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Vital Signs

How to deliver better healthcare across Europe

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Deloitte Centre *for* Health Solutions

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Foreword

Deloitte UK's Centre for Health Solutions is regularly asked to explain the differences in health systems across Europe, and to suggest which country provides the best care. A simple enough question perhaps, but there is no simple answer.

Health systems have complex multiple goals and vary considerably in performance. Comparative performance measurements, benchmarking (including performance rankings) and research studies by national and international research organisations often present very different results. Our proposition is that there is no such thing as the perfect health system. Although a few countries feature consistently as top performers, there are examples of good performance in most countries that can provide lessons for all health systems.

The financial crisis at the end of the last decade, the subsequent sustained pressure on public funding and ever increasing demand for services, mean governments throughout Europe are seeking to restrict the rise in healthcare costs and simultaneously improve the quality of care provided – a difficult challenge. Health systems have traditionally been slow to adopt evidence-based innovation, but this is now changing at an accelerated pace, driven by the need to respond to financial and operational challenges and in recognition of the benefits of adopting scientific and technological advancements.

Key drivers of change include the need for effective integration of health and social care services across care settings. This is increasingly becoming a shared vision of European payers, evidenced by new models of care delivery and an emphasis on value-based payment models. There is also a renewed emphasis on improving prevention and well-being, while optimising treatment and paying only for those treatments that work. These new models aim to shift the focus from the number of services and health interventions provided to the value they provide. The problem is in agreeing the definition of 'value' and 'good outcomes', and in determining what evidence on performance is required. Consistently achieving good performance at an acceptable cost requires efforts to increase standardisation, reduce variation and eliminate waste.

We have designed this report to provide a framework for improving a country's health system. We concentrate on a cohort of six European countries with relatively mature health systems (Denmark, France, Germany, the Netherlands, Spain and the UK). We draw on an extensive body of published literature and data from international benchmarking reports to explore performance through the lens of seven 'Vital Signs'. For each vital sign we identify why its important and what good performance might look like. We support our assessment with key performance metrics, good practice case examples and patient stories from our cohort countries.

Our intention is to provide an insight into current performance and identify levers to help countries, and all healthcare stakeholders within those countries, to deliver better health for the population, better experience and outcomes for patients, and better value for money from healthcare spending.

We hope this report enables you to have a rich discussion and debate and to take action to deliver better healthcare.

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Introduction

Health systems in Europe are diverse, the result of history, culture and the economic and political environment in which they operate. They range from predominantly single-payer systems, such as the UK and Spain, which tend to spend a lower amount of their resources (Gross Domestic Product) on healthcare, to systems of competing insurers and providers such as Germany and the Netherlands, which are two of Europe's highest spenders on healthcare.

All countries in Europe are facing similar challenges:

- unrelenting demand pressures due to increases in the size and age of the population and prevalence of chronic diseases
- growing public expectations for more personalised and convenient services
- a miss-match between the demand for and supply of adequate numbers and types of healthcare staff
- increasing costs of providing healthcare driven by new information and consumer technology and advances in medical equipment and pharmaceutical interventions
- a desire to provide high-quality care, equitable access and optimal outcomes for patients at an affordable cost.

What differs is how each country approaches these challenges, what they are prepared to pay for and what they are prepared to trade off or prioritise. Indeed, throughout Europe, after decades of relatively static approaches to delivering healthcare, all countries are reviewing and reforming their healthcare systems. Benchmarking reports and global ranking tables on performance produce widely differing results (Figure 1). This is largely due to differences in the focus of the research, the choice of indicators and the inherent views and beliefs of those conducting the research. It is also due to the inherent complexity of healthcare and the challenges involved in collecting robust, comparable data.

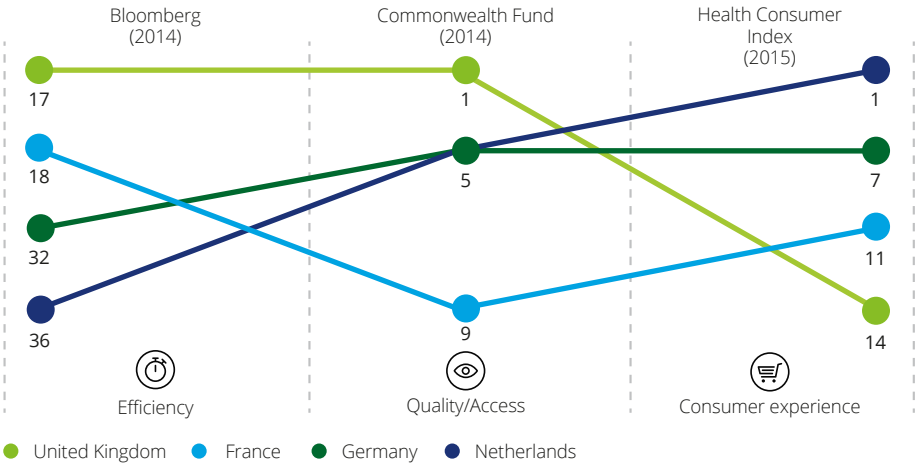
Patients across Europe have the right to expect the best possible care, in the right place, first time; and that this care will be delivered by compassionate healthcare professionals with appropriate skills, using the latest technology and prescribing the most effective therapies.

