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Health Care Quality Indicators Project 2006 Data Collection Update Report

Sandra Garcia Armesto,
Maria Luisa Gil Lapetra,
Lihan Wei,
Edward Kelley

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HEALTH CARE QUALITY INDICATORS PROJECT 2006 DATA COLLECTION UPDATE REPORT

Sandra Garcia Armesto, Maria Luisa Gil Lapetra, Lihan Wei, Edward Kelley and the Members of the HCQI Expert Group

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This version has been amended to correct mis-statements in the Acknowledgments page.

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1. The Health Care Quality Indicators Project was guided by an expert group made up of national experts nominated by countries participating in the project[1]. Financial support from the European Commission was in part used to support outreach to non-OECD European member states to encourage their participation in the collection of data. To date, three of these eight countries supplied data : Cyprus[2, 3], Latvia and Malta.

2. The authors would like to acknowledge the input provided by Peter Scherer, Elizabeth Docteur, Jeremy Hurst, Niek Klazinga and Gaetan Lafortune.

3. The HCQI project was funded during 2006 partly by regular contributions from member countries of the OECD. Additional voluntary contributions to the project were made by the following member countries: Australia, Denmark, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, and Spain. In addition, 'in kind' support was provided by the United States through the secondment of Dr. Edward Kelley from the Agency for Healthcare Research and Quality (AHRQ) to the project throughout 2006. Support was also provided by the Commonwealth Fund during the first phase of the HCQI Project that made possible the appointment of Professor Arnie Epstein (Harvard University) as chairman of the project's Expert Group during that period

4. The HCQI project was also supported during 2006 by a grant provided by the European Commission (DG SANCO).



[1] The following OECD countries participate in the Group:

Australia,	Denmark,	Hungary,	Korea,	Poland,	Switzerland,
Austria,	Finland,	Iceland,	Mexico,	Portugal,	Turkey,
Belgium,	France,	Ireland,	Netherlands,	Slovak Republic,	United Kingdom,
Canada,	Germany,	Italy,	New Zealand,	Spain,	United States.
Czech Republic,	Greece,	Japan,	Norway,	Sweden,	

[2] Footnote by Turkey:

The information in this document with reference to « Cyprus » relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

[3] Footnote by all the European Union Member States of the OECD and the European Commission:

The Republic of Cyprus is recognized by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

SUMMARY

5. This report is an update to the OECD Health Working Paper No. 22, *Health Care Quality Indicators Project: Initial Indicators Report* that was based on data collected between 2003 and 2005 and released in 2006[4]. That report presented the OECD's initial work on developing a set of health care quality indicators that could be used to raise questions about differences in quality of care across countries. The 2006 report covered 21 "initial indicators" with data provided by 24 countries. It identified 17 of these indicators as being fit for international comparisons of which 4 were identified as needing further work[5]. Following the release of that report in March 2006, the OECD undertook a second round of data collection on the initial indicator set and also gathered data for the first time on new indicators in a questionnaire sent to participating HCQI countries. This paper reports on the results of that second round of data collection. Data is presented here on an augmented indicator set considered fit for the purpose of making international comparisons on quality of health care. The data is comprised of 19 indicators (17 initial indicators plus 2 new ones). The paper also presents the data provided on 7 other indicators that are not yet considered fit for international comparison. In this round of data collection, data were reported by 32 countries.

6. The Secretariat and collaborating HCQI country experts carried out several data comparability analyses on the new indicators for which data had been gathered. Certain comparability issues were discussed with the HCQI Project Expert Group at its meeting in Paris in October 2006. These issues included:

- The use of data which were not nationally representative
- Presentation of administrative versus survey data for cancer screening
- Harmonising data recall periods for cancer survival and screening
- The use of a truncated standard population for age adjustment

7. The results of the above analysis are presented in detail in this paper. However, an overall view of data comparability and possible improvement can be offered. It is clear from the analysis that significant progress has been made within the HCQI Project and by individual member countries in improving data comparability on the set of indicators from the HCQI Project since the first data collection in 2003. For example, on a range of survey indicators (such as cancer screening), countries have been able to alter national reporting standards to provide the OECD with comparable data. In the area of mortality rates for

[4] Mattke S, Kelley E, Scherer P, Hurst J, Gil Lapetra M and the Members of the HCQI Expert Group (2006), "Health Care Quality Indicators Project: Initial Indicators Report", OECD Health Working Paper No. 22, OECD, Paris, http://www.oecd.org/dataoecd/1/34/36262514.pdf.

[5] The 21 indicators (those labelled "fit for international comparison" and "evaluated as not fit" in column 2 of Table 2, below) were described as "17" indicators in OECD Health Working Paper No. 22. That is because a group of three related indicators for "incidence of vaccine preventable diseases" and a group of three related indicators for "coverage for basic vaccination programme" were each listed as one indicator respectively. The six components of these two groups are now considered separately.

acute myocardial infarction (AMI) and stroke, country estimates have become significantly more comparable since the first data collection. What is also clear is that both gaps in data and persistent data comparability issues remain within the indicator set. For example, there are a number of countries where nationally representative data for indicators such as cancer survival are not yet available. In other instances, countries have not been able to furnish the OECD with indicators that match the age or recall period (for survey data) specifications, making differences between countries difficult to interpret. However, member countries continue to be supportive of the Secretariat's efforts to investigate these data comparability issues. With this support, the Secretariat plans to continue to improve the existing indicators while at the same time work on developing new indicators based on comparable data.

8. As noted above, this paper presents three groups of indicators:

a) All of the initial 17 indicators that were reported as being fit for international comparison in Health Working Paper No. 22, which were updated during the 2006 data collection. They are:

- Breast cancer five-year survival rate
- Mammography screening rate
- Cervical cancer five-year survival rate
- Cervical cancer screening rate
- Colorectal cancer five-year survival rate
- Incidence of vaccine preventable diseases (Pertussis, measles, and hepatitis B)
- Coverage for basic vaccination programme, age 2, (Pertussis, measles, and hepatitis B)
- Asthma mortality rate, ages 5-39
- In-hospital mortality rate within 30 days of hospital admission for acute myocardial infarction
- In-hospital mortality rate within 30 days of hospital admission for stroke
- Waiting times for surgery after hip fracture, over age 65
- Influenza vaccination, over age 65
- Smoking rate

b) Following discussions from the October 2006 meeting, two new indicators tested in the 2006 data collection round that, were judged by the HCQI Expert Group as mature enough to be added to the initial set:

- Retinal exams in diabetics – This indicator was included in the first HCQI questionnaires (in 2004 and 2005) but was not considered fit until the 2006 data collection round.
- Asthma admission rate – This indicator was collected for the first time through the 2006 questionnaire.

c) Seven indicators were not yet considered suitable for inclusion in the HCQI data set for international comparison but were recommended for additional sensitivity analysis to find ways to improve

comparability. Among them, three indicators were collected in the 2003-2005 questionnaire have seen no substantial improvements for comparability and thus are still considered not yet suitable for international comparison. These are:

- Annual HbA1c testing for patients with diabetics
- Patients with diabetics with poor glucose control
- Major amputations in diabetics

9. Four other indicators were collected for the first time through the 2006 questionnaire:

- Post-operative hip fracture or fall
- Transfusion reaction
- Uncontrolled diabetes admission rate
- Hypertension admission rate

10. The first group of indicators listed above is presented with definitions and updated data. For the second and third groups of indicators, the report reviews detailed information on the scientific soundness, importance, availability of data and the international comparability of the data for each indicator.

11. The smoking rate remains in the indicator set. This indicator was initially adopted since it is the risk factor which countries attempt to affect as they institute efforts through the health care delivery system to change tobacco consumption. There has been much discussion on this indicator because of its dependence on certain factors outside the control of the health system. It is therefore considered a relatively less valid indicator of quality of health care than the other indicators considered 'fit for international comparisons'. The Expert Group will examine other, more health care-related indicators of smoking cessation. At this point, however, these indicators are not available from a wide enough group of countries. Therefore, for the moment, the smoking rate continues to be retained among the 19 indicators in the 2006 HCQI indicator set.

RESUMÉ

12. Le présent rapport est une version actualisée du Document de travail de l'OCDE sur la santé n 22 intitulé *Health Care Quality Indicators Project : Initial Indicators Report,* établi sur la base des données rassemblées en 2003/2005 et publié en 2006[6]. Ce rapport présentait les travaux initiaux de l'OCDE concernant l'élaboration d'une série d'indicateurs sur la qualité des soins de santé qui pourraient être utilisés pour tenter d'expliquer les différences en matière de qualité de soins entre les pays. Le rapport 2006 portait sur 21 « indicateurs initiaux » pour lesquels 24 pays avaient communiqué des données ; il a été estimé que 17 de ces indicateurs se prêtaient à des comparaisons internationales et que quatre d'entre eux nécessitaient des travaux approfondis[7]. A la suite de la publication du rapport en mars 2006, l'OCDE a entamé un deuxième cycle de collecte de données relatives à la série initiale d'indicateurs et a entrepris de recueillir pour la première fois des données sur de nouveaux indicateurs par le biais d'un questionnaire adressé aux pays participants au projet HCQI. Le présent rapport fait état des résultats du deuxième cycle de collecte de données. Il contient des données sur la série élargie d'indicateurs considérés comme se prêtant à des comparaisons internationales, soit des données portant sur 19 indicateurs (17 indicateurs existants et 2 nouveaux). Il présente également les données fournies en ce qui concerne 7 autres indicateurs dont on estime qu'ils ne se prêtent pas encore à des comparaisons internationales. Les données communiquées émanent cette fois de 32 pays (des pays de l'UE qui ne sont pas membres de l'OCDE ont été invités à participer au projet[8]).

13. Dans le cadre de l'étude des nouveaux indicateurs au sujet desquels des données ont été réunies, le Secrétariat et les experts nationaux collaborant au projet HCQI ont mené plusieurs analyses touchant la comparabilité des données. Certaines questions de comparabilité ont été examinées avec le Groupe d'experts du Projet HCQI lors de la réunion de ce dernier à Paris en octobre 2006. Il s'agit des questions suivantes :

- L'utilisation de données non représentatives au plan national
- La présentation de données administratives par opposition à des données d'enquêtes en ce qui concerne le dépistage du cancer

[6] Mattke S, Kelley E, Scherer P, Hurst J, Gil Lapetra M et les membres du Groupe d'experts du Projet HCQI. *Health Care Quality Indicators Project: Initial Indicators Report*. Document de travail sur la santé no. 22. (Paris, France: OCDE). 2006. http://www.oecd.org/dataoecd/1/34/36262514.pdf.

[7] Les 21 indicateurs (voir la colonne 1 du tableau 2) étaient "en fait" présentés comme "17" indicateurs dans le Document de travail de l'OCDE sur la santé no. 22. En effet un groupe de trois indicateurs relatifs à l'« incidence des maladies pouvant être prévenues par la vaccination" et un groupe de trois indicateurs relatifs à la "couverture des programmes de vaccination de base" apparaissaient respectivement dans le document en tant qu'un seul indicateur. Les six indicateurs considérés dans ces deux groupes sont désormais distincts.

[8] Un appui financier de la Commission européenne a été utilisé afin de favoriser l'ouverture vers des États européens non membres de l'OCDE et d'encourager leur participation au projet. A ce jour, trois des huit pays concernés prennent désormais part au projet.

- L'harmonisation des périodes de référence des données relatives au taux de survie et au dépistage du cancer
- L'utilisation d'une population standard tronquée à des fins d'ajustement en fonction de l'âge

14. Les résultats des analyses susmentionnées sont présentés de façon détaillée dans le rapport. Cela étant, on peut d'ores donner une idée générale de la comparabilité des données et dire si celle-ci s'est améliorée. Il ressort clairement de l'analyse des questions de comparabilité des données existantes et des données nouvelles que d'importants progrès ont été réalisés dans le cadre du Projet HCQI ainsi que par certains pays membres en ce qui concerne la comparabilité des données afférentes à l'ensemble des indicateurs considérés dans le Projet HCQI depuis la première collecte effectuée en 2003. Par exemple, s'agissant d'un ensemble d'indicateurs reposant sur des enquêtes (tel que le dépistage du cancer), les pays ont été à même de modifier leurs normes nationales de notification afin de fournir à l'OCDE des données comparables. Pour ce qui est des taux de mortalité après un infarctus aigu du myocarde ou après un accident vasculaire cérébral, la comparabilité des estimations des pays s'est beaucoup améliorée depuis la première collecte de données. Il apparaît par ailleurs clairement que certains problèmes de comparabilité des données concernant la série d'indicateurs retenus dans le projet HCQI n'ont pu encore être résolus. Ainsi, dans un certain nombre d'entre eux, des données représentatives au plan national relatif à des indicateurs tels que le taux de survie au cancer ne sont pas encore disponibles. Dans d'autres cas, les pays n'ont pas été en mesure de communiquer à l'OCDE des données correspondant aux spécifications en matière d'âge ou de période de référence (pour les données d'enquêtes), d'où des difficultés pour interpréter les différences entre pays. Cela étant, les pays membres s'intéressent à la comparabilité des données et ont soutenu les efforts déployés par le Secrétariat pour étudier les questions s'y rapportant. Grâce à ce soutien, le Secrétariat envisage d'affiner les indicateurs existants tout en travaillant à l'élaboration de nouveaux indicateurs s'appuyant sur des données comparables.

15. Comme on l'a vu ci-dessus, trois groupes d'indicateurs sont présentés dans le rapport :

a) L'ensemble des 17 indicateurs initiaux considérés comme se prêtant à des comparaisons internationales dans le Document de travail sur la santé n° 22, mis à jour à l'occasion de la collecte de données de 2006. Il s'agit des indicateurs suivants :

- Taux de survie à cinq ans au cancer du sein
- Taux de dépistage par mammographie
- Taux de survie à cinq ans au cancer du col de l'utérus
- Taux de dépistage du cancer du col de l'utérus
- Taux de survie à cinq ans au cancer colorectal
- Incidence des maladies pouvant être prévenues par la vaccination (coqueluche, rougeole et hépatite B)
- Couverture des programmes de vaccination de base, à l'âge de deux ans, (coqueluche, rougeole et hépatite B)
- Taux de mortalité pour cause d'asthme entre 5 et 39 ans
- Taux de mortalité à 30 jours hors hôpital/à l'hôpital après un infarctus aigu du myocarde
- Taux de mortalité à 30 jours hors hôpital/à l'hôpital après un accident vasculaire cérébral
- Temps d'attente pour une opération après une fracture de la hanche, à 65 ans et plus
- Vaccination contre la grippe pour les adultes de plus de 65 ans

- Taux de tabagisme

b) Deux nouveaux indicateurs, testés lors du cycle de collecte de données de 2006 et jugés par le Groupe d'experts du Projet HCQI, à la suite des débats qui se sont déroulés lors de la réunion d'octobre 2006, comme étant suffisamment élaborés pour être ajoutés à l'ensemble initial.

- Examen de la rétine chez les patients diabétiques – cet indicateur figurait dans les questionnaires initiaux du Projet HCQI (en 2004 et 2005) mais n'était pas considéré comme approprié jusqu'à présent.
- Taux d'hospitalisation des adultes pour cause d'asthme – des données relatives à cet indicateur ont été collectées pour la première fois dans le questionnaire de 2006.

c) Sept indicateurs envisagés dans le projet HCQI dont on estime qu'ils ne sont pas prêts à être inclus dans la série car ils ne se prêtent à des comparaisons internationales, mais pour lesquels il a été recommandé de procéder à des analyses de sensibilité supplémentaires afin de trouver des moyens d'améliorer la comparabilité des données. Des données ont été rassemblées sur trois d'entre eux pour les questionnaires de 2003 à 2005 mais, faute d'une amélioration sensible de leur comparabilité, on considère que ces indicateurs ne se prêtent toujours pas à des comparaisons internationales. Il s'agit des indicateurs suivants :

- Dosage de l'HbA1c chez les personnes diabétiques
- Contrôle insuffisant de la glycémie chez les personnes diabétiques
- Amputations majeures chez les personnes diabétiques

16. Quatre d'entre eux ont fait l'objet d'une collecte de données pour la première fois dans le cadre du questionnaire de 2006 :

- Fracture de la hanche ou chute post-opératoire
- Réaction à la transfusion
- Taux d'hospitalisation pour diabète non contrôlé
- Taux d'hospitalisation pour hypertension

17. Les indicateurs du premier groupe sont accompagnés de leur définition et de données actualisées. S'agissant des indicateurs des deuxième et troisième groupes, le rapport examine des informations détaillées concernant la validité scientifique, l'importance et la disponibilité des données ainsi que la comparabilité internationale de ces dernières pour chacun d'eux.

18. Le taux de tabagisme continue de figurer dans la série d'indicateurs du Projet HCQI considérée dans le présent rapport. Cet indicateur a été initialement retenu car il représente l'aspect essentiel sur lequel les pays s'efforcent d'influer lorsqu'ils s'attachent à modifier le comportement des fumeurs par le biais du système de soins de santé. Beaucoup de questions ont été soulevées au sujet de cet indicateur et du fait qu'il dépend de nombreux facteurs qui échappent au contrôle du système de santé. Il s'agit donc d'un indicateur relativement moins représentatif de la qualité des soins de santé. Le Groupe d'experts examinera d'autres indicateurs concernant l'arrêt du tabac qui sont davantage liés aux soins de santé. Cela étant, à ce stade, ces indicateurs ne sont pas disponibles dans un groupe suffisamment important de pays. Le taux de tabagisme continue donc de figurer au nombre des 19 indicateurs de la série retenue pour 2006 dans le cadre du projet HCQI.

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INTRODUCTION

Health Care Quality Indicator Project: purpose and initial steps

19. Quality of health care delivery is a topic of concern throughout the member countries of the OECD. Articles on shortcomings in care or on comparative differences in quality across countries have become more frequent in the popular press. Efforts to improve the measurement of quality of care through the development of quality indicators have become more present in the literature and in policy forums worldwide (IOM, 2001; Sawicki, 2005; Roland, 2004; AHRQ, 2005). Many of these efforts target specific disease areas in one particular country while others compare across countries, but target particular conditions (Ramirez, 2005). The quality indicator set reported on here is one of the few efforts[9] which have attempted to examine quality of care across clinical conditions for more than one country.

20. The long-term objective of the Health Care Quality Indicator (HCQI) Project is to develop a set of indicators that can be used to raise questions on health care quality and that can be reliably reported across countries using comparable data. The indicators are intended to help raise questions for further investigations of differences in quality of care across countries. In light of its endeavour, the indicators of the HCQI Project are conceived as a "living set" in which indicators transit through different stages of maturity until they are considered fit for the purpose of international comparisons. These stages arrive from the joint effort between the participating countries and the Secretariat to improve the quality and the quantity of available data. At the core of the project rests the conviction that to enhance the international comparability of health care quality it is indispensable to have a thorough and methodical work plan for the refinement and standardisation of health care information along with the steady encouragement of information systems' development at the national level. Table 2 illustrates the process of broadening the set of indicators hitherto, showing the list of indicators involved in each data collection round and their assessed status in terms of fitness for use.

21. The OECD HCQI project began in 2001, building on two previous international initiatives to develop indicators of health care quality across countries. One of these, initiated by the Commonwealth Fund involved five countries (Australia, Canada, New Zealand, United Kingdom and United States). Another, initiated by the Nordic Council of Ministers, included another six countries (Denmark, Finland, Iceland, Norway, Sweden and Greenland). Initially a group of 19 countries (including ten of those listed under the two initiatives mentioned above) accepted the OECD's invitation to join the HCQI project. A preliminary list of indicators was derived from the work of these two earlier initiatives. Based on expert judgement, the HCQI Country Expert group chose 21 indicators out of that list, considering them as scientifically sound and important. These indicators had also shown an acceptable degree of comparability

[9] First Report and Recommendations of the Commonwealth Fund's International Working Group on Quality Indicators a Report to Health Ministers of Australia, Canada, New Zealand, the United Kingdom, and the United States. June 2004. The Commonwealth Fund. (no. 752).

across countries in the context of the previous exercises. Data collection for these 21 indicators was conducted across participating countries to prove its feasibility. Various checks were undertaken of the indicators' specifications across countries to establish their individual fitness for the purpose of international comparisons.

22. The indicator selection criteria applied in the process of creating the original and current indicator list are summarised here. For an indicator to be a useful tool for evidence-based policy decisions, two conditions should be met. First, it has to capture an **important** performance aspect. Second, it must be **scientifically sound**.

23. The **importance** of an indicator can be further broken down into three dimensions:

- *Impact on health*. What is the impact on health associated with this problem? Does the measure address areas in which there is a clear gap between the actual and potential levels of health? The impact on health is quantified where data is available for each indicator by using mortality and morbidity estimates from the World Health Organization for the 'EURO A'[10] group of countries, (Murray, 2001). This group of countries includes most of the countries participating in the OECD HCQI Project.

- *Policy importance.* Are policymakers and consumers concerned about this area? Although this dimension is difficult to quantify objectively, the cost associated with the condition covered by each indicator is used to indicate the economic importance related to each indicator. Where suitable evidence on costs exists, it is also presented for each indicator.

- *Susceptibility to being influenced by the health care system*. Can the health care system meaningfully address this aspect or problem? Does the health care system have an impact on the indicator independent of confounders like patient risk? Will changes in the indicator give information about success or failure of policy changes? This dimension is discussed based on a review of the relevant literature demonstrating that the health system can influence each indicator.

The **scientific soundness** of each indicator can also be broken down into three dimensions:

- *Face validity*. Does the measure make sense logically and clinically? The face validity of each indicator in this report is based on the basic clinical rationale for the indicator and on past usage of the indicator in national or other quality reporting activities.

- *Content validity*. Does the measure capture meaningful aspects of the quality of care? Content validity is assessed through a literature review of studies relevant to each indicator.

- *Reliability*. Does the measure provide stable results across various populations and circumstances? Reliability of each indicator is assessed through a literature review of studies assessing the stability of results across populations or circumstances.

24. The application of these criteria to the initial indicator set of the HCQI Project had been carried out as part of the two predecessor projects to the HCQI Project, mentioned above. For the Commonwealth Fund work, a rating system was used to rank each indicator based on the above criteria. Indicators which

[10] WHO EURO A countries include Andorra, Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

ranked highly on these criteria were retained in the measure set. This rating process was reviewed by the OECD Secretariat and then by the HCQI Expert Group as it began its work on selecting indicators.

25. The initial gathering of information and analysis was carried out from 2003 to 2005; new countries have continued to join the project, providing additional data for the analysis. The indicators collected during this period are listed in the first column of Table 2. Of the indicators, 17 of the 21 tested were considered fit for the purpose of international comparisons, but 4 of them (those related to diabetes care) were regarded as not yet ready, either due to their lack of availability across a sufficient number of countries (the experts agreed on a threshold of at least 10 countries able to provide data on the indicator) or some comparability issues not yet overcome. The data collected for the 21 indicators, together with the analysis of their fitness for international comparisons, were published as OECD Health Working Paper No. 22, *Health Care Quality Indicators Project: Initial Indicators Report* (Mattke et al., 2006).

26. The set of indicators resulting from the initial compilation effort was judged by the HCQI Expert Group as being too limited for comprehensive comparisons of the quality of health care across countries. Therefore the HCQI Expert Group instituted a process to identify important gaps in the areas of health care for which indicators had been developed, judging by the burden of disease being tackled, health care utilisation rates and costs. Country experts were asked to rate a set of health care condition areas in terms of importance. This rating process yielded 5 priority areas for the development of additional HCQI indicators[11]:

- Cardiac care
- Diabetes care
- Primary care and prevention
- Mental health
- Patient safety

27. Five international expert panels were commissioned to propose relevant and scientifically sound measures for each of these areas[12]. The result was a list of 86 indicators considered as valid and reliable to report on the quality of care in these priority areas.

General methods for the indicator set of the HCQI Project

28. Following the release of the five expert panel reports recommending the 86 indicators in the 5 priority areas, an availability survey was conducted across the participating countries to find out whether 10 or more countries would be able to collect the data for each indicator. The 86 indicators included a few already being collected in OECD Health Data as well as some being gathered as part of the initial indicator set at the time when the recommendations were issued.

[11] For a detailed description of this decision making process please consult the monographic supplement published by *International Journal for Quality in Health Care*; September 2006 Volume 18 supplement I.

[12] The five reports were published as OECD Health Technical Paper Nos. 14 - 18. The reports are downloadable from the HCQI web page www.oecd.org/health/hcqi. An overall picture of the process and a summary of the recommendations produced by the 5 panels can also be found in the monographic supplement published by the *International Journal for Quality in Health Care*, 2006, Vol.18 (suppl. 1).

29. Questionnaires were sent out to 23 countries in March 2005 and replies were received from March 2005 through November 2005.[13] The questionnaires asked countries, on a measure by measure basis, to respond for each indicator in one of five ways. The response possibilities were as set out in Table 1.

Table 1. Example of questionnaire response categories

Your response		
Availability of this indicator in your country	Indicator is currently collected	☐
	Indicator could be constructed from available data	☐
	A variant of this indicator could be constructed (Please describe nature of the variation below)	☐
	Data for this indicator might become available in the next three years	☐
	Unlikely to become available	☐
Additional notes and details		

Analysis steps and criteria for selecting indicators

30. In assessing whether an indicator met the threshold of 10 or more countries which could supply the data, the Secretariat considered both the number of countries that stated that an indicator was "currently collected" and the number of countries that stated that an indicator "could be constructed from available data".

Summary of the results

31. The following findings are based on country responses: 5 indicators out of the recommended 86 were "currently collected" in 10 countries or more, 3 in diabetes care (lower extremity amputations rates, annual eye exam and poor HbA1c control –already included in the initial indicators) and 2 in primary care and prevention (smoking rate and low birth weight rate – with these two already collected by *OECD Health Data*). Of the remaining indicators in these two fields and all indicators proposed for cardiac care, mental health care and patient safety, none met the criterion of "currently collected" in 10 countries or more. Eighteen additional indicators could be "constructed from available data" from 10 or more countries. This brought the **total number of indicators available** to **23 (**none for mental health[14]), broken down as follows:

- two for the area of cardiac care (CABG in-hospital mortality rate and PTCA in-hospital mortality)

- three for diabetes care (lower extremity amputations rates, annual eye exam and poor HbA1c control – already included in the initial indicators data collection, though not fit for international comparisons due to problems in national representativeness of data and other comparability issues)

[13] The Slovak Republic only recently joined the HCQI project and therefore did not take part in the survey. The findings will be updated as any additional country information is provided.

[14] Note that for two mental health indicators nine countries stated that the data were available or that they could construct the indicator from available data. These two are: MH7 (hospital readmissions for psychiatric patients) and MH12 (mortality for persons with severe psychiatric disorders).

- nine for patient safety (problems with childbirth, obstetric trauma-vaginal, obstetrics trauma-caesarean section, post-operative hip fracture, foreign body left in during procedure, birth trauma-injury to neonate, complications of anaesthesia, transfusion reaction and wrong blood type)

- nine for primary care and prevention (smoking rate, diabetes prevalence, low birth weight rate, obesity prevalence – already collected by *OECD Health Data*, abortion rates, prevalence of immunisable conditions, physical activity, gonorrhoea/Chlamydia rates and hospitalisation for ambulatory-care sensitive conditions)

32. Based on the above findings, the Expert Group discussed the possibility of adding a small number of these "new" indicators to the 2006 data collection, taking into account both their importance and availability. With the input of the members of the Primary Care and Prevention and Patient Safety panels, five additional indicators were recommended by the HCQI Expert Group for data collection as part of the HCQI 2006 questionnaire: a) asthma admission rate; b) hypertension admission rate; c) diabetes admission rate – these three being preventable causes of hospitalisation (or ambulatory-care sensitive conditions); d) post-operative hip fracture or fall and e) transfusion reaction rate. These indicators were selected for two reasons. First, the 3 indicators of preventable hospitalisations were deemed to be among the most tested of the indicators with broad data availability across countries. Second, patient safety was an area selected as high priority for work in 2006 by the Expert Group, thus the 2006 data collection would allow for an initial testing of the feasibility of international comparisons on two safety indicators using administrative data. When these 5 new indicators were added to the previous 21, the resulting collection exhausted the indicators that had broad consensus and for which comparable data across countries was available. Table 2 summarises the original collection of 21 indicators and the latest collection of 26, distinguishing between those that are deemed fit for international comparison and those that are not yet deemed fit on grounds of comparability.

Table 2. Composition and evolution of the HCQI set of indicators

Indicator	2003-2005 set of indicators as published in OECD HWP No. 22	2006 set of indicators
Breast cancer five-year survival rate	fit for international comparison	fit for international comparison
Mammography screening rate	fit for international comparison	fit for international comparison
Cervical cancer five-year survival rate	fit for international comparison	fit for international comparison
Cervical cancer screening rate	fit for international comparison	fit for international comparison
Colorectal cancer five-year survival rate	fit for international comparison	fit for international comparison
Incidence of vaccine preventable diseases (Pertussis, measles, and hepatitis B)	fit for international comparison	fit for international comparison
Coverage for basic vaccination programme, age 2 (Pertussis, measles, and hepatitis B)	fit for international comparison	fit for international comparison
Asthma mortality rate, ages 5-39	fit for international comparison	fit for international comparison
In-hospital mortality rate within 30 days of hospital admission for AMI	fit for international comparison	fit for international comparison
In-hospital mortality rate within 30 days of hospital admission for stroke	fit for international comparison	fit for international comparison
In-hospital waiting time for surgery after hip fracture, over age 65	fit for international comparison	fit for international comparison
Influenza vaccination, over 65	fit for international comparison	fit for international comparison
Smoking rate	fit for international comparison	fit for international comparison
Retinal exam in diabetics	evaluated as not fit	fit for international comparison
Asthma admission rate	not reviewed	fit for international comparison
Annual HbA1c test for diabetics	evaluated as not fit	evaluated as not fit
HbA1c level indicating poor glucose control	evaluated as not fit	evaluated as not fit
Major amputations in diabetics	evaluated as not fit	evaluated as not fit
Post-operative hip fracture rate	not reviewed	evaluated as not fit
Transfusion reaction rate	not reviewed	evaluated as not fit
Uncontrolled diabetes admission rate	not reviewed	evaluated as not fit
Hypertension admission rate	not reviewed	evaluated as not fit

33. The HCQI Expert Group has agreed to conduct developmental work in each of the priority areas, establishing specific expert subgroups for each of them sequentially. Based on the results of the data availability survey and on a review of the clinical and policy importance and scientific soundness ratings given to the indicators, the HCQI Expert Group at its 2005 meeting recommended that the initial focus areas would be patient safety and mental health. Both subgroups were formed in April 2006 and important progress in addressing methodological issues has been and continues to be made.

