

Focus on: International comparisons of healthcare quality – appendices

What can the UK learn?



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About QualityWatch

QualityWatch is a major research programme providing independent scrutiny into how the quality of health and social care is changing. Developed in partnership by the Nuffield Trust and the Health Foundation, the programme provides in-depth analysis of key topics and tracks an extensive range of quality indicators. It aims to provide an independent picture of the quality of care, and is designed to help those working in health and social care to identify priority areas for improvement. The programme is primarily focused on the NHS and social care in England, but will draw on evidence from other UK and international health systems.

 The QualityWatch website **www.qualitywatch.org.uk** presents key indicators by area of quality and sector of care, together with analysis of the data. This free online resource also provides research reports, interactive charts and expert commentary.

About this report

QualityWatch Focus On reports are regular, in-depth analyses of key topics; these studies exploit new and innovative methodologies to provide a fresh view of quality in specific aspects of health and social care. These appendices accompany the QualityWatch Focus On report *International comparisons of healthcare quality – what can the UK learn?* The report uses data from the Organisation for Economic Co-operation and Development (OECD) to understand what international comparisons tell us about changes in the quality of care in the UK between 2000 and 2013 and provides a baseline and guidance for making future comparisons. The appendices give further detail on the methodology used in the report and also provide further data and discussion that were not included in the main report for brevity.

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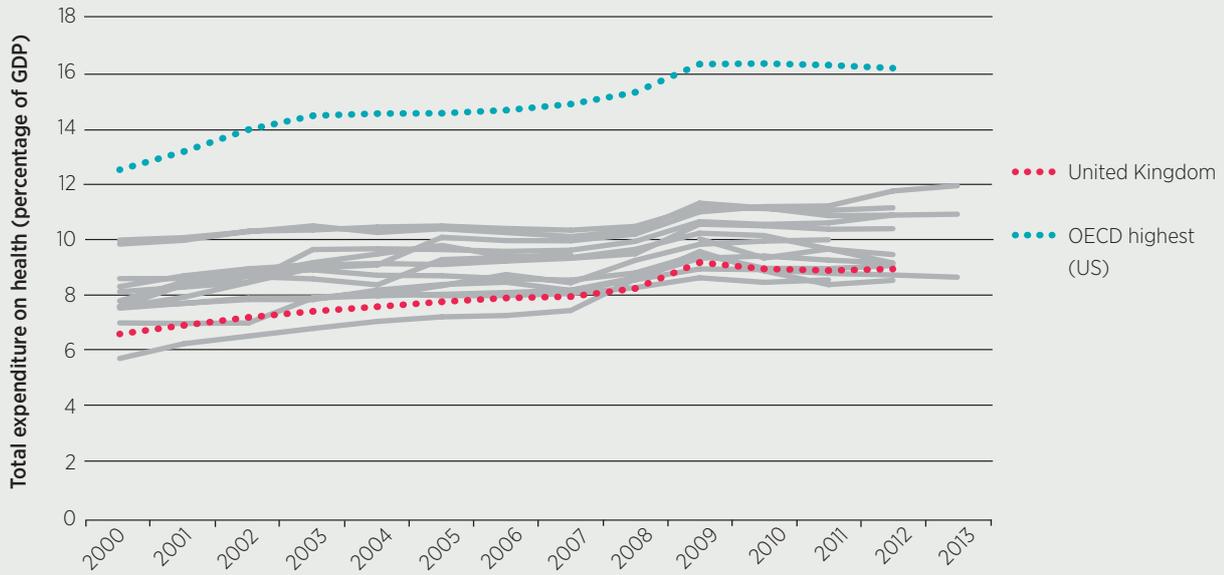
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Appendix 1: Health financing

