OECD Reviews of Health Systems

KAZAKHSTAN

2018

OECD

OECD Reviews of Health Systems: Kazakhstan 2018

OECD

BETTER POLICIES FOR BETTER LIVES

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document, as well as any data and any map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Please cite this publication as:
OECD (2018), *OECD Reviews of Health Systems: Kazakhstan 2018*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/9789264289062-en

ISBN 978-92-64-28905-5 (print)
ISBN 978-92-64-28906-2 (PDF)

Series: OECD Reviews of Health Systems
ISSN 1990-1429 (print)
ISSN 1990-1410 (online)

Revised version, March 2018
Details of revisions available at:
http://www.oecd.org/about/publishing/Corrigendum_OECD_Reviews_of_Health_Systems_Kazakhstan_2018.pdf
Photo credits: Cover © "National Research Cardiac Surgery Center" JSC.

Corrigenda to OECD publications may be found on line at: *www.oecd.org/about/publishing/corrigenda.htm*.

© OECD 2018

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of the source and copyright owner(s) is given. All requests for public or commercial use and translation rights should be submitted to *rights@oecd.org*. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at *info@copyright.com* or the Centre francais d'exploitation du droit de copie (CFC) at *contact@cfcopies.com*.

Foreword

Kazakhstan has made exceptional economic progress since independence and over time, health has attained a higher priority on the policy agenda.

Several waves of health care reforms have sought to improve the accessibility, equity, and efficiency of health care services and have been supported by increased investments in health. As a result, the entire population is now entitled to access a basic package of benefits free-of-charge, primary health care has been introduced and strengthened, and the hospital sector is being restructured to reduce reliance on inpatient care. Numerous initiatives were launched to modernise service delivery arrangements, support quality development and the co-ordination of care. In many ways, the organisational features of the Kazakhstan health system today emulate those of best performing OECD countries. Nonetheless, average life expectancy at birth remains more than eight years below OECD average and striking regional inequalities on key health indicators persist.

In this context, this review of the health system assesses the performance of the Kazakhstan health system, with a particular focus on primary and hospital care. This review is based on globally recognised frameworks and indicators for evaluating the performance of health systems and their various components. Data provided by Kazakhstan is used to benchmark the various dimensions of performance with that of OECD countries.

By and large, recent health system reforms have been going in the right direction. However, the Soviet legacy of under-investment in primary health care, the relative focus on the treatment of communicable diseases and the fragmentation of service delivery have only partially been overcome. Service delivery remains dominated by hospitals, and rates of hospitalisation for Ambulatory Care Sensitive Conditions (ACSCs) such as asthma and diabetes are exceedingly high. Moreover, the effectiveness and quality of service delivery remain well below most OECD countries. Part of the problem is that while reforms have been wide-ranging and frequent, their effective implementation at all levels of the system has received considerably less attention. The monitoring of progress is hampered by the limited capacity of the information systems to produce the reliable and relevant data policymakers need to assess implementation or progress towards results on the ground.

Lessons from experiences in OECD countries are used to formulate tailored recommendations that could help Kazakhstan in its dual objectives of improving health status of the population and ensuring the financial sustainability of the system. The authorities' commitment towards implementing them is very encouraging.

A corrigendum has been issued for this page. See http://www.oecd.org/about/publishing/Corrigendum_OECD_Reviews_of_Health_Systems_Kazakhstan_2018.pdf

Acknowledgments

The report was prepared under the responsibility of the Health Division of the OECD's Directorate of Employment, Labor, and Social Affairs. The lead author of this health system review was Agnès Couffinhal. Additional authors included Ruth Lopert (Assessment and recommendations chapter), Karolina Socha-Dietrich (Health system performance chapter), Liliane Moreira (Primary care chapter), António Duran and António Moreno (Hospital chapter). Ali Nurgozhayev provided considerable insight and help throughout the work. The report also benefited from useful comments from David Morgan and Michael Mueller. The authors wish to thank Francesca Colombo, Stefano Scarpetta and Mark Pearson for their support. Thanks also go to Ruth Lopert for copy editing the report, Lukasz Lech for formatting the document and logistical support, and Lucy Hulett for editorial support.

The completion of this report would not have been possible without the generous support of the Authorities of the Republic of Kazakhstan. To prepare the report, a team from the OECD Secretariat visited Astana in November 2015 and engaged in wide-ranging discussions with experts from the Ministry of Health, senior officials, independent experts, social partners and international organisations. The OECD Secretariat would like to thank the Ministry of Heath of the Republic of Kazakhstan for organising the initial fact-finding mission. The OECD Secretariat would also like to thank all parties met for their time and useful insights. In particular, M. Abduov, D. Aituarona, G. Alpysbekova. A. Bralov, M. Isataeva, B. Iskakov, Y. Kartayevich, B. Kaupbayeva, K. G. Kulkaeva, M. Kulzhabov, K. Lyazzat, L. Makalkina, G. Mussina, S. Mustafina, Z. Nurgalieyeva, K. Omarov, B. Saduakassova, I. Stratulat, A.K. Tastanova, V. Tlemissova, T. Turumbetova, A. Tabergenova, deserve special thanks for their time and willingness to answer the team's questions. The authors are grateful to B. Zhumadil of the World Bank for all the information availed and to M. Vujnovic from WHO for her insights. The launch event and discussions organised in Astana in November 2017 were diligently organised by the Ministry of Health and led to fruitful discussions with a number of additional experts from the Ministry and the Republican Center for Health Development. Particular thanks to A. Musrepova., T Sultangaziyev, A. A. Toksanovna, and G. Mukhanova as well as A. Baisalykova and Z. Darimbetova. At various stages of the report, the support of Vice Minister A. Tsoy, Vice-Minister L. Aktayeva and Minister Y. Birtanov proved particularly valuable.

The OECD Secretariat is grateful for the data, the comprehensive responses to requests for additional information and comments on the report that were provided by officials from Ministry of Health in Kazakhstan.

Table of contents

Executive Summary **13**

Assessment and recommendations **15**

Chapter 1. Key features of the health care system in Kazakhstan **39**

1.1. Kazakhstan in context 40
1.2. Health Status in Kazakhstan 46
1.3. Description of the health care system 60
1.4. Overall performance of the health system 71
1.5. Summary assessment and strategic directions 84
Notes 94
References 96

Chapter 2. Improving the performance of primary health care in Kazakhstan **99**

2.1. Introduction 100
2.2. The configuration of primary health care 100
2.3. Recent key reforms concerning primary care 110
2.4. Performance of primary care 120
2.5. Summary assessment and recommended strategic directions 133
Notes 146
References 147

Chapter 3. Improving the performance of hospital care in Kazakhstan **151**

3.1. Introduction 152
3.2. Kazakhstan has launched multiple initiatives to modernise the hospital sector 154
3.3. The hospital sector today 161
3.4. Performance of the hospital system in Kazakhstan 180
3.5. Summary assessment and strategic direction 202
Notes 212
References 214

Figures

Figure 1.1. Economic growth and poverty in Kazakhstan, 1990s to 2016, or nearest year 41
Figure 1.2. Income inequalities (Gini index – left panel) and the size of income groups as a proportion of the Kazakhstani population (right panel), selected years 42
Figure 1.3. Income inequality among regions – Gini index of regional GPD per capita, 2014 (or latest year) 43
Figure 1.4. Key labour market indicators, Kazakhstan and OECD, 2007-14 44
Figure 1.5. Population of youth and older people (percentage of total population) 45
Figure 1.6. Life expectancy at birth – Kazakhstan, OECD, and selected countries, 2015 or nearest year 46

Figure 1.7. Trends in life expectancy at birth, selected countries, 1960-2014 47
Figure 1.8. Regional differences in female and male life expectancy at birth in Kazakhstan, 2014 48
Figure 1.9. Total number of deaths, and breakdown by main causes in Kazakhstan, 2005-2015 51
Figure 1.10. Trends in death rates from diseases of circulatory system (CVDs), Kazakhstan and selected countries, 2000 – 2014. 52
Figure 1.11. Premature death rates (age group 0-64 years) from ischemic heart disease and cerebrovascular disease per 100 000 population, by region 53
Figure 1.12. Daily smoking in adults, 2014 (or latest year)..... 54
Figure 1.13. Alcohol consumption among adults, 2015 and 2000 (or nearest year) 55
Figure 1.14. Obesity among adults, Kazakhstan and OECD countries, 2013 (or nearest year) 56
Figure 1.15. Maternal mortality per 100 000 live births, Kazakhstan and OECD countries, 2015 (or nearest year) 57
Figure 1.16. Infant mortality per 1 000 live births, Kazakhstan and OECD countries, 2015 (or the latest year) 57
Figure 1.17. Long-term trend in infant mortality per 1 000 live births- Kazakhstan and selected countries, 2015 (or nearest year)..... 58
Figure 1.18. Kazakhstan - regional inequalities in infant health outcomes, infant mortality per 1 000 live births, 2000-15. 59
Figure 1.19. Regional inequalities in maternal health outcomes – maternal deaths per 100 000 live births, 2005-15. 59
Figure 1.20. Health expenditure as a share of GDP, 2014 (or latest year)..... 60
Figure 1.21. Health expenditure per capita, PPP USD, 2014 (or latest year) 61
Figure 1.22. Public and private share in total health spending , PPP USD, 2014 (or latest year) 62
Figure 1.23. Public health expenditure as share of total government expenditure, 2014 (or latest year) 62
Figure 1.24. Public health expenditure per capita in relation to GDP per capita, USD PPP, 2014 (or latest year) 63
Figure 1.25. Overall organisation and governance of the health care system – simplified organogram .. 65
Figure 1.26. Financing institutions and mechanisms for the State Guaranteed Benefit Package 66
Figure 1.27. Practising physicians per 10 000 population, Kazakhstan and OECD countries, 2014 (or nearest year) 68
Figure 1.28. Share of physicians aged 55 and older, Kazakhstan and OECD countries, 2014 (or nearest years)..... 69
Figure 1.29. Practising nurses per 10 000 population, Kazakhstan and OECD countries, 2014 (or nearest year) 70
Figure 1.30. Physicians per 10 000 population, Kazakhstan regions, 2016..... 71
Figure 1.31. Number of outpatient visits per capita, Kazakhstan and other groups of countries, 1991-2015. 72
Figure 1.32. Number of outpatient visits per capita, EU 25 and Kazakhstan, 2015 (or nearest year)... 73
Figure 1.33. Hospital discharges per 100 population, Kazakhstan and OECD, latest year available.... 73
Figure 1.34. Difference in visits and hospitalisation per capital across regions in Kazakhstan, 2014 .. 74
Figure 1.35. Out-of-Pocket payments as percentage of total health spending, Kazakhstan and OECD countries, 2014 or most recent year..... 75
Figure 1.36. Percentage of patients who paid a bribe for health care in the preceding 12 months in Kazakhstan, OECD countries and globally 76
Figure 1.37. Cervical cancer five-year relative survival, Kazakhstan and OECD countries, 2010-15 (or nearest period)..... 78
Figure 1.38. Breast cancer five-year relative survival, Kazakhstan and OECD countries, 2010-15 (or nearest period)..... 79

Figure 1.39. Colorectal cancer five-year relative survival, Kazakhstan and OECD countries, 2010-15, or nearest period 80
Figure 1.40. Asthma, COPD and diabetes hospital admission per 100 000 population, Kazakhstan and OECD countries, 2013 (or nearest year) 81
Figure 1.41. Share of population satisfied with health care system, 2006 and 2016 82
Figure 1.42. Percentage of population that considers various sectors corrupt or extremely corrupt in Kazakhstan, globally and the OECD 2013 83
Figure 1.43. Life expectancy at birth and GDP per capita (left) and life expectancy at birth and health spending per capita (right), 2015 (or latest year) 84
Figure 2.1. Number of GPs per 1 000 population, OECD countries and Kazakhstan, 2015 (or nearest years) 107
Figure 2.2. Primary care as a share of CHE, OECD countries and Kazakhstan, 2014 (or nearest year) 109
Figure 2.3. Primary care as a share of current health expenditure and outpatient expenditure, Kazakhstan and OECD countries, 2014 109
Figure 2.4. Proportion of General Practitioners among medical professionals, Kazakhstan and OECD countries, 2015 (or nearest year) 112
Figure 2.5. Development of PHC workforce, Kazakhstan, 2010-15 113
Figure 2.6. Evolution of legal status of PHC facilities in Kazakhstan, 2009-15 115
Figure 2.7. Annual average number of contacts with primary care providers per capita, Kazakhstan, 2015 121
Figure 2.8. Number of PHC physicians per 1000 population in rural and urban areas, by regions, Kazakhstan, 2015 123
Figure 2.9. Proportion of GPs among PHC physicians, Kazakhstan, 2015 123
Figure 2.10. Average number of registered patient per GP, Kazakhstan, 2015 124
Figure 2.11. Average number of registered patient per district therapist, Kazakhstan, 2015 124
Figure 2.12. Average number of registered patient per district paediatrician, Kazakhstan, 2015 125
Figure 2.13. Composition of PHC teams, Kazakhstan (norm, rural, and urban areas), 2015 125
Figure 2.14. PHC physician workload, 2015 127
Figure 2.15. Vaccination of children aged 1, Kazakhstan, OECD and BRIICS countries, 2015 128
Figure 2.16. Asthma, COPD and diabetes hospital admission per 100 000 population, Kazakhstan (2015) and OECD countries, 2013 (or nearest year) 131
Figure 3.1. Evolution in legal status of hospital facilities 2009-15 156
Figure 3.2. Trends in total number of hospitals in Kazakhstan, 2000-15 161
Figure 3.3. Hospitals per 1 000 000 population, latest available year 162
Figure 3.4. Trends in number of hospital beds per 1 000 inhabitants in Kazakhstan, 2006-16 162
Figure 3.5. Hospital beds per 1 000 population – OECD and Kazakhstan, 2000 and latest year available 163
Figure 3.6. Trends in number of hospitals per "refined" hospital category in Kazakhstan, 2010-15 164
Figure 3.7. Evolution of the average number of beds in each category of hospital in Kazakhstan, 2011-15 165
Figure 3.8. Density of hospital employees (FTE) per 1 000 population, 2015 167
Figure 3.9. Proportion of physicians (% of FTE positions) in hospital employment, 2015 167
Figure 3.10. Number of hospital staff (FTE) per bed, 2015 168
Figure 3.11. Nurses (FTE) to bed ratio, 2015 168
Figure 3.12. Hospital discharges per 100 population in Kazakhstan, 2005-15 170
Figure 3.13. Hospital discharges per 100 population, Kazakhstan and OECD, latest year available 171
Figure 3.14.Trends in number of hospital admissions per type of facility, 2005-15 171
Figure 3.15. Organ transplantation in Kazakhstan, 2012-15 177
Figure 3.16. Breakdown of current health expenditure by function OECD and Kazakhstan, 2014 178

Figure 3.17. Breakdown of public health expenditure by function, OECD and Kazakhstan, 2014 179
Figure 3.18. Changes between 2004-14 in the percentage of health expenditure spent on inpatient curative and rehabilitative care as a share of current expenditure on health, OECD countries ... 179
Figure 3.19. 30-day mortality rate after admission to hospital for Acute Myocardial Infarction (AMI), latest year available ... 184
Figure 3.20. 30-day mortality after admission to hospital for ischemic stroke, latest year available .. 184
Figure 3.21. Post-operative pulmonary embolism or deep vein thrombosis following surgery, latest year available ... 186
Figure 3.22. Number of hospital admissions per 100 population across regions, 2014 ... 187
Figure 3.23. Main reasons for refused admission, Kazakhstan, 2015 ... 189
Figure 3.24. Mean waiting times (days) for cataract surgery in OECD and Kazakhstan, latest year available ... 191
Figure 3.25. Cataract surgeries in OECD and Kazakhstan – percentage of patients waiting more than three months, latest year available ... 191
Figure 3.26. Hip replacement in OECD and Kazakhstan – percentage of patients waiting more than three months, latest year available ... 192
Figure 3.27. Hospital bed occupancy rates, latest year available ... 193
Figure 3.28. Average length of stay (ALOS) in days (acute care), Kazakhstan (2015) and OECD, 2013 ... 194
Figure 3.29. Average length of stay (ALOS) in days (all causes), Kazakhstan and OECD, latest year available ... 194
Figure 3.30. Trends in average length of stay (ALOS) in Kazakhstan, 2005-15 ... 195
Figure 3.31. Average length of stay (ALOS) by type of hospital in Kazakhstan, all causes, 2005-15 ... 196
Figure 3.32. Selected surgery procedures – inpatient vs. ambulatory, OECD, latest year available ... 199
Figure 3.33. Number of patients exercising their right to free choice of health care provider in Kazakhstan, total and rural/urban distribution, 2010-14 ... 202

Tables

Table 1.1. Standardised mortality rates for key causes of mortality in Kazakhstan and selected countries, 2015 (or the nearest year) ... 49
Table 2.1. Total number of PHC health facilities, by type and geographical location, Kazakhstan, 2015 (or nearest year) ... 102
Table 2.2. Number of applicants per available grant, for health professions[1] ... 112
Table 2.3. Basic characteristic of screening programmes in Kazakhstan ... 116
Table 2.4. List of indicators and 2015 Kazakhstan-level targets for PHC performance-based payments .. 118
Table 2.5. Vacant (estimated) and filled positions and head count for PHC staff, 2015, Kazakhstan 126
Table 2.6. Rates of non-communicable diseases identified at the National Screening Programme, 2008-13 ... 129
Table 3.1. Reclassifying the types of hospitals in Kazakhstan ... 152
Table 3.2. Breakdown of hospital by legal status in Kazakhstan, 2015 ... 155
Table 3.3. Details on hospital physical assets per hospital category in Kazakhstan, 2015 ... 166
Table 3.4. Selected facilities infrastructure per hospital category in Kazakhstan, 2015 ... 166
Table 3.5. Number and categories of staff by hospital, full year equivalent (year not specified) ... 169
Table 3.6. Staff and physicians (FTE) per bed in multi-profile hospitals ... 169
Table 3.7. Most frequent diagnoses for inpatient discharges, all hospitals, 2015 ... 172
Table 3.8. Most frequent diagnoses for inpatient discharges, rural hospitals, 2015 ... 172
Table 3.9. Most frequent diagnoses for inpatient discharges, rayon hospitals, 2015 ... 172
Table 3.10. Most frequent diagnoses for inpatient discharges, secondary multi-profile hospitals, 2015 173

Table 3.11. Most frequent diagnoses for inpatient discharges, tertiary hospitals, 2015 173
Table 3.12. Most frequent diagnoses for inpatient discharges, mono-profile hospitals, 2015..... 173
Table 3.13. Most frequent diagnoses for inpatient surgeries performed, all hospitals, 2015 174
Table 3.14. Most frequent diagnoses for inpatient surgeries performed, rural hospitals, 2015..... 174
Table 3.15. Most frequent diagnoses for inpatient surgeries performed, rayon hospitals, 2015 174
Table 3.16. Most frequent diagnoses for inpatient surgeries secondary multi-profile hospitals, 2015 ... 175
Table 3.17. Most frequent diagnoses for inpatient surgeries performed, tertiary hospitals, 2015..... 175
Table 3.18. Most frequent diagnoses for inpatient surgeries performed, mono-profile hospitals, 2015. 175
Table 3.19. Organ transplantations per 1 000 000 population, Kazakhstan and selected EU countries, latest year available 178
Table 3.20. Five procedures most-frequently associated with post-operative mortality, all hospitals, 2015 181
Table 3.21. Five procedures most-frequently associated with post-operative mortality, rayon hospitals, 2015 181
Table 3.22. Five procedures most-frequently associated with post-operative mortality, secondary multi-profile hospitals, 2015..... 182
Table 3.23. Five procedures most-frequently associated with post-operative mortality, tertiary hospitals, 2015..... 182
Table 3.24. Five procedures most-frequently associated with post-operative mortality, mono-profile hospitals, 2015 182
Table 3.25. Selected causes intra-hospital mortality, all hospitals, 2015 183
Table 3.26. Hospital attendances in Kazakhstan by modality of contact, 2015..... 187
Table 3.27. Elective vs. unplanned surgeries, all surgical procedures by type of hospital, 2015..... 188
Table 3.28. Elective vs. unplanned surgeries, selected surgical procedures, all hospitals, 2015..... 188
Table 3.29. Hospital attendances vs. hospital admissions in Kazakhstan, 2015..... 188
Table 3.30. Hospital attendances in Kazakhstan, by contact modality, 2015..... 189
Table 3.31. Percentage of rural population in total, attending the hospital, admitted and refused by region, 2015 190
Table 3.32. Waiting time for elective cataract surgery in Kazakhstan, by type of hospitals, 2015..... 191
Table 3.33. Details on ALOS (in days) per specific conditions and hospital category in Kazakhstan, 2014..... 197
Table 3.34. Frequency of testing by type of hospital, selected technologies..... 198
Table 3.35. Elective surgeries – trends in inpatient vs. ambulatory, all hospitals, 2014-15 199

Acronyms and abbreviations

A&E	Accidents and Emergency Departments
ACSC	Ambulatory Care Sensitive Conditions
ALOS	Average length of stay
AMI	Acute myocardial infraction
APN	Advanced practice nurse
BRIIC	Brazil, Russia, India, Indonesia, China
CEO	Chief Executive Officer
CHE	Current health expenditure
CHF	Congestive heart failure
CIS	Commonwealth of Independent States
COPD	Chronic obstructive pulmonary disease
CSIH	Canadian Society for International Health
CT	Computed tomography
CVD	Cardiovascular disease
DMP	Disease Management Programmes
DRG	Diagnosis-related group
DTP	Diphtheria Tetanus Pertussis
ECG	Electrocardiography
EU15	European Union members before the 2004 enlargement
EU25	European Union members between 2004-07
EU28	European Union's 28 member states (after 2013)
FDI	Foreign direct investments
FTE	Full-time equivalent
GDP	Gross domestic product
GI	Government institutions
GP	General Practitioner
HIV/AIDS	Human immunodeficiency virus infection and acquired immune deficiency syndrome
ICU	Intensive Care Unit
ISQUA	International Society for Quality of Healthcare

IT	Information Technology
JSC	Joint Stock Companies
KOMU	Health Services Purchasing Committee
KZT	Kazakhstani Tenge
LHA	Local Health Authorities
MDG	Millennium Development Goals
MLS	Minimum Living Standard
MOH	Ministry of Health
MRI	Magnetic resonance imaging
NCDs	Non-communicable diseases
NHA	National Health Accounts
NHS	National Health Service
NP	Nurse practitioner
OOP	Out-of-pocket payments
P4P	Pay-for-performance
PHC	Primary Health Care
PPP	Public Private Partnerships
PPP	Purchasing power parity
PREM	Patient-Reported Experience Measures
PROM	Patient-Reported Outcome Measures
PSGBP	Private Facilities Providing State-Guaranteed Package
QICH	Quality Indicators in Community Health Care
RCHD	The Republican Centre for Health Development
REM	Right of economic management
SDR	Standardised Death Rate
SE	State Enterprise
SGBP	State-Guaranteed Basic Benefits Package
SHI	Social Health Insurance
SSD	Social Significant Disease
SVA	Rural Physician Ambulatory
TB	Tuberculosis
TE	Treasury Enterprise
WDI	World Development Indicators
WHO	World Health Organization

Executive Summary

Kazakhstan has made exceptional economic progress since independence, achieving a GDP per capita on par with the Central European members of the OECD. As the economy has grown, health has attained a higher priority on the policy agenda, with the result that Kazakhstan has increased its investment in health and launched several waves of health care reforms intended to improve the accessibility, equity, and efficiency of health services. In particular, the entire population is now entitled to access a basic package of benefits free-of-charge, primary health care has been expanded, and the hospital sector has been restructured to reduce reliance on inpatient care. Additional reforms have sought to modernise service delivery arrangements by increasing the autonomy of public providers, improving the quality of care and expanding the application of evidence-based medicine. Payment systems have been reformed to reward providers' activity and quality of services more appropriately.

However, despite the reforms, the strength of Kazakhstan's economic growth has not been mirrored by concomitant improvements in health outcomes, which fall well short of those of OECD countries. Average life expectancy at birth in Kazakhstan in 2016 is more than eight years below the 2015 OECD average. Progress on other key health indicators has been mixed, with striking improvements in some areas, such as infant and maternal mortality. Kazakhstan also has low mortality from infectious and parasitic diseases, though tuberculosis is a notable – and worrying – outlier. Today however, the greatest burden of disease is overwhelmingly due to chronic conditions, and death rates significantly exceed those in OECD countries of Europe. Moreover, national averages mask striking regional inequalities on key health indicators, in particular premature mortality from cardiovascular disease. Finally, while the data on prevalence of behavioural risk factors at population level suggest that these are on par with average OECD levels, the aggregate statistics obscure stark gender differences, with higher rates of smoking and alcohol consumption among men, and of obesity in women.

Many countries with similar levels of income, such as Hungary, Poland or Turkey, continue to outperform Kazakhstan on health outcomes. Still, Kazakhstan's experience is not dissimilar to that of many countries in Eastern Europe and Central Asia region. Despite nearly three decades of ambitious reforms the health system continues to bear the weight of the country's Soviet legacy of under-investment in primary health care and relative focus on the treatment of communicable diseases. Service delivery remains fragmented, and access is hampered by the limited availability of staff and modern equipment, especially outside the large cities. Other constraints are more contemporary, including the limited collection and use of data to measure, compare, and improve performance of health services systematically, insufficient accountability for delivering results in all parts of the country, and inadequate emphasis on developing services and programmes that address the current burden of disease effectively. Finally, investment in health, notably public (1.8% of GDP), remains very low by OECD standards (6.5% of GDP publicly spent on health on average) and the resulting high out-of-pocket costs additionally impede access to health care.

The above suggests that, while increased spending on health should be considered, improving health system efficiency and effectiveness are equally important. To strengthen health system efficiency and performance, key actions that Kazakhstan should consider prioritising in the coming years include:

- *Expanding efforts to tackle the burden of chronic disease.* An overarching objective of future reforms should be tackling the burden of disease amenable to health care interventions. Priority should be given to treatment, management, and targeted prevention of non-communicable diseases.
- *Redoubling efforts to rebalance health services delivery in favour of primary health care (PHC).* It is important to ensure that hospital services are limited to specialised care of a complexity and intensity that cannot be delivered in any other care setting. Many chronic conditions can be managed or prevented both effectively and cost-effectively at PHC level.
- *Creating a clearer vision of the future health system architecture and implementing it systematically.* A starting point to address the continued fragmentation of service delivery would be to define explicitly a limited set of models towards which all facilities should evolve. Networks of facilities at all levels should be reorganised in a manner compatible with and supportive of the new service delivery models, and aligned with population trends and access patterns.
- *Ensuring the system delivers quality at all levels.* Changing clinical practice requires a range of efforts including educational and outreach mechanisms shaped by evidence-based methods for adult learning, and user-friendly decision support tools, as well as supportive and constructive clinical audit. The impact of quality improvement efforts on relevant processes and outcomes must be measured 'close to the ground', and pay-for-performance arrangements based on them. Quality improvement initiatives should also prioritise further modernisation of health information systems, in order to integrate health care data and support continuity and coordination of care for patients.
- *Strengthening public health.* Investing in the development and implementation of a more comprehensive, evidence-based public health strategy to address chronic disease risk factors such as smoking and excessive drinking, particularly among men, is essential to closing the gap in health outcomes with the OECD countries.
- *Improve the availability, relevance, and quality of information and evidence as well as their use.* Decisions taken at facility and system level require both better and more effective use of the data currently available in Kazakhstan, as well as the collection of more relevant data to inform rational decision-making in the context of a sound data governance framework. The impacts of the reforms need to be evaluated systematically, using best practice methods and involving independent research institutions. Evaluations must enable the identification of the effects of reforms or lack thereof, and feed into future decision-making. All health system actors – health professionals, local and national providers, local and national units of authority – need to be held accountable for the outcomes of their actions and results.

Many elements of the health system's organisation in Kazakhstan are comparable to those in OECD countries. Undertaking new reforms may ultimately be of a lesser priority than gearing efforts towards ensuring existing ones are implemented at all levels and are delivering results.

Assessment and recommendations

Kazakhstan has made exceptional economic progress since independence, achieving a GDP per capita on par with the Central European members of the OECD. Yet the strength of its economic growth has not been mirrored by concomitant improvements in health outcomes, which fall well short of those of OECD countries.

As the economy has grown, health has nonetheless attained a higher priority on the policy agenda, and Kazakhstan has launched several waves of health care reforms intended to improve the accessibility, equity, and efficiency of health services, in particular through:

- the adoption of the *State-Guaranteed Basic Benefits Package* (SGBP), a basket of services provided free of charge to the entire population, introduced with the objective of equalising access across the country and as a means of providing a basis for ensuring the financial sustainability of the system;
- the expansion and development of primary health care and restructuring of the hospital sector to rebalance service delivery, by reducing reliance on inpatient care and emphasising the co-ordination of care between different levels of providers;
- the introduction of competition in quality of service, in particular by moving away from global budgeting towards payment methods that better reward activity and quality, increasing the autonomy of public care providers, and enabling patients to choose their providers.

These reforms have been accompanied by additional investment in health, as although Kazakhstan's total health expenditure has remained a relatively low and constant proportion of GDP, in real terms spending has increased significantly since the mid-1990s by virtue of overall GDP growth. That said, only little more than half the total health expenditure is financed publicly, and thus out-of-pocket costs are very high by OECD standards.

Importantly, despite increases in both total and public expenditure on health, and progress in public provision of health care, many key health indicators remain poor, suggesting significant inefficiencies in the health sector. While over the last decade average life expectancy at birth in Kazakhstan has increased rapidly, it remains far below the OECD average. It is also marked by a large gender gap – nearly double that of the average gender gap in life expectancy in OECD countries. Progress on other key health indicators has been mixed, with striking improvements in some areas, such as infant and maternal mortality. Kazakhstan also has low mortality from infectious and parasitic diseases, though tuberculosis is a notable – and worrying – outlier.

Today, however, the greatest burden of disease is overwhelmingly due to chronic conditions, and death rates significantly exceed those in OECD countries of the region. Among conditions directly amenable to health care intervention, cardiovascular and

respiratory diseases explain most of the excess mortality in Kazakhstan, with death rates from cerebrovascular disease (stroke) and chronic obstructive pulmonary disease (COPD) standing out. Cancer is the third leading cause of death, and Kazakhstan also has relatively high mortality from diseases of the digestive system, in particular alcohol-related liver disease. Moreover, although the country has documented some progress in reducing excess mortality, statistics on individual diseases must be interpreted with caution. National averages mask striking regional inequalities, with a number of regions experiencing deterioration rather than progress on key health indicators such as maternal mortality. Furthermore, closer examination of the data suggests that the classification of cause of death has evolved considerably in the last decade. Data on the prevalence of behavioural risk factors at population level suggest that these are on par with average OECD levels, but here again the aggregate statistics obscure stark gender differences, with higher rates of smoking and alcohol consumption among men, and of obesity in women.

Yet despite nearly three decades of ambitious reforms intended to expand access, introduce greater autonomy, and reduce reliance on inpatient care, the health system continues to bear the weight of the country's Soviet legacy of under-investment in primary health care and relative focus on the treatment of communicable diseases. In Soviet times the role of primary health care (PHC) was limited and services were predominantly delivered in hospitals, which were numerous and often segmented by disease or population. Facilities were publicly owned, integrated and centrally managed. Since independence, several reforms have attempted to modernise the system, by rebalancing service delivery in favour of primary care and encouraging greater autonomy and diversification of ownership. Despite this, service delivery remains dominated by hospitals, and rates of hospitalisation for Ambulatory Care Sensitive Conditions (ACSCs) such as asthma and diabetes are exceedingly high. Moreover, the limited available data show that the effectiveness and quality of service delivery remain well below most OECD countries. Today accountability is fragmented and insufficient emphasis has been directed to developing services and programmes that address the burden of disease effectively, particularly for chronic conditions.

That said, Kazakhstan's experience is not dissimilar to that of many countries in the Eastern Europe and Central Asia region. Despite the convergence in income level with Western Europe and the OECD, gaps in health outcomes have widened over the last quarter century (Smith and Nguyen, 2013) largely due to a combination of the burden of cardiovascular disease and excess deaths by external causes, both of which are often inadequately addressed – from poor control of risk factors, to failure to deliver appropriate treatment. High out of pocket costs often impede access, particularly among the most vulnerable, while public funding remains distorted in favour of hospital-based services. Across the board, the system provides reasonable access to health care but with substantial geographical inequalities between rural and urban areas with the most significant disparities seen in remote areas, where access is undermined by poor transportation and lengthy travel times to health care facilities.

Although substantial progress has been achieved to date, the performance of the health system lags behind that of OECD countries, and many OECD countries with similar income such as Poland, Hungary or Turkey outperform Kazakhstan on health outcomes. Increased spending on health should be considered, but needs to be geared towards improving the system's ability to deliver care more effectively and efficiently. The experience of OECD countries shows that spending more does not necessarily lead to improved outcomes, and that a significant amount of health spending is at best ineffective and at worst, wasteful. Kazakhstan should learn from their experience to address low value care.

Thus while Kazakhstan has clearly made progress on several fronts:

- the structure of service delivery remains hospital-centric and not ready to deliver high quality services everywhere. The number of hospital beds has decreased but the rationalisation of the hospital sector has not been systematic.
- despite rapid growth in the number of PHC professionals, the health workforce remains too small to ensure equal access to PHC for all. Public health, long-term care and rehabilitation are underdeveloped. At all levels of the system, and especially outside the large cities, the ability to deliver services is constrained by poor infrastructure and inadequate equipment.
- the autonomy of many public providers has increased and payment mechanisms are more responsive to activity and quality, but much remains to be done to bring the system into line with the contracting and payment practices of the OECD countries.
- further initiatives are needed to improve quality of care. Despite being incentivised and subject to guidelines and treatment protocols, the management of chronic diseases at primary care level is not reducing hospital admissions. The system's capacity to address the greatest burden of disease thus requires further strengthening, and information systems improved.

More broadly, an overarching challenge facing Kazakhstan's health care system is the need to improve the collection and utilisation of data at all levels. The data available to inform this review proved to be not only incomplete, but also frequently inconsistent, raising questions about both quality and validity. Diagnosing the root causes of the health system's performance issues not only requires measuring the key high-level results and intermediate outcomes, but also understanding processes and inputs. Modernisation of the information system began a decade ago but both process and progress have been erratic. In general, the system does not reflect modern standards and lags behind OECD countries in the degree to which available data are used to systematically measure, compare, and improve the performance of health services. There is also limited information sharing among providers at different levels, representing a critical barrier to better integration and coordination of care. Data governance is weak and should be improved, so as to make fuller use of the personal health data routinely collected in the health system.

Overall, the health care system provides reasonable access to services but financial protections against the costs of illness are weak. To accelerate improvement in health outcomes and close the gaps in key health indicators, greater public funding is likely to be required. For example, adequate volumes of cost-effective interventions for the treatment and management of common diseases must be accessible for all who need them. However any re-definition of the scope of services to be provided by health care facilities must be accompanied by adequate funding to provide the necessary physical and human resources. Expansion of the SGBP may also be needed to improve coverage of products and services for the treatment of priority health conditions, and remove financial barriers to seeking necessary care. However, any SGBP revision should only provide coverage of interventions shown to be cost-effective. Many OECD countries use Health Technology Assessment (HTA) to inform priority-setting decisions for their benefit packages – for the selection and coverage of medicines and development of standard treatment guidelines most commonly, and increasingly, for non-drug technologies, programmes and services as well. The Ministry of Health should continue to build its capacity to undertake HTA and explore additional opportunities for international collaboration in this domain.

Additional *targeted* and *efficient* investment in health could enable Kazakhstan to achieve health outcomes more commensurate with its level of economic development. To strengthen health system efficiency and performance, key actions that Kazakhstan should consider prioritising in the coming years can be articulated around key strategic directions. First, efforts to tackle the burden of chronic diseases, including with additional public health interventions, and to rebalance health services delivery in favour of primary health care (PHC) must be expanded. This reorganisation of service delivery must be underpinned by a clearer vision of the future health system architecture and implemented more systematically. Beyond delivering the appropriate volumes of services, attention must be paid to embedding quality improvement initiatives in health professionals practices at all levels of the system. Finally, the availability, relevance, and quality of information and evidence must improve and all health system actors – health professionals, local and national providers, local and national units of authority – need to be held accountable for the outcomes of their actions and results.

Kazakhstan's health system and health care needs

Rapid economic growth has been accompanied by a decrease in poverty and the population is young

Kazakhstan was the last of the former Soviet republics to declare independence following the dissolution of the Soviet Union in 1991. With a population of only 17.8 million in the 9th largest (and largest landlocked) country, it is one of the least densely populated nations in the world. Administratively Kazakhstan comprises 14 regions (oblasts) and 2 cities of republican significance – Astana and Almaty; the regions are divided into 175 administrative districts.

Classified as an upper middle-income country, Kazakhstan had a GDP per capita of around USD 10 400 in 2015 (IMF, 2017) and is now on par with the Central European members of the OECD. Despite hyperinflation and deep recession post-independence, Kazakhstan not only recovered but made exceptional economic progress, with GDP growth of around 10% per year between 2000 and 2007, making it one of the fastest growing economies in the world at the time. Economic expansion slowed considerably in the post global financial crisis period, but picked up again between 2010 and 2014. However, with the strength of the economy highly dependent on fossil fuel exports, Kazakhstan has been vulnerable to volatility in global commodity prices. Depressed global oil prices since late 2014 led to a decline in GDP growth from 4.3% in 2014 to only 0.4% in 2016, and while it is expected to rebound to 2.5% in 2017, medium-term prospects are subdued, due to continued lower oil prices and slow growth among trading partners (IMF, 2017b).

The substantial economic growth has given rise to concomitant improvements in poverty rates and the emergence of a large middle class, making up almost two thirds of the population. Real wages increased by 280% over the last decade, compared with an OECD average of 17%, and the proportion of the population living at or below the national poverty line (ie with disposable income less than the cost of living) fell from 47% in 2001 to 2.7% in 2015. Economic development has been uneven, however, with poverty rates remaining much higher in rural than in urban areas and varying significantly between regions.

Kazakhstan is a relatively young country with a changing demographic profile. The population grew by 1.5% in 2015 after declining between 1992 and 2002 (World Bank,

2016), and the proportion of the population aged 65 and above is low, at around 7% of the population in 2015. The employment rate is high by OECD standards (68% vs 55.6% in 2014), while unemployment rates and inactivity are significantly lower in Kazakhstan (5.2% vs 7.9% and 29.3% vs 40% respectively in 2014). Across the country 24.3% of workers are in informal employment, but the rate varies substantially between regions, from as high 44% in Jambyl to as low as 5% in Astana city, partly reflecting the different levels of development and economic activity across the country. That nearly a quarter of the working population is in informal employment may prove problematic given the government's plan to increase reliance on Social Health Insurance (SHI) funded from payroll contributions.

Kazakhstan's relatively young demographic profile reflects a considerably shorter life expectancy at birth than in OECD countries, with a difference of more than eight years in 2016. Kazakhstan also has a large gender gap in life expectancy; on average, in 2015 Kazakh women lived 76.4 years, nine years longer than men (67.4 years) (World Bank, 2016; Ministry of Health of the Republic of Kazakhstan, 2016), a difference nearly double that seen in OECD countries. Life expectancy also varies regionally, with Almaty, Astana, and the regions with the largest cities tending to have populations that live longer than those in other regions of the country. On average men live longer in rural rather than urban areas, while on average women live longer in the cities.

Kazakhstan's greatest burden of disease stems from chronic conditions

Among conditions directly amenable to health care interventions, cardiovascular and respiratory system diseases contribute the bulk of the excess mortality, with the death rate due to cardiovascular disease (CVD) 54% higher in Kazakhstan than in the EU15 (albeit less than half that of the Commonwealth of Independent States (CIS) countries)[1]. Deaths from CVD also occur much earlier in Kazakhstan than in the EU15 and are the single leading cause of excess mortality in age groups 54-60 and 60-74 years. The death rate from cerebrovascular disease (stroke) is nearly three times that of the EU15, though it is unclear whether this reflects higher rates of stroke, poorer treatment outcomes, or (most likely) a combination of the two. Mortality from Chronic Obstructive Pulmonary Disease (COPD) is more than six times higher than in the EU15 and more than five times higher than the average for the CIS countries, and respiratory system diseases contribute to excess mortality in Kazakhstan in all age groups. Death rates from diseases of the digestive system also stand out in Kazakhstan, both in comparison with the EU15 and the CIS; in particular, the death rate from alcohol-related liver disease exceeds that of the EU15 by a factor of more than seven. By contrast, Kazakhstan has a relatively low death rate from infectious and parasitic diseases, although tuberculosis presents an important exception, with the death rate nearly 15 times that of the EU15.

At the same time, standardised death rates (SDRs) for CVD over the period 2007-14 have decreased substantially. The drivers of this improvement are nevertheless unclear, as it does not appear to coincide with any significant decline in the prevalence of risk factors or in obvious or targeted improvements in service delivery. The improvement also coincides with large increases in the proportion of deaths attributable to ill-defined causes and diseases of the genitourinary and nervous system, suggesting that the method of classification of cause of death may be evolving and thus trends should be interpreted with caution. In any case, the reduction in mortality at the national level belies strong regional disparities, and much remains to be done to reduce excess mortality from diseases of the circulatory system in Kazakhstan. Premature death rates (age group 0-64 years) from ischaemic heart disease vary by nearly a factor of five between the regions

with the lowest and highest mortality. Similarly, premature death rates from cerebrovascular disease vary by a factor of three (MOH, 2016).

Overall, three risk factors account for the greatest burden of disease in Kazakhstan – tobacco smoking, alcohol use, and excess weight (IHME, 2010), but are unequally distributed between men and women. While overall rates of tobacco and alcohol consumption in Kazakhstan are both below the OECD averages, among men aged 15 and over nearly 37% are daily smokers, far above the OECD average of 24%. Annual alcohol consumption is estimated at 15.7 litres a year for men, more than 50% above the OECD average (10.4) (WHO Global Information System on Alcohol and Health), which may help to explain the high mortality from alcohol-related liver disease. While the prevalence of adult obesity is relatively low compared with many OECD countries, more than 30% of women in Kazakhstan are obese, compared with 16% of men (World Obesity, 2016), placing the rate among women on par with some of the most obese countries in the OECD.

Among deaths not directly amenable to health care interventions, those from external causes present a significant burden in Kazakhstan, with a rate three times higher than in the EU15, but in line with the CIS countries. A large proportion of the gap in life expectancy is in fact explained by higher mortality among young Kazakhstanis aged 15 to 29 years, an age group in which overall death rates are more than three times higher than in the EU15.

On a more positive note, Kazakhstan has made significant advances in infant and maternal health, although there is scope for further improvement and levels remain well above OECD averages. Maternal mortality plunged from around 90 deaths per 100 000 live births in 1990 to around 13 deaths in 2015, while infant mortality declined from 45 deaths per 1 000 live births to 9 deaths over the same period. However, as with other indicators, national level data on infant and maternal mortality belie marked regional disparities. In some regions of the country maternal mortality has actually been increasing over the past ten years, by nearly 40% since 2005 in the Akmola and Karaganda regions, and in Kyzylorda region by more than 30% between 2010 and 2015[2].

Recent waves of reforms have focused on building a unified system, centralising governance and furthering the modernisation of service delivery.

Following independence in 1991, Kazakhstan's health care system evolved from being centrally controlled and financed to become more pluralistic and decentralised, with health care provider organisations enjoying increasing financial and managerial autonomy. However after several waves of reforms most regulatory and financing functions have again been centralised.

In 2004 the *National Programme for Health Care Reform and Development 2005-2010* modified nearly every aspect of the health care system, most importantly introducing the SGBP, the basket of health services to which Kazakhstanis are entitled free of charge. The SGBP aimed to delimit state guarantees and equilibrate them between regions and population groups. Under the same programme responsibility for financing and managing health care delivery, as well as ownership of most health care facilities was consolidated at the level of the 14 oblasts and the cities of Almaty and Astana.

In 2009, the government increased the authority of the Ministry of Health (MOH), which became explicitly responsible for developing national health policies and strategic development plans, in line with priorities set out by the President. In 2010, the State Health Care Development Programme for 2011-15 – "Salamatty Kazakhstan" –

introduced the concept of the *Unified National Health Care System*. Concomitantly, elements of the financing and payment functions were recentralised and the MOH became the main public purchaser of hospital services (Katsaga et al., 2012).

Today, policy-making and financing are in large part centralised within the MOH. Three dedicated Committees facilitate implementation of health policies at national as well as regional level:

- the Committee of Pharmacy, responsible for quality assurance and control, including accreditation, licensing and certification of both physical and legal entities involved in the provision of health care services, and quality audits and investigations of patient complaints *in situ*.
- the Health Services Purchasing Committee (known as KOMU), set up to purchase all publicly funded health services by means of contractual arrangements, and spearhead modern health financing arrangements. KOMU has become the main public purchaser of health care services.
- the Committee for the Protection of Public Health, responsible for implementing policy with respect to public health, sanitation and welfare of the population.
- Over time, existing regulations have been modified in favour of increased competition, improved quality of care, evidence-based medicine, greater accountability, and pluralism of ownership. In particular:
- Patient choice has been introduced to encourage competition. Ending geographically based assignment of patients to hospitals and primary care providers is seen as an effective way of encouraging quality-based competition. Although patients must still be registered with a PHC provider, they are free to choose the PHC facility with which they want to register. They may also select the hospital from which they want to receive services. An information portal provides data on the availability of hospital beds, and publicly available hospital ratings support patient choice.
- Several measures have been implemented to enhance quality including the accreditation of higher education institutions and health care facilities, the implementation of clinical guidelines and protocols, and the development of quality indicators. The development of clinical guidelines and information systems began over a decade ago, as a means of increasing the practice of evidence-based medicine. As of 2015, around 500 clinical guidelines and protocols had been completed by the Republican Centre for Health Development for a range of diseases, including a number of ACSCs.
- An embryonic unified health information system was established in 2007, and Medical Information Systems with new equipment and qualified staff were set up in all oblasts in 2008.
- Overall, however, little is known about the impact of these various measures.

Another key reform objective, the results of which are analysed in depth in the review, has been to improve the service delivery mix. In Soviet times the roles of primary health care (PHC) and health promotion were limited, with services predominantly delivered in publicly-owned and centrally managed hospital facilities. Re-balancing service delivery in favour of primary care and reducing the reliance on hospitals has been prominent objectives of the reforms since independence.

Despite becoming a policy priority in the past decade, investment in health remains modest and dominated by hospital expenditure

While health has become a policy priority in the last decade, by international standards and in comparison with its peers Kazakhstan's investment in health remains modest, and public health financing is very low by OECD standards. During Kazakhstan's period of rapid GDP growth, health spending increased significantly in real terms while remaining a relatively constant proportion of GDP; however at 3.1% of GDP (2014 data) it remains well below the OECD average of 8.9%, modest even in comparison to OECD countries with similar levels of economic development[3].

Moreover, public health spending is only 1.8% of GDP, thus contributing only 58% of total health expenditure, and leaving high out-of-pocket costs for patients. The low level of public spending on health reflects relatively limited overall government spending as well as the fact that health is a relatively low budget priority compared with OECD country averages.

The breakdown of expenditure by type of provider shows that hospitals remain the cornerstone of service delivery. Today, the hospital sector is absorbing 32% of total health expenditure, a larger share of resources than in OECD countries (26%). In terms of priorities for public funding, the distortion is more marked; whereas on average OECD countries dedicate 30% to inpatient care, the share is 45% in Kazakhstan. Although the data are incomplete, it appears that in contrast to most OECD countries inpatient care is actually increasing as a proportion of total expenditure. At the same time, the share of total and public expenditure devoted to primary care is higher than in any OECD country, but this may in part reflect the fact that the distinction between outpatient and primary care is not clear-cut.

Kazakhstan's health workforce is being modernised but challenges remain in geographical distribution.

From 1990 to 2000, the number of health professionals declined significantly as many left the health sector, emigrated, or moved into the private sector (Katsaga et al., 2012). Various reforms have since sought to strengthen the workforce, including the revision of medical education and training based on national educational standards and standardised training programmes established by the Ministry of Health. Of particular importance have been efforts to develop and expand the primary care workforce. Prior to 2005, services at PHC level were generally provided by district therapists or paediatricians. The 'general practitioner' was only introduced into the Kazakh health system in 2005, with numbers reaching 5 071 in 2016. More recently, the development of multi-disciplinary teams in primary care has been further pushed by the introduction of new staffing standards. The scope of practice of nurses working in primary care has been expanded and they can now work with greater autonomy. In particular, around a quarter of doctors' tasks in PHC are meant to be devolved to trained nurses, including patient observation, house calls, and some prescribing.

Despite the rather swift expansion of the medical workforce, the distribution of skills is unbalanced and the PHC workforce remains inadequate. As of 2016, primary care physicians in Kazakhstan are estimated to make up between 7 and 16% of the physician workforce considerably lower than the OECD average of 32%. As a result, the number of GPs per 1 000 population in Kazakhstan (at 0.28) lags well behind the OECD average of 0.72, and the number of practising nurses is also lower than in OECD countries. As of

2014 (or nearest year), Kazakhstan had on average 69 nurses per 10 000 population, while the OECD average was approximately 89 per 10 000 people.

On a more positive note, compared to OECD countries, the medical workforce is relatively young in Kazakhstan with around 23% of doctors aged 55 or older, compared with 33% on average across the OECD. However, the age distribution varies considerably across regions, suggesting some regions may face staffing crises much sooner than others.

Across the country there are large differences in the numbers of both doctors and nurses. In all regions, urban areas tend to have three to four times the density of physicians as rural areas, with no rural area exceeding 18 per 10 000 population. This suggests not only that rural doctors are probably overworked, but also that adequate access to good quality care in rural areas may be compromised. As in most OECD countries, recent medical graduates tend to prefer working in urban areas, not only because they offer better financial and social opportunities, but also because the workload is higher in rural areas. These differences across and within regions have been recognised by the government, which, in an effort to address the challenge of getting medical graduates to work in under-served regions, has put in place various economic incentives such as higher salaries and the provision of accommodation (Katsaga et al., 2012).

Overall performance of the health system

On average, the system provides reasonable access to services but with significant regional variation. In addition, financial protection is weak and quality of care, insofar as data are available to measure it, could improve substantially. Overall, given its level of development and expenditure, Kazakhstan appears to perform below par, suggesting the need for a deepening of reforms.

Access is on par with OECD countries but the availability of the right services everywhere is uncertain

In Kazakhstan, volumes of service utilisation are at levels similar to OECD averages. Hospital discharges per capita (14.6 per 100 in 2014) are comparable to the OECD average (15.6) (OECD, 2017). The number of consultations (6.1 per year) is also close to the OECD average of 6.9. Overall, while these aggregate statistics suggest that access is generally adequate, large variations in the number of contacts with the health system in different regions suggest that in some of them at least, access may be significantly constrained. Shortages of medical personnel in rural areas, poor transportation services, and lengthy travel times to health care facilities are also likely to undermine access to services in remote areas across the country (WHO, 2011). Across regions, greater use of outpatient care and relatively less of inpatient care are strongly correlated with per capita bed numbers, suggesting that structures (e.g. the existing hospital infrastructure) shape service delivery in different ways across regions.

However, it remains unclear whether the system delivers the services the population needs. Indeed, looking beyond the frequency of contacts with providers, the fundamental question is whether services provided “mirror in attention” (frequency, priority, resources, etc.) the main causes of morbidity and death in Kazakhstan. Data systems in Kazakhstan provide limited information on the nature of services delivered, and in particular on the coverage of interventions related to the management of the chronic diseases that increasingly affect the population. Yet, the information collected in the analysis of hospital and primary care and summarised below repeatedly suggests that the

profile of services delivered will need to evolve considerably to address the burden of disease more effectively.

High levels of out-of-pocket payments undermine financial protection and access

Out-of-pocket payments represent 38% of total expenditure in Kazakhstan, a level that falls well short of meeting the WHO criterion for adequate financial protection of at or below 20%, with the largest component arising from the very limited coverage of medicines. While in OECD countries households pay on average 40% of the cost of pharmaceuticals out of pocket, in Kazakhstan, the figure is 84% (OECD, 2018). Medicines prescribed in primary care are generally paid for by the patient, and only provided free of charge for patients with a listed "socially significant disease".

Conversely, at the hospital level all drugs are provided free of charge (Katsaga et al., 2012), which may explain many patients' preference for treatment at a hospital rather than a PHC facility. It is not known, however, the extent to which hospital drug coverage (in terms of quantities) is available for any given condition. To alleviate the cost burden of medicines for patients, the government has been gradually expanding the outpatient medicine benefit package since its introduction in 2005, but high OOP costs persist.

Informal payments are also very frequent in Kazakhstan, even when measured on a global scale. According to the 2013 Global Corruption Barometer of Transparency International around the world 17% of the people who sought care in the preceding 12 months declared having paid a bribe, vs only 7% in OECD countries and 28% in Kazakhstan, putting the country among the top third in the world in terms of bribes paid to access health services.

Out-of-pocket payments can have a significantly impoverishing effect. In 2002-03, health expenditure represented more than 10% of non-food consumption for more than half the population – which may be considered a catastrophic level of health expenditure (Bredenkamp et al., 2012) – and around one third of those in poverty fell below the poverty line because of OOP health care costs. A 2010 household survey in 2010 showed that 40% of respondents did not access health care services when they experienced a problem serious enough to require medical attention in the preceding four weeks. Other surveys have reported patients cancelling or delaying doctors' visits because of OOP costs for drugs. (WHO, 2011).

Further improvements are needed in quality of care

One window into the quality of the health care system in Kazakhstan is its capacity to manage certain chronic diseases. Cancer is a major health challenge and its burden is increasing in Kazakhstan. Survival rates are a key indicator of effectiveness, capturing the impact of both detection and treatment. In 2013 Kazakhstan's five-year relative survival rate in cervical cancer was less than 57%, well below the OECD average of 66% of detected cases. Kazakhstan's five-year relative survival rate in breast cancer was only 53% in 2015, comparing very unfavourably with most OECD countries (five-year relative survival rates of at least 80% in 2013) (OECD, 2015). Similarly, in colorectal cancer the survival rate of 44% puts Kazakhstan behind even the most poorly performing OECD countries, and well below the OECD average of 62%.

The number of hospitalisations for ACSCs is another, albeit indirect measure of the quality of primary care. In 2015 more than 500 adults per 100 000 population were

hospitalised in Kazakhstan due to asthma or COPD, placing Kazakhstan among the poor performers in the OECD. A similar picture is seen with respect to hospital admissions due to diabetes, which are well above the OECD average.

Finally, less than half the population is satisfied with the health system and the proportion has been declining over time. While differences in levels of satisfaction can reflect differences in expectations across countries, they nevertheless provide some insight into the quality of health care systems.

Primary care in Kazakhstan

Primary health care (PHC) in Kazakhstan is undergoing a major transformation. After being largely neglected during the Soviet period, since independence major restructuring has taken place with a view to increasing capacity and improving population health. General medical practice (GP) was introduced within the framework of the "Strategic Development Plan of the Republic of Kazakhstan until 2020" and the State Program "Salamatty Kazakhstan" for 2011-15. This work is pursued in the State Program for Health Development of the Republic of Kazakhstan "Densaulyk" for 2016-19. As of 2017, measures are geared towards creating "universal, socially oriented and accessible assistance at the level of primary health care". In other words, primary care reforms have been, and continue to be high on the policy agenda, and Kazakhstan devotes a higher proportion of health funding to primary care than many other countries.

To date, key reforms have included:

- The introduction of the role of general practitioner (GP). In September 2017, GPs were employed in nearly 60% of PHC sites, compared with 55% the previous year and the proportion was higher in six oblasts;
- The requirement that PHC services be provided by multidisciplinary teams. Nurses helps monitor specific populations (chronic patients) and a nurse in charge of prevention is being added to PHC teams. A psychologist and social worker provide comprehensive assistance to families;
- Changes in the legal status of facilities to increase their autonomy;
- The introduction of incentives into the payment system to improve quality, and mandatory accreditation of PHC facilities;
- The establishment of screening programmes and related activities to address non-communicable diseases (NCDs), together with piloting of disease management programmes (DMPs).

While these reforms have helped both to strengthen and expand the PHC sector within Kazakhstan's health system, they have not yet fulfilled their original aims. Although the results of some initiatives are clear and readily measurable (e.g. the number of PHC professionals has increased six fold in ten years) others are less so and suggest considerable room for improvement. For example, although multi-disciplinary teams are now mandatory, the data indicate that less than half the nurses expected to work in PHC are available and at most a quarter of the PHC teams meet the staffing standards.

Kazakhstan's vast network of PHC facilities continues to be fragmented and in need of rationalisation, reorganisation and upgrading. Many categories of facilities continue to coexist and do not necessarily correspond to current clinical, epidemiological or

operational realities, nor are they distributed in a way which meets current population patterns. Furthermore, many points of service remain ill equipped and poorly maintained. Finally, although the funding mix of PHC facilities resembles that of many OECD countries and combines capitation with a pay-for-performance component, the latter only applies in urban facilities and its design would need to be improved if it is to reward actual efforts effectively.

Although coverage of PHC services is nominally guaranteed effective access is not assured

Overall numbers of contacts suggest that access to PHC services is reasonable, but nevertheless remains uneven. Although public coverage of PHC services is nominally guaranteed and free of charge, effective access is not uniform. One fifth of the population is not registered with a primary care provider, and while the number of PHC contacts per capita appears high (an average of 5.6 contacts with primary care per year) the figures seem likely to include contacts with ambulatory care specialists, making estimates of actual utilisation of primary care services at population level difficult to ascertain. The average figure also masks large differences across regions in Kazakhstan. The number of annual contacts ranges from 2.0 in Astana to 9.7 in Mangystau, and some parts of the population are likely to have very limited access to primary care.

Despite ambitious workforce targets the number of PHC physicians remains very low by OECD standards, and many PHC professionals carry excessive workloads. In addition, poor coverage of outpatient prescription medicines limits both the effectiveness (and appeal) of care at PHC level.

The performance of the PHC in the management of chronic diseases needs to improve

There is also evidence that the effectiveness of primary care – a key dimension of health system quality – could be improved. On a positive note, for children, Kazakhstan has been able to maintain vaccination rates that are often above OECD averages. Significant efforts have been made to increase screening rates with substantive results but further improvement is needed. For instance, breast cancer screening is offered to women between 60 and 70, with the screening rate close to 70%. On the other hand, Kazakhstan's cervical cancer screening programme, which recommends a Pap test every five years for women 30-60 years of age, has achieved a screening rate of just above 50% of the target population. The rate is thus likely to be lower across the age range 20-69, and well below the rate of 61.6% for this age group across the OECD countries (which also typically offer screening at two or three year intervals).

The limited information available on coverage of interventions related to chronic diseases also shows that considerable progress is still required, but possible. A DPM pilot concluded in 2015 in a small number of polyclinics collected information on process and intermediate outcome indicators in the management of selected chronic diseases. While the results were not statistically representative, the range of values is powerfully illustrative of considerable variation in performance. In one facility, prior to the intervention, only 7% of diabetic patients had undergone an eye examination in the preceding year; at the end of the pilot, in another facility, the figure was 92%. Similarly, in one location only 8% of diabetic patients had undergone a urine albumin test in the 12 months preceding the intervention, while the rate was above 80% in another at the end of 2016 (CSIH, 2015). The existence of such low baseline levels for several key

indicators suggests that at present PHC teams are not uniformly managing chronic conditions in the most effective ways, despite the existence of clinical guidelines. However the results of the intervention also demonstrate that, with hands-on and fairly intensive efforts, rapid improvement is achievable.

Finally, hospitalisations for ACSCs are exceedingly high. The data for the most common chronic conditions are provided above but a comprehensive analysis of avoidable hospitalisations in Kazakhstan showed that admission rates were also very high for other ACSCs such as infectious and parasitic diseases (75%), pneumonia (85%), epilepsy (37%) and angina pectoris (36%). Furthermore, a survey conducted among national health professionals suggested that at least 61% of admissions for influenza, 44% for kidney and urinary infections, 75% for hypertension, and 42% for angina pectoris could have been avoided through effective PHC interventions (WHO, 2015).

Importantly, this review repeatedly encountered a lack of capacity among existing data systems to record and measure progress as reforms evolve. Throughout the project, the available data proved difficult both to interpret and to analyse. While Kazakhstan continues to invest in and strengthen PHC, additional efforts must be directed toward producing better quality data, otherwise it will remain challenging both to demonstrate progress and to determine how best to drive it.

Overall, primary health care in Kazakhstan is moving in the right direction. Structural elements have been put in place and the configuration of primary care services is evolving towards international best practices – a specialised and multidisciplinary PHC workforce, autonomous facilities, quality assurance tools, and payment mechanisms that seek to incentivise quality in service delivery.

However, it appears that the various parallel reforms that are driving the development of PHC have not yet achieved their full potential, and the PHC sector continues to underperform. A great deal more information and evaluation is required to understand (i) if and how the overall reforms are changing practice on the ground, (ii) if practice changes are producing the desired effects, and (iii) what drives or limits performance. Above all, strengthening PHC services requires the evaluation and recalibration of the efforts made so far in order to maximise impact.

The hospital sector in Kazakhstan

Since independence, various waves of health reform have impacted the hospital sector substantially. Successive or simultaneous changes have taken place in:

- Funding sources (from Republican budget, to oblast and local authority funding, replaced now by central and more strategic purchasing);
- Payment methods (from line-item input funding to payments which increasingly reflect activity and incentivise productive efficiency, at least in the more urban facilities);
- Organisation and governance (increasing autonomy and authorisation to develop commercial activities for public hospitals, development of the private sector).
- Many other aspects of the regulatory framework have also been modernised notably to strengthen quality assurance.

While the transformation of the hospital sector has been actively supported by government, it remains incomplete

Even the most cursory view would indicate that the hospital system in Kazakhstan differs in many ways from that of a typical OECD country, beginning with what is considered to be a 'hospital'. The 34 categories of facilities that make up the 'hospital system' are classified according to the services they provide, the populations they serve, their locations etc. The categories include entities such as 'tuberculosis dispensaries' and centres for the treatment of addiction, which, while classified as 'hospitals' in Kazakhstan, would be highly unlikely to be designated as such elsewhere. This granularity is essentially the legacy of the former Soviet system.

In the last 10-15 years significant efforts have been made in Kazakhstan to downsize the hospital system. The most obvious consequence of the efforts to develop a more modern service delivery model is the reduction in the number of facilities and beds that began in 2006. In 2016, the number of hospitals is 9% below the level of 2000. This has given rise to an even greater reduction in bed numbers, from 6.9/1 000 inhabitants in 2006 to 4.8 beds/1 000 in 2016, which is in line with the OECD average, though the number varies significantly across regions.

The re-profiling of facilities is progressing. The number of rural hospitals has decreased by 56% in the last five years. The number of single specialty ('mono-profile') hospitals has also decreased by 20%, albeit remaining very high by international standards. Mono-profile hospitals are not seen as well placed to respond to the burden of disease in modern health care systems – or as the most effective and efficient way to deploy technology – yet they still represent 40% of beds in Kazakhstan. On the other hand, the numbers of rayon and tertiary level facilities have remained stable, while the number of secondary multi-profile centres has slightly increased. By contrast, the sizes of hospitals have not changed substantially, with the average number of beds by type of facility remaining virtually unchanged over the years, implying that the decrease in the number of beds and hospitals has been driven primarily by the closure of facilities rather than the reorganisation of existing ones. The average number of beds in secondary multi-profile and tertiary hospitals (less than 200 beds in both cases) is very low given their role and scope of services, and there would appear to be significant potential to benefit from greater concentration and economies of scale.

The government has actively supported the transformation of the sector by investing in infrastructure and restructuring hospitals. In recent years a strong policy of investment in the public sector has also contributed to upgrading buildings and equipment in Kazakhstan. Small hospital departments or units (e.g. maternity and emergency departments only used by extremely small numbers of patients) have been shut down and the services absorbed by other centres.

The public-private mix in Kazakhstan has also been changing steadily, after a slow start. By 2015 there were 137 private hospitals (127 of which were at city level, 3 at oblast level and 7 at rayon level), 102 of which provide care within the SBGP services.

Overall, the MOH could not provide much information about the conditions and the capacity of hospitals to deliver specific services, making monitoring and evaluation challenging. More importantly, in an environment in which the unification of the health system is a stated priority, this probably also limits the opportunity to effectively target investment. As of 2017, tough, the Ministry of Healthcare was developing a long-term

master plan for the hospital sector, named "Unified Prospective Plan", with the objective to guide future public and private investment.

Hospital financing has been centralised and modernised but incentives for efficiency may be inadequate

Financing arrangements have been used to drive changes in professional and institutional behaviour in Kazakhstan. Currently hospital care is included in the SGBP, which covers "Inpatient care (including tertiary care)", both planned (ie based on a GP or specialist referral) and urgent ("without prescription"). Specific hospital funding and payment reforms intended to establish a 'level playing field' for public and private facilities to strive for excellence. These have included the 2012 introduction of Diagnosis Related Group (DRG)-based payments, and all urban area (57% of the total population) hospital inpatient services have since then been reimbursed through *case-mix* funding based on these. Today virtually all secondary care hospitals and most hospital day care services are fully funded using DRGs. DRG-based payment is intended to incentivise productivity, by making hospitals accountable for managing the resources used to treat a given patient. The expectation is that this will stimulate hospital productivity, since increasing the number of episodes of care spreads fixed costs over a larger number of patients, and encourage the development of day stay procedures in lieu of inpatient admissions.

By contrast, institutions providing specific tertiary care and 'consultative diagnostic services' still receive global budgets, while oncology services and others are paid via fixed budgets and a fee from a list of tariffs for each service. This is intended to support highly specialised tertiary care irrespective of provider ownership, but may also be distorting the distribution of resources. Rural global budgets are currently based on capitation, with levels reportedly adjusted annually according to utilisation, but which in reality remain roughly constant.

Overall, the implementation of DRGs has improved the transparency of hospital financing. However, some challenges remain, including the need to continue improving the cost accounting system and the measurement of clinical activity-related resource utilisation. Skills to manage facilities proficiently under the DRG-related payment systems also need strengthening (Chanturidze et al., 2016). The hospital system is unlikely to have been able to fully respond to the incentives brought about by financing reforms, and in particular by DRGs. Data on hospital finances do not always seem to be readily available either, which may suggest that limited attention is being paid to holding them accountable for their financial performance.

The efficiency of hospitals could still improve. Despite the large number of hospitals and hospital beds in Kazakhstan, bed occupancy rates are similar to or slightly higher than in OECD countries. This is explained by relatively high attendance rates and high average length of stay (ALOS). In Kazakhstan hospital ALOS (8.8 days for acute care and 11.5 days for all causes in 2015[4]) is well above OECD averages (6.5 and 7.5, respectively). This confirms that service delivery in Kazakhstan continues to rely heavily on hospital-based services, and that post-acute care and rehabilitative services are probably not readily available for discharged patients. Although ALOS is slowly decreasing overall, in tertiary hospitals (18 days) it is both very high and still increasing. Disease-specific ALOS statistics also suggest that many activities that take place in hospitals in Kazakhstan are managed in other settings in OECD countries, and may be

treated on an outpatient basis (for example pulmonary TB, which has an ALOS 55.2 of days in Kazakhstan).

Admissions are frequently unplanned

Access in Kazakhstan – as reflected in numbers of admissions – is similar to the OECD average. In Kazakhstan, the population is entitled to free access to those hospital services included in the SGBP. Overall, 82% of expenditure on hospital services is public (which compares well with the 86% average in OECD countries). In the last decade, and particularly since 2010, the number of discharges per capita has tended to decrease, and is now in line with the OECD average mentioned previously.

Nevertheless, while admission rates compare well with the OECD, access is non uniform. For example, rural dwellers represent 43% of the population but only 32% of hospital attendances. In the absence of additional information, it not possible to determine whether or not this difference signals disparities in access for rural populations, and if so, whether the drivers are geographic, cultural or infrastructural. No data appear to be collected on access to care from the patient perspective, which would aid in understanding the nature of (and remedies for) barriers to access. Overall, it is not possible to determine with the available data whether patient income or socio-economic characteristics play a role in reaching the hospital gates or being admitted. Uneven access probably also stems from the inability of facilities across regions to provide the same services. As discussed below, some procedures are performed very infrequently in Kazakhstan, implying that access to them is likely to be uneven.

Only a quarter of hospital admissions are planned. Referred patients have a higher likelihood of being admitted (82%) than those who arrive by ambulance (56%) or through self-referral (49%). The most common reason for patients being refused admission (including those with referrals) is lack of medical necessity. Unplanned procedures also represent the bulk of surgical activity in most Kazakh hospitals. Unplanned admissions occupy beds intended for planned activities, can lead to the postponement of necessary care, thereby becoming in effect a barrier to access.

The overall picture is of a system in which coordination of care across levels is limited and management capacity is in need of strengthening. While waiting times appear short, given the low volumes of surgical procedures performed, comparisons should be made with caution. They also raise the question of whether access is commensurate with need.

Hospital activity is not clearly aligned with the country's burden of chronic disease.

Hospitals mostly deliver services of limited complexity. Data on discharge diagnoses (based on ICD-10 codes) as well as surgical diagnoses (based on ICD-9 codes) suggest that most hospitals remain focused on delivering core services of limited complexity, a significant proportion of which would be more likely be provided in lower level facilities in OECD countries. Obstetric services also largely dominate the picture of hospital activity in Kazakhstan. Most of these services should indeed be hospital based, but their prominence suggests that the activity in Kazakh hospitals is neither very complex nor very diverse. Furthermore, hospital services do not appear to be clearly aligned with the country's burden of chronic disease.

Of particular concern is that absolute numbers of surgical procedures carried out by the hospital system are strikingly low, which in addition to economic considerations raises important concerns about quality and safety. While average numbers mask differences across facilities, uncomplicated caesarean section – the most frequent surgical procedure – is performed only around 100 times a day across Kazakhstan. A breakdown by category of facility shows that on average the procedure is being performed only once every 13 days in each rayon hospital; once every 12 days in each secondary multi-profile hospital, and once every 11 days in each tertiary hospital. All other surgeries are performed even less frequently. Moreover, international experience suggests that in order to optimise use of personnel and equipment in a given obstetric ward, a minimum of 600 deliveries per year, ideally 1 000 to 2 000, is required. The number of deliveries in rayon hospitals averages 480 per year and only 200 in multi-profile hospitals.

Data and official statistics provide a mixed picture on the quality of hospital care

In OECD countries at least two out of every 100 persons admitted to hospital may be expected to die. However crude hospital mortality rates do not account for the complexity or severity of the cases treated, are thus too blunt an instrument to measure or compare the quality of hospital services across facilities. In Kazakhstan, around one person dies for every 10 000 hospitalised. This does not mean that hospitals in Kazakhstan are 100 times safer. A more reasonable interpretation would be that the nature of hospitals and the range of treatments they provide in Kazakhstan differ profoundly from those of OECD countries; that patients in Kazakhstan hospitals are likely to be less unwell or are admitted for the treatment of less serious conditions that in OECD countries might not be considered to require hospital admission. Reducing the number of avoidable hospitalisations, particularly through strengthening primary health care, is a long-standing priority of the government.

A direct comparison with specific OECD indicators suggests that performance in Kazakhstan may be on par with OECD averages, although some figures cast doubt on the accuracy of the reporting. Data on safety are incompletely reported; Kazakhstan reports information on post-operative thromboembolic events, but not on other key safety indicators such as post-operative complications, retained objects, nosocomial infections, or readmission rates. For example, post-operative pulmonary embolism and deep vein thrombosis are unusually low in Kazakhstan, raising concerns about the validity of available statistics. Kazakhstan reports values that are well under the OECD average (169 vs. 576), and boasts the second lowest rate among OECD countries that report these data.

In sum, the available information on safety and quality of care in Kazakhstan presents an inconsistent picture. Some elements confirm that the system tends to serve basic and elementary needs predominantly; crude data on mortality following specific surgical procedures are not readily comparable with those of OECD countries; while some more complex measures suggest that Kazakhstan is either average or among the best performers. Overall, the quality of the reporting seems questionable.

Coordination of care between primary care and acute hospital care, as well as between the latter and rehabilitation services needs to be strengthened. The State Health Development Program of the Republic of Kazakhstan "Densaulyk" for 2016 – 2019 frames the gradual introduction of integrated care models and as of 2017, roadmaps

for the implementation of integrated care models were approved for acute myocardial infarction, acute stroke, cancer, trauma, obstetrics and child care.

In sum, the transition to a modern hospital system is still a work in progress. The sector remains highly fragmented, and while mono-profile facilities persist the "Densaulyk" strategy of the Government for 2016-19 aims to reduce their role while developing multi-profile facilities further. The clinical model underpinning the role of the hospital needs to evolve to address the burden of disease of the country more effectively, and to serve the needs of the population more efficiently. While a handful of facilities are able to provide highly specialised services and complex care (for example organ transplants), the vast majority of facilities mainly provide services of low intensity. The capacity of clinical and management professionals – and ultimately of the system – to meet the needs of the population safely and effectively must be improved, augmenting the initiatives already in place. Hospitals also appear to have very limited interactions with other parts of the health and social care delivery system, including primary health care, nursing homes and related facilities. In other words, care coordination remains underdeveloped in Kazakhstan. Again this has been a priority identified by the 2016-19 "Densaulyk" programme.

Conclusions

Since gaining independence, Kazakhstan has made impressive economic progress but health outcomes continue to lag behind. Multiple waves of policy reforms have sought to expand access, modernise service delivery arrangements, and reduce reliance on inpatient care. The system continues to face many challenges, in part reflecting its post-Soviet legacy of under-investment in primary health care and relative focus on the treatment of communicable diseases. Others constraints are more contemporary, including the unavailability of the adequate information systems, the seemingly limited accountability for delivering results in all parts of the country, and insufficient emphasis on developing services and programmes that address the current burden of disease effectively. As a result, health outcomes remain inferior to those of the OECD and inequalities are significant.

This review shows that, in many ways, the organisational features of the Kazakhstan health system today emulate those of best performing OECD countries. By and large, the reforms have been going in the right direction. The reasons for the limited progress thus run deep and are difficult to capture, especially in an environment where information systems are not geared toward that objective. In part, slow progress may be attributable to the magnitude of the task at hand.

What is clear is that while reforms have been wide-ranging and frequent, their implementation at all levels of the system has received considerably less attention than their design. In fact, insufficient attention is being paid to measuring actual progress towards effective implementation. The analysis of data produced by the system often raises concerns about its validity, and the information available today is clearly insufficient even to assess the extent to which reforms are being rolled out. Evaluating whether the changes actually translate into improvements in intermediate and higher level outcomes is an exercise seldom undertaken.

For Kazakhstan to achieve the health outcomes that may be expected given its level of economic development, reform efforts need to be deepened and coordinated more effectively. In the coming years the health care system should be steered consistently

towards more modern arrangements, with a clear focus on improving health outcomes and maximising efficiency. Many of the recommendations below are aligned with the priorities set out in the 2016-19 "Densaulyk" programme. In the end, undertaking new reforms may ultimately be of a lesser priority than gearing efforts towards ensuring existing ones are implemented at all levels and deliver results on the ground.

Policy recommendations for Kazakhstan

In order to deliver efficient, high-quality health care for all citizens and tackle the persistent burden of chronic disease, Kazakhstan should:

Better align strategic priorities for the health system and in particular:

- *Focus attention on tackling the burden of chronic disease.* An overarching objective of future reforms should be to address the burden of disease amenable to health care interventions. Priority should be given to treatment, management, and targeted prevention of chronic, non-communicable diseases.

- *Redouble efforts to rebalance health services delivery in favour of primary health care (PHC).* Many chronic conditions can be both effectively and cost-effectively managed or prevented at the PHC level. Hospital services should be limited to specialised care of a complexity and intensity that cannot be delivered in any other care setting. Further rationalisation of hospital services and development of PHC offers real opportunities for delivering better value-for-money to the system.

- Create a clearer vision of the future health system architecture. A starting point to address the continued fragmentation of service delivery would be to define explicitly a limited set of models towards which all facilities should evolve. At primary, outpatient and hospital level, the categories should primarily be defined by the scope of services they provide in line with population health needs. They should be classified in a manner that balances the availability of services at the level of communities and appropriately concentrates scarce resources at higher levels of the system.

- *Pay greater attention to reducing inequalities.* Further effort should be focused on addressing inequalities in access to health care services – between regions, as well as between cities and rural areas – taking into account the country's geography and low population density in health care delivery planning.

- *Reorganise the network and distribution of facilities*. Networks of facilities at all levels should be reorganised in a manner compatible with and supportive of the new service delivery models, and aligned with population trends and access patterns. For this exercise, a starting point could be the service delivery master plans developed in recent years. Their implementation should then become more systematic. The redefinition of the scope of services provided by health care facilities must be accompanied by adequate investment to cover the necessary physical and human resources. Investments decisions, including through PPP projects, should be selected on the basis of their ability to move towards the desired service delivery structure. Particular attention should be paid to targeting investment towards populations, care segments and regions which lag behind.

- Ensure the system delivers quality at all levels. Quality improvement measures must be implemented at all level and their impact on process and health outcomes better monitored. Pay-for-performance arrangements could be based on improvements in these health outcomes, rather than on process measures or the occurrence or avoidance of rare events. Quality improvement initiatives should also prioritise further modernisation of health information systems, in order to integrate health care data and support continuity and coordination of care for patients.

- *Ensure the availability of SGBP services and consider expanding coverage to additional cost-effective benefits.* To accelerate improvement in health outcomes and close the gaps in key health indicators, greater public funding is likely to be required. Adequate volumes of cost-effective interventions for chronic diseases must be equally accessible for all who need them. Any explicit revision of the SGBP should ensure coverage of only those interventions that are cost-effective. The Ministry of Health should continue to build capacity Health Technology Assessment (HTA) and explore opportunities for international collaboration in this domain.

- *Gear the implementation of social health insurance (SHI) towards improving the performance of the system.* Universality of coverage and the pooling of funds at the level of the entire population are among the strengths of the current financing system that should be preserved. Ideally, SHI should be empowered to become the single-payer in the system. It should have the capacity to implement modern contracting techniques, leverage them to incentivise greater coordination and integration of providers, and foster greater overall accountability for quality and cost.

- *Strengthen the mechanisms supporting accountability for health system results.* On-going reforms must be accompanied by strengthening the mechanisms supporting the accountability for health system results. The capacity of all the health system actors – health professionals, local and national providers, local and national units of authority – to deliver optimal results depends critically on whether they can be held accountable for the outcomes of their actions.