In the past, patients have tended to be passive recipients of care, deferring to the expert knowledge of clinicians, due in part to difficulties accessing and understanding health information. This situation is changing with the public becoming more engaged with information on healthcare due to a proliferation in published research, ease of access to information via the internet and the development of digital health technologies (such as wearables and mobile applications).

Our report is based on an extensive review of published datasets and literature, and Deloitte's experience of working with healthcare policymakers, payers and providers across Europe. Our intention is to identify the levers to:

- encourage wider adoption of good practice, including new ways of working
- develop more effective collaborations within and between healthcare and life sciences companies
- improve outcomes for patients
- improve the performance of healthcare professionals
- optimise the cost of providing care.

Figure 1. Variation in existing health system rankings

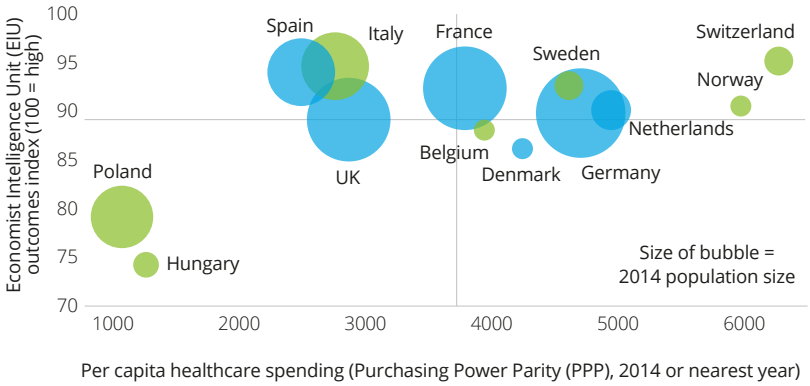


Source: Most Efficient Health Care around the world, Bloomberg, 2014[1]; Euro Health Consumer Index 2015, Health Consumer Powerhouse Ltd., 2016[2]; Mirror, Mirror on the Wall-How the Performance of the U.S. Health Care System Compares Internationally, The Commonwealth Fund, 2014[3]

Health performance metrics

Figure 2 shows that for high income countries there is little correlation between health spend and outcomes. For example, of the six countries in our cohort: Spain ranks top on the Economist Intelligence Unit (EIU) outcomes index, but its per capita spending on health is much lower than others with a similar score on the outcomes index; Denmark has the lowest outcomes score but spend per capita is above average.[4,5]

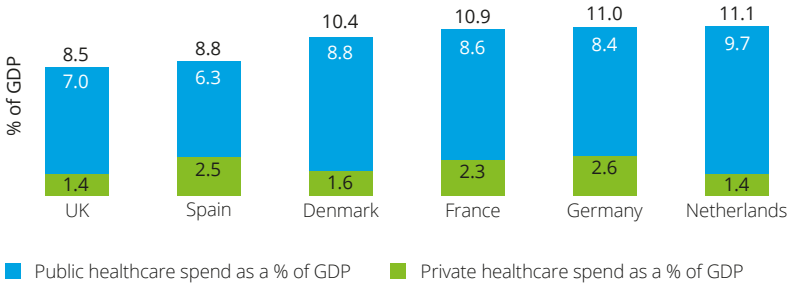
Figure 2. Relationship between per capita healthcare spending and health outcomes



Source: Deloitte research and analysis; Health at a Glance 2015, Office of Economic Development and Co-operation (OECD), 2015; Healthcare outcomes by country index 2014, Economist Intelligence Unit, 2014

Figure 3 shows the average amount spent on healthcare as a proportion of Gross Domestic Product (GDP) and the different levels of out-of-pocket spending (excluding long-term care). GDP spend on healthcare is lowest in the UK and Spain.[6]

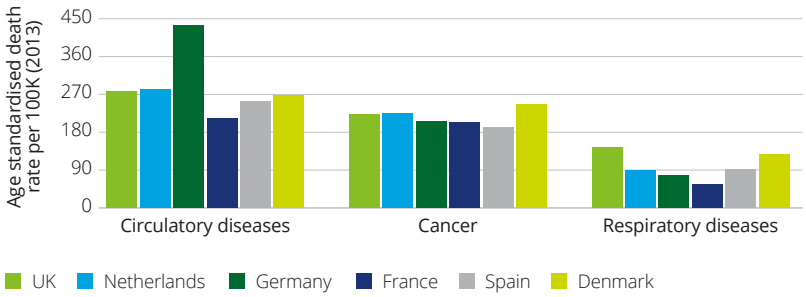
Figure 3. Healthcare spending as a share of GDP, 2013, for our cohort of six European countries



Source: Health at a Glance 2015, OECD, 2015

Figure 4 shows the age-standardised death rates in our cohort of countries for the top three causes of death. Germany has the highest number of deaths due to circulatory diseases and Denmark for cancers.[7,8]