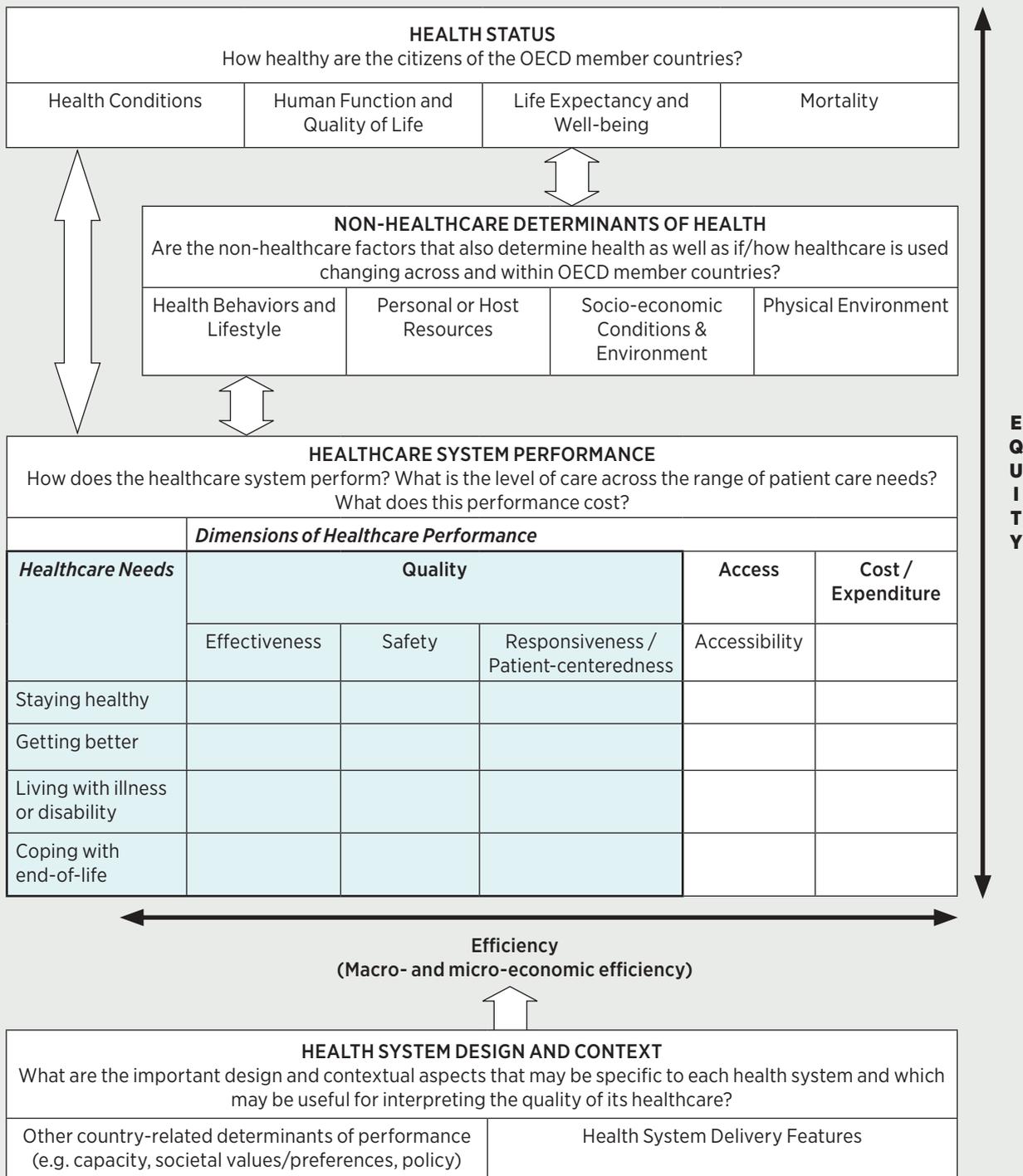
Figure A1.1: Total expenditure on health as a proportion (percentage) of Gross Domestic Product, 2000–13



Source: OECD (2014a)

Appendix 2: OECD Health Care Quality Indicators project framework

Figure A2.1: OECD Health Care Quality Indicators project framework



Note: The shaded area represents the current focus of the HCQI project.
Reproduced with permission from Arah and others (2006).

Appendix 3: Indicator definitions and comparability

Definitions and comparability for all the indicators discussed in this report are taken directly from the OECD report *Health at a Glance 2013: OECD indicators* (OECD, 2013c). Detailed information about the definitions and the source and methods for each country can be found at: http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT#.

Asthma, COPD and diabetes admissions

The asthma and COPD indicators are defined as the number of hospital discharges of people aged 15 years and over per 100 000 population. The indicator for diabetes is based on the sum of three indicators: admissions for short-term and long-term complications and for uncontrolled diabetes without complications. Rates were age-sex standardised to the 2010 OECD population aged 15 and over. Differences in coding practices among countries and the definition of an admission may affect the comparability of data. Differences in disease classification systems, for example between ICD-9-CM and ICD-10-AM, may also affect data comparability.¹

Childhood vaccination programmes

Vaccination rates reflect the percentage of children that receive the respective vaccination in the recommended timeframe. The age of complete immunisation differs across countries due to different immunisation schedules. For those countries recommending the first dose of a vaccine after age one, the indicator is calculated as the proportion of children less than two years of age who have received that vaccine. Thus, these indicators are based on the actual policy in a given country. Some countries administer combination vaccines (e.g. DTP for diphtheria, tetanus and pertussis) while others administer the vaccinations separately. Some countries ascertain vaccinations based on surveys and others based on encounter data, which may influence the results.

Deaths from suicide after discharge among people diagnosed with a mental disorder

Death rates are defined as the number of patients among denominator cases that committed suicide (ICD-10 codes: X60-X84) after discharge in the reference year over the number of patients discharged with a principal diagnosis or one of the first two listed secondary diagnosis code of mental health and behavioural disorders (ICD-10 codes F10-F69 and F90-99) in the reference year. NB: This indicator requires data that links hospital records with deaths after discharge.

1. ICD = International Classification of Diseases.

Deaths from suicide after discharge among people diagnosed with schizophrenia or bipolar disorder

Death rates are defined as the number of patients among denominator cases that committed suicide (ICD-10 codes: X60-X84) after discharge in the reference year over the number of patients discharged with a principal diagnosis or one of the first two listed secondary diagnosis code of schizophrenia or bipolar disorder (see ICD codes at <http://stats.oecd.org/wbos/fileview2.aspx?IDFile=1f2f61b6-a25a-43e9-a7b8-2954c9942050>) in the reference year. NB: This indicator requires data that links hospital records with deaths after discharge.

Diphtheria, tetanus and pertussis immunisation

Diphtheria, tetanus and pertussis immunisation rates are defined as the percentage of children under one year old who have received three doses of the combined diphtheria-tetanus-pertussis vaccine (DTP) in a given year. The age of complete immunisation differs across countries due to different immunisation schedules.

Influenza vaccinations

Influenza vaccination rate refers to the number of people aged 65 and over who have received an annual influenza vaccination, divided by the total number of people over 65 years of age. The main limitation in terms of data comparability arises from the use of different data sources, whether survey or programme, which are susceptible to different types of errors and biases. For example, data from population surveys may reflect some variation due to recall errors and irregularity of administration. A number of countries changed the way in which influenza vaccination rates were calculated between 2005 and 2011. These countries are: Chile, Denmark, Germany, Israel, Luxembourg, New Zealand, Slovenia, Switzerland and the United Kingdom.