DATA COMPARABILITY ISSUES

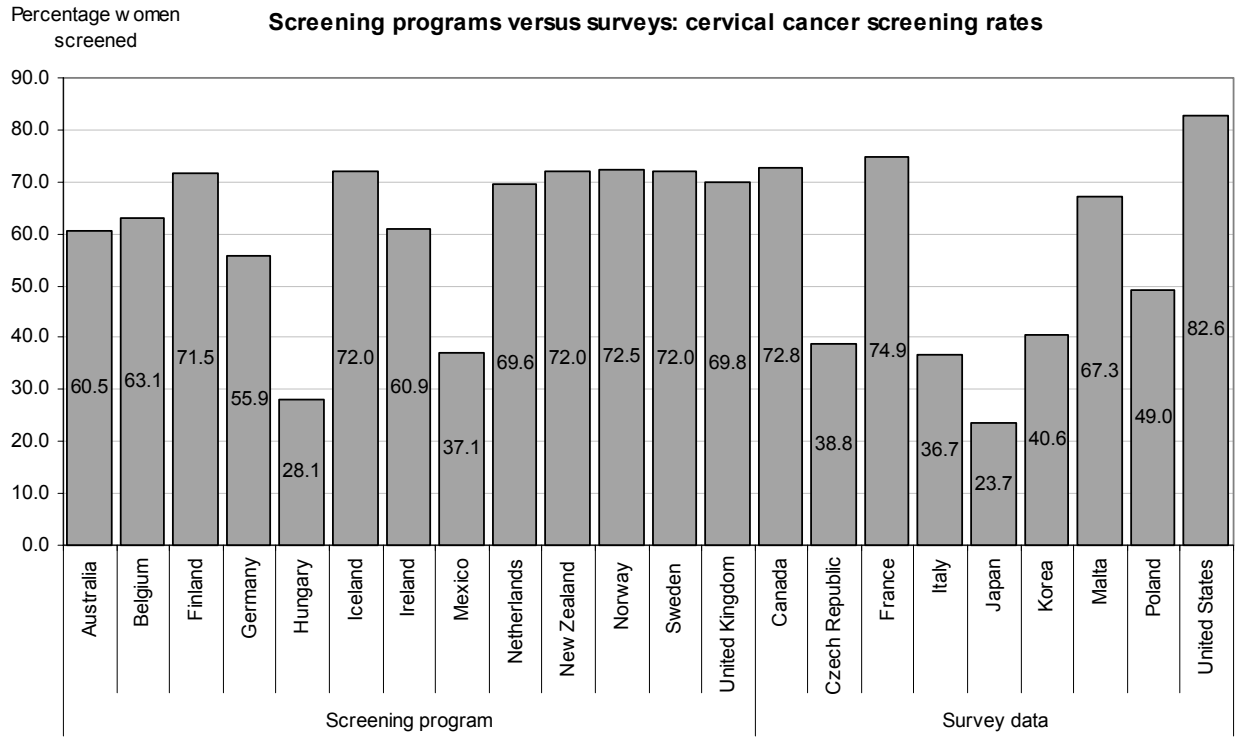
34. In OECD Health Working Paper No. 22 on the Initial Indicators for the HCQI Project, an extensive examination of a range of data comparability issues was reported. Data comparability issues persist in the current indicator set requiring further investigation. These issues were discussed at the recent HCQI Experts Meeting in October 2006. These issues include:

- the use of non-nationally representative data
- presentation of administrative versus survey data for cancer screening
- harmonising data recall periods for cancer survival and screening
- the use of a truncated standard population for age adjustment

35. The use of non-nationally representative data In Health Working Paper No. 22, the OECD Secretariat published data from countries that was not strictly nationally representative. This was an explicit recommendation of the HCQI Expert Group in 2004, when several countries stated that they were unable to provide nationally representative data for cancer survival. At the time, the HCQI Expert Group discussed this and recommended that non-nationally representative data should be included where countries provided a written statement that the data was broadly generalisable to the nation as a whole. The HCQI Expert Group reviewed this decision in October 16-17, 2006 and recommended that non-nationally representative data should be presented separately in the working paper, noting the reason why the data was presented in a separate note. It was hoped that this solution would avoid confusing comparisons between nationally representative and non-nationally representative data.

36. Presentation of administrative versus survey data for cancer screening In Health Working Paper No. 22, data were presented on cancer screening for breast and cervical cancer. In many cases, these data came from varying sources across countries, namely administrative and programmatic data or household surveys. In the analysis reported in Health Working Paper No. 22, there appeared to be a systematic difference between these two data sources, in that administrative records often provided lower estimates than survey data. The most recent round of data collection in 2006 shows that there no longer appears to be a systematic difference between these two data sources (see Figure 1 below.) However, the broader literature continues to report differences between administrative records and surveys.

Figure 1. Findings on differences between administrative and survey data for cancer screening



37. Harmonising data recall periods for cancer survival and screening An additional issue with the cancer screening and cancer survival data is that recall periods differ widely across countries. In the area of cancer survival, countries also have widely varying time periods from which they are presenting data, since many countries do not compile their cancer survival statistics annually, but rather every 3 or 5 years, depending on the periodicity of the data system. Data will be reported according to the most recent data available in the survival interval in order to simplify data presentation. The Secretariat will further work with countries to attempt to harmonise these data year differences, using the EUROCARE[15] data as one guide since EUROCARE countries have already attempted to agree on data years. For cancer screening, many countries have reported data simply according to national survey specifications. That is, if the question on the national survey and the national report for cancer screening is "How often in the last year did you receive a screening for cervical cancer?" then this was the data reported, despite the fact that this does not correspond to the indicator specification[16].

[15] The EUROCARE project (European cancer registries study on cancer patients' survival and care) is an international collaborative study on the survival of cancer patients in Europe. It currently involves 67 population-based cancer registries operating in 22 European countries. EUROCARE has been promoted by the European Community.

[16] The indicator specification for the numerator for breast cancer is "Number of women 50-69 reporting of having received a bilateral mammography within the past year or number of women 50-69 screened through an organised program within the past year." The indicator specification for the numerator for cervical cancer screening is "Number of women 20-69 reporting cervical cancer screening within the past 3 years or number of women aged 20-69 screened through an organised program within the past 3 years".

38. In October 2006, the HCQI Experts agreed that countries should try to harmonise these data over the next year so that the 2008 data collection would represent more comparable data. It was agreed, however, that the data should be presented as collected, with appropriate notes on differing recall and data years.

39. The use of a truncated standard population for age adjustment Age standardisation is necessary since a country's age structure, depending on the nature of the disease and the structure of the population, can influence the international comparison of health system performance. For example, if Country A's population is notably older as a whole than Country B's population, we would expect there to be higher rates of chronic diseases and thus the population, as a whole, may appear "sicker." This may cause apparent differences in performance for diseases whose incidence and prognosis depends on the age at diagnosis. Such apparent differences are not within the control of the health system, and adjustments for them should be made when comparing performance levels on quality indicators across countries. The same holds true for longitudinal comparisons within one country if the country's age structure changes significantly over time.

40. To account for such differences in age structure, age adjustments are made based on standardised populations. The resulting age-adjusted rates reflect a country's hypothetical performance on a standard population and should thus be viewed as relative indexes rather than actual measures. These adjustments can become extremely important when examining data over time and comparing performance across geographical areas. Many national reports on quality of care use some form of age adjustment to account for changes over time in the age structure of the population (CIHI, 2004).

41. An analysis of the impact of age standardisation was undertaken as part of OECD Health Working Paper No. 22. The findings indicated that there appeared to be virtually no difference in countries' relative rankings using either a 1980 or 2005 OECD standard population in calculating cancer survival rates. Secondly, there appeared to be only small differences in the ranking of countries between the use of a 1980 OECD standard population and the disease specific EUROCARE cancer population for *relative* survival rates. There was, however, some modest influence in the ranking of countries between the use of the 1980 OECD standard population and the EUROCARE cancer population in terms of *observed* survival. *Relative* survival rates are the ratio of the disease-specific mortality to overall mortality in a given population. The above findings, therefore, are not surprising as these *relative* survival rates control to some degree for differences in the age structure of the general population. Lastly, it appears that the use of a truncated version of the 1980 OECD standard population (at age 45+, thus shaping the age structure more closely to a disease specific population) provides estimates moderately different from those based on the EUROCARE cancer population, although the differences were more important for some types of cancers (cervical cancer) than for others. The recommendation at that point was to keep the 1980 OECD standard population as reference for standardisation in 2006 data collection and start exploring more specialised adjustment approaches for both *relative* and *observed* survival rates.

42. Working Paper No. 22 introduced also a recommendation to consider the need to apply age standardisation to the calculation of case fatality rates. So far, the Secretariat has suggested to countries to provide age standardised data or specific age groups rates for the two case fatality rate indicators, however, it has not been set as a requisite to accept data in any of the data collections hitherto due to the inability of several countries to provide data with this level of disaggregation. However the potential impact of this lack of age standardisation is not minor. In a presentation to the HCQI Experts' Group in October 2006, Dr. Max Köster, one of Sweden's representatives in the Expert Group, presented findings from an analysis examining this issue for AMI and stroke survival rates. This analysis looked at Swedish data and compared different adjustments by age and discussed whether all ages should be included. He showed how 98% of the deaths for ischemic stroke occurred in age groups of 45+. However, in the 1980 OECD standard population that was used in the HCQI Initial Indicators Report, only 31% of the population is found in this age group. This means that variations in small numbers of deaths in the younger age groups can have a

major impact if the standard population for age adjustment differs sharply in structure from the age pattern of mortality. The analysis presented two different scenarios for the same data; in Scenario A none of the 8 cases presented among the population 10-14 years old dies in the 30 days following diagnosis. In scenario B one of the cases ends fatally. The specific fatality rate for this group would actually rise from 0 to 12.5%, and due to the weight attached to this segment of population in 1980 OECD population the corresponding standardised rate will increase from 3.66% in scenario A to 4.70% in B. (Table 2).

Table 3. 2004 Admission based ischemic stroke case fatality in Sweden

Ages	Number of admissions	"True" weights Incidence distribution	Accum "true" weight (%)	Fatality rate scenario A[17]	Fatality rate scenario B [18]	Weights 1980	Accum 1980 weight (%)	Rates standardised to OECD 1980
TOTAL	35323	100,00%		9,18%	9,18%	100,00		**Scenario A**
								3.66%
0- 4	32	0,09%		12,50%	12,50%	7,94		**Scenario B**
5- 9	6	0,02%		0,00%	0,00%	8,09		**4.70%**
10-14	8	0,02%		0,00%	12,50%	8,30		
15-19	13	0,04%	1.81	0,00%	0,00%	8,56	68.67	
20-24	36	0,10%		5,56%	5,56%	8,20		
25-29	53	0,15%		1,89%	1,89%	7,81		
30-34	73	0,21%		6,85%	6,85%	7,63		
35-39	155	0,44%		0,65%	0,65%	6,31		
40-44	256	0,72%		2,34%	2,34%	5,83		
45-49	**422**	**1,19%**		**2,37%**	**2,37%**	**5,56**		
50-54	**736**	**2,08%**		**2,45%**	**2,45%**	**5,46**		
55-59	**1612**	**4,56%**		**3,41%**	**3,41%**	**5,08**		
60-64	**2416**	**6,84%**		**2,90%**	**2,90%**	**3,89**		
65-69	**3045**	**8,62%**	**98.19**	**4,47%**	**4,47%**	**3,88**	**31.31**	
70-74	**4312**	**12,21%**		**6,52%**	**6,52%**	**3,18**		
75-79	**6292**	**17,81%**		**7,69%**	**7,69%**	**2,26**		
80-84	**7649**	**21,65%**		**10,52%**	**10,52%**	**1,23**		
85-	**8207**	**23,23%**		**16,61%**	**16,61%**	**0,77**		

The recommendation issued by the Expert Group is that, for the OECD's HCQI 2008 data collection, a new OECD standard population, truncated at ages below 45, should be developed, tested and disseminated to participating countries for age adjustment of survival and mortality rates. This will serve as a better approximation to a disease-specific population. The Secretariat has developed an updated standard OECD reference population for 2005, to account for the changes in age structure across OECD countries in the last decades. This population will serve as the basis for the proposed truncation exercise.

[17] 0 cases resulting in death in the group 10-14

[18] 1 case resulting in death in the group 10-14

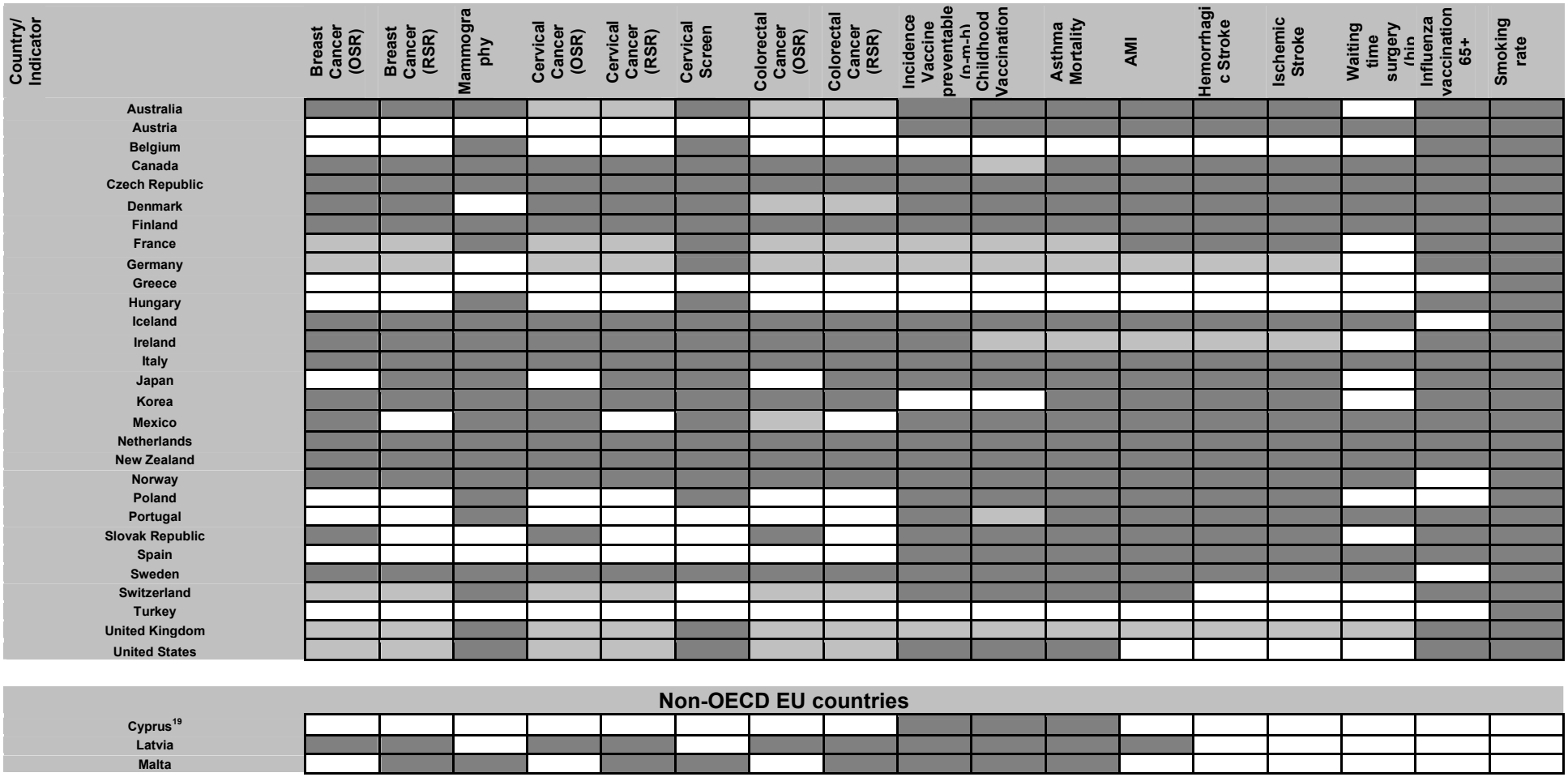
"INITIAL" (2003-2005) INDICATORS: 2006 SPECIFICATIONS AND DATA RESULTS

43. This section of the report presents data updated in 2006 for the 2003-2005 set of indicators. The indicators listed in this section are the "initial" HCQI indicators published in OECD Health Working Paper No. 22. They are listed in column 1 of Table 2 above. A full discussion of the scientific soundness and clinical importance of the indicators presented in this section is presented in OECD Health Working Paper No. 22 (http://www.oecd.org/dataoecd/1/34/36262514.pdf) and is not repeated here.

44. As mentioned earlier, it is clear that while the indicators listed in this section have met the HCQI criteria for being scientifically sound, clinically important and having comparable data across countries, this does not mean that they are free of data comparability issues. This paper reports fully on the data comparability for all indicators. The OECD Secretariat will continue to work with countries to improve the comparability of the indicators listed in this section.

45. The following table summarises the data availability for all the indicators presented in this section of the report.

Table 4. Availability of data for 'Initial' (2003-2005) Indicators presented in this section



(Blank/white cells indicate unavailability of data; grey cells available but not updated data for this paper and black cell indicate updated data)

[19] See footnotes 2 and 3 on page 3.

Breast cancer five-year survival rate

Operational Definition

A. 5-year observed survival rate (OSR), breast cancer (Diagnostic code: ICD-9 C:174.xx, ICD 10: C50.x)

Numerator: Number of women diagnosed with breast cancer surviving five years after diagnosis.

Denominator: Number of women diagnosed with breast cancer.

B. 5-year relative survival rate (RSR), breast cancer (Diagnostic code: ICD-9 C:174.xx, ICD 10: C50.x)

Numerator: Observed rate of women diagnosed with breast cancer surviving five years after diagnosis.

Denominator: Expected survival rate of a comparable group from the general population.

Table 5. Breast cancer five-year survival rate

Breast cancer						Mortality per 100 000 women	
5-year survival rates							
Country	Data year	OSR (95% CI)		RSR (95% CI)		Data year	Rate
		Crude rates	Age-standardised rates	Crude rates	Age-standardised rates		
Australia	1998-2002	80.8 (80.5-81.2)		86.6 (86.3-87.0)		2003	21.1
	1992-1997	76.5 (76.2-76.8)	77.0 (74.6-78.8)	82.8 (82.4-83.1)	80.0 (77.8-81.8)		
Canada	1998-2003	79.0 (78.0-79.0)	81.0 (80.0-83.0)	86.0 (86.0-87.0)	84.0 (82.0-85.0)	2002	23.7
	1997-2002	78.0 (78.0-79.0)	79.0 (78.0-81.0)	86.0 (86.0-87.0)	82.0 (81.0-84.0)		
Czech Republic	1994-1998	66.6 (65.9-67.2)		75.7 (74.9-76.4)		2004	25.5
Denmark	2001-2005	77.0 (75.0-78.0)		85.0 (84.0-87.0)		2001	32.8
Finland	1999-2003	80.0 (79.0-81.0)		88.4 (87.5-89.3)		2004	19.1
	1995-2000	76.2 (74.5-77.8)		85.6 (83.7-87.4)			
France	1990-1994		70.6 (n.a-n.a)		79.7 (n.a-n.a)	2003	23.5
	1985-1989		73.0 (n.a-n.a)		81.0 (78.2-81.3)		
Germany	1993-1997	69.0 (67.0-71.0)		78.0 (76.0-80.0)		2004	24.5
Iceland	1996-2000	80.8 (n.a-n.a)		89.4 (85.5-93.3)		2004	23.9
	1995-1999	80.4 (n.a-n.a)		88.8 (85.3-92.4)			
	1993-1997	77.1 (n.a-n.a)		85.6 (85.3-92.4)			
Ireland	1999-2004	72.6 (70.4-74.6)		79.7 (77.3-81.9)		2005	28.4
	1998-2002		63.5 (62.5-64.6)		75.3 (73.5-77.1)		
	1994-1998	65.0 (64.0-66.0)		73.0 (71.0-74.0)			
Italy	1995-1999	77.0 (76.0-77.0)		85.0 (84.0-85.0)		2002	22.6
	1990-1994		74.0 (n.a-n.a)		81.0 (79.9-81.2)		
Japan	1993-1996			83.1 (82.3-83.9)		2004	10.4
Korea	1998-2002	82.6 (82.1-83.1)		84.6 (84.0-85.1)		2004	5.6
Mexico	1997-2001	52.0 (n.a-n.a)				1995	11.8
	1997-1998	47.0 (n.a-n.a)					
Netherlands[1]	1996-2000	75.1 (74.2-76.2)		83.3 (82.2-84.4)		2004	27.7
	1993-1997	74.0 (72.0-76.0)		82.0 (80.0-84.0)			
New Zealand	1998-2003	75.9 (75.1-76.7)	78.7 (77.8-79.6)	83.5 (82.6-84.4)	81.2 (80.3-82.1)	2001	26.4
	1994-1999	70.9 (69.8-72.0)	71.0 (68.8-73.2)	79.5 (78.2-80.8)	76.8 (75.2-78.4)		
Norway	1998-2003	72.1 (71.3-72.9)		82.8 (81.9-83.7)		2004	20.1
	1996-2001	73.9 (72.0-75.7)		86.6 (84.5-88.8)			
	1995-1999	73.2 (72.4-74.0)		83.6 (82.7-84.5)			
Slovak Republic	1998-2002	72.0 (n.a-n.a)				2002	22.1
Sweden	1999-2004	77.8 (77.2-78.5)		87.0 (86.3-87.7)		2002	19.6
	1996-2001	75.3 (74.1-76.4)		84.7 (83.4-86.0)			
Switzerland	1990-1994	73.0 (n.a-n.a)		81.0 (n.a-n.a)		2004	23.0
United Kingdom	1998-2001	77.0 (76.2-77.8)		80.0 (79.9-80.8)		2004	26.0
	1995-1999	75.0 (74.9-75.7)		82.0 (n.a-n.a)	78.9 (78.2-79.7)		
United States	1998-2002	79.3 (78.7-79.9)		88.9 (88.3-89.5)		2002	22.0
	1992-1996	83.0 (80.2-84.9)		86.0 (83.0-88.0)			

Non-OECD EU countries						Mortality per 100 000 women	
Country	Data year	OSR (95% CI)		RSR (95% CI)		Data year	Rate
		Crude rates	Age-standardised rates	Crude rates	Age-standardised rates		
Latvia	1999-2003	59.5 (n.a-n.a)		66.6 (n.a-n.a)		2005	32.5
Malta	1998-2002			78.0 (73.0-82.0)		2005	28.1
	1993-1994				74.8 (69.0-81.0)		

Notes:

Reference population for age-standardised rates: OECD 1980, except for France, Ireland, Italy and Malta who refer to the Eurocare-3 population and the Slovak Republic to the Standard European population.

CI stands for "Confidence Interval". Observed survival rates are an estimation of the probability of a patient having survived five years after being diagnosed of cancer based on the actual data available. Relative survival rates adjusts this probability of surviving a cancer diagnosis by the general probability of surviving attributable to any member of the same age group independently of whether they do suffer cancer Thus the 95% confidence interval (CI) illustrates the degree of variability associated with these estimates. Wide confidence intervals indicate high variability, therefore, these estimates should be interpreted with due caution. When estimates are based on a small number of cases, it is more likely that observed differences are due to random, rather than systematic influences.

"n.a" stands for "no data available".

1. Data is not national, but has been weighted by the incidence they represent upon the nation. See Sources and Methods for more information.

Source: HCQI Project, 2007. Mortality data: OECD Health Data 2007, July 07

Breast cancer five-year survival rate, sources and methods

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
Australia	Australian Institute for Health and Welfare & National Breast Cancer Centre 2006. Breast Cancer in Australia: an overview, 2006. AIHW cat. no. CAN 29. Canberra: AIHW.		20+			1980 OECD population	
Canada	Canadian Cancer Registry	Canadian data coded using ICDO-3 (not ICD 9/10)	15-99		Yes	1980 OECD population	Missing cases treated as: we rely on record linkage for vital status (i.e. passive follow-up) and as such we cannot identify cases lost to follow-up. So we don't "handle" them in any way. Practically speaking there will be people who die outside of the country and whose death is not recorded in the national mortality database.
Czech Republic	National Cancer Registry of the Czech Republic; Vital Statistics (Czech Statistical Office)			1980-1998	Yes		Missing cases treated as: survivors
Denmark	National Cancer Registry	ICD-10 C50		From 1977	Yes		Missing cases treated as: dropped out. The calculations are based on unique identifiers, why few people are lost to follow-up. The Update is based on the National Hospital Register for patients diagnosed in 2001 and reported in 2005.
Finland	Finnish Cancer Register	ICD-10 C50		1953-2004	Yes		Missing cases treated as: No losses to follow-up

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
France	EUROCARE-3: Electronic availability of EUROCARE 3 data: a tool for further analysis P Roazzi, Annals of Oncology 14 150-155, 2003. National death causes database/Available Eurostat database.	ICD-10 C50	15+		4 regional registries: Calvados, Côte d'Or, Isère, Bas-Rhin representing 3.199.575 persons, i.e. 5.6% of French population in 1990. Generalisable.		ICSS population
Germany	Saarland Cancer Registry	ICD-9 174	15-89		State of Saarland. Not generalisable		Includes only: Saarland residents, 15 and 89 yrs at diagnosis, with invasive/malignant cases, first primaries. Saarland residents at time of diagnosis, age at time of diagnosis between ages 15-89. Date of diagnosis 1993-1997. Follow-up to December 2000.
Iceland	Icelandic Cancer Registry	ICD-10 C50		1955-1995	Yes		Missing cases treated as: non-survivors
Ireland	NCRI. Irish National Cancer Registry	ICD-10 C50	15-99			Eurocare 3 standard patient populations	Missing cases treated as: Follow up is passive, by means of matching registered cases to death certificates. Currently matching completed to 31 December 2003 (censoring date) and patients not matched by this date (known to have died by this date) are assumed to be alive
Italy	Registro Nazionale Tumori	ICD-10 C50	14+		Yes		Missing cases treated as: dropped out
Japan	Tsukuma H, Ajiki W, Ioka A, Oshima A, and Research Group of Population-Based Cancer Registry of Japan, Survival of cancer patients diagnosed in 1993-96: collaborative study of population-based cancer registries in Japan, Japanese Journal of Clinical Oncology, 36: 602-607, 2006	ICD-9 174					

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
Korea	Korea Central Cancer Registry Source of mortality data: Annual Report on the Cause of Death Statistics. Korea National Statistical Office, 2006.	ICD-10 C50			Yes		Missing cases treated as: dropped out 1. The Korea Central Cancer Registry has been collaborating with the Korean Breast Cancer Society's breast cancer registry to produce national breast cancer statistics. 2. Since our cancer incidence DB is under review of the International Agency for Research on Cancer (IARC), statistical figures may change after the completion of the review.
Mexico	Estadistica de Casos de Cancer de Mama: Servicio de Oncologia Mamaria Hospital de Ginecobstetricia No. 4 Luis Castelazo Ayala. Source of mortality data: Sistema Institucional de Mortalidad (SISMOR).	ICD-10 C50			No. By size it's generalisable to national level. This Hospital covered 22% of total cases of breast cancer in the country		Missing cases treated as: non-survivors

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
Netherlands	National Institute of Public Health and the Environment. Source of Mortality: Statline. Voorbrug: Statistics Netherlands, 2006 Website http://statline.cbs.nl/StatWeb/Start.asp?lp=Search/Search&LA=EN&DM=SLEN.	ICD-10 C50	All		No. In the Netherlands, the National Cancer Registry of the Association of Comprehensive Cancer Centres (CCC) delivers incidence rates. However, survival rates can not be calculated for the whole country. At this moment, three Comprehensive Cancer Centres have data on cancer survival. In a few years, all CCC's will deliver data on cancer survival. Data therefore cover over 40% of Dutch population. Data have been weighted by the incidence of the CCC into the total incidence of the country.		Missing cases treated as: the CCC's obtain data of persons in the population who died. These data are obtained from the Municipal Basis Registry, which is to a large extent complete. Patients, of whom no death report is obtained, are still alive. Emigrants are censored. Overall, almost 100% of follow-up is complete.
New Zealand	New Zealand Cancer Registry (NZCR). Source of mortality data: NZHIS Mortality data collection	ICD-10-AM (Australian Modification) C50		1994-2006	Yes	OECD standard population 1980 (only for relative rates)	Missing cases treated as: passive follow-up, no losses DCO (Death certificate only) cases were excluded
Norway	Cancer Registry of Norway	ICD-10 C50					Missing cases treated as: dropped out

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
Slovak Republic	National cancer registry	ICD-10 C50			Yes	standard European population	Missing cases treated as: returned to the reporting units for correction, therefore we do not have missing cases.
Sweden	The Swedish Cancer Register	ICD-9 174		1960-1998	yes		Missing cases treated as: censored in a survival analyses (actuarial method)
United Kingdom	Office for National Statistics/Department of Health	ICD-9 174	15-99		Data are for England	OECD 1980	The age profile of the England and Wales cancer population differs from the OECD population. For instance, 51% of the adult population is age 15-39, but only 6.1% of breast cancer cases are in this age group.
United States	Surveillance Epidemiology and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER 9 Regs Public-Use, Nov 2004 Sub (1973-2002), National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch, released April 1, 2005, based on the November 2004 submission					OECD 1980	

Non-OECD EU countries							
Country	**Source**	**Diagnosis Code**	**Age groups included**	**Additional years**	**Is this a national registry?**	**Reference population**	**Comments**
Latvia	Cancer Registry. Source of mortality data: National Death Causes Database.	ICD-10 C50			Yes		Missing cases treated as: In the calculation from "missing cases" 1/2 treated as survivors and other 1/2 as non-survivors

Non-OECD EU countries							
Country	**Source**	**Diagnosis Code**	**Age groups included**	**Additional years**	**Is this a national registry?**	**Reference population**	**Comments**
Malta	Malta National Cancer Registry: http://www.sahha.gov.mt/pages.aspx?page=91 Source of mortality data: WHO-HFA: http://data.euro.who.int/hfadb/						Mortality figures are age-standardised using European Standard Population

Mammography screening rate

Operational Definition

Numerator: Number of women ages 50-69 reporting having received a bilateral mammography within the past year.

Denominator: Number of women ages 50-69 answering survey questions on mammography or eligible for organised screening programme.

Table 6. Mammography screening rate

Country	% women 50-69 screened							Survey or screening
	2000	2001	2002	2003	2004	2005	2006	
Australia	56.9	57.1	56.1	55.6				screening program
Belgium	38	50	50	56	56			screening program
Finland		88		87.7				screening program
Hungary[1]	26.7	28.9	48.3	60.2	55.1			screening program
Iceland[2]	61	62	62	62	61	61		screening program
Ireland[3]			78.4	79.5	77.1	76.6		screening program
Japan	1.2	1.7	2.1	2.6	4.1			screening program
Netherlands	78.7	78.8	78.8	80.4	81.7	81.9		screening program
New Zealand[3]			63					screening program
Norway				98				screening program
Portugal				60.1				screening program
Sweden[5]					83.6			screening program
United Kingdom[3]	69.3	70.2	69.8	69.3	69	69.5		screening program
Canada	69.5			70.6		70.4		survey
Czech Republic			26.6					survey
France			55	72.8				survey
Italy[4]	29				59			survey
Korea						33.6		survey
Mexico						22.1	63.5	survey
Poland					15.4			survey
Slovak Republic	6.9	9.1	11.4	12.4	14.8	17.1		Survey
Switzerland			27					survey
United States	62.2			60.8				survey

Non-OECD EU countries			
Country	Year	%	Survey or screening
Malta[2]	2002	57.3	survey

Notes:
1. 45-65 years.
2. 40-69 years.
3. 50-64 years.
4. 55-69 years.
5. 50-74 years.
Source: HCQI Project, 2007

Mammography screening rate, sources and methods

http://www.ecosante.org/OCDEENG/370010.html

Cervical cancer five-year survival rate

Operational Definition

A. 5-year observed survival rate (OSR), cervical cancer (Diagnostic code: ICD-9 C:180.xx; ICD-10: C53.x)

Numerator: Number of women diagnosed with cervical cancer surviving five years after diagnosis.

Denominator: Number of women diagnosed with cervical cancer.