- *Improve the availability, relevance, and quality of information and evidence.* Decisions taken at facility and system level require both better and more effective use of the data currently available in Kazakhstan, as well as the collection of more relevant data in order to inform rational decision-making. The impact of the reforms needs to be evaluated systematically, using best practice methods and involving independent research institutions. Evaluations must also enable the identification of the effects of reforms or lack thereof, and feed into future decision-making.

Further strengthen primary care by:

- *Ensuring primary care remains the priority.* Creating a distinct and adequately resourced primary care sector is essential to the effectiveness of the health system's response to evolving health care needs and expectations. Most encounters with the health care system should begin, and be effectively resolved at the primary care level, with referrals to secondary and tertiary care occur only where effective care cannot be provided at PHC level.

- *Defining service delivery packages more explicitly and adapting the primary care network systematically*. While each local network of PHC providers should have the flexibility respond to local circumstances, it is also important to identify packages of services covering prevention, diagnosis and treatment that all patients may expect to receive irrespective of their location, in both basic and more advanced facilities. These packages should be the basis for contracting PHC services, and each local authority should be held accountable for providing effective access to them within its territory.

- *Developing the PHC workforce further to improve coverage.* The continued development of the PHC workforce must remain a priority. In order to address ongoing shortfalls in the PHC workforce Kazakhstan must find additional ways to attract and retain medical graduates in general practice. As a complementary strategy Kazakhstan should continue to invest in task redistribution, promoting advanced roles for nurses through the delegation of some GP functions, as well as the transfer of some tasks from specialists to GPs.

- *Prioritising 'hands-on' efforts to improve quality*. It is imperative that providers are held accountable for providing quality services. Ensuring multi-disciplinary teams are available and equipped to deliver PHC packages is valuable, but ultimately the quality of the care they deliver is paramount. Ensuring quality improves at facility level is a hands-on process requiring continuous attention and significant investment. The development of standards and guidelines is a necessary step but ultimately changing clinical practice requires a range of efforts including educational and outreach mechanisms shaped by evidence-based methods for adult learning, and user-friendly decision support tools, together with supportive and constructive clinical audit.

- *Strengthening system-wide coordination of care and accountability for service delivery.* Better care coordination is imperative in improving the quality and experience of care, especially for complex needs patients. Primary care should be the point of entry to the system and the place where most health needs are met, but when more specialised care is required, PHC providers should play a central role as co-ordinators of care. Integrated care models being developed and implemented in pilot regions should be designed to address issues specific to the system and the results evaluated in light of their capacity to address them.

Modernise the hospital sector by:

- *Accelerating the reorganisation of service delivery, improving efficiency, ensuring access to quality care while accounting for local needs.* The consolidation of the still-fragmented hospital sector should be accelerated according to the principles outlined earlier. Key objectives should be the mainstreaming of services still delivered in mono-profile facilities, and better differentiation of the mix of services provided by different levels of multi-profile hospitals. Care must be taken to ensure access to services in remote and rural areas is maintained.

- *Strengthening and modernising clinical governance.* While various guidelines and protocols have been developed, their use is not yet clearly embedded in practice. Clinical governance in the hospital system must be strengthened and modernised. Establishing a culture of quality is a complex structural issue and change will only occur when professionals and other stakeholders are adequately motivated and involved. A careful mix of policy, persuasion and well-designed contracting incentives will be needed.

- *Leveraging funding and contracting more effectively.* Hospital funding remains overly fragmented and the DRG system can still be improved. Progress on these fronts would improve contracting substantially, which is also necessary in the context of the introduction of social health insurance.

- *Regulating hospital autonomy, and clarifying and improving accountability*. The re-profiling of facilities and the development of clearer business and service delivery models require improved management with sufficient autonomy to (i) adapt to changes in a fast evolving regulatory and financing environment, (ii) meet patient demand and (iii) manage cost pressures. Responsibility for monitoring and steering individual facilities towards achieving system-level goals requires clarification as to the locus of responsibility for the routine analysis of data by which to monitor performance and hold hospitals accountable.

- *Developing and ensuring the availability of relevant services.* Above all hospital services need to better reflect the burden of disease in Kazakhstan, and be able respond more effectively to the key drivers of death and disability both efficiently and with proper attention to societal perceptions and quality standards.

Notes

1. Data on comparative mortality come from the European mortality database of the World Health Organization Regional Office for Europe.
2. All data pertaining to the health system and health statistics for Kazakhstan, unless otherwise specified, were provided by the Ministry of Health of the Republic of Kazakhstan in the course of the review.
3. Data on health spending are from OECD (2018).
4. Data for 2016 indicate a further decrease to 9.2.

References

Bredenkamp, C et al. (2012), *Health equity and financial protection datasheet : Europe and Central Asia*. Health equity and financial protection datasheet compendium. Washington, DC : World Bank Group, http://documents.worldbank.org/curated/en/711401468038087048/Health-equity-and-financial-protection-datasheet-Europe-and-Central-Asia.

Chanturidze T, M. Esau, S. Hölzer and E. Richardson (2016), "Introducing Diagnosis-Related Groups in Kazakhstan: Evolution, achievements, and challenges", *Health Policy*, Vol. 120, No. 9, pp. 987-91, http://dx.doi.org/10.1016/j.healthpol.2016.07.007.

CSIH (2015), "Kazakhstan Health Sector Technology Transfer and Institutional Reform Project: Partnership on Diseases Management Programmes Development and Implementation – Final report on DMP Implementation", unpublished.

IHME (2010), *GBD Profile: Kazakhstan*, Institute for Health Metrics and Evaluation.

IMF (2017), World Economic Outlook Database.

IMF (2017b) Republic of Kazakhstan : 2017 Article IV Consultation- Press Release; and Staff Report. Country Report No. 17/108

Katsaga A. et al. (2012), Kazakhstan: Health System Review, *Health Systems in Transition*, 14(4):1-154.

MOH (2016), *Population health in the Republic of Kazakhstan and activity of health care organisations in 2015*, Kazakhstan.

OECD (2018), *National Health Accounts of Kazakhstan*, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264289604-en.

OECD (2017), *Health at a Glance 2017: OECD Indicators*, OECD Publishing, Paris, http://dx.doi.org/10.1787/health_glance-2017-en

OECD (2015), *Health at a Glance 2015: OECD Indicators*, OECD Publishing, Paris, http://dx.doi.org/10.1787/health_glance-2015-en

Prakash, B. (2010), "Patient Satisfaction", *Journal of Cutaneous and Aesthetic Surgery*, Vol. 3, Issue 3,

Smith, O and Nguyen, S. N. (2013). *Getting Better: Improving Health System Outcomes in Europe and Central Asia*, Europe and Central Asia Reports, Washington, DC, World Bank Group, http://documents.worldbank.org/curated/en/953751468250295078/ Getting-better-improving-health-system-outcomes-in-Europe-and-Central-Asia.

WHO (2011), *Evaluation of the Organization and Provision of Primary Care in Kazakhstan – A survey-based project in the regions of Almaty and Zhambyl*, World Health Organisation, Geneva.

WHO (2015), Ambulatory Care Sensitive Conditions in Kazakhstan, World Health Organization, Geneva.

WHO (2015), Ambulatory Care Sensitive Conditions in Kazakhstan, World Health Organization, Geneva.

World Bank (2016), WDI – World Development indicators, http://data.worldbank.org/products/wdi.

World Obesity (2016), *World map of obesity*, http://www.worldobesity.org.

Chapter 1

Key features of the health care system in Kazakhstan

Since the early 2000s, Kazakhstan's economic progress has been exceptional, and the country's current GDP per capita is now on par with the Central European members of the OECD. These achievements, however, have been driven largely by sales of natural resources, leaving Kazakhstan vulnerable to volatility in global commodity prices.

Since 1991 Kazakhstan has launched a number of ambitious health care reforms to expand access, introduce more autonomy, and reduce reliance on inpatient care. Nevertheless, the health care system still retains the hallmarks of a transitional economy undergoing profound restructuring. Despite some improvement, Kazakhstan's health outcomes continue to lag behind those of the OECD countries and reveal some worrying regional inequalities. In the coming years the health care system should be steered consistently towards more modern arrangements, with a clear focus on improving health outcomes and maximising efficiency

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

1.1. Kazakhstan in context

The Republic of Kazakhstan is a former Soviet republic which gained independence in 1991. It is 2.7 million square kilometers in size, making it the ninth largest (and largest landlocked) country in the world. With a GDP per capita of USD 10 400 in 2015 (IMF, 2017), Kazakhstan, is classified as an upper middle-income country.

This chapter presents an overview of Kazakhstan and its health care system and policies. Section 1.1 presents some of the key geographic, demographic, and economic factors which bear upon the structure, organisation, scope and financial sustainability of the health care system. Section 1.2 presents the main characteristics and organisational features of the health care system, while Section 1.3 reviews its overall performance.

Following independence, Kazakhstan faced a deep recession, but subsequently recovered with a rapid decline in povert. Growth in the economy is nevertheless highly reliant on the extraction and export of natural resources, rather than on labour productivity and technology. As a result different regions of the country are very unequally developed. The level of informality in the labor market also remains high. With a relatively young population, Kazakhstan is undergoing a demographic transition.

Economic growth has been accompanied by a decrease in poverty and narrowing of income inequalities, but economic diversification remains a priority

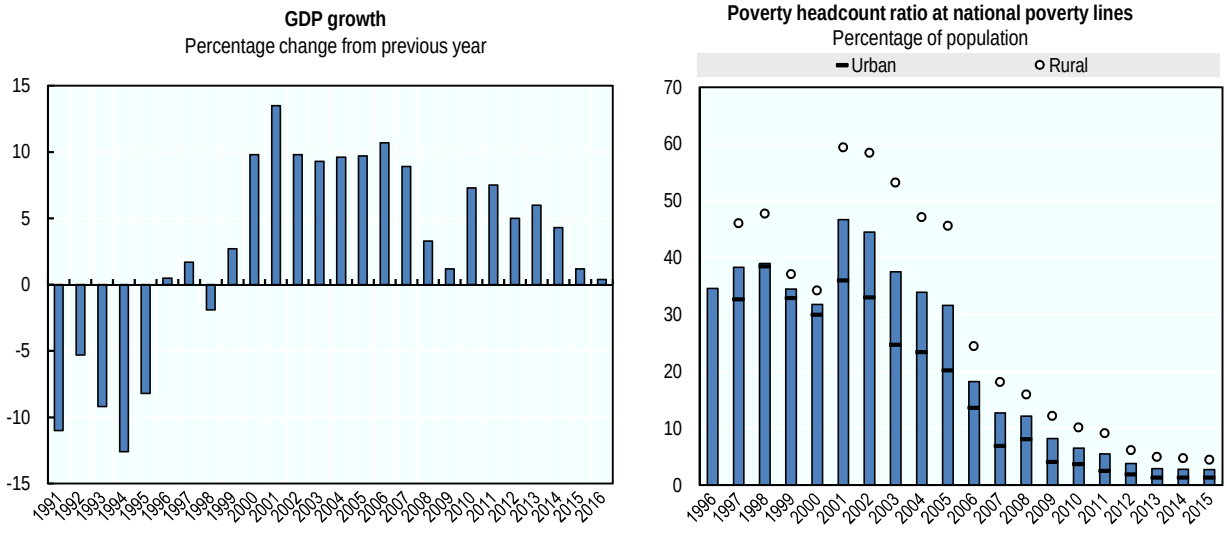
Kazakhstan has made exceptional economic progress since the early 2000s. After being plagued by hyperinflation and deep recession during the first half of the 1990s, the country's economic fortunes rapidly improved in the early 2000s. GDP grew by about 10% per year between 2000 and 2007, making Kazakhstan one of the fastest growing economies in the world. This strong GDP growth has been driven largely by the performance of the country's natural resource sectors, with economic activity and investment concentrated in the fossil fuel and mining industries (Howie and Atakhanova, 2014). However, the lack of diversity in the economy presents a threat to its long-term development.

Growth slowed down considerably in 2008 and 2009, when the economy was hit by both a local banking crisis and then by the global financial crisis, but high growth resumed between 2010 and 2014 (Figure 1.1, left panel). Since late 2014 however, Kazakhstan's economy has been facing the challenge of depressed global oil prices, which plunged by more than 50% between June 2014 and October 2015, cutting the country's export revenues by almost half and creating deficits in both the fiscal and current-account balances in 2015 (OECD, 2016). Concomitant effects on domestic consumption, contributed to a slowing in GDP growth from 4.3% in 2014 to 1.2% in 2015, and economic growth was estimated at only 0.4% in 2016 (Committee of Statistics of the Republic of Kazakhstan, 2016). Kazakhstan needs to promote economic diversification in order to reduce the country's reliance on the natural resource sectors (OECD, 2016). The Kazakh economy is projected to start expanding again in 2017 with GDP growth expected to reach 2.5% (IMF, 2017b).

Living standards have followed the macroeconomic pattern. After a significant decline in the first decade of independence, incomes improved and the proportion of the population living at or below the national poverty line (defined as having disposable income less than the cost of living) fell considerably from a record high of 47% in 2001

to 2.7% in 2015. However, poverty rates remain much higher in rural than in urban areas; in 2015 the rural poverty headcount ratio, at 4.9%, was almost four times higher than the urban figure of 1.3% (Figure 1.1, right panel).

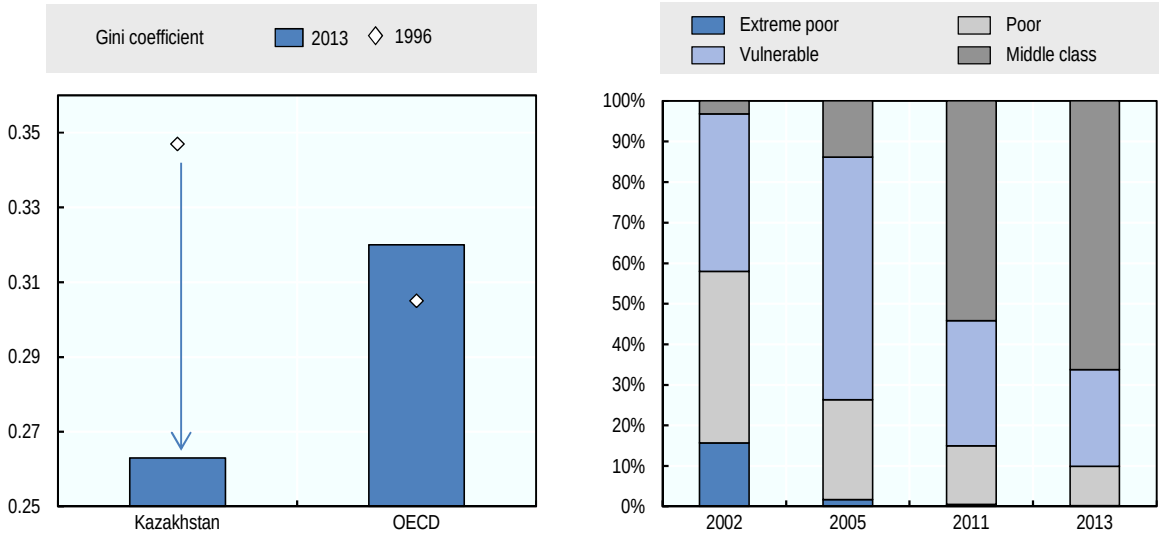
Figure 1.1. Economic growth and poverty in Kazakhstan, 1990s to 2016, or nearest year



Source: World Bank national accounts data (2016); World Bank, Global Poverty Working Group (2016); Ministry of National Economy of the Republic of Kazakhstan, Committee of Statistics (2016).

While income inequality remained low, economic growth was accompanied by a dramatic increase in real wages, leading to the emergence of a middle class in Kazakhstan. Real wages have increased by 280% over the last decade, compared with an OECD average of 17%[1]. The World Bank estimates that in Kazakhstan the Gini index – a coefficient that measures the income inequality in a society and ranges from 0 (perfect equality) to 1 (maximal inequality) – stood at 0.263 in 2013 (the most recent available data) down from 0.347 in 1996. This is considerably lower than the average Gini coefficient across OECD countries, which has shown an upward trend and reached 0.32 in 2013. It also contributed to the emergence and rapid expansion of the middle class in Kazakhstan, with almost two thirds of the population falling into this economic category in 2013 (Figure 1.2).

Figure 1.2. Income inequalities (Gini index – left panel) and the size of income groups as a proportion of the Kazakhstani population (right panel), selected years



Notes: The income groups are defined on the basis of daily per capita disposable income as follows: extreme poor if income is below 40% of the minimum living standard (MLS), poor if between 40% and 100% of the MLS, vulnerable if between the MLS and USD 10 (PPP), middle class if between USD 10 and USD 100 in purchasing power parity (PPP), rich if above USD 100 PPP per day. The rich group is not shown as the size of the group in sample surveys is very small and not representative of that group.

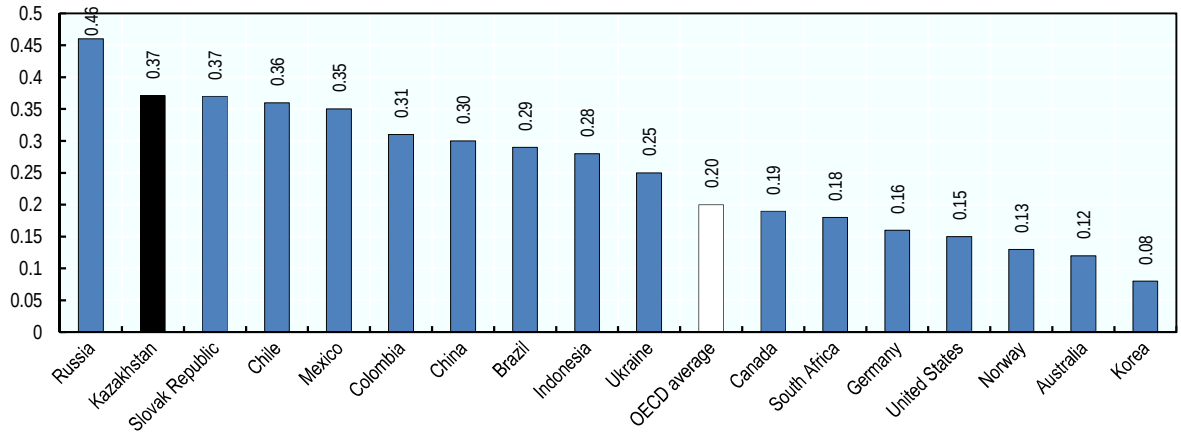
Source: World Bank, Development Research Group (2016); OECD (2016) "Multi-dimensional review of Kazakhstan" (OECD calculations based on OECD earnings database (2016); World Bank Poverty & Equity database (2016); Juatova, Mun, and Kapsalyamova (2015), "Economic Assessment of Socio-economic Classes in Kazakhstan").

Despite general economic progress, stark regional disparities persist

The administrative-territorial structure of Kazakhstan comprises 14 regions (oblasts) and 2 cities, Astana and Almaty. The regions are divided into 175 administrative districts. There are 87 cities (40 cities of regional significance and 45 cities of district significance), 34 villages and 6 947 rural settlements. The rural settlements are unevenly spread across the regions, with rural populations dominating in some regions.

The economy's overreliance on its unevenly distributed natural resources has led to stark disparities in GDP per capita across the 14 oblasts and two largest cities (Almaty and Astana) of Kazakhstan. In 2014, GDP per capita in the Atyrau region (USD 39 072) was more than three times, and in Almaty city (USD 29 286) more than twice the national average. At the same time, in South Kazakhstan, GDP per capita (USD 4 775) was close to one-third the national average. These marked regional income disparities yield a Gini coefficient of 0.37 among Kazakhstan's regions, considerably higher than the national value of 0.263. It is also twice as high as the average regional income inequality in OECD countries. Regional inequality in Kazakhstan is even higher than of the largest OECD countries in size, such as Canada and the United States. Among comparator countries for which data are available, only in Russia is regional inequality higher than in Kazakhstan (Figure 1.3) (OECD, 2016).

Figure 1.3. Income inequality among regions – Gini index of regional GPD per capita, 2014 (or latest year)



Source: OECD (2016), Multi-dimensional review of Kazakhstan, http://dx.doi.org/10.1787/9789264246768-en

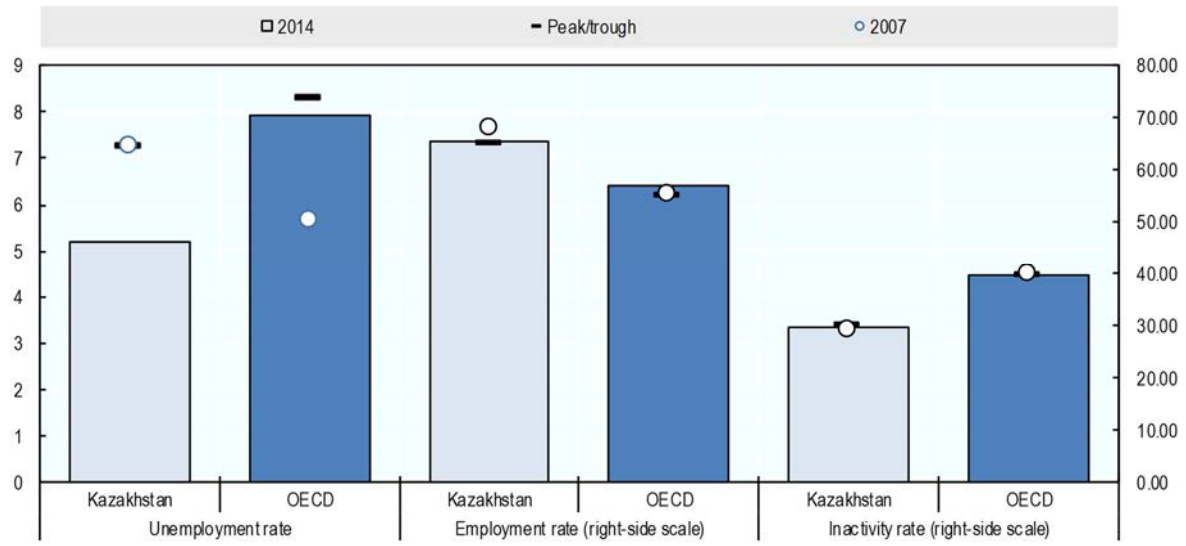
Indeed, the share of the population living at or below the national poverty line varies significantly among regions. The latest available data (2011) show that the worst values of the poverty index, which are almost twice as high as the national average level, are in the Southern-Kazakhstan (10.4%), Mangistau (10.4%) and Northern-Kazakhstan (9.6%) regions. The reasons for poor indicators in these regions include a high proportion of rural dwellers, low incomes, large self-employed populations, and high rates of unemployment. The regions with the smallest proportions of the population with disposable incomes below the cost of living were the cities of Almaty and Astana, and the Almaty region.

In order to maintain the pace of progress, the economy in Kazakhstan needs to become not only less dependent on natural resources but also more focused on growth that contributes to reducing regional disparities. Over the longer term, together with institutional reforms the successful implementation of the government's ambitious structural reform agenda should boost productivity and competitiveness in the non-oil sectors of the economy. The sustained growth of the middle class will remain crucial in diversifying the economy as it supports the emergence of entrepreneurial groups and fuels demand for greater variety in consumer goods and services in the domestic market (OECD, 2016). Over time, this is expected to lay the foundation for a more sustainable and diversified development path in Kazakhstan, and increase the country's resilience to external shocks (World Bank, 2015).

Many people still work in the informal sector

Key labour market indicators in Kazakhstan appear, at first glance, to be exceptionally healthy compared to the OECD countries. The employment rate is high by OECD standards (68% vs 55.6% in 2014), while the unemployment rate and inactivity are significantly lower in Kazakhstan (5.2% vs 7.9% and 29.3% vs 40% respectively in 2014) (Figure 1.4). In contrast to the experience of most OECD countries, the global financial crisis and the economic recession did not have a major impact on labour market outcomes in Kazakhstan; unemployment rates have in fact declined considerably since 2007 and employment and inactivity indicators also improved to some degree over the same period.

Figure 1.4. Key labour market indicators, Kazakhstan and OECD, 2007-14



Source: OECD labour force statistics database; Ministry of National Economy of the Republic of Kazakhstan, Committee of Statistics (2015).

Although employment rates are high by OECD standards, many people find themselves in informal, low-quality employment. In 2013, informal employment in Kazakhstan affected 24.3% of workers despite an earlier decline in its prevalence (OECD, 2016). Informal employment includes undeclared workers as well as informal self-employed workers. The rate of informal employment varies markedly across regions, from a high 44% in Jambyl to a low 5% in Astana city, at least in part reflecting the different levels of development and economic activity. The lack of social security coverage or protection provided by labour contracts (such as occupational health and safety standards, employment protection or minimum wages) translates into poor and unsafe working conditions. Most importantly, the fact that nearly a quarter of the working population remains in informal employment may prove problematic in the context of the introduction of the Social Health Insurance (SHI) funded out of payroll contributions.

Kazakhstan, while still young, is undergoing a demographic transition

With a population of 17.8 million, Kazakhstan is one of the least densely populated nations in the world – 6.4 people/km^2 compared with the most densely populated OECD countries: the Netherlands (503 people/km^2), the United Kingdom (269 people/km^2), and Germany (234 people/km^2), or even the OECD average (37 people/km^2) (OECD, 2016; World Bank, 2016).

Kazakhstan is a relatively young country whose demographic profile shifted dramatically during the transition years. Population growth began slowing in the 1960s, with a profound increase in the downward trend in 1989. In the decade between 1992 and 2002, the population growth reached negative values, but has been continuously recovering since 2003. In 2015, the annual population growth reached 1.5%, which is back to the levels of the mid 1970s (World Bank, 2016).

The proportion of the population aged 65 and above – the standard gauge of demographic outlook in OECD countries – remains low in Kazakhstan. In 2015, it stood

at around 7% of the population (16% in OECD countries) but varied between 4 and 11% across the regions. It has been increasing in Kazakhstan at only a relatively slow pace, from 5% in 1965 (World Bank, 2016; Committee of Statistics, Kazakhstan, 2016). Over the same period, it increased on average from 9% to 16% in OECD countries, from 8% to 17% in Central Europe and the Baltics, from 8% to 15% in Ukraine, and from 7% to 13% in Russia (World Bank, 2016).

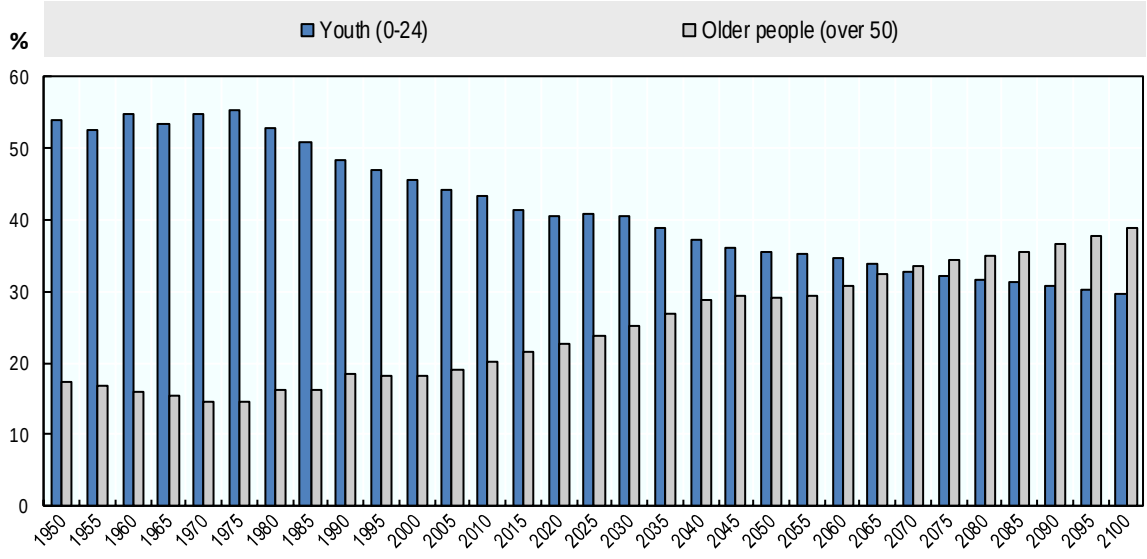
Since 2010, the age dependency ratio has been on the rise. The age dependency ratio is the number of persons younger than 15 and older than 64 as a proportion of the working-age population (ages 15-64). In 2015 it reached 50.2% (up from 45% in 2010), which is only slightly below the EU28 (the European Union's 28 member states) as well as the OECD average of 53%. It is also higher than that of neighbouring countries as well as some of the Central and Eastern Europeans: 44% in Poland, 41% in Slovak Republic, and 43% in Russia and Ukraine (World Bank, 2016).

Kazakhstan's age dependency ratio is underpinned, however, by a relatively low ratio of older dependents – people older than 64 – to the working-age population. The latter, referred to as the old age dependency ratio, has remained between 10 and 11% since 1960. Over the same period, the old age dependency ratio has increased from 14 to 25% across the OECD countries (World Bank, 2016). In general terms, less than 7% of the population in Kazakhstan is aged 65 and above, much lower than the OECD average of 16%.

In reality, the ageing of the population in Kazakhstan will not begin in earnest for some time. The current rise in the dependency ratio is largely the result of the decline in the population between 1992 and 2002, as those born during that period begin to enter the labour market (OECD, 2016). In fact, with renewed population growth the age dependency ratio is projected to fall around 2020 and then rise only marginally until the effects of ageing finally begin to be felt from around 2050 onwards (Figure 1.5) (OECD, 2016).

Figure 1.5. Population of youth and older people (percentage of total population)

Kazakhstan, 1950-2100



Note: Medium-fertility assumption: total fertility is assumed to converge eventually toward a level of 1.85 children per woman.

Source: OECD calculations based on United Nations, Department of Economic and Social Affairs, Population Division.

Overall, in the medium-term demographic changes and population ageing are expected to have less profound impact on health expenditure cost-drivers than the effect of economic and income growth.

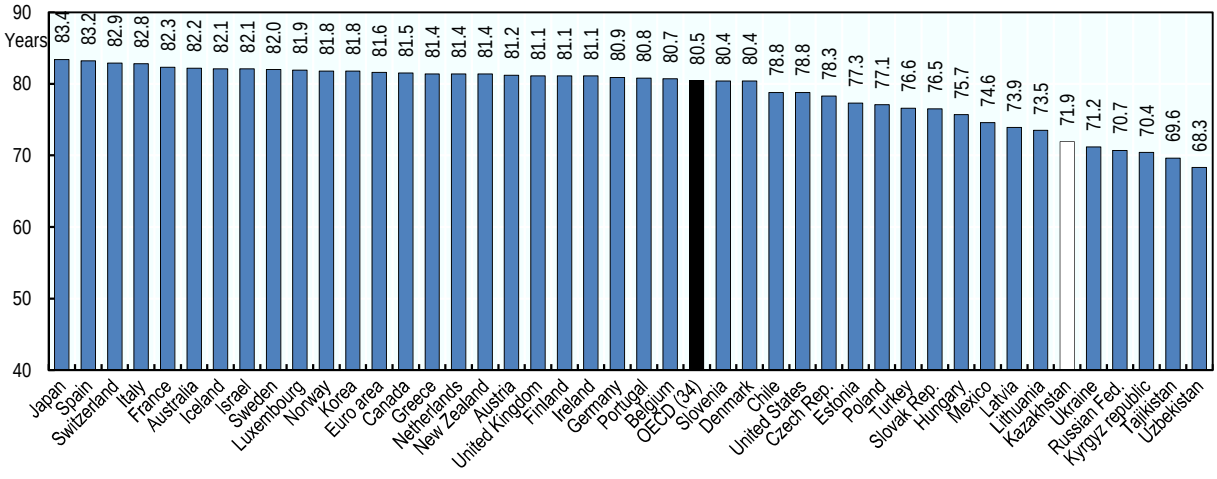
1.2. Health Status in Kazakhstan

Life expectancy in Kazakhstan remains well below that of OECD countries. The relative importance of different diseases has been changing rapidly but regional inequalities are very high across the board.

Life expectancy in Kazakhstan remains well below that of most OECD countries

In large part, Kazakhstan's relatively young demographic profile reflects a considerably shorter life expectancy at birth than in OECD countries. In 2015, average life expectancy at birth was estimated at 71.95 years (Ministry of Health of the Republic of Kazakhstan, 2016), similar to that in neighbouring countries (Kyrgyz Republic, Tajikistan, and Uzbekistan), Russia and Ukraine[2]. It is, however, far below the average life expectancy at birth in OECD countries (80.5 years), particularly the countries of the Euro area (81.6 years). It also lags behind average life expectancy at birth in the Baltic States (Estonia – 77.4, Latvia – 74.5, and Lithuania – 74.7) and the Central European countries (Czech Republic – 77.3, Poland – 77.1, Slovak Republic – 76.5, and Hungary – 75.7) (Figure 1.6). Preliminary data suggest that average life expectancy increased to 72.4 years in Kazakhstan in 2016.

Figure 1.6. Life expectancy at birth – Kazakhstan, OECD, and selected countries, 2015 or nearest year



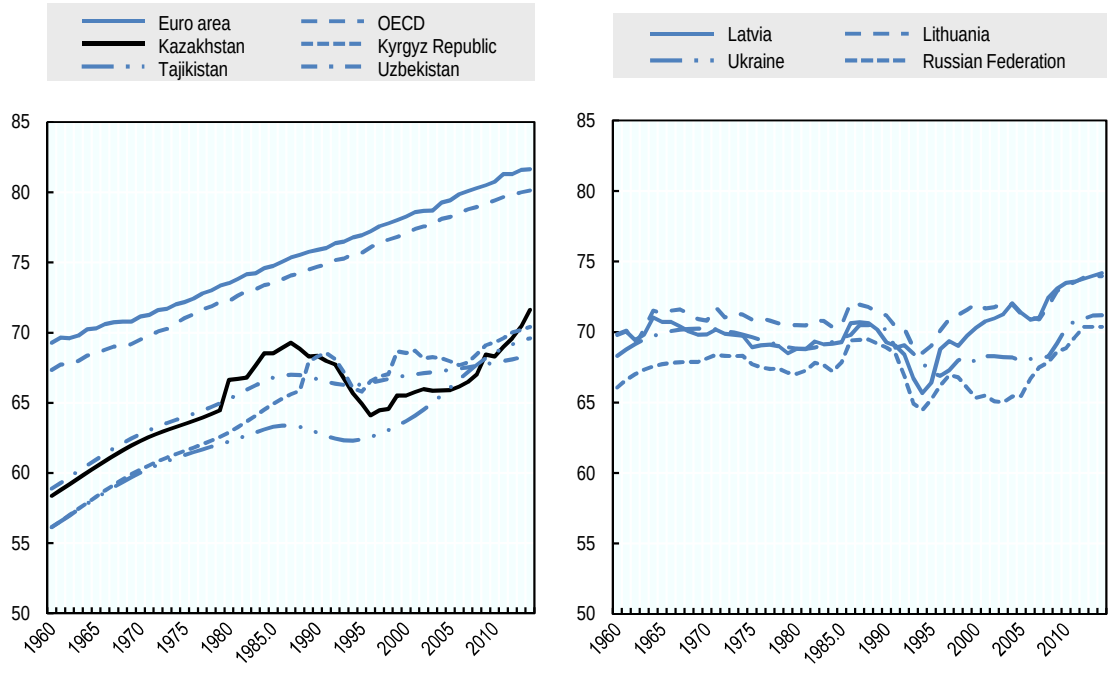
Source: OECD Health Statistics (2016), http://dx.doi.org/10.1787/health-data-en; United Nations Population Division. World Population Prospects (2016); Ministry of Health and Social Development, Kazakhstan (2016).

Over the past 30 years Kazakhstan's cumulative gain in average life expectancy at birth has been only two and a half years, compared with more than seven years in OECD countries, and more than eight years on average in the countries of the Euro area. Yet between the 1960s and mid-1980s, Kazakhstan's life expectancy grew at a pace greater than that of the developed countries. By the mid-1980s the gap between Kazakhstan and

the OECD countries had shrunk to just under five years, reflecting far greater progress than in other countries of similar economic development.

However, between 1985 and 1995 – around the collapse of the Soviet Union – Kazakhstan experienced a significant drop in life expectancy (Figure 1.7). Like many post-Soviet countries – including the Baltic States, Ukraine, and Russia – Kazakhstan experienced a substantial increase in mortality in this period. Rather than catching up with the West, for more than a decade these countries fell behind, despite the convergence in national income levels. As a result, the gap in life expectancy relative to the OECD countries increased several fold, with Kazakhstan recording one of the sharpest drops in the population's longevity (Figure 1.7). Life expectancy in Kazakhstan began to recover only after 1995, and progress in the last few years has been very rapid. Between 2010 and 2015 life expectancy increased by nearly 3.5 years. Nevertheless there remains substantial room for improvement in this and other health outcomes in the Kazakhstani population.

Figure 1.7. Trends in life expectancy at birth, selected countries, 1960-2014



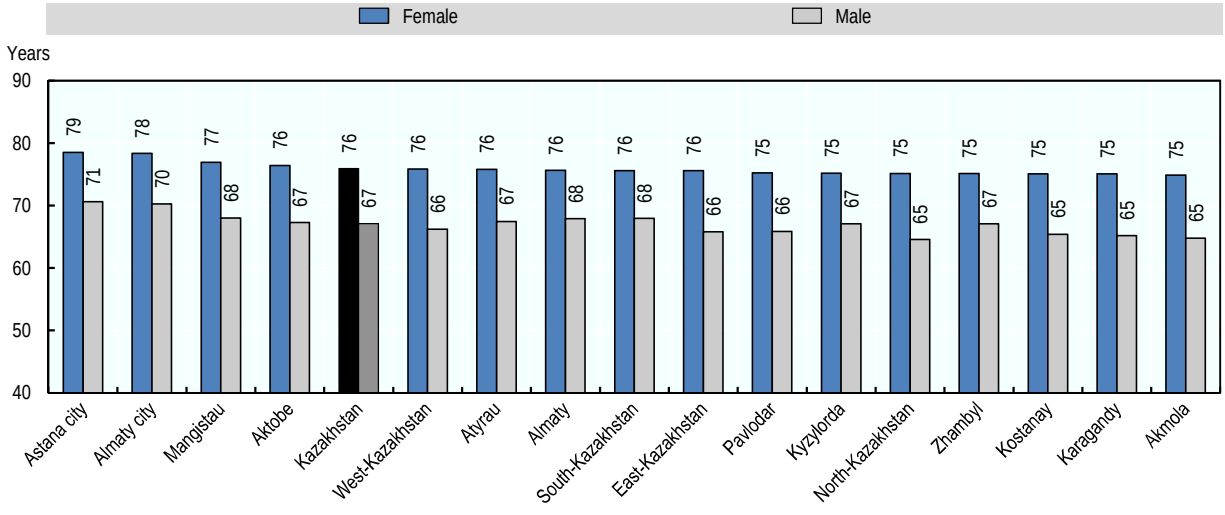
Source: United Nations Population Division, World Population Prospects (2016); Ministry of Health and Social Development, Kazakhstan (2015).

Kazakhstan also has one of the largest gender gaps in life expectancy at birth. On average, female life expectancy of 76.4 years is nine years longer than male (67.4 years) (World Bank, 2016; Ministry of Health of the Republic of Kazakhstan, 2016), a difference nearly double that seen in OECD countries. On average across OECD countries, women may expect to live 83.1 years, which is 5.3 years longer than men (77.8 years) (OECD, 2015). There are, however, a few OECD countries where the gender gap is much larger, namely Estonia (similar to Kazakhstan at around nine years,), Poland (around eight years), the Slovak Republic and Hungary (both around seven years).

In many OECD countries the gender gap in life expectancy has narrowed substantially over the last 25 years. This can be attributed, at least in part, to declining differences in risk-taking behaviours such as smoking and alcohol consumption, together with sharp reductions in mortality rates from cardiovascular disease among men (OECD, 2015). Kazakhstan has yet to join the so-called "cardiovascular revolution" that has occurred in OECD countries over the last three decades.

Life expectancy also varies regionally. Almaty, Astana, and the regions with the largest cities tend to have populations that live longer than those in other regions of the country. This variation across regions is larger for men (six years) than women (four years) (Figure 1.8). On average, urban life expectancy is only longer by a matter of months than in rural populations (71.72 years vs 71.47), but in some regions the difference is between two and more than three years (Almaty Region, Mangistau, Pavlodar, and Zhambyl). On average men live longer in rural than urban areas, while on average women live longer in the cities. Among men this may be attributable to lower death rates from external causes, for example, fewer road accidents in rural areas. Among women, however, the trend may reflect poorer maternal health care in rural areas (discussed in more detail below).

Figure 1.8. Regional differences in female and male life expectancy at birth in Kazakhstan, 2014



Source: Ministry of Health and Social Development, Kazakhstan (2015).

Data on causes of death point to very uneven progress across disease groups and regions

Among factors directly amenable to health care interventions, cardiovascular and respiratory system diseases contribute most of the excess mortality

Comparing causes of death across countries requires standardised mortality rates[3]. Based on SDRs for the Europe region, this section explores what drives differences in life expectancy between Kazakhstan and other countries, to gain further insights into the health status of the population. Internationally available data allow for comparisons with countries with similar histories in terms of economic and health system development – the countries of the Commonwealth of Independent States (CIS) – as well as some of the

southern and western European states within the OECD (EU15 – European Union members before the 2004 enlargement). Table 1.1 presents standardised rates for key causes of death in these countries. The last column in Table 1.1 presents the crude death rates for Kazakhstan, from which the standardised mortality rates have been computed, but which cannot be directly compared with those of the other countries.

Similarly to the EU15 and CIS, the highest death rate in Kazakhstan is from diseases of the circulatory system (CVD). Yet, while the rate (per 100 000 population) is 54% higher in Kazakhstan than in the EU15 (Table 1.1), it is less than half that of the CIS countries. In particular the death rate from cerebrovascular disease (stroke) also stands out at nearly three times that of the EU15.

Table 1.1. Standardised mortality rates for key causes of mortality in Kazakhstan and selected countries, 2015 (or the nearest year)

SDR per 100 000 population	Kazakhstan	CIS	EU15	Crude death rate in Kazakhstan
All causes	1 041.8	1 078.4	514.3	746.9
Diseases of the circulatory system:	281.4	602.2	153.3	193.8
- ischemic heart disease	*105.1*	*323.71*	*54.91*	*71.7*
- cerebrovascular disease	*107.4*	*158.6*	*33.8*	*71.8*
Diseases of the respiratory system:	157.5	47.8	41.3	105.0
- COPD and other chronic respiratory diseases	*117.7*	*22.3*	*18.6*	-
Cancer	125.3	146.9	152.7	92.0
Diseases of the digestive system	100.1	56.9	23.9	74.3
- alcohol-related liver disease (cirrhosis)	*66.9*	-	*9.0*	-
Infectious and parasitic diseases:	9.2	19.3	9.21	8.6
- tuberculosis	*4.4*	*11.0*	*0.3*	*4.1*
External causes	88.5	96.3	29.4	82.5
Ill-defined causes	59.0	49.2	21.4	-
Mental disorders and diseases of the nervous system	112.0	21.0	41.0	-
Diseases of the genitourinary system	41.2	10.5	9.17	-

Note: Last column presents crude death rates (CRDs) for Kazakhstan, based on which the standardized mortality rates (SDRs) of column 1 were computed by WHO. Crude death rates are not comparable across countries while SDRs are because they take into account the differences in age structure of the populations.

Source: WHO European Mortality Database, 2016; Ministry of Health of the Republic of Kazakhstan, 2016

Kazakhstan also has one of the highest death rates in the region from respiratory system diseases. Notably, death rates from the chronic lower respiratory tract diseases such as *Chronic Obstructive Pulmonary Disease* (*COPD*) are more than six times higher than in the EU15, and more than five times higher than the average for the CIS countries. Indeed, among all causes of death, the death rate from diseases of the respiratory system is the second highest in Kazakhstan. It is even higher than death rate from cancer, the leading cause of death in the EU15, and on par with CVD. Cancer death rates are actually slightly below those of the EU15 and the CIS, but cancer is nonetheless the third leading cause of death in Kazakhstan today (see Figure 1.9 below).

Death rates from diseases of the digestive system also stand out in Kazakhstan, both in comparison with the EU15 as well as with the CIS. In particular, the death rate from alcohol-related liver disease exceeds that of the EU15 by a factor of more than seven. (No data were available on the average death rate from alcohol-related liver disease in the CIS). Kazakhstan has a relatively low death rate from infectious and parasitic diseases, on par with the EU15 and less than half that of the CIS. However, tuberculosis presents an important exception, with the death rate nearly 15 times that of the EU15.

Among deaths not directly amenable to health care interventions, those from external causes present a significant burden in Kazakhstan, with a rate three times higher than in the EU15, but in line with CIS countries. Diseases of the genitourinary and nervous system are also high compared with regional averages (Table 1.1, and discussion in Box 1.2).

A more detailed analysis of excess mortality by age in Kazakhstan reveals that (Box 1.1):

- A large proportion of the gap in life expectancy is explained by higher mortality among young Kazakhstanis aged 15 to 29 years. In this age group overall death rates are more than three times higher in Kazakhstan than in the EU15. The main source of this excess mortality is external causes, including accidents and suicide (also the single largest cause of the excess mortality among Kazakhstani children below the age of 15 as well as adults aged 30-44 years).
- Deaths from CVD occur much earlier in Kazakhstan than in the EU15 and are the single leading cause of excess mortality in age groups 54-60 and 60-74 years.
- Diseases of the respiratory system contribute to excess mortality in Kazakhstan in all age groups.

The trends in Kazakhstan should be interpreted with caution (see Box 1.2), but suggest very rapid changes in the last few years, with an overwhelming dominance of non-communicable diseases. Figure 1.9 presents the total number of deaths and main causes at different points in the last decade. The total number of deaths has been decreasing over the period (which is reflected in the rising life expectancy). The top three causes of deaths in Kazakhstan, CVD, respiratory diseases and cancer accounted for more than half the deaths in 2015. Although the number of deaths in 2015 was 10% lower than in 2010 overall, 66% more people died of diseases of the digestive system. In addition, the number of people who died from diseases of the genitourinary system nearly quadrupled. Six times more people died from diseases of the nervous system between these two years. From a public health perspective, it would be important to gain a better understanding of what is behind these trends.

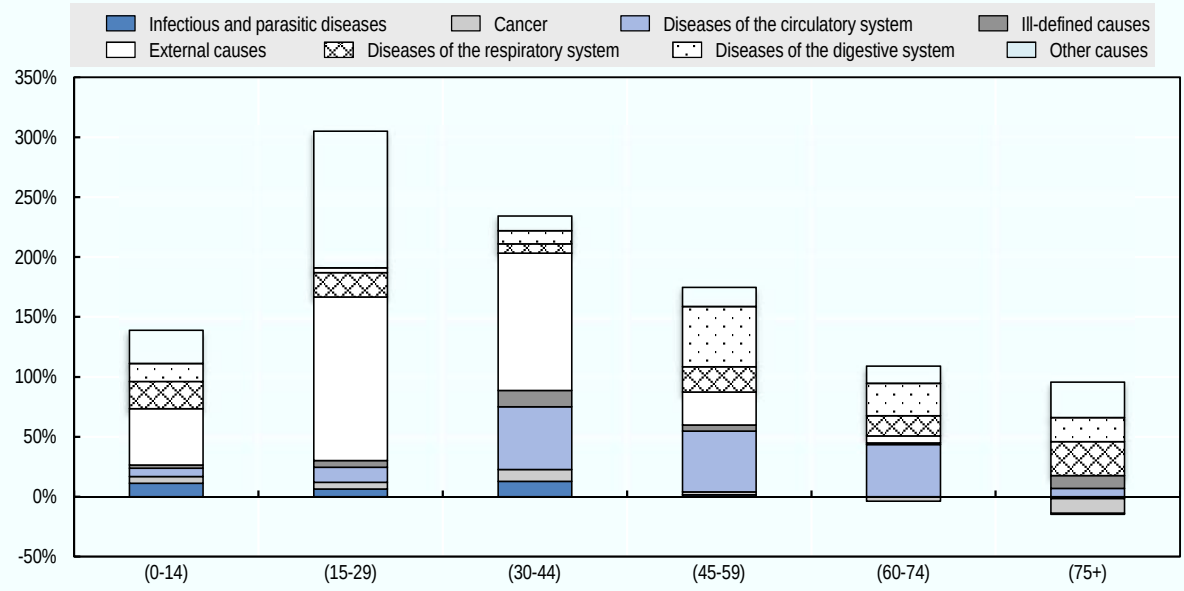
Box 1.1. A comparison of excess deaths by age in Kazakhstan with the EU15

Considering the entire Kazakhstani population, the largest excess mortality affects relatively young people – aged 15 to 29 years (Figure below). Compared with the EU15, in this age group 'external causes' are by far the leading cause of death, accounting for nearly half of all excess mortality. In the Figure below, the second highest contribution to excess mortality is indicated as "Other causes" of mortality. This category groups a large number of conditions, each with a relatively small individual contribution to excess mortality. For simplicity, these have been aggregated and are not discussed in detail.

In the population over 30 years of age, diseases of the circulatory system (CVD) are the dominant cause of death directly amenable to heath care interventions. While in the 30-44 years age group deaths from external causes still account for most of the excess mortality, diseases of the circulatory system are the second leading cause, far above any other cause (Figure below). The significance of the mortality from diseases of the circulatory system becomes even greater in the older population. In the age groups between 45-59 and 60-74 years, diseases of the circulatory system are the single leading cause of death. These alone explain more than 40% of all excess mortality in the Kazakhstani population aged 60 to 74 years and nearly a third among those aged 45-59 years. The contribution of diseases of the circulatory system is less within the oldest age group (75 years and above), where diseases of respiratory system are the leading cause of death. Indeed, respiratory system diseases are an important contribution to excess mortality in the Kazakhstani population in all age groups.

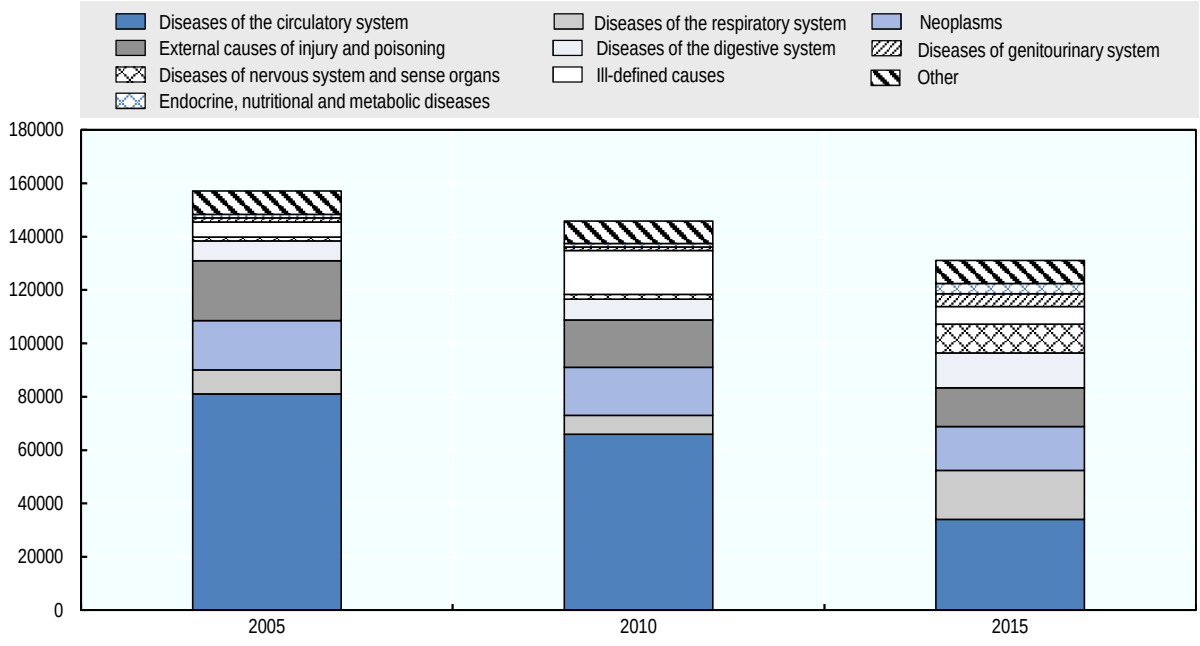
Box 1.1. A comparison of excess deaths by age in Kazakhstan with the EU15 *(Cont.)*

Excess mortality in Kazakhstan as compared to the EU15 by age group and main cause of death



Source: OECD calculations based on WHO European Mortality Database, 2016.

Figure 1.9. Total number of deaths, and breakdown by main causes in Kazakhstan, 2005-2015



Source: WHO European Mortality Database, 2016.

Box 1.2. Ill-defined causes of deaths and other classification issues: can the trends de trusted?

The classification of cause of death has clearly evolved in the last decade in Kazakhstan, which means that trends should be interpreted with caution. Abrupt changes in trends concern the following causes of deaths:

The SDR of deaths classified as 'ill-defined' more than quadrupled between 2006 and 2012 to reach 324. In 2013, the figure dropped to 85.

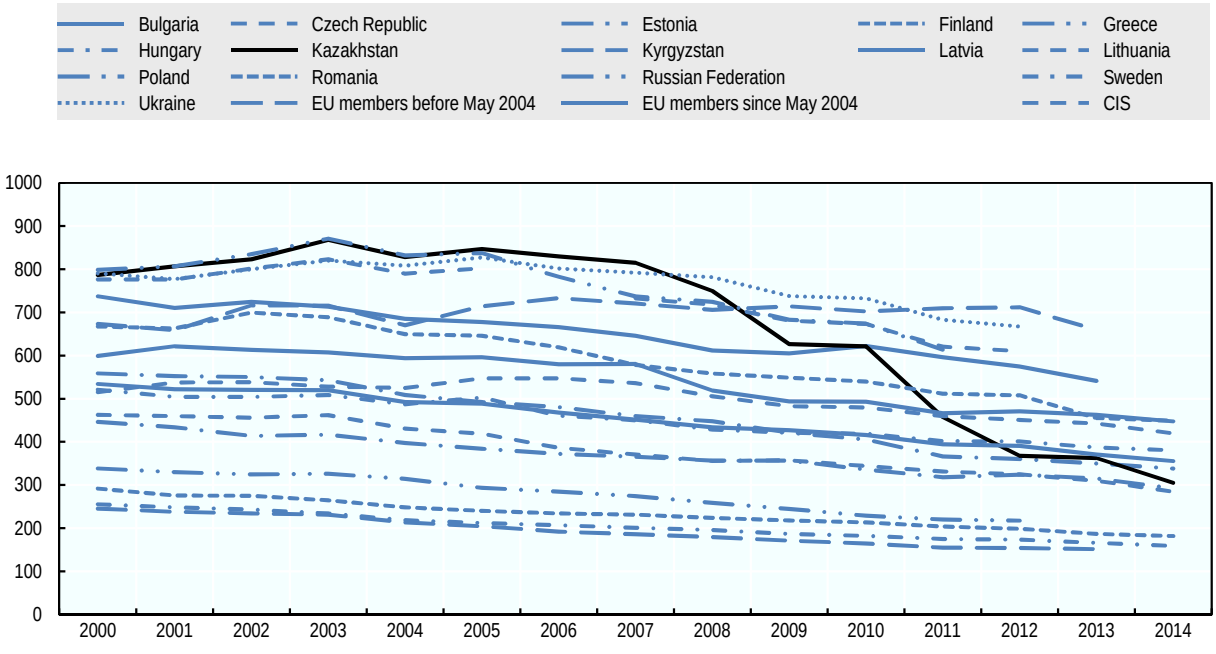
Between 2012 and 2013, a change in classification methodology must have occurred. In fact, diseases of the genitourinary and nervous system increased suddenly, and SDRs multiplied by a factor of three in the last three years, to reach levels unseen in the region (see Table 1.1).

Overall, the massive and unusually rapid drop in deaths due to CVD that began in 2007 coincided until 2012 with a very rapid increase of a similar magnitude in ill-defined causes of death, and following the reclassification of ill-defined causes in 2013, is now mirrored by rapid increases (to surprising levels) in SDRs from genitourinary and nervous system diseases.

All of this raises questions about the share of the decrease in CVD that may be attributable to changes in the methodology of classification of deaths in Kazakhstan.

The decrease in SDRs for CVD has been both substantial and unparalleled. Figure 1.10 presents trends in mortality rates from CVD over the last 15 years across a large number of countries, selected to illustrate the different patterns seen across the European region. No other country has shown such rapid progress. Given the unparalleled pace of improvement in Kazakhstan, it would be valuable to attempt to understand the drivers of this progress and ensure that the observed trend is not biased by changes in reporting or classification methods, as it does not appear to coincide with any significant decline in the prevalence of risk factors or in obvious or targeted improvements in service delivery.

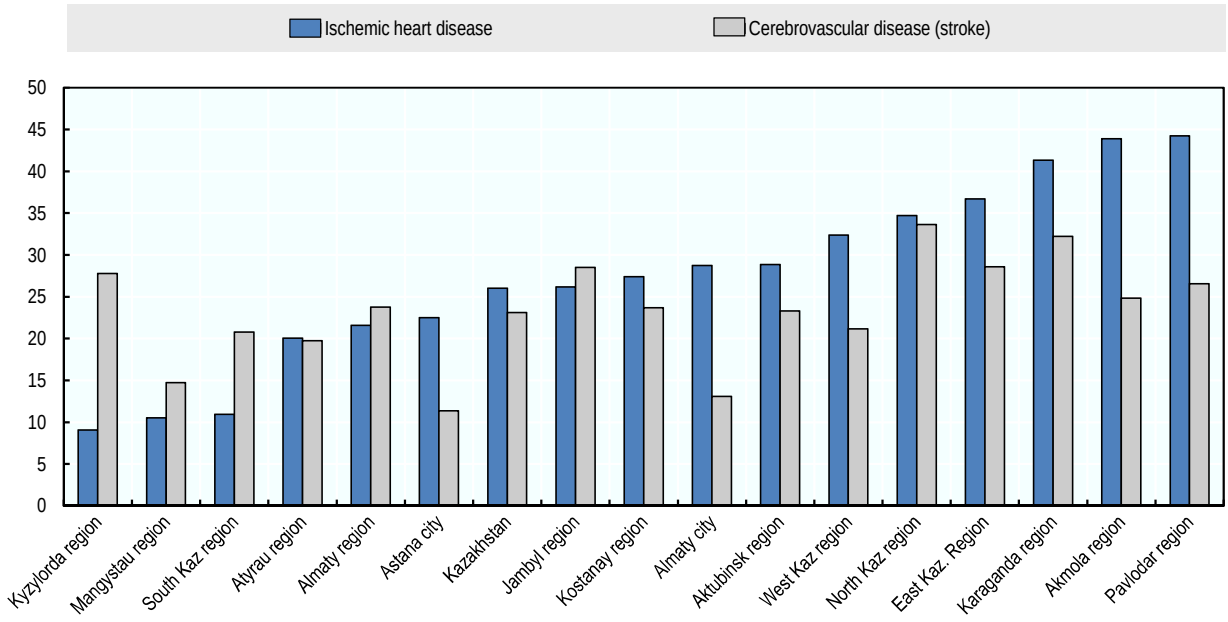
Figure 1.10. Trends in death rates from diseases of circulatory system (CVDs), Kazakhstan and selected countries, 2000 – 2014.



Source: WHO European Mortality Database, 2016.

Despite the observed progress, large regional inequalities remain, and much remains to be done to reduce excess mortality from diseases of the circulatory system in Kazakhstan. The most recent data reveal that progress in reducing mortality from circulatory system diseases at the national level belies strong regional inequalities (Figure 1.11). Premature death rates (age group 0-64 years) from ischemic heart disease vary by nearly a factor of five between the region with the lowest mortality – Kyzylorda Region – and the much more rural Pavlodar region. Similarly, premature death rates from cerebrovascular disease are nearly three times higher in the mostly rural North Kazakhstan Region than in the city of Astana, which recorded the lowest mortality in the country (MOH, 2016).

Figure 1.11. Premature death rates (age group 0-64 years) from ischemic heart disease and cerebrovascular disease per 100 000 population, by region



Source: Ministry of Health and Social Development, Kazakhstan (2016).

Risk factors for CVD and respiratory disease are unequally distributed between men and women

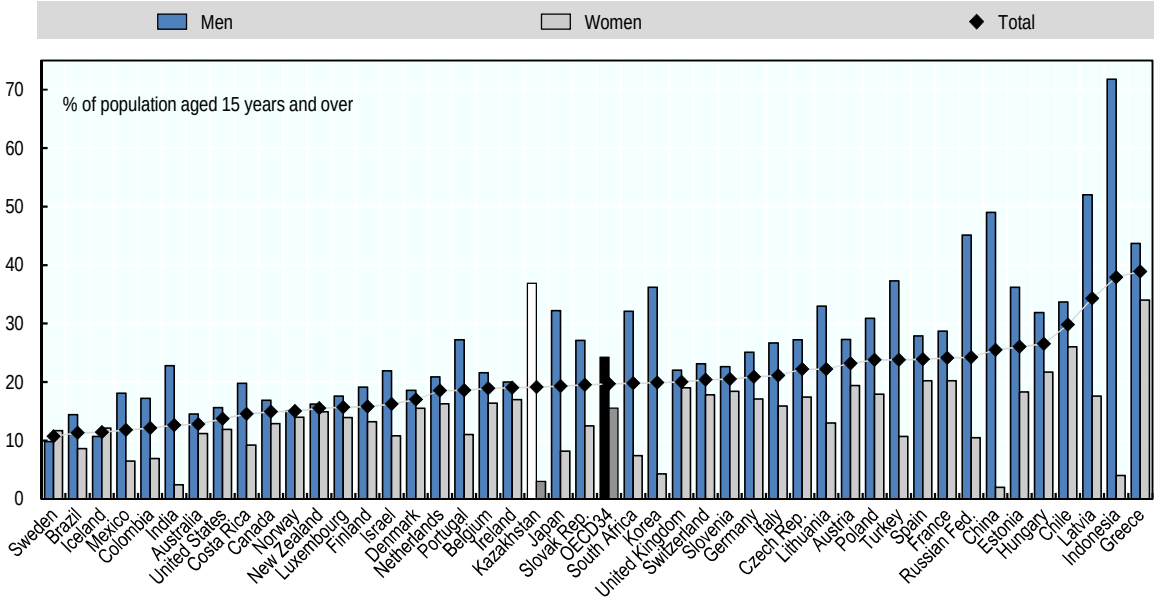
Kazakhstan could invest more in prevention. Overall, the three risk factors that account for the greatest disease burden in Kazakhstan are tobacco smoking, alcohol use, and excess weight (IHME, 2010). Indeed, a recent study (Kulkayeva et al., 2012) found that these three explain the burden of cardiovascular disease in rural Kazakhstan, although the level of understanding of these risk factors in the population remains very low. Also, as discussed in the preceding section, Kazakhstan has relatively high mortality rates from respiratory diseases such as COPD, and gastrointestinal diseases such as liver cirrhosis, for which recognised risk factors are tobacco smoking and alcohol consumption respectively (OECD, 2015).

Overall rates of cigarette smoking and alcohol consumption in Kazakhstan are both below OECD averages but this masks risky health behaviours among men (Figure 1.12 and Figure 1.13). The health behaviours of men appear markedly different from those

seen in women. For example, among men aged 15 and over nearly 37% are daily smokers, a proportion far above the OECD average of 24%. Indeed, only three OECD countries report a higher proportion of daily smokers among men aged 15 years and over: Latvia 52%, Greece 43.7%, and Turkey 37.3% (Figure 1.12).

Alcohol consumption presents a similar pattern. Recorded alcohol consumption in Kazakhstan is well below the OECD average but has been largely static, contrary to the general trend of decreasing consumption seen elsewhere (Figure 1.13). However, other data suggest the picture is more complex. First, the estimated total alcohol consumption (which includes unrecorded consumption) is much higher – 10.3 litres per person per year, almost identical to the OECD average (10.4) (*Source*: WHO Global Information System on Alcohol and Health). However, according to the same source, on average men drink 15.7 litres a year, which helps explain death rates from alcohol-related liver disease. Thus despite the more reasonable average outcome, much needs to be done to promote healthier behaviours among men in Kazakhstan.

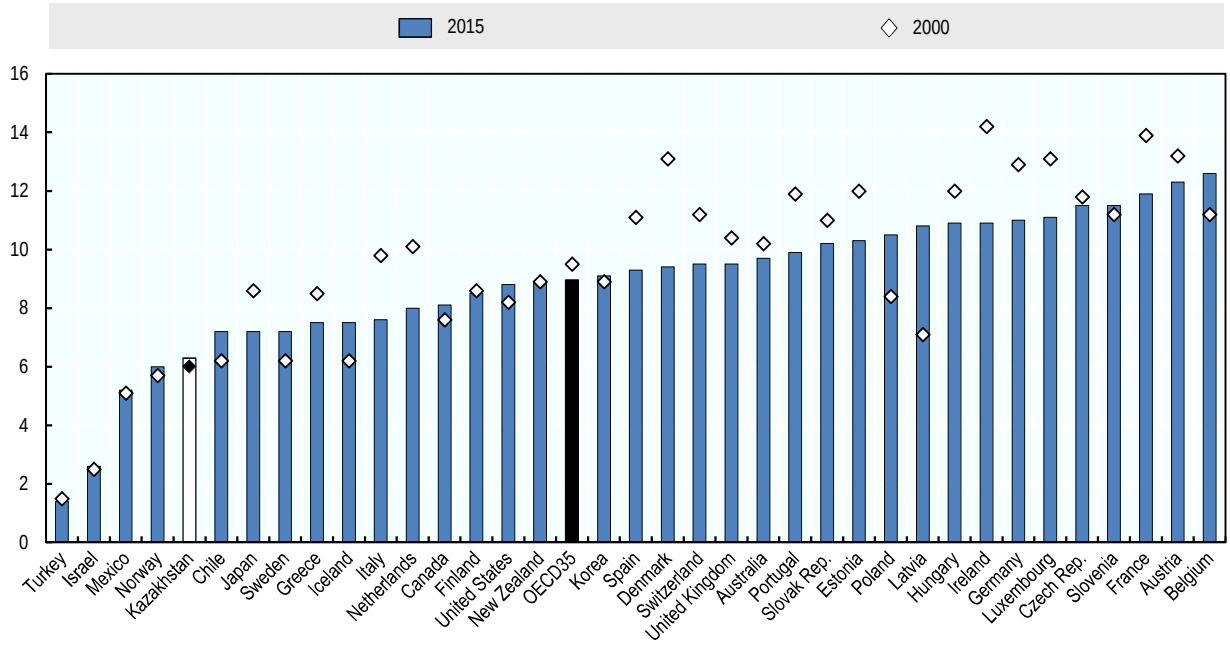
Figure 1.12. Daily smoking in adults, 2014 (or latest year)



Note: Countries are ranked in ascending order of smoking rates for the whole population.

Source: OECD Health Statistics 2016, http://dx.doi.org/10.1787/health-data-en; WHO Report on the Global Tobacco Epidemic: Kazakhstan Country Profile, 2015.

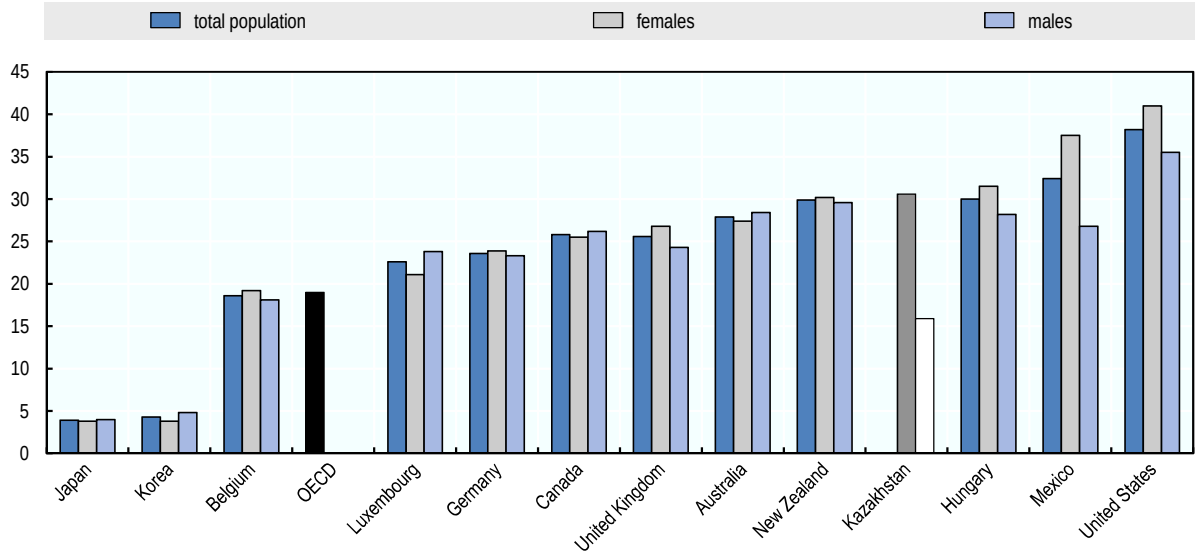
Figure 1.13. Alcohol consumption among adults, 2015 and 2000 (or nearest year)



Source: OECD Health Statistics (2016), http://dx.doi.org/10.1787/health-data-en; WHO Global Health Observatory Data Repository (2016) (apps.who.int/ghodata).

Obesity among adults is also relatively low compared with many OECD countries (Figure 1.14) but again this masks large gender differences. Women in Kazakhstan are much more frequently obese than men. In 2012 (latest available data) measured obesity data indicated that more than 30% of women were obese compared to 16% of men (World Obesity, 2016). This places Kazakhstan on par with some of the most obese countries in the OECD. The prevalence of obesity varies about six fold across OECD countries, from a low of 5% in Japan and Korea, to over 32% in Mexico and the United States. Across all OECD countries, 19% of the adult population is obese. While obesity rates in men and women are similar in most countries, in Chile, Mexico, Turkey, Colombia, the Russian Federation and South Africa, a greater proportion of women are obese, while the opposite is true in Slovenia (OECD, 2015).

Figure 1.14. Obesity among adults, Kazakhstan and OECD countries, 2013 (or nearest year)



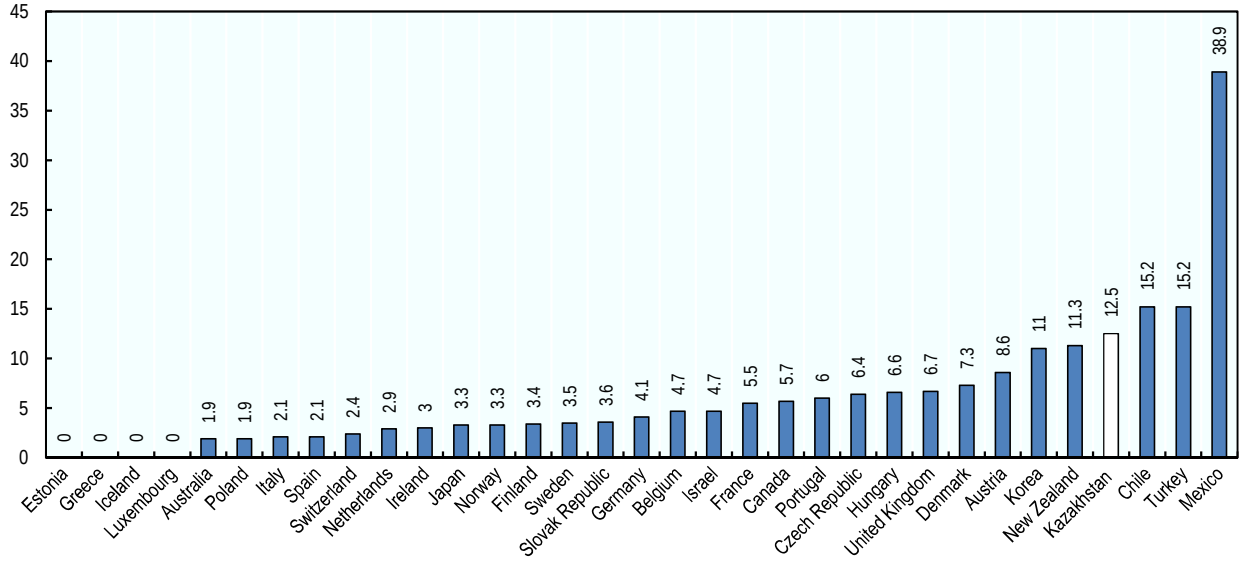
Source: OECD Health Statistics (2016), http://dx.doi.org/10.1787/health-data-en; World Obesity (2012) http://www.worldobesity.org/resources/world-map-obesity/?map=overview-women#country=KAZ.

Similarly to OECD countries, Kazakhstan should strive to adopt policies to prevent and reduce obesity, particularly among women. The rise in overweight and obesity is a major public health concern in OECD countries (OECD, 2015). A growing number of countries have adopted policies to prevent the prevalence of obesity from increasing. The policy mix includes, for example, public awareness campaigns, training for health professionals, advertising limits or prohibitions on unhealthy food, taxation and restrictions on sales of certain types of food and beverages, and nutrition labeling. Better-informed consumers, making healthy food options available, encouraging physical activity, and focusing on vulnerable groups are some of the areas in which progress has been made (European Commission, 2014).

Remarkable progress has been achieved in maternal and infant health but regional inequalities are increasing.

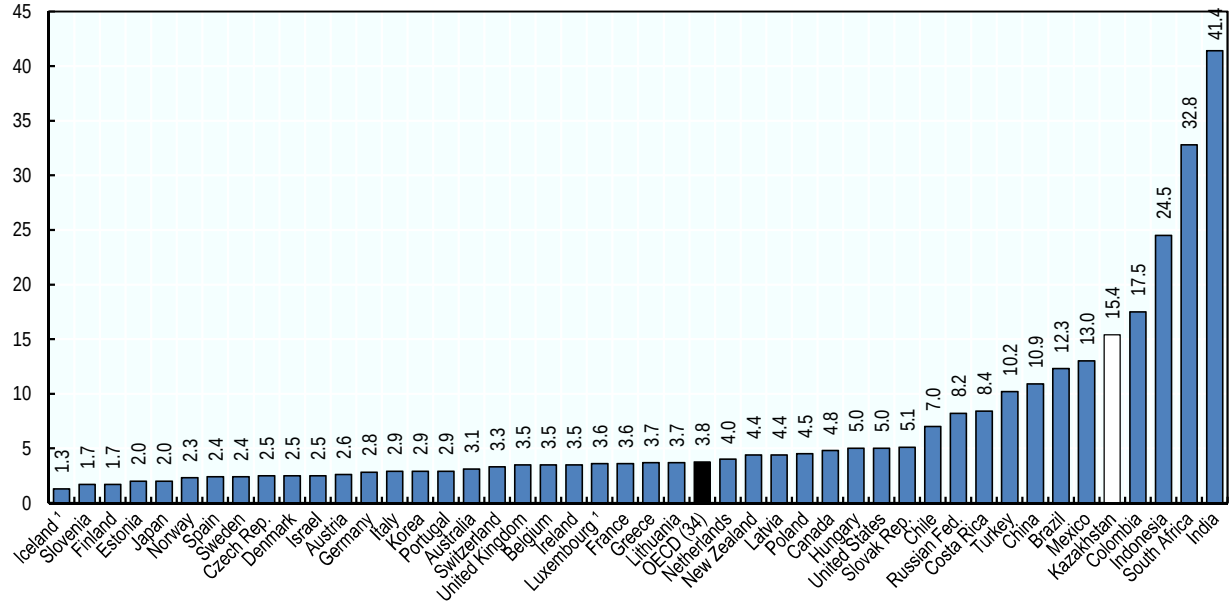
Kazakhstan has made significant advances in infant and maternal health, although there remains scope for further improvement. Over the last two decades, infant and maternal mortality have decreased dramatically, allowing Kazakhstan to meet the relevant MDGs. Nevertheless, they remain a key challenge today, with levels well above OECD averages. Maternal mortality dropped from around 90 deaths per 100 000 live births in 1990 to around 13 deaths in 2015 (Figure 1.15), while infant mortality declined from 45 deaths per 1 000 live births to 9 deaths over the same period (Figure 1.16). Although there are countries within OECD with higher infant death rates – such as Mexico with 13.0 deaths per 1 000 live births, and Turkey with 10.2 deaths per 1 000 live births – the majority of OECD countries and the Russian Federation perform better on this indicator than Kazakhstan. In particular, some of the Central European countries and Baltic States have managed to reduce infant mortality rates to below 2.5 deaths per 1 000 live births (Figure 1.16).

Figure 1.15. Maternal mortality per 100 000 live births, Kazakhstan and OECD countries, 2015 (or nearest year)



Source: OECD Health Statistics (2016), http://dx.doi.org/10.1787/health-data-en; Ministry of Health and Social Development, Kazakhstan (2016).

Figure 1.16. Infant mortality per 1 000 live births, Kazakhstan and OECD countries, 2015 (or the latest year)

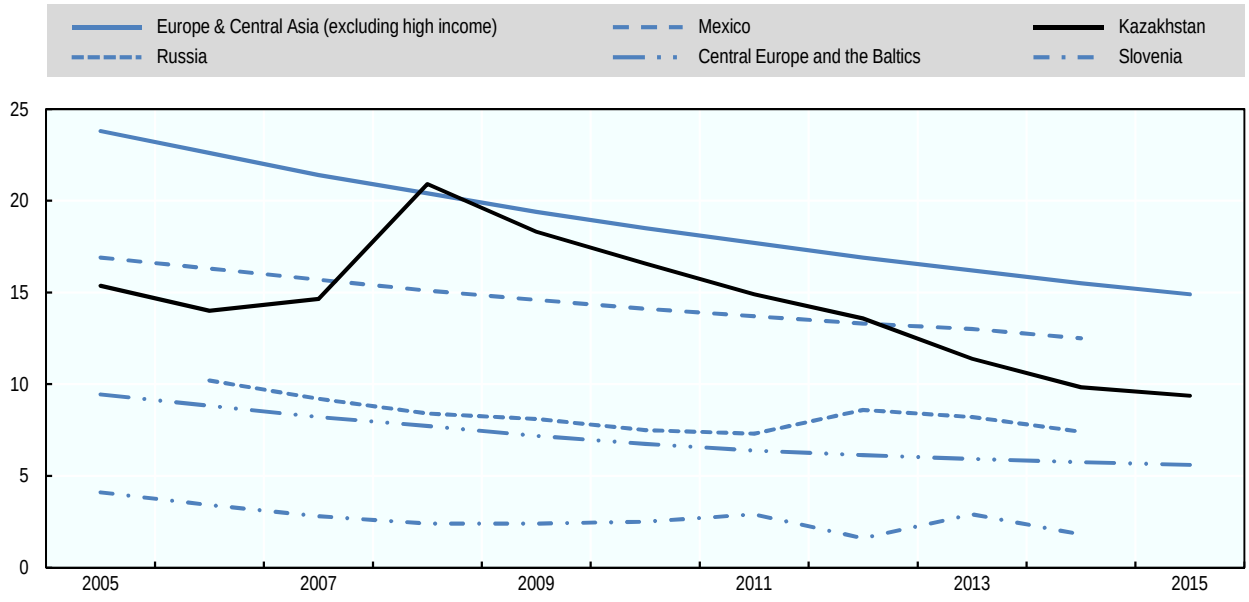


Notes: 1. Three-year average (2011-13). The data for most countries are based on a minimum threshold of 22 weeks of gestation period (or 500 grams birthweight) to remove the impact of different registration practices of extremely premature babies across countries.

