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BETTER POLICIES FOR BETTER LIVES

Purchasing for quality chronic care

Summary report

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Abbreviations

CHF	congestive heart failure
COPD	chronic obstructive pulmonary disease
DRGs	diagnosis-related groups
FFS	fee for service
GRADE	Grading of Recommendations Assessment, Development and Evaluation
GP	general practitioner
HICs	high-income countries
JKN	Jaminan Kesehatan Nasional (national health insurance scheme in Indonesia)
LMICs	low- and middle-income countries
NCD	Noncommunicable disease
OECD	Organisation for Economic Co-operation and Development
P4P	pay for performance
PROLANIS	Program Penanggulangan Penyakit Kronis (chronic disease management programme in Indonesia for members of the national health insurance scheme)
RBF	results-based financing
UHC	universal health coverage
WHO	World Health Organization

Executive summary

Improving the quality of care for patients with chronic conditions is central to advancing universal health coverage (UHC), given the large burden of premature mortality from noncommunicable diseases. Policy-makers have invested in a wide range of initiatives to address the gaps in receiving the recommended quality care. Countries at different income levels have introduced changes in purchasing and payment arrangements to shift from an activity-based approach to those incorporating measurements of quality and performance. Such methods range from payments made for providing quality care to more complex arrangements that link payments with coordinated patient management. Each method has advantages and disadvantages and creates financial incentives that align to varying extents with quality and health goals.

The objective of this research study is to describe experiences with different purchasing arrangements and payment methods and how these have been used to attain quality care and better health outcomes for patients with chronic conditions. First, we reviewed evidence from rigorous studies across different settings about payment methods and their effects on health care quality and outcomes for patients with chronic conditions. Such evaluations found weak associations with process quality and outcomes related to chronic care.

We then reviewed eight case studies, from Australia, Canada, Chile, China, Germany, Indonesia, South Africa and Spain. These studies were commissioned to provide a better understanding of the designs of different purchasing arrangements that aim to promote quality in chronic disease care. They include examples of blended payment arrangements and population-based payment methods and were, in most cases, accompanied by other service delivery interventions, with the intention of providing incentives to deliver services in a better way. A mix of process and outcome measures was used in all studies, with a reliance on information collected by existing administrative systems. A challenge in most settings was to balance the incentives in blended payment methods, i.e. a combination of two or more payment methods. Very little information was available about how decisions were made in distributing payments, which may create uncertainty for providers. For two schemes that were evaluated, important methodological challenges include selection bias. Key facilitating and inhibiting factors of the interventions included those related to governance, service delivery, quality standards, health information infrastructure, as well as the financial and regulatory environments.

There remains strong interest among all stakeholders to better understand how to implement an optimal mix of different methods of provider payment that supports the goals of better quality and health. This research study has generated lessons for countries interested in improving purchasing and payment arrangements to work towards providing better-quality care for chronic diseases.

A **stronger focus on health care delivery models** and systematically identifying obstacles that inhibit quality is an important approach suggested by this research. Such an approach enables policy-makers to focus on care quality and health outcomes for the population as a whole and identify the appropriate mix of purchasing mechanisms that support service delivery systems to achieve quality objectives. Thus, the choice of payment methods should be made with consideration of the desired change and systems requirements in the context of the existing payment infrastructure.

In terms of **quality measures**, process indicators empirically linked to clinical health may ensure strong links between a provider's practice and improved health outcomes, particularly if based on established professional norms and guidance. Measures of care coordination, integration and person-centredness are equally important for patients with chronic conditions. Defining and operationalizing these more complex measures takes substantial effort, however, and their inclusion in the programmes studied was infrequent. Outcomes reported by patients were included in many studies, and these recognize the central role that patients' behaviours play in the quality of chronic care. But obtaining data about patient-reported outcomes requires investment in special studies.

Relative or progressive quality targets may be more appropriate where there is diversity in providers' capacities. Such targets may encourage providers and facilities to strive towards gradually improving their standards of care. Moreover, adjusting quality measures to account for patients' health risks and care complexity may help ensure that providers do not face incentives that inhibit them from caring for the sickest patients. It may also more accurately reflect performance for providers working with populations that have higher health risks. Quality metrics can also be adjusted for social risk factors to redress equity in provider payments and avoid penalizing health facilities that serve vulnerable patients. Reporting requirements must be as light as possible and based on routine reporting systems to avoid high reporting burdens that take time away from care provision.

Balancing financial incentives in payment methods is a critical design challenge. Relatively small, incremental quality payments may not be sufficient to counter stronger incentives in activity-based payment methods that produce a larger share of provider

payments. There is weak evidence demonstrating the effect of nonpayment on reducing adverse outcomes. Moreover, the case studies suggested that withholding payment or reducing payments as a penalty had important negative effects. Operationalizing broad recommendations (such as not paying for poor quality care) has, in practice, resulted in policies with unintended consequences that can negatively affect patients. Penalties for poor performance should be considered carefully so as not to undermine a programme's overall objectives and reduce the resources available for improving quality.

A key design element is **payment certainty**, which may affect providers' willingness to participate in a programme or accept changes. To establish certainty about and confidence in new payment methods, the process of decision-making should be transparent. This may include decisions about the size of incentive payments and how they are paid, rules for distributing payments across or within teams, linkages to quality metrics and a timely payment schedule. Commitments to changes in payment methods may be sustained when they extend over a relatively longer period of time.

Financial incentives offered to improve quality need to be embedded in **broader quality assurance mechanisms**. This is likely to require strengthening the standards for health systems inputs and processes to provide a foundation for purchasing for quality.

New payment methods can be initiated while also building broader capacities in human resources and service delivery under **a plan for incremental, sequenced implementation**. Such a plan would create a road map for policy-makers to identify and proactively address challenges to quality improvements, as well as key facilitating and inhibiting factors within governance, service delivery, health information systems, and the financial and regulatory environments.

Because payment methods have the potential for harm as well as benefit, it is important to **build monitoring and evaluation into the design** of a payment method before and throughout wide-scale implementation. The design can include a conceptual framework that articulates causal pathways and assumptions, and data collection plans to monitor and sufficiently power an evaluation. Monitoring key design elements can allow for adjustments during implementation to provide optimal incentives and address unintended effects. Evaluations should test assumptions, address sources of bias and explicitly examine the potential unintended consequences of a broad range of outcomes and the possible differential effects among vulnerable subgroups. Selection bias (among both providers and participants) is the most common challenge in evaluations, and it should be identified and addressed in analytical plans and considered carefully when interpreting results.

There is a **lack of good evidence and documentation about other broader purchasing instruments commonly thought to promote quality**. These include making information about quality publicly available, using selective contracting, and making geographical price adjustments to ensure sufficient resources to meet minimum quality standards. Close monitoring and evaluation of these instruments are essential to determine their effects on behaviour. Financial incentives for patients to receive better quality care have demonstrated some effects and are another promising initiative deserving more research.

Evidence suggests that there could be more learning from past experiences about the design and evaluation of payment methods, including **how lessons learned can be systematically adapted across different countries and contexts.** While proactive learning takes time and effort – particularly across settings and among different stakeholders – it is essential to share experiences to avoid continually repeating similar mistakes and implementation failures. The lessons learned from this research study may be useful for countries that are looking to other settings for experiences in optimizing purchasing arrangements and payment methods to provide better quality care for patients with chronic diseases.

1

Purchasing for accelerating progress towards quality universal health coverage

1

Purchasing for quality chronic care Summary report

1.1 Background

The quality of health care is central to advancing universal health coverage (UHC). As service coverage increases globally, the quality of care gains greater importance in improving health outcomes. Poor quality medical care is estimated to account for up to 58% of preventable deaths in low- and middle-income countries (LMICs), exceeding the burden of disease attributable to a lack of access to health care *(1)*. In high-income countries (HICs), some 15% of hospital expenditures can be attributed to addressing poor quality care, including clinical mistakes and hospital-acquired infections that together affect 7% to 10% of inpatients *(2)*. A major challenge to health systems globally is premature mortality from noncommunicable diseases (NCDs) among those aged 30 to 70 years,[1] which accounts for 42% of NCD deaths globally *(3)*. As these deaths are largely preventable with access to good quality care, improving the quality of care for people with chronic conditions is a key strategy for accelerating progress towards UHC *(4, 5)*.

In recognition that gaps exist between the recommended quality of care and the care that patients receive, policy-makers have invested in a wide range of programmes to promote the best clinical and care practices *(6)*. This paper focuses on strategic purchasing instruments that seek to align payment incentives with quality outcomes *(7, 8)*. Strategic purchasing involves making decisions about which services will be purchased, which providers will deliver those services and how providers will be paid, including the incentives for improving quality *(9, 10)*.[2]

Payment methods are a key component of strategic purchasing. Many countries are modifying the ways in which health care providers are paid for their services, moving away from payments based on volumes of services delivered, or activity-based payment systems, and towards instruments that link payments with the quality of care received or patients' outcomes. Modified payment mechanisms that have the objective of improving care quality may be referred to as purchasing for quality *(11)*, pay for quality *(12)*, pay for coordination *(13)*, quality-based purchasing *(14)* and value-based payments *(15)*. Other terms for payment instruments that use quality metrics as a part of measuring an individual provider's or system's performance include pay for performance (P4P) *(16)*, results-based financing (RBF) *(17)*, performance-based financing *(18)* and outcome-based payments *(19)*. Different labels and designations have been applied to the same activities and

1 Premature mortality from NCDs is measured as the unconditional probability of dying at the ages of 30 to 70 years from any of the four major NCDs (i.e. cardiovascular diseases, cancers, diabetes, and chronic respiratory diseases).

2 Purchasing agencies can take many forms, such as a ministry of health, a subnational authority, a mandatory or voluntary health insurance scheme, or a nongovernmental organization.

approaches across contexts. For example, P4P is the term used in HICs, whereas performance-based financing or RBF has been preferred in LMICs and within the context of donor-funded programmes. These mechanisms are grounded in conceptual theories about financial incentives and behaviour; such theories are discussed in detail elsewhere *(20, 21)*. Given the importance that governments and international agencies have placed on payment methods linked to quality, many diverse networks have been established to support their implementation and evaluation *(22-38)*.

In Section 1 of this report, we collate the evidence from rigorous systematic reviews of published studies evaluating the effects of different payment instruments on the quality of care and outcomes for chronic conditions. Sections 2 and 3 synthesize the evidence gathered through eight country case studies examining purchasing for quality chronic care. Based on the evidence from the rigorous published studies and the new commissioned case studies, Section 4 concludes with lessons learned for other countries and particularly for low- and middle-income settings.

1.2 Evolution of payment mechanisms

Determining how and how much providers are paid is a key component of purchasing. In recognition that distinct payment mechanisms influence providers' behaviour and promote care quality in different ways, there has been a shift in many countries from activity-based payments (such as fee-for-service [FFS] and case-based payments) to arrangements that focus on value in spending and care quality *(10, 39, 40)*. Multiple typologies have been developed to describe different provider payment mechanisms *(41, 42)*. Building on these frameworks, Table 1 describes an evolution of payment mechanisms towards more integrated approaches and a focus on quality outcomes. For each category, the table notes a few key advantages and disadvantages, which are described fully elsewhere *(43, 44, 45)*.

Payment methods that provide no explicit incentives for quality of care include line-item budgets, activity-based payments (including diagnosis-related groups [DRGs] for hospitals), capitation payments and global budgets. The most common activity-based payment is FFS, in which payments are made retrospectively for each service provided. Quality is not rewarded, and poor quality may result from the provision of unnecessary services. Hospitals in high-income and some middle-income settings typically use DRGs as the unit of payment, which classify patients by complexity and assign prices to each case group. DRGs do not reward quality per se and may result in poor quality as measured by early discharge or underprovision of

needed care *(46)*. Global budgets are more commonly used for hospitals, in which a fixed amount of funding is given to care for a defined population and for a defined time. In many cases, however, quality metrics can be identified to monitor performance to offset the incentives for poorer quality care. However, these payment arrangements (i.e. FFS, capitation, global budget, DRGs) are often poorly aligned with health system priorities, such as improving quality.

Table 1. Payment arrangements and examples: towards integration and quality

Category	Approach	Some advantages	Some disadvantages	Example
Line-item budget	Budgets based on input costs	Ease in financial accounting	Does not reward quality or for outcomes; no risk adjustment for patient complexity; difficult to change line-item allocations	Prospective line-item budgets
Activity-based payments	Payments made retrospectively for each service provided	Linkage between resource input and volumes; may increase delivery of services that are underutilized, such as prevention interventions	Does not reward quality or efficiency; incentives for overprovision	FFS, per diem and activity-based payments *(47)*
Case-based payments	Classifies health services and patient case-mix by complexity and assigns prices	Strong incentives for controlling hospital costs, including reducing length of stay	Fixed lump-sum payments do not vary based on services provided; negative incentives include shortened length of stay resulting in readmission or inappropriate referral, increased admissions, poorer quality and underprovision of needed care	DRGs, case-based payments *(46)*

Category	Approach	Some advantages	Some disadvantages	Example
Blended payments	Incremental rewards or penalties linked to specific quality metrics; added to line item, FFS or capitation payments at primary level, or at hospitals to DRGs, per diems or fee schedules; can be paid retrospectively or prospectively	Used to balance incentives in base payments for better quality; linkage between resource allocation and quality metrics measured; can be adjusted for patient complexity	Incentives for over-and underutilization of targeted and nontargeted activities; difficult to identify quality metrics under the control of the provider	Pay-for-performance, results-based payments and pay for coordination of care added to a base payment *(45)*
	Incremental rewards or penalties linked to specific quality metrics prospectively; added to existing base payments; providers can share in the savings if they are efficient and meet quality targets	Quality standards are explicitly identified; difference between target prices and incurred costs are reconciled at the end of the year, creating incentives for providers to reduce cost	Remains an activity-based payment; shared savings may not be sufficient to counter incentives in base payment mechanisms to maximize revenue by increasing utilization	Some accountable care organizations with quality and cost targets *(48, 49)*
Bundled payments	Payments for procedure-based clinical care that combine fees for physicians, hospitals and other health care providers into a single amount for all services to cover a care episode for a specific procedure from beginning to end; generally paid prospectively	Can reduce fragmentation across an episode of care and multiple providers; quality and outcomes explicitly linked to payments; risk adjustments can be used to address selection; reduces overprovision of care and unnecessary care; promotes care coordination and efficiency; promotes financial stability	Incentives to increase the number of episodes, avoid patients with complications and deny costly needed care; feasible for common procedures with established practice guidelines; tends to focus on specialists and high-cost procedures; may lead to fragmented care for persons with multimorbidity	Bundled episode payment for procedure-based clinical care or specific chronic conditions *(50)*

Category	Approach	Some advantages	Some disadvantages	Example
Population-based payments	Payments made prospectively to health providers for defined services per person during a fixed time, regardless of utilization	Health care providers decide on the appropriate mix of care; financial incentive to keep patients healthy, reduce unnecessary care and control costs; can be risk adjusted to account for patient care complexity	Does not explicitly reward quality; incentives for underprovision of care and referral of complex patients to other providers to avoid high-cost care	Capitation for primary care services *(11)*
	Payments made prospectively to a health care organization for services and outcomes for a defined population during a fixed time, often calculated based on case-mix index	Promotes financial stability; quality and outcomes can be identified across different hospital departments, and resources can be allocated to encourage coordination	Insufficient budget may compromise quality; facilities have incentives to keep within budget and control costs by limiting access and quality	Global budget revenue models *(45)*
	Payments made prospectively to an integrated health system or group of providers responsible for delivering all primary and referral services to a defined population, typically adjusted for age, sex and health status; can include other payment incentives or penalties	Promotes integrated care across health services; quality and outcome are explicitly linked to payments and provide incentives for health facilities to work with care partners outside the health sector to deploy resources efficiently to meet targeted outcomes; may promote prevention activities	Incentives for underprovision as providers are obligated to cover costs above the target price arising from complications and readmissions; may be inappropriate for high-cost, high-need patients with complex chronic conditions that require care outside of the integrated system	Comprehensive or global capitation *(45, 51)*

DRGs: diagnosis-related groups; FFS: fee for service.