Inpatient suicide among patients diagnosed with a mental disorder

Suicide rates are defined as the number of patient discharges among denominator cases coded as suicide (ICD-10 codes: X60-X84) in the reference year over the number of patient discharges older than 15 years with a principal diagnosis or one of the first two listed secondary diagnosis code of mental health and behavioural disorders (ICD-10 codes: F10-F69 and F90-99) in the reference year.

Inpatient suicide among patients diagnosed with schizophrenia or bipolar disorder

Suicide rates are defined as the number of patient discharges among denominator cases coded as suicide (ICD-10 codes: X60-X84) in the reference year over the number of patient discharges older than 15 years with a principal diagnosis or one of the first two listed secondary diagnosis code of schizophrenia or bipolar disorder (see ICD codes here <http://stats.oecd.org/wbos/fileview2.aspx?IDFile=1f2f61b6-a25a-43e9-a7b8-2954c9942050>) in the reference year.

Measles immunisation

Measles immunisation is defined as the percentage of children under one year old who have received at least one dose of measles-containing vaccine in a given year. The age of complete immunisation differs across countries due to different immunisation schedules. For countries recommending the first dose of measles vaccine in children over 12 months of age, the indicator is calculated as the proportion of children less than 12–23 months of age receiving one dose of measles-containing vaccine.

Mortality following a stroke

The admission-based case-fatality rate is defined as the number of people aged 45 and over who died within 30 days of being admitted to hospital for ischaemic stroke, where the death occurs in the same hospital as the initial stroke admission. The in- and out-of-hospital case-fatality rate is defined as the number of people who die within 30 days of being admitted to hospital with a stroke, where the death may occur in the same hospital, a different hospital or out of hospital. Rates were age-sex standardised to the 2010 OECD population aged 45+ admitted to hospital for stroke. The change in the population structure in this edition of *Health at a Glance* compared with previous editions (where rates were standardised using the 2005 OECD population of all ages) has led to a general increase in the standardised rates for all countries.

Mortality following acute myocardial infarction (AMI)

The admission-based case-fatality rate following AMI is defined as the number of people aged 45 and over who die within 30 days of being admitted to hospital with an AMI, where the death occurs in the same hospital as the initial AMI admission. The in- and out-of-hospital case-fatality rate is defined as the number of people who die within 30 days of being admitted to hospital with an AMI, where the death may occur in the same hospital, a different hospital, or out of hospital. Rates were age-sex standardised to the 2010 OECD population aged 45+ admitted to hospital for AMI. The change in the population structure in this edition of *Health at a Glance* compared with previous editions (where rates were standardised using the 2005 OECD population of all ages) has led to a general increase in the standardised rates for all countries.

Mortality from cancer

Mortality rates are based on numbers of deaths registered in a country in a year divided by the size of the corresponding population. The rates have been directly age-standardised to the 2010 OECD population to remove variations arising from differences in age structures across countries and over time. The source is the *WHO Mortality Database*. Deaths from all cancers are classified to ICD-10 codes C00-C97. Mathers and others (2005) have provided a general assessment of the coverage, completeness and reliability of data on causes of death. Mortality rates of colorectal cancer are based on ICD-10 codes C18-C21 (colon, rectosigmoid junction, rectum, and anus).

Prescribing in primary care

Defined daily dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults. DDDs are assigned to each active ingredient(s) in a given therapeutic class by international expert consensus. For instance, the DDD for oral aspirin equals 3 grams, which is the assumed maintenance daily dose to treat pain in adults. DDDs do not necessarily reflect the average daily dose actually used in a given country. DDDs can be aggregated within and across therapeutic classes of the Anatomic-Therapeutic Classification (ATC). For more detail, see www.whocc.no/atcddd. Data generally refer to outpatient consumption only, except for Chile, Canada, Greece, Korea, Israel, Iceland where data also include consumption in hospitals and other institutions beyond primary care. Data for Canada only cover Manitoba and Saskatchewan, provinces for which population level data were available, representing 6.7% of the population.

Screening and survival for cervical and breast cancer

Screening rates reflect the proportion of women who are eligible for a screening test and actually receive the test. Some countries ascertain screening based on surveys and others are based on encounter data, which may influence the results. Survey-based results may be affected by recall bias. Programme data are often calculated for monitoring national screening programmes, and differences in target population and screening frequency may also lead to variations in screening coverage across countries.