Source: OECD Health Statistics (2016), http://dx.doi.org/10.1787/health-data-en; Ministry of Health and Social Development, Kazakhstan (2016).

Kazakhstan's progress in reducing infant mortality is particularly commendable over the last decade. Following a longer period of continuous improvement, Kazakhstan started to experience an increase in infant mortality in 2006, culminating in a dramatic peak of nearly 21 deaths per 1 000 live births in 2008 (Figure 1.17). While this coincided with the advent of the global financial crisis, its causes are not well understood. Nevertheless, the subsequent pace of improvement is impressive and if maintained may bring Kazakhstan's performance on this indicator close to the average for Central Europe and the Baltic states by 2020.

Figure 1.17. Long-term trend in infant mortality per 1 000 live births- Kazakhstan and selected countries, 2015 (or nearest year).

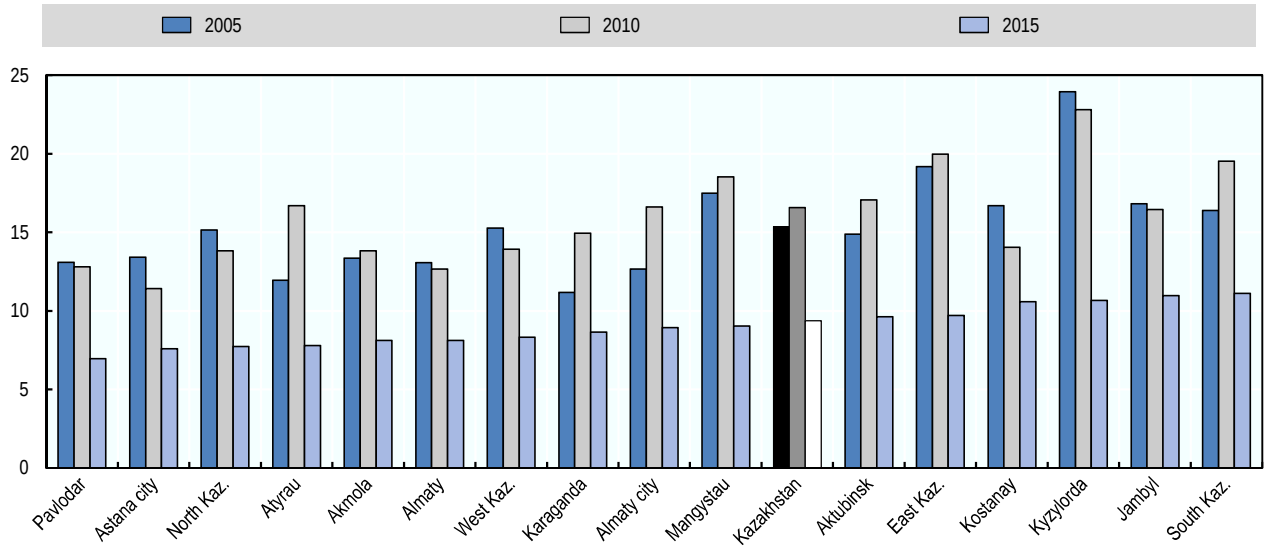


Note: Infant mortality is measured as deaths of children under one year of age per 1000 live births (no minimum threshold of gestation period or birthweight).

Sources: OECD Health Statistics (2016) (Mexico, Slovenia, Russia); World Bank Development Indicators (2016) (Europe & Central Asia, Central Europe and the Baltics); Ministry of Health and Social Development, Kazakhstan (2016).

It is noteworthy that national data on infant and maternal mortality mask marked differences across regions, with striking improvements found alongside much less successful examples. Regional data reveal large and persistent geographical inequalities in infant and maternal health outcomes. In 2005 infant death rates per 1000 live births varied by more than a factor of two between the region with the highest rate, nearly 24 deaths per 1000 live births in Kyzylorda, and the lowest, 11.2 in Karaganda (Figure 1.18). As noted above, between 2008 and 2010 Kazakhstan experienced an increase in infant mortality, coinciding with the outbreak of the global financial crisis, but which could also be an artefact of an undisclosed change in reporting methodology. Data for 2010 reveal that in half the regions infant mortality was higher than in 2005, with the largest increases reported in the city of Almaty and the Atyrau Region – 30% and 40%, respectively. Although infant mortality rates had decreased markedly in all regions by 2015, regional inequalities persist. In 2015, the region with the lowest infant death rate, Pavlodar, recorded approximately 7 deaths per 1000 live births while in South Kazakhstan the death rate exceeded 11.

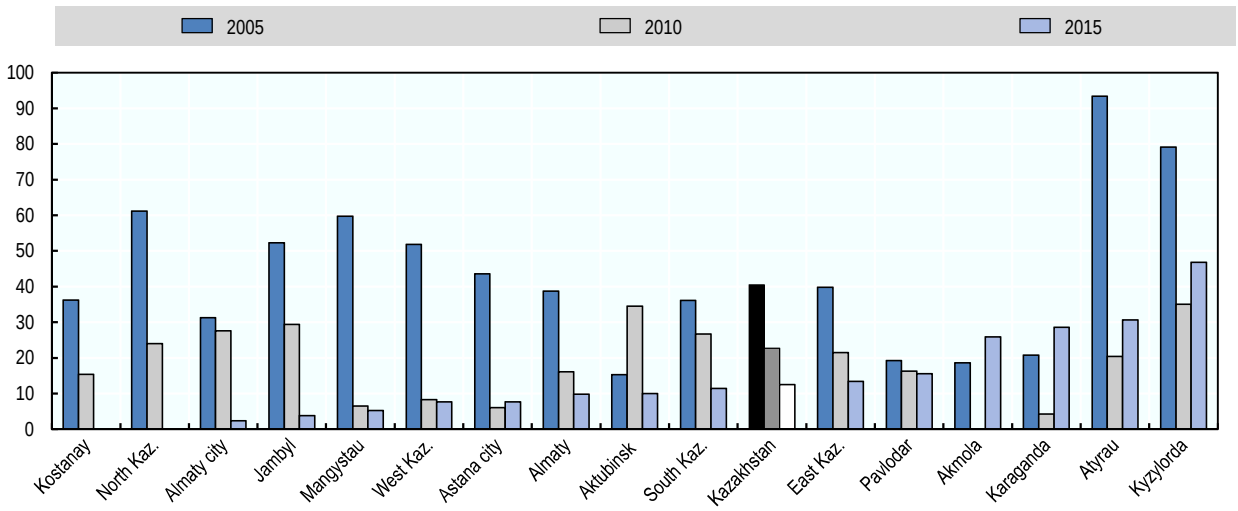
Figure 1.18. Kazakhstan - regional inequalities in infant health outcomes, infant mortality per 1 000 live births, 2000-15.



Source: Ministry of Health and Social Development, Kazakhstan (2016).

Maternal mortality also varies markedly between regions, revealing worrying regional inequalities (Figure 1.19). Similarly to the long-term trend in infant mortality, maternal mortality increased temporarily between 2005 and 2010 in most of regions, for reasons that are also not well understood. However, of particular concern is that in some regions of the country maternal mortality has been increasing continuously over the past ten years. In the Akmola and Karaganda regions maternal mortality has increased by nearly 40% since 2005, while in Kyzylorda region it increased by more than 30% between 2010 and 2015.

Figure 1.19. Regional inequalities in maternal health outcomes – maternal deaths per 100 000 live births, 2005-15.



Source: Ministry of Health and Social Development, Kazakhstan (2016).

1.3. Description of the health care system

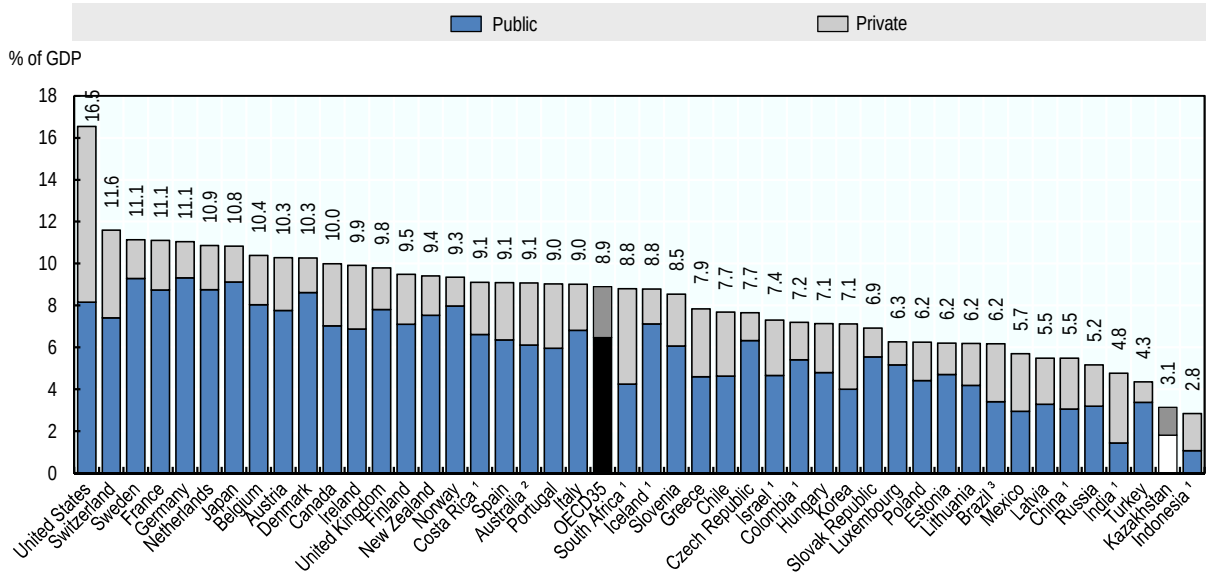
By international standards, Kazakhstan's investment in health remains very modest overall. Nevertheless, health has become a priority in the past decade. After several waves of reforms, the two key functions of policy making and financing have been largely centralised. Reforms have attempted to adapt human resources to current needs.

Total spending on health is modest and public health financing is very low by OECD standards

Total expenditure on health amounted to 3.1% of GDP in Kazakhstan in 2014 (latest available data[4]). WHO data suggest that the share of total health spending as a proportion of GDP has remained largely unchanged for the past two decades (WHO, 2016). However, as Kazakhstan had one of the most rapidly growing economies in the world for the better part of the 2000s, with GDP growth averaging almost 8% per annum, total health spending has increased significantly in real terms since the mid-1990s.

Nevertheless, total health spending as a proportion of GDP is very modest relative to the OECD average of 8.9%. Even limiting the comparison to OECD countries with similar levels of economic development – the Baltic States and Central European Countries – Kazakhstan's investment in health appears to be lagging. As Figure 1.20 shows, in Latvia health spending amounts to 5.5% of GDP, while in Estonia, Lithuania, and Poland it exceeds 6%. The proportion of GDP invested in health is even greater in the Slovak Republic (6.9%), Hungary (7.1%), and the Czech Republic (7.7%). The Russian Federation invests a significantly higher share of GDP in health (5.2%).

Figure 1.20. Health expenditure as a share of GDP, 2014 (or latest year)

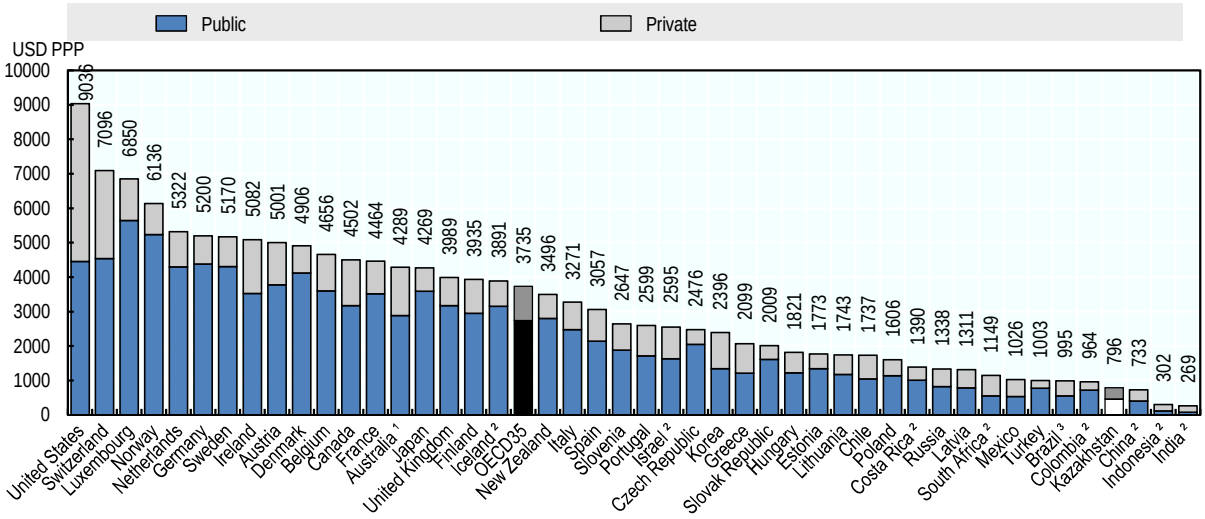


Notes: Excluding investments unless otherwise stated. 1. Includes investments. 2. Australian expenditure estimates exclude all expenditure for residential aged care facilities in welfare (social) services. 3. Data refer to 2013.

Source: OECD Health Statistics 2017, http://dx.doi.org/10.1787/health-data-en; OECD (2018).

A similar picture emerges from an analysis of per capita health expenditure (Figure 1.21). Kazakhstan invests less than a quarter of the OECD average in health expenditure per capita (in PPP USD). Among countries with a level of economic development similar to Kazakhstan, health expenditure per capita is more than 60% higher in Latvia; more than double in Poland, Estonia, Lithuania, and Slovak Republic; more than triple in the Czech Republic; and nearly 70% higher in the Russian Federation.

Figure 1.21. Health expenditure per capita, PPP USD, 2014 (or latest year)

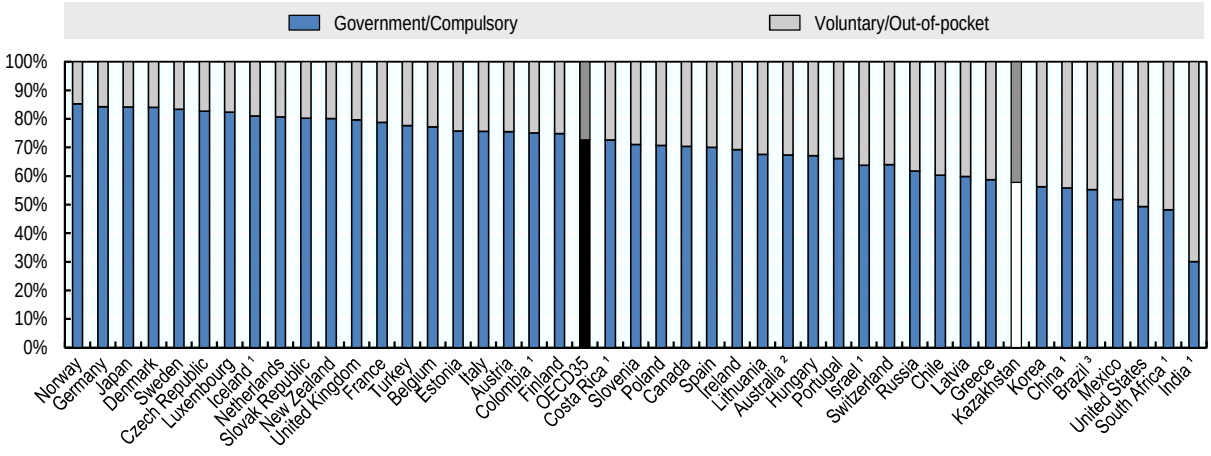


Notes: 1. Australian expenditure estimates exclude all expenditure for residential aged care facilities in welfare (social) services. 2. Includes investments. 3. Data refer to 2013.

Source: OECD Health Statistics 2017, http://dx.doi.org/10.1787/health-data-en; WHO Global Health Expenditure Database (2016), OECD (2018).

Public health spending (government schemes or compulsory health insurance) as a share of GDP is also very low by OECD standards. Public expenditure on health is only 1.8% of GDP, below one third of the OECD average of 6.5% in 2014 (Figure 1.20). In other words public spending accounts for only 58% of total health expenditure in Kazakhstan, which, in the near absence of voluntary health insurance coverage, means high out-of-pocket spending at the point of care. In the OECD, only the United States, Mexico, and Korea have lower proportions of public expenditure on health. Across the OECD, public spending represents 70% of total health expenditure on average, and more than 80% in Norway, Germany, Japan, Sweden, and Denmark (Figure 1.22).

Figure 1.22. Public and private share in total health spending , PPP USD, 2014 (or latest year)

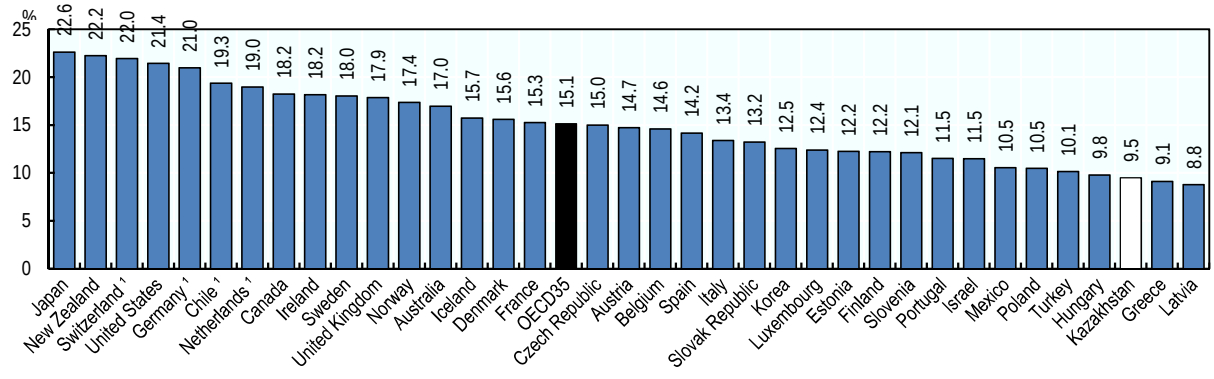


Notes: 1. Data refer to 2013. 2. France does not include out-of-pocket payments for inpatient LTC thus resulting in an underestimation of the out-of-pocket share. 3. Spending by private health insurance companies in the United States is reported under voluntary health insurance.

Source: OECD Health Statistics 2017; http://dx.doi.org/10.1787/health-data-en, OECD (2018)

The limited public spending on health reflects relatively modest government spending as well as a relatively low priority given to health. At 15% of GDP, total public spending seems particularly low in Kazakhstan. Public spending typically amounts to around 30% of GDP in OECD countries, and close to 37% in Europe and Central Asia (WDI 2016 indicators). The low level of public expenditure on health therefore partly reflects modest government spending overall. Furthermore, public health expenditure as a share of total government spending in Kazakhstan was around 9.5% in 2014. While this is more than a third lower than the OECD average of 15%, it does remain within the range of a number of OECD countries (Figure 1.23).

Figure 1.23. Public health expenditure as share of total government expenditure, 2014 (or latest year)

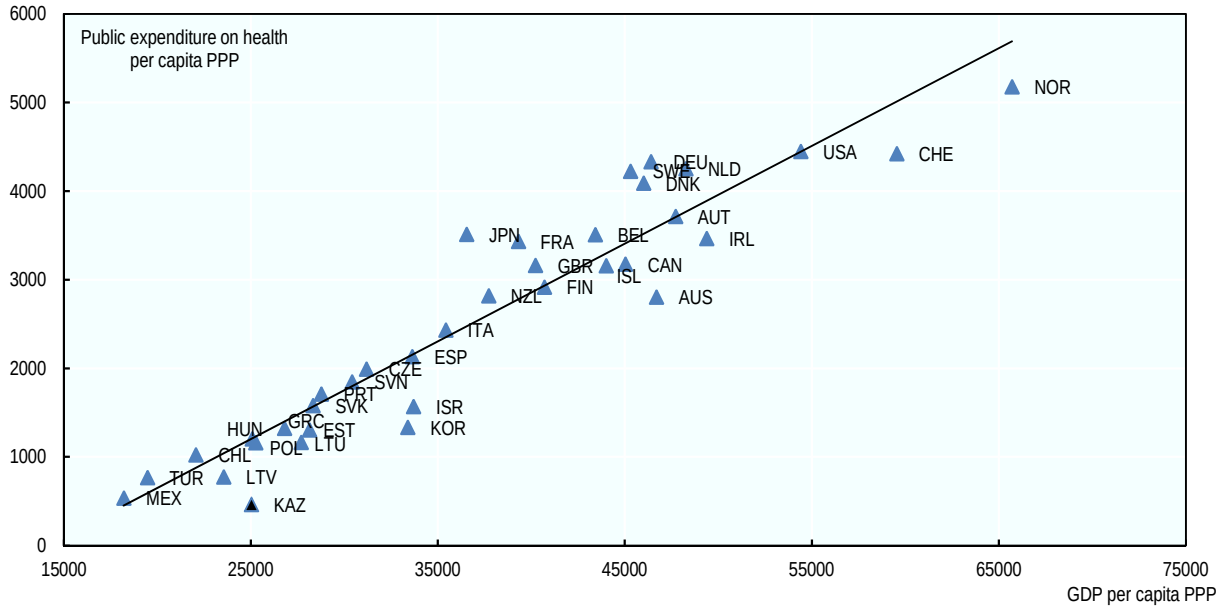


Notes: Relating spending from government and compulsory insurance to total government expenditure may lead to an overestimation in countries where compulsory insurance is provided by private insurers. 1. Includes spending by private health insurers for compulsory insurance.

Source: OECD Health Statistics (2017), http://dx.doi.org/10.1787/health-data-en; OECD National Accounts; Eurostat Statistics Database; IMF World Economic Outlook Database; Ministry of Health and Social Development, Kazakhstan, 2016.

In summary, compared to OECD countries of similar economic development, Kazakhstan appears to underinvest in health. A comparison of each country's health spending per capita relative to GDP reveals that in general per capita investment in health increases with GDP per capita (in PPP USD). This is particularly true for public health spending per capita (Figure 1.24). By this measure Kazakhstan appears to be an outlier, investing comparatively less than countries with similar levels of economic development and even countries with notably lower GDP per capita. Overall, additional investment in health – as long as it is targeted and efficient – could help Kazakhstan achieve the health outcomes that may be expected given its level of economic development (see Section 1.4).

Figure 1.24. Public health expenditure per capita in relation to GDP per capita, USD PPP, 2014 (or latest year)



Notes: Expenditure excludes investments, unless otherwise stated. 1. Includes investments. 2. Data refers to 2012.

Source: OECD National Accounts data (2016); World Bank national accounts data (2016) World Bank, International Comparison Programme database (2016); OECD (2018).

After several waves of reforms, policy-making and financing remain mostly centralised within the Ministry of Health

Since independence in 1991 Kazakhstan's health care system has evolved from being centrally controlled and financed to become more pluralistic and decentralised, with health care provider organisations enjoying increasing financial and managerial autonomy. However, at this stage of the reforms most regulatory and financing functions have been centralised again.

Several waves of reforms have led to the current organisation in which the Ministry of Health plays a prominent role.

With the collapse of the Soviet Union, Kazakhstan inherited a highly centralised health care system, typical of the Semashko model. Subsequently several waves of

reforms sought to empower regional and local authorities and reorganise service delivery, as well as encourage the private provision of services. Not all envisaged changes were implemented; notably, the restructuring and decentralisation plans initiated during the first decade of independence did not bring about the anticipated changes. An attempt to introduce mandatory health insurance was also abandoned after two years (Katsaga et al., 2012).

The pace of change increased in 2004 when a comprehensive programme of reforms – the National Programme for Health Care Reform and Development 2005-10 – was adopted, promising modifications in nearly all aspects of the health care system. It introduced a State Guaranteed Basic Benefits Package (SGBP) of s specified health services provided free of charge. The SGBP aimed to delimit state guarantees, equalise them between regions and population groups, and provide a basis for the future financial sustainability of the system. Under the same programme responsibility for financing and managing health care delivery, as well as ownership of most of the health care facilities, was consolidated at the level of the 14 oblasts and the cities of Almaty and Astana.

In 2009, the government further increased the authority of the Ministry of Health (henceforth MOH), which became explicitly responsible for developing national health policies and strategic development plans, in line with priorities set out by the President. During this period, existing regulations were modified in favour of increased competition, quality of care, evidence-based medicine, accountability, and pluralism of ownership.

In 2010, the State Health Care Development Programme for 2011-15 – "Salamatty Kazakhstan" – was adopted by way of a Presidential decree, and introduced the concept of the Unified National Health Care System. Concomitantly elements of the financing and payment functions were recentralised and the MOH became the main public purchaser of hospital services (Katsaga et al., 2012). The principle of free choice of provider was also strengthened. In addition, certain functions such as quality assurance, public health oversight, and sanitary-epidemiological responsibilities were further strengthened.

Figure 1.25 presents a simplified organogram of the current system. At present policy-making and financing (see below) are in large part centralised within the MOH. Three dedicated Committees have been established to facilitate implementation of health policies at national as well as regional level: the Committee of Pharmacy, the Health Services Purchasing Committee (known as KOMU), and the Committee for the Protection of Public Health.

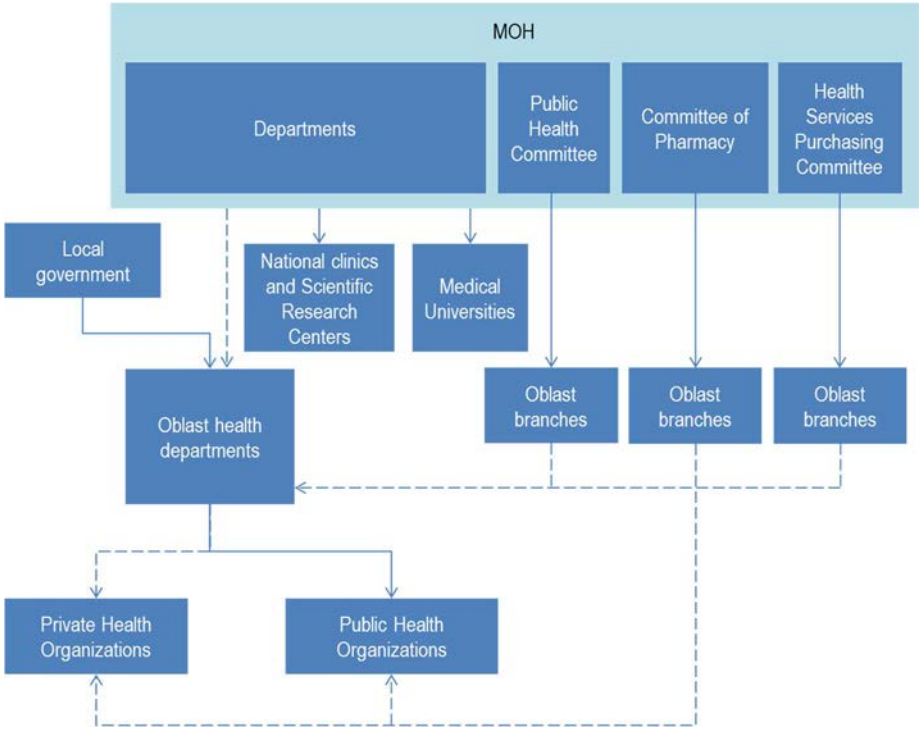
The primary responsibility of the Committee of Pharmacy is quality assurance and control. This includes accreditation, licensing and certification of both physical and legal entities involved in the provision of health care services, quality audits and the investigation of patient complaints in situ.

KOMU is a strategic body, set up to purchase all publicly funded health services by means of contractual arrangements and spearhead modern health financing arrangements. The objectives of KOMU include a) establishing a 'level playing field' between public and private players, and b) reducing disparities in funding between regions. Over time, KOMU has become the main public purchaser of health care services. Both committees have vertical structures with representation at oblast-level. In parallel a single drug distributor was established within the MOH with the mandate to procure all drugs for state-owned health organisations.

The Committee for the Protection of Public Health of the MOH has a broad remit to implement policy concerning the sanitary and epidemiological welfare of the population.

Its core responsibilities include oversight of public health and sanitary-epidemiological services. The latter include prevention and control of infectious diseases, monitoring of sanitary-epidemiological situation in the country, including quality of water and foodstuffs, as well as monitoring laboratory safety. The Committee also has a vertical structure with representations in all oblasts.

Figure 1.25. Overall organisation and governance of the health care system – simplified organogram



Note: Dotted lines indicate regulatory oversight; solid lines indicate direct administration and reporting.

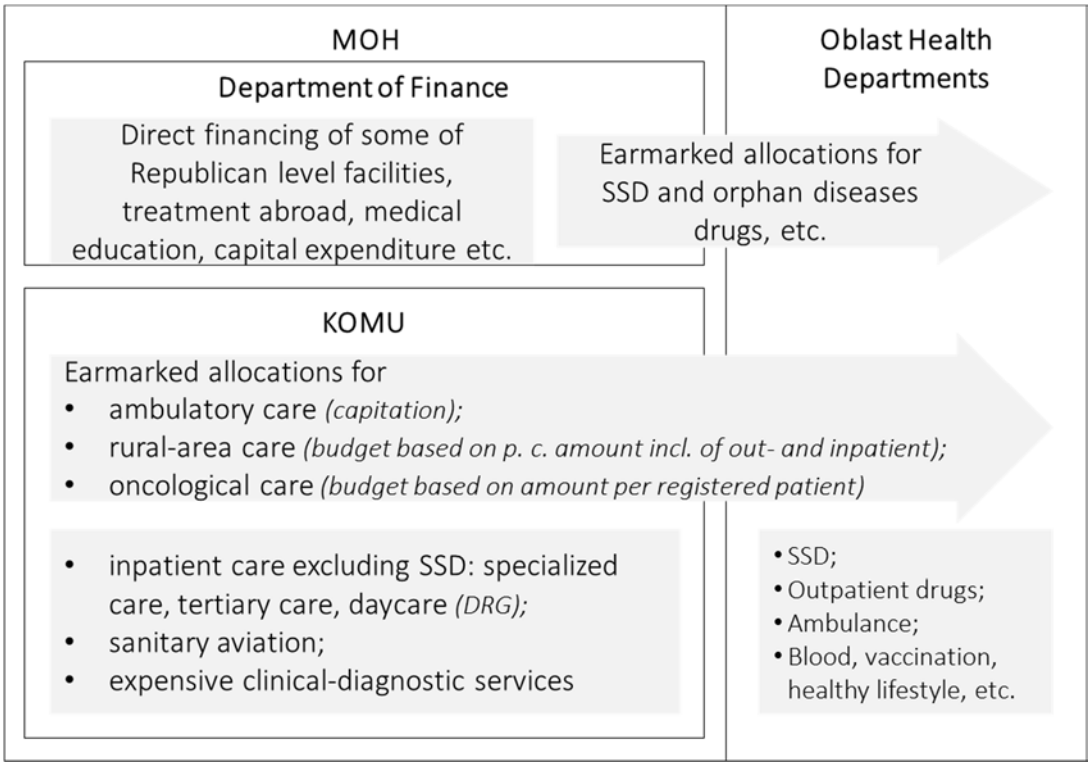
Source: Ministry of Health, Kazakhstan (2017).

Oblast Health Departments (also known as Local Health Authorities – LHAs) in the 14 regions and the cities of Almaty and Astana manage health care delivery and own most of the health care facilities in their in their respective territories. Exceptions include National Clinics, Research Centres, and University hospitals, which are owned by the Ministry of Health, and health care facilities belonging to the parallel health systems run by some of the other ministries and government agencies, such as the Ministry of Defence. The latter, inherited from the Soviet times, are mostly still in place. Some private providers operate in both the primary care and hospital sector and the majority of them contract with MOH for the provision of public health care services.

The Ministry of Health, particularly through KOMU, is the main purchaser of health services[5]

The majority of the health care budget is disbursed by the MOH, either directly or through the Oblast Health Departments (see Figure 1.26 for a schematic summary). The MOH has two financing units: the Department of Finance and the Health Services Purchasing Committee (KOMU[6]).

Figure 1.26. Financing institutions and mechanisms for the State Guaranteed Benefit Package



MOH's Department of Finance is responsible for the financing of medical education and capital investments, as well as for certain components of the SGBP, for example, treatment abroad, reimbursement of health providers at Republican level (e.g. the Republican Psychiatric Hospital, Leprosarium, AIDS Centre, etc.), sanitary aviation. It also finances medicines for the so-called 'socially significant' diseases (SSDs), cancer and orphan diseases. All of these activities are financed either through direct payments to health care providers, or via earmarked allocations to the Oblast Health Departments.

KOMU finances a significant part of the SGBP, including:

- 'Regular' inpatient cases treated within urban multi-profile hospitals, which are reimbursed under a DRG-based system[7] and fall into three categories: specialised care, day care and tertiary care. Inpatient care for socially significant diseases (SSD) such as TB, psychiatry/substance abuse, infectious diseases, HIV/AIDS, dermato-venereology, oncology) is excluded from this funding mechanism;
- Ambulatory care in urban areas though capitation;
- Care provided in rural areas (in- and outpatient) via global budgets;
- Cancer care through a global budget mechanism.

For regular inpatient cases, KOMU pays facilities directly. For ambulatory, rural and oncology care, earmarked allocations are channelled to Oblast Health Departments.

Oblast health departments, under the direct responsibility of the regions/city Governors, mostly finance ambulance services, in- and outpatient treatment as well as social assistance for patients with SSDs[8], medical care for patients with infectious diseases, rehabilitation, palliative care (except for persons suffering from malignant

neoplasms, whose palliative care is financed from the republican budget), outpatient medicines (including vaccinations), screening programmes[9], collection of blood and production of its components, autopsy services, pathoanatomical diagnostics, and public health promotion programmes (except for medical and social services provided by the republican organisations) as well as outpatient drugs.

Service delivery has undergone multifaceted reforms and its transformation is in progress. The organisation and reforms of primary and hospital care are described in two other chapters of this review. To summarise, since independence reforms have attempted to steer health service delivery away from its entrenched Semashko health system legacy. In Soviet times, the role of primary health care (PHC) and health promotion was limited and services were predominantly delivered in a range of hospitals which were numerous and often delimited by disease or population segment. Facilities were publicly owned, integrated and centrally managed. Rebalancing service delivery in favour of primary care, as well as encouraging ownership diversification and autonomy have been prominent among the stated objectives of the reforms since independence. Provider payment systems have been redesigned to promote better quality and accountability in health care services and several initiatives have encouraged greater responsiveness and the delivery of higher quality care.

Kazakhstan's health workforce is being modernised but challenges remain in geographical distribution

Health workers play an essential part in access to health care services. Ensuring health workers are available in the right places, with the right skills and in the right mix, is a complex challenge. Recognising this, OECD countries are reforming education and training policies, changing the scope of practice for various health professionals, and providing incentives to drive better geographical distribution of health workers (OECD, 2016a).

Since independence Kazakhstan has deployed several measures to ensure the appropriate workforce is available to meet population needs. Significant challenges, however, remain. From 1990 to 2000, the number of health professionals declined significantly as many left the health sector, emigrated, or moved into private sector (Katsaga et al., 2012). Various reforms have since sought to strengthen the workforce.

First, medical education and training have been revised and are now based on national educational standards and standardised training programmes established by the Ministry of Health. As in many OECD countries, the initial training of medical practitioners takes on average five years. This is followed by a compulsory internship of one to two years that culminates in the right to practise. The internship is then followed by a residency that can last from two to four years (MOH and WHO, forthcoming).

Second, considerable efforts have been made to develop a primary care workforce. Prior to 2005, services at PHC level were essentially provided by district therapists or paediatricians. The 'general practitioner' was officially introduced into the Kazakh health system in 2005. Following a period of intensive re-training efforts and an increasing number of medical graduates entering general practice, the number of GPs grew to 920 in 2006, to 2 233 in 2010, reaching 5 071 in 2016 (Ministry of Health of the Republic of Kazakhstan, 2017). This corresponds to a nearly five-fold increase. More recently, the development of multi-disciplinary teams in primary care has been further pushed by the introduction of new staffing standards (see Chapter 2 for details).

Third, in line with international practice nurses working at PHC level have seen their scope of practice expand, and they can now work with greater autonomy. In particular, a policy has been promulgated establishing that around one quarter of doctors' functions in PHC should be transferred to trained nurses. New tasks allocated to qualified nurses include, among others, patient observation, house calls, bandaging, and the issuing of some prescriptions.

Data on the health care workforce in Kazakhstan are scattered among several institutions and to date have been neither complete nor entirely accurate. Recognising this problem the government created a Human Resources for Health Observatory which has produced, in cooperation with WHO, a report on the health care workforce from which much of the information below is extracted.

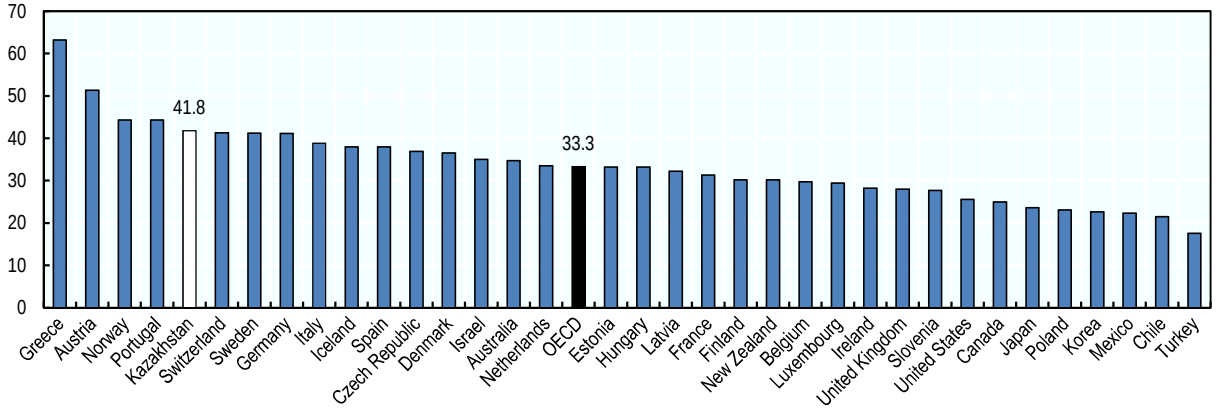
The workforce' skill set is somewhat imbalanced in light of current objectives

To some extent, variations in health workforce supply across countries can simply reflect differences in the organisation of service delivery. Nonetheless, ensuring appropriate numbers of health workers are available is essential to the proper functioning of a health system. While an undersupply of health workers can hamper access to services, an oversupply can lead to a loss of human capital and increase cost pressures through supplier-induced demand.

According to preliminary data for 2016, the health workforce in Kazakhstan comprised around 252 000 staff, of which 74 600 were doctors and 177 600 mid-level cadres (such as nurses, midwives and paramedics) (Ministry of Health of the Republic of Kazakhstan, 2017).

In 2000, the medical workforce in Kazakhstan included around 33 physicians per 10 000 population. However, in the succeeding fourteen years, the number of doctors increased significantly, reaching around 41.8 per 10 000 population in 2016 (Ministry of Health of the Republic of Kazakhstan, 2017). This figure is higher than the OECD average of 33 per 10 000 population in 2014 (Figure 1.27).

Figure 1.27. Practising physicians per 10 000 population, Kazakhstan and OECD countries, 2014 (or nearest year)



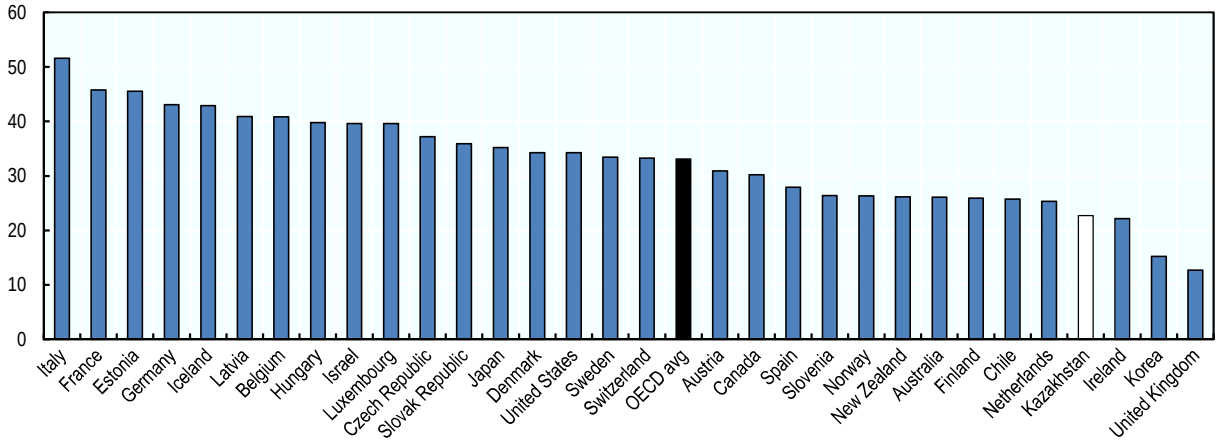
Note: Data on Turkey refers to professionally active physicians. Data on Chile, Greece and Portugal refers to physicians licensed to practice.

Source: OECD Health Statistics 2016, http://dx.doi.org/10.1787/health-data-en; Data for Kazakhstan retrieved from Ministry of Health (2017).

Despite the rather swift expansion of the medical workforce, the distribution of skills remains unbalanced. As of 2016, primary care physicians in Kazakhstan probably accounted for between 7 and 16% of the physician workforce (Ministry of Health of the Republic of Kazakhstan, 2017). (This is considerably lower than the OECD average, where the proportion of physicians in PHC is 32%, while in Ireland, Portugal and Chile, it's around 50%). As a result, the Kazakh PHC workforce remains insufficient. The number of GPs per 1 000 population in Kazakhstan (at 0.28) lags well behind the OECD average of 0.72. Even if district paediatricians and therapists are included, at 0.47 (Ministry of Health of the Republic of Kazakhstan, 2017) the ratio of PHC physicians to population still falls well below that of most OECD countries (see Chapter 2 for detailed numbers).

Compared to OECD countries, the medical workforce is also relatively young in Kazakhstan. In 2016, approximately 22.7% of doctors were 55 or older (Ministry of Health of the Republic of Kazakhstan, 2017), compared with 33% on average across the OECD (Figure 1.28). However, the age distribution varies considerably across regions; while in South Kazakhstan only 11% of the medical workforce is aged 55 or older, the proportion rises to 36% in Kostanay, suggesting some regions may face a staffing crisis much sooner than others.

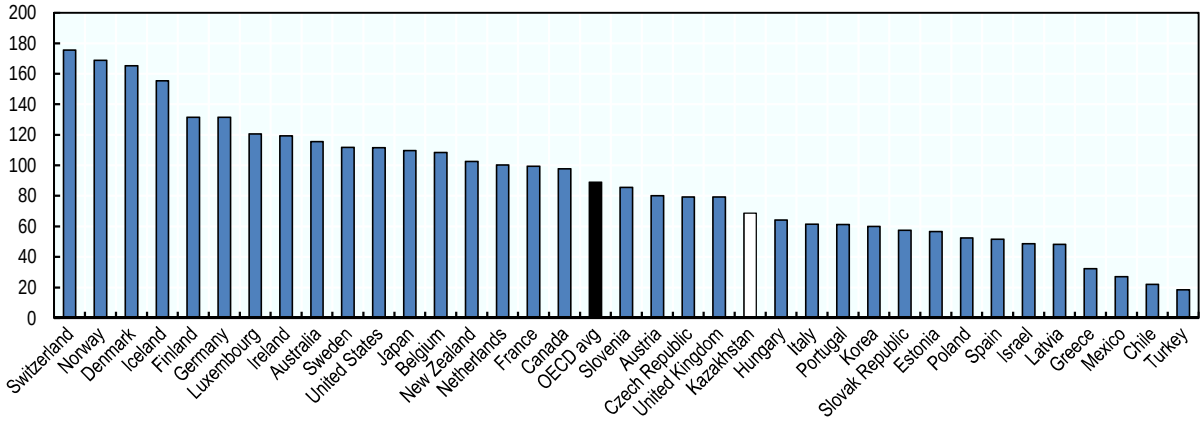
Figure 1.28. Share of physicians aged 55 and older, Kazakhstan and OECD countries, 2014 (or nearest years)



Source: OECD Health Statistics *2016*; Data for Kazakhstan from Ministry of Health, 2017.

The number of practising nurses is also comparatively lower than in OECD countries. As of 2014 (or nearest year), Kazakhstan had on average 69 nurses per 10 000 population, while the OECD average was approximately 89 per 10 000 people (Figure 1.29).

Figure 1.29. Practising nurses per 10 000 population, Kazakhstan and OECD countries, 2014 (or nearest year)



Note: Data on France, Ireland, Netherlands, Italy and Portugal refers to professionally active nurses. Data on Chile refers to nurses licensed to practice.

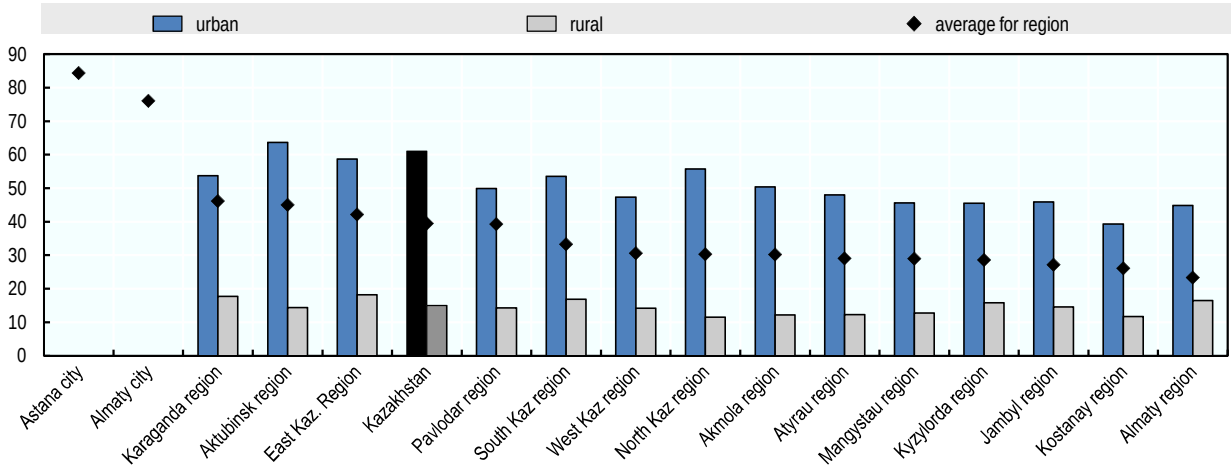
Source: OECD Health Statistics 2016, http://dx.doi.org/10.1787/health-data-en; Data for Kazakhstan retrieved from Ministry of Health (2015).

Regional disparities are significant and shortages exist in rural areas

The number of doctors varies across regions, and rural and remote areas suffer from a shortage of qualified health personnel. In 2016, the highest numbers of doctors were found in the cities of Astana (84.4 per 10 000 population) and Almaty (76.1 per 10 000 population). At the other end of the spectrum were regions such as Almaty, Kostanay and Jambyl, all with fewer than 27 doctors per 10 000 population, or around one-third the number found in cities (Figure 1.30). Data on numbers of nurses also show regional differences; in 2016, there are 100 nurses per 10 000 people in Astana, while in the Almaty region the number was only 51 (Ministry of Health of the Republic of Kazakhstan, 2017).

Across rural Kazakhstan, the ratios of doctors to population are abysmally low. In 2009 there were around 58 physicians per 10 000 population in urban areas, but only 14 per 10 000 population in rural communities. In 2016 the gap persisted, with 61 physicians per 10 000 population in urban areas and on average 15 physicians per 10 000 population in rural areas (Ministry of Health of the Republic of Kazakhstan, 2017). In all regions urban areas tend to have three to four times the density of physicians of rural areas. In rural parts of North Kazakhstan there are only just over 11 physicians per 10 000 population, but across all rural areas nowhere does the number exceed 18. This suggests not only that rural doctors are probably overworked, but also that adequate access to good quality care in rural areas may be compromised.

Figure 1.30. Physicians per 10 000 population, Kazakhstan regions, 2016



Source: Ministry of Health of the Republic of Kazakhstan (2017)

As in most OECD countries, recent medical graduates tend to prefer working in urban areas, not only as they offer better financial and social opportunities, but also because the workload is higher in rural areas. These differences across and within regions have been recognised by the government, which, in an effort to address the challenge of getting medical graduates to work in underserved regions, has put in place various economic incentives. In Kyzylorda region for example – which until recently had the lowest density of doctors – higher doctors' salaries and the provision of accommodation have brought about an increase in the numbers (Katsaga et al., 2012).

In 2016 the majority of doctors (77%) were employed by public health institutions, with 17% working in private organisations, and 6% in other public institutions (such as other Ministries). Nevertheless, the proportion of doctors working in the private sector is increasing, growing from 13% in 2003 to 17% in 2016 (Ministry of Health of the Republic of Kazakhstan, 2017). Potential drivers of this trend may be heavy workloads and lower compensation in public institutions than in the private sector (MOH and WHO, forthcoming).

Analyses suggest morale among medical staff is low. Salary levels of health workers have increased significantly over the past ten years; by 2013 salaries they were 17% higher than those of workers in the education, financing and information and communication sectors. Further analysis would be required to understand if this low morale is driven mainly by compensation or whether there are other factors (e.g. high numbers of patients, long working hours, limited empowerment and recognition etc.) that may be influencing it.

1.4. Overall performance of the health system

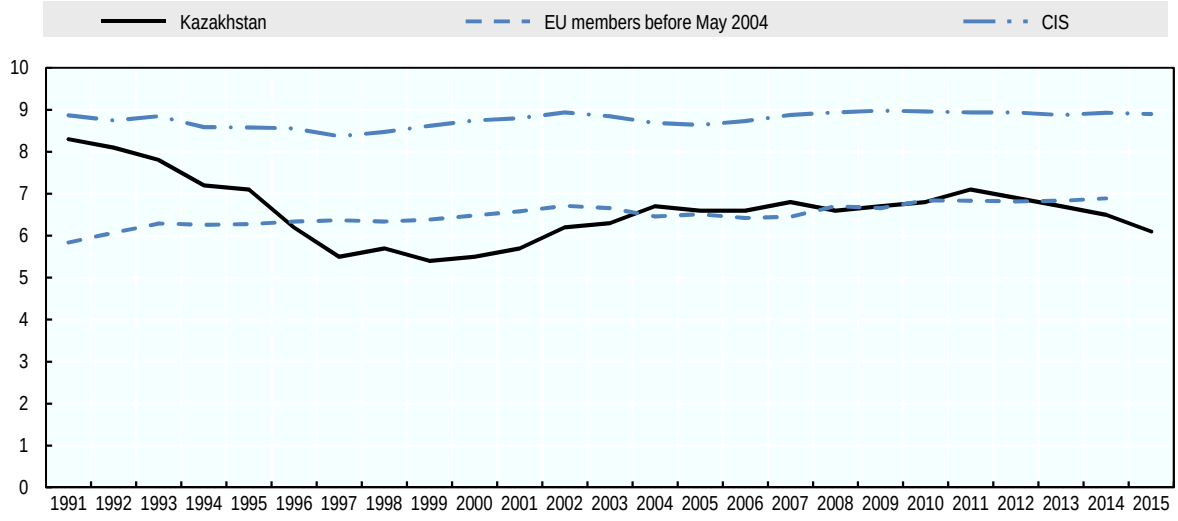
On average, the system provides reasonable access to services but financial protection is weak. Quality of care, insofar as data are available to measure it, could improve substantially. Overall, given its level of development and expenditure, Kazakhstan appears to perform below par, suggesting the need for further reforms.

On average, the system provides access to services but inequalities are high

The population of Kazakhstan is entitled to free health care across a wide range of services defined in the State-Guaranteed Benefits Package (SGBP).

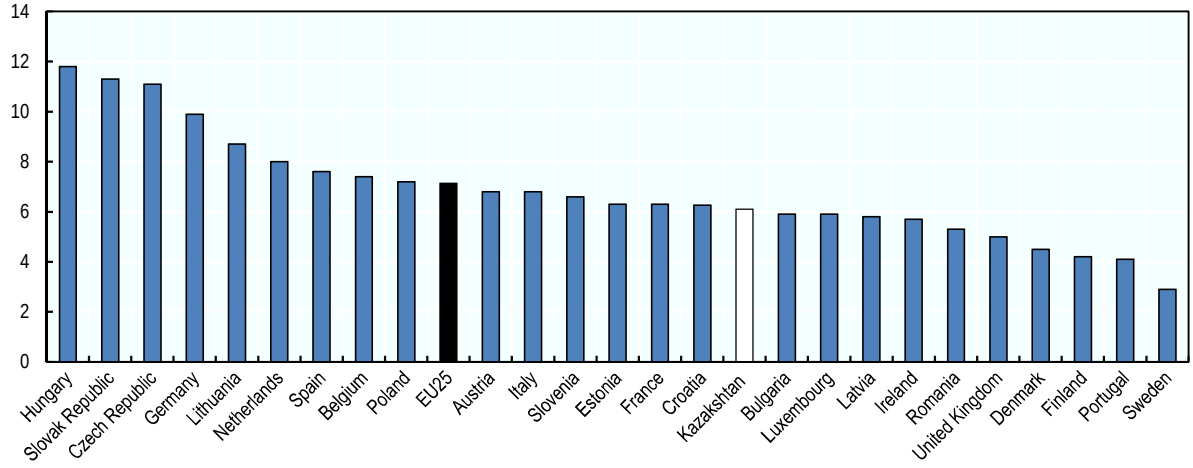
In Kazakhstan the use of outpatient and hospital services is at a level similar to the average across the OECD countries. The number of outpatient visits per capita is only slightly below the EU25 average but has been declining in recent years. As shown in Figure 1.31, at the time of independence the number of visits per capita per year was fairly high and subsequently declined when the system collapsed. It recovered during the 2000s to reach around 7, but has been declining steadily since 2011 to 6.1 in 2015 – a trend which must prompt questions about the effectiveness of efforts to move patients away from hospital-based care. By contrast, the number of physician visits per capita has traditionally been higher on average in CIS countries than in Kazakhstan, and has increased steadily in the western part of the European region in the last 25 years (Figure 1.31). On average, the number of visits per capita in Kazakhstan is within the range of the EU25 countries (Figure 1.32). Hospital discharges per capita are also on par with the OECD average (see Figure 1.33), while waiting lists for elective procedures are much lower than in OECD countries (cf. Chapter 3). Overall the statistics suggest that access to existing services is generally adequate.

Figure 1.31. Number of outpatient visits per capita, Kazakhstan and other groups of countries, 1991-2015.



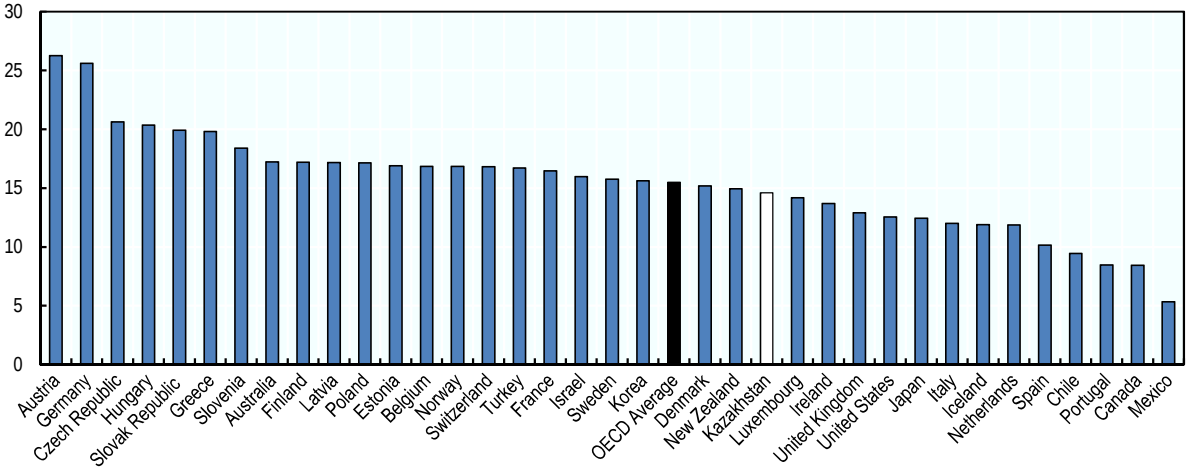
Source: European health for all database (HFA-DB) WHO/Europe (2016).

Figure 1.32. Number of outpatient visits per capita, EU 25 and Kazakhstan, 2015 (or nearest year).



Source: European health for all database (HFA-DB) WHO/Europe and OECD Health Statistics (2016); Eurostat Database.

Figure 1.33. Hospital discharges per 100 population, Kazakhstan and OECD, latest year available.



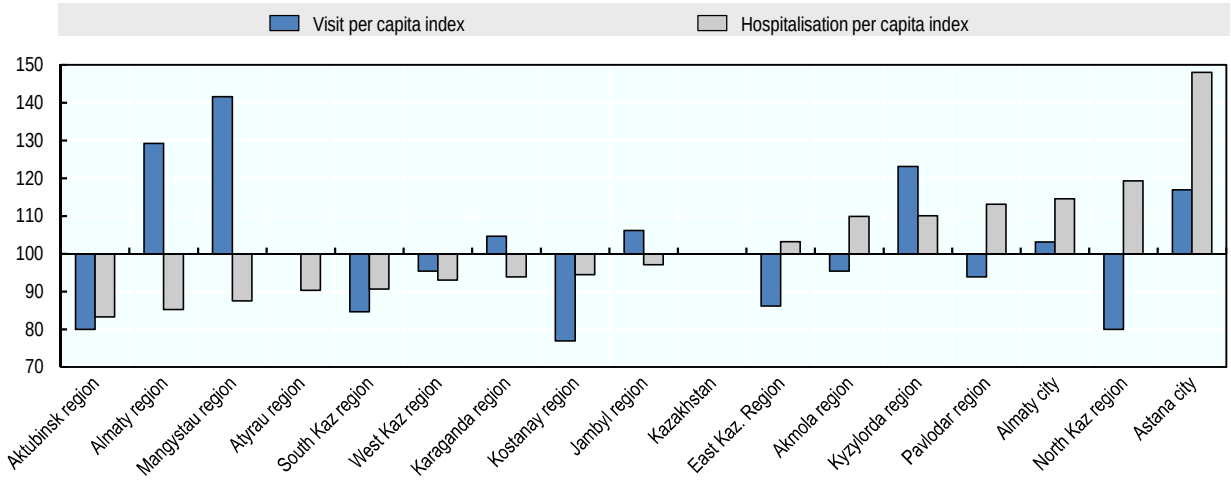
Source: OECD Health Statistics 2016; http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_PROC 2015; MOH (2016).

However the data also show large regional variation in the number of contacts with the health system, and in some of them, access would appear to be significantly constrained. Overall, across the regions the numbers of hospitalisations per capita and visits per capita both lie in the range of 1 to 1.8. Figure 1.34 presents indices for both these indicators, with the average for Kazakhstan set to 100 for each indicator. It shows that:

- In at least four regions (Aktubinsk, South and West Kazakshtan, and Kostanay) both the numbers of visits and hospitalisations per capita are well below the national average, suggesting access might be more limited than elsewhere in the country.

- Conversely, in Astana City and Kyzylorda, utilisation of both types of services is well above average;
- Elsewhere, on average people in Almaty and Mangistau tend to rely relatively more on outpatient care and relatively less on inpatient care, while the reverse is true in North Kazakhstan and Pavlodar, where outpatient care seems relatively underdeveloped and hospital care overdeveloped. Looking at the numbers of beds per capita across these two groups of regions, the former (with relatively low hospitalisation rates) has a lower number of beds per capita on average, and the latter, very high numbers of beds per capita.

Figure 1.34. Difference in visits and hospitalisation per capital across regions in Kazakhstan, 2014



Source: MOH 2016 and MOH 2015.

Overall, these variations across regions suggest the standardisation (or "unification" in the terminology used in Kazakhstan) of the health system remains incomplete:

- Access is most certainly limited in some regions. Shortages of medical personnel in rural areas, poor transportation services, and lengthy travel times to health care facilities are also likely to undermine access to services in remote areas across the country (WHO, 2011).
- The above numbers suggest that structures (e.g. the existing hospital infrastructure) shape service delivery in different ways across regions.
- If the use of evidence-based medicine and the importance of primary health care as promoted by reforms over the past decade were uniformly and deeply entrenched in the system, the differences in the way populations access the system would likely be less marked.
- Persistent inequalities in access between regions may also reflect that in practice not all of the services included in the SGBP are available everywhere. As discussed in Chapter 3, the actual numbers of certain surgical procedures are very low in the country. Consequently, the procedures are unlikely to be equally available everywhere. Although differences are not documented systematically, in practice this implies that entitlements are not *de facto* uniform throughout the country.

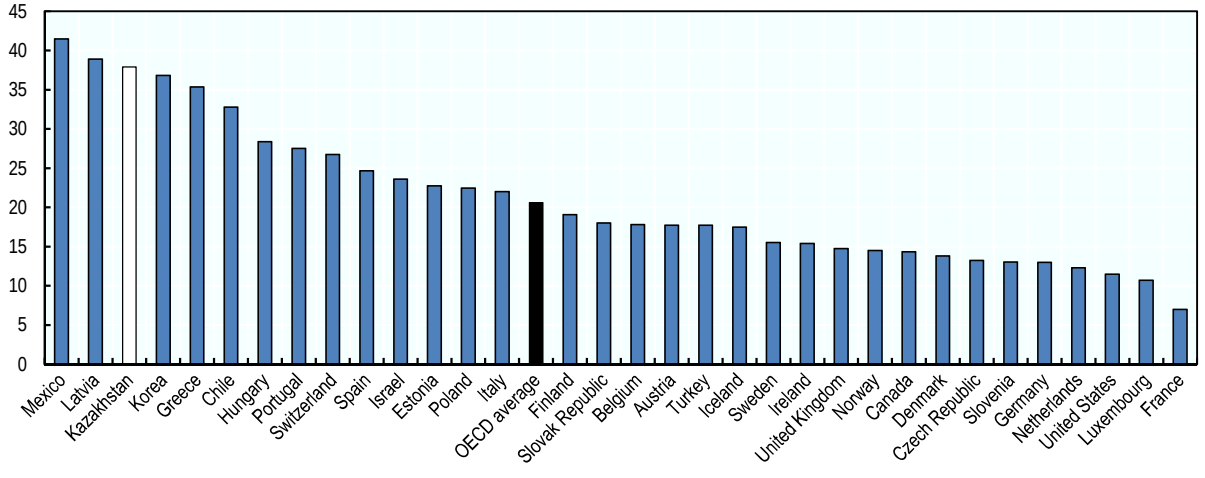
It remains an open question whether the system delivers the services the population needs. A key dimension of access is to determine whether the services received match the burden of illness in the population. Chapters 3 and 4 provide some evidence that this may not be the case. Population coverage for some services (e.g. immunisation) is very high but at the same time, no information is available about effective coverage of certain interventions related to the management of the chronic diseases that increasingly affect the population. The data show that basic services related to maternal and reproductive health still feature prominently in hospital activities but that procedures associated with the treatment of cardiovascular and other non-communicable diseases are seldom performed. Overall, discussions with experts reinforced the observations from the data – that the types of services delivered need to evolve to address the burden of disease more effectively.

The high level of out-of-pocket payments undermines financial protection and access

Financial protection is a core health system indicator. A key objective of any health system is to protect individuals from large and/or unexpected health expenditures they cannot afford, and to ensure they do not forego essential care for financial reasons. Providing this insurance *function* requires both broad coverage (that is, coverage extended to the entire population – as is the case in Kazakhstan) and low levels of out-of-pocket payments (OOP).

Out-of-pocket payments represent 38% of total expenditure in Kazakhstan, a level that falls well short of the objective of financial protection. Figure 1.35 shows that OOP costs represent 20% of total expenditure in OECD countries on average. WHO considers that a system is likely to provide adequate financial protection only if OOP is at or below the 20% level. Kazakhstan is therefore, like a handful of OECD countries (notably Latvia, Mexico and Korea), a considerable distance from meeting the WHO criterion for adequate financial protection.

Figure 1.35. Out-of-Pocket payments as percentage of total health spending, Kazakhstan and OECD countries, 2014 or most recent year

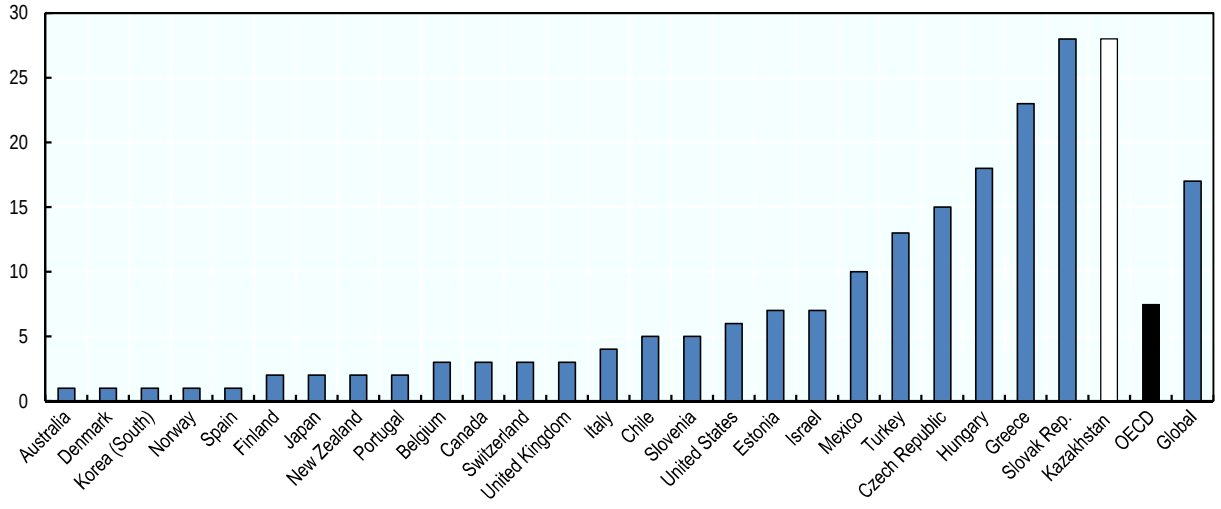


Source: OECD Health Database for OECD countries; OECD 2016 for Kazakhstan.

The magnitude of OOP costs is in large part due to very limited coverage of medicines. National Health Accounts data show that public coverage of medicines is particularly poor in Kazakhstan. In OECD countries households pay on average 40% of the cost of pharmaceuticals out of pocket; in Kazakhstan, the figure is 84% (OECD, 2016). At present, coverage of outpatient medicines is very limited; medicines prescribed in primary care are generally paid for by the patient, and only provided free of charge for patients with SSDs.[10] Conversely, at the hospital level all drugs are provided free of charge (Katsaga et al., 2013). Experts agree that this might explain patients' preference for treatment at a hospital rather than a PHC facility. To alleviate the cost burden of medicines for patients, the government has been gradually expanding the outpatient medicine benefit package since its introduction in 2005.

Informal payments are also very frequent in Kazakhstan, even when measured on a global scale. The 2013 Global Corruption Barometer of Transparency International presents the results of surveys carried out in 107 countries. Globally, 17% of the people who sought care in the past 12 months declared having paid a bribe, vs only 7% in OECD countries (Figure 1.36). In Kazakhstan, the proportion was 28%. While this is the same rate as in the Slovak Republic, it is important to note that these two countries are among the top third in the world in terms of bribes paid to access health services.

Figure 1.36. Percentage of patients who paid a bribe for health care in the preceding 12 months in Kazakhstan, OECD countries and globally



Source: Global Corruption Barometer, Transparency International (2013).

Out-of-pocket payments typically have a significantly impoverishing effect. No recent analysis of the impact of out-of-pocket payments on poverty has been carried out in Kazakhstan. However, in 2002-03, for more than half of the population health expenditure represented more than 10% of non-food consumption, which may be considered a catastrophic level of health expenditure (Bredenkamp et al., 2012). Around a third of those in poverty fell below the poverty line because of OOP health care costs. At the time OOP costs represented 45% of total expenditure compared with 38% today, so while some progress seems to have taken place, its impact should be examined further.

Results from a household survey in 2010 showed that 40% of respondents did not access health care services when they experienced a problem serious enough to require medical attention in the preceding four weeks. Many of these people turned to self-treatment, possibly because many drugs are available without prescription (Katsaga et al., 2013). Similarly, in a comprehensive patient survey conducted in two regions of Kazakhstan between the end of 2008 and the beginning of 2009, many patients (10% of all interviewed patients in Almaty and 19% in Zhambyl) reported that private payments for medicines had led them to cancel or delay a visit to their doctor in the preceding year (WHO, 2011). Qualitative research conducted in Almaty has also shown that high OOP payments in Kazakhstan can reduce access and utilisation of maternity health care services (Danilovich and Yessaliyeva, 2014).

In addition, there is evidence that people from low-income groups in Kazakhstan use health care services less often, and rely more often on self-medication. In a survey conducted by the WHO in 2000-11, Suhrcke *et al.* (2008) found that 28.4% of the people interviewed did not visit a doctor when sick specifically because of lack of money, and that this occurred six times more frequently among the poorest than among the richest quintile of the people interviewed.

Quality of care

Partly driven by data availability, the assessment of the quality of the health care system in Kazakhstan is approximated by examining the system's capacity in managing certain chronic diseases. A discussion of patient satisfaction then follows, providing insight into another dimension of quality.

Availability and timeliness of cancer treatment will need to improve

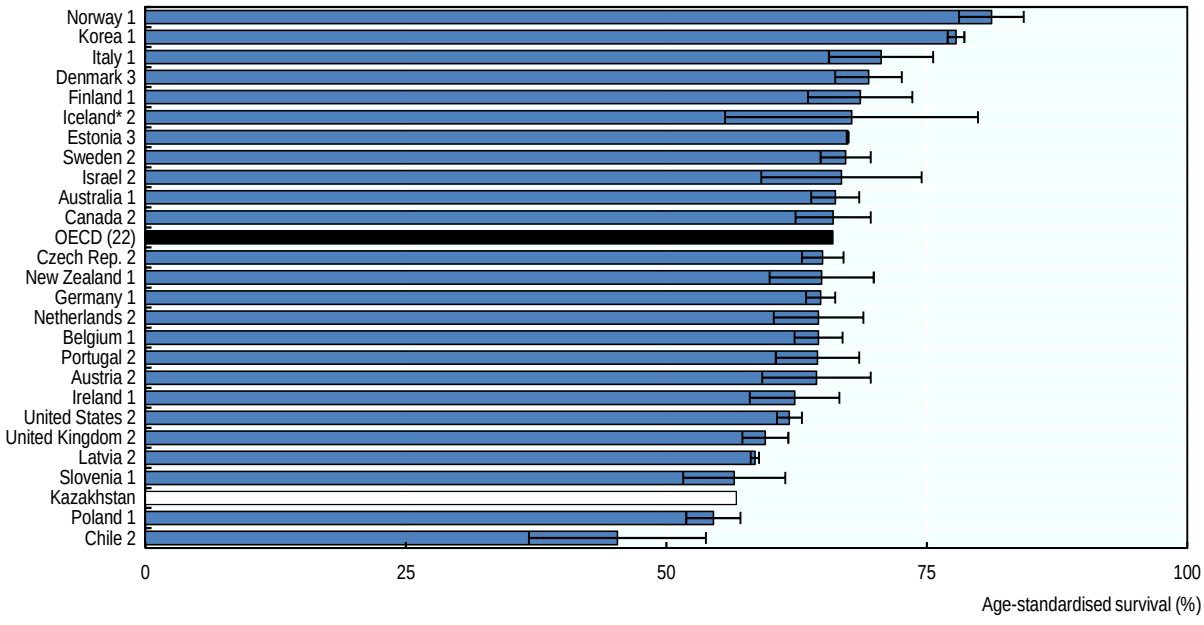
Cancer is a major health challenge and among the leading causes of death in the OECD countries, and its burden is increasing in Kazakhstan. The characteristics of good clinical cancer care are well established, and if evidence-based clinical guidelines are followed, an estimated one-third of cases could be cured with timely detection and appropriate treatment (OECD, 2015). As such, the outcomes of cancer treatment can serve as a measure of health systems quality.

For example, cervical cancer is highly preventable if precancerous changes are detected and treated before progression occurs. Internationally, policies vary with regard to the prevention and early diagnosis of cervical cancer. In 2013 the cervical cancer screening rate in women 20-69 years of age was 61.6% across the OECD countries, ranging from 20.7% in Mexico to 84.5% in the United States. Following international standards Kazakhstan also introduced a screening programme for cervical cancer for women aged 30 to 60 years (one Pap smear every five years). The screening rate today is just above 50% of the target population and likely to be lower in the 20-69 age range, suggesting substantial room for improvement.

The cervical cancer relative five-year survival rate is at the low end of the OECD distribution (Figure 1.37). Cancer survival is one of the key measures of the effectiveness of cancer care systems, taking into account both the early detection of disease and the effectiveness of treatment. In Norway, the survival rate exceeds 81% and the average across OECD countries was close to 66% of detected cancer cases in 2013 (latest available data). Kazakhstan, with a five-year relative survival rate below 57%, outperforms only Poland and Chile.

Breast cancer is the most prevalent cancer in women across the OECD countries and also in Kazakhstan. In Kazakhstan, breast cancer screening is offered to women between 60 and 70, and the screening rate is close to 70%. In OECD countries, breast screening rates are reported for women aged 50-69, and the average is 60%. Although the numbers are not directly comparable, this suggests Kazakhstan's programme is relatively effective. Nevertheless, access to effective and timely treatment does not appear to be systematically available in Kazakhstan. Indeed, Kazakhstan's five-year relative survival rate in breast cancer was only 53% in 2015. By comparison, all OECD countries had attained five-year relative breast cancer survival rates of at least 80% in 2013 (except Estonia, where it was 74%) (Figure 1.38) (latest available data) (OECD, 2015).

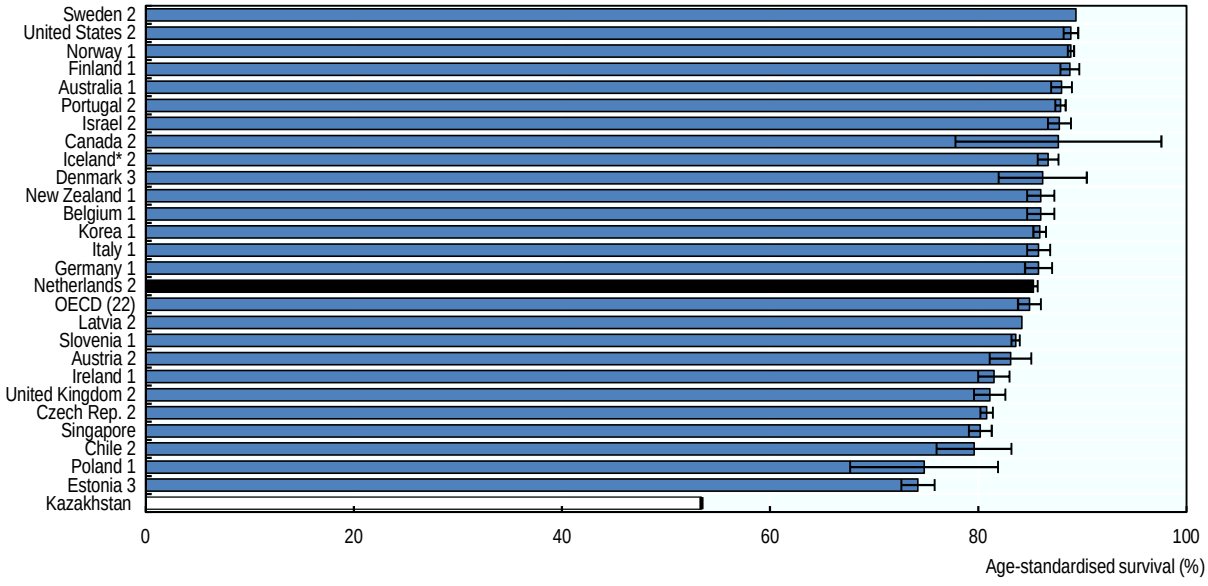
Figure 1.37. Cervical cancer five-year relative survival, Kazakhstan and OECD countries, 2010-15 (or nearest period)



Note: 1. Period analysis, 2. Cohort analysis. 3 Different analysis methods used for different years. * Three-period average.

Source: OECD Health Statistics 2015, http://dx.doi.org/10.1787/health-data-en; MOH, 2016.