Figure 4. Top 3 causes of death in our cohort of European countries

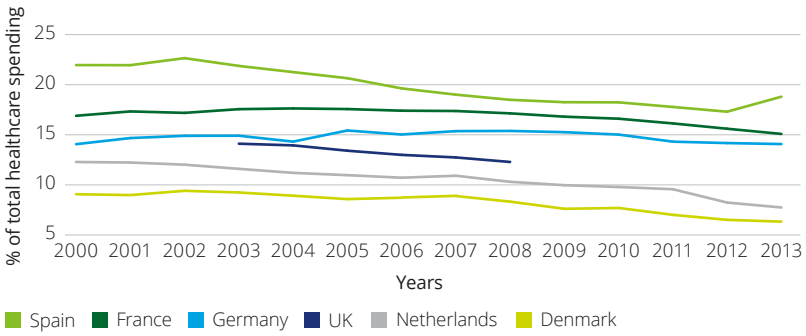


Source: Health at a Glance 2015, OECD, 2015; Eurostat, European Union (EU), 2016

Life sciences performance metrics

Figure 5 shows the general downward trend in country spending on pharmaceuticals as a percentage of overall healthcare spend over the past decade. Spain is consistently highest and is the only country in our cohort with an uptick in 2012-13.[9]

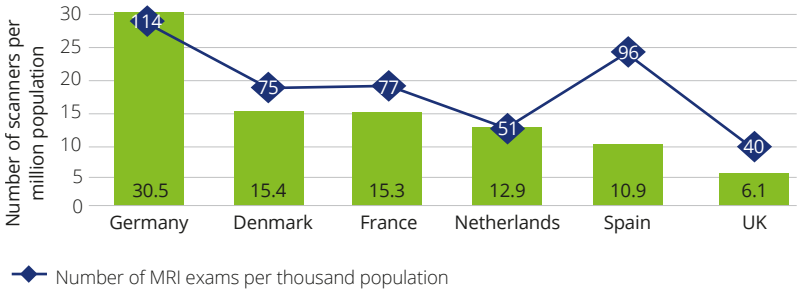
Figure 5. Spending on pharmaceuticals as a percentage of total healthcare spending (2000–13)



Source: Pharmaceutical spending, OECD, 2016

Figure 6 shows the comparative use of high-value diagnostic equipment in our cohort countries: number of exams (use) and number of MRI scanners (availability). High numbers and lower use could signify inefficiency or underuse and vice-versa. However to understand patterns of use, you need information on the impact on health outcomes from using the scanners.[10]

Figure 6. Number of MRI scanners and exams (2014 or nearest year)



Source: OECD Health Statistics- Frequently Requested Data, OECD, 2016

Figure 7 Healthcare Information and Management Systems Society (HIMSS) Analytics assesses hospitals use of Information Technology. Stage 7 is the top level of achievement and represents complete electronic health record (EHR) [also known as electronic patient record (EPR), electronic medical record (EMR) or clinical information system (CIS)] integration across all clinical areas – displacing medical paper records in the hospital.

As at first quarter (Q1) 2016, the Netherlands has the most technology enabled hospitals with an average score of 4.6 whereas Germany has the lowest, despite having one of the three Stage 7 hospitals in Europe.[11]

Figure 7. Electronic Medical Records Adoption Model (EMRAM) score distribution in our cohort - status as of Q1, 2016 (based on data from latest 36 months)

EMRAM score	Denmark	Germany	Netherlands	Spain	UK
Stage 7	0	1	1	1	0
Stage 6	0	0	6	12	3
Stage 5	24	29	26	97	53
Stage 4	0	13	1	11	4
Stage 3	0	13	0	6	0
Stage 2	0	55	13	61	13
Stage 1	0	2	1	19	8
Stage 0	0	99	0	30	18
Average country score	5.3	1.9	4.6	3.5	3.7
Number of hospitals inspected	24	212	48	237	99

Electronic Medical Records Adoption Model (EMRAM) Score Distribution, Q1 2016, HIMSS Analytics Europe, 2016

Note: HIMMS data does not include updated information on France; data collection is currently in progress.

1. Prevention and health promotion

Prevention is better than cure

Prevention is an investment in people's health. It reduces the burden of disease and contributes to the sustainability of health systems. Prevention keeps children healthy and enables senior citizens to live more actively and independently for longer. Investing in prevention is an opportunity to improve health system efficiency while reducing inequalities. There is wide consensus and evidence that show health promotion and disease prevention activities are cost-effective. They also contribute to increasing longevity and improved health status. Unfortunately health systems are still oriented to illness and not health promotion. Indeed investment in prevention across Europe has actually declined since 2009, following the global financial crisis. In 2013, funding of prevention across European countries averaged only three per cent of healthcare spending and for our cohort ranged from as little as 1.9 per cent in France to 4.8 per cent in the Netherlands.

"We have the tools and we have the will. Millions of lives stand to be saved – we must act together and we must act now."

Dr Oleg Chestnov, Assistant Director-General, World Health Organization (WHO)[12]

What does good look like?

Convincing politicians and policymakers of the importance of prevention and the need to tackle lifestyle-related determinants of ill health is challenging, especially when it requires them to take a longer-term view that looks beyond short-term costs to future benefits. Yet, some 86 per cent of deaths in Europe are now due to non-communicable diseases caused mainly by tobacco, alcohol, poor diet, and lack of physical activity. While health policymakers, payers and providers acknowledge the need to shift the focus from sickness and cure to wellness and prevention, progress in tackling health inequalities and managing long-term conditions is variable.