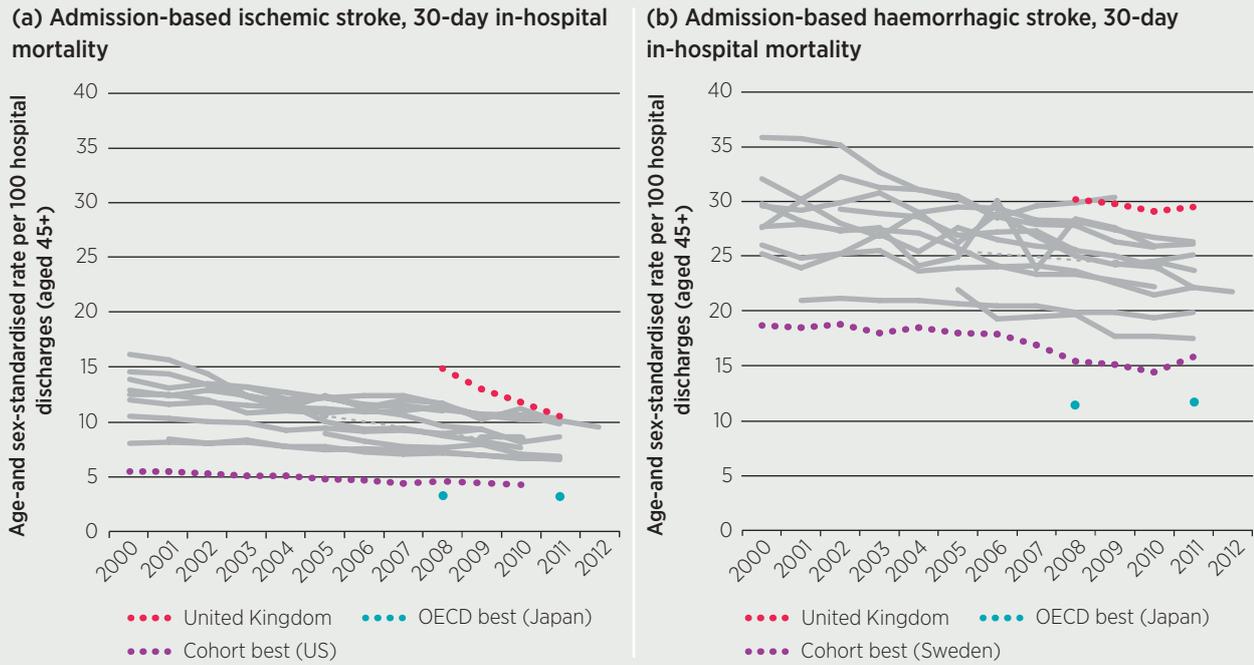
Relative survival is the ratio of the observed survival experienced by cancer patients over a specified period of time after diagnosis to the expected survival in a comparable group from the general population in terms of age, sex and time period. Relative survival captures the excess mortality that can be attributed to the diagnosis. For example, relative survival of 80% means that 80% of the patients that were expected to be alive after five years, given their age at diagnosis and sex, are in fact still alive. Survival data for Germany and Portugal are based on a sample of patients, representing 27% and 44% of the population respectively.

Cancer survival calculated through period analysis is an up-to-date estimate of cancer patient survival using more recent incidence and follow-up periods than cohort analysis which uses survival information of a complete five-year follow-up period. In the United Kingdom, cohort analysis was used for 2001-06 data while 2006-11 data are calculated through period analysis. The reference periods vary slightly across countries. All the survival estimates presented here have been age-standardised using the International Cancer Survival Standard (ICSS) population (Corazziari and others, 2004). The survival is not adjusted for tumour stage at diagnosis, hampering assessment of the relative impact of early detection and better treatment.

Survival rates of colorectal cancer are based on ICD-10 codes C18-C21 (colon, rectosigmoid junction, rectum, and anus).

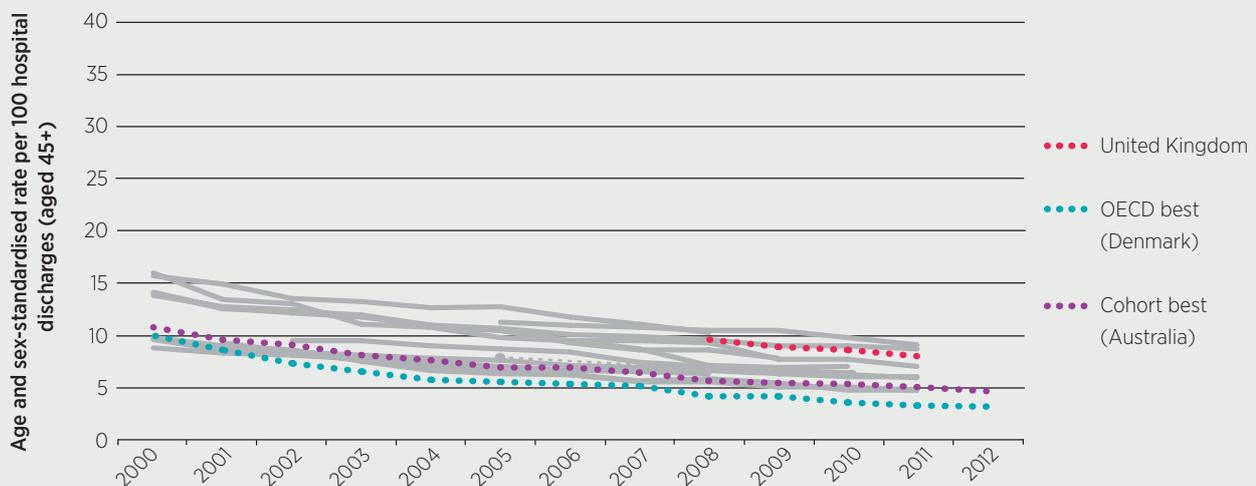
Appendix 4: Additional quality of care indicators

Figure A4.1: Admission-based ischaemic and haemorrhagic stroke, 30-day in-hospital mortality, 2000–12