B. 5-year relative survival rate (RSR), cervical cancer (Diagnostic code: ICD-9 C:180.xx; ICD-10: C53.x)

Numerator: Observed rate of women diagnosed with cervical cancer surviving five years after diagnosis

Denominator: Expected survival rate of a comparable group from the general population

Table 7. Cervical cancer five-year survival rate

Cervical cancer						Mortality per 100 000 women	
5-year survival rates							
Country	Data year	OSR (95% CI)		RSR (95% CI)		Data year	Rate
		Crude rates	Age-standardised rates	Crude rates	Age-standardised rates		
Australia	1992-1997	72.8 (71.4-74.1)	75.7 (74.3-77.0)	74.6 (73.2-75.9)	77.6 (76.9-79.0)	2003	1.9
Canada	1998-2003	70.0 (67.0-73.0)	74.0 (71.0-77.0)	73.0 (70.0-76.0)	76.0 (73.0-78.0)	2002	1.8
	1997-2002	68.0 (65.0-71.0)	72.0 (70.0-75.0)	70.0 (67.0-73.0)	74.0 (71.0-77.0)		
Czech Republic	1994-1998	63.7 (62.4-65.0)		68.4 (67.0-69.8)		2004	5.4
Denmark	2001-2005	70.0 (66.0-75.0)		73.0 (68.0-77.0)		2001	3.8
Finland	1999-2003	63.8 (56.0-71.5)		70.7 (62.0-78.7)		2004	1.4
	1995-2001	60.0 (55.0-65.0)		65.7 (60.8-70.7)			
France	1990-1994		62.7 (n.a-n.a)		65.9 (n.a-n.a)	2003	1.8
	1985-1989		59.0 (n.a-n.a)		64.0 (61.8-70.1)		
Germany	1993-1997	62.0 (57.0-67.0)		66.0 (61.0-71.0)		2004	2.5
Iceland	1996-2000	74.1 (n.a-n.a)		76.4 (64.6-88.2)		2004	1.4
	1995-1999	74.0 (n.a-n.a)		76.6 (66.0-87.3)			
	1993-1997	73.3 (n.a-n.a)		76.3 (65.7-86.9)			
Ireland	1999-2004	68.0 (59.9-74.8)		70.4 (62.0-77.4)		2005	3.4
	1998-2002		55.0 (50.9-59.1)		58.9 (54.0-63.9)		
	1994-1998	60.0 (55.0-63.0)		62.0 (58.0-66.0)			
Italy	1995-1999	61.0 (60.0-63.0)		66.0 (64.0-68.0)		2002	0.8
	1990-1994		59.0 (n.a-n.a)		64.0 (64.5-68.7)		
Japan	1993-1996			70.5 (69.1-71.9)		2004	2.4
Korea	1998-2002	77.4 (76.7-78.0)		80.1 (79.4-80.7)		2004	4.5
Mexico	1997-2001	40.7 (n.a-n.a)				1995	17.7
	1997-1998	30.1 (n.a-n.a)					
Netherlands[1]	1996-2000	66.8 (62.6-70.8)		70.4 (65.9-74.6)		2004	1.8
	1993-1997	<60 yrs: 75.0 (67.0-83.0) >60 yrs: 46.0 (32.0-60.0)		<60 yrs: 76.0 (68.0-84.0) >60 yrs: 55.0 (39.0-71.0)			
New Zealand	1998-2003	71.8 (69.0-74.6)	75.7 (73.0-78.4)	75.6 (72.7-78.6)	79.9 (77.2-82.6)	2001	2.8
	1994-1999	66.8 (63.5-70.1)	69.3 (62.9-75.7)	70.5 (67.1-74.0)	72.9 (70.1-75.8)		
Norway	1998-2003	68.3 (66.1-70.5)		73.2 (70.9-75.5)		2004	2.5
	1996-2001	62.3 (56.8-67.8)		67.9 (61.8-74.0)			
	1995-1999	67.9 (65.5-70.3)		72.7 (70.2-75.2)			
Slovak Republic	1998-2002	75.0 (n.a-n.a)				2002	5.9
Sweden	1999-2004	65.2 (62.8-67.5)		70.7 (68.1-73.3)		2002	2.4
	1996-2001	66.0 (61.6-70.5)		69.2 (64.5-73.9)			
Switzerland	1990-1994	66.0 (n.a-n.a)		72.0 (n.a-n.a)		2004	1.6
United Kingdom	1998-2001	70.0 (n.a-n.a)		72.0 (n.a-n.a)		2004	2.5
	1995-1999	68.0 (n.a-n.a)		67.0 (n.a-n.a)	62.9 (60.4-65.4)		
United States	1998-2002	67.8 (65.6-69.9)		72.0 (69.8-74.1)		2002	2.2
	1994-1998	73.6 (70.1-77.1)		75.4 (69.4-81.5)			

Non-OECD EU countries						Mortality per 100 000 women	
Country	Data year	OSR (95% CI)		RSR (95% CI)		Data year	Rate
		Crude rates	Age-standardised rates	Crude rates	Age-standardised rates		
Latvia	1999-2003	50.0 (n.a-n.a)		58.9 (n.a-n.a)		2005	8.4
Malta	1993-1994				64.0 (52.0-81.0)	2005	1.0

Notes:

CI stands for "Confidence Interval". Observed survival rates are an estimation of the probability of a patient still alive five years after being diagnosed of cancer based on the actual data available. Relative survival rates adjusts this probability of surviving a cancer diagnosis by the general probability of surviving attributable to any member of the same age group independently of whether they do suffer cancer Thus the 95% confidence interval (CI) illustrates the degree of variability associated with these estimates. Wide confidence intervals indicate high variability, therefore, these estimates should be interpreted with due caution. When estimates are based on a small number of cases, it is more likely that observed differences are due to random, rather than systematic influences.

Reference population for age-standardised rates: OECD 1980, except for France, Ireland, Italy and Malta who refer to the Eurocare-3 population and the Slovak Republic to the Standard European population.

“n.a” stands for "no data available”.

1. Data is not national, but has been weighted by the incidence they represent upon the nation. See Sources and Methods for more information.

Source: HCQI Project, 2007. Mortality data: OECD Health Data 2007, July 07

Cervical cancer five-year survival rate, sources and methods

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
Canada	Canadian Cancer Registry	Canadian data coded using ICDO-3 (not ICD 9/10)	15-99		Yes	1980 OECD population	Missing cases treated as: we rely on record linkage for vital status (i.e. passive follow-up) and as such we cannot identify cases lost to follow-up. So we don't "handle" them in any way. Practically speaking there will be people who die outside of the country and whose death is not recorded in the national mortality database.
Czech Republic	National Cancer Registry of the Czech Republic; Vital Statistics (Czech Statistical Office)	ICD-10 C53		1980-1998	Yes		Missing cases treated as: survivors
Denmark	National Cancer Registry	ICD-10 C53		1977	Yes		Missing cases treated as: dropped out. The calculations are based on unique identifiers, why few people are lost to follow-up.
Finland	Finnish Cancer Register	ICD-10 C53		1953-2004	Yes		Very few cases are behind each age group in "Age specific rate" - 0-6 cases except for 25-39 years old (29 cases) Figures are therefore very coincidental. Missing cases treated as: no losses to follow-up
France	EUROCARE-3: Electronic availability of EUROCARE 3 data: a tool for further analysis P Roazzi, Annals of Oncology 14 150-155, 2003. National death causes database/Available Eurostat Database.	ICD-10 C53	15+		3 regional registries : Calvados, Côte d'Or, Bas-Rhin, representing 2,162.000 persons, i.e. 3,8 % of French population in 1990	ICSS population	French network of cancer registries survival data fro 1988 to 1997 follow-up to 2002 will be published soon
Germany	Saarland Cancer Registry	ICD-9 180	15-89		State of Saarland. Not generalisable		

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
Iceland	Icelandic Cancer Registry	ICD-10 C53		1955-1995	Yes		Missing cases treated as: non-survivors
Ireland	NCRI. Irish National Cancer Registry	ICD-10 C53	15-99			Eurocare 3 standard patient populations	Missing cases treated as: follow up is passive, by means of matching registered cases to death certificates. Currently matching completed to 31 December 2003 (censoring date) and patients not matched by this date (known to have died by this date) are assumed to be alive
Italy	Registro Nazionale Tumori	ICD-10 C53	14+		Yes		Missing cases treated as: dropped out
Japan	Tsukuma H, Ajiki W, Ioka A, Oshima A, and Research Group of Population-Based Cancer Registry of Japan, Survival of cancer patients diagnosed in 1993-96: collaborative study of population-based cancer registries in Japan, Japanese Journal of Clinical Oncology, 36: 602-607, 2006	ICD-9 180					Includes both cervical and endometrial cancer

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
Korea	Korea Central Cancer Registry Source of mortality data: Annual Report on the Cause of Death Statistics. Korea National Statistical Office, 2006.	ICD-10 C53			Yes		1. The Korea Central Cancer Registry has been collaborating with the Gynaecologic Oncology Committee of Korean Society of Obstetrics and Gynaecology to produce national cervical cancer statistics. 2. Since our cancer incidence DB is under review of the International Agency for Research on Cancer (IARC), statistical figures may change after the completion of the review. Missing cases treated as: dropped out
Mexico	SUAVE: Sistema Unico Automatizado de Vigilancia Epidemiologica IMSS. Source of mortality data: Sistema Nacional de Mortalidad IMSS (SISMOR).	ICD-10 C53			Yes		We can not obtain rates by age group, because data are total cases not disclosed, we will obtain this information near the 2006 close. Missing cases treated as: non-survivors
Netherlands	National Institute of Public Health and the Environment. Source of Mortality data: Statline. Voorbrug: Statistics Netherlands, 2006 Website http://statline.cbs.nl/StatWeb/Start.asp?lp=Search/Search&LA=EN&DM=SLEN.	ICD-10 C53	All		No. In the Netherlands, the National Cancer Registry of the Association of Comprehensive Cancer Centres (CCC) delivers incidence rates. However, survival rates can not be calculated for the whole country. At this moment, three Comprehensive Cancer Centres have data on cancer survival. In a few years, all CCC's will deliver data on cancer survival. Data therefore cover over 40% of Dutch population. Data have been weighted by the incidence of the CCC into the total incidence of the country.		Missing cases treated as: the CCC's obtain data of persons in the population who died. These data are obtained from the Municipal Basis Registry, which is to a large extent complete. Patients, of whom no death report is obtained, are still alive. Emigrants are censored. Overall, almost 100% of follow-up is complete.

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
New Zealand	New Zealand Cancer Registry (NZCR). Source of mortality data: NZHIS Mortality data collection 1998-2006	ICD-10-AM (Australian Modification) C53		1994-2006	Yes	OECD standard population 1980 (only for relative rates)	Missing cases treated as: passive follow-up, no losses. DCO (Death certificate only) cases were excluded
Norway	Cancer Registry of Norway	ICD-10 C53			Yes		Missing cases treated as: Dropped out
Slovak Republic	National cancer registry	ICD-10 C53		Since 1970	Yes	standard European population	Diagnosed in 1998; survival 31.12.2002 Missing cases treated as: returned to the reporting units for correction, therefore we do not have missing cases.
Sweden	The Swedish Cancer Register	ICD-9 180		1961-2002	yes		Missing cases treated as: censored in a survival analyses (actuarial method)
United Kingdom	Office for National Statistics/Department of Health	ICD-9 180	15-99		Data are for England	OECD 1980	
United States	Surveillance Epidemiology and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat				Generalisable to nation	OECD 1980	

Non-OECD EU countries							
Country	**Source**	**Diagnosis Code**	**Age groups included**	**Additional years**	**Is this a national registry?**	**Reference population**	**Comments**
Latvia	Cancer Registry. Source of mortality data: National Death Causes Database.	ICD-10 C53			Yes		Missing cases treated as: In the calculation from "missing cases" 1/2 treated as survivors and other 1/2 as non-survivors.

Non-OECD EU countries							
Country	**Source**	**Diagnosis Code**	**Age groups included**	**Additional years**	**Is this a national registry?**	**Reference population**	**Comments**
Malta	Eurocare-3: Survival of Cancer Patients in Eurocare: the EUROCARE-3 Study, Annals of Oncology, Vol. 14, 2003, Supplement 5. Source of mortality data: WHO-HFA: http://data.euro.who.int/hfadb/						Mortality figures are age-standardised using European Standard Population

Cervical cancer screening rate

Operational Definition

Numerator: Number of women ages 20-69 reporting cervical cancer screening within the past 3 years *or* number of women age 20-69 screened for cervical cancer through an organised programme.

Denominator: Number of women ages 20-69 answering survey question *or* participating in an organised screening programme.

Table 8. Cervical cancer screening rate

Country	% women 20-69 screened							Recall period (years)	Survey or screening
	2000	2001	2002	2003	2004	2005	2006		
Australia	61.1	61	60.6	60.5				2	screening program
Belgium[1]	59.5	63.2	61	61	63.1			3	screening program
Finland[4]		67.5	71.8	71.5				5	screening program
Germany[5]			55.9					5	screening program
Hungary[6]	28.4	27.3	27.3	27.5	28.1			3	screening program
Iceland	74	74	74	74	73	72		3	screening program
Ireland[7]				70.1	65.5	60.9		5	screening program
Mexico[9]			38.9			37.1			screening program
Netherlands[10]	66.9	67.1	66.4	68.8	68.9	69.6		5	screening program
New Zealand	73.1	72.7	72.2	72				3	screening program
Norway[11]	70.3				72.5			3	screening program
Sweden[12]			72					5	screening program
United Kingdom[13]	67.2	66.1	71.2	70.8	70.3	69.7	69.8	3.5	screening program
Canada[2]	72.7			74.1		72.8		3	survey
Czech Republic[3]			38.8					1	survey
Denmark	69.7					69.4		3	survey
France	54			74.9				2	survey
Italy[8]	45.1					36.7		3	survey
Japan		22.6			23.7			1	survey
Korea						40.6		2	survey
Poland					49				survey
United States	84.8			82.6				3	survey

Notes:

1. 25-64 years.
2. 18-69 years.
3. 15+ years.
4. 30-60 years.
5. 20-45 years.
6. 25-65 years.
7. 20-60 years.
8. 25-69 years.
9. 25-64 years for 2002; 20-69 years for 2005.
10. 18-64 for 2001-2004 data, 30-60 other years.
11. 25-67 years.
12. 23-60 years.
13. 25-64 years.

Source: OECD Health Data 2007, July 07

Non-OECD EU countries				
Country	Year	%	Recall period (years)	Screening Program
Malta	67.3	2002	3	survey

Source: Health Interview Survey: http://www.sahha.gov.mt/pages.aspx?page=383

Cervical cancer screening rate, sources and method

http://www.ecosante.org/OCDEENG/370020.html

Colorectal cancer five-year survival rate

Operational Definition

A. 5-year observed survival rate (OSR), colorectal cancer (Diagnostic code: ICD-9 C:153.xx, 154.xx; ICD-10: C18.xx, C19.xx, C20.xx)

Numerator: Number of people diagnosed with colorectal cancer surviving five years after diagnosis.

Denominator: Number of people diagnosed with colorectal cancer.

B. 5-year relative survival rate (RSR), colorectal cancer (Diagnostic code: ICD-9 C:153.xx, 154.xx; ICD-10: C18.xx, C19.xx, C20.xx)

Numerator: Observed rate of people diagnosed with colorectal cancer surviving five years after diagnosis.

Denominator: Expected survival rate of a comparable group from the general population.

Table 9. Colorectal cancer five-year survival rate

Colorectal cancer						Mortality per 100 000 women	
5-year survival rates							
Country	Data year	OSR (95% CI)		RSR (95% CI)		Data year	Rate
		Crude rates	Age-standardised rates	Crude rates	Age-standardised rates		
Australia	1992-1997	56.0 (53.9-57.8)	59.0 (57.1-64.0)	58.5 (59.2-57.8)	62.0 (59.9-64.0)	2003	18.2
Canada	1998-2003	50.0 (49.0-51.0)	60.0 (57.0-63.0)	60.0 (59.0-60.0)	63.0 (60.0-65.0)	2002	18.4
	1997-2002	50.0 (49.0-51.0)	59.0 (56.0-62.0)	60.0 (59.0-61.0)	62.0 (59.0-65.0)		
Czech Republic	1994-1998	32.1 (31.4-32.9)		41.2 (40.3-42.2)		2004	33.9
Denmark	2001-2005	colon: 41.0 (39.0-44.0) rectum: 44.0 (40.0-47.0)		colon: 51.0 (48.0-54.0) rectum: 54.0 (50.0-57.0)		2001	27.3
Finland	1999-2003	47.0 (46.0-49.0)		59.2 (57.7-60.7)		2004	12.6
	1995-2000	43.1 (40.7-45.5)		56.3 (53.3-59.4)			
France	1990-1994		men: 45.5 (n.a-n.a) women: 54.1 (n.a-n.a)		men: 55.8 (53.4-58.2) women: 61.7 (59.3-64.1)	2003	17.8
	1985-1989		41. 0(n.a-n.a)		53.0 (n.a-n.a)		
Germany	1993-1997	men: 43.0 (41.0-45.0) women: 45.0 (42.0-47.0)		men: 55.0 (52.0-58.0) women: 56.0 (53.0-59.0)		2004	20.5
Iceland	1996-2000	men: 47.8 (n.a-n.a) women: 43.6 (n.a-n.a)		men: 60.2 (51.5-68.9) women: 52.9 (43.5-62.3)		2004	13.8
	1995-1999	men: 46.5 (n.a-n.a) women: 42.7 (n.a-na.)		men: 58.9 (51.0-66.8) women: 52.5 (44.0-61.0)			
	1993-1997	men: 40.1 (n.a-n.a) women: 43.6 (n.a-n.a)		men: 51.1 (42.7-59.6) women: 53.5 (44.7-62.4)			
Ireland	1999-2004	men: 41.5 (38.4-44.6) women: 39.5 (36.0-43.1)		men: 52.2 (48.3-56.1) women: 47.8 (43.5-52.1)		2005	21.0
	1998-2002		men: 34.1 (32.3-35.8) women: 41.1 (39.1-43.0)		men: 47.3 (44.5-50.0) women: 51.2 (48.6-44.5)		
	1994-1998	41.0 (n.a-n.a)		62.0 (58.0-66.0)			
Italy	1995-1999	46.0 (46.0-47.0)		57.0 (57.0-58.0)		2002	17.7
	1990-1994		42.0 (n.a-n.a)		52.0 (n.a-n.a)		
Japan	1993-1996			all: 67.5 (67.2-67.8) men: 69.5 (69.1-69.9) women: 64.6 (64.2-65.0)		2004	18.0
Korea	1998-2002	53.7 (53.2-54.2)		60.2 (59.6-60.7)		2004	15.2
Mexico	1997-1998	47.5 (n.a-n.a)				1995	4.9
Netherlands[1]	1996-2000	all: 45.6 (42.5-48.6) men: 44.1 (41.2-47.1) women: 47.1 (43.9-50.1)		all: 56.7 (52.8-60.6) men: 56.4 (52.4-60.2) women: 57.1 (53.2-60.9)		2004	20.3
	1993-1997	colon: 48.0 (46.0-50.0) rectal: 46.0 (42.0-50.0)		colon: 60.0 (56.0-64.0) rectal: 56.0 (52.0-60.0)			
New Zealand	1998-2003	all: 49.2 (48.4-50.1) men: 47.5 (46.3-48.8) women: 51.0 (49.8-52.3)	58.5 (57.4-59.6)	all: 60.4 (59.3-61.5) men: 59.0 (57.4-60.5) women: 61.8 (60.3-63.4)	all: 61.2 (60.1-62.3) men: 63.3 (61.7-64.9) women: 59.7 (58.1-61.3)	2001	27.2
	1994-1999	47.6 (46.5-48.6)	52.8 (51.1-54.6)	58.9 (57.6-60.2)	60.8 (58.0-63.6)		
Norway	1998-2003	43.1 (42.3-43.9)		56.6 (55.6-57.7)		2004	23.1
	1996-2001	44.0 (42.1-45.8)		59.8 (57.3-62.3)			
	1995-1999	43.8 (43.0-44.6)		57.3 (56.2-58.3)			
Slovak Republic	1998-2002	men: 51.0 (n.a-n.a) women: 54.0 (n.a-na.)				2002	31.0
Sweden	1999-2004	46.4 (45.6-47.2)		58.4 (57.4-59.4)		2002	17.2
	1996-2001	45.9 (44.4-47.4)		58.3 (56.5-60.2)			
Switzerland	1990-1994	men: 48.0 (n.a-n.a) women: 51.0 (n.a-n.a)		men: 59.0 (n.a-n.a) women: 62.0 (n.a-n.a)		2004	14.2
United Kingdom[2]	1998-2001	55.0 (54.9-55.1)		57.0 (56.9-57.1)		2004	17.9
	1995-1999	53.0 (52.9-53.0)		49.0 (n.a-n.a)	48.5 (47.3-49.6)		
United States	1998-2002	all: 50.9 (50.1-51.6) men: 51.0 (49.8-52.1) women: 50.7 (49.7-51.7)		all: 64.4 (63.4-65.3) men: 65.2 (63.8-66.6) women: 63.7 (62.3-65.1)		2002	16.3
	1994-1998	54.0 (n.a-n.a)		58.0 (n.a-n.a)			

Non-OECD EU countries						Mortality per 100 000 women	
Country	Data year	OSR (95% CI)		RSR (95% CI)		Data year	Rate
		Crude rates	Age-standardised rates	Crude rates	Age-standardised rates		
Latvia	1999-2003	28.9 (n.a-n.a)		36.2 (n.a-n.a)		2005	30.1
Malta	1998-2002			men: 54.0 (45.0-62.0) women: 49.0 (41.0-57.0)		2005	men: 23.8 women: 15.6
	1993-1994				men: 39.0 (28.0-53.0) women: 54.0 (43.0-68.0)		

Notes:
CI stands for "Confidence Interval". Observed survival rates are an estimation of the probability of a patient to be alive five years after being diagnosed of cancer based on the actual data available. Relative survival rates adjusts this probability of surviving a cancer diagnosis by the general probability of surviving attributable to any member of the same age group independently of whether they do suffer cancer Thus the 95% confidence interval (CI) illustrates the degree of variability associated with these estimates. Wide confidence intervals indicate high variability, therefore, these estimates should be interpreted with due caution. When estimates are based on a small number of cases, it is more likely that observed differences are due to random, rather than systematic influences.
“n.a” stands for "no data available".
Reference population for age-standardised rates: OECD 1980, except for France, Ireland, Italy and Malta who refer to the Eurocare-3 population and the Slovak Republic to the Standard European population.
1. Data are not national, but have been weighted by the incidence they represent. See Sources and Methods for more information.
2. Data refer to colon cancer.
Source: HCQI Indicators, 2007. Mortality data: OECD Health Data 2007, July 07

Colorectal cancer five-year survival rate, sources and methods

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
Canada	Canadian Cancer Registry	Canadian data coded using ICDO-3 (not ICD 9/10)	15-99		Yes	1980 OECD population	Missing cases treated as: we rely on record linkage for vital status (i.e. passive follow-up) and as such we cannot identify cases lost to follow-up. So we don't "handle" them in any way. Practically speaking there will be people who die outside of the country and whose death is not recorded in the national mortality database.
Czech Republic	National Cancer Registry of the Czech Republic; Vital Statistics (Czech Statistical Office)	ICD-10 C18, C19, C20.		1980-1998	Yes		Data relates to men only, values for women are also available. Also available separately data for colon and rectum cancer. Missing cases treated as: survivors
Denmark	National Cancer Registry	ICD-10 C18, C19, C20		1981-1995			Missing cases are dropped out.
Finland	Finnish Cancer Register	ICD-10 C18, C19, C20.		1953-2004	Yes		Missing cases treated as: no losses to follow-up
France	EUROCARE-3: Electronic availability of EUROCARE 3 data: a tool for further analysis (P Roazzi Annals of Oncology 14 150-155, 2003.) National death causes database/Available Eurostat Databse	ICD-10 C18.	15+		Population: 3 regional registries: Calvados, Côte d'Or, Bas-Rhin, representing 2,162.000 persons, i.e. 3.8% of French population in 1990. Generalisable to nation.	ICSS population	French network of cancer registries survival data fro 1988 to 1997 follow-up to 2002 will be published soon
Germany	Saarland Cancer Registry	ICD-9 153, 154	15-89		Population: Data refer to the region of Saarland, thus it is not representative for all Germany		Date of diagnosis in the years 1993–1997, Follow-up for deaths was to December 31, 2000.
Iceland	Icelandic Cancer Registry	ICD-10 C18, C19, C20		1955-1995	Yes		Missing cases treated as: non-survivors
Ireland	NCRI. Irish National Cancer Registry	ICD-10 C18, C19, C20	15-99			Eurocare 3 standard	Missing cases treated as: follow up is passive, by means of matching registered cases to

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
						patient populations	death certificates. Currently matching completed to 31 December 2003 (censoring date) and patients not matched by this date (known to have died by this date) are assumed to be alive
Italy	Registro Nazionale Tumori	ICD-10 C18, C19, C20.	14+		Yes		Missing cases treated as: dropped out
Japan	Tsukuma H, Ajiki W, Ioka A, Oshima A, and Research Group of Population-Based Cancer Registry of Japan, Survival of cancer patients diagnosed in 1993-96: collaborative study of population-based cancer registries in Japan, Japanese Journal of Clinical Oncology, 36: 602-607, 2006	ICD-9 153,154					
Korea	Korea Central Cancer Registry Source of mortality data: Annual Report on the Cause of Death Statistics. Korea National Statistical Office, 2006.	ICD-10 C18, C19, C20.			Yes		Since our cancer incidence DB is under review of the International Agency for Research on Cancer (IARC), statistical figures may change after the completion of the review. Missing cases treated as: dropped out
Netherlands	National Institute of Public Health and the Environment. Source of Mortality data: Statline. Voorbrug: Statistics Netherlands, 2006 Website http://statline.cbs.nl/StatWeb/Start.asp?lp=Search/Search&LA=EN&DM=SLEN. .	ICD-10 C18-20.	All		No. In the Netherlands, the National Cancer Registry of the Association of Comprehensive Cancer Centres (CCC) delivers incidence rates. However, survival rates can not be calculated for the whole country. At this moment, three Comprehensive Cancer Centres have data on cancer survival. In a few years, all CCC's will deliver data on cancer survival. Data therefore cover over		Missing cases treated as: the CCC's obtain data of persons in the population who died. These data are obtained from the Municipal Basis Registry, which is to a large extent complete. Patients, of whom no death report is obtained, are still alive. Emigrants are censored. Overall, almost 100% of follow-up is complete.

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments
					40% of Dutch population. Data have been weighted by the incidence of the CCC into the total incidence of the country.		
New Zealand	New Zealand Cancer Registry (NZCR). Source of mortality data: NZHIS Mortality data collection 1998-2006	ICD-10-AM (Australian Modification) C18-C20 (excluding anus and anal canal).		1994-2006	Yes	OECD standard population 1980 (only for relative rates)	DCO (Death certificate only) cases were excluded Missing cases treated as: passive follow-up, no losses
Norway	Cancer Registry of Norway	ICD-10 C18, C19, C20.			Yes		Missing cases treated as: dropped out
Slovak Republic	National cancer registry	ICD-10 C18, C19, C20.		Since 1970	Yes	standard European population	Missing cases treated as: returned to the reporting units for correction, therefore we do not have missing cases.
Sweden	The Swedish Cancer Register	ICD-9 153, 154		1961-2002	Yes		Missing cases treated as: censored in a survival analyses (actuarial method)
United Kingdom	Office for National Statistics/Department of Health	ICD-9 153, 154	15-99		Population: Data for England. The age profile of the England & Wales cancer population is nothing like the OECD population. For instance, 51% of the adult OECD population is age 15-39, but only 1.3% of colorectal cancer cases are in this age group.	OECD 1980	
United States	Surveillance Epidemiology and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat				Generalisable to nation	OECD 1980	

Country	Source	Diagnosis Code	Age groups included	Additional years	Is this a national registry?	Reference population	Comments

Non-OECD EU countries							
Country	**Source**	**Diagnosis Code**	**Age groups included**	**Additional years**	**Is this a national registry?**	**Reference population**	**Comments**
Latvia	Cancer Registry Source of mortality data: National Death Causes Database.	ICD-10 C18, C19, C20.			Yes		Missing cases treated as: In the calculation from "missing cases" 1/2 treated as survivors and other 1/2 as non-survivors.
Malta	Malta National Cancer Registry: http://www.sahha.gov.mt/pages.aspx?page=91 Mortality Source: Malta National Cancer Registry: http://www.sahha.gov.mt/pages.aspx?page=91						Mortality figures are age-standardised using European Standard Population

Incidence of vaccine preventable diseases (Pertussis, measles, hepatitis B)

Operational Definition

Numerator: Number of reported cases.

Denominator: Total 100 000 population.

Table 10. Incidence of vaccine preventable diseases (Pertussis, measles, hepatitis B)

Country	Data year	Hepatitis B	Measles	Pertussis
Australia	2006	1.80	0.70	65.80
	2005	1.10	0.00	51.80
	2004	1.40	0.20	42.50
	2003	1.70	0.50	25.70
	2002	2.10	0.20	28.30
	2001	2.10	0.70	48.00
	2000	2.10	0.60	31.30
Austria	2005	7.00	0.10	1.60
	2000	3.30	0.00	1.40
Canada	2004	2.70	0.03	8.79
	1999	4.20	0.10	20.00
Czech Republic	2005	3.50	0.00	5.40
Denmark	2005	0.50	0.04	2.40
	2004	0.80	0.00	4.22
Finland	2005	0.63	0.02	10.54
	2001	2.40	0.02	6.10
France	2003	<1	7.00	NA
	2001	5.00	12.00	NA
Germany	2004	1.50	0.15	NA
	2001	2.90	7.30	NA
Iceland[1]	2005	NA	0.00	2.00
	2004	NA	0.00	0.30
	2002	NA	0.00	4.00
Ireland	2005	2.29	NA	NA
Italy	2004	2.02	1.18	2.31
	2003	2.24	20.90	2.23
	2002	2.35	31.15	4.45
Japan	2005	NA	4.7	8.7
	2004	NA	9.45	10.23
	2003	NA	60.90	11.00
	2000	NA	27.00	1.41
Mexico	2005	0.59	0.01	0.33
	2004	0.65	0.06	0.13
	2001	NA	0.00	0.20
Netherlands	2005	1.83	0.02	40.04
	2004	1.80	0.07	55.95
	2003	2.03	0.02	16.65
	2002	1.70	0.02	36.39
	2001	1.30	0.11	43.54
	2000	NA	6.40	30.36
	1999	NA	14.98	39.71
	1998	NA	0.06	14.34
	1997	NA	0.13	25.28

cont.				
Country	**Data year**	**Hepatitis B**	**Measles**	**Pertussis**
New Zealand	2005	1.60	0.50	72.80
	2000	2.10	1.80	NA
Norway[2]	2005	3.10	0.00	120.00
	2004	4.10	0.20	170.00
	2001	4.50	0.10	57.30
Poland	2005	1.70	0.03	5.04
Portugal	2005	0.92	0.07	0.74
	2003	1.13	0.07	0.03
	2001	2.03	0.26	0.01
Slovak Republic	2005	1.90	0.00	0.30
	2004	2.06	0.04	NA
Spain	2004	1.93	0.07	1.34
	2001	2.24	0.37	2.32
Sweden	2005	2.40	0.10	15.10
	2004	2.90	0.10	17.50
	2002	19.40	0.10	15.10
Switzerland[3]	2005	2.00	2.00	56.00
	2001	2.10	10.00	80.00
United Kingdom	2004	2.29	4.44	0.95
	2003	2.18	4.71	0.77
United States	2004	2.10	0.00	8.90
	2003	2.61	0.02	4.04
	2000	6.30	0.00	2.70

Non-OECD EU countries				
Country	**Data year**	**Hepatitis B**	**Measles**	**Pertussis**
Cyprus[4]	2005	0.80	0.10	0.80
Latvia	2005	7.40	0.09	1.10
Malta	2005	3.22	1.49	1.75

Notes:
NA stands for "no data available".
1. 2 confirmed cases for Pertussis.
2. Pertussis' figure for 2006 is 142 per 100 000.
3. Hepatitis B for 2001 refers to 2002.
4. See footnotes 2 and 3 on page 3.