Good prevention encompasses a range of approaches to reduce the risks of ill health:

Health literacy, education programmes and campaigns aimed at:

- improving knowledge and understanding of health and healthcare, especially in vulnerable and high risk groups aimed at reducing the steepness of the social gradient in health outcomes
- supporting people to self-manage, especially people with chronic long-term conditions
- modifying behaviours through encouraging healthy lifestyle choices such as healthy eating, stopping smoking, reducing hazardous drinking levels and keeping active.

Adult and child immunisation policies and programmes that are:

- supported and fully funded by government, with the aim of maintaining or increasing rates of vaccination against preventable diseases so as to control, eliminate or eradicate vaccine preventable diseases
- aimed at meeting the European Commission's standards on vaccination rates which promote child immunisation and adult vaccination programmes as a cost-effective tool for saving lives.[13]

Disease screening (for example breast, cervical, colorectal and prostate cancer screening as well as child and senior health screening programmes):

- aimed at early identification of those at risk of illness and helping staff to target healthcare interventions more effectively.

Healthcare-associated infection prevention policies and programmes to reduce:

- extent of healthcare-associated infections
- growth of antibiotic resistance.

Improving secondary prevention by:

- educating and training primary care staff to understand the benefits of prescribing statins, anti-hypertensives, anti-cholesterol drugs etc.
- prescribing in accordance with standard protocols and guidelines with targets to reduce risk factors such as high blood pressure, high blood sugar and low oxygen levels.

Utilising every point of contact between health and social care staff and the public:

- to promote prevention and healthy lifestyles, including physical, mental and sexual health promotion in healthcare settings, schools and workplaces.

Providing transparency on provider and clinician performance on prevention:

- collecting and publishing comparative information on spending based on robust comparable data, for example, national clinical audits and national registers.

Prevention and health promotion metrics

Figure 8 shows the variable performance of our cohort on tackling the key determinants of health and reflects the scale of the prevention challenge. France ranks as the poorest performer on both smoking in adults and alcohol consumption whereas the UK ranks as poorest performer on rates of childhood and adult obesity. The Netherlands is the highest performer in three of the four indicators.[14]

Figure 8. Cohort performance on key health determinants (rank out of 34 OECD nations)

Indicator	Smoking in adults	Alcohol consumption	Obesity in adults[1]	Overweight and obesity in children[2]
Denmark	12	17	10	23
France	30	30	11	13
Germany	23	28	25*	3
Netherlands	13	14	6	7
Spain	29	20	15	26
UK	20	19	27*	32

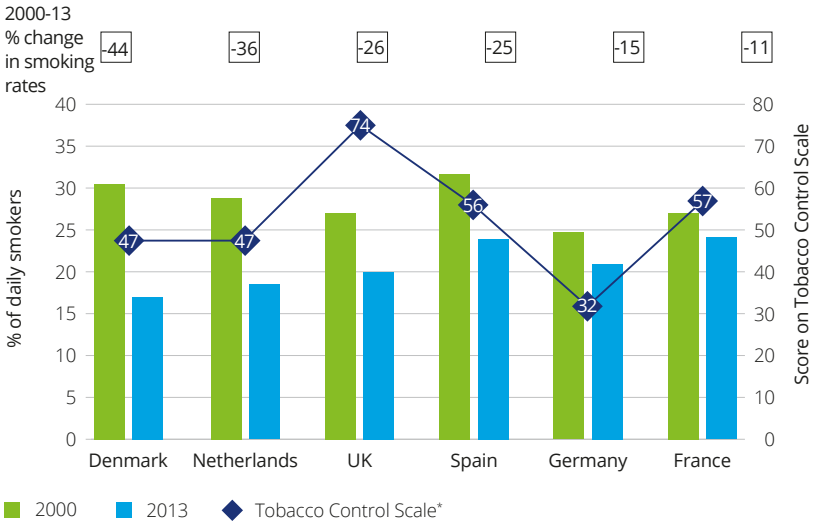
1 For the two countries marked with an asterisk, data on obesity in adults are based on measured height and weight. These result in more accurate data and higher obesity rates compared with all other countries that are providing self-reported height and weight.
2 Data on overweight or obesity in children are all based on measured data, but refer to different age groups across countries.