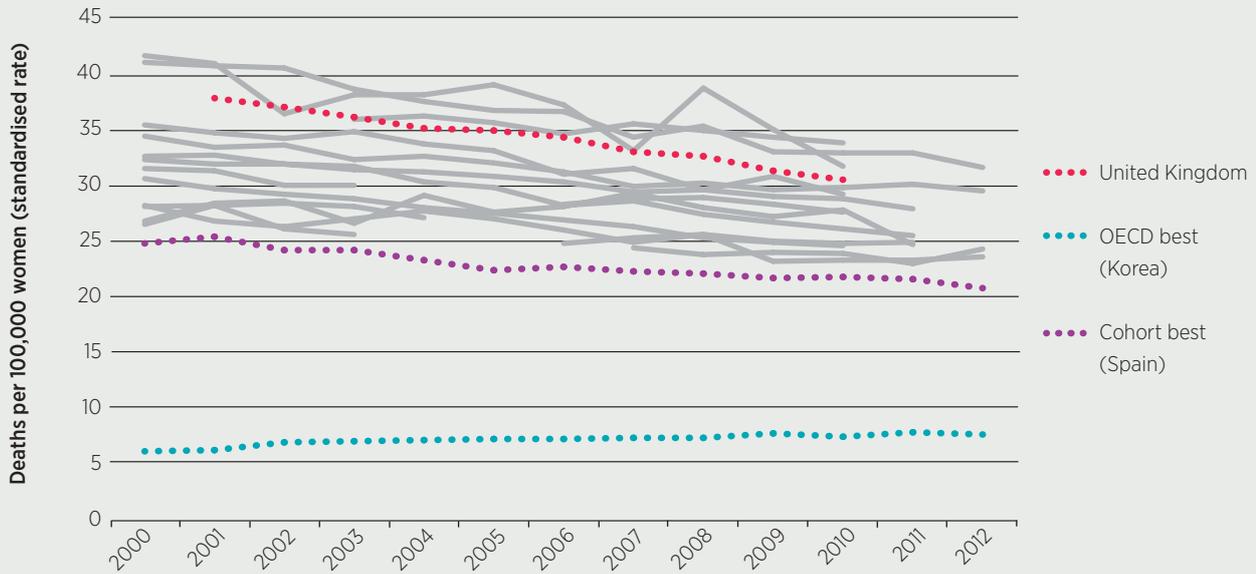
Source: OECD (2014a)

Figure A4.2: Admission-based acute myocardial infarction, 30-day in-hospital mortality, 2000–12



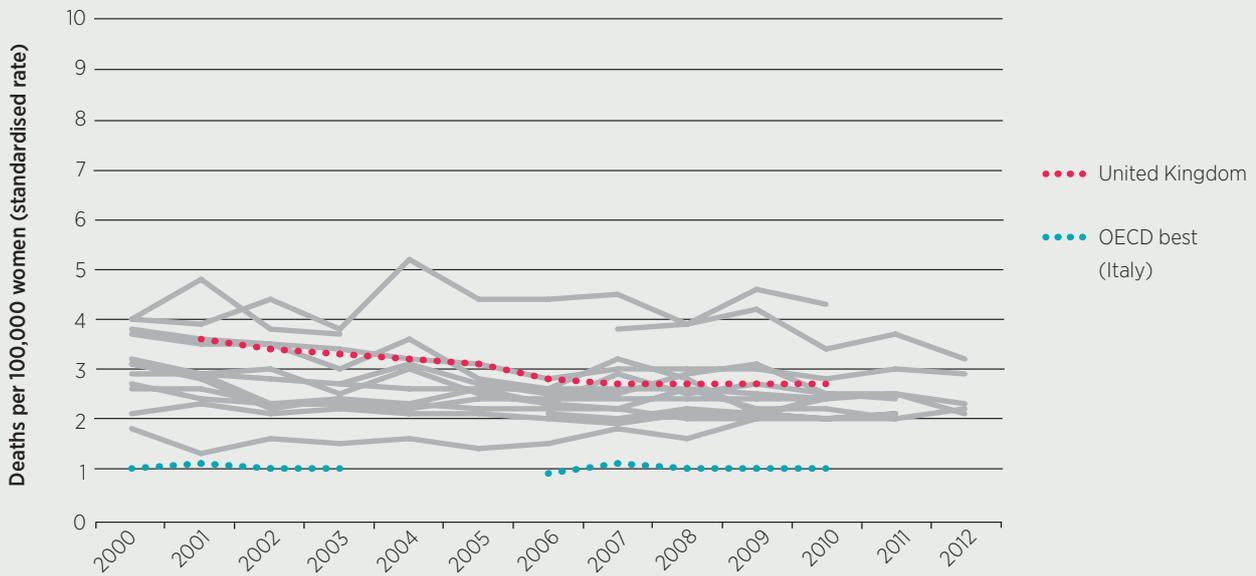
Source: OECD (2014a)