Blended payment mechanisms represent efforts to modify activity-based payment systems to realign the financial incentives towards better quality outcomes. Blended arrangements include activity-based payments that incorporate rewards for providing quality care or penalties for poor quality care. Such arrangements were developed in recognition that the incentives inherent in activity-based payments (e.g. FFS) may undermine objectives to improve care quality. The most common mechanisms in this category are P4P and RBF schemes that are added to the base payment to provide rewards for attaining specific quality objectives or penalties for not attaining them. This includes pay-for-coordination payments through which providers receive additional incentives for collaborating and coordinating care, activities that are critical for chronic disease management, particularly for patients with multimorbidity.

Blended or bundled activity-based payments linked to quality outcomes can also incorporate shared savings. Shared-savings models establish a benchmark for the base payment: the difference between the target prices and incurred costs are then reconciled. This enables savings for payers and providers, should care be provided efficiently, while also delivering quality outcomes. The challenge is to balance the incentives inherent in activity-based payments to maximize revenue through higher service utilization.

Bundled payments are typically made for high-cost procedures (such as hip replacements) or chronic care episodes for which clinical management protocols are well established. Payers combine fees and other payments for physicians, hospitals and other health care providers into a single amount to promote changes in service delivery and to improve care quality. The advantage of these approaches is the linkage between the payment and the coordination of patient management. Under the objective of providing better overall services, the payment covers care for a specific procedure or care episode from beginning to end. These payment mechanisms typically have the important contingency of ensuring that quality targets are met to avoid skimping (i.e. reducing the provision of necessary care to save resources). Bundled payments strive for vertical integration and may be less appropriate for patients with multimorbidity whose care requires horizontal integration across different service categories.

Population-based payments such as capitation are commonly used to pay for primary care services, and payments are made per person for a defined benefits package over a specified time regardless of utilization. Quality is not explicitly rewarded under capitation payments, and these can result in providers offering too little care to minimize their costs and in the selection of low-risk patients. Global capitation or a global payment has been used to incentivize the

delivery of health and social care to a defined population. Population-based payments can also be made to an integrated health system or group of providers responsible for delivering comprehensive primary and referral services to a defined population. As such, the basic payment methods and rates are altered with the aim of ensuring quality for comprehensive care. Performance-based incentives or penalties may also be included to promote quality. Such models, however, may be inappropriate for patients with complex chronic conditions who require specialized care outside of the integrated system.

As payment systems evolve to incorporate more aspects of quality and value enhancement, they typically require additional investments in information systems to monitor and evaluate costs and quality, and also strong governance structures, and they put higher demands on providers' time for reporting.

1.3 Measuring the quality of chronic care

The World Health Organization (WHO) broadly defines the quality of care as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes. The domains of quality encompass being people-centred, effective, safe, timely, efficient, equitable[3] and integrated *(52)*.

Multiple frameworks have been developed to study quality and describe how quality elements contribute to health goals *(53, 54)*. Research conducted in the 1980s and used today has defined quality in terms of structure, process and outcomes *(55)*. In this context, a key issue for measuring variations in quality is the level of the health care system (i.e. primary, secondary or tertiary) in which a programme is implemented and quality is assessed *(56)*. At one level of the health care system, quality metrics focus on the individual (e.g. clinical care processes, patient safety); at another level, metrics aim to assess the performance of the health system (e.g. responsiveness). The distinction is important, given that different interventions are used to improve these metrics at the individual and health systems levels. Evaluating the quality of care for complex and chronic conditions goes beyond traditional disease-specific measurements and pathways, and encompasses the concepts of integration, coordination, care continuity and care for patients with multimorbidity *(57-61)*.

3 In principle, efficiency and equity are distinct and separate UHC objectives (i.e. the interim objective and final objective, respectively), but we acknowledge that these two dimensions are linked and form key aspects from a quality perspective.

Typically, quality metrics included when monitoring payment methods comprise structural inputs (e.g. the availability of equipment and supplies); clinical processes linked to practice guidelines; intermediate health outcomes and risk factors that predict morbidity and mortality (e.g. blood pressure levels and tobacco use) *(62)*; and process measures linked to health outcomes (e.g. preventive care activities, hospital admissions and length of stay). Measures of patient safety and satisfaction are also commonly included. Some programmes also incorporate health outcome measures, such as disease-specific morbidity and mortality *(63-65)*.

When selecting quality metrics, both intervention-specific components as well as health systems factors can be considered *(66)*. Intervention-specific components include the objectives of the intervention, the areas of quality targeted for change and whether the financial rewards and penalties can incentivize this change. Health systems considerations include the availability of information and timeliness of measurements, the accuracy of data, and the governance structures, including the monitoring and evaluation of quality.

For chronic conditions in which self-management is critical and frequently done for a longer period, process measures may become more important than measures of morbidity and mortality. These include the patient's quality of life and ability to self-manage. As such, the objectives of the health care provider and the patient may be more difficult to align in chronic conditions, thereby complicating the choice of quality metrics that represent their shared views *(61)*.

The most common challenges in measuring quality in the context of monitoring the effects of changes in payment methods include selecting metrics that can be influenced by financial incentives, and thus are under the control of the health care provider or patient, and adjusting for patient complexity, risk and patients' preferences *(67, 68)*.

An important consideration is to identify and monitor unintended effects *(69-71)*. These may include gaming the data used to generate performance scores, focusing on only those activities linked to payments and ignoring other clinically important areas that are unmeasured, avoiding higher-risk patients and providing care that is not clinically necessary *(72)*. Extensive reporting requirements can take time away from patient care and other quality improvement programs *(73)*.

1.4 Evidence of impact

Many initiatives have been undertaken during the past several decades that shift the emphasis towards payment methods to increase quality and value in health spending and improve the delivery of quality care for patients with chronic illnesses *(74)*. In HICs, purchasing arrangements have been initiated or adapted to encourage providers to focus on quality dimensions *(75)*. However, many of the evaluations of payment initiatives have serious problems in their design that limit the conclusions that can be drawn about their effects and their applicability or relevance elsewhere.

As such, this paper aims to review the body of rigorous evidence as a whole rather than focus on the findings of individual studies. We focus on Cochrane reviews and other systematic reviews in which study quality and risk of bias were evaluated. While most of these reviews do not explicitly focus on chronic care, we extracted the findings for those studies that used quality or outcomes for chronic care conditions and reported the effects. As illustrated in Table 2, the findings of eight Cochrane reviews studying different financial incentives and payment mechanisms show only modest effects for a range of quality metrics and outcomes related to chronic care.

Table 2. Summary of findings from eight Cochrane reviews examining the effects of payment methods on the provision of better quality care for chronic diseases[1,2]

Author (reference number)	Objective	Context	Scope	Intervention	Outcomes related to quality of chronic care	Synthesized findings
Diaconu et al. *(76)*	To assess the effects of P4P on the provision of health care and health outcomes in LMICs	P4P was assessed predominantly at the health-facility level in LMICs	59 articles published before April 2018; the paper updates a 2012 review	P4P in addition to various base payments (e.g. budget, capitation)	Health outcomes, changes in targeted measures of providers' performance, unintended effects, changes in resource use	P4P had mixed effects; findings mostly with low certainty. See Table 3.
Jia et al. *(77)*	To assess the impact of different provider payment methods in outpatient settings on the quantity and quality of service provision, patients' outcomes, providers' outcomes, costs of service provision and adverse effects	Health care providers working in outpatient facilities in mostly HICs	27 articles published up to 5 March 2019	P4P in addition to various base payments (e.g. budget, capitation)	Patient–physician interaction and physician prescribing; intermediate outcomes included mean blood pressure reduction for patients	Small benefits reported, including a slight increase in the number of primary care physicians prescribing guideline-recommended antihypertensive medicines. See Table 4. One RCT found that the performance of incentivized professionals was not sustained after the P4P intervention ended.
Mathes et al. *(78)*	To assess the impact of P4P on health care delivered in hospital in terms of the quality of care, resource use and equity	Hospital-based physicians providing acute or emergency care in HICs	27 articles published up to 27 June 2018	P4P plus capitation compared with capitation alone	Patients' outcomes; quality of care; utilization, coverage or access; resource use, costs and cost-shifting; health care providers' outcomes; equity; adverse effects or harms	Most studies showed no difference or only a very small effect in favour of the P4P programme; the certainty of the evidence was low or very low.

Author (reference number)	Objective	Context	Scope	Intervention	Outcomes related to quality of chronic care	Synthesized findings
Yuan et al. *(79)*	To assess the impact of different payment methods on the performance of outpatient care facilities and to analyse the different impacts of payment methods in different settings	Facilities providing primary care and mental health care in LMICs, the United Kingdom and the United States	21 articles published up to March 2016	Different payment methods including P4P and blended payments	Patients' outcomes, health care providers' behaviours and adverse effects	P4P had only small benefits and made little or no difference to providers' behaviour or patient utilization. Slight improvements reported in providers' use of some tests and treatments; little or no difference found in adherence to quality assurance criteria. Capitated budget combined with performance payment probably slightly reduced antibiotic prescriptions in primary health facilities.
Wiysonge et al. 2017 *(80)*	To provide an overview of the evidence from up-to-date systematic reviews about the effects of financial arrangements on health systems in low-income countries	43% of 276 studies took place in LMICs	5 systematic reviews of 276 studies from 2008 to 2015	Purchasing (1 review), patient incentives (6 reviews) and providers' incentives (5 reviews)	Process quality measured for health care providers, adherence to recommended treatments measured for patients, and intermediate health outcomes, some of which were related to chronic care	Uncertain impacts on the quality of care from incentives for primary care physicians; uncertain effect of P4P on providers' performance, patients' utilization of services, patients' outcomes or resource use in low-income countries
Rashidian et al. 2015 *(81)*	To determine the effects of pharmaceutical policies using financial incentives to influence prescribers' practices on medicine use, health care utilization, health outcomes and costs	6 HICs; no study from LMICs met the inclusion criteria	18 articles published before February 2015	3 studies of P4P policies in the United Kingdom and the Netherlands	One of the following outcomes had to be reported: medicines use, health care utilization, health outcomes or costs	Effects of P4P on medicines use and health outcomes are uncertain.

Author (reference number)	Objective	Context	Scope	Intervention	Outcomes related to quality of chronic care	Synthesized findings
Scott et al. 2011 *(82)*	To examine the effects of changes in the method and level of payment on the quality of care provided by primary care physicians	Primary care physicians in all settings	7 articles published from January 2000 until August 2009	Payments based on relative performance ranking	Patient-reported outcome measures, clinical behaviour, and intermediate clinical and physiological measures	6 of 7 studies showed positive but modest effects on quality for some primary outcomes. Modest increases were reported in the mean percentage of smokers referred to a telephone counselling service and smoking cessation programmes. Modest positive effects reported on patients' assessment of care quality. Modest positive effects reported on targeted payments (e.g. for cervical cancer screening and eye exams).
Flodgren et al. 2011 *(83)*	To conduct an overview of systematic reviews that evaluated the impact of financial incentives on the behaviour of health care professionals and on patients' outcomes	Systematic reviews focusing on providers' behaviours and health outcomes at all levels of the health system in all settings	4 systematic reviews of 32 articles published up to January 2010	Payment for providing a prespecified activity or a change in activity or a change in the quality of care	Process quality for health care providers, adherence for patients to recommended treatments, and intermediate health outcomes related to chronic care	Payment for providing a prespecified level of activity or a change in activity or change in the quality of care was generally effective. Financial incentives were of mixed effectiveness on consultation or visit rates but were generally effective in improving processes of care and generally effective in improving referrals and admissions; they were generally ineffective in improving compliance with guidelines.

HICs: high-income countries; LMICs: low- and middle-income countries; P4P: pay for performance; RCT: randomized controlled trial.

[1] All studies used rigorous designs, including controlled before-after, nonrandomized or cluster-randomized, interrupted time series or repeated measures.

[2] The table limits the findings to quality and health outcomes related to chronic care.

Table 3. Summary of the Cochrane review examining the effects of pay-for performance or results-based financing schemes on the quality of chronic care in low- and middle-income countries[1] *(76)*

Comparison	Outcome	Summary of impact[2]	Certainty of evidence[3]
P4P against status quo	Health outcomes	Increased likelihood of tuberculosis treatment success (range: 12–20% improvement)[4]	Low certainty
	Delivery and utilization	Increased proportion of people receiving HIV testing (range: 6– 600%) and care to prevent mother to child transmission (range: 3.8–21%)[4]	Low certainty
		May decrease proportion of people receiving antiretroviral therapy[4]	Low certainty
		Impact on improving adherence to tuberculosis treatment	Very low certainty
	Quality of care	Improved scores rating the availability of medicine and equipment (range: 2.7–220% increase)	Low certainty
		Improved mean scores for quality of specific targeted service areas (range: 39% to 15-fold increase in scores).	Low certainty
		Uncertain impact on procedural quality of care, little or no difference in staff knowledge and skills; effects on staff responsiveness were uncertain overall	Very low certainty
	Resource use	Positive effect on availability of human resources (range: 19–44%)[4]	Moderate certainty
		Positive impacts on infrastructure functionality and medicine availability[4]	Moderate certainty
	Providers' motivation	Little difference in absenteeism (range 0.7–2%)[4]	Moderate certainty
	Patients' satisfaction	Positive effects on patient acceptability	Low certainty
	Management	Positive effects on managerial autonomy for facility[4]	Low certainty
	Equity	Conflicting results: proportion of poor people using different maternal and child health services reported to both increase and decrease[4]	Low certainty

Comparison	Outcome	Summary of impact[2]	Certainty of evidence[3]
P4P against comparator interventions	Health outcomes	Little to no difference in health outcomes	Low certainty
	Delivery and utilization	Increased probability of people utilizing care (range: 2–10%)[4]	Low certainty
	Resource use	Increased equipment availability by 75%, but reduced medicine availability by up to 160%[4]	Low certainty
	Management	May have desirable effects[4]	Low certainty
	Equity	Little or no difference or may worsen inequity[4]	Low certainty

P4P: pay for performance.