Figure 1.38. Breast cancer five-year relative survival, Kazakhstan and OECD countries, 2010-15 (or nearest period)

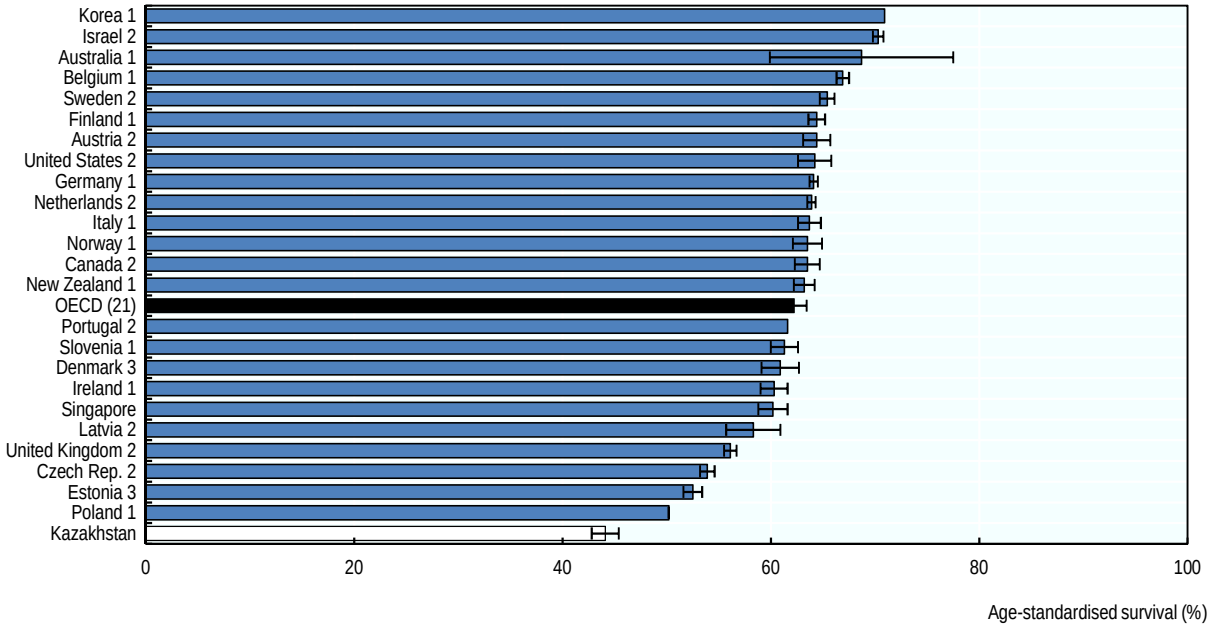


Note: 1. Period analysis, 2. Cohort analysis. 3. Different analysis methods used for different years. * Three-period average

Source: OECD Health Statistics *2015*, http://dx.doi.org/10.1787/health-data-en; MOH, 2016.

Across OECD countries colorectal cancer is the third most commonly diagnosed form of cancer after prostate and lung cancer in men, and the second most common cancer after breast cancer in women (OECD, 2015). Colorectal screening rates are especially difficult to compare across countries, but Kazakhstan does have a screening programme in place in which around half the targeted population participates. As in the case of breast cancer, the survival rate of 44% puts Kazakhstan behind even the most poorly performing OECD countries, and well below the OECD average of 62% (Figure 1.39).

Figure 1.39. Colorectal cancer five-year relative survival, Kazakhstan and OECD countries, 2010-15, or nearest period



Note: 1. Period analysis, 2. Cohort analysis. 3 Different analysis methods used for different years. * Three-period average.

Source: OECD Health Statistics 2015, http://dx.doi.org/10.1787/health-data-en; MOH, 2016.

Kazakhstan has made significant efforts to increase cancer screening rates, and has achieved creditable results. Screening rates nevertheless need to improve further, as do access to and quality of treatment. In the OECD advances in treatment – including improved surgical techniques, radiation therapy and combined chemotherapy, as well as their wider and timelier availability – have contributed significantly to increased survival gains over the last two decades.

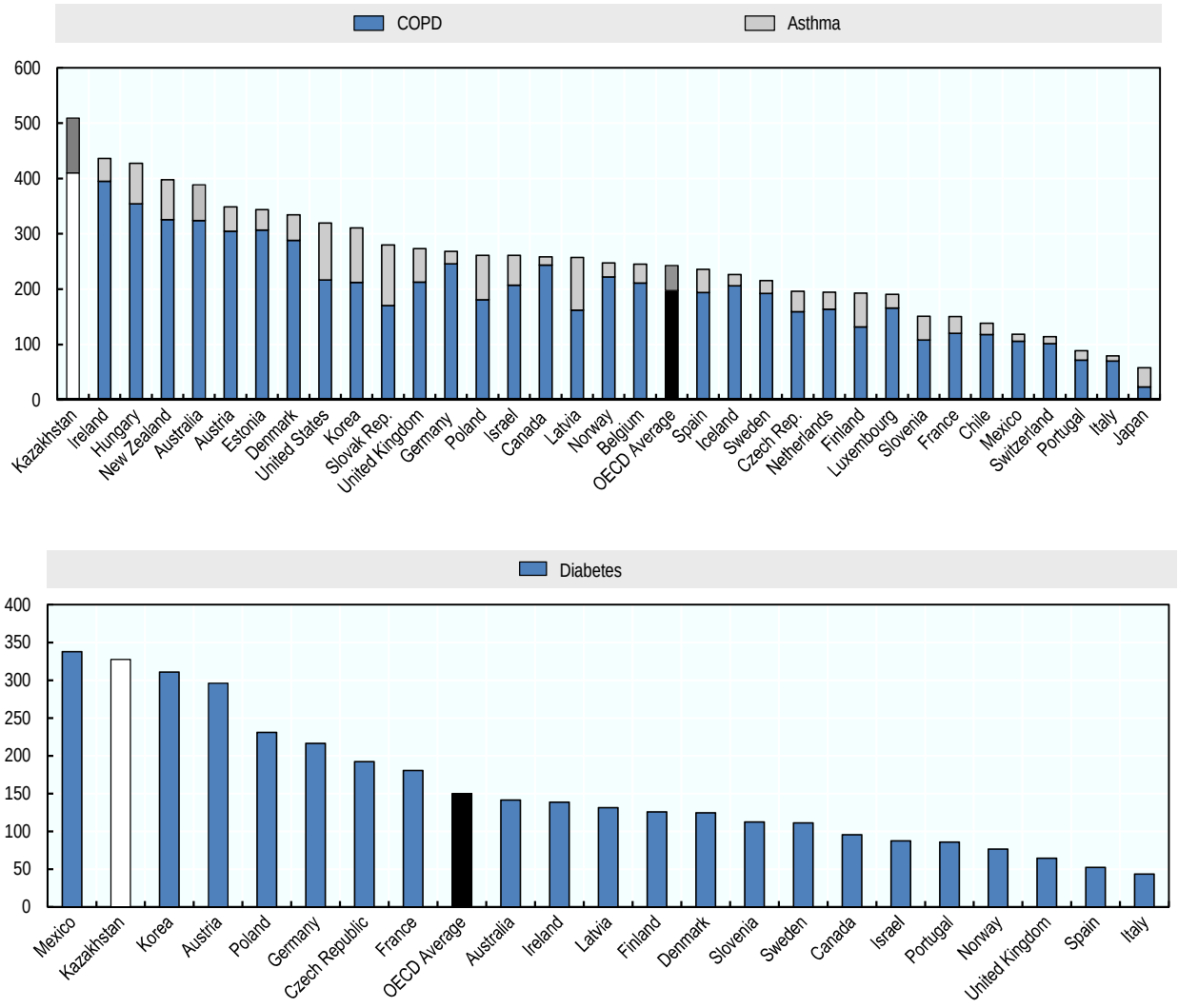
The number of avoidable hospital admissions for chronic conditions is high

The number of hospitalisations for Ambulatory Care Sensitive Conditions (ACSCs) is a powerful indicator of the quality of PHC. It is of particular importance to Kazakhstan given the stated emphasis on primary care. ACSCs are conditions for which effective and accessible primary care can generally prevent the need for hospitalisation, or for which early intervention can reduce the risk of complications or prevent more severe disease (Agency for Healthcare Research and Quality, 2001). Diabetes, chronic obstructive pulmonary disease (COPD) and asthma[11], angina, hypertension and congestive heart failure (CHF), bacterial pneumonia, dehydration, paediatric gastroenteritis and low birth weight are all ACSCs for which there is an established evidence base supporting treatment via outpatient care at the primary or community care level. Treated early and appropriately, acute deterioration in patients with these conditions and consequent hospital admissions can be avoided.

Hospitalisation rates for ACSCs place Kazakhstan among the poor performers in the OECD. In 2015, more than 500 adults per 100 000 population were hospitalised in Kazakhstan due to asthma or COPD. This contrasts with approximately 58 people in Japan, 89 in Portugal and 150 in France. A similar picture is seen with respect to hospital

admissions due to diabetes. In 2015, around 41 751 people over 15 were hospitalised in Kazakhstan due to this chronic disease, or 327 per 100 000 population, well above the OECD average (Figure 1.40).

Figure 1.40. Asthma, COPD and diabetes hospital admission per 100 000 population, Kazakhstan and OECD countries, 2013 (or nearest year)



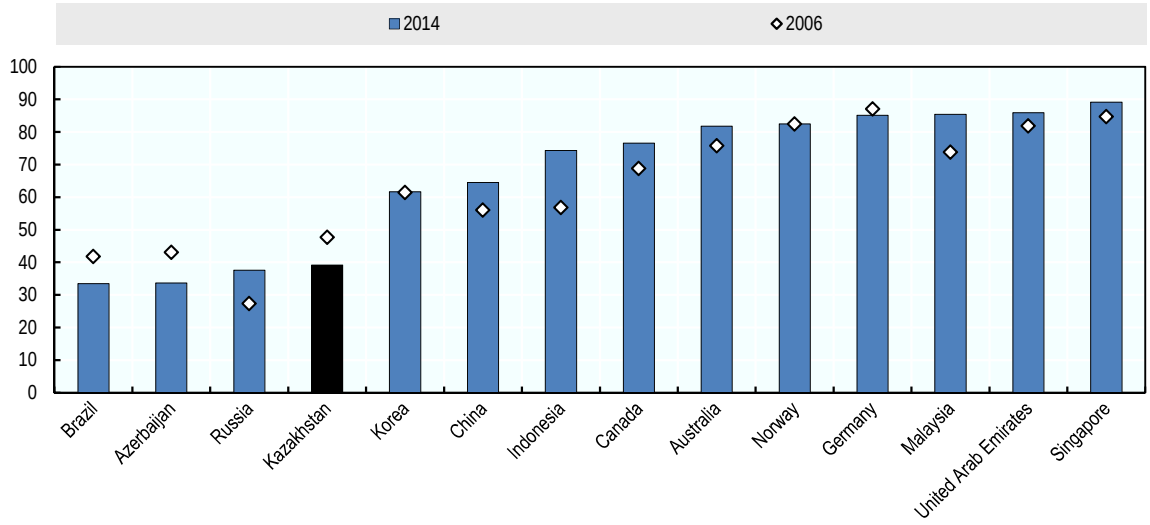
Source: *OECD Health Statistics 2016*, http://dx.doi.org/10.1787/health-data-en; Ministry of Health, Kazakhstan 2016.

Patient satisfaction in Kazakhstan is better than in some other post-soviet countries but is declining

Less than half the population is satisfied with the health system and the proportion has been declining over time. While differences in levels of satisfaction can reflect differences in expectations across countries, they nevertheless provide some insight into the quality of health care systems. Patient satisfaction surveys in Kazakhstan tend to show that the population is generally more satisfied with the health care system than in several other post-Soviet states. A study by Footman *et al*. (2013) found that around 51% of the

Kazakhstani population was satisfied with the health care system. While this compared unfavourably with Azerbaijan (56% of people are satisfied), Armenia (54%), and Belarus (52%), it rated well ahead of Moldova (32%), Russia (24%), and Ukraine (17%). Figure 1.41 shows a satisfaction level of less than 40% in 2016, 8 percentage points less than in 2006, but still higher than in Russia.

Figure 1.41. Share of population satisfied with health care system, 2006 and 2016



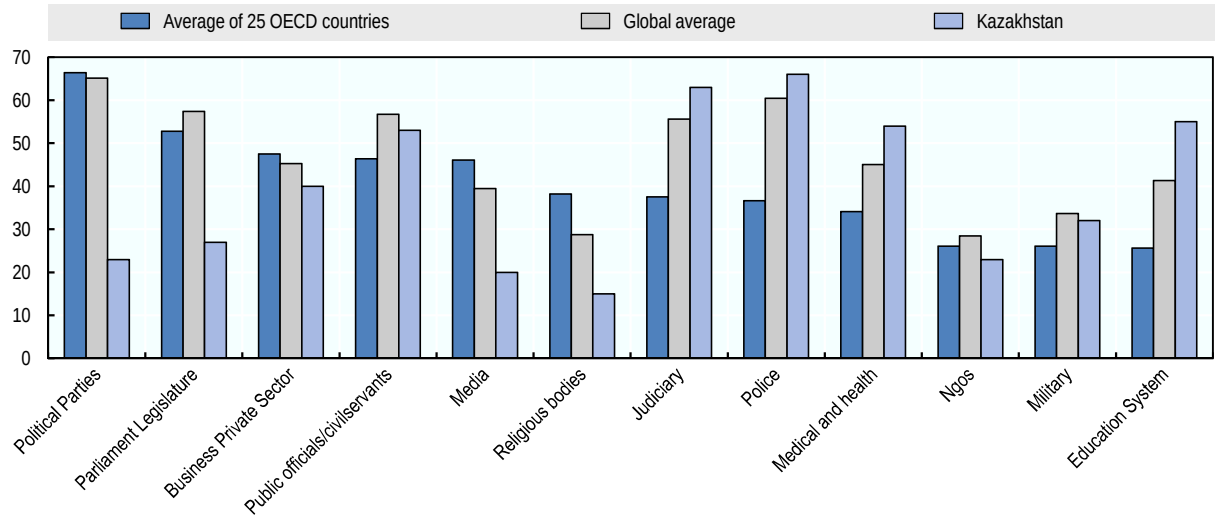
Note: the proportion of respondents who replied "satisfied" to the question: "In the city or area where you live, are you satisfied or dissatisfied with the availability of quality health care?". Data are from 2014, with the exception of People's Republic of China and United Arab Emirates (2013), and from 2006, with the exception of Australia, Brazil, Canada, China and Germany (2007).

Source: Gallup (2014), Gallup World Poll (database).

Another study, using a questionnaire containing five quality dimensions (5Qs)[12], found that patients in Kazakhstan are particularly dissatisfied with basic resources needed to provide health care services (such as a consulting room's appearance or hospital cleanliness), staff attitudes towards inpatients (such as the politeness, or lack of it among medical staff) and information, financial or social exchanges (such as waiting times for refunds or the time staff spend understanding patient needs) (Zineldin, et al., 2011).

In Kazakhstan the population also believes that the health sector is particularly prone to corruption. TI's Global Corruption Barometer asks respondents which, among 12 sectors or institutions, they consider are corrupt or extremely corrupt. A comparison of OECD and global averages suggests that corruption is seen as less prevalent in OECD countries, especially in institutions that are typically publicly financed or delivered, such as the police, judiciary, education and health care. The health sector in OECD countries is ranked in the bottom third of corrupt institutions. In Kazakhstan, health is ranked the fourth most corrupt sector, and 54% of respondents consider the sector to be corrupt or extremely corrupt, higher than the 45% global average (Figure 1.42).

Figure 1.42. Percentage of population that considers various sectors corrupt or extremely corrupt in Kazakhstan, globally and the OECD 2013



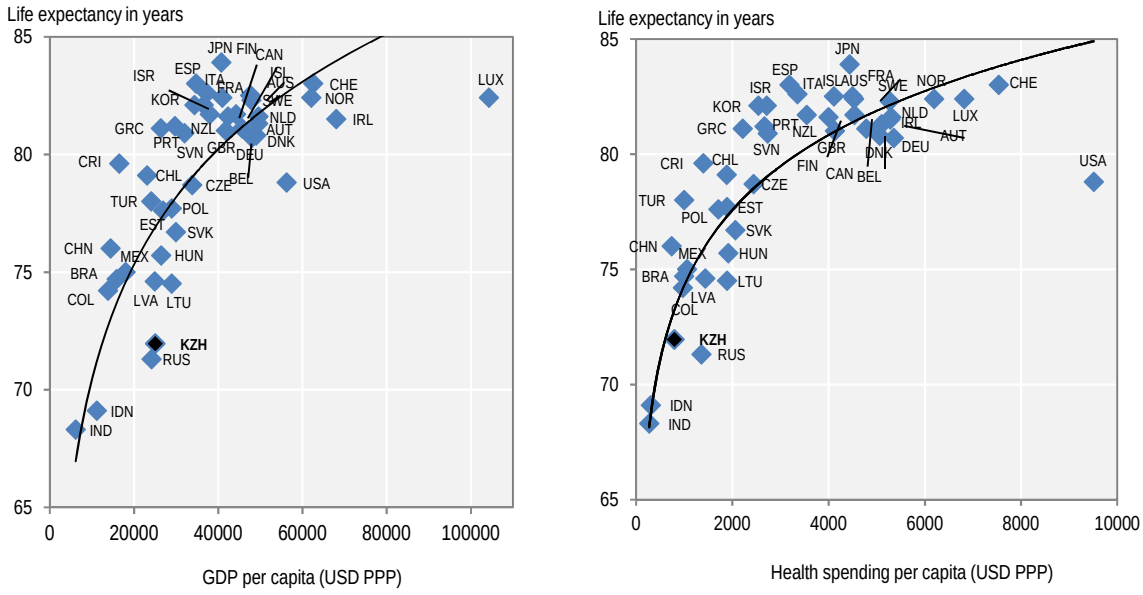
Source: Transparency International Global Corruption Barometer (2013).

Overall, the economic progress has not been accompanied by corresponding improvements in life expectancy at birth

Despite rapid economic growth, increases in both total and public expenditure on health, and progress in public provision of health care (with a set of guaranteed benefits provided free of charge), many key health indicators remain poor. In general, there is an observed association between national income (as measured by GDP per capita) and health outcomes (as measured by life expectancy at birth), although the relationship is less prominent at higher levels of national income. Similarly, there is a noticeable association between life expectancy at birth and health expenditure per capita (excluding capital investment) (OECD, 2015). While variations in life expectancy across countries can clearly be explained by a number of factors beyond GDP per capita and health expenditure per capita, these associations have been widely accepted as relevant starting points for the discussion of individual health system performance (OECD, 2015).

Compared with other countries of similar GDP per capita, average life expectancy at birth continues to lag behind in Kazakhstan. As mentioned above, at 71.9 years in 2015 average life expectancy at birth is around eight years below the OECD average (see Figure 1.6) (Committee of Statistics of the Republic of Kazakhstan, 2015; WHO, 2016). In the Baltic States and the Central European countries – which have approximately the same level of GDP per capita as Kazakhstan – life expectancy is significantly higher. There are also countries with lower levels of GDP per capita and much higher life expectancy at birth than Kazakhstan (Figure 1.43 – left panel). Given Kazakhstan's favorable economic conditions, a legitimate question is whether its low level of spending on health explains the poor outcomes. This is probably in part the case. Life expectancy in Kazakhstan in fact appears in range with its current spending on health (Figure 1.43 – right panel). The real challenge moving forward however is to ensure that additional investments are sustainable and geared towards the most effective interventions in tackling the burden of disease.

Figure 1.43. Life expectancy at birth and GDP per capita (left) and life expectancy at birth and health spending per capita (right), 2015 (or latest year)



Source: OECD Health Statistics 2017, http://dx.doi.org/10.1787/health-data-en; WHO Global Health Expenditure Database (2016); World Bank national accounts data (2016) (2016); Ministry of National Economy of the Republic of Kazakhstan, Ministry of Health, Kazakhstan (2015).

1.5. Summary assessment and strategic directions

Summary of findings

Economic progress has been accompanied by efforts to reform the health system

Since the early 2000s, economic progress in the Republic of Kazakhstan has been exemplary and the country's current GDP per capita is now on par with the Central European members of the OECD. As material conditions improved, other aspects of well being, such as health, have become a priority on the policy agenda. Consequently Kazakhstan has launched a number of ambitious health care reforms attempting to improve the accessibility, equity, and efficiency of health services, especially by:

- adopting a State-Guaranteed Basic Benefits Package (SGBP) of services provided free of charge to the entire population. The SGBP was introduced with the objective of equalising access across the country and as a means of providing a basis for ensuring the financial sustainability of the system;
- rebalancing service delivery by developing primary health care and restructuring the hospital sector to reduce the traditional reliance on inpatient care, but also emphasising the co-ordination of care between different levels of providers;
- stimulating competition on quality of service, in particular by moving away from global budgeting towards payment methods that better reward activity and quality; increasing the autonomy of public health care providers; and enabling patients to choose their provider.

These reforms have been accompanied by additional investment in health. In real terms Kazakhstan's total health spending has increased significantly since the mid-1990s but nevertheless remains relatively low as a share of the country's GDP. It is also very modest when compared with OECD countries with a similar level of economic development. In addition, little more than half the total health expenditure is financed publicly, and out-of-pocket payments are very high by OECD standards.

The performance of the health system has improved but gaps with the OECD remain

This overview chapter presents available data on the main dimensions of health system performance of the results are summarised below.

- In the last decade average life expectancy at birth has increased rapidly, but there remains significant room for improvement. Despite progress, Kazakhstan's average life expectancy at birth is far below the OECD average. In particular, it continues to lag behind OECD countries with similar levels of GDP per capita. In Kazakhstan life expectancy is also marked by one of the largest gender gaps – nearly double that of the average gender gap in life expectancy in OECD countries.
- Progress on other key health indicators reflects a mixed picture, with striking improvements in some areas together with far less successful examples. Over the last two decades, infant and maternal mortality have decreased four and six times respectively, allowing Kazakhstan to meet the related MDGs and move closer to the OECD averages. Kazakhstan also has low mortality from infectious and parasitic diseases, but tuberculosis presents a worrying exception. However the majority of deaths are due to chronic conditions and death rates significantly exceed those in OECD countries of the region.
- Indeed, among conditions directly amenable to health interventions, cardiovascular and respiratory diseases explain most of the excess mortality in Kazakhstan. Above all, the death rates from cerebrovascular disease (stroke) and chronic lower respiratory diseases such as *COPD,* stand out. Cancer survival rates are also low, and cancer is the third leading cause of death. Kazakhstan also has relatively high mortality from diseases of the digestive system, in particular alcohol-related liver disease.
- While the country has documented notable progress in reducing excess mortality, the statistics on individual diseases should be interpreted with caution. National averages mask striking regional inequalities, with a number of regions experiencing deterioration rather than progress on key health indicators such as maternal mortality. Furthermore, closer examination of the data suggests that the classification of cause of death has evolved considerably in the last decade.
- Data on the prevalence of behavioural risk factors at population level suggest that these are on par with average OECD levels, but the statistics mask marked gender differences. Data disaggregated by gender and other socio-demographic factors are not always recent or available, men in Kazakhstan smoke frequently and consume alcohol excessively, while women tend to suffer from obesity.
- On average, the system provides reasonable access to health care but geographical inequalities remain substantial. Per capita utilisation of outpatient and hospital

services is similar to the OECD average. However large regional and rural vs urban variations exist in the number of contacts with the health care system. The most severe disparities occur in remote areas, where access is undermined by poor transportation services and lengthy travel times to health care facilities.

- Finally, where data are available, they show that the effectiveness and quality of service delivery remain well below most OECD countries. For example, rates of hospitalisation for ambulatory care sensitive conditions such as asthma and diabetes are exceedingly high, and cancer survival rates lag behind.

In sum, despite the progress achieved to date, the performance of the health system lags behind that of OECD countries. In fact, as noted at the end of the previous section, many countries with similar income level outperform Kazakhstan on health outcomes.

Kazakhstan's experience of slow progress is not atypical in Eastern Europe and Central Asia

Kazakhstan's experience is to a large extent similar to that of many countries in the Eastern Europe and Central Asia region. Despite seeing a convergence in income level with Western Europe and the OECD, countries in the region have seen the gap in health outcomes widen during the last quarter of a century (Smith and Nguyen, 2013). While the life expectancy gap between the EU-15 and Kazakhstan was approximately two years in 1990, it stands now at around five years.

The reasons for gap between the EU-15 and countries in the more central part of the region are deep-rooted and multifactorial (Smith and Nguyen, 2013). The longevity gap is to a large extent a result of a combination of the burden of cardiovascular disease and excess deaths by external causes, both of which are often inadequately addressed – from poor control of risk factors to the failure to deliver appropriate treatment. Over-reliance on out-of-pocket financing often translates into inadequate access, particularly for the most vulnerable, while public funding remains distorted in favour of hospital-based services. Finally, better performing countries tend to organise their health systems in ways which link payments of providers to their activities and allow them greater autonomy, rely more extensively on information and evidence for decision-making, pool resources across the population, and have committed, credible leadership.

Fast-paced reforms go in the right direction but little is known about whether and how well they translate into effective change and deliver the results that matter on the ground.

Kazakhstan has made progress on many of these fronts, in particular, the transformation and modernisation of health services delivery. The two key chapters of this review look into PHC and hospitals respectively. Their conclusions will not be reiterated here but putting them in the broader health system's perspective highlights that:

- Despite progress, the structure of service delivery remains hospital-centric and not ready to deliver high quality services everywhere. The number of hospital beds has decreased but the rationalisation of the hospital sector has not been systematic. Despite rapid growth in the number of PHC professionals, the health workforce remains too small to ensure equal access to PHC for all. Public health, long-term care and rehabilitation are underdeveloped. At all levels of the system, and especially outside the large cities, the ability to deliver services is impeded by poor infrastructure and inadequate equipment.

- The autonomy of many public providers has increased and payment mechanisms are more sensitive to activity and quality, but much remains to be done to reflect the contracting and payment practices of the OECD countries.
- Initiatives are in place to support improvements in quality of care but efforts must be intensified. Indeed, the management of chronic diseases at primary care level, despite being incentivised and subject to guidelines and treatment protocols, is not resulting in fewer hospital admissions. Procedures associated with the treatment of cardiovascular and other non-communicable diseases are seldom performed. The system's capacity to address the current burden of disease thus requires further strengthening.

The extent to which changes and reforms are embedded in the system remains an open question. Considerable efforts have gone into introducing reforms decisively and often rapidly. As a consequence today many institutional features emulate those of best performing systems. This is certainly a remarkable achievement, but the outcomes are not necessarily improving in response. This could be partly a matter of time, but as is often the case, it is also likely that considerably less attention has been paid to the actual implementation of these system-wide transformations. A starting point is to ensure that resources, both financial and human, are available to effectively implement change – a constraint in any environment, including Kazakhstan, where resources dedicated to health remain sparse. But change management also requires, among other things, ensuring the quality and the coherence of policies at national and local levels, creating the conditions for change, identifying leaders at all levels of the system who are engaged and committed to change, and developing a new organisational culture (WHO 2016). In Kazakhstan, systems are clearly in place to monitor the "reach" of the various reforms, the number of people trained, the number of facilities in a new scheme etc. However very little information is available about reform implementation processes, challenges, and progress towards delivering the intended results.

This speaks to a fundamental challenge on which this review is attempting to shed light: the need to improve data collection and utilisation at all levels of the system. The OECD data request was comprehensive and targeted to collect the core indicators used to assess system performance in most OECD countries. Despite the effort put into responding, the data proved incomplete. The analysis also revealed a number of inconsistencies, raising questions about data quality, completeness and validity. Diagnosing the root causes of the health system's performance gaps not only requires measuring the key high-level results and intermediate outcomes, but also understanding if processes are delivered and inputs are in place at all levels. In sum, the country's current monitoring framework needs further development to track the progress and outcomes of policy implementation (Obermann, 2016). The modernisation of the information system started a decade ago but the process has been erratic. In general, the system does not reflect modern standards and lags behind OECD countries in the degree to which available data are used to systematically measure, compare, and improve the performance of health services. There is also limited information sharing among providers at different levels, representing a critical barrier to deeper integration and coordination of care. Finally, independent monitoring of reforms is underdeveloped (Birtanov, 2016).

Strategic directions for the health system in Kazakhstan

For the Republic of Kazakhstan to achieve the health outcomes that could be expected given its level of economic development, reform efforts need to be pursued further, deepened, and better coordinated. Kazakhstan has been rapidly modernising its health

system but continues to face serious challenges in tackling the current burden of disease. Some of the main constraints to further improvements are the result of the country's history, including the post-Soviet legacy of under-investment in primary health care and relative focus on the treatment of communicable diseases. Yet, others are more contemporary, including the fragmentation of accountability and insufficient attention paid to developing services and programmes that tackle the burden of disease effectively.

To conclude this high-level assessment of Kazakhstan's health system, the final section reflects on overall strategic directions and priorities. The review's focus, as determined by the Ministry of Health, was service delivery. The analysis in this report underscores the importance of maintaining and even increasing efforts towards improving the capacity of the system to tackle the burden of disease, including strengthening service delivery, but also points to the need to increase effort in the public health agenda. Health financing reforms, briefly discussed at the end of this section, should be designed to serve the same objectives and to contribute to improving the financial protection of those in need.

Step-up efforts to tackle the burden of chronic diseases

As reforms continue, their overarching objective should be tackling the burden of disease amenable to health interventions, in order to narrow the gaps with the OECD countries in health outcomes. In view of the data on health status of the Kazakhstani population, priority should be given to treatment, management, and targeted prevention of chronic diseases. To improve the state of the population's health more effectively, efforts should be focused on analysing population subgroups and adopting refined segmentation based on specific health needs. Such analyses would facilitate identification and implementation of high-impact interventions. For example, in the OECD countries improvements in life expectancy can be attributed to the decline in mortality from cardiovascular disease (CVD) – the so-called "cardiovascular revolution" – that has occurred over the past three decades. These improvements can be explained by targeted, large-scale interventions to treat, manage, and prevent CVD (see Box 1.3).

Box 1.3. Explaining the fall in CVD mortality in OECD countries

Targeted expansion of the health care system's capacity to prevent, treat and manage cardiovascular disease (CVD) has been instrumental in reducing mortality rates and increasing life expectancy in OECD countries. The introduction and diffusion of new technologies such as lipid lowering and anti-hypertensive medications, coronary angioplasty and thrombolysis over recent decades have had a marked effect on the quality of care. In addition, prevention activities such as tobacco control programmes have also had a real impact on CVDs.

A number of studies have estimated the relative contributions of treatments and risk factor management in improving coronary heart disease (CHD) mortality, a major contributor of overall CVD mortality. Several countries have used the so-called IMPACT model to explain the changes in observed in their populations. This model, developed by academics at the University of Liverpool, uses longitudinal data on major population risk factors (high systolic blood pressure, elevated total serum cholesterol, diabetes, obesity, smoking, and physical inactivity), and from medical and surgical treatments, to quantify the contribution that treatment and risk factor reduction has made to the decline in CHD mortality.

The IMPACT model has consistently shown that changes in treatments and risk factors have both made major contributions to the decline in CVD-related deaths, although the relative importance of the two contributing factors varies between countries. Across the studies, treatment accounts for 41% of the overall improvements in CHD mortality, whereas reductions in risk factors, both due to pharmacological and counselling interventions, have contributed 49%.

Source: OECD (2015), Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care, OECD Health Policy Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264233010-en.

Continue and deepen the reach of service delivery reforms

In order to address the burden of disease more efficiently, efforts to rebalance and modernise the structure of health services delivery must continue. In general, there is a need for a renewed and clearer vision of the future health system architecture. Any further structural reorganisation would benefit from an analysis of the existing categories of health care facilities, with the aim of both clarifying and reducing the number of the categories, and redefining the scope of services provided within each category to better reflect the population's health needs. Building on existing plans, the networks of facilities at all levels should be reorganised in a manner compatible and supportive of the new service delivery models, and aligned with population trends and access patterns. The changes in the structure of health services delivery should also account for the particular challenges posed by the country's geography and low population density.

While the structural reforms have consistently supported rebalancing of health services delivery in favour of primary health care (PHC), further promotion of its role is still required. As the bed capacity in the hospital sector becomes more adjusted to the demand, it is also important to ensure that the use of hospital services is limited to specialised care of a complexity and intensity that cannot be delivered in any other care setting. In particular, the experience of OECD countries offers widespread evidence that many chronic conditions can be both effectively and cost-effectively managed or prevented at the PHC level. Thus further rationalisation of hospital services and development of PHC can offer real opportunities for delivering better value-for-money to the system. Chapters 3 and 4 of the report provide more detailed recommendations on strengthening PHC and the reorganisation of hospital services in Kazakhstan.

Ensure the system delivers quality at all levels

Further restructuring and development of health care services will need to be accompanied by additional efforts towards quality improvement. Besides the existing quality initiatives such as the use of clinical guidelines, accreditation processes, and care pathways, new quality improvement measures should enable frequent monitoring of health outcomes, for example, by creating incentives for reporting. Initially these initiatives could focus on a limited, standardised set of outcomes based on existing data. Once reliable data systems are in place, pay-for-performance arrangements could be based on improvements in these health outcomes, rather than on process measures or the occurrence or avoidance of rare events. Quality improvement initiatives should also prioritise further modernisation of health information systems, in particular the completion of the electronic health record, in order to integrate health care data and promote continuity of care for patients.

Reporting on and rewarding quality of care rather than taking punitive action would also help to increase health care professionals' engagement and thereby inculcate a culture of quality assurance. For instance, evidence from OECD health systems suggests that public reporting of provider-level data on frequent health outcomes increases awareness of differences between providers, stimulates discussions on how to improve data reliability, and increases focus on improving outcomes. Health care professionals' engagement will be greatest in an open, constructive environment. This will facilitate development of refined pay-for-performance programmes and ensure their acceptance by providers.

Developing better quality measures would also support more strategic contracting, which is of particular importance in view of plans to contract independent providers more

often. By focusing not only on the cost but also on clear cost/quality criteria, with expected outcomes specified in contracts, selective contracting with better-performing providers would increase provider accountability and drive quality improvement across the sector. In addition, public reporting of provider assessments should be developed further, as this promotes informed choice by users.

Increase the attention paid to reducing inequalities

Additionally, progress should continue towards addressing inequalities between regions in access to health care, as well as between cities and rural areas. As PHC is the cornerstone of equitable delivery of health care, the rapid development of human resources for PHC must remain a priority. Moreover, expanding the functional responsibilities of nurses should be progressed if access is to improve. As previously above, the challenges posed by the country's geography and low population density must be accommodated more effectively in health care delivery planning.

A particularly interesting example of adapting existing health care facilities to better meet local needs in a remote area, while maintaining focus on maximising the efficient use of resources, can be found in Norway (Box 1.4).

Box 1.4. Transforming local services to meet population needs in a remote area through an integrated care model – Fosen, Norway

The peninsula of Fosen in central Norway consists of seven municipalities, with a population of about 25 000. For Fosen residents it can take between one and three hours by boat or car to reach a hospital. Fosen's district medical centre (DMC) is an example of a sophisticated and integrated care model that maximises the utility of existing resources, while adapting them to meet local population needs and addressing challenges posed by the geography. Fosen DMC provides health promotion, primary health care (including on-call), and outpatient specialist services, as well as an intermediate-care (observation) ward and rehabilitation unit.

Key to the success of this model has been close co-operation with a large hospital on the Norwegian mainland. The co-operation relies on data sharing; consistent standards and protocols used in the DMC and the hospital; videoconferencing; a hospital-led remote education programme for staff in Fosen; and shared staffing. With remote support from the hospital, Fosen DMC is providing a comprehensive package of care closer to where residents live, minimising travel time, promoting patient-centred care, and avoiding costly hospital admissions. For example, more than three-quarters of patients admitted to the intermediate-care (observation) ward were patients who otherwise would normally be admitted to a hospital. Additionally, 63% of all patients admitted to an observation bed were discharged after a maximum of 36 hours. Very few of the discharged patients were subsequently readmitted. This reflects the DMC contribution to preventing hospitalisations, equivalent to 230 bed days per year. The DMC has also enhanced rehabilitation services. The way in which the DMC operates has also contributed also to increased staff and patient satisfaction.

The establishment of the Fosen DMC did not require the building of new facilities, but instead emphasised innovative use of existing infrastructure. An under-occupied nursing home was converted for use as part of the DMC facilities, for example. An analysis of the region's demographics also prompted replacement of one of the region's maternity units with intermediate beds for acute admissions, post-discharge recuperation, and rehabilitation, to better reflect the needs of the increasingly elderly local population.

Source: OECD Health Systems Reviews: Latvia (2016), DOI: http://dx.doi.org/10.1787/9789264262782-en.

Strengthen public health

Lastly, the role of public health, while well recognised, should be reflected in the development and implementation of a more comprehensive, evidence-based public health strategy. Addressing unhealthy behaviours such as harmful drinking and smoking, particularly among men, is necessary to close the gap in health outcomes with the OECD countries. As discussed earlier, individually tailored interventions such as smoking-cessation counselling can be delivered within PHC. Additional systemic public health initiatives are required to curb or prevent unhealthy behaviours. These include advertising bans on alcohol and tobacco products, laws supporting smoke-free environments, tax regulations supporting improved diets or food labelling. OECD policies offer many examples of comprehensive programmes to reduce behavioural risk factors. Box 1.5 discusses tobacco control policies and their effects in OECD countries.

Box 1.5. Stronger tobacco control policies are having an effect in OECD countries

The OECD countries have implemented a wide range of public health policies to improve lifestyles and reduce risky health behaviours such as smoking, alcohol consumption, unhealthy diets, and lack of physical activity. With regard to anti-tobacco policies, OECD countries employing the most stringent and comprehensive sets of anti-tobacco policies were found to be more successful in reducing smoking rates, with a 15% additional reduction in the percentage of smokers per year than in countries with less comprehensive tobacco policies. The classification of countries as having stronger or weaker tobacco policies was based on the number and comprehensiveness of implemented anti-tobacco measures as described by WHO Global Health Observatory. There are seven distinct anti-tobacco measures, assessed on the scale of one to seven, with one indicating no data or lack of policy. Countries with less comprehensive policies had scores of three or below.

1. Protection from tobacco smoke – determines the extent to which a smoke-free environment has been created, with all public places completely smoke-free gaining the highest score;

2. Health warnings – measures the extent to which tobacco products carry warnings about the dangers of smoking, with warnings covering more than 50% of a pack surface gaining the highest score;

3. Bans on advertising – measures the implementation status and describes the extent to which advertising of tobacco products is subject to regulations, with bans on all forms of direct and indirect advertising gaining the highest score;

4. Tax – describes the amount of tax levied on the most commonly sold tobacco products as a percentage of the final retail price, with highest score given when more than 75% of retail price is tax;

5. Mass media campaigns – assesses the intensiveness, effectiveness, and recency of campaigns, with the highest score indicating that outcome evaluation was implemented to assess the campaign impact;

6. National tobacco control programmes – determines whether a country has established a national agency for tobacco control as well as its functions and resources, with the highest score indicating existence of a national agency and at least five staff;

7. Monitoring – determines whether countries actively monitor smoking patterns in their populations, with the highest score indicating availability of recent, representative and periodic data for both adults and youth.

Source: OECD (2015), Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care, OECD Health Policy Studies, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264233010-en.

In order to close the gap, additional investment in health will be required to develop and implement a public health strategy addressing the factors described above.

Ensure the availability of SGBP services and consider expanding coverage to additional cost-effective benefits

To accelerate improvement in health outcomes and close the gap on the key health indicators, greater public funding is likely to be required. For instance, an adequate volume of cost-effective interventions for chronic diseases must be equally accessible for all who can benefit from them. Similarly, any re-definition of the scope of service for health care facilities must be accompanied by adequate investment to cover the necessary physical and human resources.

Explicit expansion of the SGBP might also be required to improve the coverage of services and pharmaceuticals related to the treatment of priority health problems. The inclusion of additional benefits can remove financial barriers to seeking necessary care and support the achievement of financial protection objectives (minimising exposure to catastrophic health expenditures). OECD countries rely on various strategies to define the range of goods and services to be financed collectively (Auraaen 2016). Many residence-based systems do not define explicitly the range of health care services covered. Rather, they refer to broad categories of benefits, for example, "primary care services". In these systems, the services actually available in different regions can differ as the capacity of local authorities or service providers to ensure their provision varies. Countries with social health insurance tend to rely more on explicit definitions of the range of benefits covered through an itemised list of good and services. The lists can refer to items covered (positive lists) or items excluded from a broad category of benefits (negative lists). In the absence of positive lists, countries often provide additional guidance for both health care providers and patients about coverage. These efforts aim to increase transparency and ensure that the range of benefits is known and interpreted consistently across the country, giving all patients equal access. The benefits and drawbacks of all strategies must be weighted in a given system's context and no one strategy is superior to any other.

Any explicit revision of SGBP should ensure coverage of only those interventions that are cost-effective. In this context, most OECD countries have explicit processes for coverage decision-making that typically involve a wide range of stakeholders, including experts (Auraaen, 2016). OECD countries increasingly use Health Technology Assessment (HTA), at least for decisions on the coverage of medicines. However HTA is increasingly being used for the evaluation of non-drug technologies and services also. The Ministry of Health should continue to build its capacity to undertake HTA and explore additional opportunities for international collaboration in this domain. In the OECD countries with best practices, the bodies involved in HTA are publicly funded in order to ensure their independence. Transparency of decisions is encouraged through one or more of the publication of evaluation and decision criteria, the rationale supporting each decision, the minutes of discussions, and the eventual coverage decisions.

The importance of expanding coverage and ensuring health care services are available must be combined with increasing efforts to provide appropriate levels of care. In all systems, underuse and overuse tend to co-exist and low value care or inappropriate use of medicines, tests, imaging, screening or even surgeries can be incentivised by payment systems or simply result from poor practices (OECD 2017). Tacking wasteful spending on clinical care is essential if the system is to remain sustainable.

The implementation of the social health insurance scheme should be geared towards improving the performance of the system.

Raising revenues allocated to health and expanding the SGBP are among the objectives of the ongoing re-introduction of social health insurance. While these recent changes in health financing are not covered in this review, the importance of learning lessons from previous attempts to introduce SHI must be stressed, and every precaution taken to avoid re-encountering past pitfalls. More broadly, the introduction of SHI should be seen as a means of strengthening the overall performance of the system, and the success of its implementation assessed accordingly.

In terms of features and organisation, universality of coverage and the pooling of funds at the level of the entire population are among the strengths of the current financing system that should be preserved. Linking coverage by SHI to the capacity to contribute in an environment of widespread informal employment can not only further incentivise informality, but also exacerbate inequalities as non-contributors are more likely to be less well-off. Exclusion from coverage risks, reducing access to services, and introducing a two-tier system, which would undermine the system's performance. Similarly, the introduction of SHI should not increase the fragmentation of financing. Ideally, SHI should be empowered to become the single-payer in the system. It should have the capacity to implement modern contracting techniques, leverage them to incentivise greater coordination and integration of providers, and foster greater overall accountability for quality and cost. Additionally, the impact of SHI on improving population access and financial protection should be assessed.

While Kazakhstan continues to progress towards universal health coverage, encouraging the development of a supplementary voluntary insurance (VHI) market is an option to consider. The majority of OECD countries have VHI markets. With few exceptions, VHI is not an alternative source of coverage but instead acts as a supplement to the publicly financed package. It can offer access to treatments outside the benefits basket, or to better amenities, such as individual rooms in hospitals. In some cases it primarily reimburses public system co-payments. The role of VHI remains small in the OECD; in 2016 VHI covered 6% of health spending on average in OECD countries. With the exception of a few countries with long histories in this regard and specific regulations to ensure broad access (for example, France), VHI is generally purchased by a small and well-off section of the population. The development of supplementary VHI could be considered in Kazakhstan as well, if the availability of extra services was felt to be important to health care consumers, and with basic consumer protection and prudential regulation. If the role of private insurance were to expand, additional market regulation would be required to ensure equity of access and limit risk-selection.

Above all, expanded funding and any additional reforms must be accompanied by strengthening the mechanisms supporting the accountability for health system results. The capacity of all the health system actors – health professionals, local and national providers, local and national units of authority – to deliver optimal results depends critically on whether they can be held accountable for the outcomes of their actions. The Ministry of Health should thus undertake additional efforts to scale up the system's capacity to evaluate the impacts of policies at all levels of implementation, and attempt to identify the reasons for their success or lack thereof.

Notes

1. However, real wages growth often outpaced productivity growth, pointing to a weak link between productivity and real wage growth. This has potential implications for the firm's profitability and may affect unemployment and job creation (Klein, 2012).
2. The preliminary estimate for 2016 is 72.4.
3. Crude death rates (CDR) are calculated as a ratio between the number of registered deaths and mid-year population (per 100 000). SDRs take into account the differences in age structure of the populations of various countries. The WHO Regional Office for Europe calculates the SDRs using the direct method and standard European population structure based on the data on deaths by cause/age/sex and mid-year population by age/sex, annually reported to WHO by European Member States
4. Unless otherwise stated, the data for Kazakhstan comes from the OECD review of National Health Accounts in the Republic of Kazakhstan, OECD (2018).
5. This section is based on OECD (2018) and Oxford Policy Management (2015).
6. Also referred to as CMSP (Committee for Purchasing Medical Services) in other publications on Kazakhstan.
7. Payments methods are presented in the next section.
8. Includes medical and social assistance to persons suffering from tuberculosis, mental diseases, alcoholism, drug addiction and substance abuse (including assistance in the centres of temporary adaptation and detoxification), along with medical and social assistance to HIV-infected and AIDS patients as well as activities to combat AIDS, with the exception of medical and social assistance provided by Republican organisations.
9. The screening programmes cover the following conditions: colorectal cancer, liver cancer, breast cancer, cervical cancer, esophageal cancer and stomach cancer, prostate cancer.
10. A list of socially significant and hazardous diseases has been defined by Government Resolution No. 468 of 30 March 2000, which includes drug abuse, diabetes, iron-deficiency anaemia, infections (TB, HIV/AIDS, etc.) or if the patient is part of a specific diagnostic group such as cancer patients.
11. Asthma and chronic obstructive pulmonary disease (COPD) are both illnesses which limit people's ability to breathe. Although asthma presents intermittent symptoms which are reversible with treatment, COPD is a progressive disease that mostly affects smokers.
12. Q1: Object– technical quality (what customers receive), which measures treatment; the main reason why patients visit hospitals; Q2: Processes – functional quality (how healthcare staff provides core services). It measures how well healthcare activities are implemented; Q3: Infrastructure – basic resources needed to perform healthcare

services; Q4: Interaction – information exchange (e.g. percentage patients told when to return for check-ups, time spent by physicians or nurses understanding patient needs), financial and social exchange; Q5: Atmosphere – relationship and interaction process between parties are influenced by specific environments where they operate.

References

Auraaen, A. et al. (2016), "How OECD health systems define the range of good and services to be financed collectively", *OECD Health Working Papers*, No. 90, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jlnb59ll80x-en.

Birtanov (2016), Kazakhstan gears up to launch social health insurance. *Bulletin of the World Health Organization*. 94:792-793, http://dx.doi.org/10.2471/BLT.16.031116.

Bredenkamp, C et al. (2012), *Health Equity and financial Protection Datasheet : Europe and Central Asia*. Health equity and financial protection datasheet compendium, World Bank Group, Washington, DC, http://documents.worldbank.org/curated/en/711401468038087048/Health-equity-and-financial-protection-datasheet-Europe-and-Central-Asia.

Committee on Statistics, Ministry of National Economy of the Republic Kazakhstan (2016), *Socio-economic development of the Republic of Kazakhstan*, Astana.

Danilovich, N. and E. Yessaliyeva (2014), "Effects of Out-of-Pocket Payments on Access to Maternal Health Services in Almaty, Kazakhstan: A Qualitative Study", *Europe-Asia Studies*, 66, 578-589.

European Commission (2014), *EU Platform on Diet, Physical Activity and Health*, 2014 Annual Report, Brussels.

Footman, K., et al. (2013), "Public Satisfaction as a Measure of Health System Performance: A Study of Nine Countries in the Former Soviet Union", *Health Policy,* Vol. 112, pp. 62-69.

Howie, P. and Z. Atakhanova (2014), "Resource Boom and Inequality: Kazakhstan as a Case Study", *Resources Policy,* Vol. 39, pp. 71-79.

IHME (2010), *GDB Profile: Kazakhstan*, Institute for Health Metrics and Evaluation.

IMF (2014), *Republic of Kazakhstan, Selected Issues*, IMF Country Report No. 14/243.

IMF (2017), World Economic Outlook Database.

IMF (2017b), Republic of Kazakhstan : 2017 Article IV Consultation- Press Release; and Staff Report. Country Report No. 17/108.

International Bank for Reconstruction and Development (2014), *Assessment Report on Implementation Outcomes of the State Healthcare Development Programme"Salamatty Kazakhstan" for 2011-2015* (unpublished).

Katsaga, A. et al. (2012), *Health Systems in Transition – Kazakhstan: Health system review,* Vol. 14, No 4, European Observatory on Health Systems and Policies.

Kulkayeva, et al., (2012), "Cardiovascular Disease Risk Factors Among Rural Kazak Population", *Nagoya J Med Sci*., Vol. 74, No. 1-2, pp. 51-61.

MOH (2015), *Population Health in the Republic of Kazakhstan and Activity of Health Care Organisations in 2014*, Kazakhstan.

MOH (2016), *Population Health in the Republic of Kazakhstan and Activity of Health Care Organisations in 2015*, Kazakhstan.

MOH and WHO (forthcoming), *Assessment of Human Resources for Health in Kazakhstan*, WHO publishing.

Obermann K, et al. (2016). "Data for development in health: a case study and monitoring framework from Kazakhstan". *BMJ Global Health*, http://dx.doi.org/10.1136/bmjgh-2015-000003.

OECD (2018), *National Health Accounts of Kazakhstan*, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264289604-en.

OECD (2016a), *Health Workforce Policies in OECD countries: Right Jobs, Right Skills, Right Places*, OECD publishing, Paris, http://dx.doi.org/10.1787/9789264239517-en.

OECD (2016), *Multi-dimensional Review of Kazakhstan: Volume 1. Initial Assessment*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264246768-en.

OECD (2015), *Health at a Glance 2015: OECD Indicators*, OECD Publishing, Paris, http://dx.doi.org/10.1787/health_glance-2015-en.

Oxford Policy Management (2015), *Support to second revision of the SGBP composition, based on actuarial work in 2015*, (unpublished).

Smith, O and Nguyen, S. N (2013). *Getting Better: Improving Health System Outcomes in Europe and Central Asia*. Europe and Central Asia Reports. Washington, DC : World Bank Group, http://documents.worldbank.org/curated/en/953751468250295078/Getting-better-improving-health-system-outcomes-in-Europe-and-Central-Asia

Suhrcke, M. et al. (2008), *Socioeconomic differences in health, health behaviours and access to health care in Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation and Ukraine*, World Health Organization, Geneva.

UNDP (2010), *Millennium Development Goals in Kazakhstan*, United Nations Development Programme.

WHO (2011), *Evaluation of the Organization and Provision of Primary Care in Kazakhstan – A survey-based project in the regions of Almaty and Zhambyl*, World Health Organization, Geneva.

WHO (2016), Global Health Expenditure database, apps.who.int/nha/database

WHO Europe (2016) Health System Transformation: Making it Happen.

World Bank (2015) *Kazakhstan: Adjusting to Lower Oil Prices; Challenging Times Ahead*, Kazakhstan Economic Update No. 2, Fall 2015.

World Bank (2016), WDI – World Development indicators, http://data.worldbank.org/products/wdi.

World Obesity (2016), *World Map of Obesity*, http://www.worldobesity.org.

Zineldin, M., H. Camgöz-Akda, and V. Vasicheva, (2011), "Measuring, evaluating and improving hospital quality parameters/dimensions – an integrated healthcare quality approach", *International Journal of Health Care Quality Assurance,* Vol. 24 Issue 8, pp. 654-662.

Chapter 2

Improving the performance of primary health care in Kazakhstan

Kazakhstan has thoroughly revamped its primary health care (PHC) sector over the past ten years. Major reforms have been implemented and have resulted in substantial achievements: a specialised PHC workforce has been established and rapidly expanded, facilities have become more autonomous, quality assurance mechanisms have been put in place, new services have been introduced to tackle the burden of disease, and payment mechanisms have been restructured to incentivise quality in service delivery.

However, while PHC has become a clear priority, substantive results are yet to materialise. The current fragmentation of primary health care services impedes the effective and comprehensive service provision for the growing proportion of the population affected by chronic diseases. Although screening programmes are now in place, the extent to which patients receive adequate follow up diagnosis and treatment is not known. Where they exist, multidisciplinary teams need a more robust framework to support effective teamwork and collaboration across disciplines within PHC and with other relevant sectors. In addition, the limited collection and poor transmission of patient information are impairing the quality of service delivery. Overall, the PHC system needs to become better integrated and coordinated with the rest of the system, and new approaches are needed to ensure adequate services for the entire population, especially those in rural areas.

To support Kazakhstan in improving access, quality and effectiveness of PHC services, this chapter proposes a set of initiatives informed by the experiences of OECD countries that have faced similar challenges and successfully designed and implemented innovative solutions.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

2.1. Introduction

The key role of Primary Health Care (PHC) in addressing populations' burden of diseases in a sustainable and patient-centred way is well recognised. As individuals age and are increasingly affected by multiple chronic and disabling conditions, a growing body of evidence supports the role of PHC in providing continuous, comprehensive and coordinated care across populations, and it can also contribute to role in reducing social health inequalities (OECD, 2016f). Hospitals are not the best settings to provide preventive care or manage chronic care needs. It thus makes both clinical and economic sense for health care systems to prioritise primary health care systems (OECD, 2017b).

To build a strong primary health care system, countries need to invest in the key functions of primary care, move care away from costly inpatient facilities, and develop a rich information infrastructure that will enable them to monitor and improve quality (OECD, 2017b). In practice, this means structures that serve as the first point of contact with the health system, able to coordinate complex patient care and refer patients to secondary care as necessary. Modern PHC systems are person-centred (as opposed to disease-centred) and support long-term clinical relationships with patients.

The importance given to the modernisation of PHC in Kazakhstan is thus warranted and should be sustained. The development of PHC services in Kazakhstan is relatively recent. Despite being the host country for the 1978 Declaration of the Alma-Ata (the first major international conference highlighting the central role of primary health care in health systems), initial steps towards implementing a primary health care system only started taking shape well after the country became independent. These efforts have been sustained, and the PHC system in Kazakhstan has developed considerably, but as this chapter will show, increasing attention needs to be focused on ensuring the system delivers the results that make a difference.

The chapter is structured as follows: Section 2.2 provides an overview of the configuration of PHC in Kazakhstan; Section 2.3 summarises recent reforms intended to improve PHC services; Section 2.4 presents an assessment of PHC performance in Kazakhstan; Section 2.5 provides recommendations for improving PHC performance based on lessons learned from OECD countries.

2.2. The configuration of primary health care

The definition of primary health care services is quite broad in Kazakhstan

The definition of PHC services tends to vary across countries and is fairly broad in Kazakhstan. Primary care includes a large range of curative as well as preventive and health promotion activities. The distinction between PHC and other outpatient services (e.g. consultative and diagnostic) is not clear-cut. This results in various terms being used for the same service (Oxford Policy Management, 2014). According to decree No. 796, the following activities are carried out in Kazakhstan at the PHC level: (i) diagnosis for early detection of diseases; (ii) treatment on an outpatient basis; (iii) inpatient care (i.e. day hospital, hospital at home); (iv) examination of temporary disability; (v) preventive examinations; (vi) immunisation; (vii) the promotion of healthy lifestyles; (viii) recommendations on rational and healthy eating; (ix) family planning; (x) maternity and childbirth services and (xi) monitoring of health status.

Since 2008 PHC facilities are responsible for implementing free screening programmes. The list of non-communicable diseases (NCDs) for which screening is undertaken is established by the *National Centre for Problems of Healthy Lifestyle Development,* based on population needs. The Centre is also responsible for providing training as well as of broader public health functions (see Box 2.1).

Box 2.1. Role of the National Centre for Problems of Healthy Lifestyle Development

In 2008, the government of Kazakhstan invested in the establishment of a *National Screening Programme* aiming to address strategic objectives in the fight against NCDs. The *National Centre for Problems of Healthy Lifestyle Development* (under the MOH) is the coordinator and working body for analysis, monitoring, evaluation and reporting on the implementation of this programme.

This National Centre was established by Government decree in 1997, to implement the country's overarching development strategy *Kazakhstan – 2030*. The centre has as its mission the development and implementation of all national policies related to healthy lifestyle development in Kazakhstan. Some of its key activities include: (i) implementation and governance of healthy lifestyle programmes and prevention of diseases; (ii) collaboration with ministries, agencies and local authorities in the implementation of health promotion programmes; (iii) development and deployment of new technologies to improve the health of different population groups; (iv) training of primary health care and healthy lifestyle professionals, health educators on disease prevention, health promotion and healthy lifestyles; (v) collaboration with various population groups and media to develop and promote healthy lifestyle principles.

Source: National Centre for Problems of Healthy Lifestyle Development (2016), National Centre website, http://www.hls.kz/, (accessed on October 2016).

PHC services are provided according to standards defined by the government, and are part of the State-Guaranteed Benefits Package (SGBP). In order to be entitled to free PHC services, patients must be registered with a PHC provider. Prior to 2014 the registration process took place at the health facility of the patient's birth. Following the introduction of the Unified National Health System, patients now have the option to choose the physician and health care facility from which they will receive health care services. In order to facilitate this decision, since 2015 the Republican Centre for Healthcare Development has evaluated and published ratings on the quality of PHC facilities. However, at the time of writing this report, ratings were only available for facilities located in urban areas.

PHC services are organised centrally and managed locally

The main body responsible for designing PHC policies in Kazakhstan is the *Department for the Organisation of Medical Services* in the Ministry of Health (MOH). In addition to designing policies and strategies pertaining to PHC, this department is also responsible for monitoring the implementation of PHC services in Kazakhstan.

Several other departments of the Ministry support the development of PHC. The *Medical Services Standardisation Department* is responsible for drafting and coordinating the implementation of medical protocols and, to some extent, for managing PHC facilities, e.g. organising training of health care managers. The *Observatory of Human Resources for Health* develops all policies related to human resources and coordinates their deployment across the country. The *National Centre for Problems in Healthy Lifestyle Development* is responsible for the development and implementation of national healthy lifestyle policies that are implemented in part by PHC facilities (see Box 2.1).

Finally, since 2017, the *Committee for the Protection of Public Health* and the MOH *Department of Strategy Development in Public Health* are jointly responsible for oversight of various activities concerning infectious diseases surveillance. Health authorities at the local level implement the state level policies and organise the provision of health care. They are responsible for monitoring the performance of facilities.

The network of PHC facilities is vast, but somewhat fragmented and ill-equipped

Primary care provided by PHC teams is probably available in around 2000 facilities

Official data indicate that PHC is delivered through an extensive network of more than 6 000 PHC facilities. In 2015 the Ministry listed 6 276 PHC facilities, 91% of which were located in rural areas. Table 2.1 summarises the number and main characteristics of the various categories of PHC facilities, according to the Ministry's classification.

Table 2.1. Total number of PHC health facilities, by type and geographical location, Kazakhstan, 2015 (or nearest year)

Facility type	Services	Staff	Equipment	Total
		RURAL (1)		
Health posts 50-800 inhabitants	Provides PHC in ambulatory form or at home, including: 1. Pre-medical and urgent care; 2. Prophylactic measures in areas of high communicable disease risk; 3. Immunisation and screening programmes; 4. Medical prescriptions and drug provision; 5. Supervision of persons with chronic diseases; 6. Supervision of persons with risk factors; 7. Social worker and psychologist consultations; 8. Healthy life style promotion and awareness raising of population on health-related issues, including safe water supply and rational nutrition; 9. Referral for qualified medical care.	Feldsher or nurse	• Medical scales (with a scale for measuring height) • Haemoglobin and glucose measuring devices • Sample collection for tuberculosis • Health visitor set • Device for measuring the erythrocyte sedimentation rate • A kit for emergency care • Bactericidal irradiator • Standard physician kit • Nursing kit • Baby swaddle table • Mobile medical lamp • Electric steriliser • Drying oven • Medical refrigerator	
Feldsher-midwife posts *800-2 000 inhabitants*		Feldsher or nurse, midwife	• Scales for newborns • Oxygen inhaler • Storage for sterile instrument • Gynaecological chair • Emergency childbirth kit • Obstetric kit • Feldsher kit	854

Facility type	Services	Staff	Equipment	Total
Physician ambulatory (also called Family Health Centre) *2 000-10 000 inhabitants*	Provides PHC in ambulatory form, in day care form, or at home, which includes (in addition to health post services): 1. Treatment; 2. Referring to hospitalisation (urgent and planned); 3. Rehabilitative care; 4. Management of chronic patients; 5. Provision of the minimal list of the Services (listed below the table); Expertise of the temporary disability and referring of the persons with permanent disabilities to the appropriate bodies	GPs/ district therapist/ paediatrician + obstetrician-gynaecologists; + midwives; feldshers/ nurses	• Medical scales • Haemoglobin and glucose measuring devices • Sample collector for tuberculosis • Set health visitor • Device for measuring the erythrocyte sedimentation rate • Emergency care kit • Bactericidal irradiator • Standard physician kit • Nursing kit • Baby swaddle table • Mobile medical lamp • Electric steriliser • Drying oven • Medical refrigerator	1 364
Village polyclinic > *10 000 inhabitants*	Provides specialised care in ambulatory form, in day care form, or at home. It includes all of the physician ambulatory functions plus: 1. Specialised care (including specialist consultations and ambulatory surgery); 2. Laboratory-diagnostic services; 3. Examination and treatment of patients; 4. Management of permanent disabilities	All the listed above + A set of specialists and laboratory assistants Medical staff for performing activities listed within "Equipment" column.	• All the above • Imaging room (X-ray diagnostics, fluoroscopy, ultrasound), functional diagnostics cabinet, endoscopy room, physical therapy room, laboratory. • All the other facilities (below) have the same equipment, and if urban may also have MRI, CT, etc.	11
Rayon polyclinic	In addition to the village polyclinic's functions, it also provides consultative-diagnostic care.	As above + additional outpatient specialists		39
Dispensaries providing ambulatory care (at a rayon centre)	The dispensaries typically only provide specialised outpatient care and do not offer generalist care	Outpatient specialists		22
Other (2)				220
Total number of rural PHC facilities				**5 704**
URBAN				
Medical ambulatory (also known as *Family Health Centre*) < 30 000 inhabitants	Provides PHC in ambulatory form, in day care form, or at home (see physician ambulatory for additional details)	GPs/ district therapist/ paediatrician + Obstetrician-gynaecologists; + midwives; feldshers/ nurses	Same equipment as for physician ambulatory	79
Urban polyclinic (in cities, within the districts with more than 30 000 inhabitants, but at least 1 polyclinic per city)	Equivalent to rayon polyclinic, provides primary and specialised care as well as diagnostic care	Same as above + diagnostic technicians and specialists	See rayon polyclinic above	162
Consultative-diagnostic centre (only in Astana and Almaty)	Provides diagnostic and specialised outpatient services	Same as polyclinics excluding GPs and with narrow subspecialists		13

Facility type	Services	Staff	Equipment	Total
Dispensaries providing ambulatory care *>300 000 inhabitants*	Mostly provide specialised outpatient care and do not offer generalist care	Outpatient specialists and related staff		107
Multi-profile hospitals providing ambulatory care	Provide the same services as consultative diagnostic centres but attached to hospitals	Outpatient specialists and related staff		85
Stomatology polyclinic (only in Astana and Almaty.	Dental care	Dentists, nurses, physiotherapists		35
Other (3)				91
Total number of urban PHC facilities				572
Total number of PHC Facilities in Kazakhstan				6 276

Notes:

(1) All rural outpatient facilities are either the units of the urban and rayon polyclinics or independent entities;

(2) Includes ambulatory care departments of different types of general and specialised (e.g. tuberculosis) hospitals, in particular 116 central rayon hospitals, and 16 medical stations without a building;

(3) Includes outpatient departments of various types of hospitals (infectious diseases for adult and children, perinatal centres, maternity hospital, ophthalmology hospital, psychiatry hospital) as well as some rural facilities (13 medical stations).

Source: Ministry of Health (MOH) from Kazakhstan 2016.

The classification highlights not only the fragmentation of the PHC system, but also shows that the definition of "primary care" in Kazakhstan is very broad.

- The classification of facilities does not reflect the current configuration of service delivery. As in the case of hospitals, the official, historical classification of facilities uses a very large number of categories (34, some of which have been grouped under "other" in the table). There are clear signs that the classification may not be fully aligned with the reality of service provision today. For instance, departments in rayon hospitals can be found under both the rural and urban list of facilities, and some rural medical stations are listed under urban facilities. In addition, the status of any given facility in the classification varies across different databases. For example, the database from which the data on pay for performance are retrieved refers to some 188 rural rayon polyclinics in the pay for performance system, when the database of Table 2.1 suggests that there are only 39 such facilities in the country.
- A simplified, better calibrated, and more consistently applied classification would support more effective management. The new classification should group entities intended to deliver similar packages of services and distinguish differences in ways that allow meaningful comparisons of other characteristics (inputs, activities, performance) within and among groups. This simplified classification (e.g. with up to five categories) should be common and consistent across different databases, with linkages across them allowing meaningful, routine comparisons of the performance of individual facilities within and across categories, an exercise which does not appear feasible under the present classification schema. Ultimately, it would also help clarify the overall vision for the primary care/outpatient network, and support more consistent development. As an example, PHC facilities in Portugal may be classified as either Primary Health

Care units (typically a clinic setting which groups together a varying number of GPs providing care to their patient lists) or Family Health units (primary health care units comprising 3-8 GPs, a similar number of family nurses, and admin staff, set up to encourage more multidisciplinary team work among doctors, nurses and admin staff) (OECD, 2015).

- Another issue is that the classification does not actually identify which facilities provide primary care. Many categories of "primary health care" facilities listed in Table 2.1 also provide specialist outpatient care (e.g., polyclinics). A fairly large number of facilities listed *only* provide specialised care (for instance, dispensaries, especially those attached to specialised hospitals). While this is not a concern from a service delivery perspective – most countries have facilities which provide primary and secondary care jointly and separately – but in the absence of additional information, the classification cannot be used to obtain a clear picture of the configuration of the primary care network or of its performance.
- A number of facilities appear to be providing basic care to patients suffering from specific illnesses such as tuberculosis (a TB High-level Working Group, a National TB centre, and links to the penitentiary health systems) and HIV-AIDS (National AIDS Coordination Committee, National Centre for AIDS prevention and control, oblast and city centres for AIDS prevention and control, and AIDS trust points) (Oxford Policy Management, 2015). These models of service delivery – disease-specific primary care – are not well aligned with modern approaches to primary health care in which patients, irrespective of their underlying condition(s), should be able to turn to a single provider to coordinate their care in an integrated way.
- The number of basic health facilities staffed by paramedics remains high in rural areas (around 4 000, to which some 'medical stations without buildings' should be added). This service provision model was historically justified by the dispersion of the rural population across a very large territory, and the existence of poor transportation infrastructure. However, a recent analysis of the PHC network suggested that, while maintaining access in some remote areas using basic facilities is justified, the current number could nevertheless be reduced by around half (Sanigest International, 2014).

This review of the current classification shows that care provided by PHC teams is available in fewer than 2 000 facilities. To the extent possible, the analysis in this chapter focuses on facilities that are the first point of contact for the population and provide services of non-specialised nature (which are assumed to be those highlighted in grey in the table). They include basic facilities (such as health posts with or without building and feldsher-midwife posts), 'physician ambulatories' (where patients normally have access to a physician, an obstetrician or gynaecologist, and a lower-skilled health professional), and polyclinics that in addition to primary care offer a larger range of services. If the health and feldsher posts are excluded, this leaves around 1 900 facilities potentially providing generalist care. This assumption about the actual size of the network is supported by the fact that the database containing data on primary care activity includes 1 870 facilities (page 154, Ministry of Health, 2015).

PHC facilities are not consistently maintained and equipped and marked differences are observed in the age of infrastructure

Despite this comprehensive network, the evidence points to the generally limited availability and quality of equipment in PHC facilities, particularly in rural areas. In 2009, WHO conducted a survey in the Almaty and Zhambyl regions, which among other issues examined the percentage of PHC physicians with access to basic equipment. Out of a list of 30 basic items, only approximately 30% were available to almost all GPs in those regions. The same report highlighted that around 25% of PHC physicians reported having no emergency kit or materials with which to suture wounds. Physicians in both regions mentioned they generally had to send urine tests and blood samples outside their practices, and to refer patients requiring ultrasound diagnosis elsewhere. The same report stated that more than 50% GPs and 33% of district therapists had no access to X-ray diagnostic equipment in their polyclinic or ambulatory. Those that did were usually in urban areas (WHO, 2011).

More recently, a comprehensive assessment of the PHC network in Kazakhstan concluded that in 2014 PHC facilities were supplied with only slightly over half – 56% – of medical equipment functioning according to national standards. The same report found almost 50% of the providers felt that their facility's infrastructure and equipment were out-dated (Sanigest International, 2014).

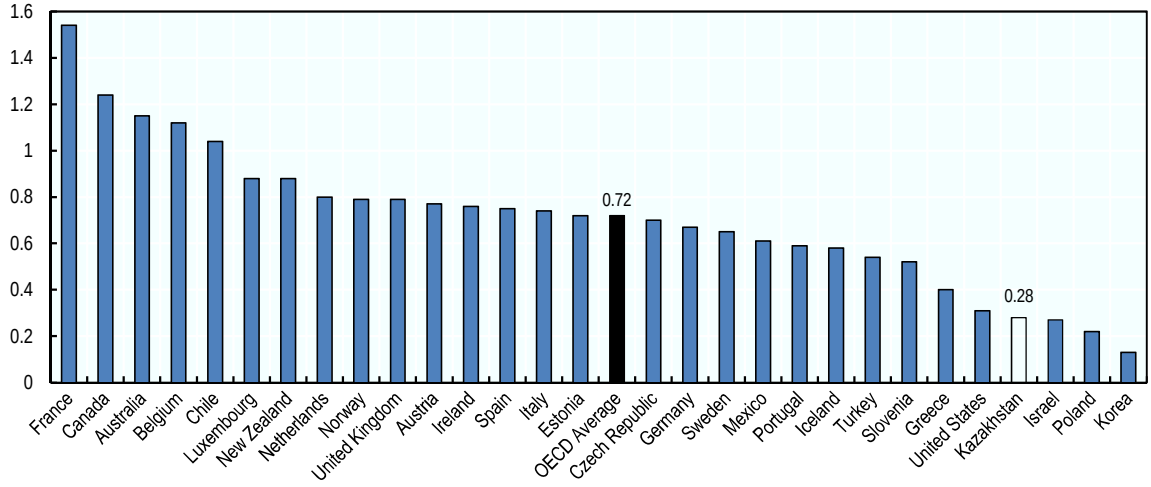
The level of equipment should be adapted to the type of diagnosis and treatment services a facility is expected to deliver according to the benefit package, aligned with the burden of disease, and taking into account the environment (e.g. the presence of more advanced facilities in the vicinity) and the extent to which access to required support services (e.g. diagnostic) is available.

Data from the MOH shows PHC infrastructure is relatively old, with marked differences across rural and urban areas, and between regions. While in urban areas polyclinics were built 28 years ago on average, in rural areas, the average age is 37 years. Whereas in Almaty and Astana PHC facilities were built 30 years ago, in six other regions (Akmola, Almaty, East Kazakhstan, Jambyl, Karanganda and Kostanay) their average age is between 35 and 42 years. Medical stations and feldsher-obstetric units (which make up 80% of rural providers) were built, on average, 33 years ago.

A range of different health professionals are involved in PHC service delivery

There are relatively few primary health care physicians in Kazakhstan. Prior to 2005, when general practice was officially introduced in the Kazakh health system, medical services at PHC level were essentially provided by district therapists or paediatricians. Newly-trained general practitioners have now joined the group of "PHC physicians" but their numbers are still small. In fact, there are only 0.28 GPs per 1 000 population in Kazakhstan, comparable with the lowest numbers seen in the OECD (Figure 2.1). Even if district paediatrician and therapists are included, the ratio (at 0.47) still falls short of the average 0.72 GPs per 1 000 population seen in OECD countries.

Figure 2.1. Number of GPs per 1 000 population, OECD countries and Kazakhstan, 2015 (or nearest years)



Source: OECD Health Statistics 2016, http://dx.doi.org/10.1787/health-data-en; Ministry of Health, Kazakhstan 2017.

General practitioners, district therapists and district paediatricians carry the bulk of the responsibility for patient care. They identify early forms of disease, provide qualified diagnostic, treatment and rehabilitation services, and coordinate other medical and rehabilitation services (Oxford Policy Management, 2014). In fact, consistent with international best practice, GPs are expected to operate as 'gatekeepers' and provide overall coordination of patient care. There is clear evidence that that efficiency and quality of care are enhanced when GPs are made the first point of contact for patients, providing referrals to specialists if necessary. In countries such as Australia, the United Kingdom and the Netherlands, the role of the GP is strongly emphasised (OECD, 2016c).

In addition to physicians, the PHC workforce comprises:

- PHC nurses, who generally work with a physician. Key among their responsibilities is the provision of nursing care in health facilities or at the patient's home, and the evaluation of patient health status. Nurses working in primary care are also responsible for prevention activities and social assistance.
- Midwives who are responsible for both clinical and administrative tasks such as keeping medical records, confirming pregnancy, providing antenatal care, identifying pregnant women at risk and providing assistance with deliveries.
- Feldshers, who are a mid-level cadre typical of former Soviet countries. Feldshers provide emergency care in rural facilities but can also provide consultations at home or in PHC facilities, and prepare patients for medical examinations (Oxford Policy Management, 2014). In 2015, there were 4 830 feldshers in Kazakhstan, 76% of whom were providing services in rural areas.
- Since 2011, social workers and psychologists are also involved in primary health care services. They are mainly accountable for preventive services but also provide social and psychological support in outpatient care settings and in the home (Oxford Policy Management, 2014).

Officially, PHC facilities are open and provide services 12 hours a day during the week. In addition to those working hours, PHC physicians are obliged to see patients after hours once a week during evenings, and once a month over the weekend. Although after hours consultations were meant to reduce hospitalisations, an assessment conducted by WHO deemed around 50% of home visits to be unnecessary, and possibly as many as 80% in the case of paediatric services (WHO, 2015).

Since 2013 call-centres have been put in place across 550 regional health departments, with a view to reducing the overburdened schedules of GPs. Uptake is increasing and the centres received 267 000 calls in the first six months of 2017, 50% more than in the previous year (data provided by the MOH, 2017). At the same time, assuming call centres are open five days a week, this amounts to an average of less than four calls a day per centre. The Ministry and regional health departments' efforts to raise awareness may need to be increased if this initiative is to demonstrate impact and prove cost effective.

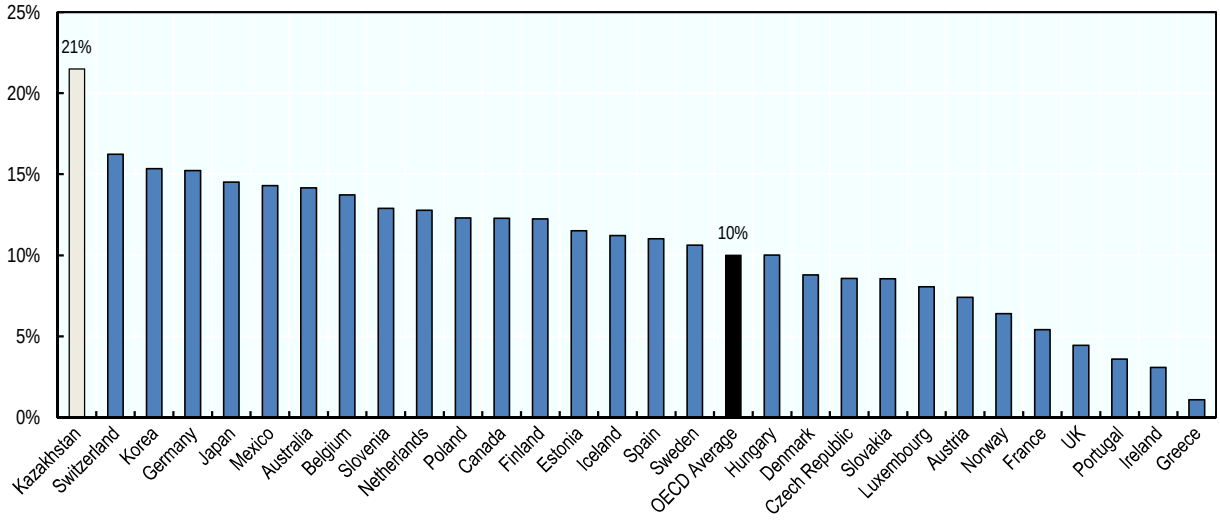
Financial resources allocated to PHC are substantial, although a significant part is borne by patients themselves

Although comparisons are difficult, the data suggest that the financing of primary care is an important priority in Kazakhstan. As mentioned earlier, the boundaries between primary and other forms of outpatient care vary from country to country. Consequently countries' levels of spending on primary care can vary significantly simply by virtue of the fact that some services may be identified and counted as primary or specialist care in different systems, or because the data systems do not allow a meaningful breakdown. Comparisons at a more aggregate level – for instance at the level of outpatient care – are ordshire NHS United K[1].

Primary care absorbs a larger share of spending in Kazakhstan than in any OECD country. According to NHA data, 21% of current health expenditure (CHE) was spent on primary care in Kazakhstan in 2014. This includes (i) general outpatient curative care, (ii) other outpatient curative care not related with dental or specialised care, and (iii) ancillary services, such as imaging services and patient transportation provided in outpatient facilities[2]. Using the same definition for primary care services, Figure 2.2 compares the proportion of expenditure spent on primary care in OECD countries and Kazakhstan. The 28 OECD countries for which data are available spend on average only 10% on primary care services, about half as much as Kazakhstan.

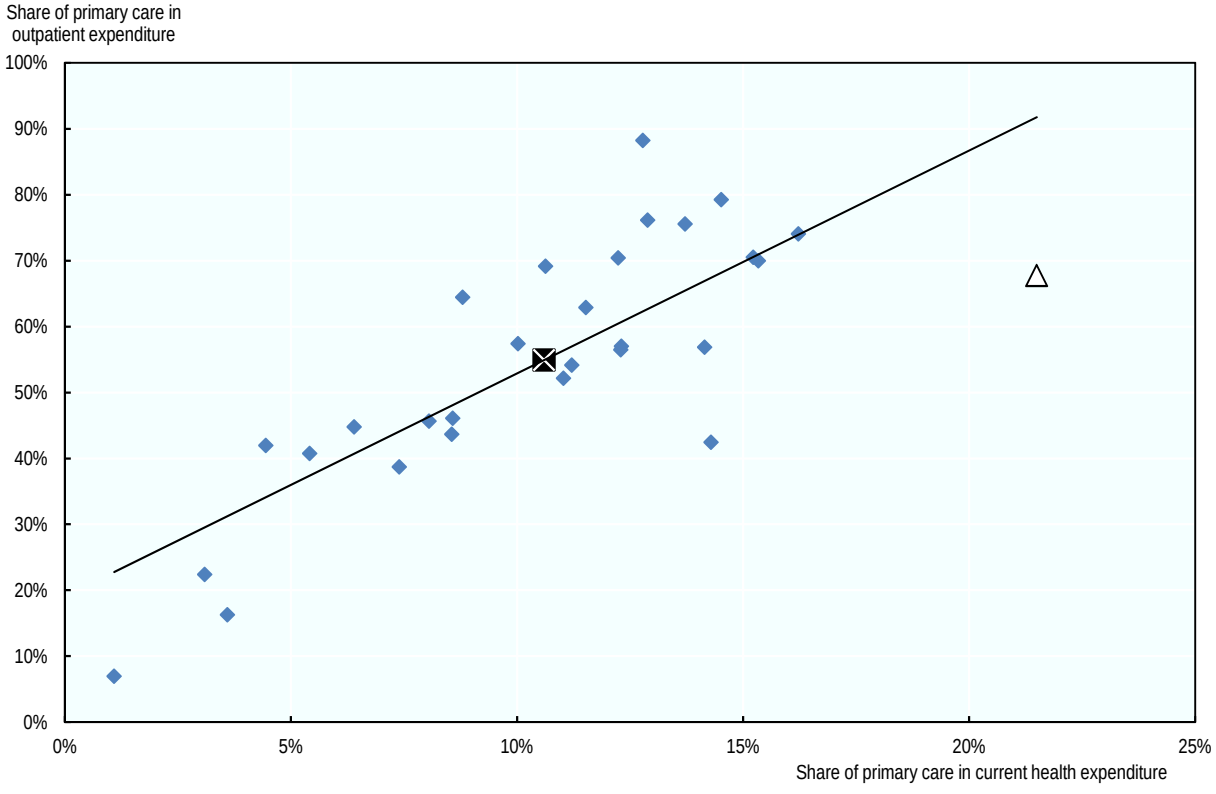
However, higher primary care expenditure in Kazakhstan probably reflects in part differences both in definition and in reporting (as is the case in other countries that report high PHC expenditure). Indeed, looking across OECD countries there is a strong correlation between the proportion of total expenditure and outpatient care represented by primary care (see Figure 2.3). In Kazakhstan – where the definition of primary care is broad – the data do not allow accurate differentiation between specialised and general care provided in outpatient facilities, and the expenditure is probably less of an outlier that Figure 2.2 would suggest. Nevertheless compared with OECD countries overall Kazakhstan does spend relatively more on outpatient services than OECD countries, suggesting the importance given to their development.