Figure A4.3: Breast cancer mortality, 2000–12



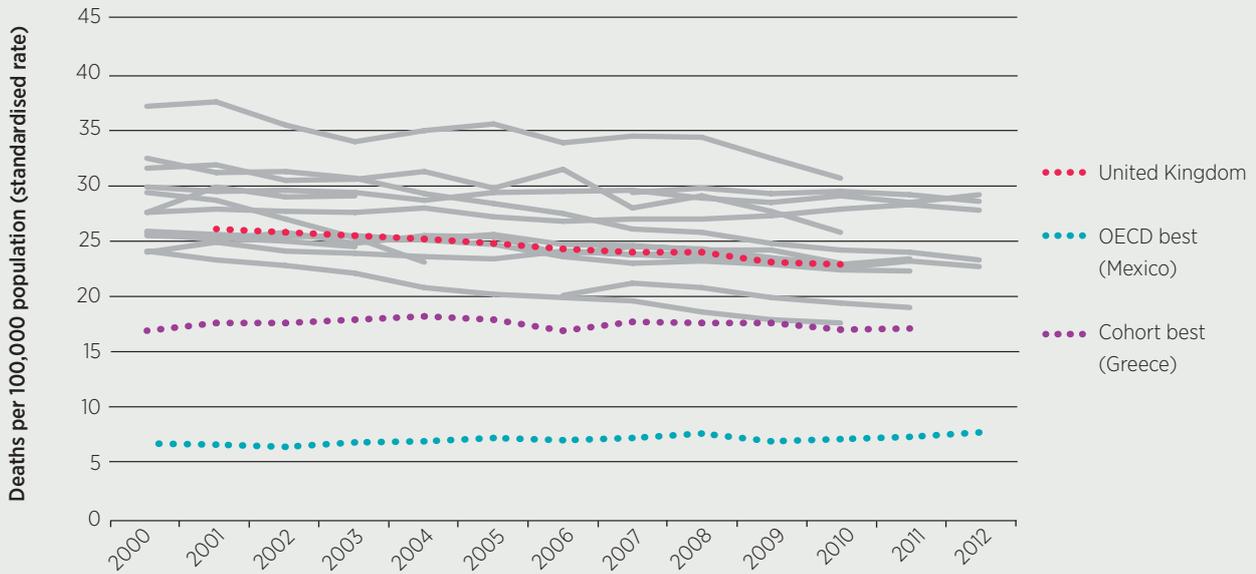
Source: OECD (2014a)

Figure A4.4: Cervical cancer mortality, 2000–12



Source: OECD (2014a)

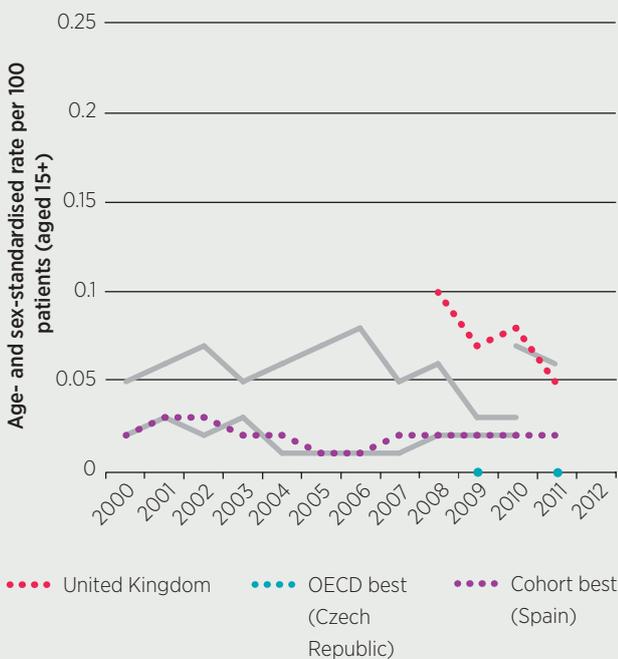
Figure A4.5: Colorectal cancer mortality, 2000-12



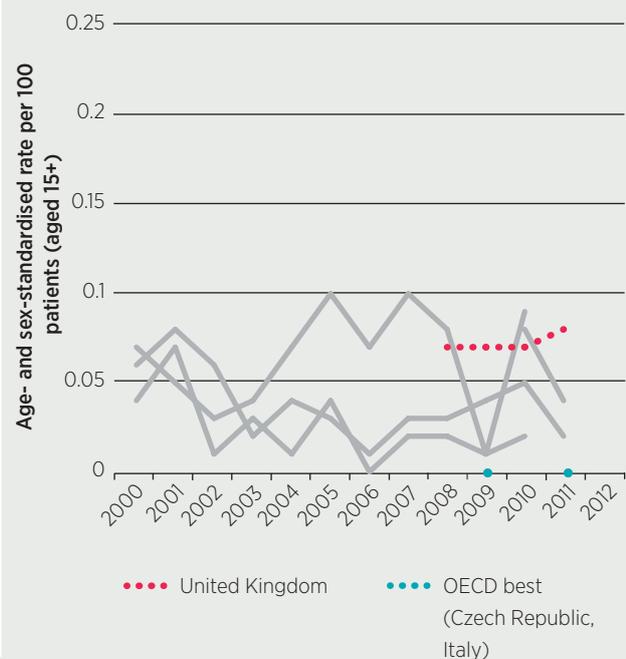
Source: OECD (2014a)

Figure A4.6: Inpatient suicide among patients diagnosed with a mental disorder and those diagnosed with schizophrenia or bipolar disorder, 2000-12

(a) Inpatient suicides among patients diagnosed with a mental disorder



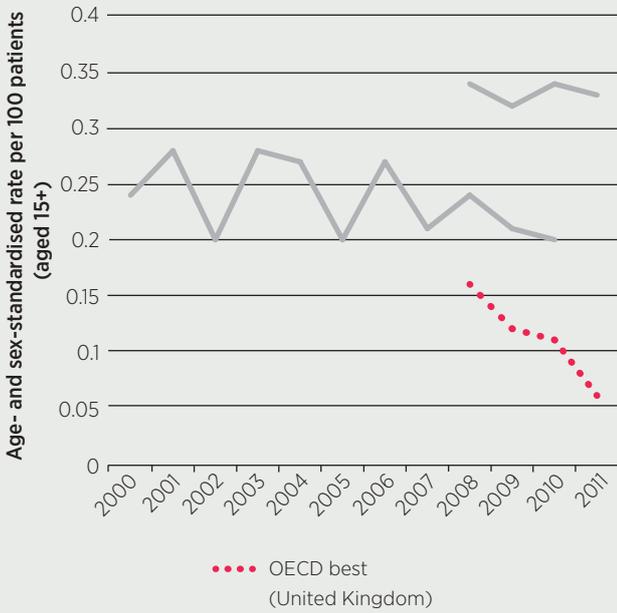
(b) Inpatient suicides among patients diagnosed with schizophrenia or bipolar disorder