Incidence of vaccine preventable diseases (Pertussis, measles, hepatitis B), sources and methods

Country	Source	Confirmed or suspected cases?	National/regional variation of vaccination policies:	Additional years available:	Reporting Mandated?	Comments
Australia	National Notifiable Diseases Surveillance System, www.health.gov.au/cda, viewed 8 December 2006					
Austria	Federal Ministry of Health and Women					No differentiation of Hepatitis B (acute), preliminary data.
Canada	Public Health Agency of Canada	Confirmed cases only	The National Advisory Committee has a national guideline for Measles and Pertussis. HBV vaccine is now given routinely in most provinces and territories to young adolescents or to both infants and young adolescents. Hepatitis B vaccine is also recommended for certain groups at higher risk of infection with HBV.			
Cyprus*	Medical and Public Health Services, Ministry of Health			Since 1980		
Czech Republic	National Institute of Public Health		Hepatitis is not part of the general vaccination programme.	Hepatitis B since 1980		Preliminary results. Pertussis (A37-ICD-10); Measles (B05-ICD-10); Hepatitis B (B16-ICD-10).
Denmark	Statens Serum Institut	Suspected and confirmed cases		Acute hep. B from 1985, measles from 1994 and Pertussis since 1980		Pertussis is only reportable by law if the person in-question is under 2 years old. Hepatitis is not part of the general vaccination programme
Finland	National Infection Register at the National Institute of Public Health	In Finland the national				

* See footnotes 2 and 3 on page 3.

Country	Source	Confirmed or suspected cases?	National/regional variation of vaccination policies:	Additional years available:	Reporting Mandated?	Comments
		infection register registers confirmed cases only, suspected cases are not registered.				
France	Réseau sentinelle for measles. disease surveillance national institut (in VS) for hepatitis B				Yes for hepatitis, No for others. For measles is mandatory since 2005.	Hepatitis B: 158 cases notified in the whole country from 1/03/2003 to 1/03/2004. No incidence data for Pertussis; RENACOQ, which is a hospitals network created in 1996, including 44 hospitals with paediatrics units, monitors Pertussis cases. Its goal is to describe epidemiological characteristics of children Pertussis, from a hospital point of view, and not to calculate an incidence rate. Réseau sentinelle is a General practitioners network, on voluntary basis, which collects and analyses epidemiological data on GP activity. GPs are included on a voluntary basis. Data concern transmissible diseases that are frequent in general practice: Influenza, acute diarrhoea, measles, mumps, varicella, hepatitis A, B, C. But now, as cases have became rarer and rarer, exhaustive cases notification is required for hepatitis B (since march 2003) and measles (2005). Incidence of measles and hepatitis B decreases as vaccination rate increases. However, hepatitis B vaccination rate does not increase as much as measles rate.
Germany	Robert Koch Institute				Yes for measles and Hep B. No for Pertussis.	Mandatory reporting is regulated on a federal state but not on a national level, hence data representative on a national level cannot be provided.
Iceland	Directorate of Health					

Country	Source	Confirmed or suspected cases?	National/regional variation of vaccination policies:	Additional years available:	Reporting Mandated?	Comments
Ireland	HSE Health Protection Surveillance Centre	The results are based on suspected cases.				Notified cases: Pertussis: 90, measles:327, hep B: 701.for Hep B, see paper submission
Italy	Ministry of Health	The results are based on suspected and confirmed cases.		2002-2003.	Yes	Missing cases treated as: Dropped out
Japan	Calculated from "Taniguchi K. Evaluation and Improvement for effective infectious disease surveillance system. Health, Labour & Welfare research grant report 2006. P65 and P68.					
Mexico	Ministry of Health (Secretaría de Salud), Mexico, SUIVE: Sistema Único de Vigilancia Epidemiológica, Indicator coverage: total population, national level.					
Netherlands	National Institute for Public Health and the Environment, Centre for Infectious Disease Epidemiology, 2006. Website: http://www.rivm.nl/isis/ggd/openbaar/tot/tb_lj.html. .	The results are based on confirmed cases.				Pertussis: every period of 2 to 3 years an epidemiologic increase occurs. Country-wide immunisation for children against was introduced in 1952. Measles: every period of 5 to 7 years an epidemiologic increase occurs. Country-wide immunisation for children against measles was introduced in 1976. Hepatitis B: In 2003 1,877 cases of hepatitis B were reported (afterwards corrected to 1,900) of which 319 acute and 1,445 chronic cases (Koedijk et al., 2005). Of 113 cases the type of hepatitis B infection was unknown. In 2002 the number reported cases of acute hepatitis B was 265. In November 2002 vaccination for groups with high risk behaviour was introduced. The Municipal Public Health Services performs the tracing of these groups: homo- and

Country	Source	Confirmed or suspected cases?	National/regional variation of vaccination policies:	Additional years available:	Reporting Mandated?	Comments
						bisexual men, prostitutes, heterosexual persons with a health care consult related to a sexual transmitting disease, and drug users. Since 2000 employers in health care have the obligation to give their health care workers (including students) the opportunity to have a vaccination. In January 2003, hepatitis B vaccination was added to the National Immunisation Programme (NIP) for children born to parents from middle or high endemic countries (birth cohort 1st January 2003 onwards). Vaccination against hepatitis B for children born to mothers tested positive for HBsAg was introduced in 1989. In January 2006 vaccination at birth was added to the NIP for these children.
New Zealand	Numerator: ESR Annual Surveillance Report 2005. Denominator: Statistics New Zealand, usually resident population from the 2001 Census.					Figures are based on Notifications 2000 (some laboratory confirmed for Measles). Hepatitis B was the only vaccine preventable disease to show a significant increase in notification rate compared with 2004 (1.0 per 100 000). Measles: one outbreak in 19 cases. Pertussis: during the latter part of 2004 and the first three months of 2005 New Zealand experienced an epidemic of Pertussis. By comparison, the annual rate was 15.7 per 100 000.
Norway	MSIS: The Norwegian System for Notification of Infectious Diseases	The results are based on confirmed cases.				
Poland	National Institute of Hygiene, Department of Epidemiology	According to EU definitions the reported cases are suspected and/or probable				

Country	Source	Confirmed or suspected cases?	National/regional variation of vaccination policies:	Additional years available:	Reporting Mandated?	Comments
		and/or confirmed for Pertussis and Measles, probable and/or confirmed for Hepatitis B.				
Portugal	DGS					
Slovak Republic	Public Health Office					
Spain	Ministry of Health and Consumer Affairs (Ministerio de Sanidad y Consumo.Instituto de Salud Carlos IIII)			Pertussis since 1983, Measles suspected cases since 1994, and registered cases since 2002, acute Hepatitis B since 1995.		
Sweden	Swedish Institute for Infectious Disease Control.					
Switzerland	Notifications/sentinel surveillance					
United Kingdom	Health Protection Agency				Yes	Measles in UK is not always lab confirmed, notifications are reported on clinical suspicion, if lab test shows it is not measles then it is supposed to be denotified, but this often doesn't happen, so measles incidence is likely to be an overestimate.
United States	CDC's Notifiable Disease Surveillance System.					As of March 2004, all 50 states allow vaccination exemptions for medical reasons; 48 states allow exemptions for religious reasons; and 20 states allow exemptions for philosophical reasons. Please comment on potential effects of national/regional vaccination policies on this indicator, if applicable: it is the

Country	Source	Confirmed or suspected cases?	National/regional variation of vaccination policies:	Additional years available:	Reporting Mandated?	Comments
						responsibility of individual states to determine which vaccines are required by law. Currently all 50 states have school immunisation laws, although there are differences in what may be required in different states.

Non-OECD EU countries						
Country	**Source**	**Confirmed or suspected cases?**	**National/regional variation of vaccination policies:**	**Additional years available:**	**Reporting Mandated?:**	**Comments**
Latvia	Public Health State Agency	The results are based on suspected and confirmed cases.				

Coverage for basic vaccination programme, age 2, (Pertussis, measles, hepatitis B)

Operational Definition

Numerator: Number of children who are fully immunised at age 2 for basic vaccination programme.

Denominator: Number of children age 2 years.

Table 11. Coverage for basic vaccination programme, age 2, (Pertussis, measles, hepatitis B)

Country	Data year	Overall %	Hepatitis B %	Measles (MMR) %	Pertussis (DPT) %
Australia	2006	92.2	95.8	93.9	95.1
	2005	92.1	95.9	93.8	95.2
	2004	91.7	NA	93.6	95.0
Austria	2004	NA	86.0	57.0	87.0
Canada	2004	NA	NA	94.0	74.0
	2002	NA	NA	94.5	75.2
Czech Republic	2005	NA	98.5	96.6	98.7
Denmark	2005	NA	NA	95.5	95.6
	2001	NA	NA	96.0	95.0
Finland[1]	2005	NA	NA	97.0	97.0
	2002	93.3	NA	96.6	95.6
France	2004	NA	30.0	87.1	90.3
	2001	NA	28.0	84.6	87.9
Germany	1999	NA	73.0	73.0	89.0
Iceland	2005	NA	NA	94.0	97.0
	2004	NA	NA	94.0	NA
	2003	NA	NA	93.0	97.0
	1999	NA	NA	92.0	98.0
Ireland	2004	90.0	NA	83.0	91.0
Italy	2005	NA	95.7	87.3	96.2
	2004	NA	96.3	85.7	94.0
	2003	NA	95.3	83.9	95.8
	2002	NA	95.7	81.1	94.2
Japan	2005	NA	NA	95.6	97.7
	2004	63.9	NA	85.8	82.7
	2003	NA	NA	88.8	85.0
	2001	NA	NA	80.9	83.3
Mexico	2005	99.3	99.4	98.5	99.4
	2004	NA	99.5	98.6	99.5
Netherlands[2]	2005	NA	NA	96.3	97.8
	2001	NA	NA	95.6	95.3
New Zealand	2005	77.4	86.5	82.0	88.6
Norway	2005	89.0	NA	89.0	91.0
	2004	NA	NA	88.0	91.0
	2001	NA	NA	90.0	91.0
Poland	2005	NA	99.8	98.2	98.8
Portugal	2004	NA	96.0	94.8	97.8
	2003	NA	96.6	95.6	96.8
	2001	NA	94.7	87.7	98.1
Slovak Republic	2005	NA	99.2	98.4	98.7 - 99.2
	2004	98.0	NA	NA	NA
Spain[3]	2005	NA	96.1	96.8	96.2
	2004	NA	98.2	97.3	97.0
	2001	NA	NA	97.3	96.0
Sweden	2005	95.6	2.6	95.4	98.7
	2004	NA	NA	94.5	98.4
	2002	NA	NA	88.4	98.8
Switzerland	2005	73.0	NA	86.0	96.0
	2000-2002	76.0	NA	NA	NA
United Kingdom	2004-2005	NA	NA	81	94
	2003-2004	NA	NA	80.0	93.0
United States	2004	80.9	92.4	93.0	85.5
	2003	79.4	92.4	93.0	96.0
	2001	78.6	93.0	91.4	94.3

Non-OECD EU countries					
Country	**Data year**	**Overall %**	**Hepatitis B %**	**Measles (MMR) %**	**Pertussis (DPT) %**
Cyprus[5]	2006	86.0	93.2	39.5	96.8
Latvia	2005	NA	98.1	95.0	95.6
Malta[4]	2005	NA	77.5	86.0	92.4

NA stands for "no data available".
1. Overall rate refers to 2002.
2. DTP rate comprises complete first series offered at 2, 3 and 4 months, assessed at 24-36 months.
3. Children under 1 year old.
4. Rates for Hepatitis B and Pertussis (DPT) refer to percentage of children up to their first birthday, whereas rate for Measles (MMR) refers to percentage children up to their second birthday.
5. See footnotes 2 and 3 on page 3.

Coverage for basic vaccination programme, age 2, (Pertussis, measles, hepatitis B), sources and methods

Country	Source	Description of the basic immunisation program:	Additional years available:	Comments
Australia	Australian Childhood Immunisation Register (ACIR)			Data are for birth cohorts 1 July to 30 September 2003, assessed 31 December 2005
Austria	Federal Ministry of Health and Women	Mumps, Measles, Rubella, Diphtheria, Pertussis, Tetanus, Poliomyelitis, Hepatitis B, Heamophilus influenza - no compulsory vaccination in Austria.		
Canada	Public Health Agency of Canada (2004 National Immunization Coverage Survey (NICS))			
Czech Republic	Department of Chief Public Health Officer of the CR	DTP: 1st dose - 9th-12th week, 2nd dose - 13th-16th week, 3rd dose - 17th-20th week, 4th dose - 18th-20th month; MMR: 1st dose - 15th month, 2nd dose - 21st-25th month; Hepatitis B: 3 doses in the interval 0-1-6 months, 1st dose - in the first months of live, usually 1st and 2nd doses are given in conjunction with DTP-HiB.		Data for DPT vaccination rate relates to 4 doses
Denmark	Statens Serum Institut	The basic program includes 3 vaccinations before 12 month for Diptheria, Tetanus, Poliomyelitis, Pertussis given in one shot and another shot for Haemophilus influenza b. The Diptheria and Tetanus vaccine is followed up by a shot at age 5. At age 15 month a vaccine for Measles, Mumps and Rubella is given. This is followed up at age 12.		DPT 93%, Polio 93%, Measles 95%, Rubella 95%, Mumps 95%, HiB 93%. The vaccination program is free of cost but some parents choose not to let their children be vaccinated, because they believe that it will strengthen the child's immune system if the child has the disease.
Finland	National Public Health Institute			The vaccination coverage study is done in Finland in systematic regular intervals. The vaccination coverage studies are done by the National Public Health Institute. The over all vaccination figure coverage is from the previous study, from year 2002. The other figures from the following study.
France	French Ministry of Health, DREES (Statistics Department)	Program Description: Vaccination against Diphtheria – tetanus, Poliomyelitis, BCG is mandatory. Vaccinations against Pertussis, Haemophilus influenzae b, Hepatitis B, Measles, Mumps, Rubella are not mandatory, but strongly recommended. MMR booster has been recommended at age. 2 since 2005. These		Vaccination rates for Diphtheria – tetanus and Poliomyelitis are calculated for a full vaccination (including 3 doses + booster). So are calculated Pertussis and H. Influenzae vaccination rates.

Country	Source	Description of the basic immunisation program:	Additional years available:	Comments
		percentages concern 24 months children (+/- 1 month). 4 doses Diphtheria, Tetanus, Poliomyelitis, HiB; 3 doses Hepatitis B; 1 dose Measles, Mumps, Rubella		
Germany	Lauberau et al. (2001) Durchimpfungsraten bei Kindern in Deutschland 1999, Monatsschr Kinderheikd 149, 367-372	Program Description: Diphtheria (D/d), acellular Pertussis (aP), Tetanus (T), Haemophilus influenzae Type b (Hib), Hepatitis B (HB), Poliomyelitis (IPV) , measles, mumps, rubella (MMR), are recommended by Standing Committee on Vaccination (STIKO) by 2 years.		Regional non-representative survey data not generalisable to national level. According to recommendations of the Standing Committee on Vaccination (STIKO) at the Robert Koch Institute (www.rki.de) basic childhood immunisation up to the age of 2 years includes vaccinations against the following diseases: diphtheria (D), tetanus (T), Pertussis (aP), poliomyelitis (IPV), haemophilus influenzae (HiB), hepatitis B (HB), measles, mumps, rubella (MMR combination vaccine), and varizella zoster virus (VZV) infections. The recommended time schedule is: DTaP, Hib, IPV, HB at ages 2,3,4, and 11-14 months; MMR at ages 11-14 and 15-23 months; VZV at ages 11-14 months.Approximately 90% of vaccinations are administered by privately practising physicians in Germany. In general, vaccination is covered by statutory health insurance when recommended by the STIKO. Small sample size, not representative.
Iceland	Directorate of Health			
Ireland	HSE, Health Protection Surveillance Centre	Program Description: DTP is tracked separately for diphtheria, Pertussis and tetanus (3 doses of each antigen by age 2).		
Italy	Ministry of Health	The basic immunisation program in Italy comprises mandatory and recommended vaccines. The mandatory ones are: diphtheria, tetanus, polio and hepatitis B; the recommended are measles, mumps, rubella, MMR, Pertussis, haemophilus influenzae type B. The immunisation schedules have been updated with the Ministerial decrees of 7 April 1999 (concerning the passage from an all OPV immunisation schedule to a sequential schedule) and of 18 June 2002; (this last concerning the shift from a sequential polio schedule to an all IPV immunisation schedule). The shots are given at 3,5,11 months for DTP, Hib, polio, hepatitis B, and at	2000-2005	

Country	Source	Description of the basic immunisation program:	Additional years available:	Comments
		12-15 months for MMR. A booster dose of polio vaccine is scheduled during the third year of age. The vaccines are administered by the personnel of the local health units.		
Japan	Administrative reports of the Community and Elderly Health. The data covers only vaccination provided by municipal governments and may be underestimated because privately-paid vaccination is not included (privately-paid vaccination is small, though).	DPT 3 times + 1 booster shot by 7.5 years old, Polio 2 times, Measles and Rubella by 7.5 years old.		Data are not available with unique identifier. So the lowest rate (% people who completed DPT, 63.9%) was adopted as an overall rate. % of Polio 85.7%, Measles 85.8%, Rubella 78%.
Mexico	Vaccination Programme. Ministry of Health (Secretaría de Salud), Mexico.	Includes: DPT, Mumps, Measles, Rubella, anti-Haemophilus influenzae b, Poliomyelitis, Hepatitis B, BCG (anti-TB).		
Netherlands	Abbink F, Oomen PJ, Zwakhals SLN, Melker HE de, Ambler-Huiskes A. Vaccinatietoestand Nederland per 1 januari 2005. [Immunisation coverage in the Netherlands as at 1 January 2005]. RIVM rapport 210021005/2006. Bilthoven: RIVM, 2006. Developments in 2006. RIVM report xxxx/2007. Bilthoven: The Netherlands. In preparation	Vaccination schedule: DTP_A and IPV at 2, 3, 4 and 11 months; MMR at 14 months; Hepatitis B (risk groups only) at birth, 2, 3, 4 and 11 months. At the age of 4 DTP_A and IPV are offered, and at the age of 9 DT, IPV and MMR. Also included in the immunisation programme are vaccinations against pneumococcal disease (2, 3, 4, 11 months), Haemophilus influenzae type b (2, 3, 4, 11 months), and infections with meningococci serogroup C (14 months). Every child is offered vaccination from birth to 13 years on a voluntary basis and free of charge. The Ministry of Public Health, Welfare and Sports decides on the vaccination policy, the Netherlands Vaccine Institute is responsible for delivering all vaccines and the National Institute of Health and the Environment (RIVM) advises the Ministry. The execution of the Dutch National Immunisation Programme is coordinated by the Centre for Infectious Disease Control (CIb) of the RIVM. For children up to the age of 4 years the programme is usually implemented by the network of Maternal and Child Health Clinics, for school-aged children by the Municipal Public Health Services. The Regional Vaccination Administration Centres (since April 2007 forming a part of the CIb of the RIVM)		Data about the immunisation rate for hepatitis B in children are not available yet, because this vaccination is introduced recently (2003). Hepatitis B vaccination within the framework of the basic immunisation programme is administered to risk group only (children of whom at least one parent was born in a country where hepatitis B is moderately or highly endemic and children of whom the mother is hepatitis B carrier).

Country	Source	Description of the basic immunisation program:	Additional years available:	Comments
		maintain a database of vaccination records for each child living in the region. These centres take care of updating the database by processing records from the Municipal Basis Registry about birth, deaths and removal.		
New Zealand	National Immunisation Coverage Survey 2005	National Immunisation Schedule effective from 1 February 2006: 6 weeks – DTaP-IPV (diphtheria, tetanus, acellular Pertussis, inactivated polio vaccine) , Hib-Hep B (haemophilus influenzae type b, hepatitis B); 3 months - DTaP-IPV, Hib-Hep B; 5 months – DTaP-IPV, Hep B; 5 months – Hib, MMR (measles, mumps, rubella); 4 years – DTaP-IPV, MMR; 11 years – dTap-IPV* (adult diphtheria, tetanus, adult acellular Pertussis, inactivated polio vaccine until the end of 2007 for those who have not previously had four doses) Special programme: 6 weeks – MeNZB (meningococcal B); 3 months – MeNZB; 5 months – MeNZB; 10 months – MeNZB (those who received the 3rd dose between 5-6 months of age, otherwise minimum 4 months after the 3rd dose).		Data from the National Immunisation Register (NIR) will be available in late 2007.
Norway	SYSVAK: National electronic vaccination register in Norway	The Norwegian Childhood Vaccination Schedule: 3 months: DTP, Hib, Polio (IPV), Pneumococcal conjugate vaccine (Pn7v). 5 months DTP, Hib, Polio (IPV), Pneumococcal conjugate vaccine (Pn7v). 12 months DTP, Hib, Polio (IPV), Pneumococcal conjugate vaccine (Pn7v). 15 months MMR. 7-8 years DTP, Polio (IPV). 11-12 years dT (for children born before 1998). 12-13 years MMR. 13-15 years BCG. 15-16 years Polio (IPV), dT (for children born in 1998 or later)..		
Poland	National Institute of Hygiene, Department of Epidemiology	Tuberculosis, Hepatitis B, Tetanus, Diphteria, Pertussis, Poliomyelitits, Measles, Rubella, Mumps	1980+	
Portugal	"Direcção Geral de Saúde" - Health Ministry.	Till 12 months: DTP (Diphtheria, Tetanus, Pertussis); Polio; BCG; HIB; Hepatitis B. Between 12 and 23 months: VASPR (Measles, Mumps, Rubella).	1985+	Last available data - 2004.
Slovak Republic	Public Health Office	Immunisation program in the Slovak rep is realised since 1954 by low. IP included vaccination against 10 antigens: TB, poliomyelitis, VHB, diphtheria, Pertussis, Tetanus, Haemophilius influenza type B, Measles,		

Country	Source	Description of the basic immunisation program:	Additional years available:	Comments
		mumps, rubella..;		
Spain	Ministry of Health and Consumer Affairs. (Ministerio de Sanidad y Consumo. Dirección General de Salud Pública)	http//www.msc.es/ciudadanos/proteccionSalud/infancia/docs/c2006.Pdf		Vaccinations by private sector are not included. Vaccinations rate - Percentage of infants reaching their first birthday who have been fully immunised
Sweden	Swedish Institute for Infectious Disease Control	Nationwide reports in January 2006 from all child health centres in Sweden regarding vaccination that passed their 2 year during the preceding calendar year (Sweden Data Year 2004-2005 - birth cohort born in 2003 vaccinated during the period from birth up to January 2006).		
Switzerland	Monitoring in 9 cantons			
United Kingdom	Department of Health	Program Description: It is not possible to give an aggregated proportion of children who have had all the standard vaccinations, so we have reported a rate for each of the standard vaccination programs. • Description of the basic immunisation program: DTaP/IPV/Hib is a primary immunisation given to babies when they are 2, 3 and 4 months old. The DTaP/IPV/Hib vaccine protects against five different diseases: diphtheria (D); tetanus (T); Pertussis. Meningitis C is a primary immunisation given to babies when they are 2, 3 and 4 months old.		Data are for England only.
United States	CDC National Immunization Survey	It is the responsibility of individual states to determine which vaccines are required by law, although most look to the schedule of recommended childhood vaccines established and updated each year by the Committee on Infectious Diseases of the American Academy of Pediatrics. The Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention, and the American Academy of Family Physicians. Currently all 50 states have school immunization laws, although there are differences in what may be required in different states. Deviation from age at measurement (2 years)? 19-35 months.		As of March 2004, all 50 states allow vaccination exemptions for medical reasons; 48 states allow exemptions for religious reasons; and 20 states allow exemptions for philosophical reasons.

Non-OECD EU countries				
Country	**Source**	**Description of the basic immunisation program:**	**Additional years available:**	**Comments**
Cyprus*	Medical and Public Health Services, Ministry of Health	The childhood immunisation programme in Cyprus* is set at national level by the Ministry of Health. In the public sector immunisation is carried out by the health visitors in the child health centres and the school health services under the guidance of the public health doctors while in the private sector vaccines are given by the paediatricians. In the public sector the following vaccinations are given free of charge to all the citizens regardless of their socioeconomic status: DPT, Poliomyelitis (IPV/OPV), MMR, Hepatitis B and Heamophilus Influenza type b (Hib). Deviation from age at measurement (2 years): Yes.		Due to lack of statistical information from the private sector, the Ministry of Health and particularly the Medical and Public Health Services perform a 3 year survey for the immunisation coverage at national level in children 17-24 months. This survey is carried out in accordance with the recommendations and a relevant protocol of the World Health Organisation to determine vaccine coverage and the degree of correct timing of the first and subsequent vaccination administration according to the WHO guidelines. According to the results of the last survey which was carried out in May 2006 among children 17-24 months, the coverage for DTP3 was 96%, for OPV3 96,5%, for DTP and OPV3 was 96,5%, for DTP3, OPV3 and MMR was 86,2% and for Hepatitis B 93,2%. The given values are estimations rely on those percentages.
Latvia	Public Health State Agency	The Basic immunisation program contains children's vaccination against Tuberculosis, Tetanus, Diphtheria, Whooping cough, Poliomyelitis, Measles, Rubella, Mumps, Hepatitis B, B type Haemophilus influenzae.		Measles vaccination at the age 16-23 months; DT - 95,6 and P 95,6; Hepatitis B - 1 year.
Malta	WHO-HFA: http://data.euro.who.int/hfadb/			

* See footnotes 2 and 3 on page 3.

Asthma mortality rate, ages 5-39

Operational Definition

Numerator: Number of people dying from asthma as a primary cause, age 5-39 [Asthma diagnostic codes ICD-9-493 or ICD-10-J45, J 46].

Denominator: 100 000 people age 5-39.

Table 12. Asthma mortality rate, ages 5-39

Country	Asthma mortality per 100 000 people							
	1998	1999	2000	2001	2002	2003	2004	2005
Australia			0.61	0.56	0.41	0.37	0.40	
Austria			0.10					0.11
Canada					0.11	0.20		
Czech Republic								0.10
Denmark				0.41				0.17
Finland				0.26		0.00	0.04	0.00
France			0.92	0.30				
Germany						0.16		
Iceland		0.00			0.00			0.00
Ireland						0.38		
Italy			0.13	0.14	0.11			
Japan				0.28		0.27	0.26	0.19
Korea								0.09
Mexico					0.32			0.30
Netherlands			0.15		0.13			0.11
New Zealand			0.80			0.35		
Norway			0.05			0.18	0.05	
Poland							0.08	
Portugal			0.10		0.16		0.08	
Slovak Republic							0.11	
Spain	0.19						0.17	
Sweden			0.07			0.12		
Switzerland		0.20				0.00		
United Kingdom					0.58	0.40	0.49	
United States					0.47	0.33		

Non-OECD EU countries								
Country	Asthma mortality per 100 000 people							
	1998	1999	2000	2001	2002	2003	2004	2005
Cyprus[1]								0.25
Latvia								0.37
Malta								0.00

Note:

1. See footnotes 2 and 3 on page 3.

Asthma mortality rate, ages 5-39, sources and methods

Country	Source	Diagnoses code(s)	Additional years available:	Reference population	Comments
Australia	AIHW Mortality Database	ICD-10 J45, J46.		1980 OECD	
Austria	Statistics Austria.	ICD-10 J45, J46.			
Canada	Canadian Vital Statistics Mortality Database	ICD-10 J45, J46.		1991 Canada Census	
Czech Republic	Vital Statistics (Czech Statistical Office)	ICD-10 J45, J46.			
Denmark	National Causes of Death Register	ICD-10 J45, J46.			Denmark wishes to make sure that the possibility of underreporting for this indicator is recognised. The underreporting makes comparisons difficult and could be misleading.
Finland	National Cause of Death Register, Statistical Institution of Finland	ICD-10 J45, J46.			
France	Numerator: national exhaustive mortality data (centre for epidemiology of medical causes of deaths – INSERM-CépiDc) for numerator, INSEE (Statistics National Institute) for population)	ICD-10 J45, 46			1999 (0.8376)
Germany	Todesursachenstatistik (causes of death statistics)	ICD-10 J45, J46			Value for ICD-10 J40-J47 is: 0.28.
Iceland	Directorate of Health				
Ireland	PHIS	ICD-9-493		PHIS Population Data	
Italy	Italian mortality database collected by ISTAT and processed by Istituto Superiore di Sanità.	ICD-9 493.		1991 Italian Census	
Japan	vital statistics	ICD-10 J45, J46.			
Korea	Annual Report on the Cause of Death Statistics. Korea National Statistical Office, 2006.	ICD-10 J45, J46.			1. Number of people dying from asthma as a primary cause (J45, J46), age 5-39: 24 2. Chronic lower respiratory disease mortality (J40-47) was 0.16.
Mexico	Mortality figures: Mortalidad 2005,	ICD-10 J45,			

Country	Source	Diagnoses code(s)	Additional years available:	Reference population	Comments
	Instituto Nacional de Estadística, Geografía e Informática y Dirección General de Información en Salud, Secretaría de Salud. Population figures: Instituto Nacional de Geografía, Estadística e Informática.	J46.			
Netherlands	National Institute for Public Health and the Environment			OECD 1980	
New Zealand	Numerator: NZHIS Mortality Data Collection 2003. Denominator: Statistics New Zealand, estimated resident mean population year ended 31 December 2003.	ICD-10-AM (Australian Modification) J45, J46.		OECD 1980	
Norway	Statistics Norway (SSB)	ICD-10 J45, J46.			
Poland	Data from Central Statistical Office processed by National Institute of Hygiene	ICD-10 J45, J46.	1999-2003	Standard Population 1990	Figure represents crude and age-standardised rate.
Portugal	DGS/INE	ICD-10 J45, J46.			The age groups 10-14; 20-24; 25-29; 30-34, do not have any registered cases of death.
Slovak Republic	Statistical Office of SR	ICD-10 J45, J46.		Standard European population	
Spain	Ministry of Health and Consumer Affairs. (Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Indicadores de salud 2006).	ICD-10 J45, J46.			
Sweden	The Swedish Cause of Death Register	ICD-10 J45, J46.		European (not OECD) and the Swedish gave the same results.	
Switzerland	Federal Office of Statistics	ICD-9 493.			
United Kingdom	Department of Health Mortality Extract 1993-04, Office for National	ICD-10 J45-J46		OECD 1980	Data are for England only

Country	Source	Diagnoses code(s)	Additional years available:	Reference population	Comments
	Statistics; Mid-year Population Estimates 1993-04, Office for National Statistics; Calculations by National Centre for Health Outcomes Development.				
United States	National Vital Statistics System Mortality	ICD-9 493.		OECD 1980	Age specific rates provided

Non-OECD EU countries					
Country	**Source**	**Diagnoses code(s)**	**Additional years available:**	**Reference population**	**Comments**
Cyprus*	Cyprus* Death Registry	ICD-10 J45, J46.			
Latvia	Death Causes Database	ICD-10 J45, J46.			
Malta	National Mortality Registry, dept. of Health Information, Malta				

* See footnotes 2 and 3 on page 3.