Figure 2.2. Primary care as a share of CHE, OECD countries and Kazakhstan, 2014 (or nearest year)



Source: OECD Health Statistics 2016; Ministry of Health, Kazakhstan 2016.

Figure 2.3. Primary care as a share of current health expenditure and outpatient expenditure, Kazakhstan and OECD countries, 2014



Source: OECD Health Statistics 2016, http://dx.doi.org/10.1787/health-data-en; Ministry of Health, Kazakhstan 2016.

Public coverage of PHC services is quite good, but high medicine costs may undermine its effectiveness. Around 74% of primary care services are paid for by the government, while 26% are covered privately (16% out of pocket payments, and 10% voluntary schemes). However, coverage of outpatient medicines, a core component in the PHC treatment armamentarium, is very poor. As highlighted in Chapter 1, on average, in OECD countries, households pay 40% of the cost of pharmaceuticals out of pocket. In Kazakhstan, the proportion is 84%.

Medicines prescribed in primary care are generally paid for by the patient, and only dispensed free of charge for patients suffering from specific conditions. A list of 'socially significant and hazardous diseases' has been defined by Government Resolution No. 468 of 30 March 2000, which includes drug abuse, diabetes, iron-deficiency anaemia, and certain infectious diseases (TB, HIV/AIDS, etc). Conversely, at the hospital level all drugs are administered without charge. Experts agree that this might explain some patients' preference for attending a hospital rather than a PHC facility. To alleviate the cost burden of medicines for primary care patients, the government has been gradually expanding the outpatient drug benefits package since its introduction in 2005. For instance, Kazakhstan introduced an outpatient drug benefit for children, adolescents, and women of childbearing age (CSIH, 2013a).

2.3. Recent key reforms concerning primary care

Since Kazakhstan's independence, the government has designed and implemented numerous reforms aimed at improving the performance of the health system. The most significant of these include the *National Programme for Health Care Reform and Development* (2005 – 2010) and the *State Health Care Development Programme*, or so-called *Salamatty* (2011 – 2015). Their implementation was supported by a USD 300 million World Bank project between 2008 and 2016.

Both reforms were intended to enhance the Kazakhstan health system performance by inter alia improving the delivery of PHC services. More specifically, the *National Programme for Health Care Reform and Development* proposed measures to prioritise PHC and prevention, modernise PHC financing, and devolve service delivery to oblasts. *Salamatty* also involved various activities intended to strengthen prevention and screening services, improve diagnosis and treatment of socially significant diseases, expand the primary care workforce, and further equip PHC facilities.

It is undeniable that PHC in Kazakhstan has reached important milestones over the past decade. The following sections summarise key areas that went through significant changes: PHC workforce development, increasing autonomy of public facilities, quality assurance, development of new services and payment systems. It also summarised future plans.

The PHC workforce has expanded rapidly

The reforms of the past decade have profoundly revamped the PHC workforce. General practice has been introduced as a fully-fledged qualification, and the role of nurses is to be expanded. New standards for PHC teams have been established, and multi-disciplinary teams are now – in theory at least – the cornerstone of primary care service delivery.

General practice has been introduced into the medical profession

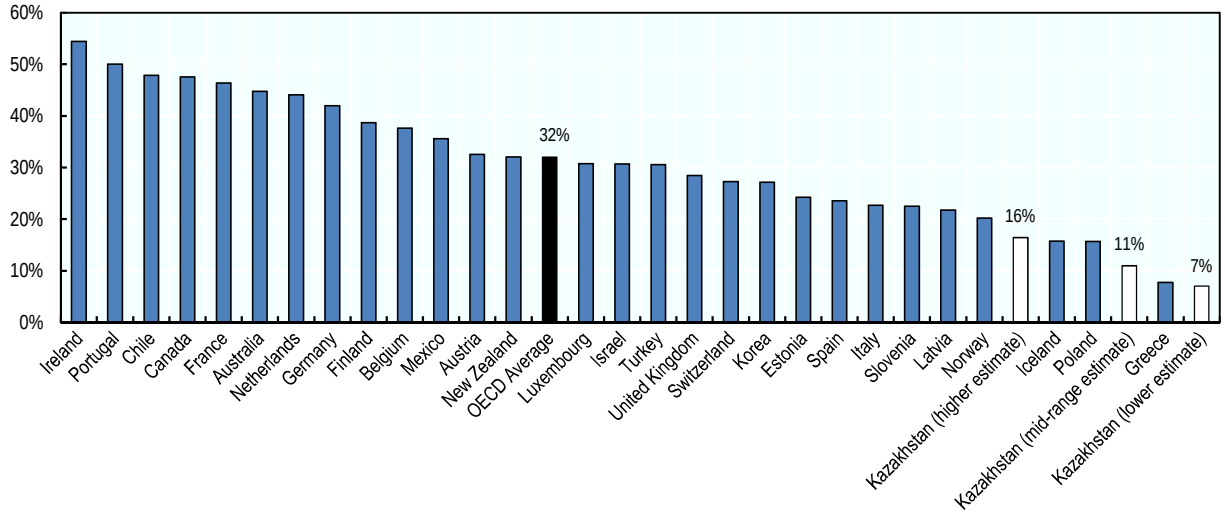
In 2005, the general practitioner role was officially introduced into the Kazakhstan health system. Prior to this, medical services at PHC level were essentially provided by district therapists or paediatricians. In 2005, the PHC workforce comprised around 4 000 district therapists and paediatricians, in both rural and urban areas. In 2005, a new training stream for general practice was introduced into medical education (MOH and WHO, forthcoming).

Training and re-training are being used to increase the numbers of GPs which in 2016, were around 5 000. Several physicians have been re-trained over time to become general practitioners. For instance, between 2014-15, 1 799 people were re-trained (636 district therapists, 648 district paediatricians and 515 other specialists). In addition, the number of medical graduates entering general practice has increased. Overall, the number of GPs grew from 920 in 2006, to 2 233 in 2010, reaching 5 071 in 2016 (see Figure 2.5 below).

To reach these figures, education and training places have been augmented considerably. However, this occurred without concomitant strengthening of teaching capacity and equipment. According to reports from the MOH, the education of health professionals is facing an important challenge, a shortage of well qualified teaching staff. In addition, from 2003 to 2014, the number of public medical colleges remained fairly stable (26 in 2003 and 27 in 2013) whereas private medical colleges have more than doubled (from 15 in 2003 to 36 in 2015). Given that accreditation standards for private colleges are less strict than for public ones, this trend may be contributing to worsening quality in medical education and could thus pose a threat to health care service delivery (MOH and WHO, forthcoming).

Despite the increase in the number of PHC physicians, they remain under-represented in the medical profession. In absolute numbers, in 2015, the Ministry of Health reported 4 014 GPs, 2 066 district therapists and 1 910 district paediatricians. GPs represented 9.5% of the physicians working in institutions of the Ministry of Health in 2016. Figure 2.4 presents three estimates of the proportion of PHC physicians in the total medical workforce in Kazakhstan and compares them with OECD numbers. The mid-range estimate for 2015 indicates that 11% of the Kazakhstan medical workforce works as a PHC physician, against 32% on average in OECD countries.

Figure 2.4. Proportion of General Practitioners among medical professionals, Kazakhstan and OECD countries, 2015 (or nearest year)



Source: Kazakhstan – Lower estimate: based on 4014 GPs (as provided by the MOH for the year 2015), mid-range estimate: HFA-DB (reports 6 243 "GPs", which is close to the sum of GPs and district therapist (6 080) as provided by the MOH). This mid-range estimate is probably the most comparable to OECD data. The higher estimate is from MOH, which reports a total of 9043 primary care physicians. This last number exceeds the sum of GP, district therapists and paediatricians (7 990) and is probably inclusive of physicians who are not directly involved in the delivery of primary care. The denominator is from the HFA-DB "number of doctors physical persons". OECD countries: OECD Health Statistics 2016, http://dx.doi.org/10.1787/health-data-en.

As in many OECD countries, general practice remains a seemingly unpopular choice for medical graduates. The proportion of graduates choosing general practice as a specialty has fluctuated from year to year since it was introduced in 2009, and was around 23% in 2015 (MOH data). The number of students applying for training in general practice continues to be the lowest among the health professions (Table 2.2).

Table 2.2. Number of applicants per available grant, for health professions[1]

	2010	2011	2012	2013	2014
Nursing care	17.7	22.9	20.0	33.2	41.4
Public health	19.4	22.4	18.9	47.1	66.8
Pharmacy	13.5	11.1	7.8	10.4	21.5
Medical and preventative care	33.4	43.8	26.5	41.2	66.2
General practice	*5.4*	*7.2*	*4.9*	*5.5*	*4.9*
Dentistry	40.6	42.1	22.5	38.8	29.3
All other specialties	10.1	12.4	8.9	10.9	8.8

Note: 1. Ratio of total number of applications for enrolment in the specific specialty to the total amount of grants

Source: MOH and WHO (forthcoming)

The PHC workforce has grown rapidly

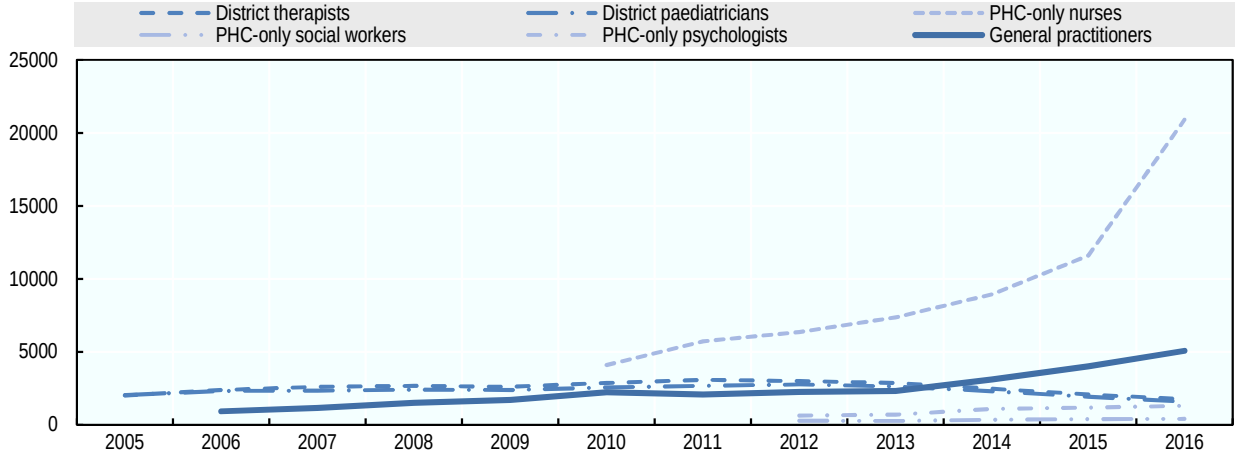
Over ten years the total number of health professionals dedicated to service delivery in primary care settings increased six fold. Figure 2.5 shows that approximately 27 000 more health professionals were added to the PHC workforce over that period. As of 2016, PHC professionals included 5 071 GPs, 1 749 district therapists, 1 579 district

paediatricians, 20 910 PHC nurses, 402 social workers and 1 299 psychologists. An impressive achievement towards increasing access to PHC services.

Health care standards from the Ministry of Health specify the human resources which should be available for PHC and explicitly require services to be delivered by multi-disciplinary teams. Staffing norms have been introduced to ensure the PHC workforce is fit-for-purpose to meet community needs. A recent rule specifies that each district therapist is responsible for up to 2 200 adults; each district paediatrician, 900 children; and each GP, 2 000 adults and children. In addition, each district therapist or paediatrician should work with two nurses, and each GP, three nurses. The staffing levels also specify that a PHC team should include qualified part-time social workers, and a part-time psychologist. The head of each health facility is responsible for appointing these individuals and managing their work (Oxford Policy Management, 2014).

The planned expansion of role of nurses is yet another innovative measure that will be implemented to reinforce the PHC workforce in Kazakhstan. In 2011, WHO recommended that PHC nurses' roles in Kazakhstan be expanded beyond administrative tasks, which constituted a large part of their workload. In particular, it was suggested that nurses become involved in activities related to prevention, health information and monitoring of patients with chronic illnesses (WHO, 2011). The current national policy establishes that a quarter of the tasks performed by physicians are transferred to trained nurses, including patient observation, house calls, bandaging and – to some degree – prescription and treatment (MOH and WHO, forthcoming). In addition, new terminologies and qualifications for the health workforce are being reviewed, with the goal of introducing a new position: 'medical nurse – applied bachelor'.

Figure 2.5. Development of PHC workforce, Kazakhstan, 2010-15



Source: Ministry of Health, Kazakhstan 2016.

The autonomy of PHC facilities increased

Over the past fifteen years, Kazakhstan has increased the role and autonomy of PHC facilities through adjustments made to their legal status.

A first move in this direction took place in the 2000s. Urban polyclinics were legally and financially split from hospitals, providing them with greater independence in managing resources. Rural PHC facilities (such as feldsher-midwifery posts and

physician ambulatories), however, remained administratively part of central rayon hospitals. From 2009 onwards, further changes were introduced not only to increase PHC facilities' independence but also – it was hoped – their efficiency. Today, PHC facilities in Kazakhstan can be classified into one of five categories: *government institutions*, *state enterprises*, *state enterprises with the right of economic management (REM)*, *private entities,* or *joint stock companies*.

Public PHC institutions are:

- *Government institutions.* These institutions do not have the autonomy to manage their own budget or fixed assets. For each expense category, a fixed amount is established by the MOH or local health authority (LHA). Institutions under this legal status provide services as defined by the government.
- *State enterprises.* These institutions can manage their own budget independently, under certain restrictions. For instance, prices of services and staff remuneration (ie. salaries and bonus) are defined by the MOH or the LHA.
- *State enterprises with REM* (i.e. state economic enterprises). These institutions are the most autonomous of the public PHC providers. In addition to independently managing their budgets, these institutions may open branches and representative offices and set the prices of the services provided (subject to approval from either MOH or LHA). Revenues from the provision of goods and services are managed autonomously by the facility, although part of the net income is shared with the state. While a staff payroll ceiling is defined by either the MOH or LHA, staff, their salaries and bonuses are managed by the facility (with the exception of the salaries of the CEO, deputies, and chief accountant for which the MOH or LHA is responsible).
- In urban areas, a few private PHC facilities and joint stock companies also provide PHC services under the SGBP.

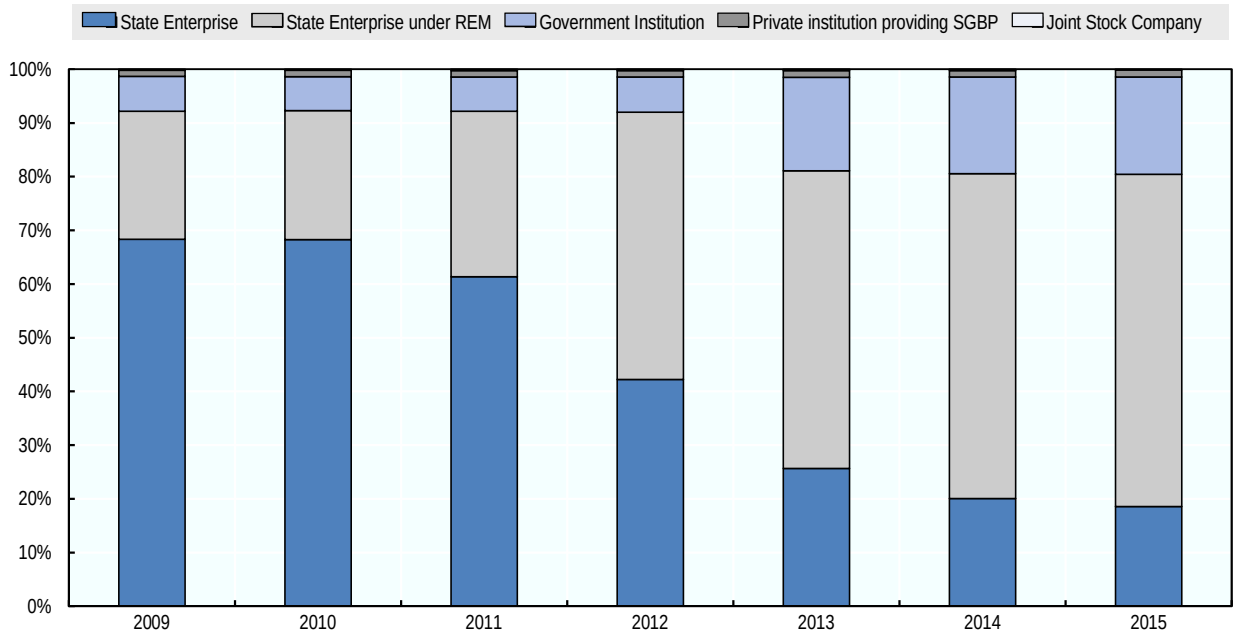
As of 2015, the breakdown of PHC facilities was as follows: 62% state enterprises with the REM, 19% state enterprises, 18% government institutions, 1% private institutions providing SGBP, and 0.1% joint stock companies (eight in urban areas, and only one in rural) (Figure 2.6). It is up to oblast administrations to decide which facilities remain state-owned and funded, and which are re-organised into state enterprises with REM.

Promoting quality assurance has become a priority

Several measures have been implemented to enhance quality at PHC level. Significant among those are the accreditation of higher education institutions and PHC facilities, the implementation of clinical guidelines and protocols, and the development of quality indicators.

Higher education institutions delivering medical education require a license to pursue their activities (a so-called *institutional license*). For each specialty, a distinct license is issued (*specialised accreditation*). Licenses for public institutions are issued every couple of years by the *Committee for Control of Education and Science*, part of the Ministry of Education and Science. By contrast, private institutions receive a licence to practice only once, from independent accreditation agencies (MOH and WHO, forthcoming).

Figure 2.6. Evolution of legal status of PHC facilities in Kazakhstan, 2009-15



Source: Ministry of Health, Kazakhstan 2016.

In the context of *Salamatty*, national standards for accreditation of health facilities were established in 2009. The standards established the core parameters to be examined in the facilities. These include (i) leadership (mandate of the organisation, strategic and operational planning, general management, and risk management and quality development), (ii) resource management (information management and human resources management), (iii) safety management (safe institution, safe equipment use, safe working environment and infection control) and (iv) treatment of patients (patients' rights, access, reception and treatment planning), drug management and quality of treatment. Data on the total number of outpatient facilities accredited were not availed.

The development of clinical guidelines and protocols began over a decade ago, as a mechanism for expanding the practice of evidence-based medicine. As of 2015 around 500 clinical guidelines and protocols had been developed at the Republican Centre for a range of diseases, including ambulatory care sensitive conditions.

Monthly internal quality audits are in place. The MOH has developed a list of about 100 quality indicators for primary and hospital care. These include, among others, measures of unwarranted referrals or unnecessary hospital admissions. Health facilities choose ten indicators against which they will be assessed on a monthly basis by internal audit specialists. The results are submitted for review by the Committee on Quality Control in the MOH, after which they are shared with the Committee on Health Service and Payment, which is responsible for reimbursing primary health care facilities (WHO, 2015).

Despite these improvements, a recent WHO report identified issues that continue to undermine the quality of PHC service delivery. They include the need to strengthen the medical curriculum and the quality of the teaching staff, and as well as for greater rigor in the accreditation process for private higher education institutions, particularly in light of their growing importance over the last decade (MOH and WHO, forthcoming).

Furthermore, although PHC health professionals report using clinical guidelines and protocols frequently, they also criticise their lack of clarity – and thus there is a need for further support in applying those (WHO, 2015).

Efforts have been made to adapt services to the burden of disease

Specific initiatives have been put in place to increase the role of PHC in tackling NCDs, in particular, the establishment of screening programmes and the piloting of disease management programmes (DMPs). PHC teams are also expected to coordinate the care of patients.

Screening programme

PHC facilities are responsible for managing the screening programme established in 2008 within their registered populations. The list of tests and related rules are presented in Table 2.3. Facilities are in charge of informing the target populations about the importance of participating in the various screening tests, ensuring the tests are conducted, communicating the results to patients and – where necessary – coordinating diagnosis and treatment with other health service providers. PHC facilities are also responsible for registering patients in an electronic database that is shared with the regional medical information analysis centre (Battakova et al., 2015).

When the national screening programme was first introduced, its performance was challenged by low levels of population awareness. To address this issue the government developed a series of information campaigns aimed at the target population. Audio and video clips with famous individuals were released as well as informational and educational posters. Since then there has been an impressive increase in the number of adults screened, from around 2 million in 2008 to 7 million in 2013 (Battakova, 2015).

Table 2.3. Basic characteristic of screening programmes in Kazakhstan

Disease	Target population	Screening test	Scope of additional tests, consultations
Arterial hypertension, ischemic heart disease	Both sexes aged 25 to 70, once every five years until 50, then every two years	Measurement of blood pressure, serum cholesterol	Electrocardiography, cardiologist
Diabetes mellitus	Both sexes aged 25 to 70, once every five years until 50, then every two years	Blood glucose test	Endocrinologist
Glaucoma	Both sexes aged 40 to 70, every two years	Intraocular pressure measurement	Ophthalmologist
Cervical cancer screening tests	Females aged 30 to 60 years old; one test every five years.	Pap smear	Colposcopy, biopsy, gynaecologist
Breast cancer screening tests	Females aged 50 to 60 years old; once every two years.	Mammography	Ultrasound, biopsy, pathologist
Colorectal cancer screening tests	Both sexes aged 50 to 70 years old; once every two years.	Faecal occult blood test	Endoscopic examination of the colon, proctologist
Oesophagus and stomach cancer screening tests	Both sexes aged 50 to 60 years old; one test every two years	Endoscopy of the oesophagus and stomach	Gastroenterologist, oncologist
Prostate cancer screening tests	Males aged 50 to 66 years old; once every four years	Prostate-specific antigen (PSA) test, Prostate Health Index (PHI)	Fine needle biopsy, urologist
Liver cancer screening tests	Both sexes with cirrhosis	Identification of AFP (alpha-fetoprotein) tumour markers and liver ultrasound every three months; if cirrhosis of non-viral aetiology, every six months. Carried out in 11 regions.	CT/MRI of liver, oncologist

Source: Battakova et al. (2015); Ministry of Health from Kazakhstan 2016.

Disease management

Kazakhstan has also pursued pilot testing of Disease Management Programmes (DMPs) in 2014-15. With the support of the Canadian Society for International Health (CSIH), DMPs were developed and tested over the course of a year. They included a package of clinical practice guidelines, a chronic care model, a 'model for improvement' (i.e. adapting the chronic care model to local factors), and a method that ensures that the skills necessary to deal with the previous three previous dimensions were taught. Results are discussed in section 4.2.

While responsibility for overall care coordination lies with PHC, in practice its implementation is limited.

A number of measures are in place to encourage PHC providers to coordinate care. These include delivery by multi-disciplinary teams, the development of care pathways and the use of 'gatekeeping". While these are all consistent with international best practices, there is limited evidence of their impact in the Kazakhstan context up to date. For example, during interviews facility staff mentioned they were not always able to understand the standards and pathways, and also that these were changed with some frequency. Patients with chronic diseases mentioned that physicians rarely had access to their medical history or did not consult it when it was provided to them. A recent independent assessment suggested the lack of effective coordination as a key issue in the Kazakhstan health system. In particular, the report pointed to a lack of evidence of how widespread screening programmes translate into the diagnosis and treatment of identified conditions (International Bank for Reconstruction and Development, 2014).

Limited information sharing among providers at different levels represents a critical barrier to deeper integration and coordination of care. The development of a Unified Healthcare Information System has been under way for a number of years. Prior to 2010, components were developed under a "thick client paradigm". Since 2010, investments have been geared towards developing web applications, such as an Electronic Register of Inpatients and a Register of the Registered Population, among other, which are operational throughout the country. According to the Ministry, the coverage of medical information systems has reached 48% of all health facilities. At this point, many PHC facilities in rural areas continue to generate insufficient data and transmit it manually, which precludes effective performance monitoring (e.g. currently PHC ratings are only available for urban facilities). Government authorities nonetheless recognise the necessity to maintain the pace of implementation of regional medical information systems and to integrate them with the national level.

The payment system has been redesigned to promote better quality in PHC services

Since independence, the PHC provider payment system has undergone significant changes, evolving from simple line-item budgets to complex two-component capitation funding. Primary health care providers were initially paid through simple line-item budgets. Capitation was introduced towards the end of the 1990s, together with a fee schedule for other outpatient consultations and diagnostic services. Initially these changes in payment method were not accompanied by increased autonomy, and this limited their impact (Katsaga et al., 2012). However around 2010, facilities' autonomy to manage funds was increased, and for the most part (and with some variations depending on their

actual legal status) they may now manage their funds more or less freely. A pay for performance (bonus) system was also added to the capitation.

Financing of PHC is currently the responsibility of the central administration. The central government defines the level of capitation and transfers the funds to the local health authorities, which in turn distribute these according to a set of predefined rules. Currently, the Health Services Purchasing Committee (KOMU) is the division within the MOH responsible for the distribution of funds for service provision under the SGBP.

In 2015, payment at primary care level was based on a complex capitation rate, which comprised a fixed component – adjusted according to the oblast (to take into account climate, demography, and other dimensions) – plus a bonus. When the bonus system was initially introduced, each region received a fixed amount per capita to distribute among its facilities. Today the envelope is national and distributed between facilities and GPs according to their results following a series of predefined indicators. The target for each indicator changes every quarter and is established by one of the 16 LHAs or the central government. The list of indicators and corresponding target figures is presented in Table 2.4.

Table 2.4: List of indicators and 2015 Kazakhstan-level targets for PHC performance-based payments

Indicators	Target for 2015
Maternal mortality avoidable at PHC level, *number of cases*	0
Child mortality 7 days – 5 years old, avoidable at PHC level, *number of cases*	0
Timely diagnosis of pulmonary TB, *minimum percentage achieved*	69.96
New cases of malignant tumours detected at stages 1 or 2 stages (for tumours which can be visually detected)	71.40
Level of hospitalisation of the patients with complications of circulatory system disorders	50.40
Number of complaints	0

Source: Ministry of Health 2015.

The capitation system used for ambulatory care reimbursement is complemented by partial fund-holding. The PHC provider receives funds for any specialised ambulatory services (i.e. diagnostic procedures, laboratory tests, consultations) and then subcontracts an appropriate provider (OECD, 2018). In addition, to encourage PHC facilities to invest staff training, the costs are included in the funds allocated. Structurally, the primary care payment method in Kazakhstan is not very different from that of many OECD countries. In 80% of OECD countries, payments for primary care are blended, meaning they mix different payment methods. In two thirds of OECD countries, capitation is the major component of primary care remuneration, and at least 13 countries combine capitation with pay for performance elements (OECD, 2016a).

At the same time, the pay for performance scheme in Kazakhstan is quite different from that typically found in OECD countries. The latter often rely on, and combine process and intermediate outcome indicators to incentivise care that is consistent with best practice guidelines. They are typically negotiated with providers who feel they can directly influence the result. In contrast, the indicators in Kazakhstan, most notably those pertaining to maternal and child mortality, but also to some extent hospitalisation associated with complications of circulatory system disorders, are high-level outcome indicators. In other words, while the indicators ostensibly only capture events that are "avoidable at the PHC level", in fact they:

- often have complex aetiologies, many of which are linked to the socio-economic status of the patient. This means that attribution of the event to the performance of a single facility is arguable. In addition, the risk profiles of the catchment populations are likely to differ substantially from one area to another. A facility can thus be put at greater or less risk – or rewarded – simply as a result of the local patient mix.
- are statistically rare. In other words, they may occur by chance at a given facilities' level and thus do not allow for fine differentiation of performance across facilities, especially if measured as frequently as on a quarterly basis (Smith et al., 2009).

Other indicators, such as the early diagnosis of pulmonary TB or certain tumours are more directly linked to the activity and performance of providers, but for technical reasons are not generally used in OECD countries.

More broadly, it is unclear how much differentiation between facilities the current set of indicators allows. Data provided by the MOH only distinguishes three levels of performance (<80% achievement, between 80-99%, and 100%+). In 2015, 97% of the PHC facilities evaluated were classified in the middle category of 80-99% (3% and 0.4% were classified in the lowest and highest categories respectively). Irrespective of the suitability of the selected indicators, the results suggest the tool does not properly capture the variation that must exist in the quality of services delivered by different facilities, and only serves to facilitate the identification of outliers, thus greatly limiting its usefulness.

Overall, the pay for performance scheme used in PHC has few characteristics in common with programmes that have been successful in OECD countries. This casts some doubts on its capacity to genuinely influence the behaviour of providers over the long term. Data provided by the MOH also show that the actual implementation of the performance-based payment scheme is incomplete. Indeed, thus far the bonus system has been implemented in only 442 facilities across Kazakhstan, 199 of which are located in rural areas (MOH data). Excluding medical and feldsher stations, this represents about 10% of rural facilities. Of these, the vast majority are actually set in fairly urban areas (and listed as rayon polyclinics[3]). Only 11 rural medical ambulatories are included in the payment scheme, largely due to the lack of IT infrastructure in rural facilities. In urban areas, 243 facilities are registered, a number roughly corresponding to the total number of urban ambulatories and polyclinics, suggesting the programme is virtually universal in that group of facilities.

Moving forward, an ambitious strategic plan has been put in place for 2016-19 – the National Programme for Development of the Health Sector in Kazakhstan "Densaulik"

The current strategic plan for 2016-19 envisages a series of additional reforms to primary care services in an attempt to address several remaining challenges. Among these, the new state development programme aims to reinforce PHC by:

- acknowledging the need to strengthen prevention activities;
- accelerating the privatisation of private facilities, as a mechanism for improving their efficiency;
- ensuring GPs are fully responsible for coordinating care, and also monitoring the quality of care;

- increasing the proportion of (trained) GPs to 54% of primary health care physicians by 2017; reducing the number of patients covered by each GP from 1 per 2 000 population to 1 per 1 500 population;
- introducing a fully-fledged fundholding scheme;
- increasing PHC financing to 40% of total health care expenditure;
- delegating selected GP functions to nurses and improving the education of both.

Overall, the efforts to continue improving PHC are fully in line with the governments' key goal of prioritising primary care. However, an onsite assessment has shown that individuals working in the design, provision and assessment of primary care services are still adjusting to the changes imposed from a decade of major reorganisation. Thus the success of a new era of ambitious reforms will largely depend on the progress made until now, i.e. on the level of adequate integration of the previous reforms to the system.

2.4. Performance of primary care

The reforms of the past decade have, among others, aimed at institutionalising PHC services in Kazakhstan. However, no thorough analysis has been yet undertaken of the consequences of these comprehensive changes in access, quality and efficiency of primary care services. One potential reason for this may be the paucity of available data arising from the lack of a comprehensive health information system.

Initial evidence shows the pace of reform has varied across the regions. In certain oblasts, PHC teams are fully operational, whereas in others district therapists or paediatricians remain the main providers (MOH and WHO, forthcoming). The current diversity of PHC facilities has also contributed to a growing variation in availability and quality of staff and infrastructure.

There is no single internationally agreed framework for measuring the performance of primary care. As outlined in Section 3.4 of the hospital chapter, the performance of PHC could be measured in the context of its contribution to the achievement of the overarching system goal of improving population health while providing financial protection. In this context, performance measurement is necessarily multi-dimensional, but at the primary care level, access and quality (including effectiveness, patient centredness, and integration) typically receive more attention (Smith et al., 2009). At a clinical level, the role of primary health care in prevention, basic acute care and chronic disease management are of particular importance. While some data on the structure of primary care were presented in section one, the rest of this section will focus on a closer analysis of the inputs, processes, outputs and intermediary or higher level outcomes. To the extent the data permit, the analysis will highlight cross-regional and urban vs rural differences, and will compare the performance of Kazakhstan with OECD countries across a series of key indicators.

Access to PHC services

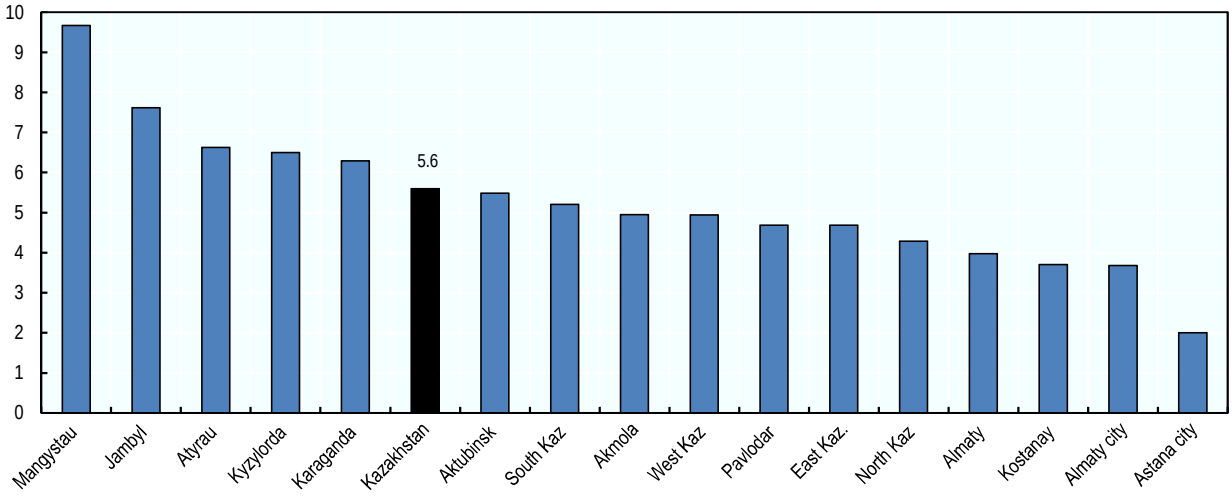
Access to health care services, which in turn depends on a well-balanced and coordinated distribution of health care resources, is an important dimension of performance. 'Access' implies that patients are able to afford care they need, the infrastructure is tailored to its target population, and sufficient numbers of health professionals with adequate skills exist and are effectively distributed geographically.

While Kazakhstan has come a long way in improving access to health care services for its population, the analysis shows that access to PHC continues to be hampered by an inadequate, overworked and poorly distributed health workforce.

The number of PHC contacts per capita seems fairly high but a closer examination raises questions about actual coverage.

The data suggest that access to PHC care in Kazakhstan is reasonable on average. MOH data on the number of presentations show a per capita average of 5.6 contacts with primary care per year (in the OECD the number of contacts with outpatient physicians is 6.6, inclusive of specialists' visits). However this average masks large differences across regions in Kazakhstan: the number of contacts ranges from 2.0 in Astana to a surprisingly high 9.7 in Mangystau (Figure 2.7). Disaggregated data show even greater variation. Some parts of the population are likely to have very limited access to primary care; survey data would help to elucidate the extent to which socio-economic factors might explain these differences.

Figure 2.7. Annual average number of contacts with primary care providers per capita, Kazakhstan, 2015



Note: It includes daily consultations and weekly home visits from general practitioners, district therapists and district paediatricians.

Source: Ministry of Health 2016.

In fact, around 17% of the population do not appear to be registered with any primary care provider. MOH data on the number of PHC physicians and the average number of persons registered with each provider category (general practitioner, district therapist of paediatrician) suggest that around 14.5 million Kazakhs are registered with a PHC provider, or 83% of the population. In the absence of additional information, for example on the geographic or socio-economic distribution of the people who are not registered, it is not possible to determine whether and how the PHC needs of 17% of the population are being met. Moreover, the average number of contacts per capita (Figure 2.7) is computed by dividing the number of visits by the entire population. Assuming the 17% of the population that are not registered do not seek care from public facilities, then those who are registered have on average 6.9 contacts with PHC each year.

A closer examination of the data however suggests that the number of contacts pertains to access to *primary care facilities*, not primary care providers. In other words, the contacts include visits to specialists based in PHC facilities. Thus the extent to which patients access PHC physicians and teams is not recorded.

Two additional factors suggest that the numbers do not reflect contacts with PHC physicians:

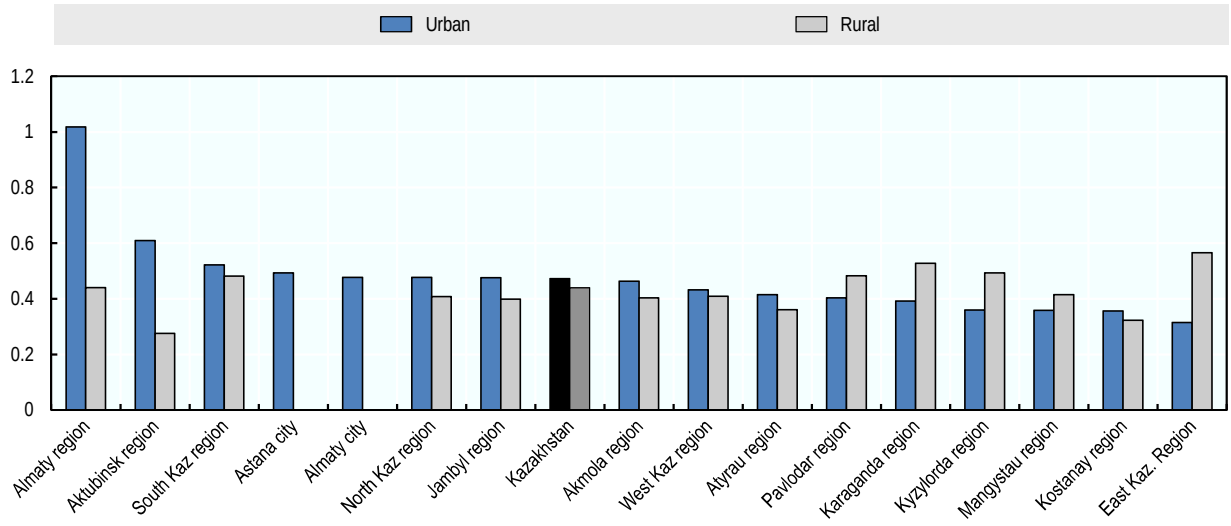
- First, the numbers suggest that outpatient specialists work very little. The reported average number of contacts with outpatient physicians in Kazakhstan was 6.1 in 2015 (MOH). If 5.6 of these are in fact PHC contacts, this means that on average Kazakhs have fewer than 1 contact with an outpatient specialist each year (6.1-5.6). In parallel, data from the MOH (discussed under Figure 2.4) show that there are about 7 990 primary care physicians (GPs, district therapists and paediatricians) and that the total number of physicians working in the "primary care facilities" (listed in Table 2.1) is 26 201 in 2015. Deducting PHC physicians from the total number of physicians working in PHC facilities, this means that there are around 18 400 outpatient specialists. In other words, although there are more than twice as many outpatient specialists, they collectively see one sixth (17%) of the number of patients seen by PHC physicians. Moreover, some of them provide laboratory services and are not expected to see patients. It is however more likely that that contacts reported in Figure 2.7 include those with non-physician providers or with specialists who work in PHC facilities.
- Second, there are inconsistencies between the number of PHC visits and the number of visits per provider. The data underlying Figure 2.7 pertain to the 1 870 "core" PHC facilities identified earlier. The total number of contacts is around 92 million for 2014. Assuming each of the 7 790 PHC physicians works 265 days a year, this means that they see more than 32 patients each day. This does not correspond to MOH data, which suggests they see around 20 patients per day on average.

The most likely conclusion therefore is that the numbers presented above represent contacts with PHC facilities, not contacts with PHC providers. Without additional data the extent to which the population has access to PHC physicians – or PHC team members – is unclear. This is clearly a serious data limitation in light of the objectives of the reforms.

PHC workforce remains insufficient and poorly distributed

Despite rapid growth in the number of GPs, the health workforce remains inadequate to meet the needs of the Kazakh population, especially in some areas where the density of PHC physicians per capita is very low. As Figure 2.4 showed, on average, the number of GPs (or more generally, PHC providers) is low by international standards. Figure 2.8 shows that the situation varies across regions. Surprisingly, in the urban Almaty region, the number of PHC physicians per capita is the same as the four OECD countries with the highest numbers of GPs. But even excluding this outlier, the number of physicians per capita varies by 220% across the different rural and urban regions depicted below. A number of regions have managed to prioritise delivery in rural areas: rural South Kazakhstan, rural Pavlodar, rural Karaganda, rural Kyzylorda and rural East Kazakhstan all have numbers of PHC physicians per capita that are higher than the national average.

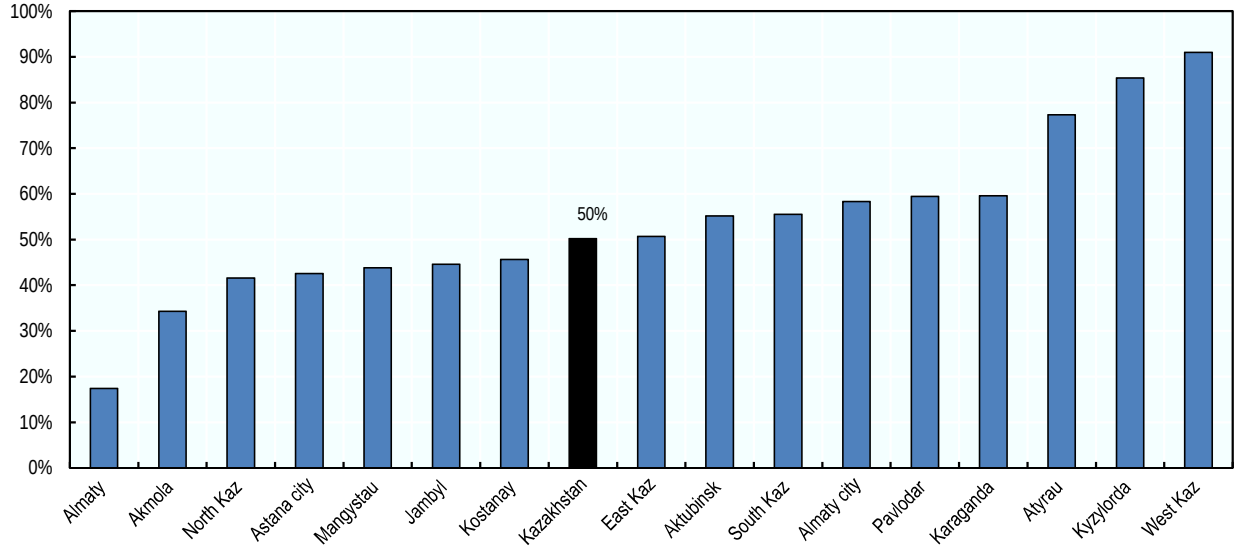
Figure 2.8. Number of PHC physicians per 1000 population in rural and urban areas, by regions, Kazakhstan, 2015



Source: Ministry of Health 2016.

The distribution of trained GPs in the medical workforce also varies greatly between regions. Newly qualified or retrained general practitioners now represent 50% of PHC physicians, the remainder being equal numbers of district therapists and paediatricians (Figure 2.9). The distribution is however, very uneven with GPs representing on average 60% of PHC physicians in rural areas but only 40% in urban areas. The differences are actually more marked across regions, with the Almaty region having the lowest proportion of GPs overall (not a single trained GP works in the urban areas of the Almaty region). By contrast, in West Kazakhstan, nearly all PHC is provided by GPs.

Figure 2.9. Proportion of GPs among PHC physicians, Kazakhstan, 2015

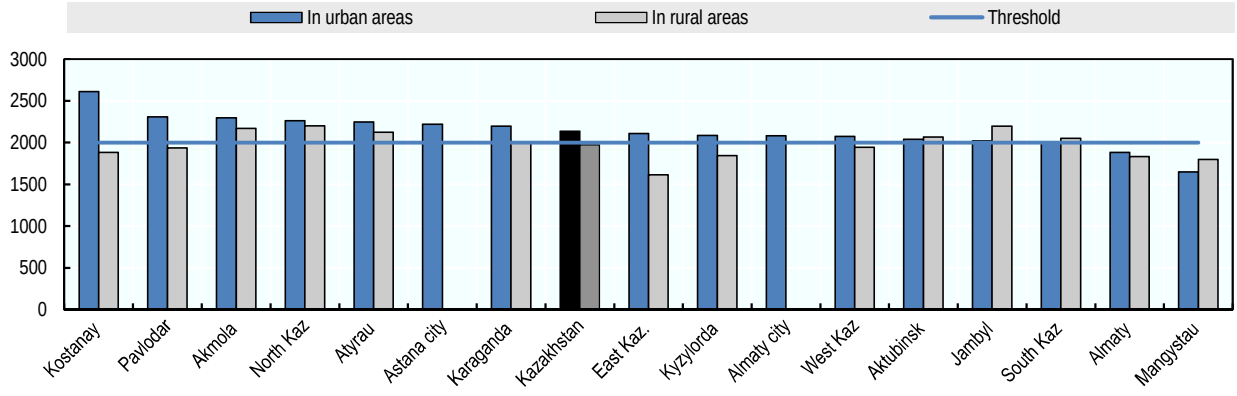


Source: Ministry of Health, Kazakhstan 2016.

The number of patients registered with individual health professionals in most regions in Kazakhstan exceeds the levels specified in current health workforce standards. The standards define the maximum number of patients that should be registered with a PHC physician in the following way: up to 2 000 adults per general practitioner, 2 200 adults per district therapist and 900 children per district paediatrician. Actual numbers are presented in Figures 2.10-2.12 for Kazakhstan and regions, rural and urban areas. Overall, the number of patients registered to the various types of providers is fairly close to the standard. There are however regional variations. In general, fewer patients are registered to PHC physicians in rural than urban areas but these are precisely the places where distances are very large and populations scattered. Thus the numbers should not be interpreted to mean that the rural population coverage is significantly better than in urban areas.

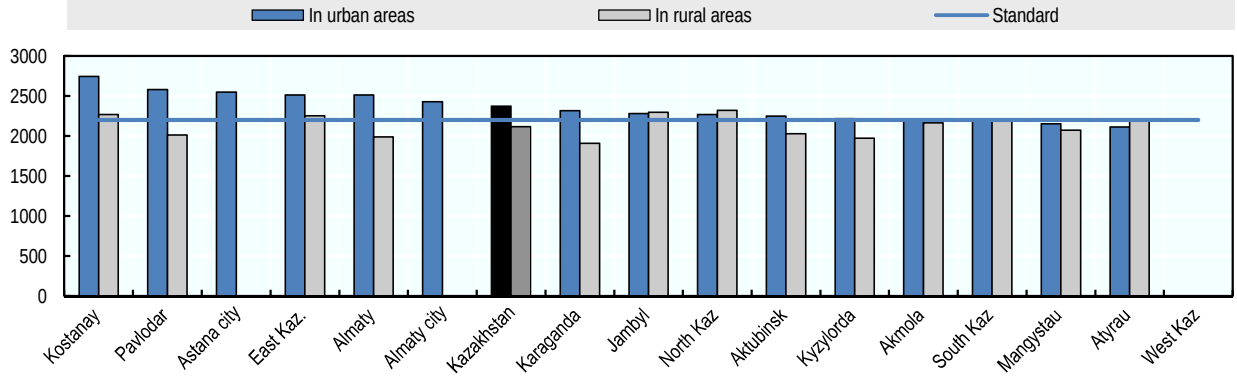
The coverage targets set out by the government for the PHC medical workforce will require a very rapid increase in the number of GPs. The current threshold of 2 000 patients per PHC GP implies that around 8 700 GPs would be necessary to cover the entire population, i.e. more than double the current number (4 014 GPs). In addition, the State Health Development Programme "Densaulyk" for 2016-19 sets a new target of 1 500 patients per GP.

Figure 2.10. Average number of registered patient per GP, Kazakhstan, 2015



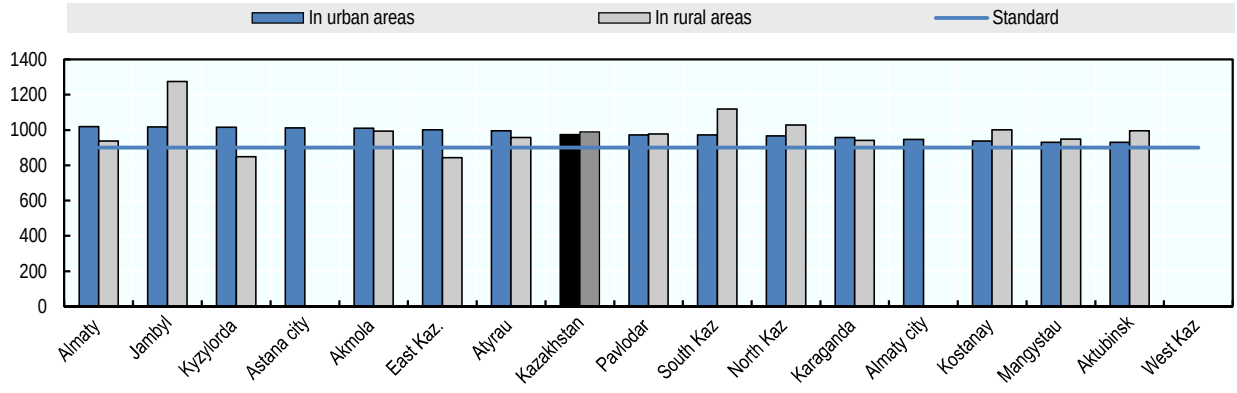
Source: Ministry of Health, Kazakhstan 2016.

Figure 2.11. Average number of registered patient per district therapist, Kazakhstan, 2015



Source: Ministry of Health, Kazakhstan 2016.

Figure 2.12. Average number of registered patient per district paediatrician, Kazakhstan, 2015

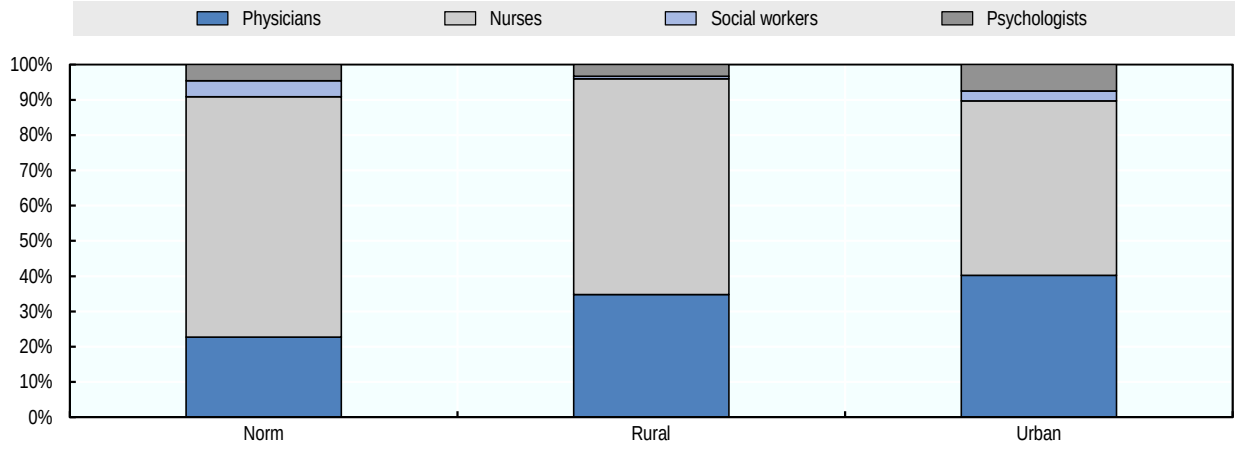


NB: there are too few district therapists and paediatricians in West Kazakhstan for the numbers to be meaningful.

Source: Ministry of Health, Kazakhstan 2016.

Access to complete PHC teams remains limited, particularly in rural areas. In theory, each PHC physician should be working with three nurses, a part time social worker, and a part time psychologist (20%). Data on the number of staff effectively working in PHC teams show that statistically for every PHC physician less than 1.5 nurses are available, half of what would be required. Around three quarter of the required psychologists are working in PHC teams and a quarter of social workers. So at most (assuming somewhat optimistically that each social worker effectively works in five PHC teams) a quarter of the PHC teams are complete. In Figure 2.13, the required mix is represented by the first bar. The figure also illustrates that on average, staffing levels are far from being met, with too few nurses per physician. In rural areas there are too few primary care nurses and allied health participation in the teams is suboptimal. In urban areas the proportion of PHC physicians in the PHC teams is even higher than in rural areas. In addition, urban facilities may also employ ten to twenty different specialists are generally better equipped (WHO, 2015). Overall, access to complete PHC teams is far from the norm, especially in rural areas.

Figure 2.13. Composition of PHC teams, Kazakhstan (norm, rural, and urban areas), 2015



Source: Ministry of Health, Kazakhstan 2016.

Somewhat paradoxically, recruitment for existing positions does not appear to be overly problematic. In 2015, there were an estimated 1 669 PHC staff positions to be filled. The vacancy rate for core PHC teams thus averages 5% (Table 2.5), with vacancies more frequent in urban areas. Data on staffing levels however suggest that each PHC physician fills on average 1.2 positions. If these are full time positions, this would suggest primary care physicians were being overextended. Overall, the figures should be interpreted with caution, as the data refer to vacancies identified by facilities and not the results of a system-wide needs assessment.

Table 2.5. Vacant (estimated) and filled positions and head count for PHC staff, 2015, Kazakhstan

	Vacant positions			Filled positions	Head count	Ratio
	Total	Rural	Urban			
PHC physicians	6%	5%	6%	11 258	9 343	1.205
PHC nurses	3%	2%	4%	25 685	25 319	1.014
Social workers	5%	4%	5%	2 023	2 019	1.002
Psychologists	7%	5%	8%	1 184	1 052	1.126

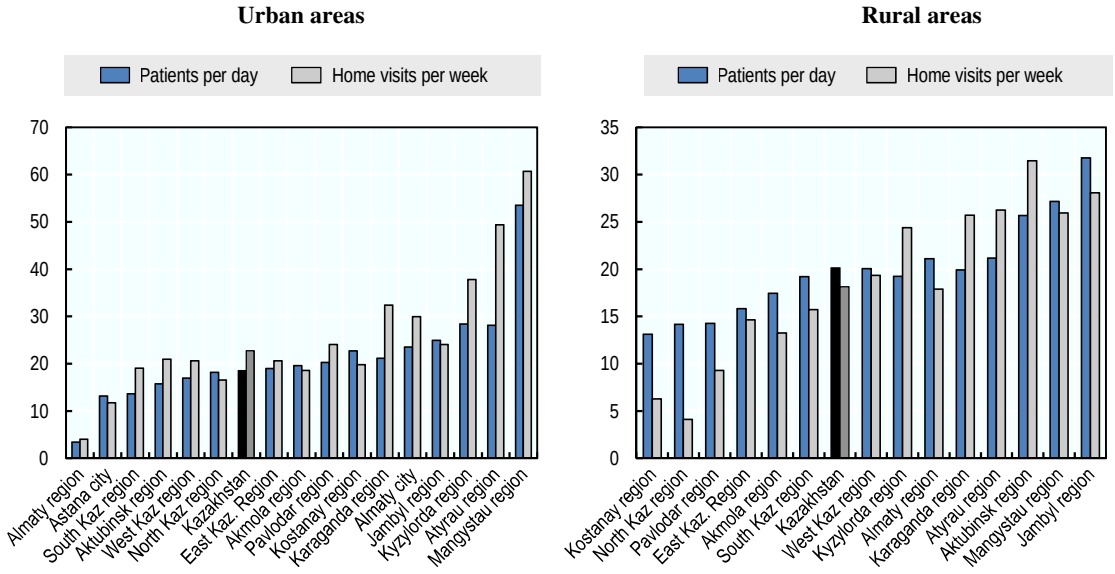
Source: Ministry of Health 2016

A *Human Resources for Health Observatory* was recently established as part of the Republican Centre for Health Development to improve the Ministry's human resources intelligence and planning capacity. The Observatory aims to improve the collection and monitoring of health statistics concerning the various categories of health professionals. It also has a remit to develop an effective system of workforce planning and forecasting, and a model has been developed with support from WHO.

Some physicians have very high workloads

The workload of many PHC physicians is too high to be conducive to delivering effective patient-centred care. On average, the workload of PHC providers is around 20 patients a day and 20 home visits a week (23 in urban and 18 in rural areas). However, here again there are large variations among regions. For instance, the data suggest that PHC providers in the urban part of the Almaty region see 3 patients a day and conduct 4 home visits a week, which seems very low. At the other end of the spectrum though, in at least 3 rural and one urban region, on average physicians see more than 25 patients and conduct 5 home visits a day, which may not be conducive to delivering the best quality care.

Figure 2.14. PHC physician workload, 2015



Source: Ministry of Health, Kazakhstan 2016. Regions are ranked from the lowest to the highest weekly estimated workload (5*number of visits per day + number of home visits).

Quality of PHC services

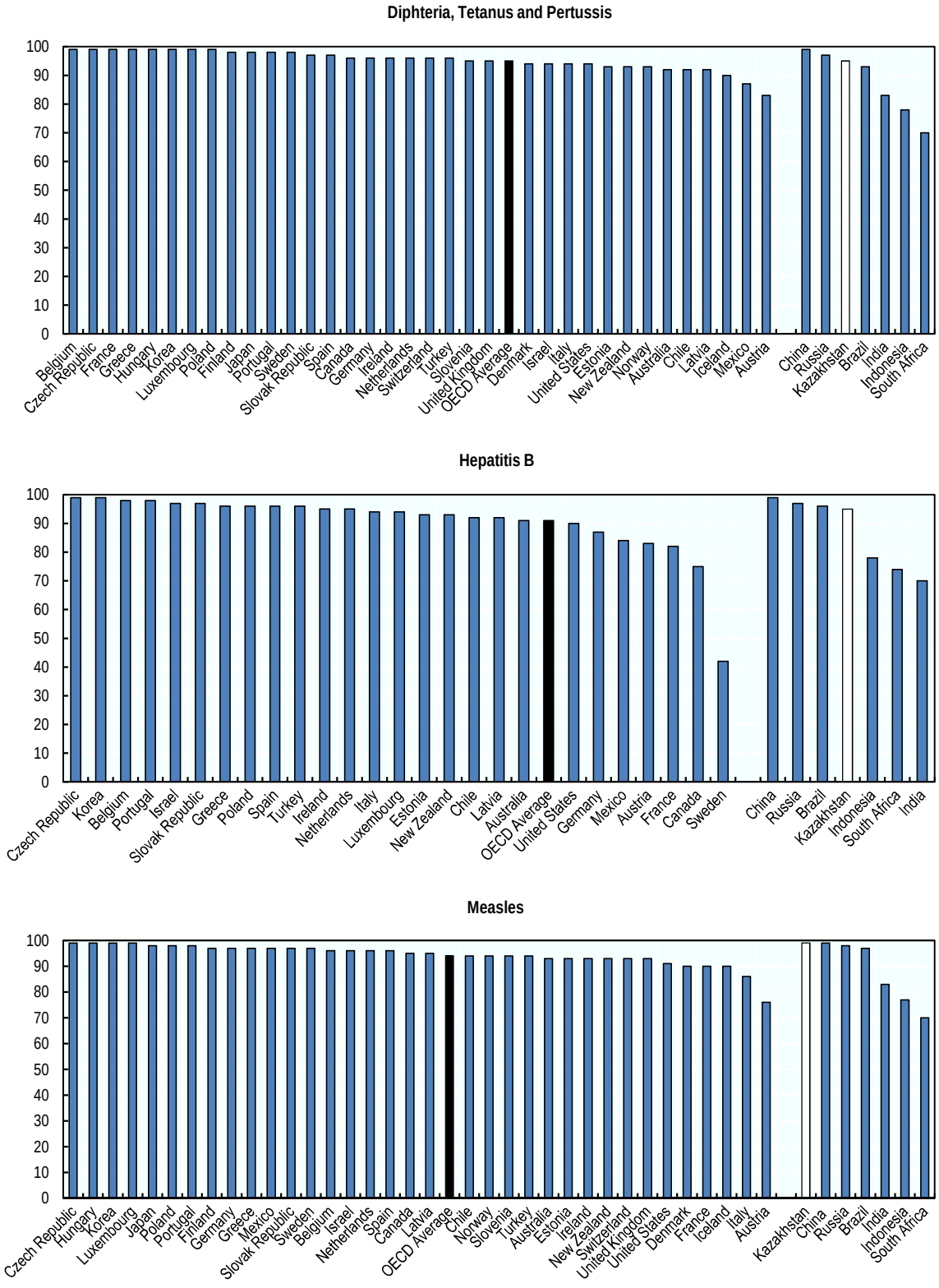
Achieving high health care quality requires putting in place institutions that oversee both the process and delivery of care and the quality of providers. At the facility level this means ensuring that quality standards are met, and that patients receive the care they need rapidly, effectively, and with dignity. For individual health professionals, it means maintaining currency of medical knowledge and skills. Quality also means ensuring appropriate co-ordination of care so that patients are followed and supported as they move through various care settings. For institutional providers, it requires the development of appropriate systems of control over the quality of care and efforts to ensure that patients are satisfied with the care they receive.

Quality has many dimensions that may be measured directly, but in light of the paucity of available data, the following section looks at population health status indicators as indirect measures of access to effective PHC. Data on patient satisfaction will also be discussed.

Immunisation rates continue to be high

Immunisation rates are high in Kazakhstan. Available vaccines provide safe and effective protection against diseases such as diphtheria, tetanus and pertussis (DTP), hepatitis B and measles. As such, the percentage of children immunised against these diseases is an accepted indicator of the quality of care at PHC level. The overall DTP vaccination rate among children in Kazakhstan is around 95%, placing it on par with the OECD average and with the exception of People's Republic of China and Russia, higher than most of the BRIICs. With respect to vaccination for hepatitis B and measles, Kazakhstan performs above the OECD average with immunisation rates of 95 to 99%. Soviet-inspired heath-systems have consistently demonstrated their capacity to provide immunisation to the vast majority of children. Kazakhstan has maintained this tradition (Figure 2.15).

Figure 2.15. Vaccination of children aged 1, Kazakhstan, OECD and BRIICS countries, 2015



Source: OECD Health Statistics 2016, http://dx.doi.org/10.1787/health-data-en; Ministry of Health 2015

Screening programmes show mixed results

The ability of PHC to detect the onset of disease early is another relevant performance indicator.

The impact of screening programmes on screening rates is promising but uneven. Data from the Ministry of Health show that in 2015, around 51% of the target population had undergone cervical cancer screening in the past five years (54% in urban areas vs 48% in rural areas). This rate is lower than the OECD average of 61.6% in 2013. In Sweden, New Zealand and Ireland, the proportion was above 76%. In addition, in most OECD countries, the recommended frequency of cervical cancer screening is higher than in Kazakhstan (every two or three years rather than five).

Regarding breast cancer, approximately 69% of the target population were screened in 2015, (75% in the urban areas vs 63% in rural), a relatively high proportion relative to OECD countries (58.5%), but in line with EU guidelines suggesting a 75% screening rate of the target population (European Commission, 2016).

From 2008 to 2010, screening tests for cardiovascular diseases identified 509 591 cases of coronary heart disease and hypertension, approximately 10% of the examined population. Over the same period, cervical and breast cancer screening revealed 83 349 and 124 052 cases respectively, equivalent to around 5% and 10% of the examined target population respectively. In 2011, the list of screening tests was expanded to include diabetes, glaucoma and colorectal cancer. From 2011 to 2013, these conditions were detected on average in around 0.7% of the population (Battakova, 2015 and Table 2.6).

Table 2.6. Rates of non-communicable diseases identified at the National Screening Programme, 2008-13

	Cardiovascular disease (includes coronary heart disease and hypertension)	**Cervical cancer** (includes precancerous lesions and cancer)	**Breast cancer** (includes precancerous lesions and cancer)	**Diabetes mellitus**	**Glaucoma**	**Colorectal cancer** (includes precancerous lesions and cancer)
2008	9.3	4.3	7	n.a	n.a	n.a
2009	10.5	6.1	11.3	n.a	n.a	n.a
2010	10.4	5.3	11.8	n.a	n.a	n.a
2011	7.7	4.5	8.8	0.3	0.2	0.05
2012	8.1	4.9	10.8	0.3	0.3	0.1
2013	8.2	4.5	12	0.4	0.3	0.1

Source: Adapted from Battakova (2015).

Despite an impressive record in introducing and expanding screening programmes, many challenges remain. First, according to data from the Ministry of Health, in 2015 2 032 913 people were screened for cervical, breast, colorectal, oesophagus, stomach and prostate cancer. This corresponds to around 54% of the relevant target population, well below the target of 70%.

Second, a key limitation is the persistent lack of coordination between the results of screening and follow-up. Although the development and reach of the screening programmes are praiseworthy, it is not clear that patients in whom diseases are identified receive adequate diagnosis and treatment. However it is also unclear whether this reflects a lack of proactivity among physicians and patients, or whether health facilities are overloaded and have limited capacity to deal with new cases (International Bank for Reconstruction and Development, 2014).

The share of avoidable hospital admissions is noticeably high, including for chronic conditions

While efforts to improve early detection of NCDs are important, attention must also be paid to ensuring PHC effectively manages and coordinates the care of people with NCDs.

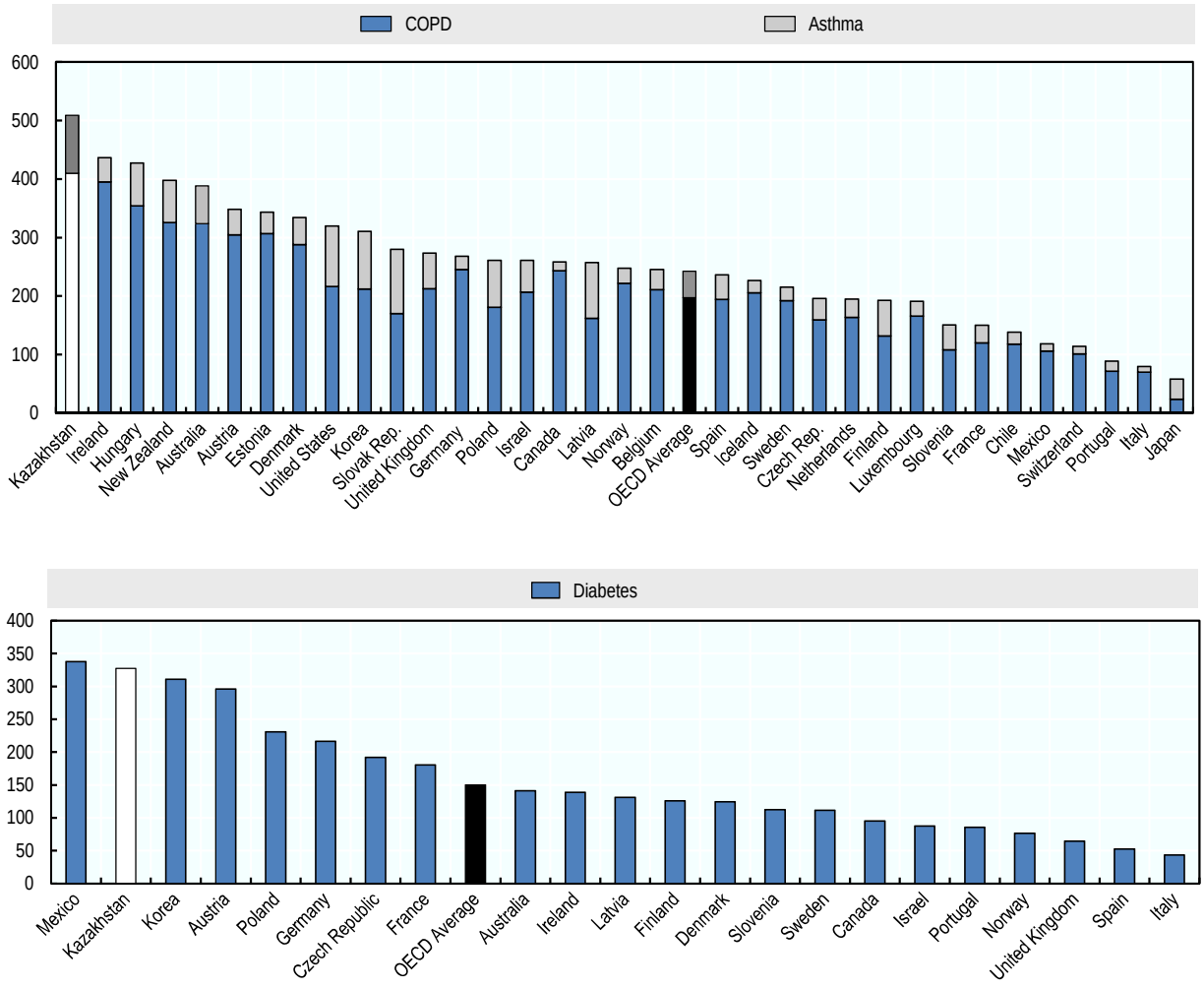
The number of hospitalisations for Ambulatory Care Sensitive Conditions (ACSCs) is a powerful – albeit rather high-level – indicator of the quality of PHC. ACSCs are conditions for which effective and accessible primary care can generally prevent the need for hospitalisation, or for which early intervention can reduce the risks of complications, or prevent or delay more severe disease (Agency for Healthcare Research and Quality, 2001). Diabetes, chronic obstructive pulmonary disease (COPD) and asthma[4], angina, hypertension and congestive heart failure (CHF), bacterial pneumonia, dehydration, paediatric gastroenteritis, and low birth weight are all ACSCs with an established evidence base showing that much of the treatment can be delivered in an outpatient setting at the primary or community care level. Treated early and appropriately, acute deterioration in people with these conditions and consequent hospital admissions can be reduced.

Hospital admissions for ACSCs in Kazakhstan are high compared with the average in OECD countries. In 2015 around 509 adults over 15 years old were hospitalised due to asthma or COPD per 100 000 population in Kazakhstan. This contrasts with around approximately 58 in Japan, 89 in Portugal and 150 in France. A similar pattern applies to hospital admissions due to diabetes; in 2015, around 41 751 people over 15 years old were hospitalised in Kazakhstan, or 327 per 100 000 population, well above the average in OECD countries (Figure 2.16). Strengthening services delivered at PHC level and improving management of service delivery outside hospitals should remain a priority.

Avoidable hospital admissions are also frequent for other ACSCs. WHO recently undertook a comprehensive analysis of avoidable hospitalisations in Kazakhstan, focusing in particular on ACSCs (WHO, 2015). The study showed that hospitalisation rates were very high for infectious and parasitic diseases (75%), pneumonia (85%), epilepsy (37%) and angina pectoris (36%). Furthermore, a survey conducted among national health professionals suggested that at least 61% of admissions for influenza, 44% for kidney and urinary infections, 75% for hypertension, and 42% for angina pectoris could have been avoided through effective PHC interventions (WHO, 2015).

The same report also demonstrated large geographic variations but no clear patterns in avoidable hospitalisations for ACSCs. Among the ACSCs reviewed, kidney and urinary tract infections showed the highest regional differences. Indeed, in 2014, hospitalisations for this condition in Akmola region were above 20%, or 4.5 times higher than in Aktobe (below 5%). Cross-regional differences were also observed for hypertension (Kyzylorda had the highest hospitalisation rate – 16.3%, and Almaty city the lowest – 2.5%), communicable diseases including influenza (Pavlodar and South Kazakhstan had the highest rate – 99.3% – and Almaty the lowest – 49.3%) and angina pectoris (Kyzylorda had the highest rate – 85.4%, and Pavlodar the lowest – 15.9%) (WHO, 2015). Differences between urban and rural areas were also considerable but no clear pattern emerged. Overall, the high rates of hospitalisations for ACSCs were attributed to a range of factors including overburdened PHC providers with limited ability to provide continuity of care, excessive and irrational prescribing of antibiotics (which are frequently purchased without prescription), as well as the limited adherence to guidelines.

Figure 2.16. Asthma, COPD and diabetes hospital admission per 100 000 population, Kazakhstan (2015) and OECD countries, 2013 (or nearest year)



Source: OECD Health Statistics 2016, http://dx.doi.org/10.1787/health-data-en; Kazakhstan figures are based on numbers of hospitalisations provided by the Ministry of Health 2016 and estimate of population over 15.

Progress in delivering effective care is required – and possible

Depending on the condition, enabling patients with ACSCs to avoid hospitalisation requires monitoring their health status and ensuring they receive appropriate care. The appropriate care of these patients is described in existing protocols, but no process or intermediate result indicators are collected systematically to enable an assessment of the extent to which they are being followed and are effective.

The previously mentioned DPM pilot concluded in 2015 highlighted both the need to improve adherence to guidelines and the ability of the system to progress. This pilot was applied in seven polyclinics located in two cities (Pavlodar and Petropavlovsk). Hypertension, diabetes and congestive heart failure were selected for assessment given their prominence in the overall disease burden in Kazakhstan. An attempt was made to collect and compare process (e.g. percentage of patients with blood pressure recorded at most recent clinic visit, or percentage of patients living with diabetes with an annual eye

examination) and outcome data before and after (e.g. percentage of chronic heart failure patients hospitalised in the last 12 months, or percentage patients living with diabetes with HbA1c (glycated hemoglobin) <7). While the results were not statistically significant the range of values is powerfully illustrative of inconsistency in performance. In one facility, prior to the intervention, only 7% of diabetic patients had undergone an eye examination in the preceding year; at the end in another facility, the figure was 92%. Similarly, in one location only 8% of diabetic patients had undergone a urine albumin test in the 12 months preceding the intervention, while the rate was above 80% in another at the end of 2016 (CSIH, 2015). The existence of such low baseline levels for several indicators suggests that at present PHC teams are not monitoring or treating chronic conditions in the most effective ways. While at the end of one year, and with targeted efforts, results showed general improvement in process measures, there was still relatively little change in intermediary outcome indicators, although some progress was recorded with respect to hypertension.

The implementation of DMPs will thus require intensive and sustained efforts in Kazakhstan. The study's authors highlighted that these require very intensive efforts to transfer new skills effectively, on-going support and positive reinforcement to motivate staff, and also noted that some teams had limited access to drugs and diagnostics (CSIH, 2015). In sum, the study demonstrated that significant efforts will be required to ensure the PHC system can evolve to provide effective care for patients with chronic diseases.

Prescribing practices are yet another area which can be used as an indicator of health care quality. For example, in order to reduce the risk of developing resistant organisms, antimicrobials should be prescribed only where there is evidence-based need. Unfortunately, data on prescribing practices at primary care level in Kazakhstan are not available but several studies (WHO 2015; CSIH, 2015) have shown that both self-prescribing and lack of adherence to prescribed regimens are widespread.

Satisfaction/patient centeredness

Incorporating the patient perspective and feedback on health care provision are becoming increasingly relevant internationally. They are important components in enabling health systems to become more responsive to the needs of the people using their services. Patient satisfaction affects both clinical outcomes and patient retention, and is influenced by the timely, efficient and patient-centred delivery of quality health care (Prakash, 2010).

Patient satisfaction can be measured in several ways. Patient-reported indicators comprise patient-reported experience measures (PREMs, e.g. whether a patient feels they were adequately involved in important decisions about their care), and patient-reported outcome measures (PROMS, e.g. whether a patient has adequate post-operative pain control). Currently Kazakhstan focuses on recording complaints, an indicator included in the PHC bonus scheme. However, the data provided show that complaints are in fact extremely uncommon (75 complaints in Kazakhstan in 2015). This contrasts with other findings regarding patient satisfaction as discussed in Chapter 1.

The preceding analysis of the performance of the primary health care system relied on the available data. A more comprehensive comparison with OECD countries would require data on, for example, prescribing in primary care, patient experiences in ambulatory care, the number of accredited outpatient facilities, and the percentage of GPs providing referral letters (including relevant information on diagnostics and treatment performed) when referring the patient to a specialist. At the time of writing, these data had been requested but not availed.

2.5. Summary assessment and recommended strategic directions

Summary of findings

The development of PHC in Kazakhstan has come a long way. Although largely neglected during the Soviet period, major restructuring to increase PHC capacity and improve population health has taken place since the country's independence. With the objective of improving quality, efficiency and access to care in the PHC sector, Kazakhstan has implemented several key reforms:

- The general practitioner (GP) role has been introduced, and PHC services are now required to be provided by multidisciplinary teams;
- Although public delivery still dominates, facilities have been restructured to become increasingly more autonomous;
- Incentives to improve quality have been introduced to the payment system, and accreditation of PHC facilities is now mandatory;
- Screening programmes and other activities are in place to address non-communicable diseases (NCDs);
- Disease management programmes (DMPs) have been piloted.

Primary care reforms have been, and continue to be high on the policy agenda, and over the coming years, an ambitious strategic plan will build on these efforts. Finally, Kazakhstan appears to be devoting a higher proportion of health funding to primary care than many other countries.

The above-mentioned developments are to be praised as they have been fundamental in solidifying, strengthening and expanding the PHC sector within Kazakhstan's health system. However, while certain measures have shown clear results (e.g. the number of PHC health professionals increased six fold in ten years, and GPs now represent 50% of the medical workforce), others show that there remains considerable scope for progress (e.g. although multi-disciplinary teams are now mandated, the data suggest these are not being established in practice).