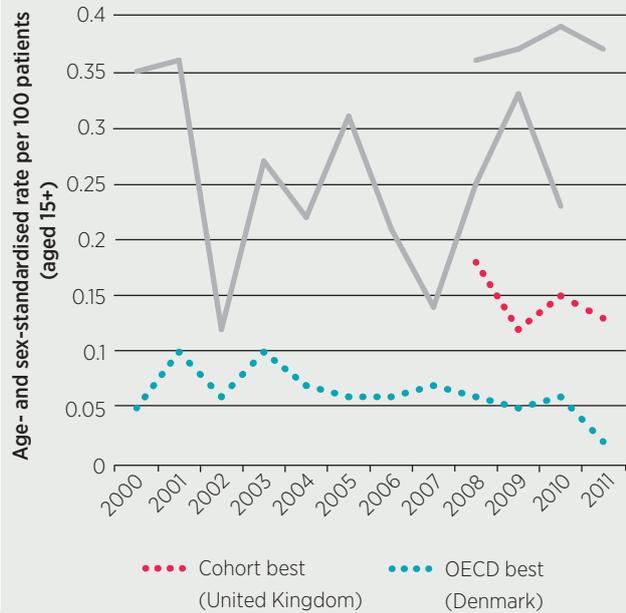
Source: OECD (2014a)

Figure A4.7: Deaths from suicide after discharge among people diagnosed with a mental disorder and those diagnosed with schizophrenia or bipolar disorder, 2000–11

(a) Deaths from suicide after discharge among patients diagnosed with a mental disorder



(b) Deaths from suicide after discharge among patients diagnosed with schizophrenia or bipolar disorder



Source: OECD (2014a)

Appendix 5: Areas under development

Mental health, patient safety and patient experiences are all essential aspects of the quality of care but, at present, international comparisons are still challenging. In this section we give a quick overview summarising why these areas are important, what has been done to date and why we cannot present meaningful comparisons yet but hope to in the near future.

Mental health

Both the direct and indirect costs of mental ill-health (e.g. healthcare costs, loss of productivity and loss of employment) are very high and mental health problems have a significant impact on society (OECD, 2014c, 2014d). According to the Global Burden of Disease study, in the UK mental and behavioural disorders represent 21.5 per cent of total years lived with disability, second highest after musculoskeletal disorders (30.6 per cent). Depression alone is responsible for 6.5 per cent of total years lived with disability (Institute for Health Metrics and Evaluation, 2013).

A recent review of mental health in OECD countries found that, despite the enormous burden of mental ill-health, it is not a priority in most healthcare systems. Also, due to lack of data, it is difficult to get a sound understanding of mental health system performance internationally (OECD, 2014c). The OECD report found that, while progress has been made towards moving care from psychiatric institutions to communities in several countries including the UK, the care in most OECD countries is inadequate, and there is large unmet need for mental health problems in general, and for common ones specifically (e.g. depression/anxiety and alcohol misuse).

In 2013, the HCQI project reviewed all its indicators against six criteria – validity, reliability, relevance, actionability, feasibility and comparability. In the review, a series of mental health indicators focusing on hospital readmissions within 30 days for patients with bipolar disorder and schizophrenia was dropped – despite the data being easy to collect, there was too much ambiguity in their interpretation and trends were likely to reflect how care was organised rather than the quality of care (OECD, 2013b). While the indicators are not presented, rates of same-hospital readmission within 30 days among patients discharged with schizophrenia and bipolar disorder have been increasing sharply since 2008 in the UK.

At present, the OECD uses inpatient suicide rates and deaths from suicide after discharge as proxies for the quality of mental healthcare (see Appendix 4). Indicators suggest that there has been some improvement/reduction but the quality and international comparability of the mental health data require further refinement to provide truly meaningful results. For inpatient suicide among patients diagnosed with mental health problems there has been a small improvement/reduction; however, there has been a deterioration/increase for inpatient suicide among patients diagnosed with schizophrenia or bipolar disorder. The rates of deaths from suicide after discharge among people diagnosed with mental health problems or schizophrenia/bipolar disorder,

capturing mainly follow-up and care coordination between the hospital and the community, have been improving/reducing. However, the 2014 National Audit of Schizophrenia has shown a mixed picture of quality. It suggests that:

- more should be done to improve the standards of care that people with schizophrenia receive, especially ensuring that people can access the care they need when they need it
- there should be more of a focus on the physical health of people with schizophrenia
- there should be more support for carers (Healthcare Quality Improvement Partnership, 2014).

Currently, the UK does not provide data for the indicators of excess mortality for patients with schizophrenia or bipolar disorder; of the comparator countries, only New Zealand and Sweden provide such data. And, overall, very few OECD countries provide mental health data. More needs to be done to improve data collection and quality.

When more countries collect and submit their data, performance on these indicators should be monitored. It will be particularly important to develop and monitor international performance on quality of care indicators for primary care mental health, as most mental healthcare is provided within primary care.