1 P4P and RBF refer to activity-based payments linked to quality metrics with the objective of providing incentives for better care quality.

2 Outcomes unrelated to the quality of chronic care are omitted from this table.

3 The GRADE (Grading of Recommendations Assessment, Development and Evaluation) Working Group ratings of the certainty of evidence:

- high certainty – the research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different is low;
- moderate certainty – the research provides a good indication of the likely effect. The likelihood that the effect will be substantially different is moderate;
- low certainty – the research provides some indication of the likely effect. However, the likelihood that it will be substantially different is high;
- very low certainty – the research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different is very high.

Substantially different refers to a difference that is large enough that it might affect a decision.

4 This was a targeted P4P programme.

1.4.1 Evidence of impact in low- and middle-income countries

In LMICs, experimentation in modifying payment mechanisms has been undertaken widely, frequently as a part of donor programmes hoping to increase access to quality care and promote equity in access *(84)*. Efforts have primarily focused on P4P or RBF mechanisms that link payments to quality metrics as an add-on to the base payment, which might be budget allocation or capitation. Table 3 presents the detailed findings of a recent Cochrane review of 59 studies evaluating P4P in 34 LMICs, and it extracts the findings from studies that used outcomes relevant to chronic care to evaluate effects *(76)*. The review found some evidence that the structural quality of care may improve with P4P; however, the impact of P4P on measures of process quality was uncertain, and there was little or no evidence of an effect on health outcomes.

The results of rigorous evaluations of large-scale international donor projects have similarly reported mixed effects of RBF on the quality

of basic services in LMICs *(85-87)*. In their Cochrane review of 15 systematic reviews, Wiysonge et al. examined 276 studies looking at a wide range of financial arrangements for health care in low-income countries; the authors reported uncertain effects of P4P on providers' performance, patients' service utilization, patients' outcomes, and resource use in low-income countries *(80)*. A meta-analysis of 116 studies evaluating P4P schemes that were published between January 2010 and February 2018 including studies in low-income countries confirmed these results *(88)*. While the latter meta-analysis did not focus solely on quality, the authors concluded that despite an increase in the number of countries adopting P4P, the results remained disappointing. The authors also noted that there was little learning from past experiences and across countries about designing and evaluating P4P schemes.

1.4.2 Evidence of impact on outpatient care in high-income countries

A Cochrane global review in 2021 focused on financial incentives for providers working in outpatient care facilities in mostly HICs (summarized in Tables 2 and 4) *(77)*. The authors reported that when P4P was blended with other payment methods (including capitation, salary, and fee for service) and compared with the status quo (i.e. without P4P), then health care providers probably offered better-quality care, including in their use of medicines, but these improvements may not be sustained when the P4P payments end. The review found that effects on health outcomes are mixed. Evidence was of low or very low certainty.

Other reviews have found similar results. Quentin et al. conducted a review of 14 purchasing-for-quality programmes in primary care in 13 European countries and found that bonus payments ranging from 0.1% to 30% of a provider's income resulted in small positive effects on absolute levels of process quality *(66)*. The authors cited similar results from seven studies published between 1999 and 2016 and summarized the evidence about pay-for-quality programmes in primary care settings, recognizing limitations in the design of many studies that affected the interpretation and findings. The authors noted that the quality of the studies is critical: methodologically weak studies based on observational data or studies with no comparison group reported positive effects on process quality with lower certainty. In contrast, more rigorous studies with control groups or data collected over longer periods reported no or only slight positive effects and had higher certainty. These findings have been observed elsewhere *(15)*.

In their 2023 scoping review, Simmons et al. *(89)* summarized the results of 12 studies that included pay-for-coordination fees alone or with performance incentives in primary care settings. They

reported that pay-for-coordination alone had low or no impact. When it was combined with performance incentives, pay-for-coordination had a positive impact on utilization (low certainty of evidence), including reducing preventable emergency department visits as well as increasing office-based visits (i.e. to primary care practitioners, nurse practitioners, specialists). They also reported positive impacts on prevention activities, care and treatment for several chronic conditions, namely through increases in testing for cardiovascular care, diabetes care and breast cancer screenings (with the certainty of evidence ranging from high to low).

Table 4. Summary of the Cochrane review examining the effect of pay for performance on the quality of chronic care offered by providers working in outpatient care *(77)*

Outcome	Summary of impact[1]	Certainty of evidence[2]
Health outcomes	Reduction in mean blood pressure	Very low certainty
	Improved blood pressure control or reduced blood pressure or appropriate responses to patients with uncontrolled blood pressure	Low certainty
Delivery and utilization	Increase in immunizations for patients aged ≥65 years	Very low certainty
	Increased number of patients who were asked more detailed questions about their disease by their pharmacist	Low certainty
Quality of care	Improved provider prescribing of guideline-recommended antihypertensive medicines	Low certainty

1 Outcomes unrelated to the quality of chronic care are omitted from this table. Pay for performance was compared against the status quo.

2 The GRADE (Grading of Recommendations Assessment, Development and Evaluation) Working Group ratings of the certainty of evidence:

- high certainty – the research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different is low;
- moderate certainty: the research provides a good indication of the likely effect. The likelihood that the effect will be substantially different is moderate;
- low certainty – the research provides some indication of the likely effect. However, the likelihood that it will be substantially different is high;
- very low certainty – the research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different is very high.

Substantially different refers to a difference that is large enough that it might affect a decision.

1.4.3 Hospital-based care in high-income countries

A Cochrane review of 27 studies in 2019 evaluated the impact of P4P among hospital-based physicians in HICs providing acute or emergency care and the effect on the quality of care, resource use and equity *(78)*. For chronic care and the other outcomes measured, the authors found that P4P had only small, short-term effects that were not sustained over time. They noted that penalizing hospitals through nonpayment for failure to reach performance targets seemed to be slightly more effective in comparison with making additional payments for performance, although the evidence was of low certainty.

Similarly, a 2019 review of 13 purchasing-for-quality programmes in hospitals in Europe found that bonus payments ranging from 0.5% to 10% of a provider's income were ineffective in improving quality or health outcomes; any positive effects waned over time *(66)*. The authors also noted variations in results by study design; any positive effects could not be confirmed by rigorous studies with control groups and outcomes adjusted for patient risk and time trends *(66)*.

More recent reviews have reported similar findings. In their systematic review of 13 studies in 2022, Remers et al. reported that no conclusions could be drawn in their evaluation of the effect of payment reforms, including bundled payments, on the quality of care for patients with multimorbidity *(90)*. The authors recommended that better quality evaluations should be conducted and that interventions should be multifaceted. A 2020 review of 37 evaluations looked at 16 Medicare payment reforms in the United States that focused on cost control by shifting from FFS to bundled payments for hospital-initiated episodes of care. The review concluded that the pace of spending declined without any adverse impact on care quality *(91)*.

1.4.4 Integrated models of service delivery

Another set of mechanisms focuses on aligning payments with models of service delivery. Shared-savings and shared-risk models apply activity-based payments to establish cost benchmarks for a set of services, typically across networks of providers; providers can share in the savings if they are efficient in reducing expenditures below benchmark levels and, where included in the program, in meeting quality targets. Under shared-risk models, providers are accountable for overspending if their costs exceed the benchmark. Examples of these models in the United States include accountable care organizations and patient-centred medical homes, which are based on a shared-savings model. A 2014 summary of the experiences of six accountable care organizations reported wide variations in design and implementation, and low certainty about their effects on quality and costs *(15)*. Under patient-centred medical homes, the payment model relies on the existing activity-

based infrastructure and may include a monthly risk-adjusted coordination fee, FFS and additional performance-based payments *(92)*. Systematic reviews of studies of patient-centred medical homes have reported inconclusive results because most studies were observational and so there was low certainty about the impact; moreover, given that the evaluations focused on the synergistic effects of delivery and payment reforms, many studies cannot identify the specific effects of the payment mechanisms *(89, 93-95)*.

In their scoping review, Simmons et al. *(89)* reported on eight shared-risk and shared-savings models. They found evidence of improved process outcomes for disease-specific management and control indicators, with moderate and low levels of certainty, and low certainty about improved health outcomes and continuity of care. These models also highlight broader aspects of service delivery in conjunction with purchasing, including the implementation of care coordination and patient management strategies.

Most of these reviews identified substantial heterogeneity in the design, implementation, measurement and evaluation of payment models. A review of 58 studies of P4P evaluations reported that several factors unique to payment design can modify the performance of payment methods *(96)*. These include the size and clinical type of the implementing organization, and individual characteristics, such as the age and sex of those providing care. The population served also matters; the same study noted that facilities and providers that care for a higher share of poor and minority patients are consistently associated with lower performance. However, the authors concluded that such heterogeneity cannot explain the lower-than-expected effectiveness consistently reported in evaluations of payment methods.

1.5 Other purchasing instruments to promote quality

As payment arrangements become more complex, concomitant large-scale investments are required in information systems, data quality and governance. In many cases, large-scale investments are needed to effect systemwide quality improvements.

At the same time, efforts have been made to align the existing payment infrastructure with quality objectives *(10, 97)*. Table 5 provides a few examples of purchasing instruments used within existing payment schemes.

Table 5. Other purchasing instruments that have been used to promote quality within existing payment infrastructure

Purchasing instrument	Examples	Evidence of effect
Making information about quality publicly available to hold providers accountable for the quality of their care and to inform users' choices	Australia's national indicators of safety and quality in health care, France's national health authority, Germany's public reporting of quality measures, the United States' Meaningful Measures Initiative *(98)*	Rigorous studies report inconclusive findings or no evidence of effect *(99, 100)*; making quality information publicly available may have unintended effects on prices *(101)*.
Redirecting volumes across providers based on quality measurements (e.g. selecting providers based on compliance with minimum quality standards) and promoting competition among providers to encourage better quality	Selective contracting based on quality standards, such as accreditation; specifying levels and types of providers and where the services covered are available, including through implicit or explicit contracts; Medicare in the United States uses selective contracting of facilities for organ transplants, and these specify the technical and facility requirements for participation *(102)*	Evidence is lacking that selective contracting can improve access to quality services *(103, 104)*.
Reducing copayments or other user fees to encourage patient use of high-quality providers and promote patient adherence	Implementing lower copayments and other financial incentives, such as paying for transportation for a patient to obtain care at a designated facility that offers higher quality care at lower costs *(105)*	There is low to moderate certainty of evidence that financial incentives improve adherence, the initiation of treatment and utilization *(80)*.
Making geographical price adjustments to ensure compliance with minimum quality standards and support access to quality care for vulnerable populations	In Thailand, price adjustments are made for districts having higher unit costs due to sparse populations, such as mountainous areas or island districts, to ensure adequate funding for operations. The United States' Medicare Wage Index accounts for local market conditions by adjusting national base payment rates to reflect the relative input price level in the local market *(102)*.	The authors could not find empirical studies that evaluate price adjustments.

Purchasing instrument	Examples	Evidence of effect
Reducing payments for sentinel events to penalize health facilities for inappropriate or harmful care	In Australia, hospitals reporting serious medical errors or hospital-acquired infections are not paid. Prices are adjusted downward for hospital-acquired complications after adjusting for patients' characteristics. All states in the United States have nonpayment polices for health care–acquired conditions, such as retaining a foreign object after surgery, stage III and IV pressure ulcers, and surgical or other invasive procedures performed on the wrong body part *(102)*.	Results are inconclusive as to whether nonpayment for hospital-acquired infections reduces the number of adverse events *(106)*; this mechanism may have perverse incentives for reporting or gaming the reimbursement system *(107)* and result in negative patient outcomes *(108)*.

Many HICs recognize quality care by making the results of quality measures available to health care providers and the public. However, evidence is inconsistent about the effect of this mechanism. A Cochrane review published in 2018 reported inconclusive findings as to whether making information about quality publicly available had an effect on patients' utilization and outcomes *(99)*. A 2008 systematic review of 46 studies found that many public reporting systems have not been evaluated *(100)*. A 2022 study that included public reporting about quality and prices found that making information about quality publicly available may have unanticipated effects by raising prices in facilities with higher quality rankings *(101)*.

Efforts have also been undertaken to reward quality in other ways. Purchasers can redirect volume to and increase volume for providers who have been recognized as delivering high-quality care by using selective contracting for services from these providers. However, a 2017 scoping review of 46 studies reported inconclusive results as to whether channelling patients to preferred providers influenced the quality of care they received *(103)*. A 2022 review concluded that networks created through selective contracting could reduce costs without affecting some quality measures *(104)*. Descriptive case studies have concluded that selective contracting is not politically viable in some settings *(109)*.

The utilization of quality care can be promoted by reducing copayments for patients who see providers who offer better quality care at lower cost; additional payments may be made to cover indirect expenses, such as transportation *(105)*. One 2017 Cochrane review reported (with low-certainty evidence) that financial incentives targeting patients may improve adherence to long-term treatments; moderate-certainty evidence suggests that one-time incentives probably improve patient return for the start or

continuation of treatment *(80)*. The review also found moderate- and low-certainty evidence that conditional cash transfers and vouchers, respectively, may positively affect health service utilization.

Price adjustments aim to ensure that public payers cover minimum quality standards, for example by ensuring fair payment for quality care in remote or rural areas; however, evaluations of such strategies have not been undertaken. In some settings, penalizing poor quality care is done through withholding payments for sentinel adverse events; however, evidence is lacking that demonstrates the effect of nonpayment on reducing the number of adverse outcomes *(78, 106, 107)* and, conversely, this strategy may have unintended effects *(108)*.

Fundamental prerequisites for these purchasing initiatives include administrative measures that enable quality improvement, including audits, utilization reviews, continued revision of payment incentives, data and information management systems, and governance structures *(10)*. Data allow for analyses of outlier behaviour and help to inform quality metrics. Many countries have also implemented health technology assessments to ensure that new medical products purchased are of greater value than existing products *(110)*.

1.6 Conclusions

Improving the quality of care for people with chronic conditions is central to accelerating progress towards UHC. Among the initiatives under way to improve quality in many countries are instruments that link payments with the quality of chronic care or with patients' outcomes. Such approaches range from blended, activity-based payments that incorporate incentives for quality care to more complex payment systems that link payments with coordinated patient management. The rigour of studies that evaluate the effects of payment methods varies. Methodologically weak studies based on observational data or without a comparison group tended to report positive effects, while more rigorous studies with control groups or data collected over longer periods reported no or only slight positive effects with higher certainty. The body of evidence from rigorous studies across widely different settings mostly reported weak or inconclusive effects on quality metrics related to chronic care. There is wide heterogeneity in the design of both the interventions and evaluations; however, such differences cannot explain the lower-than-expected effectiveness consistently reported in evaluations of payment methods. Beyond payment methods, countries have implemented other purchasing instruments that seek to align the existing payment infrastructure with quality objectives.