In-hospital mortality rate within 30 days of hospital admission for AMI

Operational Definition

Numerator: Number of deaths in the hospital that occurred within 30 days of hospital admission with primary diagnosis of acute myocardial infarction (ICD-9 410 or ICD-10 I21, I22).

Denominator: Number of people hospitalised with primary diagnosis of acute myocardial infarction.

Table 13. In-hospital mortality rate within 30 days of hospital admission for AMI

Country	Rate		Data year
	Hospital admissions-based	Unique identifiers	
Australia	6.4		2004-2005
	8.8		2000-2001
Austria	12.0		2004
Canada	9.3		2004-2005
Czech Republic	8.9		2004
Denmark		6.4	2005
		6.5	2004
Finland	11.1	16.2	2005
	11.1	15.7	2004
	13.0	18.0	2003
	14.0	16.3	2001
France	7.6		2005
	8.0		2003
	10.9		2001
Germany	11.9		1999
Iceland[2]	6.4		2005
	6.7		2004
	11.6		2002
Ireland	10.7		2003
Italy[2]	9.2		2004
	9.6		2003
	15.4		2001
Japan	10.5		2005
	10.3		1999
Korea[1]	18.6		2004
Mexico	24.5		2005
	23.1		2004
	14.3		1999

cont.			
Country	Rate		Data year
	Hospital admissions-based	Unique identifiers	
Netherlands	8.4	9.2	2005
	9.3	9.9	2004
	11.0		2001
New Zealand	5.4	7.6	2005-2006
	8.9	10.9	2000-2001
Norway	8.0		2005
	10.0		2004
Poland	8.0		2004-2005
Portugal	11.8		2005
	12.0		2004
	12.6		2001
Slovak Republic[2,3]	12.0		2005
	11.9		2004
Spain	10.3		2004
Sweden	8.3		2005
	8.5		2004
	10.3		2001
Switzerland[4]	8.1		2005
	6.9		2004
United Kingdom[2]	11.8		2003-2004
	5.2		2002-2003

Non-OECD EU countries			
Country	Hospital admissions-based	Unique identifiers	Data year
Latvia	15.8		2005

Notes:
1. Data also include patients that died within 30 days after admission, out of hospital.
2. Data with a limited generalisability to national level. See sources and methods for more information.
3. Age-standardised to Standard European Population.
4. In-hospital mortality, not necessarily 30-days in-hospital mortality after admission.

In-hospital mortality rate within 30 days of hospital admission for AMI, sources and methods

Country	Source	Diagnoses code(s)	ALOS in days	Age groups included	Reference population	Comments
Australia	AIHW National Morbidity Database	ICD-10 I21, I22	5.8			
Austria	OEBIG	ICD-10 I21, I22	9.4			Average length of stay excludes people not staying over night and excludes stays for longer than 365 days.
Canada	Hospital Morbidity Database, CIHI	ICD-10 I21 and I22	7.2	20-105 years	Crude rate is provided	ICD-9 codes (410) were used to extract cases submitted by the province of Quebec. Only discharge abstracts with a most responsible diagnosis of AMI are included in the calculation. The most responsible diagnosis is defined as the one diagnosis or condition that accounted for the longest length of stay or most resource intensive. Note that the in-hospital AMI mortality rate provided in the previous round of data collection was based on a different methodology and is not comparable with the rate provided in this round.
Czech Republic	National Registry of Hospitalized Patients	ICD-10 I21, I22	7.3			Includes hospitalised patients in general hospitals. Discharges exclude transfers to other care units within the same institution.
Denmark	National Hospital Discharge Register	ICD-10 I21, I22	5.2	All		The numbers provided are preliminary and will change as the register still receives data from the hospitals. The relevant cases are identified by unique identifiers
Finland	Hospital Discharge Register	ICD-10 I21, I22		30+		If number of patients is used as the denominator the figure for the year 2005 will be 16.2 (2004 was 15.7). This denominator is used in the NOMESKO Statistics.
France	Hospital Morbidity Database, PMSI	ICD-10 I21, I22	7.1	All		
Germany	10%-sample of all hospital cases in German. 1999 "Krankenhausdiagnosestatistik" by the Statistisches Bundesamt	ICD-9 410		10+		10% discharge sample.
Iceland	National University Hospital for survival rates, Directorate for Health for ALOS	ICD-10 I21, I22	7.3 (2004)	All		
Ireland						Not age standardised

Country	Source	Diagnoses code(s)	ALOS in days	Age groups included	Reference population	Comments
Italy	Ministry of Health	ICD-9 410	8.43	All		
Japan	Patient Survey 2005. Specially tallied by the Ministry of Health, Labour and Welfare					
Korea	Research on National Surveillance for Cardiovascular disease	I21, I22, I23, I250, I251	9.2 days	All		1. Case definition: cases with I21, I22, I23, I250 and I251 were selected from the 2004 National Health Insurance Data. Medical records have been reviewed to identify cases compatible with AHA-EPI or ESC/ACC criteria. 2. We calculated AMI 28 day in -Hospital case fatality rate.
Mexico	Sistema Automatizado de Egresos Hospitalarios, Dirección General de Información en Salud, Secretaría de Salud	ICD-10 I21, I22.	6.5			Indicator coverage: discharges recorded in all hospitals providing care to the uninsured population that is the population without access to social security (approximately 50% of the total Mexican population). The complete 2005 database analysed comprises 1 980 962 discharges reported by 596 hospitals run by the State Health Services, 10 National Institutes of Health (Federal Tertiary Care Hospitals) and 6 federal hospitals located in Mexico City and run by the federal government. Federal psychiatric hospitals are excluded from this database. It is estimated that this hospital activity represents 41% of the total activity recorded by public hospital facilities comprised in the National Health System (figure estimated on the basis of 2004 data). It is expected that the corresponding 2005 percentage will be slightly higher.
Netherlands	National Medical Registry, owned by PRISMANT. Calculations and methods by Statistics Netherlands in cooperation with Institute for Public Health and the Environment	ICD-9 410	7.56	All		Based on admissions, although figures based on patients are available. Rate defines: in-hospital mortality rate within 30 days of admission, among all discharges with AMI as reason for admission. Includes clinical admissions (with one overnight stay or more) and admissions without an overnight stay (=day care). Discharges from small specialised hospitals are excluded.
New Zealand	National Minimum Data Set (NMDS) 2005/2006	ICD-10-AM (Australian Modification) I21-I22.	5.5	All		Publicly funded events. If compared to unique patients, rather than admissions, the rate is 7.64%.
Norway	Norwegian Patientregister.	ICD-10 I21, I22				Norwegian Patient register has no unique patient identifier. This means that the same person may appear in the statistics several times during the year if this person gets treatment in different hospitals during the year.
Poland	Polish Registry of Acute Coronary	ICD-10 I21,	7.5 days			Data based on 59761 patients registered in Polish Registry of

Country	Source	Diagnoses code(s)	ALOS in days	Age groups included	Reference population	Comments
	Syndromes PL-ACS	I22.Diagnosis based on clinical definitions of STEMI and NSTEMI				Acute Coronary Syndromes with diagnosis of STEMI or NSTEMI in years 2004-2005.
Portugal	"Instituto de Gestão Informática e Financeira da Saúde" - Health Ministry	ICD-9 410		15-105		This indicator was calculated with data from Diagnosis Related Groups (DRGs) a national data base from "Instituto de Gestão Informática e Financeira da Saúde" - Health Ministry.
Slovak Republic	NHIS	ICD-10 I21, I22			Standard European population	
Spain	Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD). Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Registro de altas 2004	ICD-9 410	9.36	All		Public hospitals (75% discharges of total country).
Sweden	The Swedish Hospital Discharge Register	ICD-10 I21, I22	5.3	0-85		The value for the standardised death rate was around 0.08 due to two very high death rates for the youngest age groups with very few AMI's. Crude (non standardised) death proportion almost the same: 0.082630168.
Switzerland	AMIS-plus	ICD-10 I21, I22. Acute myocardial infarction: defined by characteristic symptoms and or ECG changes and enzyme rises (total creatine kinase or creatine kinase MB fraction) at least twice the upper limit or normal	7.7			Data show overall in-hospital mortality (not limited to 30 days); data not based on a comprehensive national data base, but judged to be representative. The ICD-10 I21.4 code was used only as an example, to show that the criteria of the AMIS-plus registry are not all exactly the same as in ICD. In the AMIS-plus data registry are all cases with acute coronary syndrome (but our expert extracted the cases for AMI). The patients' data are entered in the data registry regardless if it's a first infarction or a re-infarction.
United Kingdom	Hospital Episode Statistics (covers all NHS trusts in England)	ICD-10 I21-I22		All		Based on in hospital mortality during the last finished consultant episode in an inpatient spell. The data are for England only. The age adjusted figure above is distorted by the fact that there was a single admission in the 10-14 age group who died.

Non-OECD EU countries						
Country	**Source**	**Diagnoses code(s)**	**ALOS in days**	**Age groups included**	**Reference population**	**Comments**
Latvia	Health Statistics and medical technology state agency	ICD-10 I21, I22	11.7	18+		Indicator - mortality of adolescents and adults (%) in the hospital from acute myocardial infarction. Numerator: deceased with diagnosis acute myocardial infarction in the hospital. Denominator: Number of hospitalised with diagnosis of acute myocardial infarction.

In-hospital mortality rate within 30 days of hospital admission for stroke

Operational Definition

Numerator: Number of deaths in the hospital that occurred within 30 days of hospital admission with primary diagnosis of
a) hemorrhagic stroke (ICD-9 430-432 or ICD-10 I61-I62)
and b) ischemic stroke (ICD-9 433, 434, and 436 or ICD-10 I63-I64).

Denominator: Number of people hospitalised with primary diagnosis of stroke.

Table 14. In-hospital mortality rate within 30 days of hospital admission for stroke

Country	Data year	Hemorrhagic mortality rate		Ischemic mortality rate	
		Hospital admissions-based	Unique identifiers	Hospital admissions-based	Unique identifiers
Australia	2004-2005	24.9		11.9	
	2000-2001	25.0		13.0	
Austria	2004	17.0		8.0	
Canada	2004-2005	29.9		13.1	
Czech Republic	2004	28.4		12.0	
Denmark	2005		23.6		7.2
	2004		25.4		7.0
Finland	2005	12.5	22.9	6.3	10.5
	2004	13.7	24.5	6.5	10.6
	2003		24		11
France	2005	27.3		11.2	
	2003	27.5		13.5	
	2001	27.6		13.4	
Germany[2]	1999	21.0		10.9	
Iceland	2005	30.6		5.8	
	2004	39.2		6.3	
	2002	19.2		4.1	
Ireland	2003	23.9		11.3	
Italy[2]	2004	24.3		8.5	
	2003	24.6		9.4	
	2001	29.5		12.2	
Japan	2005	10.9		3.3	
	1999	5.3		3.2	
Korea[1]	2004	35.0		15.2	
Mexico	2005	32.0		20.1	
	2004	29.3		19.6	

cont.					
Country	Data year	Hemorrhagic mortality rate		Ischemic mortality rate	
		Hospital admissions-based	Unique identifiers	Hospital admissions-based	Unique identifiers
Netherlands	2005	29.9	33.9	9.2	9.3
	2004	30.5	33.8	10.6	10.8
	2001	35.0		16.0	
New Zealand	2005-2006		30.9		11.9
	1999-2000		32.3		13.9
Norway	2005	19.0		8.0	
	2004	25.0		9.0	
Poland	2004-2005	36.9		11.6	
Portugal	2005	26.9		9.4	
	2004	25.0		12.2	
Slovak Republic[3]	2005	28.5		12.2	
	2004	29.8		12.7	
Spain	2004	28.6		11.5	
Sweden	2005	18.6		8.4	
	2004	18.1		9.2	
	2001	24.3		10.6	
United Kingdom[2]	2003-2004	15.6		5.5	
	2002-2003	16.5		9.9	

Notes:
NA stands for “non available”.
1. Data also include patients that died within 30 days after admission, out of hospital.
2. Data with a limited generalisability to national level. See sources and methods for more information.
3. Age-standardised to Standard European Population.

In-hospital mortality rate within 30 days of hospital admission for stroke, sources and methods

Country	Source	Hemorrhagic Diagnostic Code	ALOS in days	Ischemic Diagnostic Code	ALOS in days	Ages in years	Comments
Australia	AIHW National Hospital Morbidity Database	ICD-10 I61-I62	11.0	ICD-10 I63-I64	11.5		How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
Austria	OEBIG	ICD-10 I61-I62 Hospital discharge data. Denominator: all I61 and I62 primary diagnosis - Average length of stay excludes people not staying over night and excludes stays for longer than 365 days.	20.39	ICD-10 I63-I64 Hospital discharge data. Denominator: all I63 und I64 primary diagnosis. Average length of stay excludes people not staying over night and excludes stays for longer than 365 days.	18.63		How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
Canada	Hospital Morbidity Database, CIHI	ICD-10 I61-I62 ICD-9 codes (430-432) were used to extract cases submitted by the province of Quebec. Only discharge abstracts with a most responsible diagnosis of stroke are included in the calculation. Note that the in-hospital mortality rate provided in the previous round of data collection were based on a different methodology and are not comparable with the rate provided in this round.	15.1	ICD-10 I63-I64. ICD-9 codes (433-434 and 436) were used to extract cases submitted by the province of Quebec. These data used the most responsible diagnosis field only. The most responsible diagnosis is defined as the one diagnosis or condition that can be described as being the most responsible for the patient's stay in hospital. In the event that multiple diagnoses are listed, select the most responsible diagnosis from the condition associated with the longest length of stay or most resource intense. Note that the in-hospital mortality rate provided in the previous round	16.0	20-105	Reference population: Crude rate is provided. How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Not applicable: All patients were followed-up until death, discharge or at the end of the 30 day follow-up period if still in the hospital. Deaths that occurred in a non-acute care setting, e.g., rehabilitation specialty hospital, nursing home etc, are not captured.

Country	Source	Hemorrhagic Diagnostic Code	ALOS in days	Ischemic Diagnostic Code	ALOS in days	Ages in years	Comments
				of data collection were based on a different methodology and are not comparable with the rate provided in this round.			
Czech Republic	National Registry of Hospitalized Patients	ICD-10 I61-I62	18.3	ICD-10 I63-I64	19.1		Includes hospitalised patients in general hospitals. Discharges exclude transfers to other care units within the same institution How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Usually no missing cases in hospital records.
Denmark	National Hospital Discharge Register	ICD-10 I61-I62	10.2	ICD-10 I63-I64	4.5	All	The numbers provided are preliminary and will change as the register still receives data from the hospitals. All relevant cases are identified by unique identifiers How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
Finland	Hospital Discharge Registry	ICD-10 I61-I62	31.85	ICD-9 433-434 and 436	34.13	30+	If number of patients is used as the denominator the figure for 2005 will be 22.9 (hemorrhagic) / 10.5 (ischemic) (2004 was 25.0 (hemorrhagic) / 10.6 (ischemic)). This denominator is used in the NOMESKO Statistics. How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
France	Hospital Morbidity Database	ICD-10 I61, I62.	14.2	ICD-10 I63, I64	13.1	All	
Germany	10%-sample of all hospital cases in German						10% discharge sample

Country	Source	Hemorrhagic Diagnostic Code	ALOS in days	Ischemic Diagnostic Code	ALOS in days	Ages in years	Comments
	1999 "Krankenhausdiagnosestatistik" by the Statistisches Bundesamt						
Iceland	National University Hospital for survival rates, Directorate for Health for ALOS	ICD-10 I61, I62.	11.5 (2004)	ICD-10 I63, I64	13.8 (2004)	All	How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
Italy	Ministry of Health	ICD-9-430-432	15.89	ICD-9 433, 434, and 436.	10.87	All	How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
Japan	Patient Survey 2005. Specially tallied by the Ministry of Health, Labour and Welfare						
Korea	Research on National Surveillance for Cerebrovascular disease	ICD-10 I61-I62 1. Case definition: Cases with I60, I61, and I62 were selected from the 2004 National Health Insurance Data. And medical records have been reviewed to identify cases compatible with the stroke diagnostic algorithm that has been developed by representatives of Korean Stroke Society. 2. We calculated hemorrhagic stroke 28 day in -Hospital case fatality rate.	17.7-27.7	ICD-10 I63-I64. 1. Case definition: Cases with I63, I64 were selected from the 2004 National Health Insurance Data. And medical records have been reviewed to identify cases compatible with the stroke diagnostic algorithm that has been developed by representatives of Korean Stroke Society. 2. We calculated ischemic stroke 28 day in -Hospital case fatality rate.	14.3 - 24.9		How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
Mexico	Sistema Automatizado de Egresos Hospitalarios y Bases de datos de egresos hospitalarios de los Institutos Nacionales	ICD-10 I61, I62.	7.18	ICD-10 I63, I64	6		Rates per 1 000 hospital discharges. Indicator coverage: discharges recorded in all hospitals providing care to the uninsured population (ie without access to social insurance). These include hospital facilities run by States Health

Country	Source	Hemorrhagic Diagnostic Code	ALOS in days	Ischemic Diagnostic Code	ALOS in days	Ages in years	Comments
	de Salud, Secretaría de Salud						Services, National Institutes of Health and a few hospitals run by the Federal government in Mexico City. Therefore, hospital activity undertaken at IMSS, ISSSTE, and other social insurance schemes is not included in these figures. Data reported in this table reflect about 50% of the total hospital activity undertaken by public institutions in Mexico. How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
Netherlands	National Medical Registry, owned by PRISMANT. Calculations and methods by Statistics Netherlands in cooperation with Institute for Public Health and the Environment	ICD-9 430, 431 and 432	12.53	ICD-9 433, 434 and 436	11.71	All	Based on admissions, although figures based on patients are available. Rate defines: in-hospital mortality rate within 30 days of admission, among all discharges with AMI as reason for admission. Includes clinical admissions (with one overnight stay or more) and admissions without an overnight stay (=day care). Discharges from small specialised hospitals are excluded.
New Zealand	National Minimum Data Set (NMDS) 2005-2006	ICD-10-AM (Australian Modification) I61-I62	6.72	ICD-10-AM (Australian Modification) I63-I64	7.22	All	How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? All patients were followed-up until death or 30 days from admission if still in the hospital (including rehabilitation). New Zealand has a unique patient identifier and ability to follow-up patients who suffered a stroke in any setting until either their death or 30 days after the admission. This includes rehabilitation episodes and readmissions irrespective of the reason. Comments: Publicly funded events.
Norway	Norwegian Patientregister	ICD-10 I61-I62		ICD-10 I63-I64			Norwegian Patientregister has no unique patient identifier. This means that the same person may appear in the statistics several

Country	Source	Hemorrhagic Diagnostic Code	ALOS in days	Ischemic Diagnostic Code	ALOS in days	Ages in years	Comments
							times during the year if this person gets treatment in different hospitals during the year. How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Dropped out.
Poland	Data from POLKARD 2003–2005 (full name: National Cardiovascular Disease Prevention and Treatment Program for 2003-2005)	ICD-10 I61-I62	17.23	ICD-10 I63-I64	12.41		Data are from hospital based registry - 73 stroke centres (out of 78) included that met inclusion criteria and 2478 ischemic stroke patients. Mortality rates represent only in-hospital mortality not 30 days mortality. How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Excluded from numerator and denominator.
Portugal	"Instituto de Gestão Informática e Financeira da Saúde", Health Ministry	ICD-9-430-432		ICD-9 433, 434, and 436			Missing cases are returned to the reporting unit for correction, therefore we do not have missing cases. Denominator: Number of hospital admissions with primary diagnosis, of respectively hemorrhagic and ischemic stroke.
Slovak Republic	NHIS	ICD-10 I61-I62		ICD-10 I63-I64			Reference population: Standard European population.
Spain	Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD). Ministerio de Sanidad y Consumo. Instituto de Informcaión Sanitaria. Registro de altas 2004	ICD-9-430-432		ICD-9 433, 434, and 436			Public hospital only (75% of total national discharges). How are missing cases treated, i.e. patients who are diagnosed and entered into the system, but are lost to follow-up? Only in-patients deaths.
Sweden	The Swedish Hospital	ICD-10 I61-I62		ICD-10 I63-I64			How are missing cases treated, i.e. patients who are diagnosed and entered into the

Country	Source	Hemorrhagic Diagnostic Code	ALOS in days	Ischemic Diagnostic Code	ALOS in days	Ages in years	Comments
	Discharge Register	The crude rate was 0.186004677 compared with 0.078264327 when standardised to OECD 1980 population which gives difference due to strange standard population that gives enormous weights to strata below 45 with very few strokes. In Sweden no stroke patients died at ages below 35.		The crude rate was 0.084118575 compared to only 1.3% when standardised to OECD 1980 population. Difference due to strange standard population that gives enormous weights to strata below age 45 with very few strokes. In Sweden no stroke patients died at ages below 35.			system, but are lost to follow-up? Treated as survivors.
United Kingdom	Hospital Episode Statistics (covers all NHS trusts in England)	ICD-10 I61-I62		ICD-10 I63-I64		All	Based on in-hospital mortality during the last finished consultant episode in an in-patient spell

In-hospital waiting time for surgery after hip fracture, over age 65

Operational Definition

Numerator: The number of patients with surgery initiated within 48 hours.

Denominator: The number of patients age 65 and older admitted to the hospital with a diagnosis of upper femur fracture (ICD-10 S72.0, S72.1, S72.2 or ICD-9 820).

Table 15. In-hospital waiting time for surgery after hip fracture, over age 65

Country	Femur fracture operated within 48 hours, age 65+ per 100	Data year
Austria	80.0	2004
Canada	77.8	2004-2005
	79.5	2002
Czech Republic	44.4	2004
Denmark	57.6	2005
	74.0	2004
Finland	87.9	2005
	86.1	2004
	86.0	2003
	87.7	2001
Iceland[1]	72.6	2002-2004
	73.1	1999-2003
Italy	33.8	2004
	32.7	2003
	31.2	2001
Mexico	50.0	2005
	65.1	2003
Netherlands	79.6	2004
	80.4	2001
New Zealand	72.3	2005-2006
Norway	91.0	2005
	93.0	2004
	99.0	2003
Portugal	47.4	2005
	50.1	2004
	32.1	2001
Spain	32.9	2004
Sweden	92.6	2004
	93.5	2003
United Kingdom	61.5	2002-2003

Note:

1. Three-year average

In-hospital waiting time for surgery after hip fracture, over age 65, sources and methods

Country	Source	Diagnosis Code(s)	Comments
Austria	Diagnoses and procedures report	ICD-10 S72.0, S72.1, S72.2	In hospital waiting times in Austrian hospitals are not reported by the hour; but by the day. A waiting time of two days can therefore in one case be longer than 48 hours, in another shorter.
Canada	Discharge Abstract Database, CIHI	ICD-10 S72.0, S72.1, S72.2	The crude rate is 0.7782, and the age-standardised rate (using the 1980 OECD population) is 0.7813. In the Discharge Abstract Database, the day on which the surgery occurred is recorded. The hour of the surgery is not provided. Therefore the numerator is defined as the number of patients with surgery initiated within 3 days of admission. Rate excludes Quebec-submitting hospitals. Cases are selected based on the relevant code appearing in the most responsible diagnosis field. In-hospital hip fracture cases were excluded. The most responsible diagnosis is defined as the one diagnosis or condition that can be described as being the most responsible for the patient's stay in hospital. In the event that multiple diagnoses are listed, select the most responsible diagnosis from the condition associated with the longest length of stay or most resource intense.
Czech Republic	National Registry of Hospitalized Patients	ICD-10 S72.0, S72.1, S72.2	3 days between date of arrival and date of surgery are used (based on dates not hours) included are hospitalised patients in general hospitals. About half of patients with the diagnosis were not operated.
Denmark	National Hospital Discharge Register	ICD-10 S72.0, S72.1, S72.2	
Finland	Hospital Discharge Registry	ICD-10 S72.0, S72.1, S72.2	
Iceland	Directorate of Health in Iceland	ICD-10 S72.0, S72.1, S72.2 or ICD-9 820.	No missing cases. Indicator tracks surgery within two calendar days e.g. admission on January 1st, surgery before January 3rd.
Italy	Ministry of Health	ICD-9 820	
Mexico	Estadísticas Hospital de Traumatología y Ortopedia "Lomas Verdes"	ICD-10 S72.0, S72.1, S72.2	It represents 7.23% of total cases occurred in IMSS during 2005 and the 50% value it is for 24 hours and not for 48 hour's period mentioned. On the hospital the intervals measured to initiate surgery go from 0 to 24 hrs, 24 to 72 hours and more than 72 hours to a week. The total cases obtained in this indicator was 486 it represents 7.23% of the total cases during 2005 6,719. The result could be extensible to all the institution
Netherlands	National Medical Registry, owned by PRISMANT. Calculations and methods by Statistics Netherlands in cooperation with Institute for Public Health and the	ICD-9-CM code 820	The Dutch National Medical Registry does not have exact "time of admission" and "time of operation". Consequently we use calendar days, and this indicator does not exactly measure "surgery initiated within 48 hours" but overestimates this percentage. We are able to calculate this indicator based on 1. Hospital admissions, 2. Each first admission of a patient within a one-year period, and 3. First admission of a patient not admitted in the 5 preceding years (thus, readmissions excluded). Also, reoperations can be excluded by counting "patients" instead of "admissions". Figures are based on first admissions within a on-year period for

Country	Source	Diagnosis Code(s)	Comments
	Environment		hip fracture, acute and elective surgery. Includes clinical admissions (with one overnight stay or more) and admissions without an overnight stay (=day care). Discharges from small specialised hospitals are excluded. We use a data file obtained by record linkage of the National Medical Registry to the Municipality Basis Registry. Discharges were linked by date of birth, sex, date of admission and postal code. About 85% of all discharges could be linked, so we could calculate rates on the basis of persons instead of discharges. Because some groups do have a smaller probability of being linked, a correction is applied. As a consequence, the calculated rates are representative for all patients discharged because of hip fracture in the Netherlands.
New Zealand	National Minimum Data Set (NMDS) 2005-200	ICD-10-AM (Australian Modification) S72.0, S72.1, S72.2	In-hospital hip fracture cases were excluded. The hour of the admission and surgery is not recorded in the NMDS. This indicator refers to surgery within two calendar days of admission. The rate for the same or next day surgery is 55.6%
Norway	Norwegian Patientregister	ICD-10 S72.0, S72.1, S72.2	Numerator: The number of patients with surgery initiated within 48 hours (ICD-10 S72.0, S72.1, S72.2)
Portugal	"Instituto de Gestão Informática e Financeira da Saúde", Health Ministry	ICD-9 820	This indicator was calculated with data from Diagnosis Related Groups (DRGs) a national data base from "Instituto de Gestão Informática e Financeira da Saúde" - Health Ministry
Spain	Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD). Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Registro de altas 2004	ICD-9 820	Calculated only for the cases with date of procedure (15% of total fractures). Public hospitals represent only (75% of total national discharges).
Sweden	National Hip Fracture Register	ICD-10 S72.0, S72.1, S72.2	The register does not measure the exact time of arrival to hospital only the date
United Kingdom	Hospital Episode Statistics (covers all NHS trusts in England)	ICD-10 S72.0, S72.1 S72.2	Based on admission (epiorder = 1) finished (epistat = 3) consultant episodes. Numerator is calculated as the number of primary operations (oper_1) carried out on date op_dte_1 within 48 hours of admission date (admidate). We only include those who have either HRG chapter of H or primary operation OPCS-4 chapter of W. The data are for England only

Influenza vaccination, over age 65

Operational Definition

Numerator: Number offered an annual influenza vaccination.

Denominator: Number of adults over 65 years of age.

Table 16. Influenza vaccination, over age 65

Country	Annual percentage %	Data year
Australia	79.1	2004
Austria	23.7	1999
Belgium	59.6	2005
Canada	66.5	2005
Czech Republic	16.5	2002
Denmark	55.3	2005
Finland	52	2005
France	68	2004
Germany	63	2005
Hungary	37.1	2005
Ireland	63	2005
Italy	68.3	2005
Japan	48	2004
Korea	77.2	2005
Mexico	29.1	2003
Netherlands	77	2005
New Zealand	60.6	2005
Portugal	41.6	2005
Slovak Republic	22.9	2004
Spain	70.1	2005
Switzerland	54	2005
United Kingdom	75	2005
United States	64.6	2005

Source: OECD Health Data 2007, July 07

Influenza vaccination, sources and methods

http://www.ecosante.org/OCDEENG/310030.html

Smoking rate

Operational Definition

Numerator: Number of smokers.

Denominator: Total population.

Table 17. Smoking rate

Country	Smoking Rate %	Year
Australia	17.7	2004
Austria	36.3	1999
Belgium	20.0	2005
Canada	17.3	2005
Czech Republic	24.3	2005
Denmark	26.0	2004
Finland	21.8	2005
France	23.0	2004
Germany	24.3	2003
Greece	38.6	2004
Hungary	30.4	2003
Iceland	19.3	2006
Ireland	27.0	2002
Italy	23.0	2006
Japan	26.3	2006
Korea	25.3	2005
Mexico[1]	26.4	2002
Netherlands	31.0	2005
New Zealand	22.5	2005
Norway	24.0	2006
Poland	26.3	2004
Portugal	17.0	2005
Slovak Republic	24.3	2002
Spain	28.1	2003
Sweden	15.9	2005
Switzerland	26.8	2002
Turkey	32.1	2003
United Kingdom	24.0	2005
United States	16.9	2005

Non-OECD EU countries		
Country	**Smoking Rate %**	**Year**
Malta[2]	23.4	2002

Note:
1. Data refer to urban population only.
2. Data are specific to HCQI Project. Source: EUROSTAT: http://epp.eurostat.ec.europa.eu/portal/

Source: OECD Health Data 2007, July 07

Smoking rate, sources and methods

http://www.ecosante.org/OCDEENG/813030.html

TWO NEW INDICATORS CONSIDERED FIT FOR INTERNATIONAL COMPARISONS: CLINICAL IMPORTANCE, SCIENTIFIC SOUNDNESS, SPECIFICATIONS AND DATA RESULTS

46. This section presents information on two indicators that were reviewed by the HCQI Expert Group and found to be ready for publication in a working paper format. The decisions were guided by a review of the indicators according to criteria for scientific soundness, clinical and policy importance of the indicator and the comparability across countries of the indicator's data sources.

47. Since these indicators are being published for the first time, a full account is given here of their description and definition, scientific soundness, importance and data comparability issues related to the indicator. Also presented are the national estimates and the sources and methods for each indicator.

48. The following table presents a summary of the data availability for the two indicators presented in this section.

Table 18. Summary of data availability for two new indicators in the 2006 HCQI Project indicator set

Country /Indicator	Retinal Exams in Diabetics	Asthma Admission Rate
Australia		
Austria		
Belgium		
Canada		
Czech Republic		
Denmark		
Finland		
France		
Germany		
Greece		
Hungary		
Iceland		
Ireland		
Italy		
Japan		
Korea		
Mexico		
Netherlands		
New Zealand		
Norway		
Poland		
Portugal		
Slovak Republic		
Spain		
Sweden		
Switzerland		
Turkey		
United Kingdom		
United States		

Non-OECD EU countries		
Country /Indicator	Retinal Exams in Diabetics	Asthma Admission Rate
Cyprus*		
Latvia		
Malta		

(Blank/white cells indicate unavailability of data)

* See footnotes 2 and 3 on page 3.