- The vast network of facilities remains fragmented and needs further investment. There is clearly room to rationalise and reorganise the network. The many co-existing categories of facilities do not necessarily correspond to today's operational realities or needs. At the same time, many points of service remain ill-equipped and are not consistently maintained.
- Access to PHC services remains uneven. At first glance, the numbers of PHC contacts per population seem high, but a closer examination suggests that the figures likely include contacts with specialists. Furthermore, one fifth of the population is not registered with any primary care provider. Thus the actual utilisation of PHC services at population level is difficult to ascertain. Ambitious human resource targets are not being met; the number of PHC physicians remains very low by OECD standards, and is insufficient to meet both needs and expectations. Many health professionals are overworked, especially in some regions. Ultimately even if public coverage of PHC services is nominally free and guaranteed, effective access is probably uneven.
- There are clear signs that the effectiveness of PHC, a key dimension of quality, can be improved. Although Kazakhstan has been able to maintain its traditionally high

vaccination rates, screening rates are still relatively low. In addition, avoidable hospitalisations for common chronic diseases are exceptionally high. Despite the existence of clinical guidelines and treatment protocols, studies show that health professionals do not provide adequate care consistently. Staff members need to be (better) trained and incentivised, and they need the time and the necessary tools to deliver effective care. Poor coverage of prescription medicines also limits the effectiveness (and appeal) of care at PHC level. Above all, better data systems are needed to ascertain whether effective improvement is taking place.

Overall, the reforms are not yet fully delivering on their initial promise.

Importantly, the analysis highlights the lack of capacity of existing data systems to record and measure progress as the reforms evolve. Throughout this analysis, the available data proved difficult to interpret and analyse. While Kazakhstan continues to invest in and strengthen PHC, additional effort must be directed toward producing better quality data, otherwise it will remain challenging both to demonstrate progress and to determine how best to drive it.

Drawing on the experiences of OECD countries, a series of recommendations can be assembled to assist Kazakhstan's efforts in improving PHC performance. Specifically, Kazakhstan should consider promoting better integration and coordination of care at PHC level by making use of innovative integrated care models. The PHC workforce continues to require further attention to become fit-for-purpose for the Kazakh population and priority should be given to improving data the infrastructure for data collection as this is essential for identifying sources of problems and driving quality improvement.

Improving PHC in Kazakhstan: Recommendations

Primary care must remain a priority in the years ahead and the focus should shift towards implementing for results

A strong primary health care sector is the foundation of a health system that is effective, efficient and responsive to patients' needs (OECD, 2016f). OECD countries broadly agree on the characteristics of the service model needed for primary care to deliver effectively. A distinct, specialised, and adequately resourced primary care sector should be front and centre in the health system's response to evolving health care needs and expectations. PHC should not merely function as a gateway to more complex medical or surgical procedures, but should provide a comprehensive and continuous response to the majority of the population's health needs, as well as prevent illness through effective health promotion. In other words, PHC should function in such a way that most of the population's encounters with the health care system begin, and are effectively resolved, at the primary care level, and referrals to secondary and tertiary care occur only where effective care cannot be provided. This in turn has the potential to achieve the triple aim of improving the experience of care, supporting the long-term financial viability of the health care system, and reducing the number of years of life lost by preventing premature deaths (Box 2.2) (OECD, 2017b; OECD, 2016f; OECD, 2012b).

Box 2.2. The benefits of specialists primary care to patients and to health systems

In most OECD countries, primary care systems are characterised by person- rather than disease-focused care, comprehensiveness of care (particularly for first-contact health care needs) and continuity of care (Starfield et al., 2005). Delivering such a care model is challenging, and many countries have developed a distinct, specialist sector within their health care system to deliver the model successfully.

A distinct, specialist primary care sector is believed to bring benefits to individual patients and to health systems alike. This is particularly the case in the context of population ageing, where more and more individuals will have multiple, long-term and complex care needs – the need for an "expert generalist" or "co-morbidity specialist", rather than a disease specialist, has never been greater. Primary care professionals are ideally placed to fill this role, not only because patients often enter a care pathway through primary care, and retain contact with it throughout their care, but also because of its holistic, rather than disease-centred, orientation (Masseria et al., 2009). Continuity and co-ordination of care have been identified as key elements of primary care, which are associated with improved quality, outcomes and patient satisfaction (Kringos et al., 2010). The 2011 Commonwealth Fund survey of patients with complex care needs found that care is often poorly co-ordinated in the 11 countries surveyed (Schoen et al., 2011). However, **adults seen at practices where clinicians knew individual patients' medical history and proactively co-ordinated care – rated their care higher and were less likely to experience co-ordination gaps or report medical errors.**

From a system point of view, a distinct and specialist primary care sector has been shown to contribute to better quality, co-ordination, responsiveness and cost-effectiveness of health care services, particularly with respect to the management of long-term conditions (Shi et al., 2002; Boerma et al., 1998; Kringos et al., 2010). Similarly, a study by the Commonwealth Fund of care management programmes that spanned care settings and engaged interdisciplinary teams across the continuum of care found that multifaceted, boundary-spanning approaches were associated with reduced hospital use and readmissions (McCarthy et al., 2013).

Evidence such as this supports the argument for moving from a loosely defined primary care sector staffed by semi-specialists/semi-generalists, to a specialist primary care sector that sees itself as the hub of a wider system of care, with responsibility for co-ordinating each individual's care needs, including services beyond health care (Goodwin et al., 2011).

Source: OECD (2016e), OECD Review of Health Systems: Mexico 2016, http://dx.doi.org/10.1787/9789264230491-en.

Kazakhstan has clearly recognised the importance of investing in primary care. The reforms undertaken to date clearly reflect this. Moreover, the strengthening of primary care continues to be supported by the State Health Development Programme of the Republic of Kazakhstan "*Densaulyk*" for 2016 – 2019. Key measures envisaged include reducing the size of patient lists for generalists, from the current 2 200 to 1 500, and the increased delegation of tasks to nurses. These are all steps in the right direction.

At the same time, now that many structural elements are in place, the focus needs to shift to deepening the reforms and ensuring they deliver the desired results. After decades in which PHC was largely neglected, cultural shifts in the medical as well as the political mind-sets will take time. Long-term efforts are still required to move from a hospital and disease-based approaches to health care toward person-based and community-based approaches (OECD, 2012b). Particular attention must be paid to creating supportive operational and clinical practice environments that enable primary care providers to provide effective care. The following sub-sections highlight priority areas in this regard.

Define service delivery packages more explicitly and adapt the primary care network systematically

Further clarity on operational models in primary care is required and the infrastructure adapted to population needs. The chapter highlights the many ways in which the current system, with its array of many categories of facilities and uneven distribution of resources, still requires adaptation. Each local network of PHC providers will need to adapt to local circumstances, but it is also important to identify packages of services covering prevention, diagnosis and treatment that all patients may expect to receive in rural and urban areas, in both basic and more advanced facilities. These packages should be the basis for contracting PHC services and each local authority should be accountable for providing effective access to them within its territory. Further, insofar as they own the facilities, they should ensure the required staff, operating environment, and necessary equipment are in place.

The systematic reorganisation of the network and realignment with current population patterns should continue. A master planning exercise was undertaken for primary care in the context of a World Bank project with the objective to determine how the network of primary care facilities could be adapted in each region (Sanigest International, 2014). Building on this, local authorities should develop and implement their restructuring plan for the public network, but should also remain open to considering and testing new models of service delivery.

New models of service delivery could be pilot-tested, especially in rural areas. The country's geography and low population density pose unique challenges for health service delivery. Considering these challenges, rural and remote areas require different delivery and financing models to those in more urban settings. Kazakhstan has experimented with several initiatives such as mobile primary care services and tele-medicine in some remote parts of the country. However, there is no evidence that these efforts were systematically evaluated in terms of access or sustainability, both of which would be necessary to justify their incorporation into a system-based strategy. In the end, they represent options that need further exploration and could be complemented with other policies, as is the case in rural and remote health care in Australia (Box 2.3).

Box 2.3. Australia's National Strategic Framework for Rural and Remote Health

In Australia, in recognition of the complexities of delivering health services in the most remote areas, a National Strategic Framework for Rural and Remote Health has been developed. The framework aims to promote a national approach to policy, planning, design and delivery of health services in rural and remote communities. The framework cites wide variations between rural and remote communities and encourages health service planning and delivery that recognises the need to develop solutions to meet the unique needs of local populations.

Based on evidence that rural and remote areas are places that are not perceived by health professionals as attractive to live, Australia has made efforts to provide regulatory support and financial incentives for primary care physicians to relocate to areas of need. As medical graduates from a rural background are more likely to practise in a rural area, the federal government has obliged the medical schools to fill 25% of medical school places with students from a rural background. The government has also sought to increase numbers of medical graduates in rural areas through the Medical Rural Bonded Scholarship (MRBS). The MRBS provides 100 medical school places with an attached scholarship. The scholarship recipients sign a contract that requires them to work as a medical practitioner in a rural or remote area for six years after they attain fellowship.

The remuneration strategies include offering doctors additional payments for all or selected services, in recognition of the challenges of providing care in rural and remote areas. An example is a Procedural General Practitioner Payment which aims to encourage GPs in rural and remote areas to maintain local access to surgical, anaesthetic and obstetric services. In 2013-2014, practitioners who participated in the programme received on average additional payments of AUD 23 900 per year. There is also a so-called rural loading, ranging from 15% to 50% (depending on the remoteness of the practice location), that increases the quality-related bonus payments of practices in rural and remote areas.

Australia has also adopted technology to address workforce shortages in rural and remote areas. For example, where much of the direct patient contact is provided by nurses, doctors review diagnostic tests and imaging remotely and have case discussions with the local team. These doctors are GPs who have usually previously worked in remote areas. They also form the core of the 24-hour duty roster that provides emergency advice. This is considered an important retention initiative for remote PHC workers, as it limits the expectation they are on call continuously, and it provides reassurance and backup. Moreover, the technology links rural GPs to specialists in cities or bigger regional centres via video. It also links patients directly to metropolitan specialists, such as psychiatrists, for consultations. In addition, GPs can access online case studies and educational opportunities.

Source: OECD (2015b), OECD Reviews of Health Care Quality Australia: Raising Standards, http://dx.doi.org/10.1787/9789264233836-en..

Further develop the PHC workforce to improve coverage

In order to address ongoing concerns about shortfalls in the PHC workforce and meet the targets set in "Densaulyk" to reduce the burden on GPs, Kazakhstan will need to find additional ways to attract and retain medical graduates in general practice. Like most OECD countries Kazakhstan seems to be experiencing difficulties in making general practice attractive to medical graduates (*vs* other medical specialist training) despite an increase in the number of training places. A number of OECD countries have recognised that other factors influence the choice of specialty training beyond the number of places available. Strategies which have been proved successful include offering training places in primary care facilities (outside hospitals), improving the relative remuneration of general practice, and reducing the workload and isolation often associated with general practice by promoting group practices and team work – as detailed below (OECD, 2016d).

A complementary strategy would be to continue to invest in task redistribution, which the current national law already defines, and promote advanced roles for nurses. In at least half of the OECD countries, the scope of practice of non-physicians – particularly

nurses – has been expanded between 2007 and 2012. The most prominent example is the United States, where Advanced Practice Nurses (APNs) and Nurse Practitioners (NPs) now represent over 5.5% of the registered nurses. While the scope of practice and roles of APNs and NPs vary across OECD countries (Box 2.3) in Canada and also the Netherlands, NPs and APNs play crucial roles in replacing and augmenting the work of PHC physicians. Kazakhstan is currently considering introducing a new position "medical nurse – applied bachelor" with expanded responsibilities. More broadly, work is also underway to expand the role of nurses through delegation of some GP functions, as well as the transfer of some tasks from specialists to GPs. It will be important to assess how these measures are operationalised and evaluate their actual impact on PHC teams' capacity to meet population needs.

Box 2.4. OECD countries experience with nurses in advance practice

Health service delivery in OECD countries is being re-organised as a way to respond to changing population health care needs and health workforce shortages. One way in which such re-organisation is taking place is through the advancement of nurses roles, which essentially can happen in two ways: either through *task-shifting* (also commonly known as 'substitution') or through *new complementary roles* (also known as 'supplementation'). Task-shifting assumes that nurses, after some training, can take on tasks previously performed by physicians. New complementary roles, as the title suggests, refers to nurses assuming new roles such as case management, liaison, eHealth monitoring and providing lifestyle advice. While the boundaries between these two types of advanced nurses are not always clear-cut, they have in common advanced nursing education and an expanded practice profile.

A 2015 survey carried out in 36 OECD and EU countries showed that most countries have implemented and expanded the scope of practice for certain groups of nurses. To do so, they have used a mix of educational, regulatory and payment reforms. While roles assumed by nurses differ across countries, in general, three types of categories were noted: (i) Advanced nurses working as generalists as a way to ease, for instance, GP shortages, geographical imbalances and GP workloads, (ii) Advanced nurses working on health promotion and prevention, as a way to further expand prevention activities, and (iii) Advanced nurses working as disease-specific specialists to improve management of chronic conditions. While evidence of the impact on costs and efficiency gains from nurses working in advanced roles is unclear, reviews consistently show that task-shifting results in equivalent or improved quality of care.

The United States, Canada, Australia, the United Kingdom, New Zealand, Ireland, Finland and the Netherlands have longstanding experience in integrating NPs and APNs into their health systems. In the United States, for instance, nurse practitioners work in a variety of primary care settings, including physician practices, community health centres, nurse-led clinic provider networks, retail clinics and as independent providers. In Canada, nurse practitioners work in various settings, including providing care outside the office in marginalised populations.

Source: Maier, Aiken and Busse (2017).

Going beyond numbers: evaluating and adapting human resource policies based on evidence and data

The costs and effects of different policies intended to promote more effective distribution of physicians vary significantly across countries, with the impact depending on the characteristics of each health system, the geography, physician behaviours, cultural factors and the specific policy and programme design. In Kazakhstan, legislation sets quotas for physician placement in rural areas and the remuneration of rural providers has been adjusted. Housing grants and other benefits are in place for health professionals working in rural areas. The effectiveness of these various mechanisms should be evaluated and the range of interventions reviewed, keeping in mind that the interests of all health professionals working in PHC need to be considered.

The placement and retention of human resources in remote areas is a challenge that is not unique to Kazakhstan. In order to have any significant and lasting impact, recruitment and retention policies need to be designed with a clear understanding of the interests of the target group (Ono et al., 2014). Staff may be reluctant to practice in rural regions due to concerns about their professional life (including their income, working hours, opportunities for career development, isolation from peers) and social amenities (such as educational options for their children and professional opportunities for their spouse). By actively eliciting health workers' preferences and expectations (Araújo and Maeda, 2013), Kazakhstan could improve its understanding of the factors likely to promote uptake of rural or remote positions.

A range of policy levers can be used to influence the choice of practice location of physicians. These include i) the provision of financial incentives for doctors to work in underserved areas; ii) increasing enrolments in medical education programmes by students from specific social or geographic backgrounds or decentralising the location of medical schools; iii) regulating the choice of practice location of doctors (for new medical graduates or foreign-trained doctors); and iv) re-organising service delivery to improve the working conditions of doctors in underserved areas.

Many OECD countries provide different types of financial incentives to attract and retain doctors in underserved areas, including one-time subsidies to help them set up their practices, as well as recurrent payments such as income guarantees and bonus payments (Ono et al., 2014). A number of countries have also introduced measures to encourage students from underserved regions to enrol in medical schools. As long ago as 1973 Japan established the Jichi Medical University specifically to educate physicians for service in rural communities, and this has contributed to improving access to care in underserved rural regions (Ikegami, 2014).

More broadly, as the health workforce continues to develop and becomes more complex, planning tools are required. Most OECD countries have developed such tools and tailored them to their respective health systems. Box 2.5 outlines good practice recommendations for the improvement of health workforce planning tools, based on lessons learned in OECD countries. In order to define and develop a fit-for-purpose health workforce, in 2015, a Human Resources Observatory has been set-up by the Ministry working together with WHO experts and universities. It produced the first ever assessment of Human Resources in 2015, which has yet to be released and is currently developing methods for planning and forecasting human resources. This effort needs to be sustained and the shortcomings in data systems identified in the course of the assessment, such as the fact that they do not allow monitoring of the development of the PHC workforce, rapidly addressed.

Box 2.5. Recommendations to improve health workforce planning in OECD countries

Health workforce planning is not an exact science and plans need regular updating: Assessing the future supply and demand for doctors, nurses or other health professionals 10 or 15 years down the road is a complex task, fraught with uncertainties on the supply side and even more so on the demand side. Projections are inevitably based on a set of assumptions about the future; these assumptions need to be regularly re-assessed in light of changing circumstances, new data, and the effects of new policies and programmes.

We need to know first where we are before we can know where we're heading: The first step in any effective health workforce projection exercise is having the data from which to gain an understanding of the current situation. One of the main benefits of strengthening health workforce planning efforts is that it often triggers improvements in this crucial first step.

Health workforce projections should help avoid a "yo-yo" approach to student intake and entry into medical and nursing occupations: Available evidence shows that employment in the health sector tends to be less sensitive to economic cycles than in other sectors, and there is also a long time lag between decisions about medical student intakes and when these students will actually enter the labour market. Hence, health workforce planning should keep an eye on long-term structural factors and avoid being overly sensitive to cyclical fluctuations.

Supply-side improvements need to focus more on retirement patterns: Most health workforce projection models have focused on new entry into different professions, but have paid less attention to exit through retirement. There is a need to consider more closely the complex issue of work-to-retirement patterns, particularly for doctors but also other professions, as a large number of health care providers are approaching the "standard" retirement age and their retirement decisions will have major effects on supply in the coming years.

We need to move from uni-professional to multi-professional health workforce planning: Health workforce projection models need to be able to assess the impact of different health care delivery models in a more integrated way. Many countries are looking at ways to re-organise the delivery of services to better respond to population ageing and the growing burden of chronic diseases. Moving from uni-professional to multi-professional approaches to health workforce planning is particularly important in the primary care sector where the roles and responsibilities of different providers (doctors, nurses and other providers) are rapidly evolving..

Health workforce planning models need to address adequately the geographic distribution of health workers: Any nationwide balance of health workers does not necessarily mean that regional shortages or surpluses do not exist. A proper assessment of gaps between supply and demand needs to go below the national level to assess the geographic distribution of health workers, and how this might evolve over time under different scenarios.

Source: OECD (2016d), Health Workforce Policies in OECD Countries: Right Jobs, Right Mix, Right Places, http://dx.doi.org/10.1787/9789264239517-en.

Finally, at a system level, the education of health professionals must be further improved to support the development of a qualified workforce. The previously cited MOH-led HR assessment pointed towards some issues that require attention in medical education and resonate with the ones previously developed by the CSIH (CSIH, 2013b). The effective implementation of quality assurance in public and private medical education is clearly a priority but additional attention needs to go into curriculum development and the professional development of teaching staff.

Hands-on efforts to improve quality must be prioritised, with a focus on NCDs

The crux of the matter however resides in ensuring providers are able and held accountable for providing quality services. Ensuring multi-disciplinary teams are available and equipped to deliver PHC packages is an intermediary objective worth pursuing, but ultimately the quality of the care they deliver is of paramount interest.

Ensuring quality improves at facility level is a hands-on process requiring continuous attention and significant investment. The development of standards and guidelines is a necessary step that often fails to change clinical practice. Various analyses and some interviews have suggested that health care staff are not always able to understand the standards, are insufficiently motivated or are not held accountable for implementing them. Changing clinical practice requires a range of efforts including educational and outreach mechanisms shaped by evidence-based methods for adult learning, and user-friendly decision support tools, as well as supportive and constructive clinical audits.

The diagnosis and management of chronic diseases require particular attention. The generalisation of the DMPs can improve the coordination and integration of health care services and enforce multi-disciplinary teamwork in Kazakhstan, but the lessons learned from piloting must be taken into account. To roll out these programmes and ensure their effective implementation, financial incentives could also be considered as mechanism for compensating teams for the significant amount of additional work needed to implement DMPs. Including DMP components in accreditation standards could also act as an incentive.

In relation to disease management, cost-effectiveness analyses and evaluation of the existing screening programmes could point towards ways to improve their impact. When looking to increase the outreach of the programmes, interventions by health professionals other than doctors (such as nurses and pharmacists) could be considered as these have been demonstrated to be very effective in delivering preventive health care advice. Particular attention could be paid to increasing uptake of screening among socially disadvantaged groups (e.g. populations with disabilities, the poor, and the poorly educated). Evidence shows that certain low-cost interventions that reorganise the ways screening services are offered are effective in increasing uptake rates amongst disadvantaged communities, at least in the short term (OECD, 2014). Box 2.6 presents the example of Portugal, which has introduced a multidisciplinary but primary care-centred approach to tackling diabetes, beginning with health promotion.

Box 2.6. Portugal's Coordinating Units for Diabetes (UCFD)

Reforms in 2013 created *Coordinating Units for Diabetes Care* (*Unidades Coordenadoras Funcionais da Diabetes, UCFD*), specific medical appointments for diabetes in primary care centre groups (ACES) and integrated diabetes units (UID) in hospitals.

UCFDs cover the geographic area of the respective ACES and are supposed to ensure coordination between different levels of care; they promote regular and permanent connection between professionals and services involved in the care of diabetic patients, establishing channels of communication between levels of care for people with diabetes, in order to improve access, quality and efficiency. They also support multi-disciplinary appointments for diabetics, promoting education, self-management and screening for long-term complications, reducing the risks of progression of disease.

Additionally, they are supposed to ensure that clinical information in patient records is available for the monitoring of national diabetes programme indicators, as well as statistical and epidemiological data for planning and assessment activities.

UCFDs identify groups at risk of developing diabetes and establish plans for interventions, for example requiring nurses to complete risk assessments for all patients registered in each centre, especially those over 45 years of age, overweight, with hypertension and/or a family history of diabetes.

Finally, UCFDs are expected to organise health promotion and disease prevention activities, combating risk factors for diabetes from a multidisciplinary perspective, with the support of nutritionists or dietitians, the promotion of physical activity, through individual and group education, and in collaboration with municipalities, schools and other civil society organisations.

UCFDs include the clinical directors of primary care and hospitals, local public health authorities, and primary care and hospital nurses. Medical appointments specifically for diabetes in primary care centre groups (ACES) should be multidisciplinary, and include at least a doctor and a nurse, but whenever possible also nutritionists, promoters of physical activity, podiatrists, social workers, and psychologists. In these appointments, part of the focus is on the education of the patient, particularly regarding diet, physical activity, blood sugar monitoring, foot care, screening of retinal complications, blood pressure control, lipid levels, and treatment regimens. The team sets goals with each patient.

Integrated diabetes units (UIDs) in hospitals also provide specific diabetes appointments. Teams at this level include endocrinologists, internists and paediatricians with experience in diabetes, and may call on other hospital specialists, including surgeons, orthopaedists, nephrologists, ophthalmologists, cardiologists, vascular surgeons and urologists. It is at this level that patients with continuous subcutaneous insulin infusion are often managed. Once stabilised, patients are referred back to their primary care physician.

Source: OECD (2015a), *OECD Reviews of Health Care Quality Portugal: Raising Standards*, http://dx.doi.org/10.1787/9789264225985-en.

Ultimately, both the system-wide coordination of care and accountability for service delivery must be strengthened

Better care coordination is imperative in improving the quality and experience of care, especially for complex needs patients (OECD, 2017b). Primary care should be the point of entry to the system and the place where most health needs are met, but when more specialised care is required, PHC providers should play a central role as co-ordinators of care. Within primary care and beyond, this chapter demonstrates that fragmentation in health service delivery prevents coordinated and continuous care for patients. Effective care coordination requires, among other things, the integration of information systems between different levels of providers, alignment of financial incentives, a multi-professional working culture, accountability mechanisms and strong leadership and commitment, elements which are for the most part still lacking in Kazakhstan.

Nevertheless, the Ministry of Health reports that integrated models of medical care are being developed and implemented in pilot regions. The range of options for developing integrated care models is vast (WHO, 2016) and in reality the previously mentioned DMPs constitute a form of care integration. The models to be tested should be designed to address issues specific to the system and the results evaluated in light of their capacity to address them.

Measuring and holding people and institutions accountable for performance

In addition to adequate human resources, capital investment, and regulatory frameworks, transparent performance monitoring and accountability are required.

A rich information infrastructure is the fundamental platform that underpins nearly every other initiative to improve health system performance and sustainability (OECD, 2017a). The OECD countries use performance data to improve care quality through raising awareness of problems, designing clinical guidelines that support PHC staff in their daily work, and improving the linkage of primary care funding to quality outcomes (Box 2.7) (OECD, 2016b). Comparing Kazakhstan and OECD countries, the information infrastructure and data available regarding PHC performance in Kazakhstan is underdeveloped. The current information system remains fragmented, and focuses on volumes of services and activities rather than outcomes. Information on quality and patient outcomes are seldom recorded and in practice, are limited to urban facilities.

Many OECD countries are currently striving to improve primary care, in particular through development and monitoring of evidence-based clinical quality indicators and patient reported outcome measures, as well as public reporting of these indicators. The health system in Israel, for example, has been extremely successful in the development of such indicators and in influencing physician practice through feedback on outcomes and the development of a culture of continuous improvement. The sum of these efforts is that among OECD countries, Israel's health system is particularly good at the early identification of chronic diseases and supporting those living with a health condition in avoiding unnecessary hospital visits (OECD, 2012a). Other countries, such as the United Kingdom, link quality indicators to pay-for-performance (P4P) as part of a move towards better reimbursement for primary care services, in which quality (including GP time spent with patients) plays a more prominent role (OECD, 2016b) (Box 2.7).

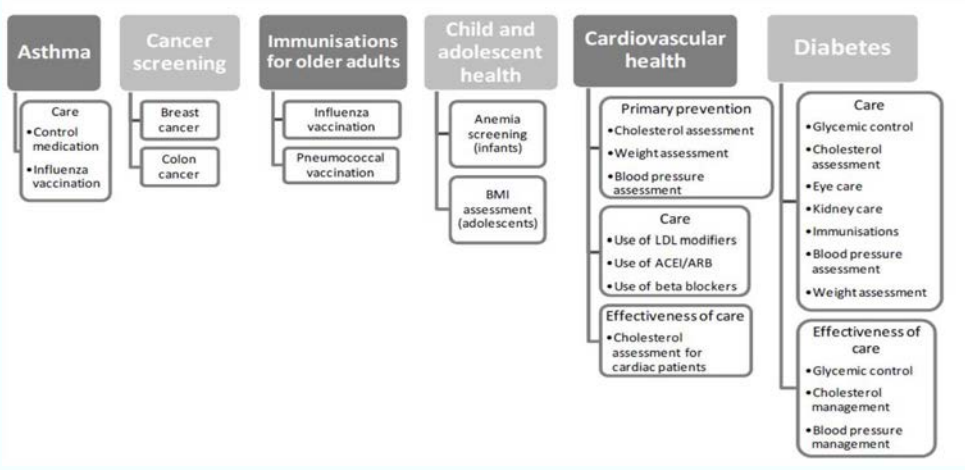
Box 2.7. Examples of use of data on primary care performance in OECD countries

The United Kingdom has become a point of reference in this field. The United Kingdom's Quality and Outcomes Framework, involving the system-wide measurement of activities and outcomes achieved in primary care, is an internationally known programme to improve processes and outcomes in general practice. It was one of the earliest programmes to link quality indicators to pay-for-performance (P4P) at system-wide level. From its inception, the framework was detailed and ambitious, and it now covers a range of clinical areas, with focus on long-term conditions and associated risk factors. For example, target outcomes were specified for particular clinical groups, such as achieving blood pressures of 145/85 or less in at least 85% of patients with diabetes. The framework is continuously evolving and its design has been adapted to in each of the four health care systems of the United Kingdom (OECD, 2016b).

Israel has developed another rich programme for monitoring the quality of primary care. Over the past decade and a half, policy-makers and health plans have sought to reorganise doctors working in the community into teams. This has provided them with a platform to accomplish things that other OECD countries struggle with, such as regular monitoring of patients' health indicators, delivering follow-up support after GP visits, and tailoring preventative advice to the specific needs of communities. These efforts are often supported by information technology platforms such as those identify and remind clinic staff which patients have not received a regular check-up. A major strength of primary care in Israel is the extensive range of data that is collected by community health facilities on almost the entire population. The basis for this has been electronic patient records that have facilitated the collection of information on patients, and have led to the specification of a minimum data set called the Quality Indicators in Community Health Care (QICH) programme. The QICH includes basic patient demographics and 35 measures across six key areas: asthma, cancer screening, and immunisation for the elderly, children's health, cardiovascular health and diabetes. These data enable the identification of risk factors for poor health (e.g. obesity), monitoring of the quality of care being delivered, tracking of drug utilisation and measurement of selected treatment outcomes (OECD, 2012a).

"Managers report that the data feedback to them is instrumental in quality improvement work; one of Israel's health funds, Maccabi, reports that amongst diabetic patients between 2004 and 2009, poor HbA1c control fell by 29% and adequate cholesterol control increased by 96.2%, for example. QICH is neither mandated nor reliant on financial incentives; instead, its success is thought to be due to its robust scientific basis, consensual development of the indicator set involving GPs and health insurance companies early on, clear patient-oriented objectives and, crucially, systematic and continuous feed-back of comparative data to both professionals and the public." (OECD, 2012a).

Structure of the Quality Indicators in Community Healthcare Programme, Israel.



Source: OECD (2016b), *OECD Reviews of Health Care Quality: United Kingdom 2016: Raising Standards*, http://dx.doi.org/10.1787/9789264239487-en and OECD (2012a), OECD Reviews of Health Care Quality Israel 2012: Raising Standards, http://dx.doi.org/10.1787/9789264029941-en.

If the goal is to continue to push forward the Kazakh PHC system towards international best practice, the health information infrastructure will need to be developed considerably. A comprehensive and well-developed information system should provide information on each facility's characteristics as well as its activity and performance. It should ideally facilitate monitoring patients' long-term outcomes, tracking them as they move from PHC to hospital care, and when are discharged.

Data on performance should also be used to hold facilities – as well as the authorities – responsible for organising service delivery accountable for their performance. Indeed, even with the limited information available, it is possible to assess the basic features of the local network and to compare the performance of facilities. However this needs to be done regularly and systematically, as it can encourage facilities/local systems to compare themselves with peers and improve but also identify areas where service delivery is substandard. The identification of poor performance needs to trigger a response which is geared towards identifying and solving the problems rather than being punitive.

In the case of regional and national authorities, one option could be to introduce more systematic benchmarking of facilities and localities to identify those that are underperforming. The transparent benchmarking of facility performance would provide objective information to regions whose relative progress, especially in improving the performance of underperforming facilities, could in turn be monitored by the Ministry.

Performance information should also be used more appropriately to reward quality. The current PHC payment system that combines capitation and pay for performance is one often used in OECD countries. However, the specific design of the performance payments differs substantially from best practice, which aims to reward results that can be more directly attributable to the level of effort of the facility, and to differentiate facilities based on their performance in a nuanced way. The pay for performance component should be revised to align with best practice and expanded to all of primary care.

Conclusion

Generally, primary health care in Kazakhstan is moving in the right direction. Structural elements have been put in place and the configuration of primary care services is evolving towards international best practices – a specialised and multidisciplinary PHC workforce, autonomous facilities, quality assurance tools, and a payment mechanism that seeks to incentivise quality in service delivery.

However, although various parallel reforms are pushing forward the development of PHC, it is not clear that those reforms have achieved their full potential, and the PHC sector continues to underperform. A great deal more information and evaluation is required to understand (i) if and how the overall reforms are changing practice on the ground, (ii) if practice changes are producing the desired effects, and (iii) what drives or limits performance. Above all, strengthening PHC services requires the evaluation and recalibration of the efforts made so far in order to maximise impact.

Notes

1. This is for instance illustrated by the fact that while the share of spending on PHC varies in a ratio of 1 to 15 across OECD countries, the ratio is only 1 to 3 for outpatient care.
2. Based on OECD 2015 the amount is around KZT 275 000 million. No data are reported for preventive care in outpatient facilities, outpatient rehabilitative care, or home-based curative and rehabilitative care which all should be included in primary care.
3. According to the table provided by MoH 188 rayon polyclinics are registered in the pay for performance programme. Table 4, discussed earlier only listed 39 rayon polyclinics which shows that the classification of facilities is not consistent across databases.
4. Asthma and chronic obstructive pulmonary disease (COPD) are both illnesses which limit people's ability to breathe. Although asthma presents intermittent symptoms which are reversible with treatment, COPD is a progressive disease that mostly affects smokers.

References

Agency for Healthcare Research and Quality (2001), "AHRQ Quality Indicators – Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions", AHRQ Pub. No. 02-R0203, Rockville, United States.

Araújo, E., Maeda, A. 2013. How to Recruit and Retain Health Workers in Rural and Remote Areas in Developing Countries : A Guidance Note. HNP Discussion Paper;. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/16104 License: CC BY 3.0 IGO

Boerma, W.G.W. et al. (1998), *The Role of General Practice in Primary Health Care*, World Health Organization Regional Office for Europe, Copenhagen.

Battakova, Z. at al. (2015), "International Experience on Screening and National Screening Programme in Kazakhstan", International Research Journal.

CSIH (2013a), Subcomponent B2: Evidence-Based Practice – Kazakhstan Health Sector Technology Transfer and Institutional Reform Project, CSIH Achievements and Recommendations. Unpublished.

CSIH (2013b), Kazakhstan Health Sector Technology Transfer and Institutional Reform Project: Improvement of Medical Education. Achievements and Recommendations. Unpublished.

CSIH (2015), Kazakhstan Health Sector Technology Transfer and Institutional Reform Project: Partnership on Diseases Management Programmes Development and Implementation – Final report on DMP Implementation. Unpublished.

European Commission (2006), *European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis*, 4th edition, Luxembourg.

Goodwin, N. et al. (2011), "Improving the Quality of Care in General Practice: Report of an Independent Inquiry Commissioned by The King's Fund", The King's Fund, www.kingsfund.org.uk/sites/files/kf/improving-quality-of-care-general-practice-independent-inquiry-report-kings-fund-march-2011_0.pdf.

International Bank for Reconstruction and Development (2014), *Assessment Report on Implementation Outcomes of the State Healthcare Development Programme "Salamatty Kazakhstan" for 2011-15.* Unpublished.

Ikegami, N. (2014), "Factors Determining the Distribution of Physicians in Japan", Chapter 7 in Universal Health Coverage for Inclusive and Sustainable Development: Lessons from Japan, World Bank, Washington, DC, available at: http://dx.doi.org/10.1596/978-1-4648-0408-3.

Katsaga, A. et al. (2012), *Kazakhstan: Health system review. Health Systems in Transition*, 2012, Vol. 14, No. 4, pp. 34-36.

Kringos, D.S. et al. (2010), "The Breadth of Primary Care: A Systematic Literature Review of Its Core Dimensions", *BMC Health Services Research*, Vol. 10:65, http://dx.doi.org/10.1186/1472-6963-10-65.

Kringos, D. et al. (2015), "Building Primary Care in a Changing Europe: Case Studies", *European Observatory on Health Systems and Policies*, Study Series No. 38.

Masseria, C. et al. (2009), "Primary Care in Europe", Policy brief, Directorate-General Employment, Social Affairs and Equal Opportunities Unit E1, Social and Demographic Analysis, European Commission.

McCarthy, C., A. Cohen and M. Bihrle Johson (2013), "Gaining Ground: Care Management Programmes to Reduce Hospital Admissions and Readmissions Among Chronically Ill and Vulnerable Patients", The Commonwealth Fund, New York.

MOH (2015), *Population health in the Republic of Kazakhstan and activity of health care organisations in 2014*, Kazakhstan.

MOH and WHO (forthcoming), Assessment of Human Resources for Health in Kazakhstan, World Health Organization, Copenhagen.

Maier, C., L. Aiken and R. Busse (2017), *Nurses in Advanced Roles in Primary Care: Policy Levers for Implementation*, OECD Publishing, Paris.

National Center for Problems of Healthy Lifestyle Development (2016), Center website, http://www.hls.kz/ (accessed in October 2016).OECD (2012), *OECD Reviews of Health Care Quality – Israel: Raising Standards*, OECD Publishing, Paris.

OECD (2018), *National Health Accounts of Kazakhstan*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264289604-en.

OECD (2017a), *Tackling Wasteful Spending on Health*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264266414-en.

OECD (2017b), *Caring for Quality in Health – Lessons learnt from 15 reviews of health care quality*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264267787-en.

OECD (2016a), *Better Ways to Pay for Health Care*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264258211-en

OECD (2016b), *OECD Reviews of Health Care Quality: United Kingdom 2016: Raising Standards*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264239487-en

OECD (2016c), *OECD Review of Health Systems: Latvia*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264262782-en

OECD (2016d), *Health Workforce Policies in OECD Countries: Right Jobs, Right Mix, Right Places,* OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264239517-en

OECD (2016e), *OECD Review of Health Systems: Mexico 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264230491-en

OECD (2016f), *Health at a Glance: Europe 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264265592-en.

OECD (2015a), *OECD Reviews of Health Care Quality – Portugal: Raising Standards*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264225985-en.

OECD (2015b), *OECD Reviews of Health Care Quality – Australia: Raising Standards*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264233836-en.

OECD (2014), *OECD Reviews of Health Care Quality – Czech Republic: Raising Standards*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264208605-en.

OECD (2013), *OECD Reviews of Health Care Quality – Denmark: Raising Standards*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264191136-en.

OECD (2012a), *OECD Reviews of Health Care Quality Israel 2012: Raising Standards*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264029941-en.

OECD (2012b), *OECD Reviews of Health Care Quality: Korea 2012: Raising Standards*, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/9789264173446-en.

Ono, T., M. Schoenstein and J. Buchan (2014), "Geographic Imbalances in Doctor Supply and Policy Responses", OECD Health Working Papers, No. 69, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jz5sq5ls1wl-en.

Ono, T., G. Lafortune and M. Schoenstein (2013), "Health Workforce Planning in OECD Countries: A Review of 26 Projection Models from 18 Countries", OECD Health Working Papers, No. 62, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/5k44t787zcwb-en

Oxford Policy Management (2014), Development and institutional sustainability of health policy analysis, provider payment system and strengthening single payer capacity for Kazakhstan. Deliverable 23: Analysis of organization and legal status of PHC providers in Kazakhstan. Unpublished.

Oxford Policy Management (2015), Development and institutional sustainability of health policy analysis, provider payment system and strengthening single payer capacity for Kazakhstan. Deliverable 22: Recommendations for refining financing and purchasing of outpatient services to support emphasis on preventive services at primary health care level in Kazakhstan. Unpublished.

Prakash, B. (2010), Patient Satisfaction, Journal of Cutaneous and Aesthetic Surgery, Vol. 3, Issue 3, Pp. 151-155.

McCarthy, C., A. Cohen and M. Bihrle Johson (2013), "Gaining Ground: Care Management Programmes to Reduce Hospital Admissions and Readmissions Among Chronically Ill and Vulnerable Patients", The Commonwealth Fund, New York.

Sanigest International (2014), The Kazakhstan Health Technology Transfer and Institutional Reform Project – Twinning Arrangements for Investment Planning in Health Sector: Summary of Master Plans for Restructuring PHC Network, Unpublished.

Schoen, C. and R. Osborn (2011), "The Commonwealth Fund 2011: International Health Policy Survey of Sicker Adults in Eleven Countries", http://www.commonwealthfund.org/~/media/Files/Publications/In%20the%20Literature/2011/Nov/IHP%20Survey/PPT_Schoen_2011_survey_ARTICLE_chartpack.ppt

Smith P., et al. (eds.) (2009), Performance Measurement of Health System Improvement – Experiences, Challenges and Prospects, Health Economics, Policy and Management, Cambridge University Press.

Starfield, B., L. Shi, J. Macinko (2005), "Contribution of Primary Care to Health Systems and Health", *Milbank Quarterly*, Vol. 83, No. 3, pp. 457-502.

Thorlby, R. (2013), "Reclaiming a Population Health Perspective: Future Challenges for Primary Care", Nuffield Trust, http://www.nuffieldtrust.org.uk/sites/files/nuffield/publication/130425_reclaiming-a-population-health- perspective.pdf

WHO (2011), Evaluation of the Organization and Provision of Primary Care in Kazakhstan – A survey-based project in the regions of Almaty and Zhambyl, World Health Organisation, Geneva.

WHO (2015), Ambulatory Care Sensitive Conditions in Kazakhstan, World Health Organization, Geneva.

WHO (2016), Integrated care models: an overview. WHO Regional Office for Europe, Copenhagen.

Chapter 3

Improving the performance of hospital care in Kazakhstan

The typically integrated and oversized hospital system Kazakhstan inherited at independence has undergone various reforms, including the autonomisation of public facilities, the introduction of payments based on diagnostic-related groups and accreditation, the development of some very specialised services and restructuring. Today, the number of beds per capita (4.8 per 1 000) is close to the OECD average.

Yet, the hospital system in Kazakhstan continues to differ in many ways from that of a typical OECD country. Mono-profile facilities for instance still represent 40% of beds and many rural facilities are not staffed or equipped to provide complex services. Although admission rates are similar to those in OECD countries, a closer examination suggests that a considerable proportion of hospital care could be provided on an outpatient basis. On the other hand, absolute numbers of surgical procedures carried out by the hospital system are strikingly low, which in addition to economic considerations raises important questions about quality and safety.

The chapter examines the performance of the hospital system and outlines possible directions of reform to improve the hospital system's capacity to address the burden of disease of the country more effectively and serve the needs of the population more efficiently.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

3.1. Introduction

The aims of this chapter are to review the organisation of the hospital sector in Kazakhstan and to assess the effectiveness of its operation within the overall health care system of Kazakhstan. It provides some insights into the range of issues confronting the sector in light of the results achieved to date. It also presents a comparison with the organisation and operation of hospitals in OECD countries. The ultimate objective is to highlight ways in which Kazakh hospitals might adapt to changing population health needs in an environment of limited resources. Getting more or better coverage from available resources requires, among other things, that hospitals are well-coordinated with, but not over-engaged in the provision of services that may be more efficiently delivered in primary and ambulatory care.

From the outset even a cursory view of the hospital system in Kazakhstan shows that it differs in many ways from that of a typical OECD country. Indeed, official statistics in Kazakhstan list 34 categories of hospitals according to the services they provide, the populations they serve, their locations etc. This official classification, presented in Table 3.1, contains categories such as tuberculosis dispensaries and centres for the treatment of addiction – classified as "hospitals" in Kazakhstan but unlikely to be designated as such elsewhere. In other words, the boundaries of what constitutes the "hospital system" in Kazakhstan differ to a certain extent from those of a typical OECD country.

In order to make meaningful comparisons of the organisation and operation of hospitals in Kazakhstan with those in OECD countries, the analysis in this chapter uses a hospital classification better aligned with international practice (also presented in Table 3.1). While this modified classification may seem reductive, it enables a clearer assessment of the comparative performance of the main types of facilities, and helps to identify ways in which they might evolve in the future.

Table 3.1. Reclassifying the types of hospitals in Kazakhstan

CATEGORY IN THIS REPORT	CATEGORIES OF THE OFFICIAL CLASSIFICATION INCLUDED	NUMBER
Rural hospitals	Rural village hospitals in network with Central rayon hospitals; Independent rural village hospitals	109
Rayon hospitals	Rayon hospitals; Inter-rayon hospitals; Central rayon hospitals	181
Secondary multi-profile hospitals	Children's oblast hospitals; Children's city hospitals; Emergency care hospitals; Oblast hospitals; City hospitals	163
Tertiary hospitals	University hospitals	33
Mono-profile hospitals	Tuberculosis dispensary; Sexually transmitted diseases dispensary; Psycho-neurological dispensary; Endocrinology dispensary; Addiction related diseases dispensary; Cardiology dispensary; Perinatal care hospitals; Infectious diseases hospitals; Children infectious diseases hospitals; Maternity hospitals; Ophthalmological hospitals; Tuberculosis hospitals; Addiction related diseases hospitals; Psychiatric hospitals; Hospitals for war invalids; High-security psychiatric hospitals; Leprosy hospitals; Rehabilitation hospitals; Rehabilitation hospitals for children; Hospices; Nursing care hospitals; Cancer hospitals; Sports medicine hospitals	279
	TOTAL	765

In broad terms, the categories above may be understood as follows:

- Rural hospitals: Hospitals in this category form the foundation of rural inpatient care. They are typically small facilities with about 20-25 beds, mostly devoted to basic emergency and secondary care, maternity and outpatient care. The analysis in this report will show that rural hospitals provide many services that in more

developed systems would be delivered in a primary and ambulatory care setting. Providing access to hospital care in remote areas is a problem many OECD countries share (see Box 3.1); remote facilities are typically focused towards providing effective emergency care, together with agile patient referral and transportation services.

- Rayon hospitals: Located in the largest towns in each rayon, they typically are 100-300 bed facilities staffed with a range of specialists and a variety of advanced diagnostic equipment. Special attention is also paid to referrals for those patients suffering severe conditions and needing more complex care. In OECD countries, first level facilities typically provide specialised services in internal medicine, obstetrics, paediatrics and general surgery.
- Secondary multi-profile hospitals: These are 600-1 000 bed facilities, offering a wide range of specialist care and advanced technology. They are usually located in the main town of each oblast. Secondary hospitals are also common in OECD countries where they mainly concentrate on delivering large volumes of high volume, low complexity surgical procedures, requiring short stays.
- Tertiary hospitals: These provide highly specialised care, conduct research, coordinate national programmes and serve as teaching facilities. They are mostly located in Almaty and Astana. In OECD countries, equivalent facilities (frequently also called tertiary hospitals) act as reference hospitals, concentrating and co-locating highly specialised resources to treat low volume, high-complexity cases.
- Mono-profile hospitals: In Kazakhstan, as in most former Soviet countries, mono-profile hospitals are typically part of the fabric of the hospital system. They provide care for specific disease or population groups (e.g., maternal and child health; tuberculosis; psychiatric conditions; sexually transmitted diseases; other infectious diseases; as well as addiction disorders, and hospice services). The vast majority of cases treated in these types of facilities could be treated either in outpatient facilities or in some of the other facilities listed above. By contrast, mono-profile hospitals are extremely rare in OECD countries, with specialised cancer treatment centres often being the main exception (not always with outstanding results).

It is important to note that the analyses in this chapter are based on data available in the MOH database and are incomplete. Indeed, in addition to the 765 facilities listed in 2015, the hospital system includes 8 high-level institutes (Healthcare Development Institute, National Institute of Cardiology and Internal Diseases, National Research Centre for Mother and Child Health, National Children's Rehabilitation Centre, National Diagnostic Centre, Scientific Centre of Neurosurgery, Scientific Research Institute of Emergency Care and National Research Cardiac Surgery Centre). These high-level institutes, which are mostly tertiary level facilities, are not included in this list of 765 hospitals. Thus, despite their key role and strategic importance, the review does not cover them further, although a separate analysis would certainly be warranted. The database also does not cover parallel systems (hospitals run by other Ministries or the private hospitals which are *not* delivering the "State Guaranteed Benefit Package", SGBP). On the other hand private facilities that deliver the SGBP appear to be included (see Table 3.2). In sum, statistics presented in this chapter only refer to hospitals present

in the MOH database, which will be referred to as "Hospitals delivering the SGBP" or "hospitals" as shorthand.

The chapter is structured as follows. Following the introduction, Section 3.2 discusses efforts toward reforming the system over the last 10-15 years (with emphasis on *processes and instruments*). Section 3.3 describes the main features of the hospital sector in Kazakhstan today (*outputs – structures and activities*) as a result of these efforts. Section 3.4 assesses the performance of hospitals, mostly focusing on the *outcome* dimensions of quality, safety, access and efficiency. Section 3.5, finally, offers suggestions drawn from the experience of OECD countries, on ways to tackle some of the current and future challenges for the sector.

3.2. Kazakhstan has launched multiple initiatives to modernise the hospital sector

When Kazakhstan became independent in the early 1990s, there were 740 publicly-owned hospitals. The number grew to 895 in 2006, with more diverse ownership, mostly resulting from decentralisation. Under the "National Programme for Health Care Reform and Development 2005-2010", in 2009 the government then expanded the authority of the MOH. The State Health Care Development Programme 2011-15 "Salamaty Kazakhstan" introduced a new regulatory environment, with greater health system centralisation and financing functions.

These core reforms of *instruments and processes* were organised along three lines, discussed in turn in this section. First, existing regulations were modified to encourage autonomy and accountability in a more competitive and mixed environment. In that context, hospital funding reforms, including the introduction of DRGs aimed at providing a level playing field for both public and private facilities and professionals to strive for excellence. Finally, the authorities supported the strengthening and modernisation of the hospital sector with targeted investments and reorganisation.

The regulatory environment has been modernised

The core objective of the reforms of the last ten years has been to create a "unified national healthcare system" with a consolidated health budget at national level. At the same time, public providers have been granted more autonomy, and private provision has been allowed, with the aim of making health service delivery both more mixed and more competitive. To support this, a number of initiatives have sought to strengthen quality assurance and to encourage and guide patients' choice of facility.

More autonomy has been granted to public hospitals

The 1995 Law of Self-Government introduced a series of new legal statuses under which public facilities now operate. Today, each hospitals is designated as one of the following:

- *Government Institutions* (GI): Health care entities that are, and in the foreseeable future are likely to remain publicly owned and financed by budgetary sources (usually hospitals for treating socially significant diseases such as TB, or psychiatric hospitals); these do not have financial management autonomy of any kind and are not permitted to charge fees for their services;

- *Treasury Enterprises* (TE): A specific form of public enterprise provider created for the purpose of "contracting with the Treasury" (from originally being budgetary institutions of local authorities). These are mostly financed by contracts with the single payer; they have limited financial management autonomy but are permitted to charge some fees for their services;
- *State Enterprises with the Right of Economic Management* (SE with REM): Public providers financed according to contracts with the single-payer, mostly based on the services provided; they have autonomy to manage their internal resources, using a flexible staff compensation rules within a payroll ceiling approved by the single-payer. These were given "supervisory boards" in 2011 and are supposed to be responsible for their own management / financial governance;
- *Joint Stock Companies* (JSC): These do not differ from other JSCs in other sectors; ownership is held by shareholders and subject to commercial law and most staff contracted are not civil servants. They are financed through contracts with a single-payer. As an example, since 2011 the National Medical Holding is a JSC which incorporates six national medical centres and the Astana Medical University under a single management authority;
- *Private Facilities Providing State Guaranteed Benefit Package* (PSGBP): These are fully private entities originally intended to serve only the private market, yet for reasons of 'public interest' have an 'exceptional' right to provide the SGBP.

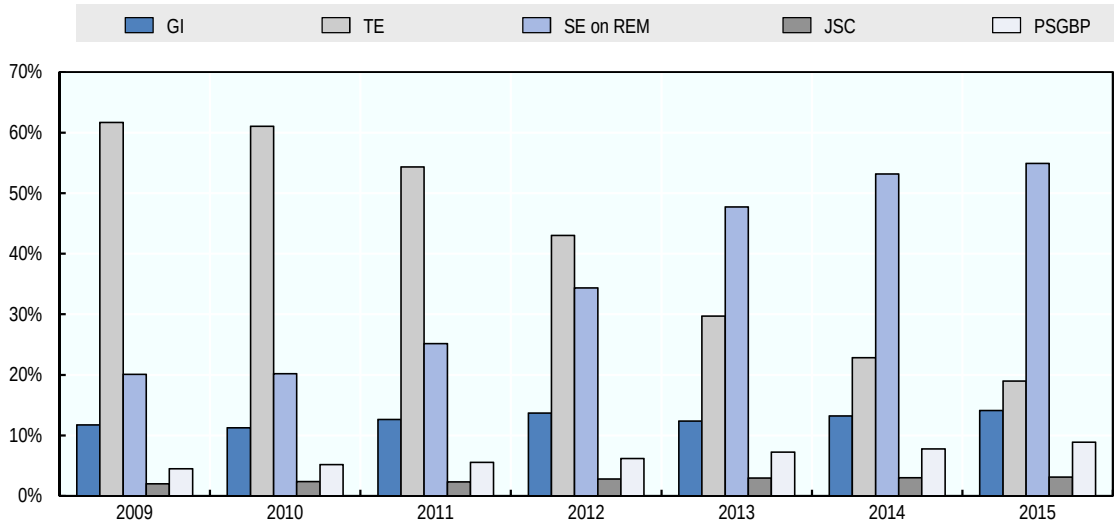
State Enterprises with the Right of Economic Management (SE with REM) have developed quickly. Figure 3.1 shows that the proportion of Treasury Enterprise facilities (the most common model in 2009) dropped dramatically between 2009 and 2015. SE with REM, on the other hand, is now the most common status. In 2015, 55% of the 765 hospitals were SEs with REM, and only 3% joint-stock companies (see Table 3.2).

Table 3.2. Breakdown of hospital by legal status in Kazakhstan, 2015

GI		TE		SE with REM		JSC		PSGBP	
Number	%	Number	%	Number	%	Number	%	Number	%
108	14%	145	19%	420	55%	24	3%	68	9%

Source: MOH data, August 2016.

Figure 3.1. Evolution in legal status of hospital facilities 2009-15



Source: MOH data, August 2016.

Private investment in the hospital sector is encouraged but has been slow to materialise

Public Private Partnerships (PPP) are encouraged to support the modernisation of infrastructure. In the reform, the privatisation of health care service delivery was intended to remain modest at first, limited to pharmacies and dentistry, with some role in renal dialysis, specialist visits, some laboratory tests, etc. For hospitals, privatisation was intended to develop through public-private partnerships. PPPs were mostly seen as a way to bring in additional investments to renew the sector in Kazakhstan: "…It is necessary to use public-private partnership mechanisms to "unload" budgetary expenses more actively. It is necessary to develop additional measures for encouraging private investments into priority spheres of economy. It is important to attract private investors not only to the construction of roads, gas pipelines, hospitals, schools and other objects, but also to their reconstruction and servicing. All funds released by optimisation of the budgetary expenses should be allocated, first of all, to projects which will bring real results for the population.[1]"

Overall, the data show that the development of PPPs has not been rapid. Information submitted by the regions in 2016[2] showed 47 ongoing PPP projects, including 13 hospitals, 30 primary health care sites, 2 contracts for purchasing equipment, 1 for reconstructing a simulation centre and 1 for building auxiliary facilities. Two of those contracts were national (multi-profile hospitals for 300 beds at medical universities in Almaty and Karaganda) and 45 were local, of which 10 are in Almaty and 4 in Astana. Many local projects are at different stages of preparation – e.g. examination of the concession proposal, review of the project concept, feasibility studies of the concession project, assessing the tender documentation, selecting the concessionaire, and so on.

For regional projects, single-stage competition was anticipated in East Kazakhstan but did not materialise in 2016 due to lack of applications, and re-tendering was envisaged. Competition for Almaty projects was expected to utilise a two-stage procedure but a lack of bids also led to re-tendering. The competition for Astana also envisaged a two-stage

procedure. With respect to asset management projects (another way to give scope to the private sector) the list includes 21 projects (6 for hospitals, 13 for PHC and 2 for educational institutions). Another 12 projects were at the planning stage (6 in Almaty and 3 in each of Pavlodar and South Kazakhstan).

A safety-based accreditation process and protocols are the main tools implemented to improve quality

After decades of exclusively normative work (when quality was meant to be achieved only by following the ministerial norms and decrees), accreditation was introduced into the system in 2009 and Kazakhstan became a member of the International Society for Quality in Health Care (ISQUA). Public and private service providers, including hospitals, were then invited to undergo a formal process of quality accreditation in order to be part of the national health care system, and to receive public funding of any type within the "guaranteed volume of free medical care", the SGBP which would cover specific services.

The initiative was developed within the context of the World Bank Project and with technical assistance from the Canadian Society for International Health, using explicit Joint Commission International (JCI) principles (CSIH, 2013). Quality standards, patient safety, patients' rights, and communication and nursing care are the main dimensions used in the accreditation, which was conceived as a mandatory qualifying process. Put simply, every provider organisation was invited to apply for accreditation on the understanding that failing to qualify would lead to sidelining of the facility concerned. Three levels of accreditation were out in place: (i) national standards (prior to 2009), (ii) ISQUA (from 2009) and (iii) a 3rd level that would entitle providers to provide highly specialised care – (valid for three years).

By 2010 some 1 319 organisations had applied and 1 205 were accredited in the first round of the new Accreditation Process. Remarkably, the proportion of private providers seeking accreditation increased from between 2-3% of applications in 2009 to more than 25% recently. For medical practitioners/ specialists, a parallel process of reaccreditation was introduced in 2012, with a requirement for renewal every five years (Katsaga et al., 2012).

A strong emphasis has also been put on service providers' use of and adherence to clinical pathways and protocols. In 2009 the Arterial Hypertension Management Guidelines were jointly developed by the National Institute of Cardiology and Internal Diseases, the Association of Family Practitioners and others. The Republican Centre for Health Development, RCHD, set up in 2011 by merging the Health Development Institute and the Republican Medical Information and Analytical Centre, has to date produced more than 2000 pathways and treatment algorithms.

Patient choice has been increased and supported by a web-based portal that provides information on quality.

In the drive towards a competitive environment expected to improve both quality and effectiveness, another crucial element has been the introduction of patient choice of hospital for elective care, together with the online publication of quality-based ratings. Putting an end to the geographically-based assignment of hospitals for elective care was seen as the highest expression of the pro-quality initiative. To that end, in 2009, the President of Kazakhstan's "Code on People's Health and the Health Care System" established the Rights and Duties of Patients, who since 2010 have had the freedom to choose their treatment centre on an inter-regional basis.

The RCHD operates an online portal called the "hospitalization bureau"[3], enabling patients to obtain accessible and transparent information about the expected availability of hospital beds nationally over the succeeding three days. The waiting lists for regional and national clinics are made available to patients by way of a code assigned when the patient receives a doctor's "voucher for planned hospitalization for chronic diseases and non-hazardous life-threatening conditions that do not require emergency medical intervention". The nomination is cancelled if the patient fails to present himself for admission within the period specified in the voucher. However the hospital retains the right to refuse admission, and hospitalisation is not possible without a whole package of documentary guarantees.

The annual "rating" of hospitals by the RCHD is another major initiative for improving both patient choice and assessing the management standards of facilities. For example, within the framework of the 2011 state development programme "Salamatty Kazakhstan", in 2014 experts assessed 15 oblast hospitals, 49 city hospitals, 15 children's hospitals in regions and 15 in cities (94 multi-field hospitals) across the country separately, by group, using indicators related to mortality, quality of care, timeliness of care, patient satisfaction, etc. Results were put in the public domain and promoted: e.g. the oblast medical centre of Kyzylorda achieved the highest score among regional multi-speciality adult hospitals, while the oblast children's hospital of Mangistau was the leader among regional, multi-specialty children's hospitals.

Hospital financing has been centralised and modernised

Financing has been another core instrument used to prompt changes in professional and institutional behaviour in Kazakhstan.

Centralisation of hospital funding

Hospital care is included in the package guaranteed by the State, the SGBP, which covers "Inpatient care (including tertiary care)", both planned (i.e. based on a GP or specialist referral) and urgent ("without prescription").

Hospital, and more generally, health financing has been reformed many times since independence. Following the temporary introduction of a health insurance system in the late nineties, financing was consolidated at the level of the rayons/districts in 2000-03 and further centralised at the oblast/regions level between 2004 and 2009.

The succeeding wave of reforms was intended to introduce a "Unified National Health Care System". In 2009, a Health Services Purchasing Committee (KOMU) was set up to purchase all publicly funded health services by means of semi-contractual

arrangements ("Unified Health Care System public funding"); other objectives of KOMU were to a) establish a level playing field between public and private players, and b) reduce disparities in funding between regions. KOMU was given a vertical structure with branches in all oblasts. In parallel, in 2009 a single drug distributor was established within the MOH with a mandate to procure all drugs for state-owned health organisations. As early as 2010, KOMU began funding hospital services covered by the SGBP. With the advent of Compulsory Social Health Insurance, the new Health Insurance Fund would replace KOMU and develop more systematic contracting approaches.

Hospital payment methods

After various waves of reforms, in 2012 Kazakhstan decided to introduce Diagnosis Related Group-based payments and proceeded to implement the new system swiftly. All urban area (57% of the total population) hospital inpatient services have since then been reimbursed through *case-mix* funding based on Diagnosis Related Groups (DRGs) introduced via a World Bank project. However, specific providers of specialised services and rural health care providers (see below) are not included in the system and continue to be reimbursed through slightly modified flat budget allocations. This means that under "regular" conditions:

- Virtually all secondary care hospitals and most hospital day care services are fully funded using DRGs. Urban hospital services thus receive an amount for all the health care provided during an inpatient episode DRG; this is intended to incentivise productivity by making hospitals accountable for managing the resources used to treat a given patient (provided of course that quality is maintained). The expectation is that in particular, DRGs can incentivise the development of day care in place of inpatient care, as appropriate; hospital productivity can also be stimulated as increasing numbers of episode of cares spread the fixed costs over a larger number of patients.
- By contrast, rayon hospitals and mono-profile hospitals still receive global budgets;
- Specific tertiary care and 'consultative diagnostic services' (oncology services and others) are paid fixed budgets and a fee for service according to a tariff list for each service. This is intended to foster highly specialised tertiary care irrespective of provider ownership, but there is some concern that this might distort the distribution of resources (and in the absence of transparent costing data, this cannot be refuted).
- Rural global budgets are currently based on capitation, reportedly adjusted annually according to utilisation, but which in reality leaves budgets roughly constant. The need to review this practice in order to better match need, demand and the necessary services to achieve improved outcomes seems to have broad agreement (see also 5.1).

Overall, DRGs have significantly improved the transparency of hospital financing. However, some challenges remain, notably linked to the need to continue improving the cost accounting system and the measurement of clinical activity-related consumption of resources. Furthermore, the coding of procedures needs to be extended to include secondary diagnoses, co-morbidities and complications, and the grouping criteria need refining. The need for short-term systematic development of managerial skills to proficiently manage both DRG system technicalities and facilities under DRG-related payment systems represents the main challenge to optimising this newly established funding mechanism (Chanturidze et al., 2016).

The government also actively supported the transformation of the hospital sector

Overtime, the authorities have also supported the transformation of the sector by (i) investing in infrastructure; (ii) restructuring hospitals.

Targeted investments have helped modernise some hospitals

In recent years a strong policy of investment in the public sector has also contributed to upgrading buildings and equipment in Kazakhstan. The Ministry of Finance is now in charge of capital investment in all economic sectors; it allocates funds to both the Ministry of Health and the oblasts, including funds for health services and capital investments ("transfers for development"). In the last ten years, 446 new facilities have been built throughout the country for a total budget of 359.5 billion tenge under two programs: "100 schools, 100 hospitals" (2008-14) and "Construction of 350 medical outpatient clinics, feldsher-midwifery stations and polyclinics" (2011-16).

Although arguably the planning of investments has not always been coordinated optimally between oblast and other public decision makers, figures in the national health budget show investments have increased by a factor of around four in the last decade, and corrected a longstanding need for investment in infrastructure.

The restructuring of hospitals has also been fostered by the authorities

A combination of normative planning and contractual incentives has been used over time by the Ministry of Health and other public agencies to reorganise – and rationalise – the sector. Small hospital departments or units (e.g. maternity and emergency departments only used by extremely small numbers of patients) have been shut down and the services absorbed by other centres.

In 2010 a *Master Plan* (Sanigest Solutions, 2010) was developed under a World Bank project to guide this process, with the objectives of increasing the role of primary care, enhancing the quality of care in the hospital sector, and reducing the dependency of the population on emergency care. The master plan aimed at "drafting the right number and distribution of providers to assure accessible, continuous, permanent and professional health care, taking into account geographic and demographic conditions as well as population health needs in order to decide on the services required". The work was pursued under "Densaulyk 2016-19". In cooperation with the regions, the Ministry of Healthcare is finalising a long-term plan for the development of the health infrastructure. This unified plan will consolidate information on the existing network of health care organisations, the planned restructuring (opening, consolidation, closing, re-profiling), and construction of additional facilities. The plan's implementation will need to be effectively monitored.

3.3. The hospital sector today

This section discusses in some detail the main features of the hospital sector in Kazakhstan today. It highlights progress and changes over time, and provides, to the extent possible, comparisons with OECD countries. The size of the hospital infrastructure and the profiles of hospitals are first presented, followed by an analysis of the availability and quality of physical inputs, and then of hospital outputs. The section concludes with a review of the hospital sector's contribution to health expenditure in Kazakhstan.

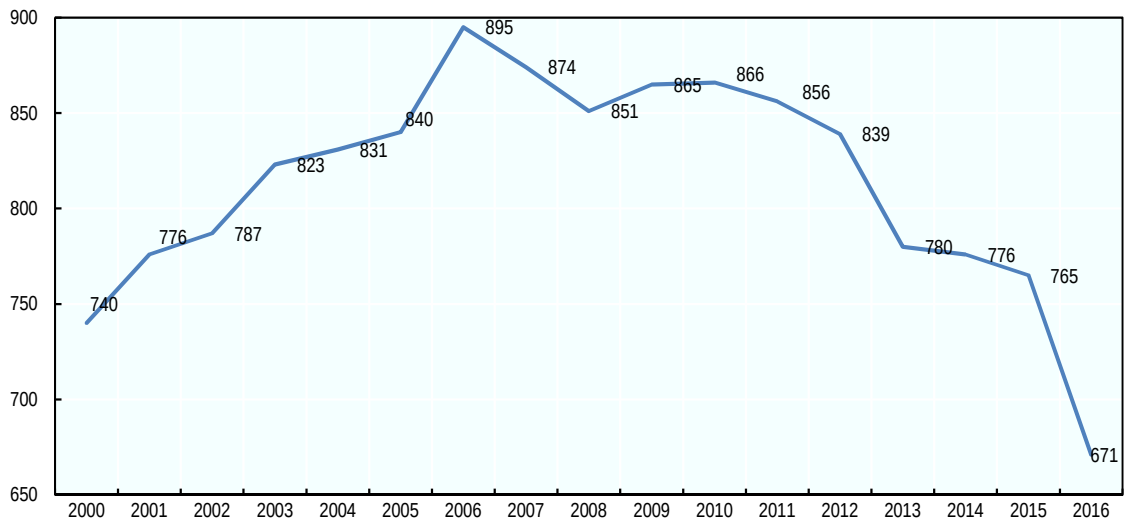
Size of the infrastructure and profile of facilities

This section describes the anatomy and organisation of the hospital sector in Kazakhstan. It reviews the size of the hospital sector, the public-private mix, and the basic functionality of hospitals.

The number of hospitals and beds has decreased but remains high

In terms of service provision, the most visible consequence of the transition towards a more modern service delivery model is a reduction in the number of facilities and of beds, which began in 2006. Figure 3.2 shows, as previously noted, that between 2000 and 2005 the number of hospitals grew quickly. In 2015, there were still slightly more hospitals than in 2000 but following a remarkable reduction in 2016, the number of hospitals is now 9% below that level.

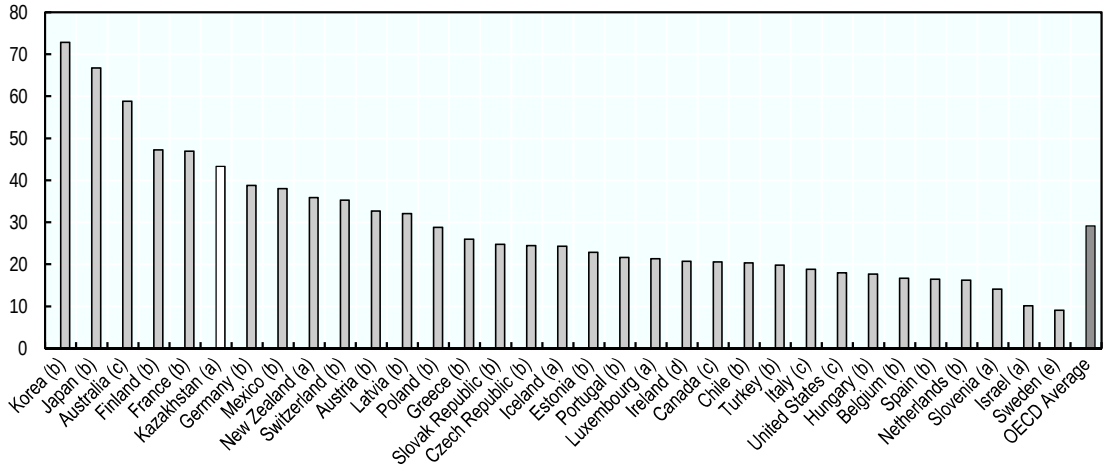
Figure 3.2. Trends in total number of hospitals in Kazakhstan, 2000-15



Source: MOH data, August 2017

Figure 3.3 in turn compares the number of hospitals per 1 000 000 population between Kazakhstan and OECD countries. It shows that in 2015 Kazakhstan still had a large number of hospitals compared with the OECD average, and similar to the numbers in France and Germany, both of which are considered to be too hospital-centric. Even following the 2016 drop in the number of hospitals, Kazakhstan still remains at the level of Mexico.

Figure 3.3. Hospitals per 1 000 000 population, latest available year

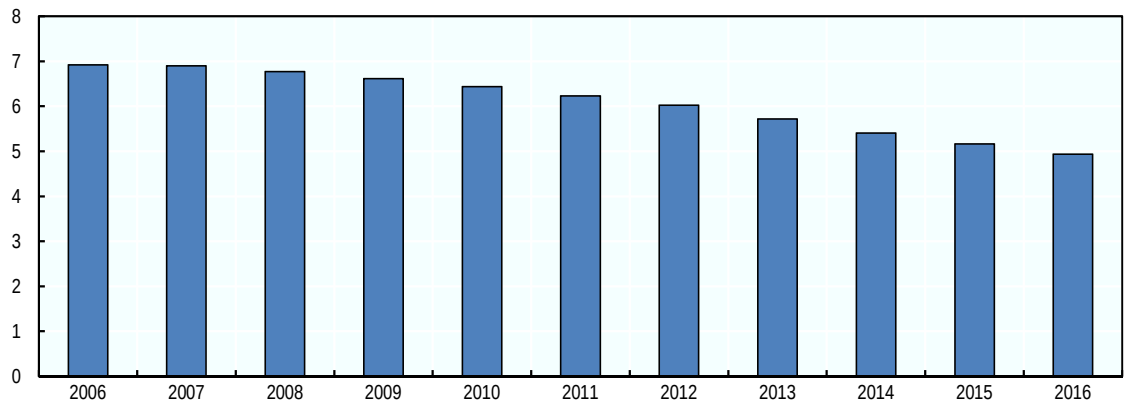


Note: (a): 2015; (b): 2014; (c): 2013; (d): 2012; (e) 2003.

Source: MOH data, August 2016; OECD Health Statistics 2016, http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC.

A direct consequence of hospital closures has been a reduction in the number of beds. In 2016 Kazakhstan had 87 172 hospital beds (4.8 beds/1 000 inhabitants), compared with 105 345 (6.9/1 000 inhabitants) in 2006 (see Figure 3.4).

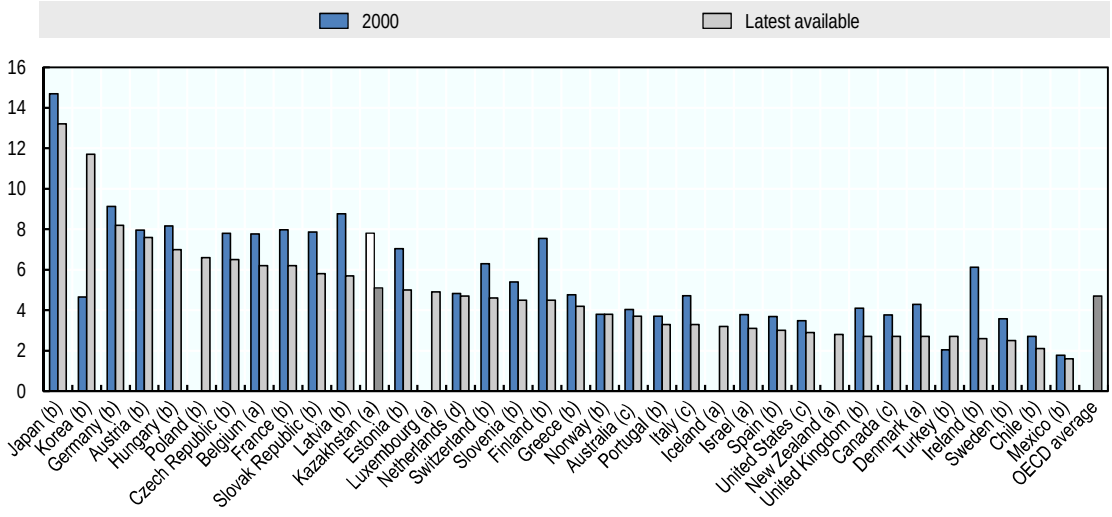
Figure 3.4. Trends in number of hospital beds per 1 000 inhabitants in Kazakhstan, 2006-16



Source: MOH data, August 2017.

Figure 3.5 compares the number of hospital beds per 1 000 inhabitants in Kazakhstan with those in OECD countries, in 2000 and the latest year available. While it shows that bed numbers are now in line with the OECD average, most OECD countries with high numbers of beds strive to reduce them and emulate more outpatient-cantered systems (such as those of Denmark, Sweden, the United Kingdom, etc.). The number of beds per capita also varies significantly across regions. In South Kazakhstan Region, there are 4 beds per 1 000 population and 6.6 in North Kazakhstan Region.

Figure 3.5. Hospital beds per 1 000 population – OECD and Kazakhstan, 2000 and latest year available



Note: (a): 2015; (b): 2014; (c): 2013; (d): 2009.

Source: MOH data, August 2016 for Kazakhstan; OECD Health Statistics, 2016, http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC

As indicated, no information is readily available about the hospitals and beds belonging to the "parallel health systems" run by the Ministries of Internal Affairs, Defence, etc. or by Kazakh Railways and other large state-owned companies during Soviet times, but it is widely assumed that they have also been significantly downsized.

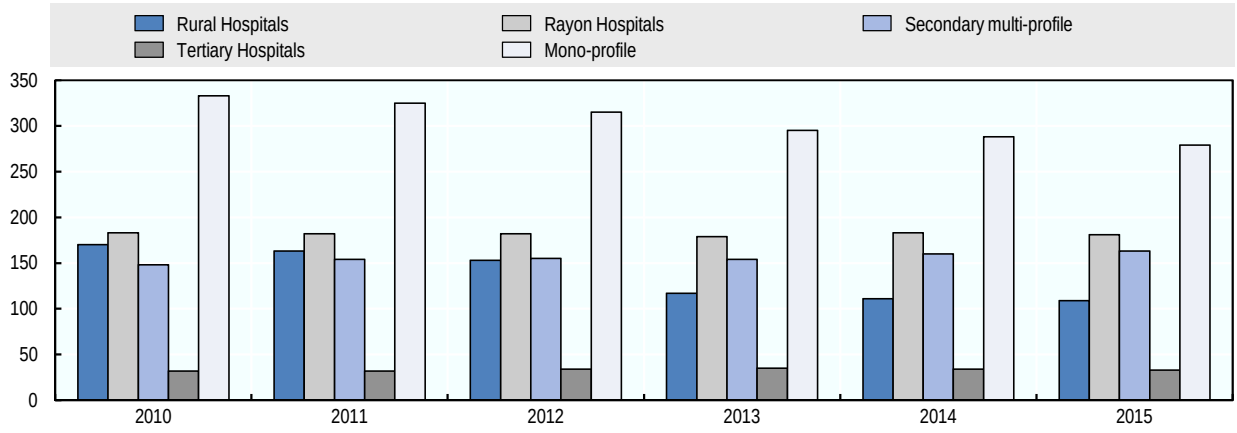
The public-private mix of hospitals has changed

The public-private mix in Kazakhstan has been changing steadily, after a slow start. Between 1999 and 2004, for example, the number of private hospitals almost doubled (and the number of private facilities almost tripled). By 2009, 16.4% of all physicians were working in the private sector. In 2012, the state owned 777 of the 913 hospitals (i.e. the remaining 136 hospitals were private) (Kumar et al., 2013). As of 1st July 2015, there were 137 private hospitals, 127 of which were at city level, 3 at oblast level and 7 at rayon level. Some 102 of the 137 hospitals (or around three quarters) provide care within the SBGP services.

Hospitals are being slowly re-profiled

Significant efforts have been made in the last 10-15 years in Kazakhstan to re-profile the system. Using the grouping of hospitals outlined in Section 3.1, Figure 3.6 shows progress of the system transformation. The number of rural hospitals has decreased by 56% in the last five years and the number of mono-profile facilities by 20%, albeit remaining very high by international standards. On the other hand, the numbers of rayon and tertiary level facilities have remained stable, while the number of secondary multi-profile centres has slightly increased.

Figure 3.6. Trends in number of hospitals per "refined" hospital category in Kazakhstan, 2010-15



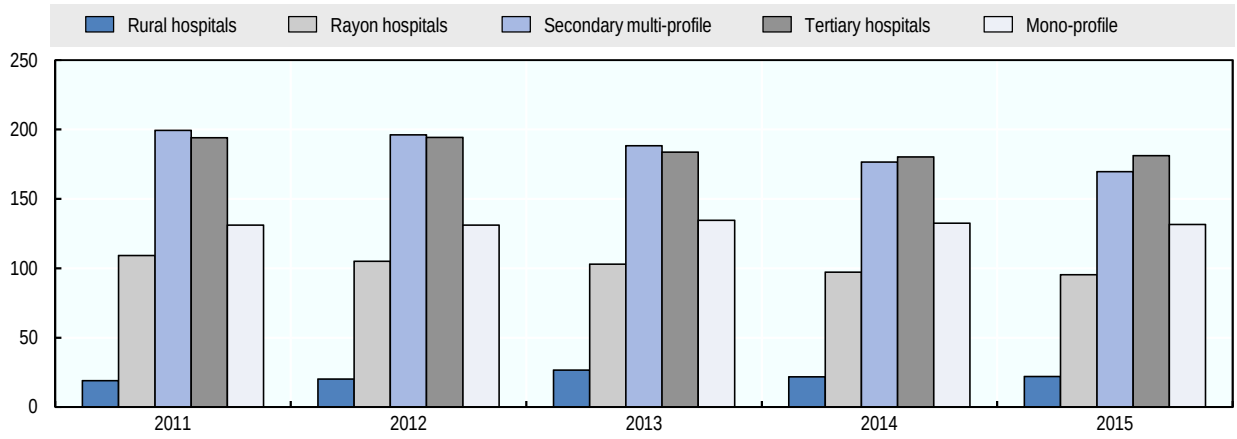
Source: MOH data, August 2016.

Hospital closures were supported by efforts to reorganise local service delivery. In general, according to Ministry experts, the closing of local hospitals was accompanied by the strengthening of regional units and upgraded technology. Some were also restructured to become robust multi-profile general facilities intended to ensure better access to quality services. A few centres of excellence with state of the art technology were also established (e.g. the aforementioned National Medical Holding).