Top third performers | Middle third performers | Bottom third performers

Source: Non-medical determinants of health, OECD, 2016

Figure 9 shows that in relation to our cohort, Denmark has made the most progress in reducing smoking rates although it started from a relatively high point and scores relatively poorly on the Tobacco Control Scale (15th out of 34 countries surveyed – compared to the UK (top performer) and Spain (2nd)). France had the lowest percentage reduction in smoking rates with Germany only marginally better. Germany is also the lowest performer on the Tobacco Control Scale – ranked 33rd overall.[15,16]

Figure 9. Change in daily smoking rates and ranking on the Tobacco Control Scale



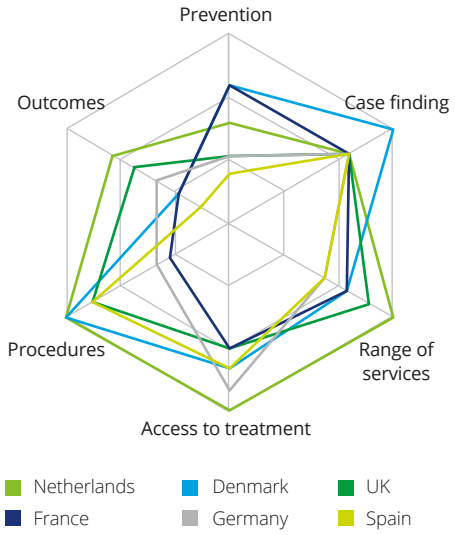
*The Tobacco Control Scale quantifies the implementation of tobacco control policies at country level (total score is 100). It is produced by the association of European Cancer Leagues and describes results of a tobacco control activity survey in 34 European countries in 2013

Source: Deloitte research and analysis; Tobacco consumption among adults, OECD, 2016; The Tobacco Control Scale 2013, Association of European Cancer Leagues, 2014

Scale of challenge in improving prevention

Figure 10 shows the Euro Diabetes Index 2014 scores for our cohort of countries. Maximum score is 1000 – prevention (175), case finding (50), range and reach of treatment (175), access to treatment (200), procedures (275), and outcomes (125). The Netherlands had the top position in the index for our cohort (second overall to Sweden). France and Germany scored highest on prevention.[17]

Figure 10. The Euro Diabetes Index 2014 – cohort rankings

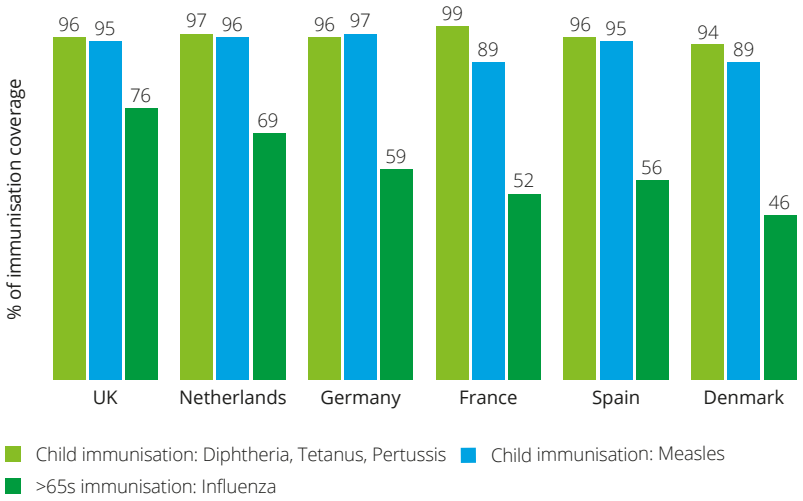


Country	Points/ 1000	Ranking
Netherlands	922	2nd
Denmark	863	3rd
UK	812	4th
France	736	9th
Germany	733	10th
Spain	633	17th
Sweden	**936**	**1st**

Source: Deloitte research and analysis; Euro Diabetes Index 2014, Health Consumer Powerhouse, 2014 which ranked 30 countries on 28 indicators in the six categories above

Figure 11 shows that all countries in our cohort achieve high rates of coverage for childhood immunisation, although Denmark and France failed to reach the recommended rate of 95 per cent for measles. Only the UK met the EU Council 's 2009 recommendation for all member states to vaccinate 75 per cent of their "at risk" citizens against influenza by the winter of 2014-2015.[18,19] Note: If all other EU countries had met the target, 9,000 to 14,000 lives would be saved each year.[20]

Figure 11. Immunisation coverage % (2013 or nearest year)



Source: Childhood vaccination programme, OECD, 2016; Influenza vaccination for older people, OECD, 2016

Good practice examples of prevention and health promotion

Prevention helps reduce health risks and is cost-effective

Patient portrait: Francine, diagnosed with Type 2 diabetes

Francine lives in France and, in 2012, was diagnosed with Type 2 diabetes following a routine appointment with her General Practitioner (GP). Although clinically obese she had no physical symptoms and so was shocked at the diagnosis of a life-long condition. After diagnosis she was offered support at a local healthcare centre where stories of people losing their sight or having their limbs amputated terrified her, as did being told "You have diabetes. There is no cure. Deal with it." In 2013 she attended a retinopathy and foot clinic and saw a poster asking: "Would you like to put your Type 2 diabetes into remission?" She contacted the researchers and was accepted onto the trial.

Eight weeks on an 800-calorie a day diet, albeit tough, paid off. The study lasted nine months by which time she had lost 19 kilos and her insulin levels were back within normal limits. Her diabetes was in remission and, by maintaining her diet and increasing her activity levels, she has remained in remission.