Retinal exam in diabetics

Operational Definition

Numerator: Number of diabetic patients who received a dilated eye exam or evaluation of retinal photography by an ophthalmologist or optometrist in a given year.

Denominator: Number of patients with diabetes (type I and type II) age 18-75 years.

49. *Importance:* Diabetes has become one of the most important public health challenges of the 21st century. Over 150 million adults are affected worldwide with the number expected to double in the next 25 years (King et al., 1998; Zimmet et al., 2001). For example in the US an estimated 15.7 million people suffers diabetes, including an estimated 5.4 million people not yet diagnosed. The prevalence of diabetes in the US is projected to increase from the present rate of 5.9% to 8.9% by 2025.[20] This rise is fuelled largely by the rise in obesity. The epidemic of diabetes requires resources to be devoted to the management of diabetes and its complications. Diabetes is the leading cause of blindness in industrialised countries in people ages 20-74 (Ghafour et al., 1983) and the most common cause of end-stage renal disease in the United States, Europe, and Japan. Individuals with type II diabetes have a 2-4 times greater risk of cardiovascular disease compared with people who do not have diabetes (Haffner, 2000). Non-traumatic amputations are 15 times more frequent in diabetic patients than in the general population (Ollendorf et al., 1998). While recent medical advances have led to a reduction in mortality from cardiovascular disease in OECD countries, such a positive trend has not been documented for diabetic patients, suggesting that these advances may be less effective for diabetics (Gu et al., 1999). Diabetes mellitus was responsible for an estimated 21 deaths per 100,000 people in WHO Euro A countries in 2000. This represents 2% of all deaths.

50. Retinopathy poses a serious threat to vision. In the United States, diabetes is responsible for 8% of legal blindness, making it the leading cause of new cases of blindness in adults 20-74 years of age. [21] Each year, between 12,000 and 24,000 people lose their sight because of diabetes. Nearly all patients who have type I diabetes for about 20 years will have evidence of diabetic retinopathy. Up to 21% of people with type II diabetes have retinopathy when they are first diagnosed with diabetes, and most will eventually develop some degree of retinopathy.

51. *Cost:* In 2002, the cost of diabetes in the United States was an estimated USD 92 billion in medical expenditures and USD 40 billion in lost productivity (ADA, 2003). According to projections by the International Diabetes Federation, countries will be spending 7-13% of their healthcare budgets on diabetes care by the year 2025 (IDF, 2003).

Scientific Soundness

52. *Face validity:* The prevalence of retinopathy is strongly related to the duration and control of diabetes, rendering adequate glycemic control the key measure to prevent retinopathy. But even in patients with manifest retinopathy, treatment modalities exist that can delay progression and eventual blindness.[22]

[20] American Diabetes Association "Facts and Figures", http://www.diabetes.org; NIDDK "Diabetes Overview", http://www.niddk.nih.gov/health/diabetes/pubs/dmover/dmover.htm.

[21] American Diabetes Association, http://www.diabetes.org/diabetes-statistics/eye-complications.jsp. Accessed, 28/07/04.

[22] American Diabetes Association: Clinical Practice Recommendations 2002. Diabetic Retinopathy (Position Statement).2002;25(sup.1):90-93. Available at: http://care.diabetesjournals.org/cgi/content/full/25/suppl_1/s90.

People with proliferate retinopathy can reduce their risk of blindness by 95% with timely treatment and appropriate follow-up care.[23] Because a person can be unaware of having retinopathy and not realise it, a regular check-up with an eye care professional is essential for early detection and treatment. Additionally, there have been several cost-effectiveness analyses of screening for diabetic retinopathy. Even though modelling techniques and component costs have differed substantially, the result of all the analyses is the same: screening for diabetic retinopathy saves vision at a relatively low cost, and the cost is less than the disability payments provided to people who would go blind in the absence of a screening programme.[24]

53. *Construct validity:* A number of associations, such as the American Association of Clinical Endocrinologists/American College of Endocrinology, American Diabetes Association, and American Academy of Ophthalmology, offer clinical guidelines recommending that annual eye exams be performed for patients with diabetes. In addition, annual retinal exams are one of five diabetes management tests recommended by the US Alliance on Diabetes Quality Improvement (which includes the American Diabetes Association). They recommend that for the patient group 29 years or younger that the first examination be made within 3-5 years after diagnosis of diabetes once the patient is age 10 or older, with a minimum routine of yearly follow-up. For the patient group 30 years an older, it is recommended that the first examination be conducted at the time of diagnosis of diabetes and with yearly minimum routine follow-ups. Women with diabetes who are planning to become pregnant should have a comprehensive eye examination and be counselled on the risk of developing retinopathy, and also have a comprehensive eye examination in the 1st trimester with close follow up throughout pregnancy.

54. *Reliability:* Countries use national surveys to determine eye exam rates. These rates will be affected by national aspects of survey design such as the question used, sampling, and method of administering the survey. Survey questions are also sensitive to cultural differences in survey responses in different countries, potentially leading to recall bias.

Feasibility

55. *Data availability:* Retinal eye exam rates are available for ten countries (Table 19). Data are provided for the years 1999 to 2005. Some countries use slightly different age ranges. One country could only provide regional data. Another country provided data for retinal exams in the last two years. One country could only provide the rate of eye exams by diabetics. Countries obtained their data from population surveys, from patient records, or clinical surveys.

56. *Comparability issues:* The deviations in age and years are minor. Another minor problem is comparing a country using rate of "eye exams" in diabetics to the dilated eye exam. The different methods of collecting data represent major threats to comparability. There are two basic ways to obtain estimates for this indicator, population based surveys, and surveys at clinical sites or a review of patient records. Population based surveys rely on respondents to self-report their diabetes diagnosis and their most recent eye exam. Population based surveys are likely to capture diabetics who might not be regularly seeing a physician. However, there may be recall bias associated with these surveys—in that respondents may not accurately be able to remember their last exam. Data obtained from patient records are likely to be more accurate with respect to the frequency of tests, but exclude diabetics who do not seek regular medical care. For these reasons rates obtained from population based surveys should be compared with caution to rates obtained from clinical surveys or clinical records.

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[23] National Eye Institute, http://www.nei.nih.gov/health/diabetic/retinopathy.asp#15. Accessed, 28/07/04.

[24] American Diabetes Association: Clinical Practice Recommendations 2002. Diabetic Retinopathy (Position Statement).2002; 25(sup.1):90-93. Available at: http://care.diabetesjournals.org/cgi/content/full/25/suppl_1/s90.

57. *Overall assessment:* Only ten countries were able to provide data for this indicator. Not many countries routinely survey diabetics, or include such detailed questions in general population surveys. Obtaining data from patient records can be burdensome.

Table 19. Retinal exam in diabetics

Country	Rate for diabetics per 100	Data year
Australia	72.5	1999-2000
Canada	48.6	2005
France	45.1	2002
	43.0	2001
Germany	49.0	1998
Italy[1]	56.0	2003
Japan	37.0	2005
	59.0	2002
Korea	38.1	2005
New Zealand	65.5	2005
Slovak Republic	47.0	2005
Sweden	77.8	2005
	82.6	2003
United Kingdom	83.4	2004-2005
United States	67.6	2002
	69.0	2001

Non-OECD EU countries		
Retinal exams in diabetics		
Latvia	54.3	2005

Notes:

1. Italy's figure refers to diabetic patients attending specialised clinics (estimated 60% of total diabetic population).

Retinal exam in diabetics, sources and methods

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Diabetes Diagnosis Criteria: All registered patients of diabetes (type 1 and type II) from Diabetic Register	Additional years available	Comments
Australia	Australian Diabetes, Obesity and Lifestyle Study (AusDiab)	25+					Numerator includes those screened in the last 2 years, as that is the Australian recommendation. Nationally representative sample
Canada	Canadian Community Health Survey		Diabetic status was self-reported	Numerator comprised of self-reported diabetics who have ever had a dilation eye exam. For the 2005 CCHS survey, 68.2% of diabetics reported ever having eye dilation.			The Diabetes Care module is optional content and therefore, the results only represent diabetes care practices in the participating health regions. In the 2005 CCHS, the module was selected by all health regions in Newfoundland and Labrador, Prince Edward Island, New Brunswick, Ontario, and Manitoba. The ability to generalise these results to other non-participating provinces is limited. Please describe the sample on which the indicator is based: Data are from the 2005 Canadian Community Health survey, a telephone survey conducted by Statistics Canada from January to December 2005. Diabetes-related questions are from the Diabetes module. The diabetes module was optional content and was selected by all regions in the provinces of Newfoundland and Labrador, Prince Edward Island, New Brunswick, Ontario, and Manitoba. Only respondents in health regions where the module was selected were administered the diabetes care questions. All responses were voluntary.
France	"Entred" (survey based upon a national sample of diabetic patients whose health insurance is "Caisse nationale des travailleurs salariés")	18+					National, generalisable sample
Germany	German National Health Interview and Examination Survey 1998; Thefeld W.	18-75					The validity of a self-reported diagnosis of diabetes mellitus is compromised by potential misclassification bias (Thefeld W. Prevalence of diabetes mellitus among adults in

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Diabetes Diagnosis Criteria: All registered patients of diabetes (type 1 and type II) from Diabetic Register	Additional years available	Comments
	Prevalence of diabetes mellitus among adults in Germany. Gesundheitswesen 1999; S85-S8 - the data presented here are recalculated to the age range 18-75 years.						Germany. Gesundheitswesen 1999; S85-S89). Detailed information on research on this topic has been provided to the OECD by German representatives and is available upon request. Self-reported diagnosis by a physician. Nationally representative sample
Italy	QuED study, Quality of Care and Outcomes in Type 2 DB	All					Comments: Based on sample of 25274 diabetic persons attended in primary care-- data base of medical records. National, generalisable sample
Japan	Japan Medical Data Center						
Korea	Korea National Health and Nutrition Examination Survey	30-39					National representativity of the registry: National representative sample. 1. Diabetes diagnostic criteria: Persons who answered "yes" to the questions: Have you ever been told by doctor that you have diabetes? 2. Age: 19+ 3. Age group specific rate: 19~29:37.13, 30~39:17.56, 40~49:37.80, 50~59:38.20, 60~69:39.90, 70+: 39.75
New Zealand	National Get Checked Quality Program for diabetics		Approximately 70 000 diabetic patients were seen in the year 2005 with Get Checked data reported.	Yes, diabetics in New Zealand are screened every second year, hence the rate differs to the retinopathy screening within preceding 2 years.			
Slovak Republic	Institute of health statistics						Data is not identical to request. Instead of number of retinal exams is used number of retinopathy detected

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Diabetes Diagnosis Criteria: All registered patients of diabetes (type 1 and type II) from Diabetic Register	Additional years available	Comments
Sweden	NDR Sweden						
United Kingdom	Quality and Outcomes Framework (QOF), Health and Social Care Information Centre	16+					
United States	Agency for Healthcare Research and Quality, Center for Financing and Cost Trends, Medical Expenditure Panel Survey	18+					Persons answering "yes" to the following question: Have you ever been told by a doctor or other health professional that you have diabetes or sugar diabetes? Nationally representative sample

Non-OECD EU countries							
Country	**Source**	**Age groups included**	**Deviations from the definition of the denominator**	**Deviations from the definition of the numerator**	**Diabetes Diagnosis Criteria: All registered patients of diabetes (type 1 and type II) from Diabetic Register**	**Additional years available**	**Comments**
Latvia	Register of the Patients of Diabetes Mellitus				All registered patients of diabetes (type 1 and type II) from Diabetic Register.		Diabetic Register does not cover all population of diabetics, because there are unregistered cases yet. It includes the patients who are in primary care and those in hospitals who are registered by their physician as a diabetic in the register.

Asthma admission rate

Operational Definition

Source: AHRQ Prevention Quality Indicators.

Numerator: All non-maternal discharges of age 18 years and older with ICD-9-CM principal diagnosis code of asthma.

Denominator: Total population.

58. *Importance:* Asthma is the most common chronic disease in childhood, with increasing prevalence in recent decades. Research suggests that asthma may in fact be a collection of different diseases with similar symptoms (Wenzel, 2006). Asthma is an inherently treatable disease through appropriate medical care. In 2002, the estimated annual cost of treating asthma in the United States was USD 14 billion, of which hospital care accounted for almost a third of direct costs (NHLBI, 2002). Estimates for the European Union suggest annual medical costs of EUR 17.7 billion and productivity losses of EUR 9.8 billion (ERS, 2003). The cost of asthma treatments accounts for close to 2% of annual expenditures for medical care in Japan (Tanihara and Kobayashi, 2004). Analysis from Korea has shown that hospitalisations for asthma were a significant health care cost however hospitalisations and trips to the emergency department were only a small fraction of the total health care cost of uncontrolled asthma (Park, 2006).

59. *Clinical significance of process or outcome*: Avoidable hospitalisations are those conditions that could have been avoided if proper ambulatory care had been received and can thus be seen as a measure of access to appropriate medical care. While not all admissions for ambulatory care sensitive conditions are avoidable, appropriate prior ambulatory care can prevent most cases of the onset of this type of illness or condition, control an acute episodic illness or condition, or manage a chronic disease or condition. Hence a disproportionately high rate is presumed to reflect problems in obtaining access to primary care (Weisman, 1992). Admission rates for asthma have been shown to be associated with lower socioeconomic status (AHRQ, 2006).

60. *Identification of process/outcome as quality problem*: The rate of Ambulatory Care Sensitive (ACS) hospitalisations is considered an index of access of a population to adequate primary care. Primary care should be able to effectively manage both adults and children with asthma. Treatment with anti-inflammatory agents, such as inhaled corticosteroids and leukotriene inhibitors, are largely able to prevent exacerbation and, when it occurs, systemic corticosteroids and bronchodilators should preclude any need for hospitalisation. While current protocols and guidelines provide clear guidance for the treatment of asthma, studies suggests that treatment often falls short of recommended care (Mattke *et al*., 2006b; Halterman, 2001; and AAFA, 2005). As a consequence of insufficient treatment, patients with asthma may need to be hospitalised. Admission rates for asthma and asthma mortality rates have been used to assess quality of care. For example, the UK National Health Service has designated asthma admission as a High Level Performance Indicator, and both paediatric and adult admission rates are part of the US National Healthcare Quality Report (AHRQ, 2006). Asthma mortality rates have been used as an indicator to assess the quality of care for health system comparison in the European Community, United Kingdom, Australia, and several other countries (Charlton *et al*., 1998; Holland *et al*., 1997; Manuel and Mao, 2002; AIHW; 2003).

61. *Policy importance*: Given the high cost of hospital care and the high prevalence of asthma, elevated ACS hospitalisation rates could point not only towards possibilities to improve quality but also to substantial cost savings, if better primary care were provided. In addition, the ACS hospitalisation rate appears sensitive to the presence or absence of economic barriers to access. It has been reported to be lower and/or less correlated with socioeconomic status in countries with national health insurance (Billings, 1996).

62. *Susceptibility to being influenced by the health system*: Appropriate prior ambulatory care could prevent the onset of an illness or condition; control an acute episodic illness or condition; or manage a chronic disease or condition (Anderson, 1996). According to the National Asthma Education Program, asthma is a

readily treatable chronic disease that can be managed effectively in the outpatient setting (NHLBI, 1997). In a US-based study of asthma in urban settings, low cost primary care and preventive measures significantly decreased the incidence of severe asthma episodes and hospitalisations (Houck, 2006). Observational studies offer some evidence that inhaled steroids may decrease risk of admission by up to 50% (Blaise, 1998).

Scientific Soundness

63. *Face validity*: Managing chronic diseases to prevent complications and exacerbations is regarded as a core task of the primary health care system. Little empirical evidence exists as to the validity of the asthma avoidable hospitalisations indicator in particular. The AHRQ study group developing this indicator found that the indicator was "adequately precise" in measuring true differences across areas or regions (AHRQ, 2006). However, there are important differences across race and socioeconomic groups and proper adjustment techniques when looking at sub national data is recommended (Ray, 1998).

64. *Content validity*: As mentioned above, several groups have advocated measures of ACS hospitalisation rates. The fact that hospital admission diagnoses are readily available in most countries implies that the indicator can be easily constructed. However, it should be mentioned that there remains some controversy about this (and similar) measures as a quality indicator, because ACS hospitalisation rates reflect access to, as well as quality of, primary care. Also, defining the appropriate level of hospital admission rates for those conditions is difficult, because in a subset of cases an admission is clearly warranted.

Table 20. Asthma admission rate per 10 000 discharges, (primary care and prevention, ambulatory sensitive conditions)

Country	Rate per 10 000	Data year
Australia	10.05	2004-2005
Austria	6.97	2004
Canada	3.73	2004-2005
Czech Republic	6.30	2004
Denmark	5.64	2005
Finland	13.23	2005
Iceland	1.69	2005
Italy	3.82	2004
Japan	6.72	2005
Mexico	1.82	2005
Netherlands	2.78	2005
New Zealand	8.13	2005-2006
Norway	4.54	2005
Portugal	3.88	2004
Spain	4.40	2004
Sweden	3.30	2004
United States	12.00	2002

Non-OECD EU countries		
Country	**Rate per 10 000**	**Data year**
Latvia[1]	16.13	2005

Notes:

1. Data from hospital administered statistics

Asthma admission rate, sources and methods

Country	Source	Diagnosis code(s)	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Australia	AIHW National Hospital Morbidity Database				Data are for ICD-10-AM J45, J46		
Austria	Statistics Austria		15+		Principle diagnoses given in ICD-10 codes: J450, J451, J458, J459, J46		No exclusions were made, all discharges with principle diagnosis of the given codes.
Canada	Discharge Abstract Database, CIHI						Cases were extracted based on a most responsible diagnosis of the condition of interest. The most responsible diagnosis is defined as the one diagnosis or condition that can be described as being the most responsible for the patient's stay in hospital. In the event that multiple diagnoses are listed, select the most responsible diagnosis from the condition associated with the longest length of stay or most resource intense.
Czech Republic	National Registry of Hospitalized Patients		20+	Population 20+ as of 1st of July	Includes all hospitalised patients in general hospitals for diagnoses of J45, J46.		
Denmark	National Hospital Discharge Register						There have been no exclusions in the numerator (it is not possible to write in the numerator box). The numbers provided are preliminary and will change as the register still receives data from the hospitals. It should be kept in mind, when

Country	Source	Diagnosis code(s)	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
							interpreting this indicator that the indicator is strongly dependent on how the health system is organised.
Finland	Hospital Discharge Register						Overall number of cases was 5893. In this all referred cases are included. The number of cases admitted to hospital from ER's was 4214. Other cases were referrals.
Italy	Ministry of Health - National discharges database					2001+	
Japan	Patient Survey		20+				Since the Patient Survey covers only one month, the numerator (estimated 7 300) was multiplied by 12. The decline of the rate (with respect to 2002) indicates improved quality of care for asthma. Quoting the actual data provided by the Patient Survey in 2002 and 2005, the estimated number of discharges over 20 years with primary Dx of asthma was 7 300 in 2002 and 5 800 in 2005. The rate was calculated as follows: 5 800X12months/103.56 million population.
Mexico	SIAIS.- Sistema de Información de Atención Integral a la Salud. IMSS (DTIES) División Técnica de Información Estadística en Salud		20+	20 years and older.	20 years and older and ICD-10 codes. (Unofficial table of ICD-9 and ICD-10 codes).		Nationwide representative.
Netherlands	National Medical Registry, owned by PRISMANT. Calculations and methods by Statistics Netherlands in cooperation with Institute for Public Health and the Environment		18+				The Dutch National Medical Registry does not use the following asthma diagnoses: 493.x2, 493.2x, 493.8x, (493.81, and 493.82). Consequently, our selection is based on ICD-9-CM code 493 (493.0, 493.1 and 493.9). A fifth digit differentiates between 'without mention of status asthmaticus' and 'with status asthmaticus' (respectively codes 0 and 1). Major Diagnostic Categories (MDCs) are not used in all countries, at least not in the Netherlands. We assume that MDC 14 refers to health status described in Chapter 11 of ICD-9 (codes 630-676) and several V-codes (V22-V24, V27, V28). Secondary diagnoses excluded from the numerator:

Country	Source	Diagnosis code(s)	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
							277.0, 747.21, 748.3, 748.4, 748.5, 748.6, 748.8, 748.9, 750.3, 759.3, 770.7, ICD-9 codes: 630-676 or V22-V24, V27, V28. Discharges from small specialised hospitals are excluded. We only present data from general acute care hospitals (including university hospitals). Data from seven specialised clinics for rehabilitation of chronic diseases like lung disease were excluded. In these clinics patients are admitted with the goal to learn to manage their disease. The length of stay can be one day (day care) to several weeks. In general, patients are not admitted in these clinics because of acute exacerbations or complications. In all rates, clinical admissions (with one overnight stay or more) and admissions without an overnight stay (=day care) were included. Transfers are included in the nominator. Consequently, discharges from secondary hospitals are included.
New Zealand	National Minimum Data Set (NMDS) 2005-2006.	ICD-10-AM (Australian Modification) J45-J46			Yes, excludes pregnancy, childbirth, puerperium (MDC14) and emergency specialty (M05-08) with a length of stay < 1 day.		Publicly funded events.
Norway	Norwegian Patientregister.						Diagnoses codes ICD-10: J45, J46
Portugal	DRGs						
Slovak Republic							Our records do not work with four digits ICD; therefore it is not possible to consider exclusions.
Spain	Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD).						only public hospitals (75% of total country discharges)

Country	Source	Diagnosis code(s)	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
	Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Registro de altas 2004						
Sweden	The Swedish Hospital Discharge Register						
United States	Healthy People 2010, measure 24-2 (modified age group). Agency for Healthcare Research and Quality (AHRQ) Prevention Quality Indicators (PQ			U.S. population age 18+	Number of discharges with first listed diagnosis of asthma (ICD-9-CM code 493) among adults age 18 and over. Excludes obstetric admissions and transfers from other institutions		Rates are adjusted by age and gender, using the total U.S. population for 2000 as the standard population. Although not all States participate in the HCUP database, the Nationwide Inpatient Sample is weighted to give national estimates using weights based on all U.S. community, non-rehabilitation hospitals in the American Hospital Association Annual Survey of Hospitals.

Non-OECD EU countries							
Country	**Source**	**Diagnosis code(s)**	**Age groups included**	**Deviations from the definition of the denominator**	**Deviations from the definition of the numerator**	**Additional years available**	**Comments**
Latvia	Health statistics and medical technology state agency				Numerator is hospital statistics rate, not in primary care. Hospitalised discharges of age 18 years and over with asthma (ICD-10 J45, J46)		At this moment, we have only information from branch statistical report about discharged rate, but in the future it will be able from the Management Information System.

INDICATORS NOT SELECTED FOR INCLUSION IN 2006 HCQI INDICATOR SET

65. This section presents information on the clinical importance, scientific soundness together with specifications and data results for the 7 indicators which are not yet considered suitable for international comparisons by the HCQI Expert Group and which are still under review. The criteria applied for this assessment of the indicators were either the lack of availability of the indicator across a sufficient number of countries or some major divergences in the methodology of calculation between countries hampering seriously the comparability of figures. The comparability problems underlying this judgement are presented and possible solutions suggested. The section offers information about the 4 indicators already tested in the previous data collection for which the availability and comparability problems have not yet been satisfactorily solved and 3 new indicators tested for the first time in 2006 data collection, for which the HCQI Expert Group recommended further work before inclusion in the HCQI indicators set.

Annual HbA1c test for patients with diabetes

NOTE that this indicator was already tested in (2003-2005) HCQI data collection and it is not yet considered suitable for international comparisons by the HCQI Expert Group. It is included in this paper to illustrate current data concerns with the indicator and possible future solutions

Operational Definition

Numerator: Number of patients with at least one test of HbA1c levels in the reporting year.

Denominator: People age 18-75 with diabetes mellitus type I or II, defined as: at least one physician visit with a diagnosis of diabetes or patient dispensed insulin and/or hypoglycaemic agent, excluding those with gestational diabetes and those not seen for continuing care.

Importance

66. *Mortality:* Diabetes mellitus was responsible for an estimated 21 deaths per 100 000 people in WHO Euro A countries in 2000. This represents 2.1% of all deaths.

67. *Prevalence:* Diabetes mellitus affected an estimated 3 of every 100 people living in WHO Euro A countries in 2000. Diabetes mellitus constitutes a major public health burden in the industrialised countries, affecting, for example in the US an estimated 15.7 million people, including an estimated 5.4 million people not yet diagnosed. In addition to being the seventh leading cause of death in the US (ADA, 2006), diabetes mellitus is also the leading cause of blindness in people ages 20-74, the leading cause of end-stage renal disease (ESRD), the most frequent cause of non-traumatic lower limb amputations, and a major risk factor for heart disease and stroke. The prevalence of diabetes in the US is projected to increase from the present rate of 5.9% to 8.9% by 2025 (ADA, 2006).

68. *Cost:* Endocrine diseases, of which diabetes is the most common, are the 12th attributable contributor to cost of illness in Canada (2.2% of direct and indirect costs). In the United States, the costs of diabetes totalled $132 billion in 2002, including about $92 billion in direct medical expenditures and about $40 billion in lost productivity and premature death (Hogan, 2003).

Scientific Soundness

69. *Face validity:* There is now strong evidence that reducing blood glucose to normal levels can reduce the risk of complications associated with both type I and type II (ADA, 2001) diabetes. Severity of complications associated with chronic diabetes, lack of symptoms in initial stages of disease, and long period between the commencement of sustained hyperglycaemia and observable complications make this disease a prime candidate for aggressive, outpatient based, primary preventive care. Blood glucose testing using HbA1c is recommended as a quality indicator by the American Medical Association and is used by the US Veteran's Administration. The American Diabetes Association and many other national scientific societies have issued guidelines for the management of diabetes that reflect the implications of this research (ADA, 2001). These guidelines have been disseminated widely, and adapted by many health care provider organisations to reflect local practice. Yet as in other areas of clinical practice, numerous studies have documented that the level of clinician adherence to diabetes practice guidelines' recommendations for routine monitoring and screening remains variable and often quite low (Streja, 1999; Lawler, 1997).

70. *Content validity:* Reviews of the evidence from clinical trials of diabetes management, including those conducted by the Cochrane Collaboration, the American Diabetes Association, the New Zealand Guidelines Group, and others, have all concluded that good glycemic control reduces the occurrence of retinopathy, nephropathy, and neuropathy, and improves functional status and well-being among people with type I and type II diabetes (Renders, 2002; Nathan; 2002).

71. *Reliability:* Data on the frequency of HbA1c testing is usually derived from studies using medical chart review or prospective data collection. International comparison of these studies is therefore affected by all differences in study design.

Feasibility

72. *Data availability:* HbA1c test rates are available for eight countries (Table 21). The HbA1c screening data supplied were for 2000-2005. Five countries provided data that slightly deviated from the requested OECD age range. Countries provided data based on samples from primary care clinics, and from patient surveys. Countries that reported from general surveys also reported a problem that many diabetics are not familiar with the term of HbAc1.

73. *Comparability issues:* Detailed documentation and assessment is provided in Table 22. There should be concern over comparing the results of patient surveys to a review of patient records. A major challenge for this indicator relates to fielding surveys that might be able to accurately collect information on HbAc1 testing. Because diabetics are not always familiar with the term HbAc1, self-reported data may not be reliable, resulting in one country not reporting their data. Data derived as part of research project may not be generalisable to a country, because care patterns and patient characteristics may be systematically different from the general population.

74. *Overall assessment:* Only eight countries could provide data on this indicator. It also appears that some of the data comes from research projects and may not be regularly collected. However, during the course of the project, data availability improved for this indicator and it may warrant examination in future HCQI efforts.

Table 21. Annual HbA1c test for patients with diabetes

Country	Diabetic patients tested for HbA1c in the last year (%)	Data year	Age
Finland	98.0	2000	
France	82.6	2002	>=18 years
Italy	Type I 91.0 Type II 88.0	2004	14+
Norway	93.0	2000	
Spain	77.4	2000	14+
Sweden	97.0	2003	
United Kingdom	94.4	2004-2005	16+
United States	90.4	2002	18 and over

Annual HbA1c test for patients with diabetes, sources and methods

Country	Source	Age groups included	Comments
Finland	A survey conducted in 2000		Data come from a research project, and are a representative sample of diabetics in Finland. The objective was to describe the level of diabetic care in Finland. The criteria were HbA1c levels, blood pressure and lipid level. 3580 diabetic took part, 3462 had had their HbAc1 level measured. The results are 97% in patients on oral medication, 99% in patients on insulin, and 100% in patients on combination medication.
France	"Entred" (survey based upon a national sample of diabetic patients whose health insurance is “Caisse nationale des travailleurs salariés”)	18+	Patients repaid for insulin or hypoglycaemic agents
Italy	Associazone medici diabetologi	1-100	Based on sample of 120.000 diabetic persons of any age. The information has been derived from electronic records of 86 diabetes outpatient clinics. In Italy 50-70% patients are followed by diabetes clinics
Norway	Unpublished data from an epidemiological study carried out in two parts of Norway		A sample of 2000 patients with diabetes attending primary care in Norway had their HbA1c tested at least once during the year
Spain	GEDAPS (Study Group of Diabetes in Primary Health Care)	14+	This indicator was based in a sample of 6202 people with diabetes mellitus aged 14 years and older. This sample was obtained from the morbidity registries in several centres of primary health care by physicians who participate voluntarily in a program to improve care quality
Sweden	National Diabetic Register, covering approximately 30% of all diabetics in Sweden		In Sweden the focus has shifted to monitoring evidence-based practice and outcomes of care. Only patients with type I diabetes or type II diabetes and at least one test of HbA1c levels were reported this year 2003.
United Kingdom	Quality and Outcomes Framework (QOF), Health and Social Care Information Centre	16+	The data provided represents "the percentage of diabetic patients who have a record of HbA1c or equivalent in the previous 15 months. As the care of children with diabetes mellitus is generally under the control of specialists, the register should exclude those patients age 16 and under. Likewise, the indicators are not intended to apply to patients with gestational diabetes and relate to patients with both type I and type II diabetes. Data does not adjust for age or gender-they are crude rates. No allowance is made for e.g. deprivation and ethnicity. And importantly, there are "exclusions" from QOF e.g. if a patient fails to show for repeat requests for annual review, GPs can and do exclude them from the denominator.
United States	MEPS	18+	Research for the Medical Expenditure Panel Survey (MEPS) at US DHHS AHRQ has shown that there are a large number of non-respondents to questions about whether the individual had an HbA1C test due to lack of knowledge about HbA1C.

Table 22. Annual HbA1c test for patients with diabetes, comparability issues

		Comparability Implications	
		Minor	**Severe**
Possibility to correct the deviation?	**Possible**	Age ranges vary	
	Unlikely	Data available for different years	Diabetics often are unfamiliar with the term "HbAc1" leading to potential bias in population surveys. Comparability between population/patient surveys and review of patient records is unknown. Data derived from research studies may not be generalisable

Possible solutions:

- Footnotes can indicate the year and age range
- OECD could investigate the comparability between in-person surveys and a review of patient records.
- Tables should separate results based on population-level data and research studies as well as those based on survey data and patient records.

HbA1c level indicating poor glucose control

NOTE that this indicator was already tested in (2003-2005) HCQI data collection and it is not yet considered suitable for international comparisons by the HCQI Expert Group. It is included in this paper to illustrate current data concerns with the indicator and possible future solutions.