Networking strategies have not been used systematically. With the exception of the National Medical Holding in Astana, Kazakhstan has developed few programmes under which two or more hospitals are put under a unified management team to foster resource rationalisation, promote efficiency and facilitate synergies between neighbouring units. Establishing consortia for the integration of multiple facilities, particularly when located in the same area, is now a fairly common strategy in OECD countries to promote reorganisation on the basis of complementarity in service delivery and improved resource use (Angeli and Maarse, 2012), and one that Kazakhstan could consider applying more systematically.

The sizes of hospitals have not changed substantially. Figure 3.7 presents the average size of facilities in each category of hospital, based on data provided by the Ministry. The average number of beds by type of facility has remained virtually unchanged over the years. This suggests that the decrease in the number of beds and hospitals has been driven primarily by the closure of facilities. The average number of beds in secondary multi-profile and tertiary hospitals (less than 200 beds in both cases), is however, surprisingly low given the role they are meant to play and the potential gains economies of scale and concentration could bring. In addition, these numbers contrast sharply with the typically much higher hospital bed numbers in systems with a strong Semashko tradition, and also with the numbers in the 2012 Health in Transition Profile of Kazakhstan[4].

Figure 3.7. Evolution of the average number of beds in each category of hospital in Kazakhstan, 2011-15



Source: MOH data, August 2016.

Presence, distribution and quality of infrastructure and other inputs

This section reviews information about hospitals' structural characteristics and their main inputs, in particular physical assets, technical equipment, and staff.

Physical assets

Investments have contributed to modernising hospital infrastructure in Kazakhstan, which was reputed to be old and in very poor condition. In reality though, none of the hospitals was built before the 1970s. By way of comparison, the United Kingdom's NHS hospitals were on average built in 1985 (Pachilova and Sailer, 2015), so most premises in Kazakhstan only seem a bit older than Canadian and US hospitals (the average age of a U.S. hospital is 27 years (Guenther, 2010); in 1998 about a quarter of Canadian hospitals were between 10 and 25 years old, and the median age of all health care buildings was 27.1 years (Government of Canada, 1998)).

Renovations have mostly benefited larger hospitals and facilities. Table 3.3 presents the basic physical characteristics by hospital category. Tertiary care hospitals have clearly received significant attention and are on average, fairly recently built. By contrast the more peripheral and rural hospitals have received much less attention; most rural hospitals were built 45 years ago and their depreciation is close to 70%.

Table 3.3. Details on hospital physical assets per hospital category in Kazakhstan, 2015

Rural Hospitals		
Average year of construction	1971	(ranging from 1970 to 1984)
Average size (in m^2)	1 110 m^2	(ranging from 479 m^2 to 1 698 m^2)
% depreciation	69.8%	(ranging from 35.9% to 95.8%)
Rayon Hospitals		
Average year of construction	1977	(ranging from 1979 to 1988)
Average size (in m^2)	2 418 m^2	(ranging from 987 m^2 to 4 774 m^2)
% depreciation	61.1%	(ranging from 39.0% to 69.8%)
Secondary multi-profile		
Average year of construction	1983	(ranging from 1973 to 2002)
Average size (in m^2)	4 424 m^2	(ranging from 1 454 m^2 to 15 375 m^2)
% depreciation	45.6%	(ranging from 17.4% to 66.6%)
Tertiary Hospitals		
Average year of construction	1988	(ranging from 1973 to 2012)
Average size (in m^2)	4 537 m^2	(ranging from 1 863 m^2 to 12 360 m^2)
% depreciation	30.7%	(ranging from 9.94% to 38.3%)
Mono-profile		
Average year of construction	1980	(ranging from 1969 to 1989)
Average size (in m^2)	2 327 m^2	(ranging from 1 032 m^2 to 4 782 m^2)
% depreciation	56.5%	(ranging from 24.2% to 72.6%)

Source: MOH data, August 2016.

Essential technical equipment

The availability of medical technology is a necessary condition for the provision of diagnosis and treatment, especially for complex cases. A hospital's level of technical equipment should be assessed according to the mix and type of services it is expected to provide. The table below includes some details about selected infrastructure and technology available in Kazakh hospitals[5].

Table 3.4. Selected facilities infrastructure per hospital category in Kazakhstan, 2015

	Rural	Rayon	Secondary	Tertiary	Mono-profile
ICUs	0	48	45	13	46
A&E departments	0	4	44	3	5
Radioisotope diagnostic labs	0	0	3	0	3
Clinical diagnostic labs	15	594	107	13	198
Bacteriological labs	0	49	19	3	52
Serological labs	0	26	10	1	17
Biochemical labs	1	53	20	4	22
Cytological labs	7	9	6	1	8
Number of facilities	109	181	163	33	279

Source: MOH data, August 2016.

The data suggest hospitals are poorly equipped. There are no international norms on the ideal level of equipment per head of population. Some facilities in Kazakhstan are well equipped and can deliver modern care, however the "density" of some equipment (number of items divided by number of facilities) is strikingly low. For example, Intensive Care Units (ICUs) exist in only 39% of tertiary hospitals and 28% of secondary multi-profile hospitals, while Accident and Emergency Departments (A&E) Departments are only present in 9% of tertiary hospitals and 27% of secondary multi-profile hospitals.

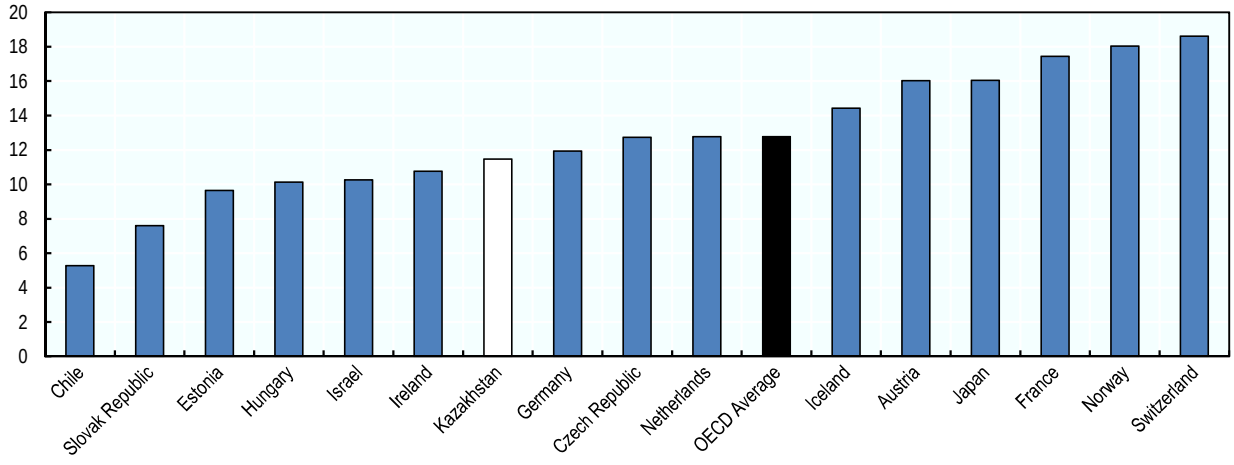
Above all, insufficient information is available to target investment effectively. Indeed, data requested on the availability of specific equipment was not provided. This would suggest that the MOH lacks core information about the conditions and the capacity

of hospitals to deliver specific services, making monitoring and evaluation challenging. More importantly, in an environment in which the unification of the health system is a stated priority, this probably also limits the opportunity to effectively target investment.

Professional staff in hospitals

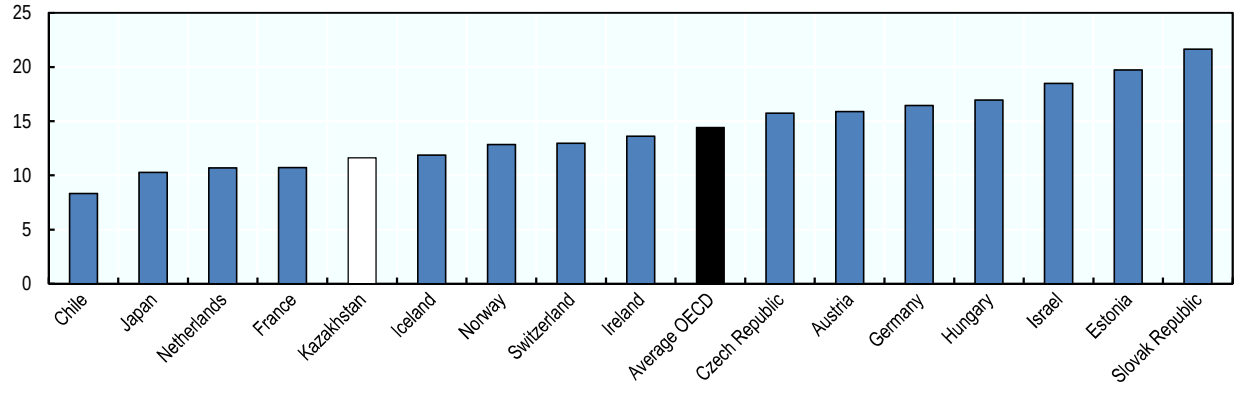
Staffing patterns in hospitals are fairly typical. According to data provided by the MOH, hospitals employ close to 200 000 full-time equivalent staff, around 11% of whom are physicians. Hospital staffing per bed is around 2.2. Figures 3.8, 3.9 and 3.10 present equivalent data in OECD countries; they show large variations among countries and the figures in Kazakhstan do not really stand out. Figure 3.11 shows that the number of nurses per bed is low compared with OECD countries.

Figure 3.8. Density of hospital employees (FTE) per 1 000 population, 2015



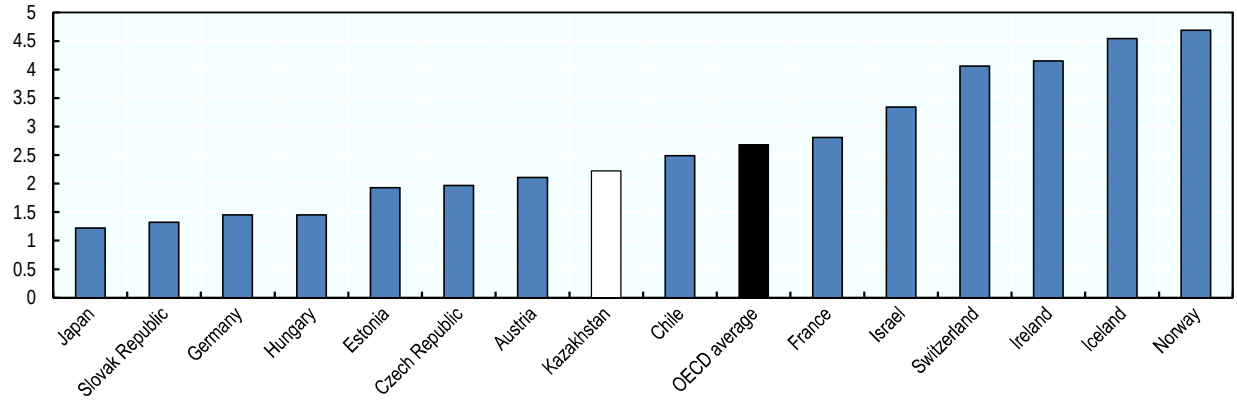
Source: MOH data, August 2016; OECD Health Statistics, 2016 (data for 2014) http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC.

Figure 3.9. Proportion of physicians (% of FTE positions) in hospital employment, 2015



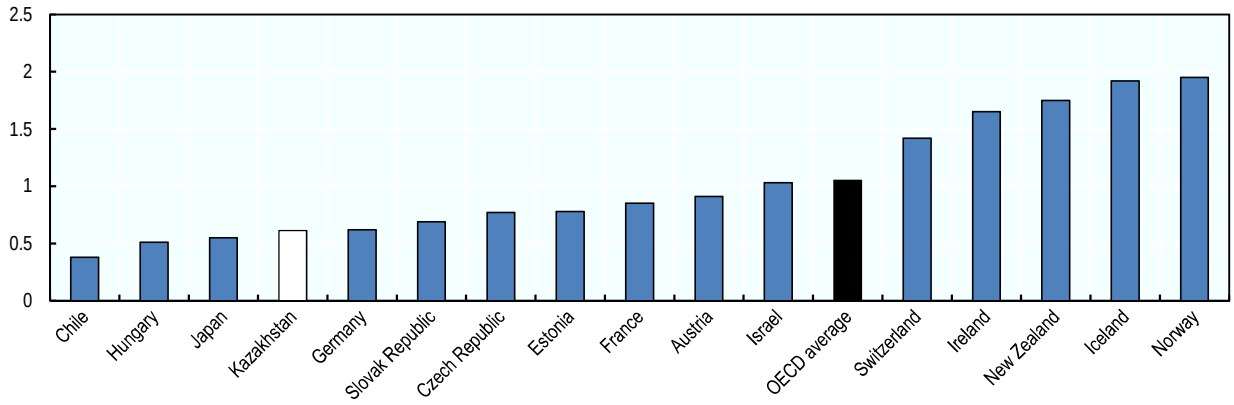
Source: MOH data, August 2016; OECD Health Statistics, 2016 (data for 2014) http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC.

Figure 3.10. Number of hospital staff (FTE) per bed, 2015



Source: MOH data, August 2016; OECD Health Statistics, 2016 (data for 2014) http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC.

Figure 3.11. Nurses (FTE) to bed ratio, 2015



Source: MOH data, August 2016; OECD Health Statistics, 2016 (data for 2014) http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC.

Variations across categories of hospitals present more unusual patterns. Table 3.5 and 3.6 show the breakdown by category of facility and suggest that:

- "rural hospitals" would probably not be considered hospitals in the OECD. Indeed, on average, rural hospitals have less than one physician on staff, and only seven in total. While average numbers probably obscure some substantial variations, this casts further doubt on the capacity of these types of facilities to provide what would be considered hospital services in the OECD context.
- staff to bed ratios vary across facilities but not as expected. Overall, the total numbers of staff per facility do not vary much across categories of facilities. Rayon hospitals on average employ the same number of staff as tertiary hospitals, when, according to Figure 3.7, they are close to half their size. This translates into large variations in staff to bed ratios across these types of facilities. Rayon hospitals have 3.47 staff per bed, 1.6 times more than the national average of 2.2. Tertiary hospitals have 1.8 only staff per bed.

- there are probably fewer nurses than in typical OECD countries. The ratio of 2.4 nurses to each physician in the hospital sector also appears relatively low. To give an example, the FTE nurse per physician ratio in hospitals is around 3.3 in France, 2.9 in Spain, and 5.4 in United States, but only 2.3 in Germany. Overall, hospitals in Kazakhstan rely much less on nurses than those of most OECD countries.
- 35% of hospital staff still work in a range of mono-profile facilities, confirming that they retain an important role.

Table 3.5. Number and categories of staff by hospital, full year equivalent (year not specified)

	Rural	Rayon	Secondary	Tertiary	Mono-profile	TOTAL
Physicians	**66**	**6 377**	**7 359**	**1 767**	**7 663**	**23 232**
Per facility	*0.6*	*35.2*	*45.1*	*53.5*	*27.5*	
Nurses	**254**	**18 835**	**16 328**	**2 908**	**16 821**	**55 146**
Per facility	*2.3*	*104.1*	*100.2*	*88.1*	*60.3*	
All categories of staff	**812**	**59 986**	**57 281**	**10 811**	**70 839**	**199 729**
Staff per facility	*7*	*331*	*351*	*328*	*254*	

Source: MOH data, August 2016.

Table 3.6. Staff and physicians (FTE) per bed in multi-profile hospitals

	Rayon	Secondary	Tertiary
Staff per bed (FTE)	3.47	2.07	1.81
Physician per bed (FTE)	0.37	0.27	0.30
Nurse per bed (FTE)	1.09	0.59	0.49

Source: MOH data, August 2016.

In summary, the above analysis suggests that:

- Given the level of inputs available, rural hospitals still play a role in providing basic urgent care, for instance by assessing and transferring patients in need to higher level facilities, but are unlikely to deliver what would be considered hospital-standard care in most OECD countries;
- Mono-profile hospitals still comprise a significant amount of inputs in the sector.
- The number of beds per hospital is on the low side compared with expected numbers.
- Among the three other categories of multi-profile hospitals, higher-level facilities have received more attention and investment. However, the available data are insufficient to assess whether their actual equipment levels enable them to deliver complex services in a consistent manner. The lack of information about the allocation of modern technology also impedes the effective analysis of government policy regarding those investments.
- Overall hospital employment per capita is in line with OECD numbers[6]. However, staffing numbers by hospital are very similar across the three categories of multi-profile hospitals, suggesting large and unexplained variations in staff/bed ratios. Nurse to physician ratios seem comparatively low.

- Overall, tertiary hospitals, which are meant to be referral centres for complex conditions, do not appear to be particularly better endowed in terms of staff of equipment, although they seem to have been constructed somewhat more recently on average.

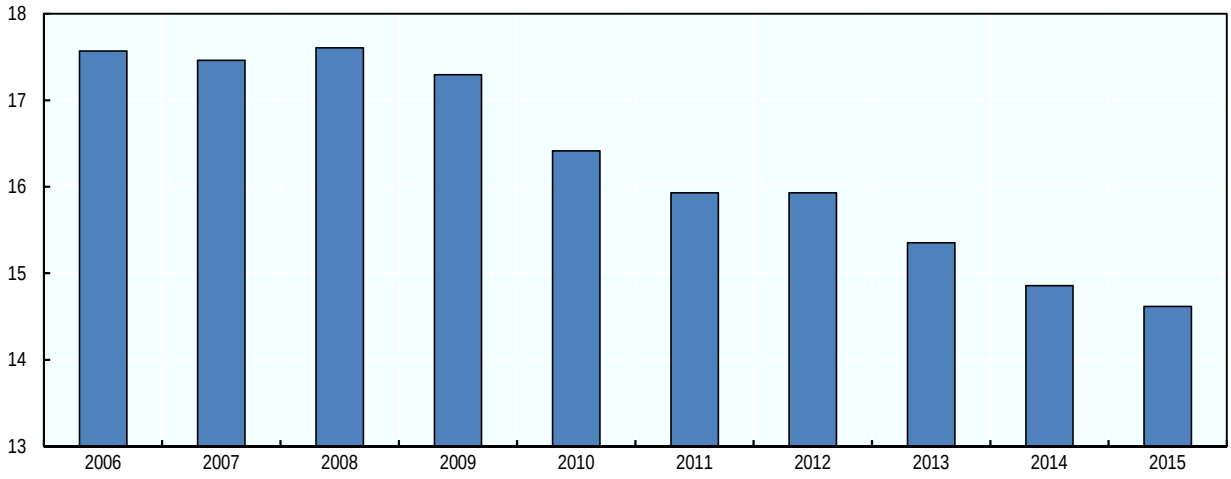
Hospital throughput and processes

In the previous section structural changes and issues were assessed; this section looks at hospital *activity*. What do Kazakh hospitals do and produce?

In-patient activities: discharge rates

In the last decade, the number of discharges per capita has tended to decrease, particularly since 2010 (Figure 3.12). By contrast in the OECD the number of discharges per bed has stayed roughly constant since 2005.

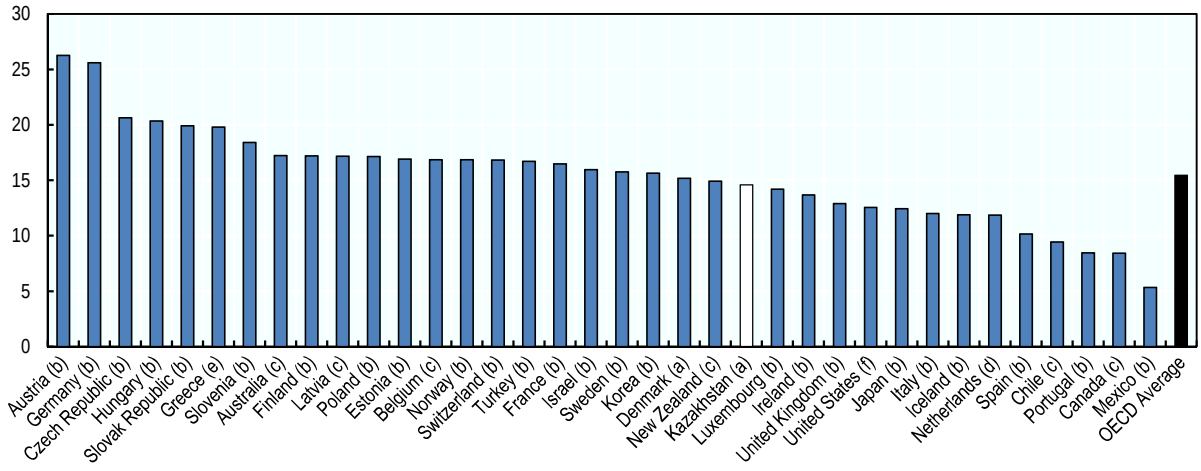
Figure 3.12. Hospital discharges per 100 population in Kazakhstan, 2005-15



Source: MOH data, August 2016.

International comparisons place Kazakhstan in the middle of OECD countries with the number of discharges per 100 population similar to the OECD average (Figure 3.13).

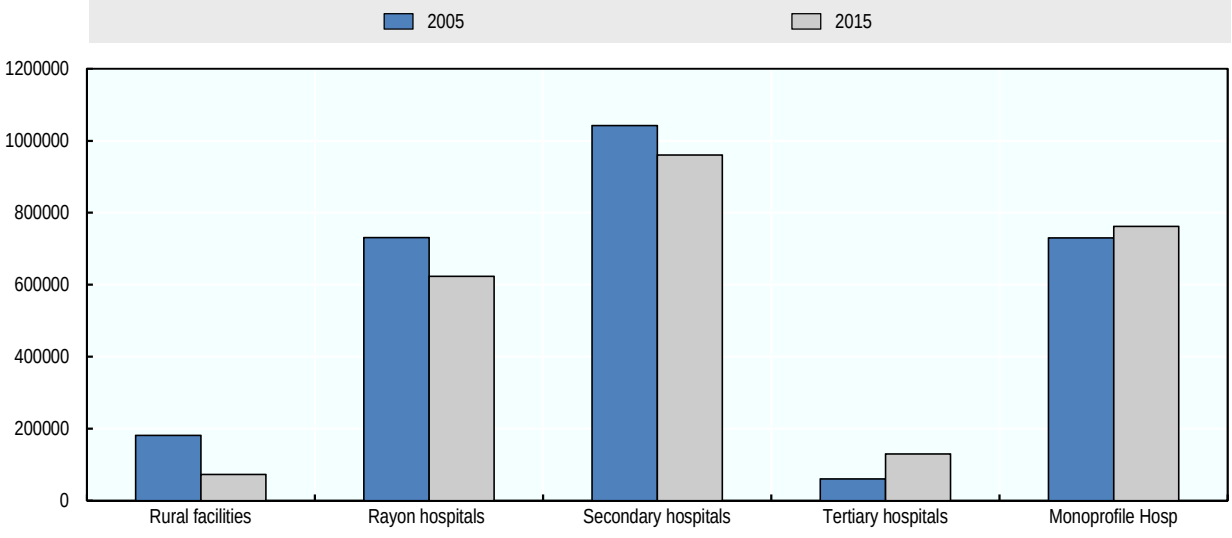
Figure 3.13. Hospital discharges per 100 population, Kazakhstan and OECD, latest year available



Note: (a) = 2015; (b) = 2014; (c) = 2013; (d) = 2012; (e) = 2011; (f) = 2010.

Source: MOH data, August 2016; OECD Health Statistics, 2016; http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_PROC.

Figure 3.14.Trends in number of hospital admissions per type of facility, 2005-15



Source: MOH data, August 2016.

Hospital activity remains focused on fairly simple services

In order to understand better the role of hospitals in service delivery at country level, a close examination of their activity is warranted. To that end, data were requested on the ten most frequent discharge diagnoses, as well as the ten most frequently performed surgical procedures per category of hospital.

Table 3.7. Most frequent diagnoses for inpatient discharges, all hospitals, 2015

Diagnoses (title and ICD10 code)	Number of discharges	% of total discharges
Spontaneous vertex delivery – O80.0	253.740	9.7%
Other acute upper respiratory infections of multiple sites – J06.8	28.690	1.1%
Acute upper respiratory infection, unspecified – J06.9	26.757	1.0%
Delivery by emergency caesarean section – O82.1	25.640	1.0%
Other forms of angina pectoris – I20.8	23.483	0.9%
False labour before 37 completed weeks of gestation – O47.0	23.443	0.9%
Concussion (commotio otio cerebri – S06.0)	21.682	0.8%
Paranoid schizophrenia – F20.0	19.255	0.7%

Source: MOH data, August 2016.

Table 3.8. Most frequent diagnoses for inpatient discharges, rural hospitals, 2015

Diagnoses (title and ICD10 code)	Number of discharges	% on total discharges
Spontaneous vertex delivery – O80.0	325	10.0%
Acute bronchitis due to other specified organisms – J20.8	232	7.1%
Hypertensive encephalopathy – I67.4	214	6.6%
Other acute upper respiratory infections of multiple sites – J06.8	160	4.9%
Other pneumonia, organism unspecified – J18.8	132	4.1%
Other specified diseases of biliary tract – K83.8	97	3.0%
Threatened abortion – O20.0	91	2.8%
Acute obstructive laryngitis [croup] – J05.0	82	2.5%
Other forms of angina pectoris – I20.8	78	2.4%

Source: MOH data, August 2016.

Table 3.9. Most frequent diagnoses for inpatient discharges, rayon hospitals, 2015

Diagnoses (title and ICD10 code)	Number of discharges	% on total discharges
Spontaneous vertex delivery – O80.0	86.460	12.0%
Other acute upper respiratory infections of multiple sites – J06.8	28.690	4.0%
Other forms of angina pectoris – I20.8	17.911	2.5%
Acute bronchitis due to other specified organisms – J20.8	17.131	2.4%
Threatened abortion – O20.0	16.231	2.2%
Concussion (commotio cerebri) – S06.0	15.683	2.2%
False labour before 37 completed weeks of gestation – O47.0	13.235	1.8%
Other bacterial pneumonia – J15.8	12.697	1.8%
Infectious gastroenteritis and colitis, unspecified – A09	12.504	1.7%
Other pneumonia, organism unspecified – J18.8	11.707	1.6%

Source: MOH data, August 2016.

Table 3.10. Most frequent diagnoses for inpatient discharges, secondary multi-profile hospitals, 2015

Diagnoses (title and ICD10 code)	Number of discharges	% on total discharges
Spontaneous vertex delivery – O80.0	33.300	3.2%
Other bacterial pneumonia – J15.8	29.283	2.8%
Other forms of angina pectoris – I20.8	23.483	2.3%
Concussion (commotio cerebri) – S06.0	21.682	2.1%
Calculus of gallbladder with acute cholecystitis – K80.0	13.168	1.3%
Thoracic, thoracolumbar and lumbosacral intervertebral disc disorders with radiculopathy – M51.1	12.650	1.2%
Unstable angina – I20.0	12.598	1.2%
Cerebral infarction due to thrombosis of cerebral arteries – I63.3	12.083	1.2%
Acute pancreatitis – K85	11.438	1.1%

Source: MOH data, August 2016.

Table 3.11. Most frequent diagnoses for inpatient discharges, tertiary hospitals, 2015

Diagnoses (title and ICD10 code)	Number of discharges	% on total discharges
Other forms of angina pectoris – I20.8	8.107	6.8%
Complicated cataract – H26.2	2.279	1.9%
Unstable angina – I20.0	1.708	1.4%
Dislocation of lens – H27.1	1.686	1.4%
Non insulin-dependent diabetes mellitus – E11.7	1.609	1.3%
Atrial fibrillation and flutter – I48	1.373	1.1%
Other specified diseases and conditions complicating pregnancy, childbirth and the puerperium – O99.8	1.369	1.1%
Bilateral primary osteoarthritis of knee – M17.0	1.283	1.1%
Thoracic, thoracolumbar and lumbosacral intervertebral disc disorders with radiculopathy – M51.1	1.282	1.1%
Hypertensive heart disease with (congestive) heart failure – I11.0	1.232	1.0%

Source: MOH data, August 2016.

Table 3.12. Most frequent diagnoses for inpatient discharges, mono-profile hospitals, 2015

Diagnoses (title and ICD10 code)	Number of discharges	% on total discharges
Spontaneous vertex delivery – O80.0	133.980	17.4%
Acute upper respiratory infection, unspecified – J06.9	26.757	3.5%
Delivery by emergency caesarean section – O82.1	25.640	3.3%
False labour before 37 completed weeks of gestation – O47.0	23.443	3.0%
Paranoid schizophrenia – F20.0	19.255	2.5%
Tuberculosis of lung, bacteriologically and histologically negative – A16.0	14.573	1.9%
Infectious gastroenteritis and colitis, unspecified – A09	13.670	1.8%
Mental and behavioural disorders due to use of alcohol. Dependence syndrome – F10.2	12.739	1.7%
Unstable angina – I20.0	12.607	1.6%
Delivery by elective caesarean section – O82.0	12.393	1.6%

Source: MOH data, August 2016.

Similarly, the following tables outline surgical activity (again, first all hospitals and then per type of hospital):

Table 3.13. Most frequent diagnoses for inpatient surgeries performed, all hospitals, 2015

Diagnoses (title and ICD9 code)	Number of discharges	% on total discharges
Classical caesarean section – 74.00	36.745	5.9%
Dilatation and curettage following delivery or abortion – 69.02	32.750	5.3%
Appendectomy – 47.00	30.936	5.0%
Laparoscopic cholecystectomy – 51.23	14.645	2.4%
Caesarean section of other specified type – 74.40	9.245	1.5%
Suture of laceration of vulva or perineum – 71.71	7.731	1.3%
Coronary arteriography using two catheters – 88.56	7.198	1.2%

Source: MOH data, August 2016.

Table 3.14. Most frequent diagnoses for inpatient surgeries performed, rural hospitals, 2015

Diagnoses (title and ICD9 code)	Number of discharges	% on total discharges
Dilatation and curettage following delivery or abortion – 69.02	33	26%
Appendectomy – 47.00	17	13%
Other surgical induction of labour – 73.1	11	9%
Excision of varicocele and hydrocele of spermatic cord – 63.1	9	7%
Manual exploration of uterine cavity, postpartum – 75.7	9	7%
Excisional debridement of wound, infection, or burn – 86.22	7	5%
Dilatation and curettage for termination of pregnancy – 69.01	6	5%
Aspiration curettage following delivery or abortion – 69.52	5	4%
Manual removal of retained placenta – 75.4	4	3%
Other operations on Bartholin's gland – 71.29	3	2%

Source: MOH data, August 2016.

Table 3.15. Most frequent diagnoses for inpatient surgeries performed, rayon hospitals, 2015

Diagnoses (title and ICD9 code)	Number of discharges	% on total discharges
Appendectomy – 47.00	13.340	16%
Dilatation and curettage following delivery or abortion – 69.02	9.804	12%
Excisional debridement of wound, infection, or burn – 86.22	7.761	9%
Classical caesarean section – 74.00	5.261	6%
Excision of varicocele and hydrocele of spermatic cord – 63.1	3.033	4%
Other dilatation and curettage – 69.09	2.648	3%
Other and open repair of indirect inguinal hernia – 53.02	1.824	2%
Operations On Skin And Subcutaneous Tissue – 86	1.820	2%
Cholecystectomy – 51.22	1.602	2%

Source: MOH data, August 2016.

Table 3.16. Most frequent diagnoses for inpatient surgeries secondary multi-profile hospitals, 2015

Diagnoses (title and ICD9 code)	Number of discharges	% on total discharges
Dilatation and curettage following delivery or abortion – 69.02	25.395	8%
Appendectomy – 47.00	17.627	5%
Laparoscopic cholecystectomy – 51.23	14.719	4%
Insertion of prosthetic lens – 13.73	10.767	3%
Excisional debridement of wound, infection, or burn – 86.22	7.782	2%
Coronary arteriography using two catheters – 88.56	7.214	2%
Operations on skin and subcutaneous tissue – 86	6.657	2%
Laparoscopic appendectomy – 47.01	6.381	2%
Other operations on nasal sinuses – 22.9	5.389	2%
Classical caesarean section – 74.00	4.971	2%

Source: MOH data, August 2016.

Table 3.17. Most frequent diagnoses for inpatient surgeries performed, tertiary hospitals, 2015

Diagnoses (title and ICD9 code)	Number of discharges	% on total discharges
Insertion of Prosthetic Lens – 13.73	5.173	8%
Insertion of drug-eluting coronary artery stent(s) – 36.07	2.416	4%
Coronary arteriography using two catheters – 88.56	2.196	4%
Excision or destruction of other lesion or tissue of heart, endovascular approach – 37.34	1.749	3%
Other mechanical vitrectomy – 14.74	1. 142	2%
Classical caesarean section – 74.00	1.126	2%
Total hip replacement – 81.51	992	2%
Puncture of spleen – 41.10	977	2%
Total knee replacement – 81.54	902	2%

Source: MOH data, August 2016.

Table 3.18. Most frequent diagnoses for inpatient surgeries performed, mono-profile hospitals, 2015

Diagnoses (title and ICD9 code)	Number of discharges	% on total discharges
Classical caesarean section – 74.00	36.746	25%
Dilatation and curettage following delivery or abortion – 69.02	11.948	8%
Caesarean section of other specified type – 74.40	9.245	6%
Suture of laceration of vulva or perineum – 71.71	7.736	5%
Insertion of drug-eluting coronary artery stent(s) – 36.07	5.078	3%
Coronary arteriography using two catheters – 88.56	4.300	3%
Suture of laceration of vagina – 70.71	3.488	2%
Low cervical caesarean section – 74.10	3.455	2%
Insertion of intraocular lens prosthesis at time of cataract extraction, one-stage – 13.71	3.006	2%
Other surgical induction of labour – 73.10	2.842	2%

Source: MOH data, August 2016.

The data (diagnoses at discharge, based on ICD-10 codes, as well as diagnoses for surgeries, based on ICD-9 codes) provides useful insights into the nature of the hospital system in Kazakhstan. Overall it seems that most hospitals remain focused on delivering core services of limited complexity, a significant proportion of which would likely be provided by lower level facilities in OECD countries.

- A significant share of the diagnoses driving hospitalisations in Kazakhstan would preferentially and more often be treated in an ambulatory care or outpatient setting in Western countries (e.g., tuberculosis treatment; cholecystectomies, including via laparoscopic techniques; cataract removal, including insertion of intraocular lens; etc.)
- Obstetric services also largely dominate the picture of hospital activity in Kazakhstan. Most of these services should indeed be hospital based, but their prominence suggests that the activity in Kazakh hospitals is neither very complex nor very diversified. It also does not appear to be particularly aligned with the burden of disease described in Chapter 1. Across EU member states, the main discharge diagnosis in 2014 was circulatory diseases. Other common diagnoses included diseases of the digestive system, diseases of the respiratory system, and neoplasms (benign or malignant cancers) (Eurostat Statistics Explained, 2015a).
- Regarding the complexity of cases, the frequently conducted complex procedures among EU Member States (Eurostat Statistics Explained, 2015b) include bronchoscopy with and without biopsy (ICD-9-CM codes 33.21–33.24 and 33.27), transluminal coronary angioplasty (ICD-9-CM codes 36.01, 36.02 and 36.05), or bypass anastomosis for heart revascularisation (coronary artery bypass graft; ICD-9-CM code 36.1), none of which appear in the above list.
- Although direct comparisons across countries are by nature crude, they provide another illustration of the contrast between the activity of hospitals between Kazakhstan and a typical OECD country (Agence Technique de l'Information sur l'hospitalisation, 2016). In France roughly 20% of hospital acute care activity is focused on digestive problems, 10% on orthopaedic trauma, followed by cardiovascular activity (7%), uro-nephrology (6%) and obstetrics (6%). Moreover, in Kazakhstan the most frequently performed surgical procedures represent a much higher proportion of surgeries than in France. For instance, caesarean sections which account for a total of 6.4% of surgeries in Kazakhstan represent 0.8% in France; appendectomy in France represent 0.4% of surgeries compared with 5% in Kazakhstan.

Secondly, the absolute numbers of surgical procedures carried out by the hospital system are strikingly low, which in addition to economic considerations raises important questions about the safety of service provision in many places. Naturally, average numbers can mask differences across facilities, but classical uncomplicated caesarean sections – the most frequent surgical procedure – are performed around 100 times a day throughout Kazakhstan. The breakdown by category of facility further shows that 14 caesarean sections are carried out on any day across all 181 rayon hospitals, and the same number across the 163 secondary multi-profile hospitals. In tertiary hospitals the procedure is performed 1 100 times a year (in other words, three times a day nationally across 33 hospitals). On average this means that the procedure is being performed only once every 13 days in each rayon hospital; once every 12 days in each secondary multi-profile hospital, and once every 11 days in each tertiary hospital. All other surgical procedures are performed even less frequently in any given hospital.

International experience suggests that in order to maximise personnel and the technical equipment in a given delivery ward, a minimum of 600 deliveries per year, ideally 1 000 to 2 000, is required (for Germany and Spain, for example, see[7]). The number of deliveries in rayon hospitals averages 480 per year and only 200 in multi-profile hospitals.

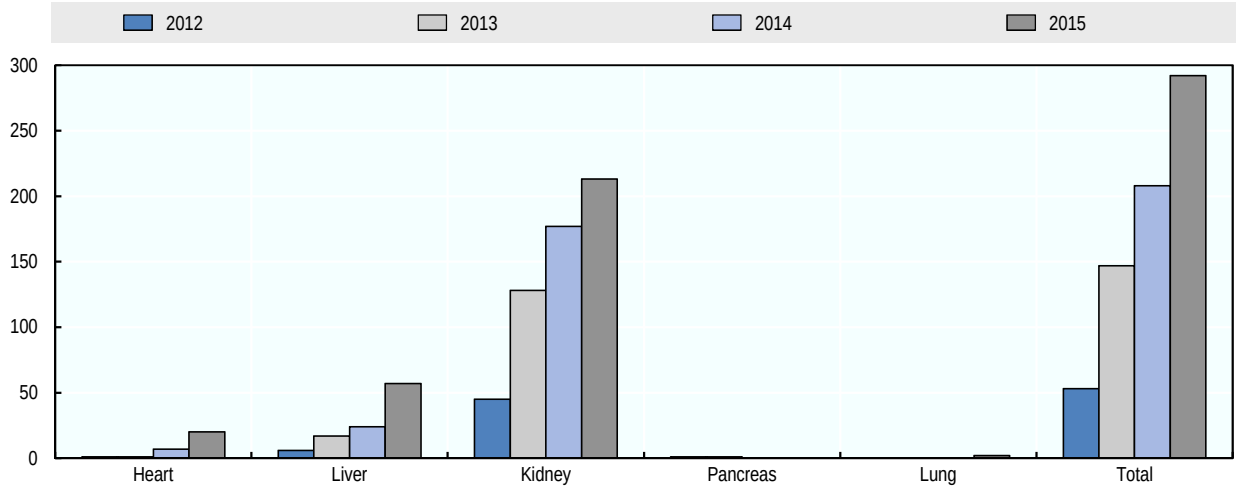
The third key observation is that the types of services provided by the different categories of facilities are very similar. The distribution of "most frequent diagnoses" is almost the same across the various levels. The list of the 10 most frequent diagnoses for both discharges and surgical procedures includes a total of only 30 different procedural headings, and the same diagnostic codes are repeated in each hospital category[8]. In contrast, most OECD countries try to cluster hospitals and concentrate more technically complex services in higher-level facilities, while supporting the availability of basic services in more peripheral facilities. Kazakhstan has a long way to go in this direction, and this could help improve both safety and efficiency.

To summarise, Kazakhstan still requires a significant re-profiling of existing hospital services (and of the health care structures in general) and needs to align activity more closely with the burden of disease.

Highly specialised services and day care are growing

Despite the general trends highlighted in the previous section, some Kazakh hospitals have advanced in their modernisation process and show elements fully compatible with facilities in OECD countries. Complex surgeries such as organ transplants, for example, which were rarely performed in the country five years ago, numbered 300 in 2015, as shown in Figure 3.15 below.

Figure 3.15. Organ transplantation in Kazakhstan, 2012-15



Source: MOH data, August 2016.

Although this increase is remarkable, a comparison suggests the capacity of the Kazakh hospital sector to deliver very complex procedures remains modest compared with that of OECD countries.

Table 3.19. Organ transplantations per 1 000 000 population, Kazakhstan and selected EU countries, latest year available

Kidney		Liver		Heart		Lung	
Netherland	56.8	Belgium	26.3	Slovenia	14.3	Austria	15.1
Spain	54.4	Spain	23.3	Austria	7.5	Belgium	9.1
Norway	53.8	Portugal	22.7	Norway	7.4	Ireland	7.0
United Kingdom	51.6	Norway	22.0	France	6.5	Norway	6.6
Austria	49.5	Sweden	16.8	Czech R	6.4	Spain	6.1
...	...	...	...	...	...	...	...
Kazakhstan	12.1	Kazakhstan	3.2	Kazakhstan	1.1	Kazakhstan	0.1

Source: European Commission (2014), Recent Facts & Figures. 2013 data, Journalist Workshop on Organ donation and transplantation 26 November 2014, Brussels (for EU countries) http://ec.europa.eu/health/blood_tissues_organs/docs/ev_20141126_factsfigures_en.pdf; MOH data, August 2016 (for Kazakhstan).

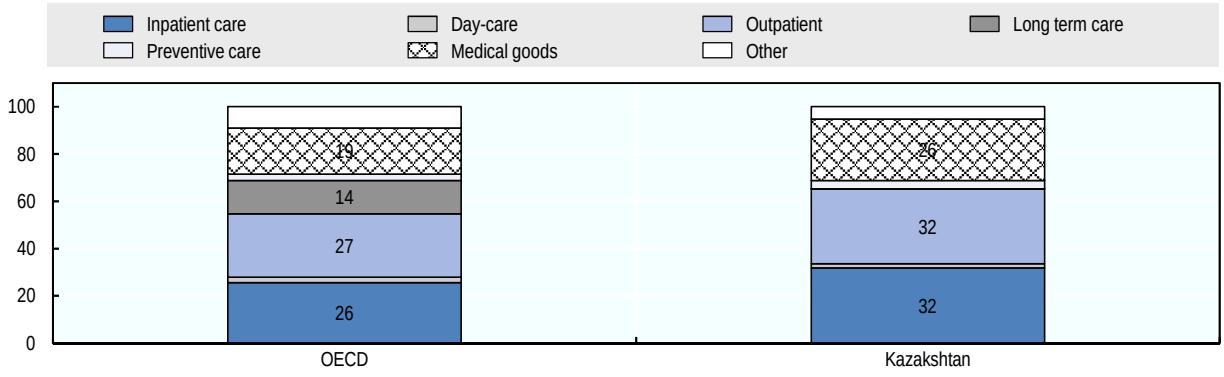
Similar trends can be observed for other highly specialised services. Incentives in place to develop outpatient surgery in particular are starting to take effect, so that ambulatory cases and other specialised care have gone up in Kazakhstan, as data from the most recent years show (see also the case of ambulatory below, on Efficiency).

The hospital sector is absorbing a large share of available resources

The final dimension of this overview of the hospital sector is financial. How much money is devoted to hospitals *within* the Kazakh health system?

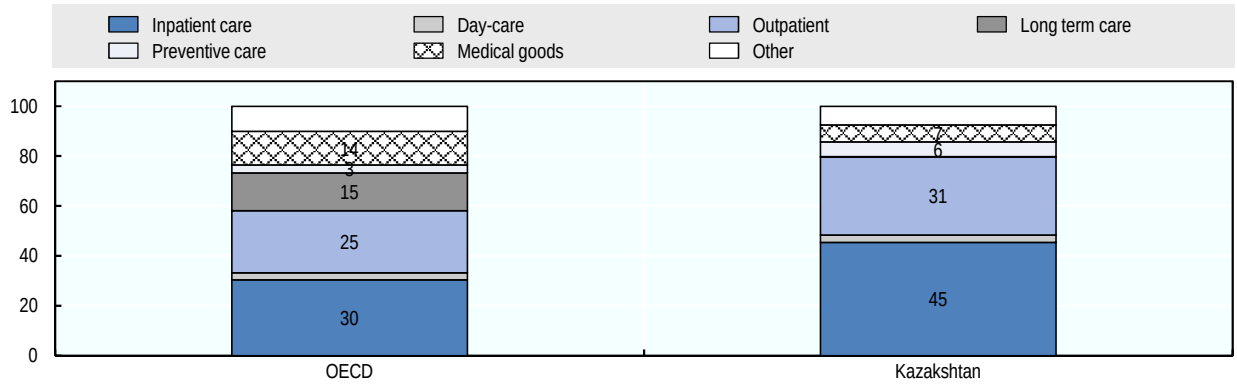
Overall, hospitals are absorbing a large share of spending, especially public. Data from the recent rounds of National Health Accounts (Figures 3.16 and 3.17) show that the Kazakh hospital sector is absorbing 32% of total expenditure on health, a larger share of resources than in OECD countries (26%). In terms of priorities for public funding, the distortion is more marked; whereas on average OECD countries dedicate 30% to inpatient care, the share is 45% in Kazakhstan. On the other hand, it is important to highlight that the share of total and public expenditure devoted to primary health care is higher than in all OECD countries (see Chapter 2).

Figure 3.16. Breakdown of current health expenditure by function OECD and Kazakhstan, 2014



Source: OECD Health Statistics, 2016, http://dx.doi.org/10.1787/health-data-en; OECD report on NHA (2016).

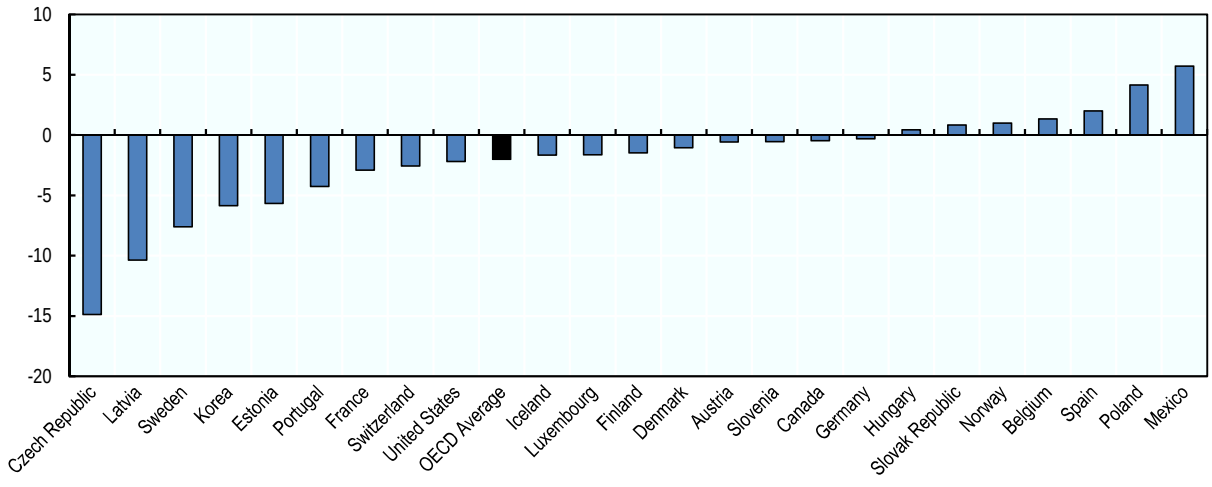
Figure 3.17. Breakdown of public health expenditure by function, OECD and Kazakhstan, 2014



Source: OECD Health Statistics, 2016, http://dx.doi.org/10.1787/health-data-en; OECD report on NHA (2016).

Although the data are incomplete, it appears that in contrast to most OECD countries, inpatient care is increasing as a proportion of total expenditure. As the following figures illustrate, between 2004 and 2014 inpatient curative and rehabilitative care decreased as a proportion of both total and public health expenditure in most OECD countries and on average. Data over a long period are not available in Kazakhstan and there are some significant fluctuations from year to year, but between 2000 and 2014, public expenditure on hospitals grew somewhat faster than public expenditure on hospitals (95 vs 89% in nominal terms) (Ministry of Health, 2015). By contrast, over the same period, hospitals' share of public expenditure decreased by 1 percentage point in OECD countries,

Figure 3.18. Changes between 2004-14 in the percentage of health expenditure spent on inpatient curative and rehabilitative care as a share of current expenditure on health, OECD countries



Source: OECD Health Statistics, 2016, http://stats.oecd.org/Index.aspx?DataSetCode=SHA.

3.4. Performance of the hospital system in Kazakhstan

This section will focus specifically on final and intermediate results at hospital level: quality, safety, access and efficiency indicators are reviewed in turn and compared with OECD results where feasible. System level results, in particular the fact that health outcomes continue to lag behind in Kazakhstan (see Chapter 1) should be kept in mind.

According to official statistics, the quality of hospital care is on a par with OECD countries

A high-level review of the hospital sector (in fact, of the entire health system) would first assess whether hospital services "mirror in attention" (frequency, priority, money expended after adjusting for service prices, etc.) the main causes of death analysed in Chapter 1. The preceding analysis of hospital activity (see for example, most frequent diagnoses) would most likely reveal a mismatch between the profile of services provided in Kazakhstan and the 85% of deaths due to chronic, non-communicable diseases (cancer, cardiovascular disease, diabetes, etc.), as well as the 11% caused by injuries, and the 2% due to communicable diseases (Aringazina et al., 2012). This discussion is even more relevant in light of recent findings concerning the relationships between health care and health (Arah et al., 2006) and between both and economic development[9].

However the pragmatic approach taken in this chapter is to assess the impact of hospital services and their quality on health outcomes, with the view to determining the *extent to which hospitals are producing good results*.

Overall hospital mortality rates in Kazakhstan also highlight the low complexity of care provided in hospitals in comparison with OECD countries.

In OECD countries, for every 100 persons hospitalised, at least two may be expected to die. Crude hospital mortality rates, which do not account for the severity of the cases treated, are too blunt an instrument to measure or compare the quality of hospital services across facilities. As a result they are rarely reported by countries, which instead use other indicators of quality (see Conclusions). On the other hand, the range of crude hospital mortality rates in OECD hospitals can be quickly assessed with a few examples: it was about 2 per 100 admissions in the United States in 2010 (Hall et al., 2013), 2.7 per 100 admissions in Scotland in 2012 (NHS Scotland, 2013) and 1.93 in the East and North Hertfordshire NHS United Kingdom trust in 2014/2015[10].

In Kazakhstan, around one person dies for every 10 000 hospitalised. Statistics provided by the Ministry of Health suggest that in Kazakhstan 0.92 patients admitted die for every 10 000 admitted. This figure is entirely out of range in comparison with the above numbers. It cannot reasonably be interpreted to mean that hospitals in Kazakhstan are 100 times safer than those of the countries cited. A more reasonable interpretation (and even beyond possible discussions about the completeness and accuracy of hospitals information systems), would be that the nature of hospitals and the range of treatments they provide in Kazakhstan are profoundly different to OECD countries. In other words, whereas in OECD countries hospitalised patients are more likely to be severely ill or to have complex conditions with a higher likelihood of a fatal outcome, patients in Kazakhstan hospitals are likely to be less unwell or to be admitted for the treatment of less serious conditions. In OECD countries, some would likely not be considered to warrant hospital admission. Reducing the degree of avoidable hospitalisations, particularly through the strengthening of primary health care, is a long-standing priority of the government. The statistics above

highlight the urgency of this priority. They also support the inference that the hospital sector provides very low complexity care to most patients.

The quality of data reported on cause-specific mortality rates seems questionable but suggests that for the most frequently performed surgeries, mortality is in the range of OECD figures.

Data on *selected* causes of intra-hospital mortality should provide a more accurate picture as they allow for comparisons of the outcomes of specific interventions. Data on post-operative mortality statistics (Tables 3.19 to 3.23) were provided by the Ministry of Health for all hospitals except rural ones, which perform the most basic services and for which statistics may not be reliable, as well as for each category of hospital separately.

The data provided clearly contain some errors. For instance, cephalotrypesis is listed in the first table (all hospitals) as causing the largest number of deaths across all hospital types but is not listed among the five major causes of death in any individual hospital category. Moreover, while the 502 deaths across all hospitals associated with cephalotrypesis are supposed to represent the leading cause of death, more people (655) die following *Coronary arteriography 1 or 2 catheters* in secondary multi-profile hospitals only. Similarly, the table summarising data for all hospitals points to 194 deaths in 2015 following a tracheostomy, while the number of deaths associated with the procedure was 360 in secondary hospitals alone.

Table 3.20. Five procedures most-frequently associated with post-operative mortality, all hospitals, 2015

	Total number of operations	Number of deaths	% in total post-operative mortality	Mortality %
Cephalotrypesis	2 304	502	5.4	21.8
Introduction into the coronary artery of a drug-eluting stent	11 543	216	2.3	1.9
Coronary artery bypass surgery of three or more of the coronary arteries	3 824	136	1.5	3.6
Implantation of pulsation balloon	302	107	1.1	35.4
Tracheostomy	1 114	194	2.1	17.4

Source: MOH data, August 2016.

Table 3.21. Five procedures most-frequently associated with post-operative mortality, rayon hospitals, 2015

	Total number of operations	Number of deaths	% in total post-operative mortality	Mortality %
Operations for limb amputation	187	21	3.9	11.2
Appendectomy	7 734	4	0.7	0.1
Operations on the digestive organs (excluding appendectomy)	3 183	66	12.2	2.1
Incision and drainage of abscesses of soft tissues and cavities with purulent diseases	2 755	39	7.2	1.4
Debridement of infected or burned skin	376	36	6.6	9.6
All causes	50 939	543	--	1.1

Source: MOH data, August 2016.

Table 3.22. Five procedures most-frequently associated with post-operative mortality, secondary multi-profile hospitals, 2015

	Total number of operations	Number of deaths	% of total post-operative mortality	Mortality %
Coronary arteriography 1 or 2 catheters	31 897	665	8.7	2.1
Drug coated stent into coronary artery	8 759	252	3.3	2.9
Other forms of craniotomy	1 829	251	3.3	13.7
Tracheostomy	879	360	4.7	41.0
Implantation of pulsation balloon	264	151	2.0	57.2
All causes	554 120	7 619	100	1.4

Source: MOH data, August 2016.

Table 3.23. Five procedures most-frequently associated with post-operative mortality, tertiary hospitals, 2015

	Total number of operations	Number of deaths	% in total post-operative mortality	Mortality %
Operations on vessels and heart, including:	10 452	371	32.4	3.5
Revision reconstructive heart surgery	*126*	*45*	*3.9*	*35.7*
Coronary arteriography one catheter	*1 083*	*45*	*3.9*	*4.2*
Coronary arteriography two catheters	*3 804*	*44*	*3.8*	*1.2*
Percutaneous transluminal coronary angioplasty	*419*	*13*	*1.1*	*3.1*
Introduction into the coronary artery of a stent without drug coating	*174*	*13*	*1.1*	*7.5*
Coronary artery bypass grafting of the three coronary arteries	*378*	*13*	*1.1*	*3.4*
Drug coated stent into coronary artery	*2 773*	*12*	*1.0*	*0.4*
Operations on the digestive organs	1 604	49	4.3	3.1
Other forms of craniotomy	156	30	2.6	19.2
Tracheostomy	149	21	1.8	14.1
Peritoneal lavage	33	21	1.8	63.6
All causes	84 246	1 145	--	1.4

Source: MOH data, August 2016.

Table 3.24. Five procedures most-frequently associated with post-operative mortality, mono-profile hospitals, 2015

	Total number of operations	Number of deaths	% in total post-operative mortality	Mortality %
Operations on the organs of the chest, including:	1 129	7	15.6	0.6
Other manipulations on chest	*271*	*7*	*15.6*	*2.6*
Pneumocentesis	*203*	*3*	*6.7*	*1.5*
Tracheostomy	*3*	*2*	*4.4*	*66.7*
Other laparoscopy	*4*	*2*	*4.4*	*50.0*
Diagnostic thoracoscopy	*148*	*2*	*4.4*	*1.4*
All causes	2 570	45	--	1.8

Source: MOH data, August 2016.

Cautious interpretation of post-operative mortality statistics is always warranted (Noordzij et al., 2010), but some observations can nevertheless be drawn.

- By pointing to cephalotrypesis as a source of hospital mortality, the data raise questions about the application of best practices. Cephalotrypesis is a method of foetal cephalocentesis (surgical trephination of the foetal skull) used in cases of cephalopelvic disproportion, e.g., when vaginal delivery of a breech presentation or an hydrocephalic infant become impossible. By and large, it is considered as an obsolete practice (Segen's Medical Dictionary, 2011). In fact, clinical protocols in Kazakhstan advise against its use. The data suggest it remained in use as recently as 2015 and that it is associated with a fatal outcome in one in every five times it is undertaken in Kazakhstan. The development of evidence-based clinical guidelines is an important step already underway by Kazkahhstan, but this example offers a powerful illustration of the fact that adherence may be suboptimal. Staff at all levels of the health system need to be aware of the relevant clinical guidelines and to adapt their protocols and practices appropriately. Proactive monitoring of clinical practice is also warranted.
- Tracheostomy, which consists of creating an opening through the neck into the trachea, is not intrinsically a high-risk procedure. The high mortality rate in Kazakhstan may be indicative of poor technique (Pretty et al., 2012) (if the surgery is only performed rarely by any given surgeon[11]), or of significant comorbid disease burden in the majority patients, neither of which can be discerned from the raw data.
- The data provided suggest that crude post-surgery mortality figures stand at 1.8% in mono-profile hospitals, 1.4% in tertiary hospitals and secondary hospitals and 1.1 in rayon hospitals. These numbers are broadly in the range of what may be expected in advanced countries (between 0.5 to 1.2%) (Watters et al., 2015)[12]. Still, the evidence so far suggests that hospitals in Kazakhstan offer fairly basic surgeries, and that many hospitals carry them out at low frequency. Given the low complexity of the procedures, the above numbers suggest that surgery is somewhat less safe in Kazakhstan, although not necessarily by an order of magnitude.

A more direct comparison with specific OECD indicators suggests that performance in Kazakhstan may be on par with the OECD average, although some figures cast doubt on the accuracy of reporting.

Over a number of years the OECD has developed safety indicators, which, while generally quite complex to compute, allow for meaningful comparisons across countries. In the context of the review, the MOH provided figures for five selected causes of intra-hospital mortality and safety-related events (Table 3.25).

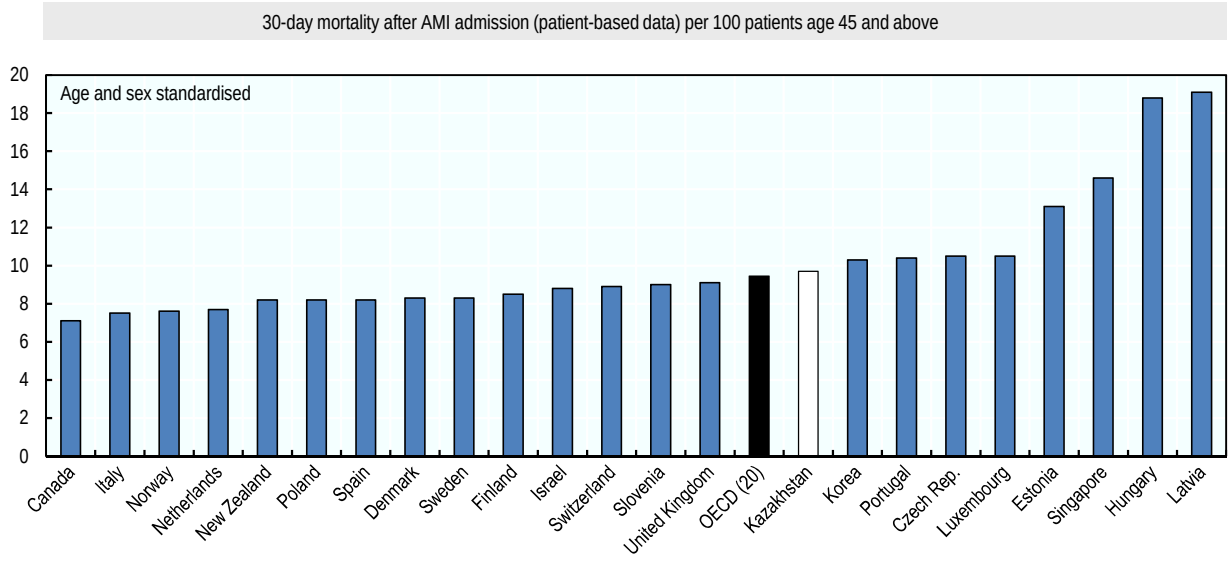
Table 3.25. Selected causes intra-hospital mortality, all hospitals, 2015

Admission based AMI 30 day in-hospital (same hospital) mortality	1.3
Patient based AMI 30 day (in-hospital and out of hospital) mortality (patients admitted to hospital with a primary diagnosis of acute myocardial infarction).	9.7
Patient based ischaemic stroke 30 day (in-hospital and out of hospital) mortality (patients admitted to hospital with a primary diagnosis of ischaemic stroke)	9.0
Admission based ischaemic stroke 30 day in-hospital (same hospital) mortality	11.4
Post-operative pulmonary embolism OR Postoperative deep vein thrombosis	169.2

Source: MOH data, August 2016.

The following two figures place Kazakhstan close to the OECD average for AMI and stroke.

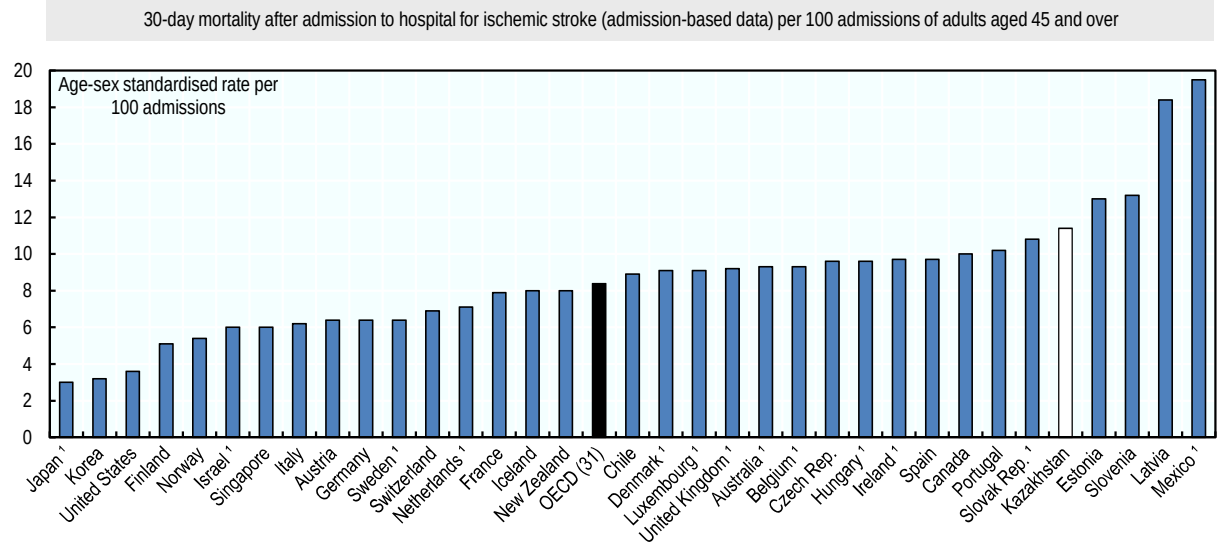
Figure 3.19. 30-day mortality rate after admission to hospital for Acute Myocardial Infarction (AMI), latest year available



Note: (a): 2013; (b): 2012; (c): 2011; (d): 2009; MOH data, August 2016 (for Kazakhstan).

Source: OECD Health Statistics, 2016, http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_HCQI

Figure 3.20. 30-day mortality after admission to hospital for ischemic stroke, latest year available



Note: (a): 2014; (b): 2013; (c): 2012; (d): 2011; (e): 2009;

Source: MOH data, August 2016 (for Kazakhstan); OECD Health Statistics, 2016 http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_HCQI

Patient-based mortality for AMI is close to the OECD average. With respect to 30-day mortality after admission to hospital for AMI based on patient data, Kazakhstan is positioned very close to the OECD average (9.5), with fourteen OECD countries having lower mortality rates and seven, higher (eight if Singapore is included).

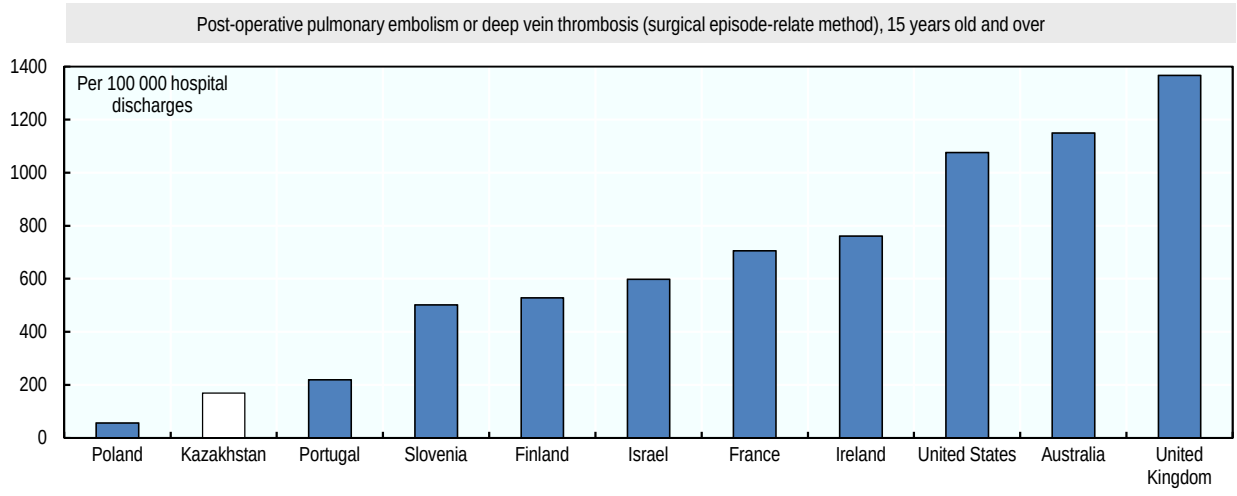
The level of admission-based mortality for AMI and the large gap between patient and admission-based measures in Kazakhstan are however unusual. Mortality following AMI can be reported at the level of hospitals (admission-based) or at the patient level (this is feasible when information systems allow patients' pathways to be followed through the entire health system over time). Admission-based figures are generally easier to collect and tend to be reported more widely than patient-based figures (Kazakhstan was able to report both). Admission-based mortality is, by definition, lower than patient-based mortality. In the OECD, admission-based mortality for AMI averages 8.1. The admission-based figure for Kazakhstan is only 1.3, three times better than the best OECD performance (Australia), which is somewhat surprising. The gap between the two indicators (from 1.3 to 9.7) is also unusually high in Kazakhstan, compared with the OECD (from 8.1 to 9.5).

The comparison of 30-day mortality after admission to hospital for ischaemic stroke based on admission data, however, is somewhat less favourable. While the OECD admission-based average is 8.4, the level in Kazakhstan is 11.4. Mortality is higher in only four OECD countries. At the same time, Kazakhstan's patient-based figure for this indicator is 9.0, which by definition should be higher than the admission-based value (11.4). This casts additional doubts on the accuracy of the reported numbers, and additional methodological work may be required to ensure full comparability with OECD data.

Data on safety are incompletely reported. Data on adverse events such as nosocomial infections signal the presence of poor clinical processes, and for this reason also deserve attention (Gawande, 2009). Kazakhstan reports information on post-operative thromboembolic events, but not on other key safety indicators such as post-operative complications, retained objects, nosocomial infections or readmission rates.

Post-operative pulmonary embolism and deep vein thrombosis are unusually low in Kazakhstan. The table below contrasts Kazakhstan with those OECD countries that report on this indicator. Here again, the comparison raises concerns about the validity of available statistics. Kazakhstan reports values that are well under the OECD average (169 vs. 576), and boasts the second lowest rate among OECD countries that report these data.

Figure 3.21. Post-operative pulmonary embolism or deep vein thrombosis following surgery, latest year available



Note: (a): 2013; (b): 2012; (c): 2011; (d): 2009.

Source: MOH data, August 2016 (for Kazakhstan; OECD Health Statistics, 2016 http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_HCQI

To summarise, the available information on safety and quality of care in Kazakhstan present a somewhat paradoxical picture. Some elements confirm that the system predominantly tends to serve basic and elementary needs; crude data on mortality following specific surgical procedures are not readily compatible with those of OECD countries, while some more complex measures suggest that Kazakhstan is either average or among the best performers. Overall, the quality of the reporting often seems questionable.

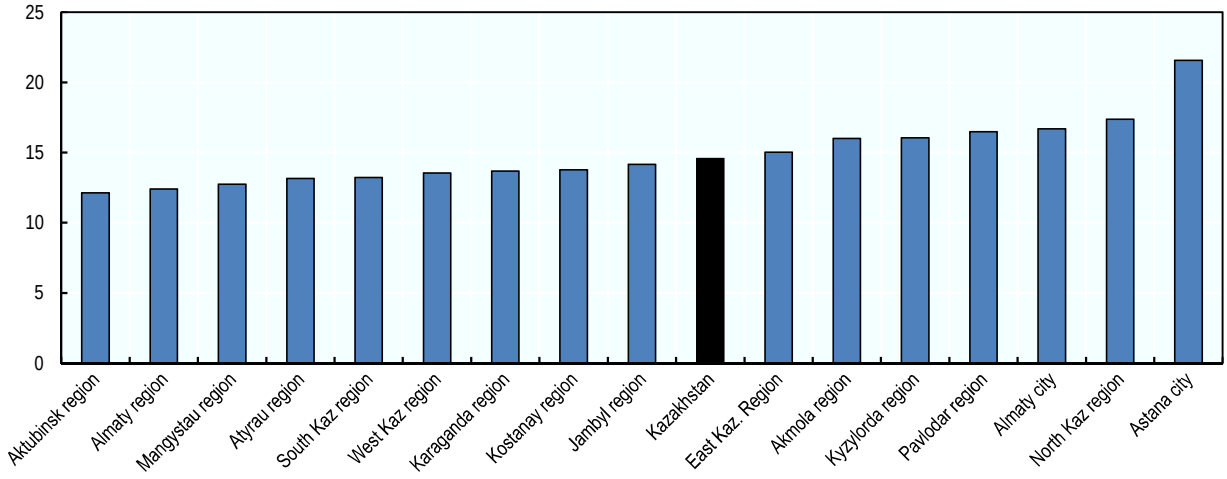
Available data suggest access to existing services is not constrained

A second key dimension of performance is access, which can be analysed in a number of ways. The ability to "reach and use health care effectively" (Duran et al., 2012) depends on many factors such as entitlement, volume and quality of available services, geographical distribution, operating schedules, booking systems and waiting times (including referral rules) of providers, as well as the patient's ability to navigate the different routes, among others. A number of (operative, geographic and economic, etc.) barriers can arise, often related to the way services are organised while others are linked to patients' perceptions (previous experience and/or perceived quality) and cultural biases (education, expectations, etc.).

As discussed previously, access in Kazakhstan – as reflected in numbers of admissions – is similar to the OECD average, but there are large variations across regions. In Kazakhstan, the population is entitled to free hospital services included in the SGBP. Overall, 82% of expenditure on hospital services is public (which compares well with the 86% average in OECD countries). There is also little doubt that the residents of Almaty and Astana city are advantaged when it comes to accessing health services, as these two cities host the most advanced national clinical centres, whereas geographical accessibility of health services in remote areas is much more challenging, reflecting the country's vast and scarcely populated territory. Indeed, while Admission rates compare

well with OECD countries, there is a significant amount of variation across regions (see Figure 3.22); excluding Astana as a clear outlier, the rate of admission in Aktubinsk is around 12, compared with more than 17 in the North Kazakhstan region.

Figure 3.22. Number of hospital admissions per 100 population across regions, 2014



Source: MOH data, August 2016.

The following paragraphs discuss other access indicators available for Kazakhstan.

Hospital admissions are largely unplanned, far more than in a typical OECD system

Only a quarter of hospitalisations are planned. The figure and table below show that one-quarter of all patients arrive with a non-urgent referral from a GP or specialist, one in three patients who contact the hospital are "self-referred", and the remainder arrive via ambulance. In other words, almost three-quarters of hospital encounters are *unplanned,* a proportion that appears unusually high. Although the data may not be strictly comparable, in 2014 in Denmark, for example, only 30% of contacts were deemed “acute” (roughly equivalent to unplanned), down from 33% in 2010. In the United States, about half of all admissions are via the emergency department (Morganti et al., 2013) and the figure is about 40% in the United Kingdom (Purdi et al., 2012).

Table 3.26. Hospital attendances in Kazakhstan by modality of contact, 2015

Planned attendances (referrals from GP / Specialist)	837 266	27%
Unplanned emergency contact (ambulance transportation)	1 278 130	40%
Unplanned emergency contract (patient decision)	1 038 772	33%
Total attendances	3 154 168	

Source: MOH data, August 2016.

Unplanned procedures represent the overwhelming bulk of surgical activity in most Kazakh hospitals. Tables 3.27 and 3.28 below compare unplanned and elective services by type of hospital and for selected surgical procedures. Unplanned admissions occupy beds for planned activities, distort facility operations and often lead to the postponement of necessary care, thus becoming in effect a barrier to access (see below). Tertiary

hospitals are the only category of facilities where the proportion of elective surgery is larger than the unplanned proportion – probably due to greater capacity to deal with complex cases. On the other hand, the management of patients seem to be operational for a number of elective surgeries (Table 3.28). Yet, the overall picture is of a system in which coordination of care across levels is limited and management capacity is in need of strengthening (see also below recommendations in Section 3.5.).

Table 3.27. Elective vs. unplanned surgeries, all surgical procedures by type of hospital, 2015

	Elective		Unplanned	
Rural hospitals	15	12.30%	107	87.70%
Rayon hospitals	18 127	23.50%	59 001	76.50%
Secondary multi-profile hospitals	113 674	34.83%	212 715	65.17%
Tertiary	44 672	78.53%	12 212	21.47%
Mono-profile hospitals	40.206	31.03%	89 385	68.97%
TOTAL	**216 694**		**373 420**	

Source: MOH data. August 2016

Table 3.28. Elective vs. unplanned surgeries, selected surgical procedures, all hospitals, 2015

	Elective		Unplanned	
Non-emergency/elective coronary bypass surgeries	2 679	(55.5%)	2 152	(44.5%)
Non-emergency/elective hip replacement (including the revision of hip replacement)	3 708	(81.1%)	865	(18.9%)
Non-emergency/elective knee replacement (including the revision of knee replacement)	3 630	(99.3%)	26	(0.7%)
Non-emergency/elective hysterectomy	2 646	(80.1%)	659	(19.9%)

Source: MOH data, August 2016.

Around 40% of people who reach the hospital are turned away because their condition does not require hospital care

Overall, 60% of people who reach hospital are admitted. Tables 3.29 and 3.30 show patient admissions by nature of attendance. 40% of patients who go to hospital are not ultimately admitted. Referred patients have a higher likelihood of being admitted (82%) than those who arrive by ambulance (56%) or through self-referral (49%). The most common reason for patients being refused admission (including those with referrals) is lack of medical justification (see Figure 3.23).

Table 3.29. Hospital attendances vs. hospital admissions in Kazakhstan, 2015

Total attendances	3 154 168
Hospital admissions	1 897 453 (60%)
Refused hospitalisations	1 256 717 (40%)
Total attendances per 100 population	17.8

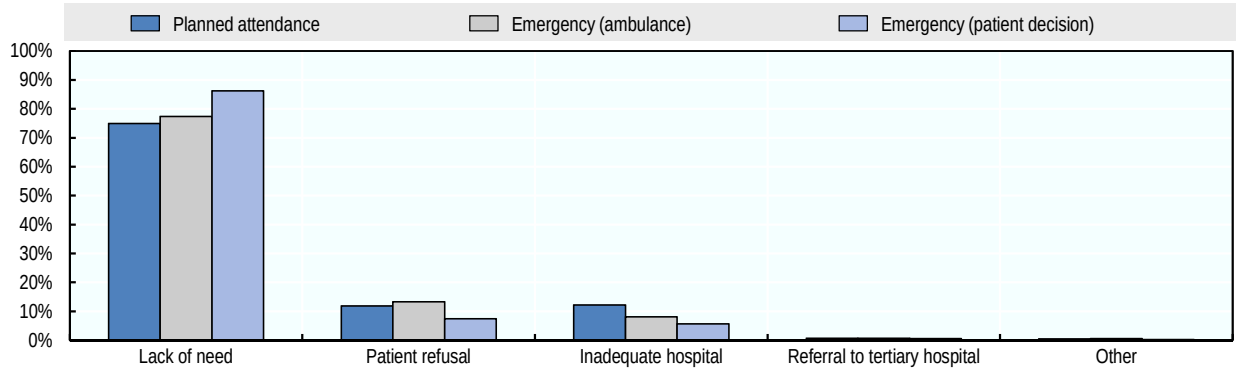
Source: MOH data, August 2016.

Table 3.30. Hospital attendances in Kazakhstan, by contact modality, 2015

Planned attendances (referrals from GP / Specialist)	837 266	27%
Admitted hospitalisations	685 479	81.9%
Refused hospitalisations	151 787	18.1%
Emergency (ambulance transportation)	1 278 130	40%
Admitted hospitalisations	709 814	55.5%
Refused hospitalisations	568 316	44.5%
Emergency (patient decision)	1 038 772	33%
Admitted hospitalisations	502 158	48.3%
Refused hospitalisations	536 614	51.7%
Total attendances	3 154 168	

Source: MOH data August 2016.

Figure 3.23. Main reasons for refused admission, Kazakhstan, 2015



Source: MOH data, August 2016.

Among rural populations hospital attendances are less frequent. Once patients arrive, however, they are generally more likely to be admitted, the exception being in hospitals in large cities (Almaty and Astana). Table 3.31 contrasts rural and urban populations. The first column presents the rural population as a proportion of any given region; the third, the proportion of the rural population among hospital attendances and the last two, the proportion admitted or not among those attending. Rural dwellers represent 43% of the population; however, they attend hospitals less frequently than urban residents, and represent only 32% of attendances. The rural-urban difference is particularly marked in some regions (Akmola, Alamty, Atyrau and West Kazakhstan). However, once they present to hospital, rural dwellers are less likely to be refused admission (28% rural vs 46% urban). In some regions, the proportion of admissions is very high (more than 80% in Aktubinks, Atyrau, Kyzylorda, and Karaganda). In the absence of additional information, it not possible to determine whether this difference in behaviour signals disparities in access for rural populations and if so whether the drivers are geographic, cultural or infrastructural.