The evidence of impact is weak or inconclusive for many of these instruments, including price and quality transparency initiatives, selective contracting, and penalties for adverse sentinel events. Financial incentives for patients have demonstrated some effect on patients receiving a better quality of care and are another promising route deserving more research.

2

Case studies

2.1 Settings and objectives

Countries at different income levels have introduced changes in purchasing and payment arrangements to shift from activity-based approaches to incorporating measurements of quality, value and performance. This section focuses on eight case studies that were commissioned to better understand the designs of the different purchasing arrangements that aim to promote quality for chronic care (Box 1). The case studies aim to represent a wide range of payment methods implemented in settings at different income levels and in different geographical regions.

Box 1. Eight case studies commissioned by WKC and OECD to inform this report

1. AUSTRALIA
Hall J, van Gool K, Haywood P, Pearse J, Mazevska D, Yu S, et al. Australian Health Care Homes trial: case study. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2023.

2. CANADA
Wodchis WP, Rashidian L. Integrated Comprehensive Care programme in Ontario, Canada. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2023.

3. CHILE
Urriola R, Larrain N. Effect of the payment mix for primary care services on the quality of chronic care in Chile: case study. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2023.

4. CHINA
Long Q, Jia Y, Li J, Lou Z, Liu Y. National Basic Public Health Services Programme in China: case study. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2023.

5. GERMANY
Lindner LE. Healthy Kinzigtal Programme in Germany: case study. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2023.

6. INDONESIA
Nappoe SA, Djasri H, Kurniawan MF. Chronic disease management programme (PROLANIS) in Indonesia: case study. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2023.

7.SOUTH AFRICA
Smith A, Mosam A. Value Care Team model in South Africa: case study. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2023.

8.SPAIN
Bernal-Delgado E, Angulo-Pueyo E. Purchasing arrangements to strengthen the quality of chronic care in three Spanish autonomous communities: case study. Geneva: World Health Organization, Organisation for Economic Co-operation and Development; 2023.

The case studies include models grouped into two categories described here: Chile *(111)*, China *(112)*, Indonesia *(113)* and South Africa *(114)* (Table 6); and Australia *(115)*, Canada *(116)*, Germany *(117)* and Spain *(118)* (Table 7). Two of the studies are national in scope (China and Indonesia), while the others focus on specific geographical areas. The annual budgets reflect, to a large extent, the population scope, and range from an estimated US$ 18.4 billion in China to cover the national population to US$ 1 million in Pretoria, South Africa, to cover 5620 people. Programmes were initiated between 2005 and 2019, and one has since ended (Australia).

The first four studies use capitation payment models (Table 6). The *Program Pengelolaan Penyakit Kronis* (known as PROLANIS) is a chronic disease management programme in Indonesia. It was designed to promote active management of patients with type 2 diabetes or hypertension, or both, enrolled in the national health insurance programme (known as JKN for Jaminan Kesehatan Nasional). Initiated in 2014, the programme aims to address the problems of poor adherence to medication regimens, patients lost to follow up, weak interactions between the primary care teams and patients, and low participation in prevention activities. Among JKN members (approximately 223 million people, or 83% of the total population), about 1 million have registered for PROLANIS since 2014. More than 22 000 public and private primary level facilities and providers participate. In 2019, to encourage providers to enrol more people, JKN incorporated PROLANIS performance as one of the three indicators used to calculate the capitation payment. The indicators are a minimum 15% contact rate among JKN members (given 40% weight), a nonspecialist referral rate below 2% (weighted at 50%) and a minimum of 5% of patients enrolled in PROLANIS whose blood pressure or blood glucose levels are controlled (weighted at 10%). The monthly capitation payment for providers ranges from US$ 0.25–1.08 per registered JKN member, based on variation in performance scores and the type of facility. The capitation payment covers approximately 93% of funding for the participating primary care providers. By 2021, enrolment in PROLANIS remained low, which hampered the objectives of the programme to increase adherence to medication and prevention

recommendations. By 2021, only 6.5% of public health centres had received 100% of the performance-based capitation payment for having met the minimum targets for the three indicators.

Capitation with performance payments is also used in China's National Basic Public Health Services Programme to ensure equal access to basic public health services. The target group for the incentives is health care staff at more than 45 000 public health centres responsible for delivering the package of basic public health services. First implemented in 2009 to address inequities in capacities to deliver a basic package of public health services, the programme was expanded in 2019 from nine services to 14 services, including hypertension, type 2 diabetes, severe mental disorders and tuberculosis. The standard capitation payment was set centrally and increased incrementally, reaching US$ 13.00 in 2022. The central, provincial, municipal and county governments cover the costs of the capitation payment. The contributions are primarily determined by funding capacity; for example, the central government covers up to 80% of total funding for 12 low-income provinces. The central government initially recommended that at least 5% of the total capitation payment should be determined by staff performance using a 100-point grading system based on assessments of organizational and financial management (30%), the volume of services delivered (45%) and the Programme's outputs (25%), including the management of patients with hypertension or diabetes. Performance assessments are carried out at each administrative level, where changes can be made to the weighting of the assessment criteria and share of payment used for performance pay, thus resulting in wide variations across regions. Application of the performance criteria resulted in changes to central level allocations to 14 provinces because they had lower-than-expected performance (i.e. scores <80). Most of these reductions occurred in low-income regions, and these funds were reallocated to 17 other provinces with higher scores. Given that the allocation of resources following performance assessments was regressive, it may have undermined the Programme's overall objective of improving equity, and it may have negatively affected the quality of services in less-developed areas. By 2022, only 0.5% of the total payment from the central government was used for performance-based pay.

The value-based care pilot in Gauteng, Pretoria, South Africa, uses risk-adjusted capitation payments with performance bonuses. Funded by the Government Employees Medical Scheme, a closed, private voluntary insurance scheme for civil servants, it aimed to overcome the limitations of FFS payments, including supplier-induced demand, and to control costs by reducing hospital admissions and shifting care to primary settings. Initiated in 2019, it covers 5620 patients who enrol voluntarily, amounting to 21% of

the eligible population. The target group for the incentives is four general practitioner (GP) practices and about 17 GPs. The Government Employees Medical Scheme contracts with a private company, PPO Serve, to manage the pilot and payments, which are adjusted for patients' health risks. The performance payment is based on quality scores, ranging from 0 to 100 using 22 metrics at both hospital and primary care levels. Combining the risk-adjusted payment and the performance pay, monthly provider payments amount to about US$ 15.00 per capita, of which about half is performance-related pay. The model is small in scale and the population is a fraction of each provider's practice. As such, the objective to drive population-level change by shifting care to the primary setting and reducing pressure on hospitals cannot be achieved until there is broader uptake.

The objectives of the Family and Community Integrated Health Care model (Modelo de Atención Integral en Salud Familiar y Comunitaria) in Chile are to ensure access to health care, improve the quality of health services and training of the health workforce, and to increase social participation. Chile funds primary care through a combination of risk-adjusted capitation payments (71% of total), earmarked funding from central government (20%), pay for performance (6%) and municipal allocations (4%). The capitation payments promote equity in resource allocation by adjusting for differences in income, population age structure, rural areas, difficulty in recruiting staff and geographical isolation. Performance payments include fixed and variable components based on the weighted average of ten indicators – of which three relate to chronic care – and can amount to an extra 22.2% of the base salary. The case study found that most primary care networks received full performance bonuses by meeting more than 90% of health goals; thus, the effect of the payment incentives was limited. As performance bonuses are calculated from health workers' base salary, they may also reinforce inequalities in salary payments, providing fewer incentives for nonphysician work that is essential for care coordination. Moreover, all health workers receive a 10.3% salary bonus even if the network's performance is poor. In this light, health workers consider the performance bonus to be a given, a situation that limits the effectiveness of the financial incentive to improve the quality of care. Furthermore, only a few of the performance indicators relate to chronic care.

Table 6. Overview of four commissioned case studies for programmes that use capitation models

Description	Programme			
	Chronic Disease Management Programme (PROLANIS) *(113)*	**National Basic Public Health Services Programme *(112)***	**Value Care Team model *(114)***	**Family and Community Integrated Health Care model *(111)***
Country, region	Indonesia, nationwide	China, nationwide	South Africa, Gauteng province, Pretoria	Chile, La Pintana metropolitan region
Type of payment model	Capitation with performance-based payments	Capitation with performance-based payments	Risk-adjusted capitation with performance-based payments	Risk-adjusted capitation with performance-based payments, municipal budget allocations and earmarked funding
Prior payment model	Capitation	FFS	FFS	Capitation and municipal budget allocations
Year initiated	2019	2009	2019	2012
Main goals of the programme	To improve quality of life for participants in the national health insurance scheme with type 2 diabetes or hypertension, or both	To achieve universal coverage of basic public health services	To optimize care quality and decrease expensive hospital-based care	To provide access to comprehensive care, improve the quality of health services and increase social participation
Intended change to service provision	Integration of care for patients with diabetes or hypertension, and strengthening the gatekeeping function of primary care providers	Equity in capacities for and access to basic public health services	Strengthen care at primary care level and reduce pressure (i.e. costs) at hospitals	Deliver people-centred primary health care
Provider participation	Mandatory for 22 373 public and private primary care providers	Mandatory for more than 45 000 public health centres	Voluntary for 4 general practitioner practices, including 17 general practitioners	Mandatory for 6 municipal primary health care facilities and private contracted providers
Population coverage	948 432; 12–14% of the eligible population	1.4 billion (total population)	5 620; 21% of the eligible population	145 619; 77% of eligible population

Description	Programme			
	Chronic Disease Management Programme (PROLANIS) *(113)*	**National Basic Public Health Services Programme *(112)***	**Value Care Team model *(114)***	**Family and Community Integrated Health Care model *(111)***
Monthly payment per capita	US$ 5.00, amounting to 93% of funding for primary care providers	US$ 0.65 (targeted total capitation payment inclusive of 5% performance pay)	US$ 15.00 for good performance, amounting to 25–33% of a provider's income	US$ 18.40 per capita, inclusive of performance payments, accounting for 22% of salary
Implementing body	National health insurance agency	Ministry of Finance and provincial, municipal and county governments	Private medical insurance (Government Employees Medical Scheme), private management company (PPO Serve)	Municipality of La Pintana
Estimated annual budget	US$ 1 billion from national health insurance for total capitation payments, including for PROLANIS (2021)	US$ 18.4 billion for total capitation payments (2022)	US$ 1 million (2022)	US$ 32.19 million (2021)

FFS: fee for service.

The other four case studies examine shared savings, bundled payments and global budget mechanisms (Table 7). The Australian Health Care Homes trial was conducted from October 2017 to June 2021. The model aimed to promote multidisciplinary care for patients with chronic disease and included a bundled payment for chronic disease management that covered patient care planning, care team conferences, and enhanced access for patients, such as telephone or after-hours support. Providers continued to be reimbursed through FFS payments for consultations unrelated to chronic disease management. The target group for the incentive was participating private practices, who received an initial payment estimated at US$ 7462 to invest in the additional capacities required for participation. The payment was made to the practice, with the aim of changing the approach to chronic disease management to reduce inefficiencies. Initially, more than 11 000 patients with one or more chronic and complex diseases enrolled voluntarily across 227 participating primary care practices; however, drop-out rates were high. About 68% of patients and 46% of practices completed the trial. Assessments concluded that the amount of the bundled payments was insufficient for what they were intended to cover. In addition, the limited time for the trial was insufficient for the changes required. Opposition to the programme

from some parts of the medical profession contributed to poor results.

Healthy Kinzigtal is an integrated care network in southwest Germany introduced in 2005 with the objectives to promote integrated care for chronic illnesses, improve patients' experience of care and the health of the population, and reduce health care expenditures. Of some 71 000 inhabitants in the region, 33 000 were members of the two participating health insurance funds, of which 8150 (25%) were enrolled in Healthy Kinzigtal in 2020. Participation among providers is voluntary, and includes 24 general practitioners, as well as specialists, hospitals, nursing homes, community centres, pharmacies and gyms. Participating providers receive incentives to promote prevention and improve care coordination, based on a shared-savings arrangement contracted between the two health insurance funds and the programme's management company, formed by the local health providers' network and a German health care management company. Providers are mainly reimbursed based on the usual insurance FFS for standard care and receive add-on payments for services that are not conventionally covered by the participating health insurance funds – including preparing case management plans for people with chronic conditions – and performance-based bonuses for meeting quality and performance goals. Savings relative to a risk-adjusted normative average cost of care are shared between the management company and the two health insurance funds. Add-on payments and performance-based bonuses comprise up to 15% of a provider's income, with values around 5% being common. The model's primary objectives and conditions for its long-term success are the improvement of health care and the reduction of costs, with financial self-sustainability achieved in 2007. Given that the overall goal aimed to improve population health, the relatively low patient enrolment may have hindered its achievement.

Table 7. Overview of four of eight commissioned case studies for programmes that use shared savings, bundled payments and global budget mechanisms

Description	Programme			
	Health Care Homes trial *(115)*	**Healthy Kinzigtal *(117)***	**Integrated Comprehensive Care 2.0 programme *(116)***	**Plan for Integrated Diabetes Care *(118)***
Country, region	Australia, 10 regions	Germany, State of Baden-Württemberg, Kinzigtal region	Canada, Ontario province, Hamilton Niagara Haldimand Brant region	Spain, Aragon region
Type of payment model	Bundled payments for chronic disease management	Shared savings with add-on payments for performance and care coordination	Bundled payments for COPD and CHF	Global budget with framework agreements
Prior payment model	FFS	Mainly FFS	Case-mix groups	Global budget
Year initiated	2017–2021 (ended)	2005	2015	2014
Main goals of the programme	To improve care for people with chronic and complex diseases through delivery of coordinated and comprehensive primary care	To improve health care quality, patients' experience of care and the health of the population, and to reduce per capita costs of health care	To improve efficiency of the health care system by integrating resources across the continuum of care	To improve care for diabetes patients, decrease incidence and multimorbidity, and improve survival and quality of life
Intended change to the service provision	Enhanced care coordination and ease in patient access	Better coordination of care across providers and care settings, financial self-sustainability of the programme	Better clinical management and outcomes for patients with COPD or CHF	Integration of diabetes care management at primary care level
Provider participation	Voluntary participation of 227 care practices enrolled; 106 (46%) completed trial	Voluntary participation of 24 general practitioners, 41 specialists, 3 psychotherapists, 7 hospitals, 11 physiotherapists, 10 nursing homes, 5 home care services, 16 pharmacies, 38 sports clubs and associations, and 8 gyms (2020)	Voluntary participation of 9 hospitals (7% of 122 hospitals in Ontario and 10% of all Ontario hospital volume) (2021)	All primary care providers, hospitals and specialists in region

Description	Programme			
	Health Care Homes trial *(115)*	**Healthy Kinzigtal *(117)***	**Integrated Comprehensive Care 2.0 programme *(116)***	**Plan for Integrated Diabetes Care *(118)***
Population coverage	11 332 enrolled; 7 742 (68%) completed trial	8 150 (11% of total population and 25% of eligible population, 2020)	3 010 patients (44% of eligible population, 2015–2018)	94 000 people with diabetes diagnosis enrolled (2021)
Monthly payment levels	On average, US$ 87.00 per patient and US$ 7 247 per practice	5–15% of a provider's income	Average payment to a typical hospital was US$ 7 667 for COPD and US$ 8 721 for CHF (2015–2018)	Not available
Implementing body	Australian national (Commonwealth) government through Medicare programme	Healthy Kinzigtal Ltd, a regional, integrated care management company	Ontario Ministry of Health and Long-Term Care	Regional Health Service in Aragon
Estimated annual budget	US$ 15.9 million over 4 years	Undisclosed	US$ 9.9 million	Not available

FFS: fee for service; CHF: congestive heart failure; COPD: chronic obstructive pulmonary disease.