Case example 1. Smoke-free schools in Germany where tackling at risk groups early improves outcomes of primary prevention

Early onset of smoking among children has been shown to be one of the most important predictors for later smoking and also correlates with heavier smoking in adulthood and experimenting with other psychoactive substances. Primary prevention measures should therefore begin as early as possible. 'Be smart don't start' is a school-based German campaign aimed at delaying or preventing smoking. It is part of the European Smoke-free Class Competition programme, introduced in 1997-98. In Germany, the campaign is supported by the Federal Centre for Health Education, all federal states and a large number of public and private health and healthcare organisations. Classes can participate after voting to be a non-smoking class from November until April of each year. Students must sign both an individual contract and a joint class contract promising not to smoke or consume nicotine in any form during the competition. Students report weekly on smoking habits. A minimum of 90 per cent of students need to refrain from nicotine-use for the class to remain in the competition. Classes also organise additional activities and events on smoking health and well-being. Teachers also engage students in reflecting on the impacts of peer pressure and misconceptions of the attractiveness surrounding substance abuse. Successful classes enter a prize-draw, with a school-trip as first prize and additional prizes for creativity or repeated commitment. Germany has been actively engaged throughout the programme, with 7,512 classes registered in the competition in the school-year 2015-16. Other countries in our cohort who have participated in the competition are France, the Netherlands, Spain and Wales. Of the German participants in this year's 19th competition, 5,865 classes (78 per cent) completed the competition successfully (compared to 66 per cent of classes in 2011-2012). A longitudinal evaluation of the programme published in 2012 showed smoking rates in adolescents declined from 28 per cent in 2001 to 11.7 cent in 2011 (in total, around three million students have participated in the programme over that period). Evaluations have shown the programmes to be cost-effective.[21]

Case example 2. National immunisation programmes

Despite many efforts by member states, Europe has experienced a decline in vaccination coverage along with an erosion of confidence and trust in some vaccines. Exemplified by the resurgence of measles and rubella with outbreaks in France in 2011 (15,000 cases) and in the Netherlands in 2013 (2,600 cases), this is largely due to the sub-optimal uptake of the Measles, Mumps and Rubella (MMR) vaccine. The European Commission estimates that 4.9 million children born between 1998 and 2008 missed their first dose of measles vaccine with the number missing the second dose even higher (85 per cent of reported measles cases were unvaccinated). Factors that negatively impact the chances of meeting the EU strategy and goal for measles and rubella elimination by 2015 include: perceptions that measles is a mild disease, a decline in public confidence in vaccines, the existence of pockets of under-vaccinated populations, and strained public health budgets. In our cohort, Germany has the highest overall childhood vaccination rates and Denmark the lowest.[22]

Case example 3. Impact of workplace health promotion in the UK

Workplace health promotion has been shown to be cost-effective. Johnson & Johnson's (J&J) company-wide health and well-being strategy, initially launched in 1979, provides locally-customised onsite health and well-being programmes for over 90 per cent of their global employees. It includes financial incentives for employees to undergo a health risk assessment. There is also targeted onsite health education, access to health and well-being classes on physical and mental health, fitness facilities, screening for common diseases and monitoring of lifestyle factors (body mass index, blood glucose and cholesterol testing). Other measures include smoke free campuses and healthy snacks in vending machines. Evaluations of the programme have shown high participation, lower overall healthcare spending and a reduction of absenteeism. It has additionally demonstrated significant reductions in smoking (12 per cent to 4 per cent), prevalence of high blood pressure (14 per cent to 6 per cent) and high cholesterol (19 per cent to 5 per cent). In 2015 J&J was named Britain's Healthiest Company and deemed to have Britain's Healthiest Workplace by the University of Cambridge and RAND Europe's Healthiest Workplace wellness study.[23, 24]

Case example 4. Assessing European health literacy

Good health literacy enables people to make judgements and take effective decisions to help improve their health status. However, there is a wide variation in health literacy levels within and between European countries. Poor health literacy is one of the strongest predictors of health inequality, and correlates strongly with education, employment and income levels, age and race. Many people over the age of 75 have poor health literacy, precisely at the point in life when their healthcare needs are greatest. People with low health literacy seek out fewer preventive health services such as vaccinations and screening. The European Health Literacy Survey conducted in 2011 in eight European countries (Austria, Bulgaria, Germany, Greece, Ireland, the Netherlands, Poland and Spain) showed that 12 per cent of the population have inadequate health literacy and a further 35 per cent have health literacy that is limited and thus likely to have a problematic impact on health. Of the countries surveyed, the Netherlands had the lowest percentage of people with inadequate or limited health literacy (29 per cent). The study concluded that the social gradient in health literacy must be taken into account when developing public health strategies to improve health equity in Europe.[25]

Case example 5. Integrated diabetes care in the Netherlands

The Euro Diabetes Index has consistently judged the Netherlands to have a high standard of diabetes care. Key reasons include having a robust, coordinated, multi-disciplinary team approach and that primary care physicians follow the national diabetes standard extremely strictly. In order for diabetes care to remain cost-effective physician assistants handle the majority of diabetes patients. The strict application of standards ensures that patients receive a precise diagnosis, approved treatments and follow-up plans. The Dutch diabetes care standard includes smoking cessation, blood pressure measurements, annual BMI measurements and quarterly visits to the doctor. In 2007 a bundle payment for diabetes was introduced. This led to the formation, in 2010, of diabetes care groups and most Type 2 diabetics being treated in primary care. Patients with more complex co-morbidities are treated in secondary care. Care in and outside hospital is completely separated. If a patient is referred to hospital the fee for the family physician stops. Some diabetologists and endocrinologists are attached to a primary care group to provide consultations. Patients are given a fixed amount of reimbursement for their medicine and the care group covers the extra cost. This shifting of healthcare cost to the provider ensures that only guideline-recommended medication is prescribed for the patient. This funding approach has enabled family doctors to hire specialist nurses and helped to improve care processes and staff and patient satisfaction. However, the link to clinical outcomes is less well evidenced, as noted in the Euro Diabetes Index 2015.[26]

What next for prevention and health promotion?