Table 3.31. Percentage of rural population in total, attending the hospital, admitted and refused by region, 2015

	A		B	A-B	% of rural attendees	
Region	Rural proportion of population	Hospital attendances	Rural proportion of attendances	Difference	Admitted	Refused admission
Akmola region	53%	135 001	33%	20%	70%	30%
Aktubinsk region	38%	108 107	31%	7%	86%	14%
Almaty region	76%	264 065	61%	15%	76%	24%
Atyrau region	52%	77 505	33%	19%	81%	19%
East Kaz. Region	40%	277 976	29%	11%	76%	24%
Jambyl region	60%	189 945	47%	13%	72%	28%
West Kaz region	50%	116 220	35%	15%	65%	35%
Karaganda region	21%	199 927	18%	3%	90%	10%
Kostanay region	47%	145 353	40%	7%	60%	40%
Kyzylorda region	56%	118 790	47%	9%	82%	18%
Mangystau region	52%	115 021	49%	3%	65%	35%
Pavlodar region	30%	160 726	20%	10%	75%	25%
North Kaz region	56%	128 293	43%	13%	61%	39%
South Kaz region	55%	431 985	49%	6%	74%	26%
Almaty city		398 439	6%	-6%	41%	59%
Astana city		286 815	1%	-1%	43%	57%
Kazakhstan	43%	3 154 168	32%	11%	72%	28%

Source: MOH data, August 2016.

Waiting times are low but the question remains open of whether services are available to meet the population's burden of disease

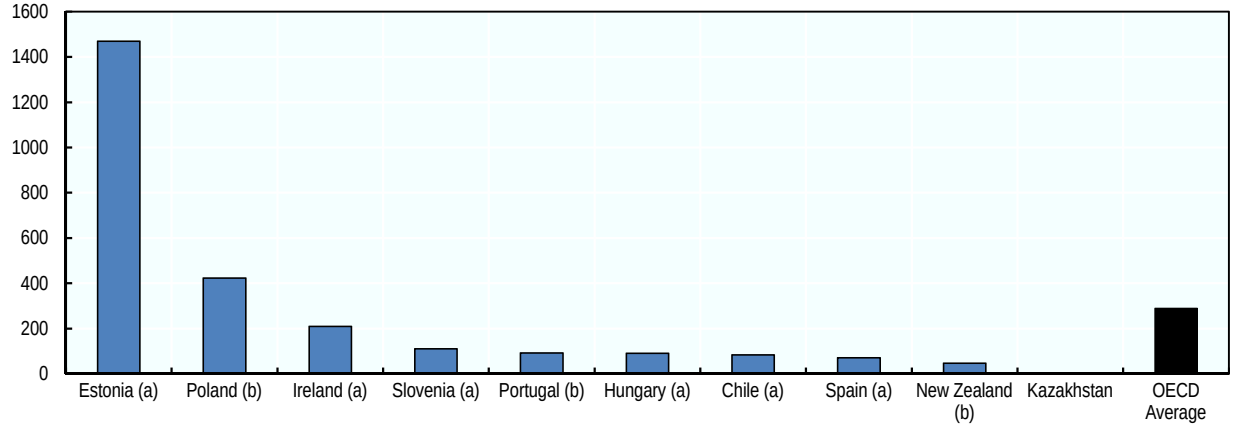
Reported waiting times are short, but the low volumes of surgeries performed still raise the question of whether access is commensurate with need. According to the official data, waiting times for the treatment of selected conditions have decreased in recent years, largely due to the previously mentioned system of "choose and book" via the bureau of hospitalisation web portal. Data and international comparisons on waiting times for elective cataract surgery are shown below.

Table 3.32. Waiting time for elective cataract surgery in Kazakhstan, by type of hospitals, 2015

	Average waiting times in days	% of all patients waiting more than three months
Rural hospitals	0.0	0.0%
Rayon hospitals	0.0	0.0%
Secondary multi-profile hospitals	1.4	2.0%
Tertiary hospitals	1.2	5.0%
Mono-profile hospitals	3.5	7.3%
Average, all hospitals	1.2	0.03%

Source: MOH data, August 2016.

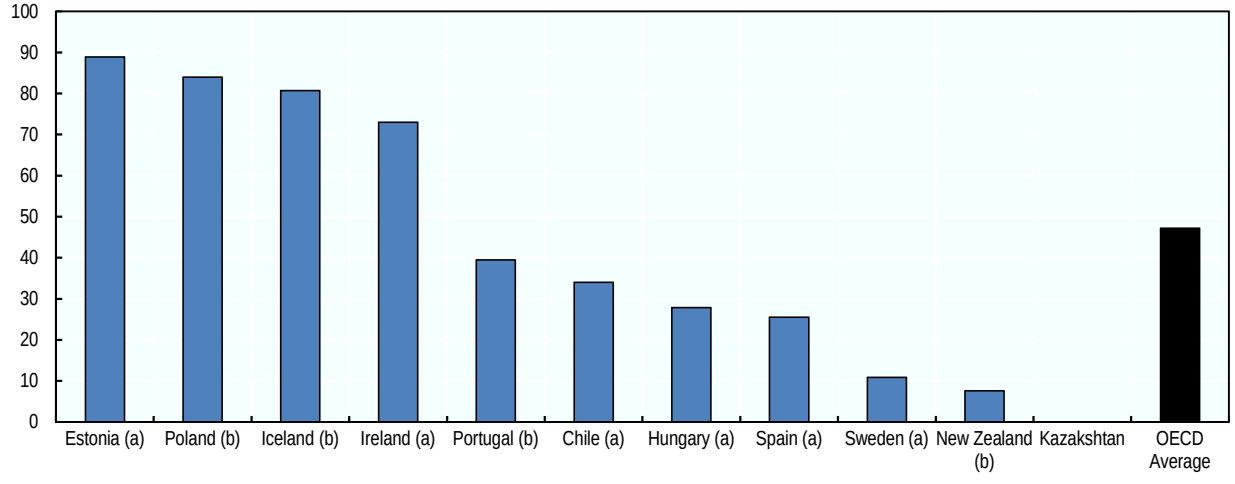
Figure 3.24. Mean waiting times (days) for cataract surgery in OECD and Kazakhstan, latest year available



Note: (a): 2015; (b): 2014.

Source: MOH data, August 2016 for Kazakhstan; OECD Health Statistics, 2016 http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_PROC.

Figure 3.25. Cataract surgeries in OECD and Kazakhstan – percentage of patients waiting more than three months, latest year available



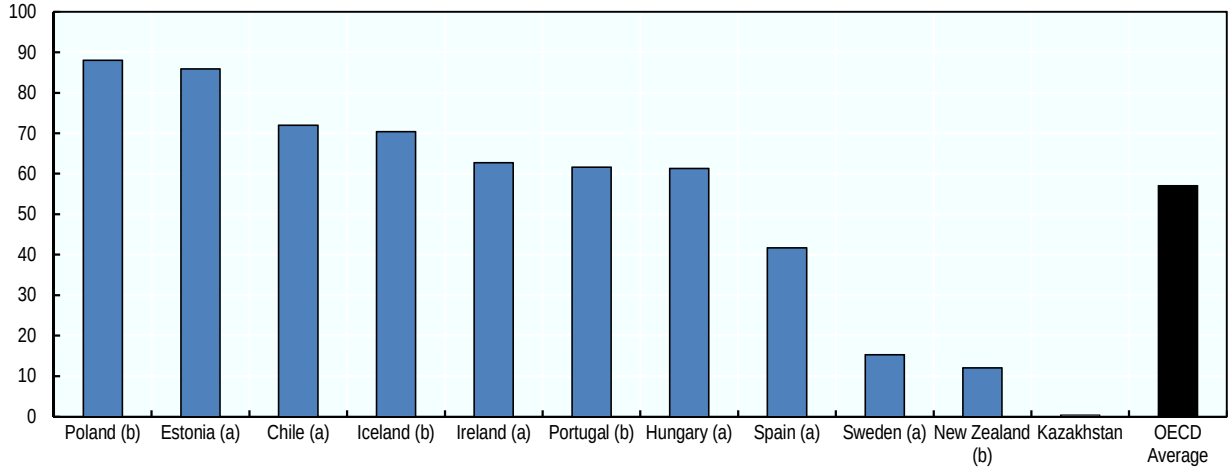
Note: (a): 2015; (b): 2014.

Source: MOH data, August 2016 for Kazakhstan; OECD Health Statistics, 2016 http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_PROC.

Waiting times for elective cataract surgery (1.2 days, with 0.03% of patients waiting more than three months) are shorter in Kazakhstan than in OECD countries for which data are available. However, comparisons should once again be drawn with caution in light of very low levels of activity for this procedure. According to available hospital activity statistics (see section above, Most frequent diagnoses for surgeries), cataract procedures are performed only once every 5.5 days in secondary multi-profile hospitals, every 2.3 days in tertiary hospitals and every 33.9 days in mono-profile. According to the data provided the total number of cataract procedures is around 20 000 procedures a year (for a population of more than 17 million). By contrast, in Lithuania, for example, the procedures was carried out more than 21 000 times in 2014[13] in a population of 3 million, and in Hungary (population less than 10 million), some 85 000 times.

The picture for other procedures is similar (but detailed data are not shown). The waiting time for a coronary by-pass graft is very short, but the procedure is not listed among the most frequent surgeries performed in any category of hospital. For knee and hip replacement, the average waiting time and the proportion of patients waiting more than three months seem extremely low in comparison with the OECD (see graph). However, these procedures only appear in the top ten list of surgeries in Tertiary hospitals where they are carried out less than 1 000 times a year each (1 hip replacement every 12 days and 1 knee replacement every 13 days). In Lithuania 4 718 hip replacement surgeries and 2 196 knee replacements were performed in 2014 (Eurostat Statistics Explained, 2015c).

Figure 3.26. Hip replacement in OECD and Kazakhstan – percentage of patients waiting more than three months, latest year available



Note: (a): 2015; (b): 2014.

Source: MOH data, August 2016 for Kazakhstan; OECD Health Statistics, 2016 http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_PROC.

Patient-reported data would be required to gain a better understanding of possible barriers in access to care

Overall, no data appear to be collected on access to care from the patient perspective, which would aid in understanding financial, geographical or other barriers. Importantly, the hospital data do not take into account that patients may be turned away or choose not

to attend or be admitted to hospital because of inability to pay. Some hospital care is supposed to be free of charge but the data do not distinguish whether patients are actually seeking treatment for free services or services for which the hospital collects fees. Overall, it is not possible to determine with the available data whether patient income or socio-economic characteristics play a role in *reaching* hospital gates or being admitted. No survey of travel times to accessing care appears to exist either.

Efficiency may not be sufficiently incentivised

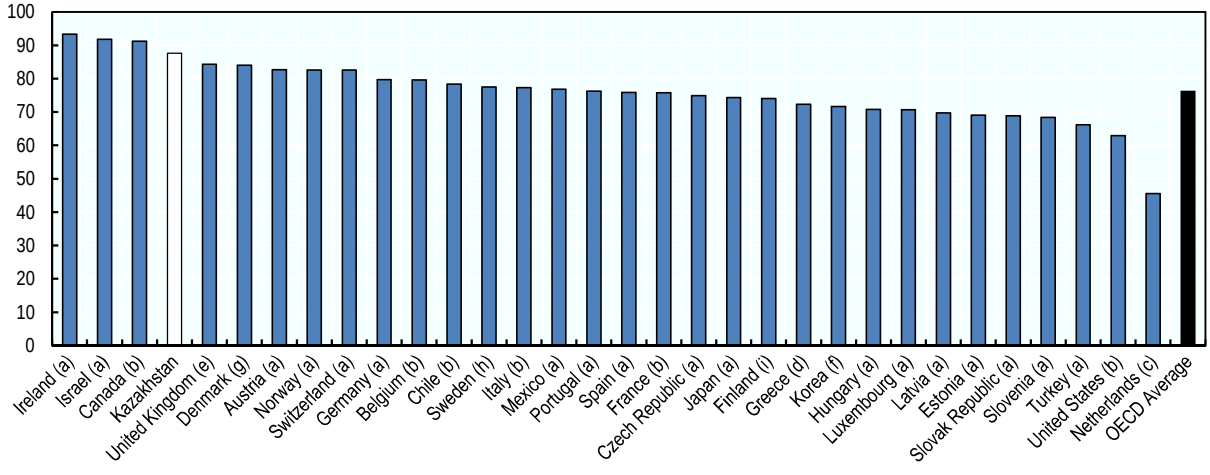
Productivity (*technical efficiency*) measures the relationship between outputs and inputs (more specifically, the level of output that can be produced for a given amount of input and technology endowment). Many related definitions can be found in the technical literature but OECD (OECD, 2013) and other authors (Street and Hakkinen, 2009) emphasise the distinction between technical and allocative efficiency (which is the maximum level of output that can be produced assuming the cheapest mix of inputs given their relative prices). The distinction is relevant because hospital efficiency measures the returns obtained from resources already committed. It can be measured by different types of indicators (e.g., cost per activity; bed occupancy rate; inpatient length of stay; operation room utilisation indices; use of non-inpatient surgery; staff absenteeism; etc.) and indeed as an effect of economic incentives.

Taking into account the information available, this section will address technical efficiency through comparisons of bed occupancy; length of stay and use of non-inpatient surgery. It also provides some further discussion of aspects of the use of DRGs as a payment mechanism, which are intended to improve efficiency.

Bed occupancy and lengths of stay are fairly high

Overall, in Kazakhstan, despite a large number of hospitals and hospital beds, bed occupancy rates are similar to or slightly higher than in OECD countries. This is explained by relatively high attendance rates and high ALOS.

Figure 3.27. Hospital bed occupancy rates, latest year available

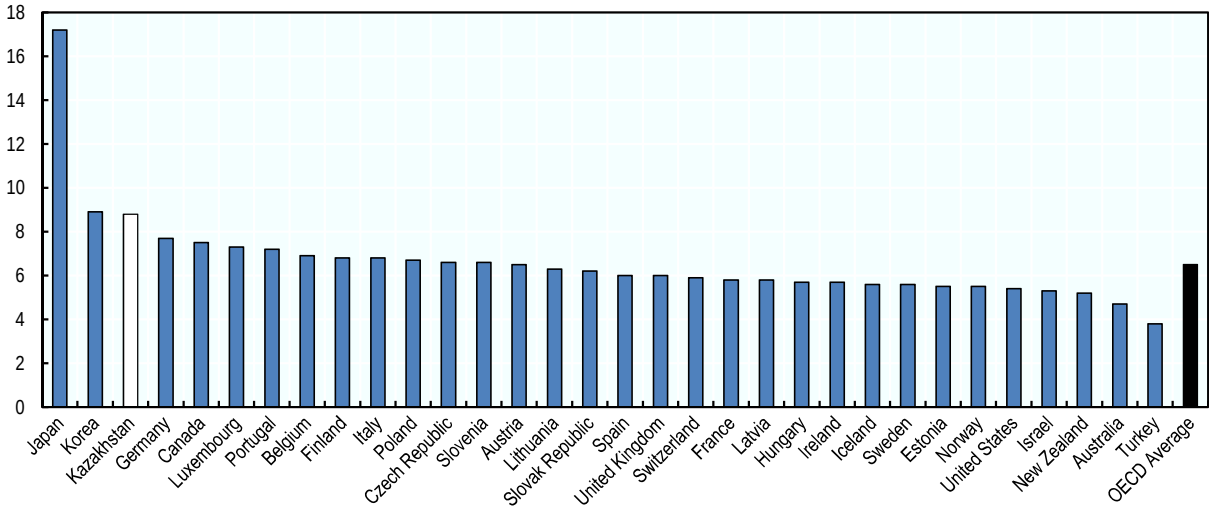


Note: (a): 2014; (b): 2013; (c): 2012; (d): 2011; (e): 2010; (f): 2003; (g): 2001; (h): 1996; (i):1995.

Source: MOH data, August 2016 for Kazakhstan; OECD Health Statistics, 2016
http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_REAC

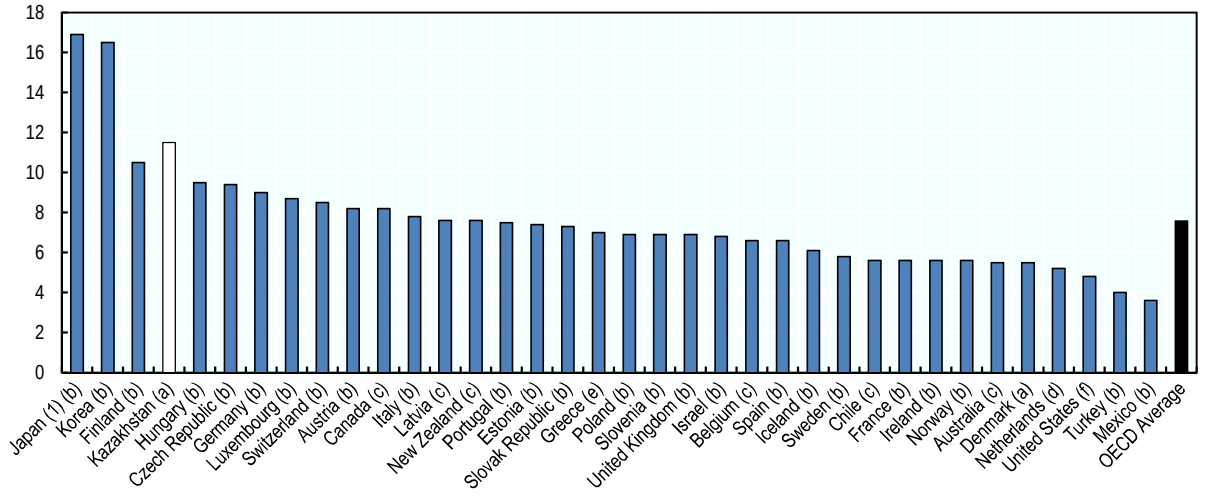
In Kazakhstan hospital average length of stay (8.8 days for acute care and 11.5 days for all causes in 2015[14]) are above OECD averages (6.5 and 7.5, respectively). This suggests that service delivery in Kazakhstan continues to rely heavily on hospital-based services and that post-acute care and rehabilitative services are probably not readily available for discharged patients.

Figure 3.28. Average length of stay (ALOS) in days (acute care), Kazakhstan (2015) and OECD, 2013



Source: MOH data, August 2016 for Kazakhstan; OECD Health Statistics, 2016 https://data.oecd.org/healthcare/length-of-hospital-stay.htm

Figure 3.29. Average length of stay (ALOS) in days (all causes), Kazakhstan and OECD, latest year available

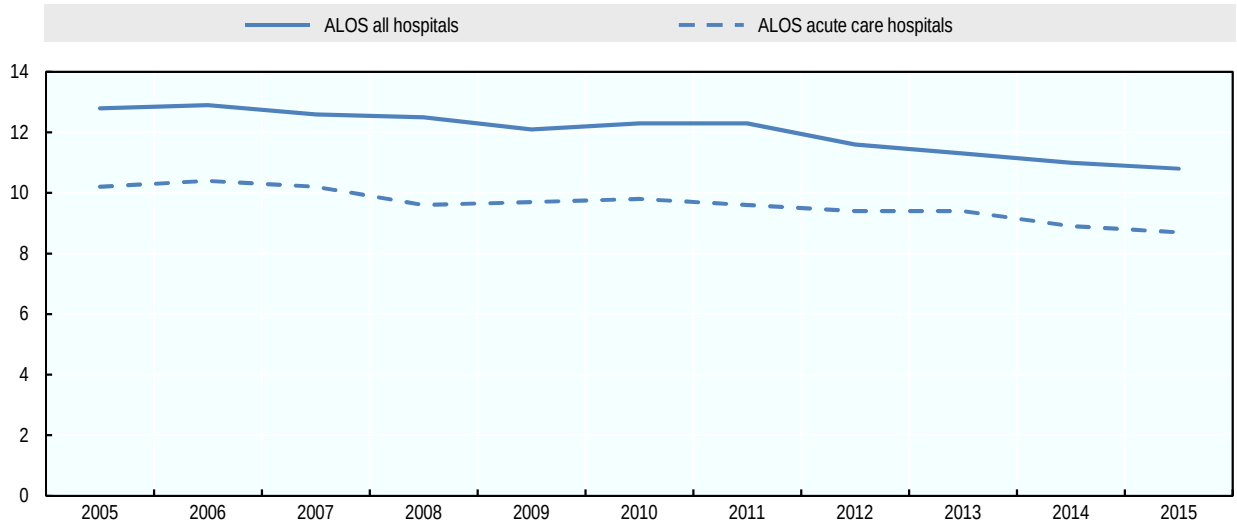


Notes: a): 2015; (b): 2014; (c): 2013; (d): 2012; (e): 2011; (f): 2010. (1) Data refer to average length of stay for acute care (excluding long-term care beds in hospitals).

Source: MOH data, August 2016 for Kazakhstan; OECD Health Statistics, 2016 http://stats.oecd.org/Index.aspx?DataSetCode=HEALTH_PROC

The ALOS in Kazakhstan is slowly decreasing nevertheless. Figure 3.30 shows that between 2005 to 2015 the ALOS for all hospitals as well as for acute hospitals decreased in Kazakhstan by about 15%, at a slower rate than the average in CIS[15] countries (close to 20% drop in both cases) but faster than OECD countries (around 5%) – yet the levels in the latter are significantly lower[16].

Figure 3.30. Trends in average length of stay (ALOS) in Kazakhstan, 2005-15



Source: European health for all database (HFA-DB) WHO/Europe (2016).

With a very high and increasing ALOS, tertiary hospitals stand out. Figure 3.31 presents the ALOS and the trends for different categories of hospitals. ALOS in Kazakhstan ranges from almost 18 days in tertiary hospitals to 7.6 in rural hospitals, similar to rayon hospitals (where it is 7.7). ALOS in these latter two categories decreased by 20 and 15% respectively over the period 2005-15. The ALOS in secondary multi-profile facilities is closer to 9 days and has been decreasing more slowly (11% over the same period). In contrast, ALOS for tertiary hospitals has increased in recent years. Finally, ALOS in mono-profile hospitals also remains very long (around 15 days), despite decreasing by 30% over the same period.

Figure 3.31. Average length of stay (ALOS) by type of hospital in Kazakhstan, all causes, 2005-15

Source: MOH data, August 2016.

Disease-specific ALOS statistics once again point to the use of hospital resources in ways which differ from OECD countries. Table 3.33 shows the ALOS for specific conditions by type of hospital in Kazakhstan[17]. It shows that ALOS may to an extent reflect severity of the condition being treated. For instance, hypertension (included in the table as "Disease characterised by high blood pressure") has an average ALOS of 10 days, with a range between 8.7 and 8.9 (in mono-profile and rayon hospitals, the latter being the least well-equipped facilities) and 11.8 (in tertiary hospitals, the most well-equipped), respectively. A similar pattern occurs with other conditions for which case-severity is probably reflected in longer ALOS. However, data also suggest that care practices may not be harmonised in the system. ALOS for tuberculosis for instance, ranges from 111.1 days in mono-profile hospitals to 77.1 in tertiary hospitals and 7.5 in secondary multi-profile hospitals. In other words, in Kazakhstan, the approach to treating a single disease is very different depending on the type of facility to which the patient is admitted.

Table 3.33. Details on ALOS (in days) per specific conditions and hospital category in Kazakhstan, 2014

	Rayon hospitals	Secondary hospitals	Tertiary hospitals	Mono-profile hospitals	Average
Acute myocardial infarction	6.3	7.4	10.6	10.8	8.8
Acute rheumatic fever	10.6	12.5	17.4	17.0	14.4
Asthma	8.8	9.1	10.8	21.7	12.6
Burns	9.6	11.9	14.4	-	12.0
Cholelithiasis, cholecystitis, cholangitis	8.3	9.7	10.4	4.6	8.3
Chronic rheumatic heart disease	9.2	9.6	12.8	14.5	11.5
Diabetes	8.9	9.7	9.0	23.3	12.7
Disease characterised by high blood pressure	8.9	10.6	11.8	8.7	10.0
Diseases of nerves, nerve root and plexus	9.6	10.8	11.3	--	10.6
Gastric and duodenal ulcer	9.3	9.8	10.6	3.0	8.2
Gastritis and duodenitis	8.1	8.1	13.3	15.9	11.4
Glaucoma	10.0	7.7	9.2	7.3	8.6
Glomerular disease	7.9	11.7	11.9	3.2	8.7
Infectious hepatitis	12.8	14.8	18.8	15.6	15.5
Intestinal infectious diseases	7.6	7.7	3.5	6.9	6.4
Malignant neoplasm	8.4	11.7	19.2	22.2	15.4
Pneumonia	9.5	10.3	13.5	12.9	11.6
Poisoning drugs & biological substances, toxic substances effect non-medical purposes, other and external causes unspecified effects	4.7	4.1	5.8	2.3	4.2
Pulmonary tuberculosis	24.9	7.5	77.1	111.1	55.2
Systemic connective tissue disorders	9.4	11.2	13.8	9.4	11.0
Tubulo-interstitial kidney disease	8.9	9.6	12.1	32.7	15.8

Source: MOH data, August 2016.

The data again suggest that many activities that take place in hospitals in Kazakhstan are managed in other settings in OECD countries, where they may be treated on an outpatient basis. An example is pulmonary TB, which has an exceptional long ALOS in Kazakhstan (55.2 days).

Taken together with the previous observation that most types of hospitals seem to treat similar conditions, Kazakh hospitals probably adapt treatment duration to patient circumstances, with only a limited correlation with case complexity (in the case of TB, the practice may be to "keep" patients in some categories of hospitals for social reasons). There is no evidence, however, that this affects the financial standing of the facilities concerned. This is also suggests that the DRG system has had only limited impact on hospital behaviour (see below).

Some data on the use of modern technologies and processes

Assessing hospital efficiency is a difficult exercise, but a closer analysis of how specific technologies are used can provide some insights. Systems under pressure to deliver care efficiently will tend to use modern and costly equipment at full capacity and try to adopt procedures that can deliver services using fewer or lower level resources, such as day surgery. On both accounts, Kazakhstan could make significant progress.

The data on the frequency of diagnostic tests in hospitals points to low intensity of care and/or limited efficiency of resource allocation

Key diagnostic tests are performed at low frequency across hospitals. In the absence of data on the number of equipment available in each category of hospital, the number of tests performed per hospital should be interpreted with caution. The table below correlates the number of major diagnostic tests carried out in each category of facility with the number of hospitals in each category. The first observation is that the numbers are very low and once again highlight the relatively low intensity of care in most Kazakh hospitals. The low number of tests per day per hospital could also suggest again scope for rationalising the deployment[18] of technologies to ensure they are used more efficiently. As a matter of contrast, on average in Canada in 2005 (Ruolz and Fortin, 2007), CT scans were used 3 times per hour and MRI machines 1.5 (both numbers close to the average utilisation per day in the most efficient category of hospitals).

Table 3.34. Frequency of testing by type of hospital, selected technologies

		Rayon hospitals	Secondary hospitals	Tertiary hospitals	Mono-profile hospitals	TOTAL
CT Exams	# of tests	13 089	169 039	27 247	46 186	255.561
	# of facilities	181	163	33	279	765
	Daily/ facility	0.20	2.84	2.26	0.45	0.92
MRI Exams	# of tests	306	82 146	19 770	6 577	99 540
	# of facilities	181	163	33	279	765
	Daily/ facility	0.00	1.38	1.64	0.06	0.36
Echographies	# of tests	17 657	164 259	80 069	83 497	345 482
	# of facilities	181	163	33	279	765
	Daily/ facility	0.27	2.76	6.65	0.82	1.24

Source: MOH data, August 2016.

Outpatient surgery remains underdeveloped.

Common to reforms aimed at rationalising the hospital sector are efforts to achieve balanced structures that avoid providing treatment in an in-patient setting which could be delivered more efficiently at other levels –either as hospital out-patients, or even in a primary care setting[19]. Cataract removal, inguinal hernia repair and laparoscopic cholecystectomy are among the most frequent procedures amenable to delivery in a non-inpatient, day surgery setting.

The share of cataract surgery performed on an ambulatory basis in Kazakhstan is reported to have increased by almost 8% between 2014 and 2015 (from 25.8% to 33.2%). Inguinal hernia repairs and cholecystectomies are also being performed more often on a day-care basis (albeit increasing more slowly) – see below.

Table 3.35. Elective surgeries – trends in inpatient vs. ambulatory, all hospitals, 2014-15

	Total		% Inpatient		% Ambulatory	
	2014	**2015**	**2014**	**2015**	**2014**	**2015**
Cataracts	22 466	25 298	74.2%	66.9%	25.8%	33.2%
Inguinal hernia repairs	22 690	22 822	95.8%	93.1%	4.2%	6.9%
Cholecystectomies	29 452	21 189	99.7%	99.4%	0.4%	0.6%

Source: MOH data, August 2016.

Nevertheless, both absolute figures and proportions remain well below OECD averages for all three procedures (see below):

Figure 3.32. Selected surgery procedures – inpatient vs. ambulatory, OECD, latest year available

(i) Cataracts

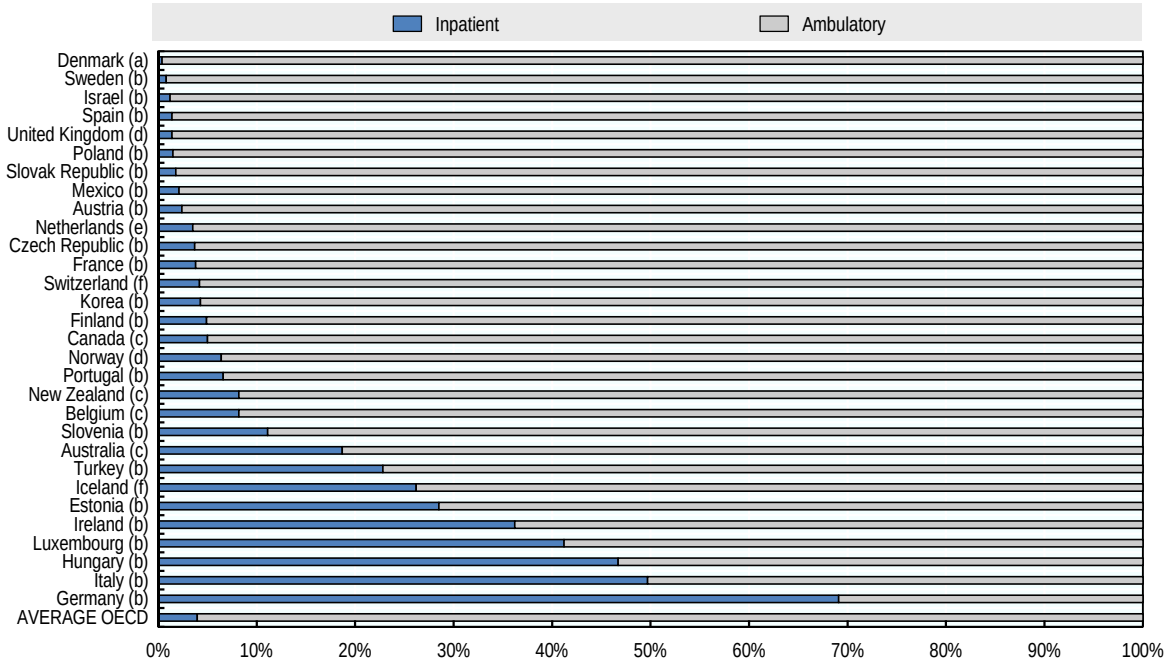
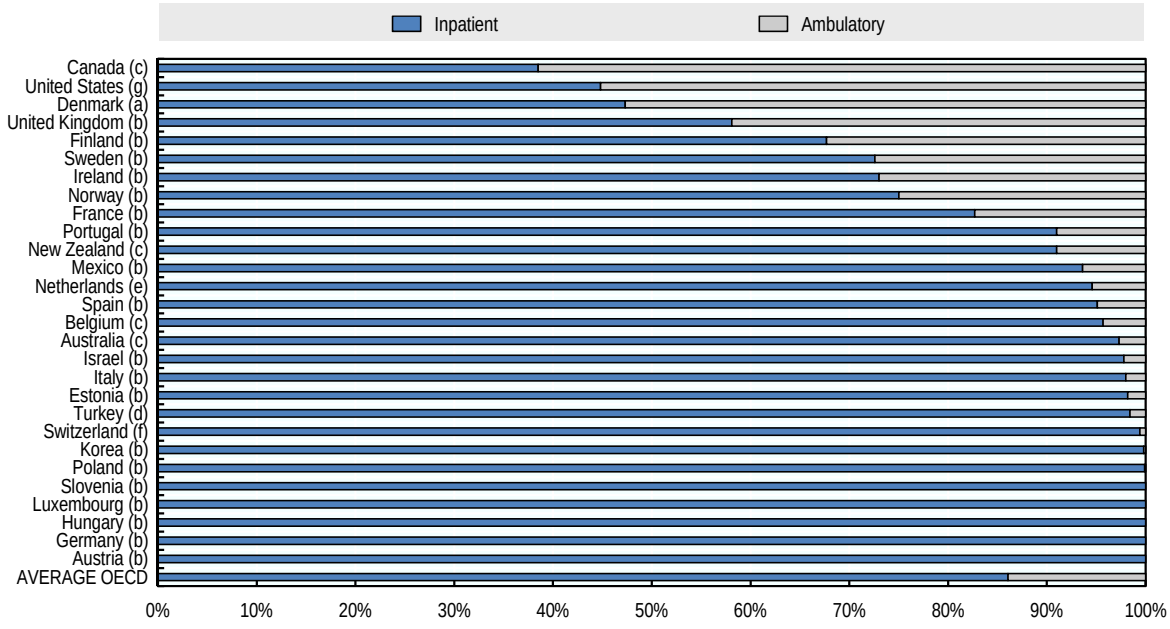
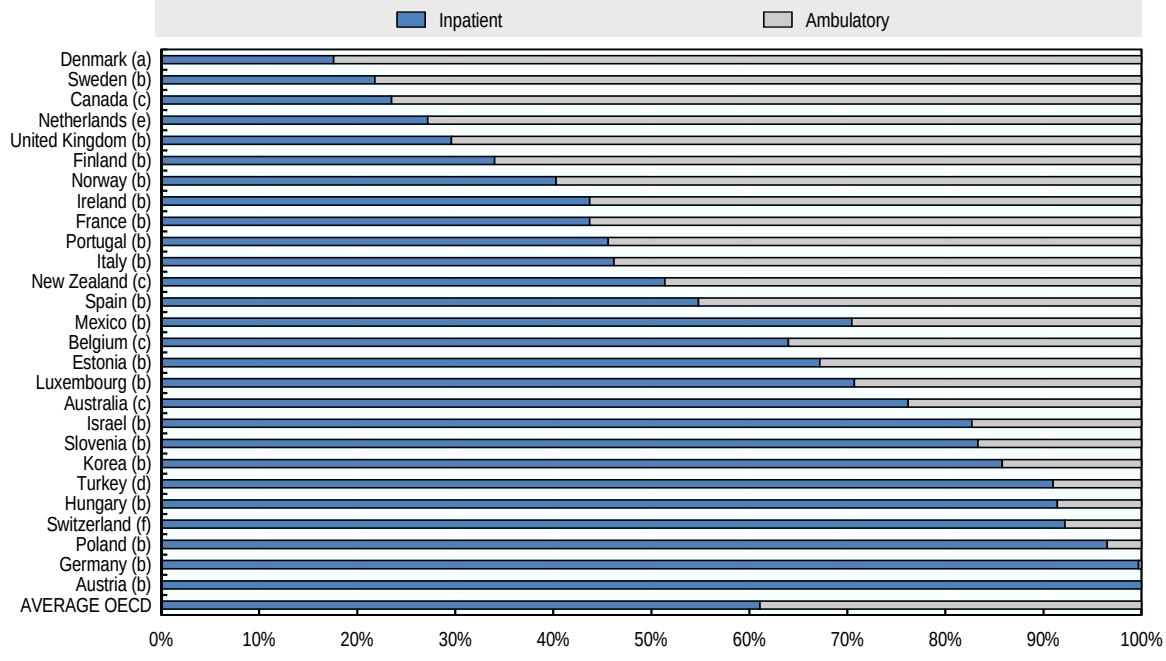


Figure 3.32. Selected surgery procedures – inpatient vs. ambulatory, OECD, latest year available (*Cont.*)

(ii) Cholecystectomy



(iii) Inguinal hernia repair



Note: (a): 2015; (b): 2014; (c): 2013; (d): 2012; (e): 2010; (f): 2008; (g): 2006.

Source: OECD Health Statistics, 2016, http://stats.oecd.org/index.aspx?queryid=30167

The full impact of the rapid introduction of DRGs is not clear yet

In Kazakhstan, prospective global budgets are allocated to most hospitals by means of contracts, with activity-based prospective payments that involve systematic DRG grouping (see also above). In addition to patient age and sex, DRGs use clinical attributes such as: (i) main diagnosis; (ii) severity; (iii) procedures performed; (iv) co-morbidities; and (v) status at discharge. DRG payments are then based on a schedule set by the MOH, which has essentially remained unchanged since its inception (though the DRG rates paid to health care providers were increased by 3.5% in 2013 and 2014).

Strictly speaking, since their introduction in Kazakhstan DRGs have been used more for payment and budget allocation purposes than for the description or measurement of hospital activity/ hospital output. DRGs are thus further analysed here as a component of efforts toward enhanced efficiency.

The current Kazakh DRG system remains unavoidably fairly crude. Differences in hospital capacity and cost variations linked to differences in case complexity (the *Case-Mix index*) may not be adequately recognised. Hospitals with greater capacity or those that attract sicker or more complex patients within a DRG may be disadvantaged; high-quality hospitals or departments that draw the most severely ill patients by virtue of their clinical excellence may be penalised for having costs above established tariffs. Differences not necessarily arising from hospital inefficiencies but from differences in capacity or in the complexity of admitted cases are probably insufficiently taken into account, and the responses the financial consequences may prompt (e.g. up-coding, or cut backs in quality) are uncertain.

Currently DRGs are only used for a limited, not precisely published, proportion of total hospital financing as a large number of hospitals fall outside of the scope of DRG financing. Within DRG financed-hospitals a large number of activities are financed by other means. If would be valuable to undertake an analysis of the reform's impact on hospital finances.

Overall, efficiency remains difficult to ascertain

To conclude, and again in contrast with the practice in many OECD countries, data do not appear to be readily available on hospital financial results, productivity or absenteeism, or many other indicators which could aid the assessment of hospital efficiency. Facilities "with the right of economic activities" have *supervisory boards* which are responsible for their financial management / governance practices but there is little evidence that the Ministries of Health and Social Development (or indeed the oblasts who own the facilities) have the means to ensure the improved accountability that should accompany their increased autonomy.

Conversely, DRG and cost data are increasingly available by age and with rural/urban breakdowns, split into Inpatient, Outpatient, Tertiary, Rehabilitation and Day-care (separately by Polyclinic and Hospital). This information is already analysed and used by KOMU to design contracts, or in other words, to understand the costs and project them as adequate. The introduction of Compulsory Social Health Insurance will need to be accompanied by increased efforts to assess and compare the various dimensions of hospitals performance and the impact on payment methods more systematically.

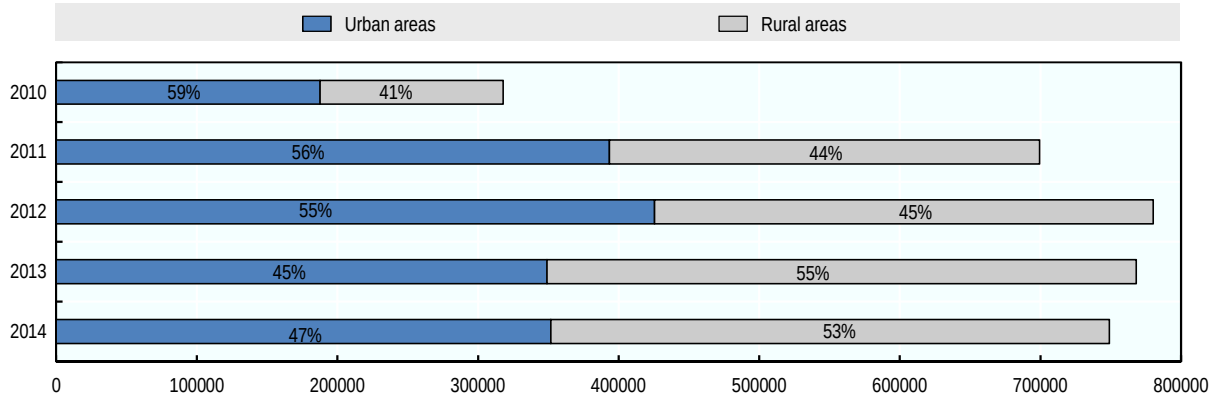
Responsiveness/patient centeredness

In OECD countries, information is increasingly being collected and attention paid to the experience of patients while receiving care (*do physicians spend enough time with*

patients during a consultation with people who visit regularly?; do they give patients opportunity to ask questions or raise concerns?; do they provide easy-to-understand explanations?; do they involve patient in decisions about care and treatment?) Answers to these questions help assess how responsive doctors are to patients' needs and expectations.

Thus in Kazakhstan, giving patients the right to choose a health provider based on their preferences is a way of incentivising the hospital system's responsiveness. This was established in 2010, and the number of patients exercising their options increased quickly to around 700 000 to 800 000 decisions a year. Urban dwellers were initially more likely to exercise the option but now it is used by more than half of those living in rural areas. Since rural dwellers attend hospitals less frequently, it would appear that the policy has been particularly appealing to them.

Figure 3.33. Number of patients exercising their right to free choice of health care provider in Kazakhstan, total and rural/urban distribution, 2010-14



Source: Presentation by the Minister of Health, MOH, Astana, 2015.

Additional patient-level data would however be required to assess the extent to which patients are satisfied with services.

3.5. Summary assessment and strategic direction

Assessing inputs, activities and results of the hospital sector

It is beyond dispute that the hospital sector in Kazakhstan has evolved significantly since the country gained its independence. Fewer, more modern and better-equipped hospitals provide a core set of specialised services, including very advanced ones, to the population. Many reforms have taken place concurrently, including successive or simultaneous changes in:

- Funding sources (from Republican budget, to oblast and local authority funding, replaced now by central and more strategic purchasing);
- Payment methods (from line-item input funding to payments which increasingly reflect activity and incentivise productive efficiency, at least in the more urban facilities);

- Organisation and governance (authorisation to develop commercial activities for many public hospitals, creation of special public companies, development of the private sector).
- Many other aspects of the regulatory framework have also been modernised. For instance, accreditation has been introduced to encourage quality improvement and safety; patients are allowed to select the facility from which they seek treatment using objective performance information available to them though an online portal, etc.

While many of these elements are also part of the regulatory arsenal of the hospital sector in OECD countries, they still need to be carefully crafted in order to ensure sustainability and impact (European Steering Group on Sustainable Healthcare, 2014).

The simultaneous implementation of many reforms in Kazakhstan has created some specific challenges, however. Reforms have often been rolled out swiftly (for instance the move to a DRG system was decided in 2011 and funding on this basis started in 2012, a remarkably short period by international standards (Busse et al., 2011). Moreover, in practice not all elements of the various reforms have been consistent with or clearly aligned to predetermined objectives. The need to adapt reform principles to the Kazakh-specific context and political realities may well explain these events, but in some instances, they seem to have created somewhat paradoxical situations.

For instance, the articulation of all reform elements around the hospital consolidation agenda remains incomplete. As indicated, a master plan was developed – in close contact with the authorities – to provide a strategic roadmap for the redesign and modernisation of service delivery, taking into account population needs and the existing capacity of the system. As of the end of 2017, the plan was still being revised and the intention remained to implement it. In parallel, investments and development programmes continue to be designed and agreed by various stakeholders at the central level, as well in oblasts, and even in the private sector. Examples include some public-private partnerships and the construction of an infectious diseases hospital for children in Astana. If two streams of reform such as these are not perfectly aligned and articulated around common priorities, they can slow progress and even undermine efforts to rationalise and modernise the system across the country.

Financing reforms probably have yet to come into full effect. The introduction of DRGs has undoubtedly contributed to increasing the transparency of acute care financing. It has also provided a more solid base to develop and refine the contracts, which will need to be generalised with the introduction of the Compulsory Social Health Insurance. On the other hand, however, the rapid introduction of the DRG system initially required the use of fairly crude data that appears to have resulted in payments distorted toward more complex care. Furthermore, the move towards more transparent and normative payment mechanisms has not reached all parts of the system. Payments for cancer or TB care for example – significant components of the services provided by mono-profile facilities – remain outside the scope of DRG payments. Rural and rayon hospitals also remain financed essentially by budget allocations, but their levels, according to experts, do not necessarily reflect facilities' activities or performance.

In this context, the hospital system probably has not been able to fully respond to the incentives brought about by financing reforms and in particular, by DRGs (intended, as explained, to incentivise more efficient of resources and standardisation of practice). Data on hospital finances do not seem to be always readily available either, which might

suggest that limited attention is being paid to holding them accountable for their financial health.

More broadly, the analysis in this chapter shows that in some respects, the transition to a modern hospital system has yet to fully take root. The hospital system remains highly fragmented, as evidenced by the 34-category official classification of hospitals used in the country. Grouping them – with expert guidance, along functional lines in this text – has helped highlight some key features of today's system.

First, disease specific or population-specific facilities continue to represent 40% of hospitals, 40% of beds and around one third of admissions. Many post-soviet countries, in contrast, appear to have been more effective in moving past the common Soviet legacy of mono-profile facilities. This movement has often been driven by targeted investments and more efficient use of existing resources, human and material. More importantly, the trend is also driven by the burden of disease and changes in treatment and technologies that rely on and allow better coordinated care of complex cases involving multiple morbidities. The "Densaulyk" strategy of the government for 2016-19 aims to develop multi-profile facilities further and reduce the role of mono-profile hospitals.

Second, an analysis of hospital activity through the prism of the new classification has highlighted the difficulty in identifying all the elements of the business /operational models in operation in the Kazakh hospital sector. It shows clearly that "rural hospitals" are not able to, and in fact do not deliver specialised services. They may well provide a critical point of entry in the system for rural populations but from a functional perspective, they are more aligned to the domain of primary, social or rehabilitative care. For other categories of multi-profile facilities, the classification shows that while resources vary across assumed levels of technical complexity, with the exception of a few highly specialised services there is little evidence that activities differ substantially. In other words, Kazakhstan hospitals are not sufficiently differentiated and networked vertically. Again this is an organisational principle most OECD countries adhere to, because it allows hospitals to organise their services in ways that capture economies of scale and scope. This also can help to deliver services safely and effectively (Roland et al., 2013).

Finally, and although this is rather difficult to quantify, the information collected in the context of this review suggests that hospitals have very limited and arguably inadequate interactions with other parts of the health and social care delivery system, including primary health care, nursing homes and related facilities. In other words, care coordination remains underdeveloped in Kazakhstan. Again this has been a priority identified by the 2016-19 "Densaulyk" programme.

Overall, the clinical model underpinning the hospital role may need to evolve to address the burden of disease of the country more effectively and serve the needs of the population more efficiently. A handful of facilities are able to provide highly specialised services and complex care for low (epidemiological) frequency, complex and high cost cases (for example organ transplants). Yet these facilities also deliver many treatments for common conditions of relatively low complexity and variation, and with low unit cost per case. In fact, as explained, the vast majority of facilities mainly provide services of low intensity (as illustrated for instance by the relative importance in their case mix of routine procedures such as appendectomies or caesarean sections, or simply by the low proportion of patients hospitalised with life-threatening conditions).

The analysis also suggests that much of the care provided on an inpatient basis in Kazakh hospitals, would not typically warrant an inpatient stay in a modern health care system. Conversely, much of the care considered routine in OECD hospitals (particularly in Europe where data allow more comparisons), remains relatively rare in Kazakhstan, at least according to the data provided (e.g. cataract surgeries performed as day-care, or coronary artery bypass grafts). While the Kazakh population is still relatively young, the burden of disease is such that the differences call into question the capacity of the hospital system to meet the population's needs effectively.

In sum, the mix of services provided in Kazakh hospitals remains quite different from the typical OECD hospital.

The results of the performance assessment undertaken in this review need to be understood in this context. At a very high level, the data suggest that access to existing hospital services seems to be adequate, discharges rate are within range of the OECD average and waiting times are very low. High-level efficiency indicators, such as average length of stay or bed occupancy are also comparable with those found in OECD countries (in fact, overall mortality in hospitals is seemingly around one hundred times lower than in OECD countries). At the same time, when numbers are analysed in more detail, and put in perspective, a more nuanced picture emerges which casts doubt on the ability of the hospital sector to safely deliver care adapted to the population's burden of disease. The analysis also hints at significant potential for economic and functional rationalisation.

In the end, though, the data are probably insufficient to provide a more granular assessment of the overall sector performance. Many indicators used for this purpose in OECD countries (see also the next section) are apparently unavailable. More generally, it is not clear whether the data already collected in the system are routinely analysed and used to assess the performance of the sector or of individual facilities. Thus, despite evidence that reforms are going in the right direction, it must be concluded that in the absence of systematic evaluation of their impact, the extent to which they are contributing to moving toward the intended goals remains unclear.

Improving hospital care in Kazakhstan: Recommendations

Kazakhstan's declared goal is to meet OECD standards for health system outcomes, structure and spending levels. Thus the reforms that Kazakhstan has implemented to modernise hospital care should be assessed with respect to this objective.

Despite clear progress, the section above argued that changes to date have not yet had sufficient impact on performance to bridge the gap. As a consequence, *sustained efforts are still needed in many Kazakh hospitals to elevate practice to levels of quality and efficiency seen in modern OECD hospitals*.

The ambitious goal set should however help set the strategic direction for the system. This final section proposes a set of high-level-priorities to reform the structure, function and governance of the Kazakh hospital system. These priorities are based on lessons learned by the OECD countries and, where relevant, examples of how OECD countries are tracking specific challenges are presented. In summary, these recommendations intend to help consolidate and prioritise the current efforts which are, overall, heading in the right direction.

Accelerate the reorganisation of service delivery, improve efficiency, ensure access to quality care while accounting for local needs

The consolidation of the still fragmented hospital sector should be accelerated. The restructuring should have as a key objective the mainstreaming of services still delivered in mono-profile facilities (Atun, 2008) and better differentiation of the mix of services provided by different levels of multi-profile hospitals. Different levels of facilities should be functionally connected. Access to services for the population living in remote and rural areas must be maintained. Some of the approaches used in OECD countries (see Box 3.1 below) could be adapted to Kazakhstan.

Box 3.1. Summary of existing approaches to hospital services in rural areas

Australia

- Multi-purpose services (MPS), aimed at improving the provision of health services in small remote or rural areas, based on simplified financing
- Use of tele-health
- Medical training has embraced the issue of remote or rural training
- Networks for emergency medicine

Canada

- Focus on transfer to hospitals when needed
- Medical air transport
- Rural Health Hubs providing emergency care

Estonia

- Increased cooperation in hospital networks aims to enhance access to specialist care in smaller hospitals

Italy

- National standards on hospitals in remote areas
- Hospitals in remote areas are defined by distance to the referential hub or spoke centre

Spain

- No specific rural hospitals, as hospitals are defined by their clinical purpose
- Increasing provision of emergency care by primary health care

United Kingdom

- Centralisation of services
- Support to smaller hospitals
- Network arrangements

United States

- Illustrative federal-level policy levers include reimbursement policies, policies that seek to expand access to health insurance, and demonstration programmes to test new models of care and system development

Source: Rechel (2016)

In practical terms, the master plan developed in 2010 in the context of the World Bank project (which reflects the principles laid out above and analyses in depth region by region the current status and potential for transformation of each facility) has fed into an official master plan which the Ministry was, as of 2017, finalising.

More systematic efforts are also required to align new investments, whether they are private or public, funded by the centre or by oblasts, with the above-mentioned sector's development plan. Various stakeholders should be held accountable for its implementation.

In order to facilitate the process, mergers of complementary facilities that could be used more strategically, even with a single management in charge of more than one facility (as management-led efforts within a hospital rather than across facilities are likely to be met by less resistance; see international practice in the Box 3.2 below).

Finally, emphasis is required on change management and communication in particular towards the public for which it should be clear that restructuring decisions can actually result in improved access to safe care better adapted to needs.

Box 3.2. Hospital restructuring, some good practice examples.

Reconfiguration of the hospital system is never a simple exercise. Some of the following strategies have been used to encourage reconfiguration in different contexts:

- In Estonia, in early waves of reforms, hospitals that were destined to merge were put under unified management. Good quality management can help depoliticise discussions about mergers and closures;
- In Austria, different local governments are jointly managing networks of facilities and are thus incentivised to configure services efficiently;
- In Finland, the Helsinki University Hospital was established through the merger of 17 hospitals, grouping 20 000 employees and 3 300 beds, for a catchment population of 1.4 million;
- In Sweden, two major campuses were merged into the Karolinska University Hospital, Stockholm, grouping 15 000 employees and 1 700 beds, for just over a 1 million catchment population;
- In the United Kingdom, five hospitals were merged under the Sheffield Teaching Hospital, for a catchment population of 640 000;
- In Spain, a Guide for Planning Hospital Convergence has been recently developed upon the experience of merging two big hospitals in Seville under a common management.
- In Lithuania, facilities in regions are being functionally clustered by line of business, to ensure patients can rapidly get to the facility most able to treat their condition given the degree of complexity. If a complex treatment is delivered at a high level, patients can subsequently be transferred to lower level facilities for step-down care.

Determine with sufficient clarity pathways and decisions on what should be done in hospital in principle

Kazakh hospitals need to take a step forward to further improve quality of care. At this point, virtually all hospitals have undergone an accreditation process. While sets of guidelines and protocols have been developed, the use of these clinical and quality management tools and processes is not clearly embedded in practice. Additional steps

were taken in 2016; a Joint Commission on the Quality of Medical Services was established under the Ministry of Health, with the objective of advancing standards of medical care. More than 10 commission meetings were held in 2016, during which more than 130 clinical protocols on diagnosing, treating and rehabilitating patients, 18 medical technologies (methods of treatment in cardiology, oncology, ophthalmology, neurosurgery, gastroenterology) and 3 standards of delivery of medical care were accepted. The challenge of supporting and monitoring effective implementation at all levels of the system will need to be faced. Clinical governance in the hospital system must be strengthened and modernised.

Setting up a culture of quality is a complex structural issue, especially given the tradition of "command and control". Change will not happen unless professionals and other stakeholders are adequately motivated and involved. A careful mix of policy, persuasion and well-designed contracting incentives (see below) will be needed.

Coordination of care between primary care and acute hospital care, as well as between the latter and rehabilitation services also needs to be strengthened, as envisaged in the state programme "Densaulyk" for 2016-19. The clinical capacity of staff and the management skills of the concerned professionals – and ultimately of the system – to meet the needs of the population safely and effectively must be improved, augmenting the initiatives already in place (see Section 3.2).

OECD countries offer many examples of strategies to improve both clinical practice and coordination of care between hospitals and other providers, including controlling re-admission rates with financial incentives; introducing strict training programmes with rigorous follow up, linked to professional advancement (a virtually universal practice in all the OECD); instituting transparent performance appraisal systems (Cashin et al, 2014); and setting up hospital P4P in a progressive, carefully monitored way as in the United Kingdom and France (Nolte et al., 2014), or involving professional managers in the running of facilities, with clear penalties for excessive readmissions if necessary as in the United States, Germany and Belgium, (Charlesworth, 2012).

Leveraging funding and contracting more effectively

Hospital funding remains fragmented and the DRG system can still be improved. Progress on these fronts would improve contracting substantially, which is also necessary in the context of the introduction of social health insurance (Marshall et al., 2014).

The future single purchaser should use contracting tools to leverage improvements in both quality and restructuring of service delivery. The process of contracting is as important as the content of the contract, according to international experience (Loevinsohn, 2008). It should be undertaken in conjunction with efforts to develop alternatives to inpatient-based care, including primary care, outpatient and day care, as well as critical social and follow-on care and increased coordination between different care segments.

Regulate hospital autonomy and improve accountability

The re-profiling of facilities and the development of clearer business and service delivery models requires improved management with sufficient autonomy to (i) adapt to changes in a fast evolving regulatory and financing environment, (ii) meet patient demand and (iii) manage cost pressures.

Significant efforts have been made to increase autonomy and management capacity. Kazakhstan has already instilled some degree of autonomy in the system by encouraging the conversion of hospitals into State Enterprises with the Right of Economic Management. Under "Salamatty Kazakhstan" nearly 7 000 managers have been trained. "Densaulyk" for 2016-19 has introduced professional standards in "Health Management", and developed professional development pathways for managers, as well as tools to support effective management. Finally, a project supporting the "Development of Management and Corporate Governance in Medical Organizations" is being implemented, approved by the Vice-Minister of Health in 2017. The project provides for the implementation of corporate governance in medical organisations, which will enable autonomous management, collective management and reporting of performance data.

Patient choice is a cornerstone of increased accountability. Patients in Kazakhstan are now expected to exert their right to select the facility in which they will receive treatment. The "rating"/ranking of hospitals by the RCHD is a major initiative to support this, in line with international experience (Kelly and Tetlow, 2012).

At the same time, patients alone cannot hold hospitals accountable, and autonomy must be accompanied by increased accountability. Although administrative responsibilities are clearly assigned though the system, the overarching responsibility for monitoring and steering individual facilities towards achieving system-level goals appears to be somewhat diffuse among the regions, and the Ministry of Health's departments and entities (KOMU). Although some mechanisms are in place, it is not clear who is in charge of routinely analysing data to in order to monitor the various dimensions of performance and hold hospitals accountable for them.

Notably, the private sector is gaining importance in the country and should not escape this trend. In OECD countries, private hospitals are subject to regulations and controls in order to ensure standards of performance; this implies a role for the Ministry of Health in relation to setting and monitoring standard of service delivery in the private sector (Eurofund, 2017).

Strengthen information-based strategy and stewardship

Generally, decisions taken at facility and system level will require both better and more effective use of the data currently available in Kazakhstan. The data request put by the OECD to the authorities certainly did not cover the entire universe of available information. Still, even on fairly basic indicators, the numbers point both to shortcomings in the quality of the data produced by existing information systems and to a number of possible gaps. Over recent years, health information systems in both developed and developing countries have tended to produce an abundance of information (health status, health system activity, etc). More often than not though, the data (particularly on inputs such as staff numbers and mix, equipment, health expenditure, or outputs such as aggregated hospital activity) are fragmented, and not aggregated or analysed in ways which either test – or challenge – the quality, nor are they contextualised to discern whether a (consistent) story emerges. In truth, the data have often failed to improve operational efficiency-related decision-making in any systematic way.

The state programme "Informational Kazakhstan" supports the introduction of health information systems in the country. One of the target indicators of this programme is 100% connection of all medical organisations to a unified health care network by 2020.

Developing new tools and approaches for gathering data and using health information effectively could be a first step to improving hospital management and the system in general. In order to be successful, this effort requires:

- setting goals and intermediary objectives for hospitals and the hospital system;
- selecting an appropriate set of indicators to measure the various dimensions performance and progress towards these goals;
- disaggregated, valid, and reliable data comparing the current levels with the desired standards;
- analytical capacity to identify performance gap;
- information on the solutions which could help address that particular set of problems (ability to link the existing evidence with improvement proposals).
- intelligence to skilfully use data and information to deliver change (strategies for disseminating evidence and influencing the behaviour of relevant stakeholders in search of the proposed set of solutions)
- analysis of the impact of reforms to assess whether they have achieved the intended outcomes while monitoring any potential, unintended impacts on other dimensions of performance.

Building a targeted and quality information base is thus only a part of the equation. The authorities need to strengthen strategic intelligence – in other words elaborate a comprehensive framework articulating the appropriate policy objectives, understanding the causal chains which link policy decisions to these objectives, producing intelligence to support these policy decisions and generating alarms in cases of unacceptable deviations from the desired standards.

Even when the foundations of reforms have been successfully established, reviewing the performance of hospitals and ensuring strategic direction in their development will continue to be crucial, as it is everywhere (Jeurissen, 2016) (see Box 3.3 on hospital measurement systems in OECD countries).

The inconsistencies observed in various aspects of hospital performance in Kazakhstan probably reflect the various transition processes the country and its health system (and the hospitals within it) have undergone in recent years. Undoubtedly, for hospitals and the various stakeholders to whom they are accountable, these processes have been very complex. But complexity creates the potential for misalignment of reforms objectives and tools. For this reason, Kazakhstan now needs to place the highest priority on strategy and stewardship. The impact of what has been done to date needs to be evaluated systematically, and the necessary intelligence / high-level information collected in order to inform rational decision-making.

Putting into perspective the information gathered from various stakeholders with the observations from this chapter suggests perhaps the most fundamental challenge in this regard. Hospital services need to better "mirror the burden of disease" in Kazakhstan, enabling them to respond more effectively to the drivers of death, disease and disability. They also need to do so with maximum levels of efficiency and with proper attention to societal perceptions and quality standards.

Ultimately, hospital reforms are part of broader systemic changes, and from international experience, take time (Hurst, 2010). It is of paramount importance not to

vary a course of action without thorough evaluation, and to refrain from changing direction without proper assessment.

Box 3.3. National measurement programmes for hospitals in OECD countries

A 2015 survey undertaken by the OECD to which 15 countries responded (Australia, Canada, Chile, Denmark, Finland, Israel, Italy, Korea, Latvia, Malta, Mexico, Norway, Singapore, Sweden, United States) revealed that:

- Most countries have national indicator programmes but are at very different stages of development;
- Use of data by hospitals and clinical community becomes more relevant as systems mature;
- P4P programmes are being established using this information to align financial incentives with care outcomes;
- Most countries publicly report some of the data on hospital performance.

The following table highlights the main measures commonly used by these countries to measure performance organised along the categories proposed by the WHO Path framework

DIMENSION	COMMONLY USED INDICATORS
Timeliness	Emergency department wait times, elective surgery wait times, cancer care wait times, outpatient waiting times.
Efficiency	Length of stay (e.g. Relative Stay Index), average admission cost (cost per resource weighted discharge), administration expenses as a proportion of total expenses, day surgery rates, day of surgery admission rates for multi-day patients, performance against budget, theatre utilisation, staff productivity
Safety	Health care associated infections, sometimes with a focus antimicrobial resistance (e.g. catheter related bloodstream infection, rates of Clostridium difficile, methicillin-resistant Staphylococcus aureus, ESBL Klebsiella and E. Coli), postoperative (e.g. deep vein thrombosis or pulmonary embolism) and nurse-sensitive complications (e.g. decubitus ulcers, patient falls, health care associated pressure sores) and other adverse events (e.g. sentinel events, such as wrong site surgery, foreign object). Some indicators also related to processes: efforts to implement clinical governance, hand hygiene compliance, safe surgery (checklist), tackling anti-microbial resistance, patient identification, safety blood and blood products (transfusion error), medication safety, clinical communication around chemical pathology, haematology; timely notification of critical values, reduce ventilation associated pneumonia, reporting and learning system
Effectiveness	Standardised mortality rates, case fatality rates for specific conditions (e.g. AMI, Stroke), evidence-based processes of care indicators for specific conditions (e.g. aspirin prescribed on discharge for AMI patients) and 30-day re-admission rates, appropriate use of medical imaging (e.g. MRI lumbar spine for low back pain), caesarean section rates.
Patient Centeredness	Patient experiences indicators (e.g. communication, cleanliness), patient reported care process and outcomes measures (only noted for the United Kingdom), rates of restraint for people with mental illness, staff feedback on care.
Responsive governance	Outpatient care with a health promotion focus (e.g. immunisation), patient experiences of discharge information and care transitions, rate of community follow after mental health admission.
Staff Orientation	Staff safety (e.g. needle stick injuries), absenteeism, worked overtime, ongoing training and education, workplace culture, staff experiences, turnover rates, workload measures (e.g. staff hours to bed-day ratio).

Source: Klazinga (2016)

Notes

1. Kazakhstan in new global reality: growth, reforms, development", Message by the President of the Republic of Kazakhstan of November 30, 2015 http://www.rcrz.kz/docs/ppp/PPP%20in%20healthcare%20March%202016.pdf.

2. PPP in Kazakhstan Q1 2016, http://www.rcrz.kz/docs/ppp/spravka-ppp-en.pdf. (Consulted 24 August 2016).

3. Hospitalization Bureau Portal (www.bg.eisz.kz and https://egov.kz/cms/en/articles/health_care/2Fportal_byro_gosp); also (http://www.rcrz.kz/index.php/ru/o-centre/nashi-zhurnaly?id=95), (http://www.rcrz.kz/index.php/ru/o-centre/nashi-zhurnaly/8-struktura/373-perechen-reiting-2014); consulted August 28, 2016.

4. HiT 2012 op. cit. suggests that Rayon hospitals have between 100-300 beds and secondary multi-profile hospitals between 600 and 1,000 beds. This apparent contradiction between expected and actual size was also noted by Sanigest (2010), 'Needs and Market Assessment: Analysis of the Supply and Demand for Care in the 14 Oblasts and 2 cities'.

5. No information has been provided on the numbers of operating theatres, delivery rooms, magnetic resonance imaging (MRI) devices and computed tomography scanners (CT).

6. Even keeping in mind that data are probably underestimated given that some hospitals– and their staff - are excluded from the database.

7. Germany: Maier, 1977, To the concentration of delivery and paediatric wards in Rheinland-Pfalz. Contribution to the reduction of mother and infant mortality rate. Monatsschr Kinderheilkd 1977 Apr;125(4):225-33. Available at: http://www.ncbi.nlm.nih.gov/pubmed/854034; Spain: MSPS Ministerio de Sanidad y Política Social, 2009, Maternidad Hospitalaria. Estándares y Recomendaciones. Madrid. Available at: http://www.msc.es/organizacion/sns/planCalidadSNS/docs/AHP.pdf.

8. Such is the case for example among the discharges diagnoses "Spontaneous vertex delivery - O80.0" or "Other forms of angina pectoris - I20.8"; among the surgery diagnoses, the same occurs with "Classical cesarean section -74.00" or "Dilation and curettage following delivery or abortion - 69.02".

9. Larry Summers, presenting The Lancet Report, Stella Dawson, Thomson Reuters - World Bank seeks to bridge differences over best way to improve healthcare, Sat, 12 Apr 2014 http://www.trust.org/item/20140412121437-vkwgy/?source=hpbreaking; https://www.devex.com/news/new-high-level-support-for-universal-health-coverage-83295.

10. http://www.enherts-tr.nhs.uk/about-the-trust/mortality-data/crude-mortality-rate/ consulted on Dec 1, 2016.

11. A study of 60 patients in hospitals.
12. The above mentioned NHS trust has a crude mortality rate for surgery of 0.8.
13. Eurostat, Surgical operations and procedures performed in hospitals by ICD-9-CM
14. Data for 2016 indicate a further decrease to 9.2.
15. Commonwealth of Independent States.
16. Authors estimate based on OECD health statistics.
17. No information has been provided for rural hospitals.
18. Data on the number of machines were not provided, so this average could obscure large differences if equipment is not distributed evenly across facilities.
19. Christensen C, 2009, The Innovator's prescription. A disruptive solution for healthcare, McGraw Hill, New York.

References

Agence Technique de l'information sur l'hospitalisation (2016), http://www.atih.sante.fr/analyse-de-l-activite-hospitaliere-2015.

Angeli, F. and H. Maarse (2012), "Mergers and acquisitions in Western European health care: exploring the role of financial services organizations", *Health Policy*, Vol. 105, pp. 265-272.

Arah, O. et al (2006), "Conceptual framework for the OECD health care quality indicators project", *International Journal of Quality Health Care*, Vol. 18(Suppl.)1, pp. 5-13.

Aringazina, A., G. Gulis and J. Allegrante (2012), "Public Health Challenges and Priorities for Kazakhstan", *Central Asian Journal of Global Health*, Vol. 1, No. 1, http://dx.doi.org/10.5195/cajgh.2012.30.

Atun, R., S. Bennet, and A. Duran (2008), "When do vertical (stand-alone) programmes have a place in health systems?", *Health Systems and Policy Analysis*, European Observatory on Health Systems and Policies, Brussels.

Busse, R. et al. (eds.) (2011), "Diagnosis-Related Groups in Europe. Moving towards transparency, efficiency and quality in hospitals", *European Observatory on Health Systems and Policies Series*, pp.3-23.

CSIH (2013), *Kazakhstan Health Sector Technology Transfer and Institutional Reform Project (KHSTTIRP) – Subcomponent B1: Health System Accreditation – CSIH Achievements and Recommendations* http://www.csih.org/wp-content/uploads/2013/05/Project-Summary-Accreditation-_-June-2013.pdf.

Carinci, F. et al. (2015). "Towards actionable international comparisons of health system performance: expert revision of the OECD framework and quality indicators". *International Journal for Quality in Health Care*, 2015, Vol. 27, No. 2, pp. 137146. http://intqhc.oxfordjournals.org/content/27/2/137

Cashin, C., et al. (eds.) (2014), "Paying for Performance in Health Care; Implications for health system performance and accountability", *Open University Press*, pp. 4-20

Chanturidze, T. et al. (2016), "Introducing Diagnosis-Related Groups in Kazakhstan: Evolution, achievements, and challenges", *Health Policy*, Vol. 120, No, 9, pp. 987-91. doi: http://dx.doi.org/10.1016/j.healthpol.2016.07.007.

Charlesworth, A., A. Davies and J. Dixon (2012) *Reforming payment for health care in Europe to achieve better value*, The Nuffield Trust, www.nuffieldtrust.org.uk/euro-summit/2012.

Conrad, D. and L. Perry (2009), "Quality-Based Financial Incentives in Health Care: Can we Improve Quality by Paying for It?", *Annual Review of Public Health*, Vol. 30, pp. 357-71.

Duran, A. et al. (2012), "Understanding health systems: scope, functions, and objectives", in Figueras, J and M. McKee (eds.) *Health Systems Health, Wealth, and Societal Well-being*, McGraw Open University Press, New York.

Duran, A. and R. Saltman (2015), "Governing public hospitals", in Blank R, E. Kuhlmann and I.L Bourgeaul and C. Wendt (eds.) *International Handbook of Healthcare Policy and Governance*. Basingstoke, United Kingdom: Palgrave MacMillan; pp. 443-461.

Eurofound (2017), "Delivering hospital services: A greater role for the private sector?".

European Steering Group on Sustainable Healthcare (2014), *Acting together: A roadmap for sustainable healthcare*, Brussels, p. 8.

Eurostat Statistics Explained (2015a), Hospital discharges and length of stay statistics. Data extracted in October 2015; http://ec.europa.eu/eurostat/statistics-explained/index.php/Hospital_discharges_and_length_of_stay_statistics

Eurostat Statistics Explained (2015b), Surgical operations and procedures statistics. Data extracted in January 2017. http://ec.europa.eu/eurostat/statistics-explained/index.php/Surgical_operations_and_procedures_statistics

Eurostat Statistics Explained (2015c), Surgical operations and procedures statistics. Data extracted in January 2017. http://ec.europa.eu/eurostat/statistics-explained/index.php/Surgical_operations_and_procedures_statistics

Government of Canada (1998), Energy Efficiency in Buildings Benchmarks and Best Practices for Acute and Extended Health Care Facilities: A Guide for Energy Managers and Finance Officers, http://www.nrcan.gc.ca/energy/publications/efficiency/buildings/5985, Consulted 17 September 2016.

Gawande, A. (2009), *The Checklist Manifesto –How to Get Things Right*, Penguin Book, New York, p. 8.

Guenther. R. (2010), "Global lessons in healthcare", Healthcare design, 1 October, http://www.healthcaredesignmagazine.com/article/global-lessons-healthcare

Hall, M. et al. (2013), Trends in Inpatient Hospital Deaths: National Hospital Discharge Survey, National Center for Health Statistics data brief No. 118, https://www.cdc.gov/nchs/products/databriefs/db118.htm.

Herzlinger, R. (2004), Consumer-Driven Health Care: Implications for Providers, Payers, and Policymakers. San Francisco: Jossey-Bass.

Hurst, J. (2010), "Effective ways to realise policy reforms in health systems", *OECD Health Working Papers*, No. 51. OECD Publishing, Paris, http://dx.doi.org/10.1787/5kmh377l4n9x-en.

Jeurissen, P., A. Duran and R. Saltman (2016), "Uncomfortable realities: the challenge of creating real change in Europe's consolidating hospital sector", *BMC Health Services Research*, Vol. 16 (Suppl 2), p. 168

Katsaga, A. et al. (2012), *Kazakhstan: Health system review. Health Systems in Transition*, 2012, Vol. 14, No. 4, pp. 34-36.

Kelly, E. and G. Tetlow (2012), Choosing the place of care. The effect of patient choice on treatment location in England, 2003-2011, Institute of Fiscal Studies and the Nuffield Trust.

Kuhlmann, E., Y. Rangnitt and M. von Knorring (2016), "Medicine and management: looking inside the box of changing hospital governance", *BMC Health Services Research,* Vol. 16 (Suppl 1), No. 159, http://dx.doi.org/*10.1186/s12913-016-1393-7*.

Kumar, A.B., A. Izekenova and A. Abikulova (2013), "Inpatient care in Kazakhstan: A comparative analysis" *J Res Med Sci*. Vol. 18, No. 7, pp. 549–553, http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3897019.

Loevinsohn, B. (2008), "Performance-Based Contracting for Health Services in Developing Countries, A Toolkit", *Health, Nutrition, and Population Series*, World Bank, Washington, p 20, https://openknowledge.worldbank.org/handle/10986/6481.

Marshall, L., A. Charlesworth and J. Hurst (2014) "The NHS payment system: evolving policy and emerging evidence", *Research report,* The Nuffield Trust, 2014, http://www.nuffieldtrust.org.uk/publications.

Morganti, K. et al. (2013), The Evolving Role of Emergency Departments in the United States, Rand Corporation, http://www.rand.org/pubs/research_reports/RR280.html.

Ministry of Health (2015), National Health Accounts Of The Republic Of Kazakhstan, A report on health care expenditure for the year 2014.

NHS Scotland (2013), Hospital Standardised Mortality Rates, Quarterly HSMR Release.

Noordzij , P.G. et al. (2010), "Postoperative mortality in The Netherlands: A population-based analysis of surgery-specific risk in adults" *Anesthesiology*, Vol. 12, No. 5, pp. 05-15. http://dx.doi.org/10.1097/ALN.0b013e3181d5f95c.

Nolte, E. et al. (2014) *The Changing Hospital Landscape. An Exploration of International Experiences*, Rand Europe.

OECD (2015), *OECD Reviews of Health Care Quality: Portugal 2015*: *Raising Standards,* OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264225985-en.

OECD (1993), Glossary of Industrial Organisation Economics and Competition Law, compiled by R. S. Khemani and D. M. Shapiro, commissioned by the Directorate for Financial, Fiscal and Enterprise Affairs, available at: http://www.oecd.org/regreform/sectors/2376087.pdf.

Pachilova, R and Sailer, (2015),"Size and complexity of hospitals matter for quality of care: A spatial classification of NHS buildings", in Karimi, K. et al. (eds.): Proceedings of the 10th International Space Syntax Symposium, 31:1-31:16, http://www.sss10.bartlett.ucl.ac.uk/wp-content/uploads/2015/07/SSS10_Proceedings_031.pdf.

Pretty, D. et al. (2012), *Tracheotomy-Related Catastrophic Events: Results of a National Survey*, US National Library of Medicine National Institutes of Health, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3614343/

Purdi, S. et al. (2012), Interventions to reduce unplanned hospital admission: a series of systematic reviews, http://www.bristol.ac.uk/media-library/sites/primaryhealthcare/migrated/documents/unplannedadmissions.pdf.

Sanigest Solutions (2010) Guidelines for Master Planning in the Hospital Network. Document presented to the Ministry of Health, 11 June 2010.

Rechel, B. et al. (2016), "Hospitals in rural or remote areas: An exploratory review of policies in 8 high-income countries", *Health Policy*, Vol. 120, Issue 7, pp. 758-769.

Roland, M. et al. (2013), "Ernst & Young LLP: Does integrated care deliver the benefits expected? Findings from 16 integrated care pilot initiatives in England", RAND Corporation, Santa Monica, California, http://www.rand.org/pubs/research_briefs/RB9703.

Ruolz, A. and G. Fortin (2007), Could MRI and CT Scanners Be Operated More Intensively in Canada?, Health Policy, 3(1): e113–e120

Saltman, R., A. Duran and H. Dubois (2011), *Governing Public Hospitals*, European Observatory of Health Systems and Policies.

Segen's Medical Dictionary (2011), retrieved 29 September 2016 from http://medical-dictionary.thefreedictionary.com/cephalotrypesis.

Stabile, M and S. Thomson (2014), "The changing role of government in financing health care: an international perspective", *Journal of Economic Literature,* Vol 52(2), pp 480-518.

Street, A. and U. Hakkinen (2009) "Health system productivity and efficiency", in Smith P.C. et al. (eds.), *Performance Measurement for Health System Improvement. Experiences, Challenges and Prospects*, Cambridge University Press, New York (on behalf of European Observatory on Health Systems and Policies), pp. 222-248.

Watters, D. et al. (2015), "Perioperative Mortality Rate (POMR): A Global Indicator of Access to Safe Surgery and Anaesthesia, *World J Surg*, http://dx.doi.org/10.1007/s00268-014-2638-4.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Union takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

OECD PUBLISHING, 2, rue André-Pascal, 75775 PARIS CEDEX 16
(81 2018 03 1 P) ISBN 978-92-64-28905-5 – 2018

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Union takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

OECD PUBLISHING, 2, rue André-Pascal, 75775 PARIS CEDEX 16
(81 2018 03 1 P) ISBN 978-92-64-28905-5 – 2018

OECD Reviews of Health Systems

KAZAKHSTAN

These reviews examine the performance of health care systems in various countries, highlighting key challenges and opportunities for system strengthening based on international best practice. Each review provides targeted recommendations to improve health system accessibility, quality, efficiency and sustainability in the subject country.

Kazakhstan has made significant economic progress over recent decades. Health has risen on the policy agenda with a number of sector reforms introduced to modernise the system and improve the health of the population. This review uses globally recognised frameworks and indicators to evaluate Kazakhstan's overall health system as well as its primary care and hospital sectors. Data provided by Kazakhstan is used to benchmark the various dimensions of performance with that of OECD countries. While the review points to notable successes, Kazakhstan continues to face challenges to improve the accessibility, equity, and efficiency of health services. To strengthen health system performance, the report points to key actions that Kazakhstan should consider prioritising in the coming years.

Consult this publication on line at ***http://dx.doi.org/10.1787/9789264289062-en***.

This work is published on the OECD iLibrary, which gathers all OECD books, periodicals and statistical databases. Visit ***www.oecd-ilibrary.org*** for more information.

2018

OECD*publishing*

www.oecd.org/publishing

ISBN 978-92-64-28905-5
81 2018 03 1 P