The Integrated Comprehensive Care project began in one hospital in 2012 in Ontario, Canada, and has been expanded to a regional programme with 3010 patients voluntarily enrolled during 2015–2018 (44% of the eligible population) in nine hospitals that account for 10% of hospital discharges in Ontario. It aimed to improve the efficiency of the health care system by integrating resources across acute and postacute care at home by using integrated bundled payments for patients with chronic obstructive pulmonary disease (COPD) or congestive heart failure (CHF). The payments are adjusted by hospital-specific case-mix weights to compensate hospitals that care for patients with complex needs and to reduce the incentive to select patients with lower care needs. Patients who are readmitted after the 60-day period covered by the payment are not counted within the previous episode of care and the readmission effectively triggers a new event, resulting in a new provider payment. Results from the initiative during 2015–2018 showed positive trends in patient utilization outcomes. Challenges include low patient enrolment among those who were satisfied with their current home care arrangements; the 60-day time frame for an episode, given that many patients returned for care after 60 days and were counted as new cases; weak information-sharing across different providers; insufficient adjustment for patients' risk; and a lack of attention to nonmedical determinants of health.

In Spain, regional governments implemented a range of initiatives with the aim to deliver integrated, person-centred care, promote value through the delivery of appropriate care for high-need patients, and improve health outcomes for patients with chronic illnesses. In 2014, the Regional Health Department in Aragon implemented the Plan for Integrated Diabetes Care in all public primary care facilities.[4] The initiative identified health services and access conditions by specifying roles and referral rules. Global budgeting is complemented with guidance identifying which high-value services will be purchased from which care providers and specifying rules for referring patients. By 2021, 94 000 patients had enrolled. Trend data illustrated an increase in the utilization of targeted services, including diabetic foot and eye examinations, and reductions in avoidable hospitalizations.

2.2 Key design features

Tables 6, 7 and 8 summarize some key design features identified in the eight case studies.

2.2.1 Intended change to health systems

For most of these studies, the focus of system change was to strengthen primary care management of patients with chronic disease, usually to reduce pressure on referral hospitals. The programmes in Australia, Chile, China, Indonesia and Spain emphasized equity in access to care and medications for patients. Those in Canada, Germany and South Africa emphasized care coordination across hospital and primary care levels; in Germany and South Africa, they specified the dual goal of ensuring better clinical management and controlling expenditures, and the model in Germany also targeted financial self-sustainability. For the programmes in Canada, China and Indonesia, targeted change was improved disease management among individuals with chronic diseases including easing access to services and prevention activities.

2.2.2 Participation of providers

In four of the case studies, providers voluntarily participated in the schemes. While some may do so because they support the change in emphasis from volume to value (e.g. in Australia), others may choose to participate voluntarily only if there is an incentive to do so. Only 10% of hospitals in Ontario, Canada, participated in the bundled payments scheme. Voluntary models may increase the

4 Two other examples of approaches and purchasing instruments implemented in the Basque County and in Navarre are illustrated in the case study for Spain.

adverse selection of providers in that those who have below-average costs have incentives to join. Providers may also disenroll if they sustain financial losses. For example, the Australian Health Care Homes trial reported voluntary participation of 227 care practices at the start of the initiative, of which 106 (46%) completed the trial after they had received the US$ 7462 payment at start up. While such start-up incentives may be needed to encourage investment in quality improvements, other authors have observed that such incentives, where provided with no conditions, may result in low return on investment for payers if providers disenroll *(119)*.

2.2.3 Voluntary enrolment of participants

Most of the programmes aimed for health improvements by focusing on a population within a geographical region. Yet in all but two cases (China and Spain), participant enrolment was voluntary. As such, the aim to improve population health was inhibited in most studies by relatively low, voluntary patient enrolment. Patients may enrol for different reasons, such as response to financial incentives, satisfaction with existing health care providers and health status. This selective enrolment complicates appropriate service delivery and levels of care provision and presents an important bias in the evaluation of impact. Within the patient population of the nine hospitals in Ontario, Canada (representing 10% of hospital volume), less than 50% of eligible patients were enrolled. Given patient selection related to voluntary enrolment, many programmes adjusted for risk and patient care complexity so that providers would not exclude people that might have more severe conditions. In terms of the evaluation in Ontario, for example, hospital administrative data lacked details about disease severity across the population groups, thus making it difficult to identify differences in clinical severity between the intervention and comparator populations.

2.2.4 Nonfinancial incentives

Most of the case studies assumed that the quality of care and providers' performance can be improved primarily by financial incentives. However, poor quality can result from a lack of training, essential medicines or supplies; low efforts made by health care providers; or discrimination in treating patients. There were some important efforts to provide professional recognition or access to training, feedback or information. In China, the two provincial governments surveyed had programmes that gave awards to primary health care providers for outstanding work. In Germany, providers were given performance feedback and access to data infrastructure, which served as nonfinancial incentives. The Ontario scheme was thought to have improved the reputations of participating providers, which is considered an important motivating factor.

2.2.5 Service delivery elements and health information systems

In five of these case studies, changes to payment methods were accompanied by other service delivery interventions, with the intention of providing incentives to deliver services in a better way (Table 8). As such, the payment instruments formed a key component within a broader approach to improving service delivery and health outcomes *(120)*.

Improvements in human resources capacity featured prominently. Initiatives included supporting new categories of health professionals in specialized areas or allied health services (i.e. in China, South Africa, Spain), health promotion professionals (i.e. in Indonesia), and care coordinators and practice transformation coaches (i.e. in South Africa). Developing training materials and conducting training for existing staff to increase their capacity to better manage patients with chronic diseases occurred in Australia, China and Spain. The initiative in South Africa introduced the team-based approach to care provision. China promoted partnerships between hospitals and primary care facilities to support training and capacity development.

Most of the case studies also involved making improvements in health information systems. New information systems were introduced in Indonesia and South Africa. Specific data collection platforms and personal health records were established in China, and a dashboard system to monitor and benchmark progress was introduced in Spain. In Australia, participating practices had to install and use shared-care planning software to develop a care plan and share it with providers outside of their practice, as well as with the patient and their family or carer.

The programme in Germany engaged a wide range of providers and facilities to increase patient enrolment in its programme, including allied health professionals, long-term care facilities and their professionals, pharmacies and sports clubs. In Indonesia, stronger linkages were made with pharmacy and laboratory networks to improve access to diagnostics and medicines for patient management. In addition, linkages were made to the community. One criterion for the PROLANIS programme in Indonesia was to establish a club with at least 30 patient members to carry out health promotion activities. In Chile, a key objective of the programme was to ensure community engagement; as such, citizen's dialogues were established that encouraged the participation of community members and social organizations.

Table 8. Investments in capacity building that accompanied the introduction of the different purchasing models[1]

Area of capacity building	Programme					
	Chronic Disease Management Programme (PROLANIS) *(113)*	**National Basic Public Health Services Programme *(112)***	**Value Care Team model *(114)***	**Family and Community Integrated Health Care model *(111)***	**Health Care Homes trial *(115)***	**Plan for Integrated Diabetes Care *(118)***
	Indonesia, nationwide	China, nationwide	South Africa, Gauteng province, Pretoria	Chile, La Pintana metropolitan region	Australia, 10 regions	Spain, Aragon region
Human resources	Physical activity instructors and health promoters	Medical alliances between hospitals and primary care facilities to support capacity development Large-scale health worker training, including online platforms and professional certificates On-site trainings as well as specialized training	Multidisciplinary team-based care and care coordinators Practice transformation coach Established 0.4–0.6 full-time equivalent allied health professionals	Health care team approach	Local training and national training materials Independent advisory group	Primary care nurses trained in patient education and patient self-management New professional roles: diabetic foot nurse, retinography specialist Training materials in health education
Health information systems	Newly designed health information application	Specific data collection platforms Newly designed personal health records	Health information system that follows the patient		New shared-care planning software Risk stratification tool	Monitoring and benchmarking dashboard

Area of capacity building	Programme					
	Chronic Disease Management Programme (PROLANIS) *(113)* Indonesia, nationwide	**National Basic Public Health Services Programme *(112)*** China, nationwide	**Value Care Team model *(114)*** South Africa, Gauteng province, Pretoria	**Family and Community Integrated Health Care model *(111)*** Chile, La Pintana metropolitan region	**Health Care Homes trial *(115)*** Australia, 10 regions	**Plan for Integrated Diabetes Care *(118)*** Spain, Aragon region
Links to community-based initiatives	Clubs to promote physical activity Links to pharmacy and laboratory networks			Citizen's dialogues Participation of social organizations		
Accreditation prerequisites for provider participation	Primary care accreditation requirements and optional requirements to establish health clubs		Providers who serve patients insured by the Government Employees Medical Scheme in a selected geographical area, willingness to participate	Registered with National Registry of Individual Health Providers or Accredited Providers	Accreditation standards of the Royal Australian College of General Practitioners	

[1] In China, experiences varied widely by province and municipality; those components noted may be limited to a specific region (or regions). For Germany's Healthy Kinzigtal programme, the only information provided was about the establishment of the private management company. For the programme in Ontario, Canada, no information was provided by the authors of the case study. Empty cells indicate that the category is not applicable.

2.3 Quality measurements

Table 9 summarizes the quality measurements used for monitoring and evaluation of the schemes. These are generally described as structure, process and outcome measures. Table 10 describes the attributes of these measures.

Information provided in the case studies reveals the quality measures used to monitor these schemes. The measures vary by the health care level (i.e. primary, secondary or tertiary) in which the scheme is being deployed. Most of the studies focus on primary care. A mix of process and outcomes measures was used in all studies. In China, the scheme included structural measures to monitor progress. Seven of the eight models used process measures that focused on access to primary health care and prevention measures, reflecting, to a large extent, alignment with the overall intended health system change to promote the use of primary care. Many of the programmes aim for coordination and patient-centred care, which requires going beyond disease-specific measures. However, such quality measurements were not typically used in these studies. Several programmes used measures of hospital admissions and length of stay, medication adherence and coordination between primary care and hospitals.

Some measures of process quality can be controlled by the health care provider and thus may reflect more accurately their activities. In many cases, the measures of quality are based on established clinical protocols endorsed by professional peers. Metrics that measure compliance with clinical protocols established by professional associations may provide additional incentives for providers to work towards the intended outcomes. In these cases, the process measures appear to be strong predictors of targeted health outcomes, for example, the management of patients with hypertension or diabetes.

All studies used clinical outcomes to monitor programmes. Most relied on administrative data, such as laboratory results, which are practical for reporting objective measures. However, by using existing data collection and information systems, it is difficult to disentangle actual changes in the delivery of care from improvements in reporting. Four of the case studies used measures of patient satisfaction, which required special surveys. In three of these programmes, the results were made public. Given the nature of chronic care and the importance of self-management, patient involvement and adherence are important factors driving these outcomes. In most cases, the studies emphasized the challenges faced in that some process and outcome measures are outside the control of the health care provider. Moreover, while it is recognized that the quality of care for complex and chronic conditions

encompasses the concepts of integration, coordination and care for patients with multimorbidity *(58-61)*, these case studies did not include measurements of these concepts.

Five of the eight programmes adjusted their quality measures for patient health risk and complexity. Accurate risk adjustment can help ensure that providers do not face incentives that inhibit them from caring for the sickest patients. If no risk adjustments are made, comparisons or assessments of performance may also be unfair to providers working with patient populations and case-mix differences that reflect higher health risks or in regions with challenging socioeconomic factors.

In three case studies, there was a discrepancy between the quality measures used for calculating payments and the quality metrics that were used for monitoring and evaluations. This is primarily related to data availability and quality, as gaps may exist in the data available to measure quality and the aspects of care that are targeted for change. In some cases, however, performance assessments may make some assumptions and judgments about providers that reflect data availability rather than the quality of care provided. Many of the authors documented unintended consequences, such as avoidance of high-risk patients or underreporting; however, such consequences do not appear to have been anticipated since they were not captured by monitoring and evaluation systems.

Regarding setting targets for performance, many schemes use fixed, uniform targets for the quality indicators, and success was defined by the absolute performance achieved. In the case studies from China and Indonesia, for example, a programme was successful if a quality indicator reached a fixed target, primarily linked to objectives set forth in national plans and goals. However, some regions faced more challenges because they had less capacity. In some instances, such as in Indonesia, the providers felt that the uniform targets were unattainable, particularly in remote areas where patients had limited access to care and patient recruitment was more difficult.

In Canada, success was measured in relation to a comparison group or what would have happened if the programme had not been implemented. This approach considers other ongoing interventions that may improve quality. In some settings, there were no quantifiable goals, and performance was measured as trends over time. Such subjectivity may have made it difficult to determine whether programmes were successful.