While not part of the HCQI project, another important piece of work on mental health carried out by the OECD is the Mental Health and Work Project. This project looks at those who are employed but struggling because of mental health problems or those who are not employed but wanting to return to or find employment. A report from the project (OECD, 2014d) found that, compared with some other OECD countries, in the UK more people are out of the workforce due to sickness and disability and that mental ill-health accounts for a large and growing proportion of disability benefit claims. Also, employment rates for people with mental health problems are among the lowest when compared with a selection of OECD countries (OECD, 2014d). The report highlighted that, while the UK is more innovative in the area of 'mental health and work' and further ahead in policy thinking than other OECD countries, more needs to be done to intervene in the early phase of mental ill-health, for example through:

- investing in active labour programmes to provide support to people with mental health problems
- continuing to integrate health and employment services
- strengthening the knowledge of general practitioners
- improving people's access to psychological therapies (OECD, 2014d).

Apart from the OECD indicators, other international (Spaeth-Rublee and others, 2014) and national initiatives exist (e.g. the Mental Health Intelligence Network), which aim to develop mental health quality of care indicators. These different initiatives demonstrate the increased importance of mental health. However, more needs to be done so that we have high-quality data for informed decision-making in this important area, especially data on the extent to which people can access care and the best ways to measure quality, outcomes and value.

Patient safety

Safety is very high on the policy agenda in many countries, especially as several million adverse events could be prevented every year (OECD, 2014b). And in the UK, safety has been increasingly at the forefront of the debate on care, especially in light of some important system failings and consequent investigations (Keogh, 2013).

The OECD encourages the collection of data for several patient safety indicators, separating these into:

- never events or sentinel events, which should never occur (e.g. leaving a foreign body inside a patient after a surgical procedure)
- adverse events such as post-operative sepsis, which can never be fully avoided but a high incidence may suggest serious problems in the system (OECD, 2013c).

However, international data collection on patient safety and the comparison of patient safety indicators have been one of the most challenging areas. Some countries rely on administrative databases rather than systems designed specifically to collect information on adverse events, which results in large differences when rates are calculated (OECD, 2013c). Therefore, we do not present any results on this in this report but we want to highlight the importance of collecting and further improving data collection and international comparison efforts.

The 2014 QualityWatch annual report provided evidence for safety improvements in inpatient care but there is very little data to capture safety in primary and community care (QualityWatch, 2014). This is an area that should be looked at.

On several of the OECD indicators there was an increase in reported incidents in the UK, likely to suggest improved reporting rather than deteriorating performance (e.g. obstetric trauma – vaginal delivery with/without instrument; post-operative pulmonary embolism or deep vein thrombosis – all discharges etc.).

Patient experiences

Measures of patient experiences of care are increasingly recognised as being important markers of performance. While the UK is relatively advanced in collecting such data (OECD, 2013c), there are insufficient data points for the comparator countries under examination in this report to show trends over time.

The OECD has started to collect this type of data. The International Health Policy Survey carried out by the Commonwealth Fund forms the basis for the OECD's work in this area. The 2014 Commonwealth Fund report found that the UK is one of the most responsive healthcare systems (Davis and others, 2014). However, issues with the data – including sample size, representativeness and response rates – need to be noted (Kossarova, 2014), as well as a problem with adjusting for the different expectations of patients across the countries. The OECD continues its work in refining these indicators and hopefully they can be monitored over time in the near future.

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About the authors

Lucia Kossarova joined the Nuffield Trust in April 2014 and is involved in quality of care and international comparisons projects. She has over 10 years of experience in international health policy and health systems research and analysis. She joined from the London School of Economics and Political Science (LSE), where she had been a Teaching Fellow. While at the LSE she taught on different MSc courses, worked as a researcher on different EU-funded projects, and was Assistant Editor for Eurohealth. Prior to this, Lucia worked in the Quality Team at the Health, Nutrition and Population unit of the World Bank in Washington DC. She also worked as senior consultant at a private healthcare consulting company involved in health system reform and HIV/AIDS projects in Central Asia, Eastern Europe and Central America. She continues to be a strategic adviser for the Provida Foundation which invests and provides advice to social ventures with social impact, as well as for project Buddy that focuses on disadvantaged children in Slovakia. Lucia obtained her PhD in Health Policy from the LSE.

Ian Blunt is a Senior Research Analyst at the Nuffield Trust. He leads a range of quantitative analyses making use of large administrative datasets. Recent examples include an evaluation of an NHS integrated care pilot, a descriptive analysis of long-term trends in admissions for ambulatory care sensitive conditions and implementing a predictive risk model for emergency readmissions within 30 days. Past projects have included studies on person-based resource allocation, patient-level costing and the rising trend of emergency admissions. Before joining the Trust, Ian worked for the Healthcare Commission, developing an automated risk assessment process to help target inspections.

Martin Bardsley is Director of Research at the Nuffield Trust. He leads a specialist team undertaking a range of quantitative research projects, most of which aim to exploit existing information systems in the NHS. He has over 20 years' experience in health services research and analysis. Before joining the Trust he worked in healthcare regulation. He was Assistant Director at the Commission for Health Improvement before moving to the Healthcare Commission, where he led its work on new ways to use information to target regulatory activity. This included groundbreaking work on the use of multiple indicators and time series analyses for surveillance. Martin is a Fellow of the Faculty of Public Health and in the 1990s he established a London-wide resource on public health information. This work led to a number of reports on health in London, including the first Public Health Report for Greater London in 1998. Prior to that, Martin had worked on the application of outcome measurement, which formed the basis of his PhD. He was also involved in early stages of the application of Diagnostic Resource Groups in the UK – work that eventually led to Payment by Results. Martin is a member of the board of CLOSER, a project funded by the Medical Research Council on longitudinal surveys; and a member of the Peter Sowerby Commission.

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