Operational Definition

Numerator*:* Number of patients with HbA1c level greater than 9.5% at the most recent test given in the reporting year.

Denominator*:* People age 18-75 with diabetes mellitus type I or II who had HbA1c levels tested within the reporting year (Diabetes defined as: at least one physician visit with a diagnosis of diabetes OR patient dispensed insulin and/or hypoglycaemic agent, excluding those with gestational diabetes).

Importance (for a more detailed discussed, please see above under HbA1c test rate)

75. *Mortality:* Diabetes mellitus was responsible for an estimated 21 deaths per 100 000 people in WHO Euro A countries in 2000. This represents 2.1% of all deaths.

76. *Prevalence:* Diabetes mellitus affected an estimated three of every 100 people living in WHO Euro A countries in 2000.

77. *Cost:* Endocrine diseases, of which diabetes is the most common, are the 12th highest contributor to cost of illness in Canada (2.2% of direct and indirect costs). In the United States, the costs of diabetes totalled $132 billion in 2002, including about $92 billion in direct medical expenditures and about $40 billion in lost productivity and premature death (Hogan, 2003).

Scientific Soundness

78. *Face validity:* HbA1c has been termed the memory of glucose control. Chronically elevated blood glucose levels, indicating poor glycemic control, lead to chemical alterations of the haemoglobin, the component of the red blood cells that transport oxygen. By measuring HbA1c-levels, clinicians gain insight into the glycemic control of a patient over the last couple of weeks. Thus, the test determines how well a patient's diabetes has been managed with elevated values indicating uncontrolled diabetes.

79. *Content validity:* Reviews of the evidence from clinical trials of diabetes management, including those conducted by the Cochrane Collaboration, the American Diabetes Association, the New Zealand Guidelines Group, and others, have all concluded that good glycemic control reduces the occurrence of retinopathy, nephropathy, and neuropathy, and improves functional status and well-being among people with type I and type II diabetes (Renders, 2002; Nathan, 2003). Many diabetic patients have poor glycemic control (Renders, 2002). The threshold for this indicator, 9.5% (indicating very poor glycemic control), is based on a recommendation from a group of 15 experts in developing clinical diabetes indicators for the National Committee for Quality Assurance (NCQA, 2003). This threshold, however, will need to be updated periodically as numerous organisations, including the US National Quality Forum and the Alliance on Diabetes Quality Improvement (representing the American Medical Association, the American Diabetes Association and the Joint Commission on the Accreditation of Healthcare Organisations) have updated this threshold to a more stringent level.

80. *Reliability:* Different HbA1c tests could provide different results. However, the threshold chosen was judged high enough so that no patient, regardless of the test used or health condition should exceed the threshold.

Feasibility

81. *Data availability:* HbA1c levels are available for eleven countries (Table 23). The screening data are supplied for a range of years. Some countries provided data that slightly deviated from the OECD age range requested. Some countries used population surveys, and others sampled from clinics or hospitals. One country used a sample from a specialty clinic, which may not be representative of diabetes care nationally. One country provided data with a definition that was significantly more rigorous than the OECD definition. (Although another country, while supplying the data as requested, regularly uses the more rigorous target as well.) One country provided data for a specific ethnic group that is not generalisable to the national level.

82. *Comparability issues:* Detailed documentation and assessment is provided in Table 24. The differences in years provided at age deviations do not appear to be significant threats to validity. The variation in definition of poor glucose control (HbAc1>9.5%) is a significant problem with respect to international comparability. The differing sampling techniques are likely to pose threats to comparability.

83. *Overall assessment:* Eleven countries could provide data on this indicator. It appears that some of the data stem from research studies and may not be regularly collected. Data would be available in patient records, but would require a review of patient records which currently is not routinely done in most national data collection systems.

Table 23. HbA1c level indicating poor glucose control

Country	Diabetic patients with HbA1c levels >9.5%	Data year	Age
Australia	10.9	1999-2000	25-75
Finland	17.7 type 1 diabetics: 28.1 type 2 diabetics: 12.5	2000	
France	missing: 7.9 <=6.5: 26.6 [6.5-8]: 40.3 [8-10]: 20.9 >10: 4.3	2001	
Germany	16.4	1998	18-75
Italy	10.7	2003	14+
Mexico	20.8	2002	18-75
New Zealand	9.9	2001	18-75
Spain	9.5	2000	14+
Sweden	PHC 60.0 Hospital Clinics 31.0	2001	
United Kingdom	10.6	2004-2005	16+
United States	21.0	1999-2002	18+

HbA1c level indicating poor glucose control, sources and methods

Country	Source	Age groups included	Comments
Australia	Australian Diabetes Obesity, and Lifestyle Study (AusDiab)	25-75	Data were weighted to match the age and sex distribution of the 1998 residential population of Australia aged 25 and older.
Finland	A survey among Finnish diabetics (a representative sample of 3580, of whom 3462 had their HbAc1 measured)		
France	"Entred" (survey based upon a national sample of diabetic patients whose health insurance is “Caisse nationale des travailleurs salariés”)		Sample of 1 718 patients repaid for insulin or hypoglycaemic agents: a questionnaire was sent to patients and then another to their practitioner
Germany	German National Health Interview and Examination Survey 1998 (Bundes-Gesundheitssurvey 1998)	18-75	The result is based on data of a population survey, which included 298 diabetic persons in accordance with the definitions stated above.
Italy	Study "SFIDA"	35-70	Information on metabolic control comes from cross-sectional study involving 12 222 patients with type 2 DB enrolled by 261 DB outpatient clinics (more than 1 third of Italian DB outpatient clinics). Data refers to individuals with levels >8% HbA1c.
Mexico	Unidad de Investigación en Epidemiología Clínica, Hospital de Especialidades Centro Médico Nacional Siglo XXI	18-75	Data based on a representative sample of 1082 type 2 diabetes patients.
New Zealand	Annual Check Program	18-75	NZ uses proportion with HBA1c>8% as a performance indicator for District Health Boards. This is reported, and targets are set, by ethnicity.
Spain	GEDAPS (Study Group of Diabetes in Primary Health Care)	14+	This indicator was based in a sample of 6202 people with diabetes mellitus aged 14 years and older. This sample was obtained from the morbidity registries in several centres of primary health care by physicians who participated voluntarily in a program to improve care quality.
Sweden	National Diabetes Register		The difference between PHC and hospital clinics is likely to depend on patient selection. The measure can be reported, e.g., per type of diabetes, age and sex.
United Kingdom	Quality and Outcomes Framework (QOF), Health and Social Care Information Centre	16+	
United States	National Health and Nutrition Examination Survey (NHANES), NHQR	18+	Non-institutionalised diagnosed diabetics

Table 24. HbA1c level indicating poor glucose control, comparability issues

		Comparability Implications	
		Minor	**Severe**
Possibility to correct the deviation?	**Possible**	1. Age ranges vary 2. Data available for different years	1. Data provided for different definition of poor glucose control (HbAc1 > 8%, compared to HbAc1 > 9.5%) 2. Some countries obtain samples from population based surveys and some from specialised clinics. The generalisability of such selected samples is unknown.
	Unlikely		1. Some countries obtain samples from population based surveys and some from specialised clinics. The generalisability of such selected samples is unknown.

Possible solutions:

- Footnotes can indicate the year and age range
- In the future, OECD can work with countries to provide data that is consistent with HCQI definition of poor control.
- Drop or report separately data from countries that cannot provide data that is generalisable to the national level.

Major amputation in diabetics

NOTE that this indicator was already tested in (2003-2005) HCQI data collection and it is not yet considered suitable for international comparisons by the HCQI Expert Group. It is included in this paper to illustrate current data concerns with the indicator and possible future solutions.

Operational Definition

Numerator: Number of diabetic patients with major (above or below knee) amputations in a given year.

Denominator: Number of patients with diabetes (type I and type II) ages 18-75 years.

Importance[25]

84. *Mortality*: Diabetes mellitus was responsible for an estimated 21 deaths per 100,000 people in WHO Euro A countries in 2000. This represents 2% of all deaths.

85. *Prevalence:* Each year, more than 10,000 Americans with diabetes face decisions related to amputation. Two of the main complications of longstanding inadequate glycemic control (indicating poor diabetes management) are peripheral vascular disease, the chronic deprivation of blood supply of the legs due to arteriolosclerosis, and peripheral neuropathy, damage to the peripheral nervous system. The combination of those two complications put diabetics at greater risk for lower extremity lesions. Loss of sensation in the foot increases likelihood that minor trauma goes unnoticed, while inadequate blood supply results in impaired healing of the wound and greater risk of infection. Thus, osteomyelitis (severe infections of the bone) and gangrene (infection induced tissue necrosis) may result. For about 75% of the cases, a partial amputation of a foot may be enough to stop the foot ulcer from progressing, but for the remaining 25%, it will be necessary to remove the leg from below the knee (Mundell, 2004). Diabetics are also at higher risk of developing uninfected necroses of the lower extremities because of vascular complications. In the US, minority populations have had the highest rates of amputations and it is thought that socioeconomic status is a major factor leading to amputations. Thus, differences in level and distribution of wealth may be reflected in the measure together with differences in quality of care.

86. *Cost:* Amputations have a large impact on health, particularly on quality of life, and result in substantial follow-up cost in the form of rehabilitation, prostheses and disability.

Scientific Soundness

87. *Face validity:* Adequate glycemic control has been shown to reduce the risk and severity of neuropathy and vascular complications in diabetics (Renders, 2002). It is also widely believed that careful monitoring for an intensive treatment of minor lesions in the presence of neuropathic and arterial disease of the extremities can prevent amputations, but only a few randomised trials have been conducted to support this (Lavery, 2000).

88. *Construct validity:* The main challenge to the construct validity of this indicator is a certain disjoint of the underlying concept and the operationalisation. Precisely speaking the concept behind the indicator is that proper diabetes management should reduce the risk of severe tissue damage to lower extremities. However, the indicator measures amputation rates, a closely related but slightly different

[25] For additional discussion on the importance of diabetes, please refer to the discussion above under the retinal exam indicator.

concept that captures the typical *consequence* of severe tissue damage. One could also argue that, while severe tissue damage is unambiguously negative, the decision to amputate is not so that the indicator does not clearly indicate better or worse quality of care. However, many regard major amputation rates as reasonable proxy for severe tissue damage rates and thus a valid quality indicator.[26] Because of the importance of this complication and plausibility of the concept behind the indicator, this measure has great potential. But it needs to be further studied before adopting it for international comparisons.

89. *Reliability:* As this indicator is derived from hospital discharge information, the ability to construct it reliably for international comparisons depends on the comparability of coding and reporting practices across countries. Amputation rates should be ascertainable in a reliable fashion in administrative data, as is done currently in the US by the Centers for Disease Control and Prevention (NCQA, 2003), because such major procedures usually influence hospital payments and are thus reliably reported. But it may be difficult to reliably identify the diabetic population, because diabetes may only be recorded as comorbid condition rather than the primary reason for admission and coding of such secondary diagnoses may vary across countries.

Feasibility

90. *Data availability:* Major amputations in diabetics' rates are available for 14 countries (Table 25). The data were reported for years ranging from 1994 to 2004. The OECD definition is for all ages, and five countries had deviations in the age range. All countries use hospital records for the numerator, but the method of estimating the denominator varied. Some countries used previous estimates or population surveys to obtain the denominators. Other countries used administrative data to obtain the denominator, which would not capture all diabetics but only the diabetics receiving hospital or other medical care, and the diagnostic codes to capture the diabetic population varied. One country indicated that hospital records may be incompletely coded, and may underestimate the amputations on diabetics. Countries used different procedure codes, and even some using the same coding system included different (more or less) procedures. Countries used varying inclusion criteria for the procedure, even accounting for differences in national coding systems. This is of serious concern to comparability.

91. *Comparability issues:* Detailed documentation and assessment is provided below. There are serious concerns about comparability, both from the estimation of the denominator, and because different procedures are being included, the HCQI project will have to ensure that countries are reporting the same type of amputations.

92. *Overall assessment:* Fourteen countries provided data on this indicator. While information for this indicator might exist in hospital records of other countries as well, it is unclear how many countries would be able to construct this indicator on a routine basis. Additionally, a significant amount of analytic work will have to be done in order to ensure that the data are internationally comparable. However, data comparability and availability for this indicator improved during the project and the indicator may warrant examination in the future as part of HCQI indicator updates.

[26] The situation is clearly different for minor amputations (*e.g.*, toes), where timely amputations can avoid progression of the disease.

Table 25. Major amputation in diabetics, per 10 000 diabetics

Country	Incidence of amputations per 10 000	Data year
Australia	6.3	1999-2000
Austria	13.2	2004
Canada	8.5	1999-2000
Czech Republic	106.3	2005
Finland	27.8	2005
	7.0	2004
	5.0	2002
France	15.0	2001
Italy	0.1	2004
Mexico	11.8	2005
	7.9	2003
Netherlands	7.8	2004
	35.0	2000
New Zealand	14.6	2005-2006
	68.0	2002-2003
Norway	50.0	1994
Portugal	40.0	2004
	51.0	2002
Slovak Republic	138.0	2004
Spain	18.4	2004
Sweden	101.2	2005
	87.0	2003
United Kingdom	17.8	2003-2004
	23.0	2002-2003
United States	44.0	2002-2004
	56.0	1999-2001

Non-OECD EU countries		
Country	**Incidence of amputations per 10 000**	**Data year**
Latvia	62.8	2005

Major amputation in diabetics, sources and methods

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Australia	AIHW National Morbidity Database	25+				Measured diabetics (Prevalence from Diabetes and Associated Disorders in Australia 2000). Procedures Included: E10-E14 (diabetes); 44367-02, 44367-01, 44367-00, 44370-00, 44373-00 (lower extremity excluding toe and foot amputation)
Austria	Numerator: hospital discharge statistics, denominator: estimate according diabetes report 2004.	15+				
Canada	Numerator: HMDB 1999, CIHI; Denominator: National Diabetes Surveillance System, 2003, Health Canada	20-74		We are using an Austrian specific classification for coding procedures (MEL), included are amputations of the upper leg and of the thigh.		Includes toes, foot, and ankle. Standardised to OECD Standard population. Diabetic Diagnostic Criteria: a. One hospitalisation with an ICD-9 code of 250 (diabetes mellitus), selected from the first three diagnosis codes on the hospital files or b. Two medical claims with an ICD-9 code of 250 within 730 day, selected from the first diagnostic code. National, full population. Procedures Included: 1. Numerator CCP codes: 96.14 amputation of lower leg; 96.15 amputation of thigh and articulation of knee in conjunction with ICD-9 code 250
Czech Republic	National Health Information System (Annual report on outpatient care for diabetics)	Total population				
Finland	Hospital Discharge Registry					This number comes if persons are named diabetics if they have had the diagnosis at any previous visit to hospital in spite of the fact that it is not mentioned at the discharge letter from the amputation surgery in all cases. The corresponding number is 12.43 if only those cases are included where diabetes is mentioned in the discharge letter from the amputation surgery care. Denominator: number of diabetics who get reimbursed for medication, age 18 and older.
France	"Entred" (survey based upon a national sample of diabetic patients whose health insurance is “Caisse nationale des travailleurs salariés”)	18+				Currently the use of exhaustive data from the national hospital information system (PMSI MCO) is studied.

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Italy	Ministry of Health / ISTAT		Main procedure codes: 84.15; 84.17. All the major amputations rates for the years 2002-2004 are expressed per 10 000 diabetics. The denominator source is the National hospital discharges database for the years 2002-2003 and for the year 2004 it is the multi-purpose survey on “health status of the population and use of health services” conducted by the National Institute of Statistics.	The numerator represents the number of the in-patients, being no less 18 years old, with the main surgical procedure “84.15” or “84.17” by ICD-9-CM and having the codes “250.7*” as main diagnosis and at least one secondary diagnosis with the code “443.81” by ICD-9-CM	2001+	The denominator used for this indicator has been modified. It has been supplied by the National Institute of Statistics and it represents the estimate of the Italian people suffering from diabetes. Multipurpose survey on "health status of the population and use of health services" National Institute of Statistics
Mexico	Sistema de Información de Atención Integral a la Salud SIAIS-IMSS. División Técnica de Información Estadística en Salud (DTIES)		Population estimate based on the data include only once Diabetic patients type I and II over 20 years that had at least one consultation during 2005.	Yes, the age included is Intervals are 20 years and older.		Numerator includes ICD-9 84.10, 84.15 and 84.17 codes and these are all de procedures effectuated during 2005 in the diabetic population.

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Netherlands	National Medical Registry, owned by PRISMANT. Calculations and methods by Statistics Netherlands in cooperation with Institute for Public Health and the Environment	18+	number of diabetes patients, registered by GPs.	Number of patients discharged in a one-year period, with a primary or secondary diagnosis of diabetes mellitus, and who had an amputation of the leg (Amputation through tibia/fibula or femur).		In the Netherlands we do not have a registry of patients who ever had an amputation. However, we can calculate the number of amputations done in the hospital in a year among patients with diabetes mellitus. So we measure the hospital discharge rate, instead of a prevalence ratio. We do not have a diabetes register, either. However, we can make an estimation of the *prevalence* of diabetes on the basis of registries in general practice. In the Netherlands people are listed by name in a general practice, so that the underlying practice population by age and sex is known and the denominator of the epidemiological fraction can be determined. Direct access to a medical specialist and other forms of care is only possible after a referral from the general practitioner, except for emergency care. Besides, medical specialists inform the GP about the diagnoses made. Consequently, most health problems presented to health care are known by GPs. The 1-year prevalence is the average of the prevalence ratios of five registries in general practice. For most registries, average prevalence ratios are computed for 2000-2004. In total 128 general practices of 4.533 Dutch practices (2005 January 1st) took part in these registries (2.8%). In all rates, clinical admissions (with one overnight stay or more) and admissions without an overnight stay (=day care) were included. Discharges from small specialised hospitals are excluded. We used a data file obtained by record linkage of the National Medical Registry to the Municipal Basis Registry. Discharges were linked by data of birth, sex, date of admission, and postcode. About 85% of all discharges could be linked, so we could calculate rates on the basis of persons instead of discharges. Because some groups do have a smaller probability of being linked, a correction is applied. As a consequence, the calculated rates are representative for all patients discharged because of an amputation in the Netherlands. To get an idea of the extent of the completeness of the medical registry with regard to registration of diabetes as primary or secondary diagnosis among patients with an amputation, we computed the numbers of discharges (not patients!) for amputation with or without diabetes and traumas. Conclusion: for 2,529 cases, nor diabetes neither a trauma is registered as the cause of amputation. Other causes can be expected, but it is also possible that diabetes is underreported as a primary or secondary diagnosis in these cases.

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
New Zealand	National Minimum Data Set (NMDS) 2005-2006		An estimate based on the 2002-2003 New Zealand Health Survey and an assumed 4% annual increment.	Major amputation is defined as an amputation below knee (44367-02), disarticulation at knee (44367-01), amputation above knee (44367-00), amputation at hip (44370-00) and hindquarter amputation (44373-00).		Publicly funded events.
Norway	Hospital records in the form of patient journals and operation theatre protocols, compared to national statistics on amputations, from 4 counties. The county records show that the national statistics. (from the NPR, Norwegian Patient Register) are of very high quality. The national statistics for 1994, the only year reviewed in detail, showed 94-98% of the actual amputations performed on diabetics in 4 counties.	18+				Criteria: ICD-10 codes. Regional population, generalisable to nation. Procedures Included: ICD9-250 + procedure code O 8716-19-Diabetes+non-traumatic major amputation.
Portugal	Hospital discharges-- annual data from diagnosis related groups (DRGs)	19-74				Only the data from the hospitals belonging to the National Health Services are included. Discharges with principal and associated diagnosis-- Diabetes Mellitus, code 250- IDC9-CM. National, full population. Procedures Included: ICD9.CM code 84.1
Slovak Republic	NHIC					
Spain	Numerator: Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD). Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Registro de altas 2004. Denominator: Health Interview Survey 2003.	All		Numerator coding: ICD-9-Diag 250 (any diagnostic) + procedure codes 84, 15 or 84, 16 or 84, 17		Discharges cover public hospital only (75% of total country discharges). Needs to be adjusted by others risk factors: age. Other data: by sex (male: 24.27, female: 13.4)

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Sweden	National Diabetic Register, covering approximately 30% of all diabetics in Sweden	18-75				Sweden does not differentiate between Type I and Type II diabetes in the Register. National, representative sample.
United Kingdom	Numerator: Hospital Episode Statistics 2002/03, OPCS procedure code X9-10 and any diagnosis field of diabetes (ICD10-E10-14). Denominator: Health Statistics Quarterly 14, estimated prevalence from GPRD data for 1998	All				This indicator should be taken cautiously because (a) diabetes is incompletely coded in hospital admissions data and (b) the denominator is estimated. Data are for England only. Criteria: Numerator: ICD10 E10-14, for Denominator criteria see Health Statistics Quarterly 14. National, full population. Procedures Included: OPCS procedure code X9-10 and any diagnosis field of diabetes (ICD10 E10-14)
United States	Numerator: National Hospital Discharge Survey, denominator: National Health Interview Survey. CDC NCHS National Hospital Discharge Survey	All				US civilian persons who report that they have ever been diagnosed with diabetes. National, representative sample

Non-OECD EU countries						
Country	**Source**	**Age groups included**	**Deviations from the definition of the denominator**	**Deviations from the definition of the numerator**	**Additional years available**	**Comments**
Latvia	Register of the Patients of Diabetes Mellitus		All patients of diabetes (type I and type II) in the age 18 and over, who are include in the Diabetic Register. It includes patients who are in primary care and those in hospitals who are registered by their physician as a diabetic in the register.	Number of diabetic patients with major (above or below knee) amputations in given year. The number isn't very correct, because lower extremity amputations are defined as "yes" or "no" in Diabetic Register Card (procedure code is not included, and some amputations maybe weren't related to diabetes mellitus.		Diabetic Register does not cover all population of diabetics, because there are unregistered cases (problem with data collection from Family doctors).

Table 26. Major amputation in diabetics, comparability issues

		Comparability Implications	
		Minor	**Severe**
Possibility to correct the deviation?	**Possible**	1. Data available for different years 2. Data available for slightly different age ranges 3. Different procedure codes included. Unclear how comparable they are between countries.	1. Different diagnostic codes used to capture diabetic population in hospital discharge data.
	Unlikely		1. For the denominator, population based surveys and data obtained from clinical surveys or records may not be fully comparable. 2. Some countries indicated that the administrative records may underreport diabetes because of incomplete records.

Possible solutions:

- Footnotes can indicate the year and age deviations
- Footnote (or drop if serious) if there are concerns that administrative data underreport diabetes.
- Data collected with the denominator from population surveys should be separate from those obtained from clinical surveys or records.
- OECD will need to work with countries to ensure that comparable procedures are used to calculate this indicator.

Post-operative hip fracture rate

NOTE that this indicator was already tested in (2003-2005) HCQI data collection and it is not yet considered suitable for international comparisons by the HCQI Expert Group. It is included in this paper to illustrate current data concerns with the indicator and possible future solutions.

Operational Definition

Source: Agency for Healthcare Research and Quality Patient Safety Indicators (AHRQ PSIs).

Numerator: Patients experiencing an in-hospital hip fracture OR fall as defined by the CSP: secondary diagnosis only and excluding patients with trauma or metastatic cancer as any diagnosis; excluding patients with principal diagnosis of seizure, syncope, stroke, coma, cardiac arrest, or poisoning; excluding patients in MDC 8.

Denominator: Inpatients undergoing major surgery OR minor or miscellaneous surgery OR invasive cardiac procedures OR invasive radiologic procedures OR endoscopy OR medical patients OR all patients as defined by the CSP.

Importance

93. *Clinical significance*: Falls are a leading cause of adverse event in acute care hospitals. Up to 20% or 1 in 5 elderly people fall during recovery from illness (many patients are "at risk" because of problematic medication effect, rehabilitation, etc). Falls are associated with functional disability and injury, increased length of stay, and risk of nursing home placement from hospital. Patient falls are also a significant liability issue for hospital risk-management, because many falls and their damaging consequences are preventable. Falls may be caused by the persons' health status, response to medication or anaesthesia, external factors (wet floor, etc.) or other factors. Reducing risk of falls is an important quality of care issue for hospitals (Iezzoni, 1994).

94. The incidence of hip fracture is related with demographic factors (and others) such as: age, gender, racial difference, rural *vs.* urban, institutional *vs.* community dwelling and family history. Two thirds of all hip fractures occur among women. Hip fracture incidence rate from different countries within Europe appear to vary substantially with the highest incidences found in Northern Europe and the lowest in Mediterranean area. Highest rates are found in white populations and lower rates are found in Asian and developing countries. Rural population have lower incidence than urban population. Institutionalised elderly people also have higher rates.

95. *Policy importance*: Prevention of falls is an important factor in hospital management. It's an important aspect for patients, hospital managers, and visitors. Failure to provide safe conditions in hospital, and a safe environment can lead to falls, which may result in injuries. These injuries may lead to complications and decrease in mobility. In other hand, falls may have impact in patient's perception of safety and psychological well-being.

Scientific Soundness

96. Evidence supporting indicator validity: The review of this indicator by the AHRQ study group constructing the AHRQ PSIs found post-operative hip fracture generally performs well on several different dimensions, including reliability, bias, relatedness of indicators, and persistence over time (AHRQ, 2005).

A study conducted a study in Canadian province of Saskatchewan from 1983 through 1985. They found six factors independently associated with a significant increased risk of in-hospital hip fracture: impaired vision; unassisted ambulation, confusion, psychotropic drug use, lowest height tercile and prior in-hospital fall (Lichenstein, 1994). Another study from Canada noted the preventability of falls in the hospital setting (O'Connor, 2006). The American Nurses Association, its state associations, and the California Nursing Outcomes Coalition have identified the number of patient falls leading to injury per 1,000 patient days (based on clinical data collection) as a "nursing-sensitive quality indicator for acute care settings"(McDonald, 2002).

Feasibility

97. *Data availability:* Postoperative hip-fractures or fall rates are available for 13 countries (Table 27). The data were reported for years ranging from 2002 to 2005. The OECD definition is for all ages, and five countries had deviations in the age range. All countries use hospital records for the numerator and denominator, but the exclusion criteria of OECD definition were not apply in most of the countries and the codes included varied widely across reporting countries. Several countries expressed their concern about the underestimation of these events due to the scarce codification of patient safety issues. Thus hospital records may be incomplete. All this is of serious concern to comparability.

98. *Comparability issues:* Detailed documentation and assessment is provided in Table 28. There are serious concerns about comparability both from the estimation of the denominator, and the numerator, the HCQI project will have to ensure that countries apply the same inclusion and exclusion criteria in their calculations. Also some countries rely on ICD9 for codification while others do on ICD10, the impact of this choice in the rates yielded needs to be evaluated by the Secretariat.

99. *Overall assessment:* thirteen countries provided data on this indicator. While information for this indicator might exist in hospital records of other countries as well, it is unclear how many countries would be able to construct this indicator on a routine basis. Additionally, a significant amount of analytic work will have to be done in order to ensure that the data are internationally comparable. However, data comparability and availability for this indicator is likely to improve due to the work of the Patient Safety Expert Subgroup and the indicator may warrant examination in the future as part of HCQI indicator updates.

Table 27. Post-operative hip fracture rate per 100 discharges

Country	Rate per 100	Data year
Australia	0.77	2004-2005
Canada	0.07	2004-2005
Denmark	0.63	2005
Finland	0.28	2005
Italy	0.07	2004
Japan	0.01	2005
Mexico	0.08	2005
Netherlands	0.05	2004
Norway	0.57	2005
Portugal	1.76	2004
Spain	0.08	2004
Sweden	0.05	2004
United States	2.60	2002

Post-operative hip fracture rate, sources and methods

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Australia	AIHW National Hospital Morbidity Database		Australian definitions of Medical, Surgical and Other discharges based on Australian Refined Diagnosis Related Groups (AN-DRG) version 5.1 have been used. These may not match international definitions.		2004-2005	Discharges as principal diagnosis or any diagnosis also available.
Austria						
Canada	Discharge Abstract Database		Cases from Quebec are excluded due to differences in data collection. ICD-9-CM codes used: 304.00-02, 304.10-12, 304.20-22, 304.30-02, 304.40-02, 304.50-52, 304.60-62, 304.70-72, 304.80-82, 304.90-92, 305.20-22, 305.30-32, 305.40-42, 305.50-52, 305.60-62, 305.70-72, 305.80-82, 305.90-92, E9500, E9501, E9502, E9503, E9504, E9505, E9506, E9507, E9508, E9509, E9510, E9511, E9518, E9520, E9521, E9528, E9529, E9530, E9531, E9538, E954, E9550, E9551, E9552, E9553, E9554, E9555, E9554, E956, E9570, E9571, E9572, E9580, E9581, E9582, E9583, E9584, E9585, E9586, E9587, E9588, E9589. ICD 10 codes used:F112, F132, F142, F122, F152, F162, F182, F192, F192, F192, F121, F161, F131, F111, F141, F151, F131, F191, F55, X60, X61, X61, X61, X64, X64, X68, X69, X68, X69, X66, X66, X67, X67, X67, X67, X67, X70, X70, X70, X71, X72, X73, X73, X7408, X7408, X75, X7409, X78, X80, X80, X80, X81, X76, X76, X83, X83, X82, X83, X83, X83, X84.	We used ICD-10-CA codes instead of ICD-9-CM.	1995-1996 to 2004-2005.	

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Denmark	National hospital discharge register					The numbers provided are preliminary and will change as the register still receives data from the hospitals.
Finland	Hospital Discharge Register					
Italy	Ministry of Health - National discharges database		All surgical discharges (18+) without any exclusion.		2001+	Numerator: count of different patients with code for hip fracture in any secondary diagnosis field. Value: numerator/denominator*100.
Japan	Japan Medical Data Center, Inc	All				
Mexico	SIAIS.- Sistema de Información de Atención Integral a la Salud IMSS (DTIES) División Técnica de Información Estadística en Salud	20+	20 years and older and it refers to ICD 10 Codes equivalent (unofficial ICD-9, ICD-10 codes	20 years and older and to ICD 10 Codes S720-22		Nationally representative
Netherlands	National Medical Registry, owned by PRISMANT. Calculations and methods by Statistics Netherlands in cooperation with Institute for Public Health and the Environment	18+	All discharges with surgery excluding discharges with the following reasons for admission: poisoning due to anaesthetics, drug dependence, drug abuse or self-inflected injury. Following ICD-9-CM codes: 304, 305.2-305.9, 968.1-4, 968.7, E855.1, E950-E958.			In calculating the rate of post-operative hip fracture, three selection steps were made: 1. selection of discharges with surgery (Dutch Classification of Medical Specialist CMSV, version 2.6: 5011-5719, 5738-5999, 8724-, 8851, 9277. Surgery of the hip CMSV 2.6 codes: 5789.54, 5790.06, 5790.13, 5790.24, 5792.06, 5792.16, 5792.23, 5792.33, 5792.34, 5792.6, 5815, 5816. 2. Exclusion of discharges with drug dependence, drug abuse or self-inflected injury as primary reason for admission. 3. Calculating all discharges with a hip fracture as secondary diagnosis. Hip fractures as a secondary diagnosis after hip surgery, were included. Includes clinical admissions (with one overnight stay or more) and admissions without an overnight stay (=day care). Discharges from small specialised hospitals are excluded.