Table 9. Summary of quality measures used for monitoring and evaluation of the programmes[1]

Quality measures used	Programme							
	Chronic Disease Management Programme (PROLANIS) *(113)*	**National Basic Public Health Services Programme *(112)***	**Value Care Team model *(114)***	**Family and Community Integrated Health Care model *(111)***	**Health Care Homes trial *(115)***	**Healthy Kinzigtal *(117)***	**Integrated Comprehensive Care 2.0 programme *(116)***	**Plan for Integrated Diabetes Care *(118)***
	Indonesia, nationwide	China, nationwide	South Africa, Gauteng province, Pretoria	Chile, La Pintana metropolitan region	Australia, 10 regions	Germany, state of Baden-Württemberg, Kinzigtal region	Canada, Ontario province, Hamilton Niagara Haldimand Brant region	Spain, Aragon region
Structure								
Organizational and financial management structures		+						
Process								
Access to primary health care and prevention care	+	+	+	+	+	+		+
Hospital admissions or length of stay			+			+	+	+
Patient medication adherence		+	+			+		
Outcomes								
Clinical outcomes	+	+	+	+	+	+	+	+

Quality measures used	Programme							
	Chronic Disease Management Programme (PROLANIS) *(113)*	**National Basic Public Health Services Programme *(112)***	**Value Care Team model *(114)***	**Family and Community Integrated Health Care model *(111)***	**Health Care Homes trial *(115)***	**Healthy Kinzigtal *(117)***	**Integrated Comprehensive Care 2.0 programme *(116)***	**Plan for Integrated Diabetes Care *(118)***
	Indonesia, nationwide	China, nationwide	South Africa, Gauteng province, Pretoria	Chile, La Pintana metropolitan region	Australia, 10 regions	Germany, state of Baden-Württemberg, Kinzigtal region	Canada, Ontario province, Hamilton Niagara Haldimand Brant region	Spain, Aragon region
Adverse health events			+			+	+	+
Hospital readmissions			+			+	+	
Patient satisfaction		+		+	+	+	+	
Patient knowledge		+		+		+	+	
Patient ability to self-manage						+	+	
Used for calculating payment	Yes	Yes[2]	Yes	Yes	No	Yes[3]	No	NA

[1] A + symbol indicates that a programme uses a particular measure; empty cells indicate that the programme does not.

[2] In China, a limited subset of quality measures was used for performance assessments, including structure and process measures (e.g. organizational and financial management, the volume of and minimum quality standard for services delivered).

[3] In Germany, the quality indicators are used for performance bonuses, but the indicators are not publicly available and may differ from those listed.

Table 10. Features of quality measures used by the programmes

Features	Programme							
	Chronic Disease Management Programme (PROLANIS) *(113)*	**National Basic Public Health Services Programme *(112)***	**Value Care Team model *(114)***	**Family and Community Integrated Health Care model *(111)***	**Health Care Homes trial *(115)***	**Healthy Kinzigtal[1] *(117)***	**Integrated Comprehensive Care 2.0 programme *(116)***	**Plan for Integrated Diabetes Care *(118)***
	Indonesia, nationwide	China, nationwide	South Africa, Gauteng province, Pretoria	Chile, La Pintana metropolitan region	Australia, 10 regions	Germany, state of Baden-Württemberg, Kinzigtal region	Canada, Ontario province, Hamilton Niagara Haldimand Brant region	Spain, Aragon region
Alignment with programme objectives								
Alignment with intended system change	+	+/–	–	+/–	+/–	NA	–	+
Weighted for importance	+	+	+	+	–	NA	–	–
All or partially activity based	+	+	+	+	+	+	+	+
Measuring unintended consequences	–	–	–	–	–	–	–	–
Fully under the control of the provider	–	–	–	–	–	–	–	–
Measurement issues								
Consideration of patients' preferences	–	+	–	+	+	+	+	–

Features	Programme							
	Chronic Disease Management Programme (PROLANIS) *(113)*	**National Basic Public Health Services Programme *(112)***	**Value Care Team model *(114)***	**Family and Community Integrated Health Care model *(111)***	**Health Care Homes trial *(115)***	**Healthy Kinzigtal[1] *(117)***	**Integrated Comprehensive Care 2.0 programme *(116)***	**Plan for Integrated Diabetes Care *(118)***
	Indonesia, nationwide	China, nationwide	South Africa, Gauteng province, Pretoria	Chile, La Pintana metropolitan region	Australia, 10 regions	Germany, state of Baden-Württemberg, Kinzigtal region	Canada, Ontario province, Hamilton Niagara Haldimand Brant region	Spain, Aragon region
Adjustments for patient care complexity	–	–	+	–	+	+	+	+
Targets adjusted by locality or over time	–	–	+	+	–	NA	–	+
Data collection, analysis and publication								
Benchmarks used			+	–	–	+	+	+
Special surveys or data collection instruments	–	+	+	+	+	+	+	+
Results made public	–	–	–	+	+	–	+	+

NA: not available. A + symbol indicates that a programme uses a particular measure; a – symbol indicate that the programme does not.

[1] For Germany, the information is based on the case study and information about quality indicators is not publicly available and may differ from the information provided in published reports.

Two models aimed to improve patient care while reining in expenditures (i.e. in Canada and South Africa). The German model has been able to sustain itself financially exclusively through the funds it received from the shared-savings arrangement. For the programmes in Canada and Germany, spending benchmarks are generated to determine whether cost savings or cost neutrality was successful. However, it is important to note that in the case of Germany, reductions in expenditures at the provider level did not necessarily imply expenditure decreases for patients as shared savings are distributed differently among providers and the health insurance funds. Spending benchmarks aim to project future costs across the population or episodes of care – for example, for CHF or COPD in the case of Ontario, Canada – using average historical costs during prior years based on regional or national averages. As costs vary over time and regions, such benchmarks may lock in inefficiencies. As all three models in Canada, Germany and South Africa are voluntary, providers below the benchmarks may be more willing to participate than those above them. Such national or regional benchmarks combined with adverse selection may result in the appearance of cost savings when this is not actually occurring.

2.4 Structure of financial incentives

The target groups for the financial incentives across these programmes included individual providers as well as groups or practices. Except for the programmes in Australia and Spain, which did not include provider incentives, payments were made to budget holders at primary health facilities (in China, Chile and Indonesia), group practices (in South Africa), hospitals as budget holders (in Canada) or a private management company (in Germany).

Table 11 illustrates the design of the reward structure in five programmes for which this information was provided: Australia, China, Chile, Indonesia and South Africa. In each of these cases, changes were intended to occur at the primary care level. As such, the primary care facilities, networks and practices were the entities that received the financial incentive. The means of distribution within the facility or network varied widely across the studies and within the settings themselves.

Table 11. Programme design components: reward structure[1]

Design component	Programme				
	Chronic Disease Management Programme (PROLANIS)*(113)*	**National Basic Public Health Services Programme *(112)***	**Value Care Team model *(114)***	**Family and Community Integrated Health Care model *(111)***	**Health Care Homes trial *(115)***
	Indonesia, nationwide	China, nationwide	South Africa, Gauteng province, Pretoria	Chile, La Pintana metropolitan region	Australia, 10 regions
Entity that receives payment	Public and private primary health care facilities	Public primary health care facilities, ranked by performance	Private general practitioner practices	Primary health care networks	Private primary practice
Distribution of payment	In public facilities, up to 40% of payment can be distributed to participating individuals. In private facilities, arrangements vary.	Distribution varies by region; some elements of national quality criteria are used for determining individual payments, including to village doctors.	Practices distribute payment among the practice owner and multidisciplinary team based on benchmarked performance.	Payments are made to staff (medical and auxiliary health staff and administrators) as a share of their income.	Three levels of payments are made based on patients' needs for coordination and care.
Frequency of payments	Monthly	Annually	Every 6 months	Every 3 months	Monthly
Payment per month	US$ 0.25–1.15 per registered member of the national health insurance scheme, depending on the provider's capacity	Estimated maximum US$ 0.05 per person (5% of total capitation payment)	Maximum US$ 15.00 per health professional	10.3% to 22.2% of base salary	On average US$ 87.00 per patient and US$ 7 247 per practice
Penalty	Withholding of capitation payment	Withholding of performance-based share of payment	None	Withholding or reduction of payment if goals are not reached	None

[1] Germany is omitted from this table because payment information is not publicly available. The information for Canada was not provided in the case study by the authors. The information for Chile refers to the pay-for-performance payment because this is the only payment that affects the salaries of the workforce. In Aragon, Spain, there is no specific reward.

In the national programmes in China and Indonesia, the facility determine the distribution to staff. In China, there is an emphasis on supporting village doctors responsible for outreach to communities, and efforts are made to use national criteria to evaluate performance as the basis for payment. Given the wide variation in distributions, even at the facility level, uncertainty about whether a payment would be received may have undermined impact in both countries. This may have been particularly true in China, given that the amount of the payment is determined once a year based on multiple performance assessments at different administrative levels.

South African private GP practices use performance benchmarks. In Chile, notably, all staff are provided with performance-related payments, including administrators, in recognition of their roles in patient care and coordination. Group incentives may be more effective in the context of care that requires teams of providers, although this may depend on the size of the group and relationships among them, and decisions made about funds allocation within the facility *(121)*. However, theory suggests that group-level incentives depend on the size of the group and the extent to which any one person can "free ride" on others (where someone may benefit from the incentives without making a contribution to the programme); as such, effects may decline as the group's size increases *(122)*.

The amount of the financial incentives varies widely for individual providers and practice groups or systems. In some cases, additional funds were provided to cover costs incurred from making investments in quality, either structurally or in care processes (e.g. in Australia). It is usually assumed that larger incentives lead to larger improvements in quality. While some reviews cite a small incentive size as a possible contributing factor to poor outcomes *(123)*, we found no studies that have established clear guidance as to what the appropriate size may be *(124)*.

The number of enrolled patients also affects the impact of financial incentives. In South Africa, the quality-linked payments are a significant share of reimbursement at the level of the individual patient. However, the low patient volume and the small scale of implementation resulted in relatively low aggregate levels of incentives that were insufficient to drive the large changes in providers' behaviour needed to achieve a change in service delivery that would result in a measurable impact over a relatively short period.

Perhaps more importantly, the incentives need to balance or offset any negative incentives in base payment methods. In some studies, the payments were relatively small and incremental; as such reward payments or penalties may not have been sufficient to counter the much stronger incentives in the activity-based payment methods that produce a larger share of provider revenues. In Germany, for example, it is unclear whether this balance has been achieved.

In Chile, China and Indonesia, payments could also be withheld. Based on the principle of risk and loss aversion, theory suggests that financial rewards for quality may have smaller effects than penalties *(21)*. In their 2019 Cochrane review, Mathes et al. *(78)* noted that penalizing hospitals through nonpayment for failing to reach performance targets seemed to be slightly more effective than making additional payments for performance, but this conclusion was based on low-certainty evidence. Moreover, these case studies do not support this finding. The Indonesian study cites payment withholding as problematic, more so in the absence of risk adjustment, by creating resentment among providers who consequently selectively enrolled healthier patients who were more willing to adhere to medical advice. In China, withholding payments based on performance assessments was regressive as it occurred primarily in resource-poor regions, and the funds were allocated to better-performing areas. Taking away financial resources from providers make it more difficult for them to make the necessary changes to improve the quality of care, thus undermining the overall objective of the programme. In Chile, withholding the maximum bonus was possible; however, in practice, most providers received 100% of the performance-based bonus.

2.5 Evaluation of impact

Several key issues related to the evaluation of payment and purchasing mechanisms are well documented in the literature and discussed in Section 1. A key issue in both the case studies and evaluation literature is the general lack of rigorous evaluation. Indeed, only Indonesia and German case studies documented in this report have undergone rigorous independent evaluation that was then peer-reviewed and published. While many programmes use monitoring data and report on trends, such data cannot enable conclusions about impact with any certainty, as such data do not control for other extraneous factors or concurrent programmes.

Because of the complexity of payment arrangements, methodological challenges were faced by studies evaluating these programmes. In their Cochrane review, Diaconu et al. *(76)* discussed the major sources of selection bias as that resulting from voluntary participation in incentive schemes and that arising from a lack of comparison groups. Studies typically lack randomization and allocation concealment. While it may be impractical to employ random assignment to intervention and control groups, some researchers have employed more sophisticated analytical techniques to address selection bias, such as difference-in-differences analysis. Such techniques can also be used to control for other factors that may vary between intervention and control

groups, including population risk and other time-varying factors.

Another methodological barrier is accounting for spillover effects from other programmes. In the case of China, for example, several national health reforms were undertaken at the same time as the programme was implemented. Isolating the impact of a specific intervention or payment reform poses a major methodological challenge to evaluations *(89)*. Challenges have also arisen in evaluations of payment mechanisms that use quality improvements as outcomes. Quality metrics for intervention participants can be collected through routine or specialized data collection throughout the intervention period. As such, to evaluate a model, a baseline should be measured across key dimensions to avoid implementing the model and the metrics at the same time. It may be more difficult and costly to collect similar data for controls, particularly in cases in which the control group is identified during a later evaluation phase, thus leading to differences in the quality measures available for evaluation *(89)*.

Two of the programmes detailed in the case studies have undergone rigorous evaluation and peer review. Table 12 summarizes the results of these evaluations for the programmes in Germany and Indonesia.

In Indonesia, Sambodo et al. *(125)* studied the effect of capitation plus performance-based financing on the three incentivized outcomes, including its impact on the PROLANIS programme discussed in the case study. The authors used a difference-in-differences study design and focused on early programme impacts in public health centres between 2015 and 2016. To reduce bias, the authors used coarsened exact matching *(126)* to identify comparable control districts. They tested the parallel trends assumption from unobserved time-varying confounders under the difference-in-differences study design by comparing the pre-intervention trends for treated and control groups in the seven months before performance-based capitation payment was announced. They reported that weighted pre-implementation trends were almost identical for treated and control groups, increasing the likelihood that the parallel trend assumption holds.

The evaluation found a 0.578 percentage point increase in the monthly percentage of enrolees contacting a public health centre, and a 1.15 percentage point increase among chronically ill patients. The authors reported no statistically significant effect on referral rates to hospitals for conditions not requiring specialist care. While the size of the impact was statistically significant, the authors note that it was far below the programme's targets. The increase of 48% in overall contact rate compared with the baseline rate of just 1.2% still left most public health centres below the target threshold of 15%. For chronically ill patients, the small statistically significant

increase does not reach the targeted threshold of 50%. The authors concluded that the performance-based capitation reform was not effective in promoting greater use of primary care as the results were far below targeted levels. We note that the evaluation focuses on very early results from the payment scheme, and modifications to the programme have been implemented since 2016, as detailed in the case study.

In Germany, Schubert et al. designed and implemented an evaluation of the shared-savings model designed to promote integrated care in the Kinzigtal region *(127, 128)*. The authors used a quasi-experimental design that included persons covered by a large private health insurer in the intervention region with controls in 13 comparable regions and a random sample of persons insured with the same health insurer in the state of Baden-Württemberg (excluding the Kinzigtal region) to evaluate the impact of the programme on trends in pre-established quality indicators over ten years (2006–2015). The evaluation reported no difference in quality indicators between the intervention and control regions for 88 of the 101 indicators. The authors noted, however, that under the cost-savings goal of the programme, there was no reduction in care quality during the study period. The authors cite the limitations inherent in using insurance claims data, including the omission of conditions outside of routine reporting systems and the absence of patient-reported outcomes that are important to chronic disease management.

Evaluations have been undertaken for the schemes in Australia and Canada, but these have not been published as peer-reviewed journal articles. Those results are summarized in the case studies, with the limitations noted.