Build on what works and adopt evidence-based interventions

A fully funded prevention strategy is essential for all health systems and requires targeted investment at local, regional and national level. However, most countries in Europe have reduced the percentage of healthcare spend on prevention, despite the wealth of evidence and political rhetoric that such investment is fundamental to a sustainable health system. As our scientific knowledge and technology capable of tracking and monitoring health status improves, the impact of failing to invest in prevention will become increasingly evident and difficult to justify to the general public. Ultimately, prevention requires a new social contract between healthcare payers, providers and the public based on new models of co-creation and self-management. It also requires improvements in health literacy, especially in the over-75s and socially disadvantaged groups. Deloitte considers that, based on our view of the different elements of prevention, the country in our cohort with the most robust approach is the Netherlands.

Key enablers of prevention and health promotion

The global economic downturn has impacted the health and well-being of populations across Europe, with the most vulnerable and disadvantaged feeling the effects most strongly. Sustaining a growing, ageing population across Europe requires an increased focus on prevention.

Systems and processes

Improve health literacy by tailoring interventions to the needs of patients or groups with the poorest health literacy and involving citizens in the development of interventions to improve skills and competencies in understanding their health. Policymakers need to address common misconceptions and confused messaging if behaviour change is to be tackled successfully.

Re-energise vaccination programmes in Europe through the adoption of a new R&D model to secure and increase immunisation levels. A large body of research suggests vaccinations are one of the most cost-efficient investments. However, health information programmes are needed to assure the public of the quality and safety of vaccines, and payers need to ensure that their country has an adequate supply of relevant vaccines. Policymakers and providers need to promote vaccination as essential for a sustainable health system and monitor and publish rates of immunisation.

Coordinate the use of health screening and health surveillance by developing targeted screening programmes that identify diseases or pre-clinical conditions and detect undesired health effects in a given population. Case finding and surveys, when carried out in a systematic way, can also form part of health surveillance.

Apply behavioural economic principles to public health initiatives to create healthy environments and promote health awareness. For example, tackling obesity, given over a third of Europe's population is overweight or obese and trend projections are alarming. Potential policies include: a sugar tax, a salt tax, and putting calorie details and health warnings on processed food and alcohol. Mandatory exercise in schools and colleges can make a difference to activity levels. Evidence-based obesity reduction targets also need to be adopted in all countries and healthcare professionals need to be trained to understand the complexity of obesity and how to deal with it.

Workforce

Make every point of contact count by ensuring that all staff have the skills and knowledge to promote primary prevention and recommend interventions that encourage people to maintain a healthy weight, reduce levels of alcohol, increase levels of activity and stop smoking. Smoking bans in public places are one of the most effective interventions as are initiatives like UK's 'Stoptober' campaign aimed at encouraging people to stop smoking for 28 days.[27] Evidence shows people who stop smoking for 28 days are five times more likely to stop altogether.

Technology

Increase staff and public awareness of digital health technology and how it can support effective self-management and provide interactive advice and guidance, to help patients monitor their health status and track compliance with treatments. Of the 165,000 health apps now available, around two-thirds target fitness and wellness. Citizens need information and advice on which apps are effective – such as health app directories. Digital health technology can also be used to identify and track viral and bacterial disease outbreaks.

Undertake and share appropriate economic modelling to capture the full value of prevention activities and use the results to underpin and target spending on prevention – which should be no lower than 5 per cent of healthcare spending.

2. Primary care today and tomorrow

Clinical advisor, interpreter and care coordinator

The primary care model in most EU countries has remained virtually unchanged for decades and is based largely around the family doctor. Yet the nature of demand has changed significantly due to increasing numbers of complex and co-morbid patients and the policy ambition of most governments to reduce reliance on more expensive hospital settings and deliver more care in community and primary care. There is also a growing body of evidence that shows that family doctors acting as gatekeepers to specialist healthcare services, supported by waiting time targets and referral protocols are associated with better population health outcomes, equity and continuity of access and lower costs. In more highly-populated regions, the traditional model of small practices is considered no longer fit for purpose. There is pressure to 'scale up' the delivery of care through networks, federations and partnership, with GPs working in multidisciplinary teams with other health and social care professionals. As governments seek to ensure the sustainability of their health systems, including the role of primary care, decisions will need to be made about structural form, but even more critical is the willingness of staff to work differently.

"You treat a disease, you win, you lose. You treat a person, I guarantee you, you'll win, no matter what the outcome". Patch Adams.[28]

What does good look like?