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Norway	Norwegian Patientregister				2001+	Numerator: ICD-10 codes which are comparable with the given ICD-9 codes are used. Diagnoses: S72.0, S72.1, S72.2. Norwegian Patientregister has no unique patient identifier. This means that the same person may appear in the statistics several times during the year if this person gets treatment in different hospitals during the year.
Portugal	DRGs				1993-2004	Numerator: Discharges with ICD-9-CM for hip fracture in any diagnosis field; denominator: all surgical discharges 81.53 age 18 and over
Spain	Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD). Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Registro de altas 2004			Only discharge age > 18 and surgical DRG (no exclusions	1997	No indications about the hip fracture being suffered after o earlier than the main surgical procedure.
United States	Agency for Healthcare Research and Quality (AHRQ) Patient Safety Indicators (PSI)		Inpatient hospital surgical discharges age 18 and over who were not susceptible to falling, excluding patients with diseases and disorder of musculoskeletal system and connective tissue; patients admitted for seizures, syncope, stroke, coma, cardiac arrest, poisoning, trauma, delirium, psychoses, or anoxic brain injury; patients with metastatic cancer, lymphoid malignancy, bone malignancy, or self-inflicted injury; and obstetrical patients.	Subset of the denominator with any secondary diagnosis indicating hip fracture (ICD-9-CM code 8200–8203, 8208, 8209).		Rates are adjusted by age, gender, age-gender interactions, comorbidities, and Diagnosis Related Groups (DRG) clusters. When reporting is by age, the adjustment is by gender, comorbidities, and DRG clusters; when reporting is by gender, the adjustment is by age, comorbidities, and DRG clusters. Although not all States participate in the HCUP database, the Nationwide Inpatient Sample is weighted to give national estimates using weights based on all U.S. community, non-rehabilitation hospitals in the American Hospital Association Annual Survey of Hospitals.

Table 28. Post-operative hip fracture rate, comparability issues

		Comparability Implications	
		Minor	**Severe**
Possibility to correct the deviation?	**Possible**	1. Data available for different years 2. Different procedure codes included. Unclear how comparable they are between countries.	1. Different diagnostic codes and code systems used across countries (ICD-9 versus ICD-10).
	Unlikely		1. Some countries indicated that empirical testing of this indicator has indicated the administrative records may underreport safety issues because of incomplete records.

Possible solutions:

- Footnotes can indicate the year and age deviations
- Footnote (or drop if serious) if there are concerns that administrative data underreport particular safety issue.
- OECD will need to work with countries to ensure that comparable procedures are used to calculate this indicator.

Transfusion reaction rate

NOTE that this indicator is new; it has been incorporated for the first time in the 2006 HCQI data collection. It is included in this paper to illustrate current data concerns with the indicator and possible future solutions.

Operational Definition

Source: AHRQ/CIHI Safety Indicators.

Numerator: Discharges with ICD-9-CM codes for transfusion reaction in any secondary diagnosis field per 100 discharges.

Denominator: All medical and surgical discharges, 18 years and older or MDC 14 (pregnancy, childbirth or puerperium).

Importance

100. *Clinical significance*: Transfusion of wrong blood type to the wrong person may have serious effects. The risk of adverse outcome from erroneous transfusion rivals or exceeds current estimates of the risk of acquiring infectious disease by transfusion (Linden, 2000). According the same authors the systems must be redesigned to allow minor fluctuations in human performance, especially in routine tasks. The use of systems designed to prevent specific errors may be helpful (such as convenient access to standard operating procedures instructions in work areas, a blood component lock system that will not allow the access of a component unless there is patient wristband and blood component match, etc.).

101. Recent studies on human error in medicine followed methods derived from the experience gained while analysing large-scale technological disasters (Eagle, 1992; Reason, 1990). They recognised that medical, like technological, accidents nearly always require the conjunction of two types of failures: active failures, mistakes happening while performing a task, and latent failures, or management system errors. The latter ones are more difficult to perceive, because they constitute silent failures residing in a system until human error allows the expression resulting in a major accident (Baele, 1994). According to the author the detection and the correction of the latter type failure, ideally before the occurrence of accidents, is more efficient in improving the overall quality of a system than any action aiming at only active failures. Clinician panellists from AHRQ consider that this indicator very likely reflects actual medical errors. As expected, this indicator proved to be very rare with less than 1 per 10 000 cases at risk.

102. *Scientific Soundness*

103. *Evidence supporting indicator validity*: This indicator was originally proposed by Iezzoni *et al.*(1992) as part of the Complications Screening Programme (CSP "sentinel events"), along with gas gangrene, CNS abscess, anoxic brain injury, accidental puncture or laceration, wound dehiscence, and foreign body left in (all of which were omitted from this indicator). It was also included as one component of a broader indicator ("adverse events and iatrogenic complications") in AHRQ's original HCUP Quality Indicators. It was proposed by Miller *et al.* (2001) in the original "AHRQ PSI Algorithms and Groupings," although their definition also includes minor transfusion reactions (999.8), which were omitted from this indicator.

Operational Issues

104. Some countries have been made efforts to quantify the magnitude of the non-infectious risks of transfusions include the voluntary SHOT programme; the New York State Department of Health mandatory reporting programme of transfusion – related incidents, accidents and errors; the French Haemovigilance System; and the Belgium SANGUIS Group (Callum, 2001). However, the data may not be available in countries without similar programmes. Moreover, experience in a number of countries as well as in the US has shown that transfusion reactions are very rare events, even within the patient safety indicator group. A study applying the AHRQ PSIs to the US Veterans Administration hospital data found that the transfusion reactions only occurred at a rate of 0.007 per 1000 discharges, the least frequent event across the PSIs (Rosen, 2005).

Feasibility

105. *Data availability:* transfusion reaction rates are available for 10 countries (Table 29). The data were reported for years 2004-2005. Five countries reported deviations from OECD definitions in the calculation of numerator and or denominator. The main issue in many of the countries seems to be the restriction of the codes for the numerator to those corresponding to major severe reactions to transfusion. The age related criteria were also unclear for some countries.

106. Also some countries used different procedure codes. This is of serious concern to comparability.

107. *Comparability issues:* Detailed documentation and assessment is provided in Table 30. There are serious concerns about comparability, both from the estimation of the denominator and numerator because different codes are being included; the HCQI project will have to ensure that countries are reporting the same type of amputations. Some countries indicated that empirical testing of these indicators has indicated the administrative records may underreport safety issues because of incomplete records

108. *Overall assessment:* Ten countries provided data on this indicator. While information for this indicator might exist in hospital records of other countries as well, it is unclear how many countries would be able to construct this indicator on a routine basis. Additionally, a significant amount of analytic work will have to be done in order to ensure that the data are internationally comparable. However, data comparability and availability for this indicator is likely to improve due to the work of the Patient Safety Expert Subgroup and the indicator may warrant examination in the future as part of HCQI indicator updates.

Table 29. Transfusion reaction rate per 100 000 discharges

Country	Rate per 100 000	Data year
Australia	0.31	2004-2005
Canada	1.09	2004-2005
Czech Republic	0.08	2005
Denmark	0.58	2004
Finland	0.08	2004
Italy	1.05	2004
Netherlands	0.21	2005
Portugal	19.30	2004
Spain	0.61	2004
Sweden	29.40	2004

Transfusion reaction rate, sources and methods

Country	Source	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Australia	AIHW National Hospital Morbidity Database	Australian definitions of Medical, Surgical and other discharges based on Australian Refined Diagnosis Related Groups (AN-DRG) version 5.1 have been used. These may not match international definitions.		2004-2005	Discharges as principal diagnosis or any diagnosis also available.
Canada	Discharge Abstract Database	Cases from Quebec are excluded due to differences in data collection		1995-1996 to 2004-2005	The selection of surgical/medical/MDC14 was based on the CMG grouping
Czech Republic	UZIS CR (Annual Report on the activity of Transfusion Services)	Total number of hospitalised persons	Includes just number of serious adverse reactions - immunological haemolysis due to AB0 incompatibility, immunological haemolysis due to other allo-antibody.		Our Annual Reporting System was conformed to the European Commission Directives: 2005/61/EC and 2002/98/EC concerning setting standards of quality and safety for the collecting, testing, processing, storage and distribution of human blood components. No other data concerning transfusion reactions are collected.
Denmark	National Hospital Discharge Register				Data is for the year 2004. The denominator does not include MDC 14
Finland	Hospital Discharge Register		Numerator: also age 18 and older. There was 1 case in 123 203.		
Italy	Ministry of Health - National database of discharges	All surgical and medical discharges, 18 years and older	Only ICD 9 CM 999.6 or 999.7 in any secondary diagnosis field	2001 +	
Netherlands	National Medical Registry, owned by PRISMANT. Calculations and methods by Statistics Netherlands in cooperation with Institute for Public Health and the Environment	Consists of all surgical and medical discharges (18+ or MDC 14)'. We assume OECD means all hospital admissions for persons 18 years or older and hospital admission among adolescents for MDC 14. We	It is unclear whether newborns and children have to be included. Nevertheless, we decided to present only data for adults (18+) and girls of 10 years old or older.		From the National Medical Registry we include all discharges with a transfusion reaction as primary or secondary admission diagnosis. In all rates, clinical admissions (with one overnight stay or more) and admissions without an overnight stay (=day care) were included. Discharges from small specialised hospitals are excluded, for example eye clinics, clinics for

Country	Source	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
		expected as denominator the number of transfusions, number of blood units administered or the number of patients with a transfusion. Major Diagnostic Categories (MDCs) are not used in all countries, at least not in the Netherlands. We assume that MDC 14 refers to health status described in Chapter 11 of ICD-9 (codes 630-676) and several V-codes (V22-V24, V27, V28). The denominator is only defined for persons 18 years or older and women admitted for problems occurring during pregnancy, childbirth and puerperium.			epilepsy, asthma clinics, clinics for rehabilitation
Portugal	DGRs			1993-2004	The denominator represents the number of blood transfusions
Slovak Republic					Alternative available source could be the record of patient complaints handled at the Bureau for Supervision of Health Care.
Spain	Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD). Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Registro de altas 2004.		Selected age also (same criteria than denominator)	From 1997	The term "reaction" also includes codes (ICD9) related to other type of reactions, apart from incompatibility or mismatched blood.

Table 30. Transfusion reaction rate, comparability issues

		Comparability Implications	
		Minor	**Severe**
Possibility to correct the deviation?	**Possible**	1. Different ages included 2. Different procedure codes included. Unclear how comparable they are between countries.	1. Different diagnostic codes and code systems used across countries (ICD-9 versus ICD-10).
	Unlikely		1. Some countries indicated that empirical testing of these indicators has indicated the administrative records may underreport safety issues because of incomplete records.

Possible solutions:

- Footnotes can indicate the year and age deviations
- Footnote (or drop if serious) if there are concerns that administrative data underreport particular safety issue.
- OECD will need to work with countries to ensure that comparable procedures are used to calculate this indicator.

Uncontrolled diabetes admission rate

NOTE that this indicator is new and has been incorporated for the first time in 2006 HCQI data collection. It is included in this paper to illustrate current data concerns with the indicator and possible future solutions.

Operational Definition

Source: AHRQ Prevention Quality Indicators.

Numerator: All non-maternal discharges of age 18 years and older with ICD-9-CM principal diagnosis code for uncontrolled diabetes, without mention of a short-term or long-term complication.

Denominator: Total population.

Importance

109. *Clinical significance of process or outcome*: Avoidable hospitalisations are those conditions that could have been avoided if proper ambulatory care had been received and can thus be seen as a measure of access to appropriate medical care. While not all admissions for ambulatory care sensitive conditions are avoidable, it is assumed that appropriate prior ambulatory care could prevent the onset of this type of illness or condition, control an acute episodic illness or condition, or manage a chronic disease or condition. A disproportionately high rate is presumed to reflect problems in obtaining access to primary care (Weissman, 1992). In terms of avoiding uncontrolled diabetes admission rates, in the US, the Healthy People 2010 effort has set a national goal to reduce the rate of admissions for uncontrolled diabetes for persons 18-64 years of age from 7.2 per 10 000 to 5.4 per 10 000 population (HHS, 2000). Studies in the US have shown similar rates of admissions for uncontrolled diabetes for men and women and across racial and ethnic groups, unlike some other preventable hospitalisation indicators for diabetes care (Correa-de-Araujo, 2006).

110. *Identification of process/outcome as quality problem*: The rate of Ambulatory Care Sensitive (ACS) hospitalisations is considered an index of access of a population to adequate primary care. These are hospitalisations for selected diagnoses some of which might reasonably have been prevented if primary care had been received in time. ACS hospitalisations are elevated in low-income areas and in rural/frontier areas.

111. *Policy importance*: Given the high cost of hospital care and the high prevalence of the disease included in this indicator, elevated ACS hospitalisation rates could point not only towards possibilities to improve quality but also to substantial cost savings, if better primary care were provided. In addition, the ACS hospitalisation rate appears sensitive to the presence or absence of economic barriers to access. It has been reported to be lower and/or less correlated with socioeconomic status in countries with national health insurance (Billings, 1996).

112. *Susceptibility to being influenced by the health system*: Appropriate prior ambulatory care could prevent the onset of an illness or condition; control an acute episodic illness or condition; or manage a chronic disease or condition (Anderson, 1996).

Scientific Soundness

113. *Face validity*: Managing chronic diseases to prevent complications and exacerbations is regarded as a core function of the primary health care system. Good quality outpatient care of diabetes has been shown to lead to reductions in a range of diabetes admissions.

114. *Content validity*: As mentioned above, several groups have advocated measures of ACS hospitalisation rates. The fact that hospital admission diagnoses are readily available in most countries implies that the indicator can be easily constructed. However, it should be mentioned that there remains some controversy about this (and similar) measures as a quality indicator, because ACS hospitalisation rates reflect access to, as well as quality of, primary care. Also, defining the appropriate level of hospital admission rates for those conditions is difficult, because in a subset of cases an admission is clearly warranted. Based on scientific studies, this indicator is only moderately precise with area level rate of 34.7 per 100,000 (based on US estimates) and a standard deviation of 28.1.[27]

Feasibility

115. *Data availability:* Uncontrolled diabetes admission rates are available for 13 countries (Table 31). The data were reported for years 2004-2005. Eight countries reported deviations from OECD definitions in the calculation of numerator. All countries use hospital records for the numerator, but the diagnostic codes to capture uncontrolled diabetes admission varied. Countries indicated that hospital records may be incompletely coded, and may underestimate the number of admissions.

116. *Comparability issues:* Detailed documentation and assessment is provided in Table 32. There are serious concerns about comparability from the estimation of the numerator; the HCQI project will have to ensure that countries are reporting the same type of admissions.

117. *Overall assessment:* Thirteen countries provided data on this indicator. While information for this indicator might exist in hospital records of other countries as well, it is unclear how many countries would be able to construct this indicator on a routine basis. Additionally, a significant amount of analytic work will have to be done in order to ensure that the data are internationally comparable. However, data comparability and availability for this indicator is likely to improve due to the work of the Primary Care and Prevention Expert Subgroup and the indicator may warrant examination in the future as part of HCQI indicator updates.

Table 31. Uncontrolled diabetes admission rate

Country	Rate per 100 000	Data year
Australia	18.9	2004-2005
Austria	34.2	2004
Canada	22.1	2004-2005
Czech Republic	364.6	2004
Finland	12.7	2005
Italy	70.9	2004
Japan	294.2	2005
Mexico	7.6	2005
Norway	90.0	2005
Portugal	23.3	2004
Spain	79.9	2004
Sweden	71.9	2004
United States	25.4	NA

Notes: NA stands for no data available.

[27] Agency for Healthcare Research and Quality. Guide to the Prevention Quality Indicators. (Rockville, MD: February 2006.) Version 3.0a.

Uncontrolled diabetes admission rate, sources and methods

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Australia	AIHW National Hospital Morbidity Database			ICD-10-AM E10.1, E11.1, E12.1, E13.1, E14.1		
Austria	Statistics Austria	15+		Principle diagnoses given in ICD-10 codes: E100, E110, E120, E130, E140, E101, E111, E121, E131, E141		Exclusion of pregnancy, childbirth and puerperium is not possible.
Canada	Discharge Abstract Database, CIHI		Quebec population figures are excluded as the numerator excludes Quebec cases (see Other Comments below).			1. For FY2004, CIHI Coding Standards state that a blood glucose level of less than 14 mmol/L(PC) or 10mmol/L (fasting) in the presence of physician documentation that the patient was 'uncontrolled' would place the case in an 'adequately controlled' code because the blood sugar level was not truly in the uncontrolled parameters. Therefore, the number of cases of 'uncontrolled' diabetes (as per the ICD-9-CM rule of coding uncontrolled when stated) in Canada is likely to be lower than in other jurisdictions. 2. Cases were extracted based on a most responsible diagnosis of the condition of interest. The most responsible diagnosis is defined as the one diagnosis or condition that can be described as being the most responsible for the patient's stay in hospital. In the event that multiple diagnoses are listed, select the most responsible diagnosis from the condition associated with the longest length of stay or most resource intense. 3. Due to an inability to separate uncontrolled diabetes cases coded in ICD-9, data submitted by the province of Quebec are excluded.

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Czech Republic	National Registry of Hospitalized Patients	15+	Population 20+ as of 1st of July	Includes all hospitalised patients in general hospitals for dg. of E10-E14		
Finland	Hospital Discharge Register				2001+	Overall number was 482 cases. The reliability of diagnostic notes is unclear, may be an over or underestimation
Italy	Ministry of Health - National discharges database					
Japan	Patient Survey	20+	20+	Includes all diabetes (ICD9 250)		According to the Patient Survey, the number of discharges in September 2005 over 20 years with primary diagnosis of diabetes was estimated as approximately 25 400 (subject to wide margin of error inherent in sampling survey). Multiplied by 12, the annual number of discharges is estimated to be 304 800. Divided by Japan's population over 20 as of October 2005 [103.56 million], the rate was calculated as 24.52 / 100,000 monthly or 294.24/100 000 annually. Since the Patient Survey covers only one month, the numerator (estimated 26 700) was multiplied by 12.
Mexico	SIAIS.- Sistema de Información de Atención Integral a la Salud IMSS (DTIES) División Técnica de Información Estadística en Salud	20+	Only 20 years and older, exclude 18 and 19 years old	Work with ICD 10 Codes (Unofficial table ICD 9 and ICD 10 codes		Nationwide representative
Norway	Norwegian Patientregister					Numerator: ICD-10 codes which are comparable with the given ICD-9 codes are used. Main diagnoses: E10.9, E11.9, E12.9, E13.9, E14.9.
Portugal	DRGs					

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Slovak Republic						Our records do not work with four digit ICD, therefore it is not possible to consider exclusions.
Spain	Numerator : Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD). Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Registro de altas 2004. Denominator: Health Interview Survey 2003			Number of transferred patients from other centres not known.		National patient records (in-patients) do not include information about transferred patients from other centres.
Sweden	The Swedish Hospital Discharge Register					
United States	Agency for Healthcare Research and Quality (AHRQ) Prevention Quality Indicators (PQI)		U.S. population age 18 and over. Are there any deviations from the definition of the numerator? Discharges age 18 and over with principal diagnosis of uncontrolled diabetes (ICD-9-CM code 250.02, 250.03) without mention of a short-term (ketoacidosis, hyperosmolarity, coma) or long-term complication (renal, eye, neurological, circulatory, other unspecified). Obstetric and neonatal admissions and transfers from other institutions are excluded. Comments: Rates are adjusted by age and gender using the total U.S. population for 2000 as the standard population. When reporting is by age, the adjustment is by gender only; when reporting is by gender, the adjustment is by age only. Although not all States participate in the HCUP database, the Nationwide Inpatient Sample is weighted to give national estimates using weights based on all U.S. community,			

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
			non-rehabilitation hospitals in the American Hospital Association Annual Survey of Hospitals.			

Table 32. Uncontrolled diabetes admission rate, comparability issues

		Comparability Implications	
		Minor	**Severe**
Possibility to correct the deviation?	**Possible**	1. Data available for slightly different age ranges 2. Different procedure codes included. Unclear how comparable they are between countries.	1. Different diagnostic codes used to capture diabetic population in hospital discharge data.
	Unlikely		1. For the denominator, population based surveys and data obtained from clinical surveys or records may not be fully comparable. 2. Some countries indicated that the administrative records may underreport diabetes because of incomplete records.

Possible solutions:

- Footnotes can indicate the year and age deviations
- Footnote (or drop if serious) if there are concerns that administrative data underreport diabetes.
- Data collected with the denominator from population surveys should be separate from those obtained from clinical surveys or records.
- OECD will need to work with countries to ensure that comparable procedures are used to calculate this indicator.

Hypertension admission rate

NOTE that this indicator is new and has been incorporated for the first time in 2006 HCQI data collection. It is included in this paper to illustrate current data concerns with the indicator and possible future solutions.

Operational Definition

Source: AHRQ Prevention Quality Indicators.

Numerator: All non-maternal discharges of age 18 years and older with ICD-9-CM principal diagnosis code for hypertension. (Excluding cases: transfer from other institution, MDC 14 (pregnancy, childbirth, and puerperium or with cardiac procedure codes in any field.

Denominator: Total population.

Importance

118. *Clinical significance of process or outcome*: Avoidable hospitalisations are those conditions that could have been avoided if proper ambulatory care had been received and can thus be seen as a measure of access to appropriate medical care. While not all admissions for ambulatory care sensitive conditions are avoidable, it is assumed that appropriate prior ambulatory care could prevent the onset of this type of illness or condition, control an acute episodic illness or condition, or manage a chronic disease or condition. A disproportionately high rate is presumed to reflect problems in obtaining access to primary care (Weissman, 1992). While not all admissions for hypertension are inappropriate, it has been shown that good quality primary care can keep hypertensive patients out of the hospital. Moreover, while hypertension is relatively common, hospitalisations for hypertension are relatively rare. One study in the US found that hypertension accounted for only 0.5% of total admissions for ambulatory care sensitive conditions (Blustein, 1998).

119. *Identification of process/outcome as quality problem*: The rate of Ambulatory Care Sensitive (ACS) hospitalisations is considered an index of access of a population to adequate primary care. These are hospitalisations for selected diagnoses some of which might reasonably have been prevented if primary care had been received in time. ACS hospitalisations are elevated in low-income areas and in rural/frontier areas. A Italian study on the causes of uncontrolled hypertension concluded that, in addition to patient level factors, the doctor-patient relationship and a good quality of primary care were significant factors in avoiding adverse outcomes (Degli Esposti, 2004).

120. *Policy importance*: Given the high cost of hospital care and the high prevalence of the disease included in this indicator, elevated ACS hospitalisation rates could point not only towards possibilities to improve quality but also to substantial cost savings, if better primary care were provided. In addition, the ACS hospitalisation rate appears sensitive to the presence or absence of economic barriers to access. It has been reported to be lower and/or less correlated with socioeconomic status in countries with national health insurance (Billings, 1996).

121. *Susceptibility to being influenced by the health system*: Appropriate prior ambulatory care could prevent the onset of an illness or condition; control an acute episodic illness or condition; or manage a chronic disease or condition (Anderson, 1996).

Scientific Soundness

122. *Face validity*: Managing chronic diseases to prevent complications and exacerbations is regarded as a core task of the primary health care system. Little empirical evidence exists as to the validity of the hypertension avoidable hospitalisations indicator in particular. However, studies have shown that there are significant differences across age and sex, and AHRQ recommends that this indicator be ultimately age and sex adjusted (AHRQ, 2006).

123. *Content validity*: As mentioned above, several groups have advocated measures of ACS hospitalisation rates. The fact that hospital admission diagnoses are readily available in most countries implies that the indicator can be easily constructed. However, it should be mentioned that there remains some controversy about this (and similar) measures as a quality indicator, because ACS hospitalisation rates reflect access to, as well as quality of, primary care. Also, defining the appropriate level of hospital admission rates for those conditions is difficult, because in a subset of cases an admission is clearly warranted.

Feasibility

124. *Data availability:* Uncontrolled diabetes admission rates are available for 15 countries (Table 33). The data were reported for years 2004-2005. Seven countries reported deviations from OECD definitions in the calculation of numerator. All countries use hospital records for the numerator, but the diagnostic codes to capture hypertension admission varied. One country indicated that hospital records may be incompletely coded, and may underestimate the number of admissions.

125. *Comparability issues:* Detailed documentation and assessment is provided in Table 34. There are serious concerns about comparability from the estimation of the numerator; the HCQI project will have to ensure that countries are reporting the same type of admissions. Another threat for the comparability comes from the variation of hypertension prevalence across countries. There should be explored the need for age-standardisation and the use of a truncated population as a proxy for disease specific population.

126. *Overall assessment:* Fifteen countries provided data on this indicator. While information for this indicator might exist in hospital records of other countries as well, it is unclear how many countries would be able to construct this indicator on a routine basis. Additionally, a significant amount of analytic work will have to be done in order to ensure that the data are internationally comparable. However, data comparability and availability for this indicator is likely to improve due to the work of the Primary Care and Prevention Expert Subgroup and the indicator may warrant examination in the future as part of HCQI indicator updates.

Table 33. Hypertension admission rate per 100 000 discharges

Country	Rate per 100 000	Data year
Australia	43.7	2004-2005
Austria	474.8	2004
Canada	26.3	2004-2005
Czech Republic	273.0	2004
Denmark	2.9	2005
Finland	178.1	2005
Italy	174.8	2004
Japan	82.3	2005
Mexico	87.9	2005
Netherlands	35.9	2004
Norway	120.0	2005
Portugal	53.1	2004
Spain	10.4	2004
Sweden	63.8	2004

Non-OECD EU countries		
Country	**Rate per 100 000**	**Data year**
Latvia[1]	677.0	2005

Notes:

1. Data from hospital administered statistics

Hypertension admission rate, sources and methods

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
Australia	AIHW National Hospital Morbidity Database			Data are for ICD-10-AM I10, I11, I12, I13.		
Austria	Statistics Austria	15+		Principle diagnoses given in ICD-10 codes: I10, I110, I119, I120, I129, I130, I131, I132, I139		No exclusions were made, all discharges with principle diagnosis of the given codes.
Canada	Discharge Abstract Database, CIHI		Quebec population figures are excluded as the numerator excludes Quebec cases (see Other Comments below).			1. Corresponding ICD-10-CA codes were used. 2. Cases were extracted based on a most responsible diagnosis of the condition of interest. The most responsible diagnosis is defined as the one diagnosis or condition that can be described as being the most responsible for the patient's stay in hospital. In the event that multiple diagnoses are listed, select the most responsible diagnosis from the condition associated with the longest length of stay or most resource intense. 3. Due to an inability in the ICD-9 coding classification to separate CHF and renal failure patients who also present with hypertension, data submitted by the province of Quebec were excluded (Quebec was the only province in Canada coding in ICD-9 in 2004/05).
Czech Republic	National Registry of Hospitalized Patients	20+	Population 20+ as of 1st of July	Includes all hospitalised patients in general hospitals for diagnosis of I10		
Denmark	National Hospital Discharge Register					There have been no exclusions in the numerator (it is not possible to write in the numerator box). The numbers provided are preliminary and will change as the register still receives data from the hospitals. It should be kept in mind, when interpreting this indicator

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
						that the indicator is strongly dependent on how the health system is organised.
Finland	Hospital Discharge Register					Number of cases was 5912. Out of these 4326 were admitted from ER's. Others were via referrals.
Italy	Ministry of Health - National discharges database				2001+	We consider as "cardiac procedure codes" all ICD 9 CM codes between 35.** and 39.**.
Japan	Patient Survey	20+	20+ (102 million)			Since the Patient Survey covers only one month, the numerator (estimated 8 400) was multiplied by 12. According to the Patient Survey, the number of discharges in September 2005 over 20 years with primary diagnosis of hypertension was estimated as approximately 7 100 (subject to wide margin of error inherent in sampling survey). Multiplied by 12, the annual number of discharges is estimated to be 85 200. Divided by Japan's population over 20 as of October 2005 [103.56 million], the rate was calculated as 82.25/100 000 annually.
Mexico	SIAIS-Sistema de Información de Atención Integral a la Salud. IMSS (DTIES) División Técnica de Información Estadística en Salud	20+	20 years and older	Work with OCD-10 Codes (Unofficial table ICD-9 and ICD 10 codes)		Nationwide representative
Netherlands	National Medical Registry, owned by PRISMANT. Calculations and methods by Statistics Netherlands in cooperation with Institute for Public Health and the Environment			Secondary diagnoses excluded from the numerator: health problems because of pregnancy, childbirth or puerperium; ICD-9 codes: 630-676 or V22-V24, V27, V28. Any cardiac procedures; CMSV 2.6 codes: 1273-1278, 1580, 5350-5357, 5359-5363, 5369-5379, 8520, 8576, 8640-8641, 8643-8644, 8649-8658, 8660, 8837.		Benign hypertension (ICD-9-CM code 401.1) is not included in the OECD-selection, while benign hypertensive heart disease without heart failure or renal failure is (codes 402.10 and 403.10). At codes 403 and 404 the Netherlands Medical Registry does not differentiate between hypertension with and without heart failure and renal failure. Consequently, we selected the following hypertension diagnoses: 401.0, 401.9,

Country	Source	Age groups included	Deviations from the definition of the denominator	Deviations from the definition of the numerator	Additional years available	Comments
						402.00, 402.10, 402.90, 403, 404. Are excluded: 401.1, 402.01, 402.11, 402.91. We assume that MDC 14 refers to health status described in Chapter 11 of ICD-9 (codes 630-676) and several V-codes (V22-V24, V27, V28). Discharges from small specialised hospitals are excluded. In all rates, clinical admissions (with one overnight stay or more) and admissions without an overnight stay (=day care) were included. Transfers are included in the nominator. Consequently, discharges from secondary hospitals are included.
Norway	Norwegian Patientregister					Diagnoses codes ICD-10:I10-I15
Portugal	DRGs					
Slovak Republic						Our records do not work with four digit ICD, therefore it is not possible to consider exclusions
Spain	Hospital Discharge Minimum Data Set (Conjunto Mínimo Básico de Datos CMBD). Ministerio de Sanidad y Consumo. Instituto de Información Sanitaria. Registro de altas 2004.		Information not available on transferred patients			Minimum data set for in-patients discharge does not include data about if the patient has been transferred or not from other centre.
Sweden	The Swedish Hospital Discharge Register					

Non-OECD EU countries						
Country	**Source**	**Age groups included**	**Deviations from the definition of the denominator**	**Deviations from the definition of the numerator**	**Additional years available**	**Comments**
Latvia	Health statistics and medical technology state agency			Numerator is hospital statistics rate, not in primary care. Hospitalised discharges of age 18 years and older with hypertensive diseases (ICD-10 I10, I15).		At this moment, we have only information about discharged rate, but in future it will be available from the Management Information System.

Table 34. Hypertension admission rate, comparability issues

		Comparability Implications	
		Minor	**Severe**
Possibility to correct the deviation?	**Possible**	1. Data available for slightly different age ranges 2 Different procedure codes included. Unclear how comparable they are between countries. 3. Hypertension prevalence rates differ across countries	1. Different diagnostic codes used to capture hypertensive population in hospital discharge data.
	Unlikely		1. Some countries indicated that the administrative records may underreport hypertension because of incomplete records.

Possible solutions:

- Footnotes can indicate the year and age deviations
- Footnote (or drop if serious) if there are concerns that administrative data underreport hypertension.
- OECD will need to work with countries to ensure that comparable codes are used to calculate this indicator.
- Also age standardisation and adjustment by hypertension prevalence rates when reporting indicator

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