Table 12. Results of published peer-reviewed evaluations of purchasing programmes in Germany and Indonesia

Study	Study design	Aim	Intervention	Study funder	Locations where care provided
Sambodo et al. *(125)*	Difference in differences	To evaluate the effects of the performance-based financing scheme on its three incentivized outcomes	Capitation-based payments with performance-based payments	Indonesia Endowment for Education and Erasmus University, Rotterdam, Netherlands	560 public primary care facilities in 27 of 34 provincial capitals, Indonesia
Schubert et al. *(127, 128)*	Quasi-experimental with a control group	To investigate trends in the quality of care over 10 years in comparison to conventional care	Shared-savings contract	Innovation Committee of the Federal Joint Committee, a private insurer in Baden-Württemberg and Healthy Kinzigtal	Kinzigtal region, Germany

	Study population	Control or comparator population	Data collection methods	Time period	Analysis	Outcomes reported	Bias reported
	Population enrolled in the national health insurance programme in 27 intervention districts	300 comparable non-capital control districts using coarsened exact matching	Health insurance claims data from a stratified 1% sample of members	2015 to 2016	Two-way fixed effects regression model	0.578 and 1.15 percentage point increase in the monthly percentage of enrolees and chronically ill enrolees, respectively, contacting a public health centre	Parallel trends assumption
	All persons insured with private company in the Kinzigtal region	Persons insured in the 13 control regions and a sample of those insured in the state of Baden-Württemberg but excluding the Kinzigtal region	Claims data collected by a large statutory health insurance provider in Germany	2006 to 2015	Logistic regression evaluating trends between the intervention and control groups	For 88 of the 101 quality indicators, no difference was seen in trends over time between the intervention region and the average trend in the control regions	Limitations in using claims data

2.6 Facilitating and inhibiting factors

While the impact of a payment arrangement is critically important, equally important is an understanding about why and how a programme could have resulted in better quality. In many of the case studies, the authors did not have a definite explanation for the exact mechanisms that could have enabled the positive effects. Most recognized that it was a host of contributory mechanisms. Case study authors have identified a series of factors that both facilitated and inhibited the implementation of the payment and purchasing arrangements (Tables 13 and 14).

One of the more important facilitating factors is the overall **governance structure**. Strong leadership and transparent and participatory governance were facilitating factors in many settings. This was evidenced in certain schemes by the alignment of a programme's goals with national health goals and targets, and sometimes included the establishment of national policies and quality standards. In several countries, leadership was supported by technical advisory groups and clinical leadership to address implementation challenges. Leadership is also especially important since implementing alternative payment methods often involves creating new entities that are in charge of managing and distributing budgets as well as coordinating participating providers.

Given that many of the schemes implemented payments to align with and provide incentives for improved **service delivery**, key facilitating factors included the strong involvement of different stakeholders. In many settings, programmes engaged with health professionals and patients and, in one programme, community and social organizations were engaged in implementation. Capacity development was prioritized in some programmes, and staff were provided with additional training. In some countries, there was a recognition that changing payment and service delivery models required a different set of capabilities than those used in activity-based payment systems. Facilitation and communication mechanisms were enhanced for care coordination and connected to different programmes for the management of chronic diseases. In addition, efforts were made to support performance through feedback and establish clinical pathways and care guidelines for providers to improve **quality**.

Table 13. Facilitating factors for payment and purchasing arrangements

Category	Example
Governance	Strong leadership and financial commitments from purchaser (Australia, China, Indonesia, South Africa, Spain)
	Alignment of the programme's goals with national health goals and targets (Chile, China, Indonesia)
	Independent technical advisory group or clinical leadership to support implementation (Australia, Germany, Spain)
	Desire for change towards more integrated service delivery (South Africa)
	Nationwide scope (China, Indonesia)
	Long project duration (Germany)
	National policies and strategies for improving quality in place (China, Indonesia)
Service delivery	Strong involvement of nursing and medical specialists (Spain), physicians (Canada, Germany) or patients (Germany)
	Participation of community and social organizations (Chile)
	Training for staff (Australia, Spain)
	Care coordination elements (South Africa)
	Connection among different programmes with similar goals for managing patients with chronic disease (Indonesia)
Quality management	Regular feedback on providers' performance (Germany)
	Care guidelines developed (Germany, Spain) and clinical pathways developed (Canada, Spain)
Health information systems	Centralized health information system (Indonesia, Spain), electronic health records (Germany), health information systems for public health programme (China), or health information systems that follow the patient (South Africa)
	Infrastructure for information systems (Canada)
	Systems for ongoing monitoring of quality that enabled decision-making (Germany, Spain)
	Risk stratification tool (Australia)
Financial factors	Substantial start-up funding (Australia, Germany)
	Payments aligned with model of care (Australia)

New payment mechanisms frequently require significant investments in **health information systems** and technology. Most of the schemes described in the case studies documented important investments and capacity-building in health information systems, including in electronic health records, and other means to integrate health information and use data for quality improvements. In two programmes, **financial elements** that were facilitating factors included substantial start-up funding for the payment scheme. It was also noted that aligning payments with the service delivery model is beneficial.

Case study authors also identified key inhibiting factors that prevented effective implementation and impact (Table 14). In terms of critical **governance** issues, the most common inhibiting factors were a lack of coordination and communication among leading participating institutions. Other factors included a lack of support among medical professionals for new models of payment and the challenge of implementing pilots within a broader payment environment with contradictory incentives. Regulatory issues were also mentioned where they prohibited new clinical roles or fee-sharing across different categories of health providers. Inhibiting factors also included a lack of transparency that limited the ability to make improvements to the programme and limited learning over time.

Table 14. Inhibiting factors for payment and purchasing arrangements

Category	Example
Governance	Lack of coordination or communication, or both, between health insurance programme and national health programmes for chronic disease management run by same public health staff (Indonesia), between public health and noncommunicable disease control programmes (China) or between hospitals and primary care staff (Spain) and health department and department for health information (Spain)
	Lack of support among some medical professionals for new models (Australia, South Africa)
	Decisions made for short-term problems rather than long-term objectives (Spain)
	Small-scale pilots that change payment methods are difficult to implement in fee-for-service environment (South Africa)
	Legal framework for civil servants that did not accommodate new clinical roles (Spain)
	Regulations preventing sharing fees across health professionals and provider groups (South Africa)
	Lack of transparency limiting improvements to programme and information about lessons learned (Germany)
Service delivery	Low health provider participation in programme inhibiting population-level change (Australia, South Africa)
	Lack of incentives for or barriers to patients enrolling resulting in low uptake that inhibited population change (Canada, Germany, Indonesia, South Africa) or leading to risk selection (Germany)
	Home care services poorly integrated into health system provision (Canada)
	Difficult to monitor variation in implementation of programme across regions (China, Indonesia)
	Insufficient attention to broader social determinants of chronic disease management among patients (all settings)

Category	Example
Quality management	Insufficient attention to equipment and supplies, including access to medicine, necessary to meet quality targets (Australia, China, Indonesia)
	Clinical or patient management protocols not updated over time (China)
	Insufficient attention to having sufficient qualified human resources (China, Indonesia) or high staff turnover (Australia)
	Insufficient attention to patients' perceptions of quality (Chile)
	Health care providers do not discuss or engage with performance reports, thus limiting their impact (South Africa)
	Some professionals reluctant to use new tools, such as an information dashboard (Spain)
Health information systems	Lack of interoperability of new information systems with national health information systems (Australia, Indonesia)
	Lack of information technology standards across regions that inhibit data-sharing (China), or between primary care and hospital levels (Chile)
	Additional time needed for complying with information system requirements was burdensome and complex (Australia, Indonesia)
	Data quality concerns related to heavy reporting burdens (China)
	Information captured not fully available for study and evaluation (Spain)
	No routine systems of indicators linked to patient satisfaction (Chile)
Financial factors	Payment levels insufficient to compensate for incentives in activity-based payments (China) or cover costs of patients with complex conditions (Australia); unclear whether balance achieved between financial incentives in payment mechanisms for quality and those for volume (Germany)
	Small-scale pilots associated with high implementation costs (South Africa); low patient volume resulting in incentives that were insufficient to drive changes in providers' behaviour (South Africa)
	Insufficient consideration of implementation costs and time for practices to change and to recruit staff (Australia)
	Uncertainty about the continuation of funding may have increased provider drop out (Australia)
	Financial flows between practice and practitioners were unclear and may have affected participation (Australia)
	Financial rewards delinked to health outcomes (Spain)
	Lack of earmarked investments (Spain)

Low health provider and patient uptake prevented large-scale impact in many settings. Weak **service integration** was mentioned as an inhibiting factor, particularly between home care and the health system. Another factor included the lack of attention to broader social determinants of health, which are critical in chronic disease management.

In some settings, authors reported that there was insufficient attention to basic infrastructure to deliver **quality**, including human

resources capacities, supplies and equipment; and clinical protocols were not updated over time. In some settings, health professionals failed to engage with the programme or were reluctant to use new tools. In others, authors reported insufficient attention to patients' perceptions of quality. **Health information systems**, while critical, were associated with numerous challenges, including a lack of interoperability that inhibited data sharing and availability between national and regional health information systems or between primary- and secondary-level facilities. The additional reporting burden was considered particularly heavy and may have taken time away from other activities in some settings.

For financial issues, the most frequently mentioned inhibiting factors were payments that were felt to be insufficient to motivate providers, the inability to attain sufficient patient volume to generate sufficient financial incentives, and the inability to balance the incentivized activities and base payment methods. Uncertainty about payments and financial flows within the health facility inhibited implementation, as well as uncertainty regarding the continuation of pilot models.

2.7 Conclusions

This section discussed the findings from eight case studies that describe the design of different purchasing arrangements that aim to promote quality in chronic disease care. In most studies, changes to payment methods were accompanied by other service delivery interventions, with the intention of providing incentives to deliver services in a better way. A mix of process and outcome measures were used in all studies, with a reliance on information collected by existing administrative systems. A key consideration in the incentive structure is whether the incentives were sufficient to balance any negative incentives in the base payment. Evidence suggests that this was a challenge across most settings. Additionally, rigorous evaluation of schemes remains a challenge. Results from evaluations of quality were not conclusive for programmes that undertook these. Evaluations faced important methodological challenges, including selection bias and the choice of quality metrics, such as patients' perspectives. Key facilitating and inhibiting factors included those related to governance, service delivery, quality and health information infrastructure, and the financial and regulatory environments.

3

Lessons learned

3

Purchasing for quality chronic care Summary report

The purchasing function is ubiquitous in health systems around the world. Provider payment methods are a key component of purchasing arrangements. Each method has advantages and disadvantages. As such, each creates financial incentives that align to varying extents with the overall quality goals of the health system. There have been numerous initiatives to ensure that purchasing arrangements and payment methods are more closely aligned with overall health systems and policy goals.

This joint research programme between the WHO and OECD commissioned new case studies and reviewed the body of evidence from rigorous evaluations to discuss the modalities and effects of different payment methods for purchasing to improve the quality of chronic care across diverse settings. Despite many studies having been published across a range of settings, evidence from rigorous evaluations of payment methods found only weak associations with improved process quality and outcomes. Among the few studies that demonstrated positive results, the effects were modest and short-lived. While there is substantial heterogeneity in the design, implementation, measurement and evaluation of such programmes, as well as among the programmes' features – including the size and type of the organization, technical scope and individual characteristics of health providers – such factors cannot explain the consistently lower-than-expected effectiveness reported in evaluations of payment methods *(96)*.

In response to such evaluations, some authors emphasize that there is a need to reconsider how payment methods are designed and implemented to promote better performance *(129)*. Others point out the need to strengthen governance, institutional arrangements and health information systems as prerequisites to enable stronger payment systems to be successfully implemented *(9, 10)*. Governments provide the legislative basis and often the initial financial investments that enable a shift from activity-based payment methods to a payment mix purposively aligned to strengthen the incentives for improving quality. Equally important enabling factors include the local context and implementation factors, and the alignment of a programme with the overall goals of the health system.

All stakeholders – whether governments as purchasers and health leaders, the international community or academia – strive to better understand how to implement an optimal mix of different methods of paying providers to support the goals of better quality and health. We conclude with some lessons learned about improving purchasing arrangements and payment methods to provide better quality care for patients with chronic conditions.

3

Lessons learned

3.1 Stronger focus on the service delivery model

As demonstrated in prior studies and policy advice, this report reiterates the finding that purchasing arrangements and payment methods alone cannot overcome major structural problems in service delivery that inhibit quality. While a narrow focus on payment methods may be attractive in its simplicity, a great deal of evidence shows that it is not a magic bullet. One-off initiatives – even when successful – tend to have modest and short-lived effects. Perhaps worse, they may take away the time and resources needed to sustain quality improvements that could be more impactful *(66, 130)*. Health care providers can also become demotivated and discouraged when they are held accountable for poor health outcomes that are beyond their control and primarily attributable to weak delivery systems, and poor accountability and coordination structures *(11)*.

An important approach suggested by this research is to focus more strongly on health care delivery systems and systematically identify obstacles that inhibit the effects of purchasing mechanisms on quality. As described in Section 1, an increasing number of countries are gradually changing payment methods to support the implementation of specific service delivery and quality improvement models, including integrated care models. Several of the country case studies in this report focused on the use of payments to support a higher degree of care integration, for example between primary and secondary levels. As such, purchasing forms one part of a comprehensive quality improvement initiative grounded within a service delivery model. The role of payments, therefore, shifts from a short-term transactional activity towards a financing mechanism to support and drive changes in service delivery systems to deliver quality care.

The choice of payment methods should thus consider the desired change and systems requirements in the context of the existing payment infrastructure. Several of the case studies targeted specific clinical quality improvements for specific diseases; as such, payment methods can be tailored to achieve incremental results in the short term while also considering longer-term objectives and the required investments, such as in health information infrastructure. With a focus on the quality objectives, policy-makers can also consider which payment methods are the best options among a range of quality improvement mechanisms.

3.2 Selecting quality measures, relative targets and reporting requirements

The choice of quality measures, targets and reporting requirements is among the critical design elements. Quality is a multidimensional concept. Particularly in the context of chronic care, it can include not only clinical quality but also coordination across different categories of health care providers as well as prevention. While measures of care coordination, integration and person-centeredness are important in caring for patients with chronic conditions, substantial efforts are required to define and operationalize these more complex measures; as a result, their inclusion in the programmes studied here was infrequent *(131)*. Many settings select process measures based on clinical protocols to ensure strong linkages between a providers' practice and improved health outcomes. As clinical protocols are aligned with established professional norms, this ensures that quality measures are evidence-based, and it may increase compliance. Some of the case studies and evaluation literature had information about patient-reported outcomes, including self-management, which may be important for measuring care quality for chronic conditions. However, these require investments in specific surveys and careful data analysis and interpretation.

Using fixed uniform targets for the quality indicators measures success as defined by the absolute performance achieved. The case studies demonstrated that fixed targets may have resulted in barriers to provider and patient participation in remote areas where patient recruitment was more difficult. In such cases, relative or progressive targets may be more appropriate when there is diversity in providers' capacities *(131)*. Relative or progressive targets may encourage providers and facilities to strive towards gradually improving standards of care. This strategy allows for higher levels of investment in disadvantaged regions while also linking those investments with tangible indicators to hold providers accountable for the quality of care they offer. This may be more appropriate for primary care providers, for whom higher levels of investment in basic quality may be needed in some cases. Relative or progressive targets can also apply to the quality credentialing process, enabling facility participation, with targets that may increase over time to encourage quality improvements.

Adjusting the quality measures for risk and patient care complexity may help ensure that providers do not face incentives that inhibit them from caring for the sickest patients. It may also enable more accurate assessments of performance for those providers working with populations that have higher health risks or in regions with challenging socioeconomic factors. The level of granularity in risk adjustment may depend on the blend of payment mechanisms. For

example, more granular risk adjustments may be needed when primary care capitation replaces FFS, as the latter adjusts for risk based on a higher number of visits for patients with more complex problems *(132)*.

In one country case study, metrics were adjusted for social risk factors to address inequities in serving vulnerable populations *(114)*. This practice is in line with evidence that adjusting performance measures for social risk factors can be used to avoid penalizing health facilities for serving poor and vulnerable patients and thus can improve equity in provider payments *(133)*.

Data availability is an important factor in determining quality measures. At the same time, reporting systems that collect extensive data about quality can be costly in terms of implementation and providers' time. Heavy reporting requirements may result in health care providers taking time away from patients and other quality improvement programmes *(134)*. As such, reporting requirements must be as light as possible and completed through the claims management system or other routine reporting systems, where feasible. This ensures that any additional reporting is integral to existing systems. It can also be noted that, as data availability and claims management systems evolve, particularly with digital and information technologies, this may ease the reporting burden.

3.3 Key design features of payment level and certainty

Two other key design elements are payment level and certainty. There is variation in how payments can be designed and allocated. Key elements in the design of financial incentives for payment methods have been well documented. They include the base payments prior to the intervention, the size of the financial incentive and the size of the additional payments as a percentage of total revenue, marginal costs that providers should bear to improve performance, the linkage between the incentive and the quality measurements, how payments are distributed, and the blend of group- and individual-level incentives and how they are weighted *(8, 121, 135-138)*. While some reviews cite a small incentive size as a possible contributing factor to poor outcomes, studies have not established clear guidance as to what the appropriate size or amount may be *(123, 124, 136)*. The appropriate mix of payment methods and related incentives may vary by organization or practice setting. The size of the performance payment can also be based on broader goals, such as providing incentives for quality primary care or making the payment more attractive.

Certainty in payment is another key factor in providers' willingness to participate or accept change. Uncertainties regarding payments can include a lack of clarity about the amount or receipt of the incentive payment. This report found little information about how decisions are made to distribute payments; where the process is unclear, this may create greater uncertainties that, in turn, reduce the effect of the incentive. As such, the terms of the incentives should be transparent and include information about their linkages to quality metrics and a timely payment schedule. Confidence is increased in the payment method when there are clear rules for distributing performance payments across teams or within teams, whether related to salary or actual effort. In recognition that some payment methods may also result in decreased provider revenue, it is also important not to expose providers to risks that they cannot control – that is, excessive financial risk. Given the challenges to sustaining positive changes, there should also be a commitment to payment reforms that span an extended period.

3.4 Balancing financial incentives

The case studies illustrate the difficulties of balancing or offsetting any negative incentives in base or existing payment methods against new payment methods. Relatively small incremental reward payments or penalties may be insufficient to counter the much stronger incentives in activity-based payment methods to increase the volume of services delivered. For example, the risks inherent in a shared-savings contract include underproviding needed care; at the same time, there are incentives for overprovision in the FFS reimbursement system. Bundled payments with shared savings for providers must be contingent on achieving defined quality targets to avoid skimping on needed care. Shared savings may, in the end, lead to a redistribution of funds across different stakeholders rather than a reduction in expenditures. Hence, it is important to be transparent about the different interests and who determines how funds are distributed.

Some evidence suggests that nonpayment for failure to reach targets may be effective in hospital settings *(78)*. However, in two of these case studies, withholding payments as a penalty had negative effects. This included creating resentment among providers who consequently selectively enrolled healthier patients more willing to adhere to medical advice. In another setting, withholding payments based on poor performance assessments had a regressive effect, as it primarily affected resource-poor regions and the funds were allocated to better-performing higher-income areas. In some hospital settings, penalizing poor quality is done by withholding payments for sentinel adverse events. However, evidence is

inconsistent that the effect of nonpayment reduces the number of adverse outcomes *(106-108)*. These experiences suggest that penalties for poor performance should be considered carefully so as not to undermine overall programme objectives and reduce resources for quality improvements.

3.5 Investing in quality to support payment methods

Several case studies identified the importance of clinical protocols and pathways for patient management and referral as important facilitating factors for payment methods. Financial incentives to improve quality rely heavily on, and need to be embedded in, the pillars established through other quality assurance mechanisms, which vary widely across different country contexts. To enable the implementation of purchasing mechanisms for quality, investments need to be systematically made to strengthen the standards for health systems input and processes to provide a foundation for purchasing and other quality improvement programmes. These investments include developing standards for health systems input and infrastructure (e.g. regulation of health professionals, licensing and certification of facilities and products, and accreditation) and standards for ensuring health systems processes (e.g. clinical protocols and pathways, audit and patient safety strategies) *(139)*. Another factor mentioned in the case studies was the regulation of health professionals' practice that inhibited the expansion of roles and fee-sharing.

3.6 Planning sequenced implementation to address systems requirements

Substantial long-term planning is needed to change payment and delivery systems and set up the requisite infrastructure to enable quality care. Many of the inhibiting factors mentioned in this research – such as a lack of interoperability between health information systems, poor communication and coordination, and resistance from key stakeholders – suggest that taking a long-term approach may be optimal. In this way, a sequenced implementation plan could more systematically predict and address the needed changes over time. This is consistent with some of the approaches in the case studies in which new payment methods were initiated while programmes also built broader capacities in human resources and service delivery. Such an approach enables policy-makers to focus on quality and health outcomes for the population and to

identify the appropriate mix of payment methods that will support reforms to service delivery that will achieve the quality objectives.

Table 15 illustrates a hypothetical and simplified example of a long-term planning exercise undertaken to implement and sustain changes in how providers are paid and identifying areas in which investments are required in institutional capacities. The factors listed in the table come from examples identified in the case studies. In this hypothetical example, we identify the broad goal of delivering patient-centred primary care, and some facilitating and inhibiting factors within governance, service delivery, health information, and financial and regulatory systems.

Table 15. Hypothetical, simplified example of using sequenced implementation of a purchasing arrangement to address systems requirements for the long-term goal of delivering patient-centred primary care

Key facilitating factors	Starting point	Intermediate objectives	Long-term objectives
Governance	Limited engagement of health care providers	Government as purchaser has systems in place to gather regular feedback about implementation from providers in public primary care facilities	Providers' feedback used for strategic planning and ongoing adjustments to implementation
Health information systems	Disease-specific reporting systems in place	Interoperability of health information systems between primary and secondary levels	Common information platform for planning, monitoring and evaluation
Care management	Disease-specific management protocols in place	Standardized protocols used across primary and secondary facilities	Smooth referrals across the primary and secondary system and to community level
Financial	Financial risk to providers is clear	Certainty and transparency about payments and distribution of payments	Funding is integrated into routine payment system

This research suggests that some of the important governance factors include strong political and health system leadership, and engagement and communication across a wide range of stakeholders, including purchasers, providers and the community. To enable payers to implement purchasing arrangements and carry out negotiations with providers, some countries have invested in strengthening institutional arrangements or independent agencies to carry out purchasing and payment functions, including data collection, stakeholder consultations and monitoring and evaluation *(98)*.

Investments are typically required in operational prerequisites, such as health information systems and health data infrastructure.

Interoperability across health information systems was identified as a major barrier to improving systems and payments. It is critical element towards a common platform for health information systems that enable both care management as well as monitoring. Many of the programmes described in the case studies also developed the important ability to identify high-risk populations for targeted interventions. Over time, such platforms can be used to make ongoing quality improvements.

Uncertainty about payments was mentioned as an inhibiting factor in the case studies. Certainty among providers that they will indeed receive initial and long-term funding can help ensure confidence among those implementing changes that will be sustained over time. Confidence may be increased when funding for a specific programme is integrated into the routine payment system and providers understand their financial risk and are not exposed to excessive risk.

Investments in the institutional bodies required to sustain quality improvement take time. However, in many settings, purchasers have taken into consideration short- and medium- term changes to promote quality within the current payment infrastructure by building in stronger incentives for quality improvements. In the example in Table 15, we highlight integrated care protocols as a mechanism for smooth referral, coordination and communication between primary and secondary facilities. In several case studies, standardized and regularly updated care protocols were the basis for payment and incentive mechanisms.

Financial aspects and regulatory issues also need to be identified and systematically addressed. Regulatory issues mentioned in the case studies included rules that inhibited the expansion of professional roles, capacities and responsibilities to implement changes aligned with the service delivery and payment model.

3.7 Nonfinancial incentives

Stronger conceptual frameworks are essential to underpin the careful design of such schemes before wide-scale implementation. They include the articulation of causal pathways and assumptions made. The general assumption underlying payment initiatives is that health care providers know how to improve quality and performance and will do so if they are paid more. While financial incentives remain a powerful motivator to change behaviours, health care providers' behaviours are complex and are driven by more than money *(140)*. Further exploration of other, potentially more effective and possibly less costly, approaches to improving quality are needed. These may include supervision, staff promotion, training

and other forms of nonfinancial motivation. Importantly, before using financial incentives in LMICs, the quality fundamentals must be assured – for example, medicines and sufficient staff.

Incentive schemes in some settings took into consideration several different factors that drive behaviours. Such factors can be incorporated into programmes to enhance motivation. As documented in the case studies, important incentives included providers' and organizations' reputations. Some programmes published data about their quality measures, and this is considered one means to motivate providers *(141)*, although evidence on its effect is scarce *(100-102)*. Training opportunities were an additional motivating factor.

3.8 Monitoring and rigorous evaluation

Because payment methods have the potential for harm as well as benefit, it is important to invest in monitoring systems and evaluations. As noted previously, most of the programmes in the case studies have invested in health information systems to collect data and enable ongoing monitoring during implementation. This will allow for continual revisions during implementation to address unexpected outcomes and providers' gaming of payment systems.

The absence of rigorous independent evaluation studies has hindered the design and implementation of options to improve purchasing mechanisms aiming towards better care quality. Many studies that were evaluated applied weak methods and designs that led to low certainty of impact. For example, multiple studies in the evaluation literature cited in Section 1 failed to correct for selection bias occurring because of voluntary participation in incentive schemes and a lack of comparison groups. Challenges in evaluation include widely varying contexts across the intervention itself, the patient population and the institutional environment. It is uncertain in some cases whether sufficient time was given for implementation prior to evaluation. Given that published studies represent a small share of all studies conducted, such publication bias suggests that even the small effects reported overestimate the impacts *(142)*.

Having plans for data collection and statistical analysis are fundamental to generate sufficient power for an evaluation. Analysis plans should test assumptions, address sources of bias, and explicitly examine the potential unintended consequences against a broad range of outcomes. Studies should identify and evaluate differential effects among vulnerable subgroups.

Selection bias represents one of the more prevalent issues in evaluating the effects of payment methods. Such bias results from

the voluntary participation of providers as well as voluntary patient enrolment. Generally, providers may have more incentives to participate if they have met or exceeded quality requirements and could maximize their revenue through additional incentives *(89)*. Patients may be more likely to enrol if they have worse health or access and can benefit from quality interventions.

While it may be impractical to employ random assignment to intervention and control groups, researchers can employ more sophisticated analytical techniques to address selection bias and control for other factors, including the programme's characteristics, population risk and other time-varying factors. Difference-in-differences approaches can be used to facilitate the use of control groups for evaluation. Furthermore, to evaluate a model, baseline data should be measured across key dimensions to avoid implementing the model and the metrics at the same time. In explaining results, evaluators need to clearly describe the quality of the evidence and any limitations so that policy-makers can accurately interpret the findings.

In addition, there is a lack of good evidence and documentation about other purchasing instruments commonly thought to promote quality. These include making information about quality publicly available to hold providers accountable for the quality of their care, using selective contracting to promote competition to encourage better quality and making geographical price adjustments to ensure compliance with minimum quality standards. Operationalizing broad recommendations (such as not paying for poor quality care) has, in practice, resulted in policies with unintended consequences that can negatively affect patients *(143)*. Close monitoring and careful evaluations of these instruments are essential. Financial incentives for patients have demonstrated some effect in terms of them receiving better quality care and are another promising route deserving more research.

3.9 Conclusions

This report collected information from new case studies and reviewed rigorous evaluations to collate evidence about the effects of different models for purchasing quality chronic care across diverse settings. Despite there being many studies across a range of settings, evidence from rigorous evaluations of payment methods is limited, and associations between changes in payment methods and desired outcomes are weak. There remains strong interest in better understanding how to implement an optimal mix of different payment methods to support the goals of better care quality and health. The challenge is to better understand whether design and

implementation are inadequate to achieve more promising results or whether the assumptions about improving quality through financial incentives are flawed.

An important approach suggested by this research is that there must be a stronger focus on service delivery and systematic identification of obstacles that inhibit the effects of purchasing mechanisms on quality. In this way, the role of payments shifts from a short-term transactional activity towards a financing mechanism that can support and drive changes in service delivery systems to provide quality care.

There are many critical elements in designing payment methods, including the choice of quality measures, targets and reporting requirements. Relative or progressive targets are an important consideration as these allow providers to strive for quality improvements. Reporting requirements should be reasonable so as not to burden health care providers. Relatively small, incremental reward payments or penalties may be insufficient to counter the much stronger incentives in the activity-based payment methods that produce a larger share of provider payments. Penalties for poor performance should be considered carefully so as not to undermine the overall objectives of a programme and so they do not reduce the resources available for quality improvements.

To enable the implementation of purchasing mechanisms for quality, investments need to be systematically made to strengthen the standards for health systems input and processes to provide a foundation for purchasing and other quality improvement programmes. A road map can help to identify and systematically address challenges in an incremental way to improve quality within the existing governance, service delivery, quality assurance, health information, and financial and regulatory systems. Rigorous independent evaluations can support the scaling up and transferability of programmes to improve purchasing mechanisms that aim towards better quality. Proactive learning across countries and among different stakeholders is essential to share experiences to avoid continually repeating similar mistakes and implementation failures.

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