Across Europe, doctors in primary care are seen as the first point of contact, expected to interpret symptoms, diagnose and treat the patient. Consultations are typically short, generally 7–16 minutes. Patients quite often (but not invariably) present with the early manifestations of illness, or symptoms that cannot be readily attributed to a definite cause. A proportion of these patients may also have pre-existing psychosocial problems and physical co-morbidities. Diagnosis in such circumstances is difficult and often provisional. Experience and knowledge of the patient, underpinned by technology that uses standardised clinical algorithms and point of care diagnostics, can reduce risks to patients and provide effective and timely decisions.

Good primary care services should be accessible, comprehensive, coordinated and sustainable.

Services should be designed to respond in a timely manner to the health needs of the local population including:

- investing in the size and capability of the primary care workforce and deploying technology to optimise access (emails, on-line consultations, Skype, e-visits, electronic prescriptions)
- involving patients and carers in service design to meet local needs
- speedy access to the relevant expertise when and where needed with options that minimise the number of separate visits
- availability of appointments, advice and treatment, including out-of-hours.

Comprehensive services that are matched to population health needs can help people to live independently for longer. For example:

- broad diagnostic and treatment services that identify and treat acute and chronic diseases and support rehabilitation
- evidence-based treatment protocols (pharmaceuticals and other therapies), case management and outreach work
- anticipatory care that uses flexible, multi-disciplinary staffing models.

Coordination requires joint working and partnerships between hospital specialists, community teams, other primary care centres, pharmacists, social care, the voluntary sector and (importantly) patients themselves and should be based on:

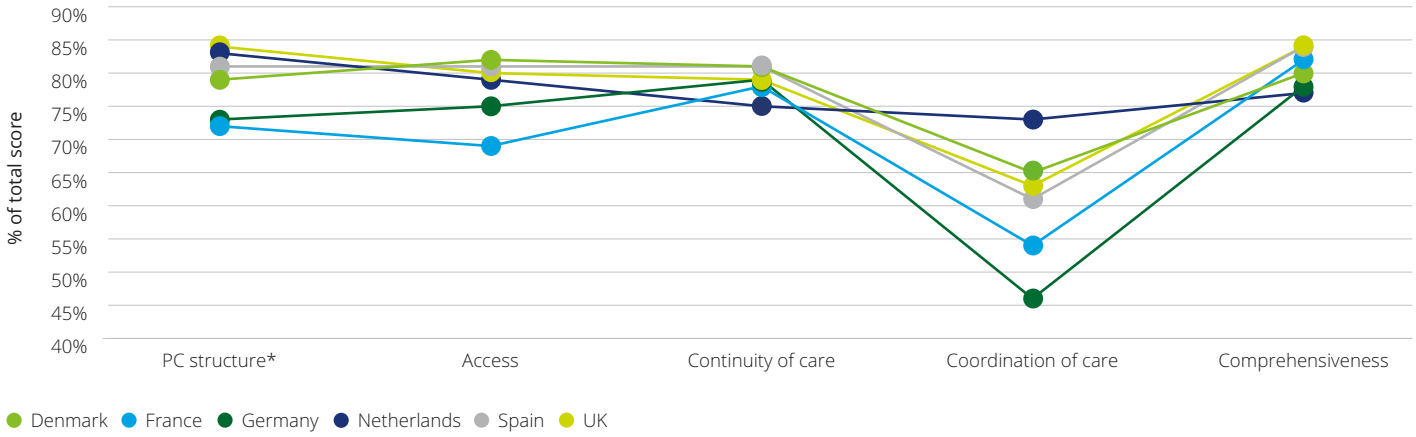
- a shared, interoperable EHR, which records all interactions and which the patient can access, add data to and has a say over who else can access
- incentives that facilitate delivery of the right care, at the right time, and in the right place
- innovative service delivery models, including integrated clinical pathways, group visits, pharmacist-led care, assessment and treatment services, rapid access centres and home-based drug administration services.

A sustainable and well qualified primary care workforce that:

- enables doctors to focus on more complex patients
- optimises the use of multi-disciplinary community teams
- tailors services to patient preferences
- exploits the latest technology to diagnose, monitor and engage patients in self-management.

Primary care performance metrics

Figure 12. Evaluation of primary care (PC) performance (2009-2010)



Source: Building primary care in a changing Europe, European Observatory on Health Systems and Policies, 2015

Figure 12 shows data from the European Observatory on Health Systems and Policies and how countries in our cohort are ranked on the different dimensions of primary care. For example, see below for the primary care structure index and an explanation of how comprehensiveness and coordination are assessed.[29]

The primary care structure index

The primary care structure index considers governance, funding and workforce development measures, the latter being a key issue in most countries. The study ranks 31 European countries on this specific metric.[29]

The position of each of the countries in our cohort on this measure is as follows:

UK	**1st**
Netherlands	**2nd**
Denmark	**3rd**
Spain	**7th**
Germany	**20th**
France	**21st**

How the research assesses coordination and comprehensiveness of services:

Coordination

This covers joint working within and across primary care, cooperation with hospital specialists and engagement with public health staff. This measure has the widest range of scores. Barriers to coordination include lack of skills mix in primary care, single-handed doctor practices and lack of engagement with specialists.

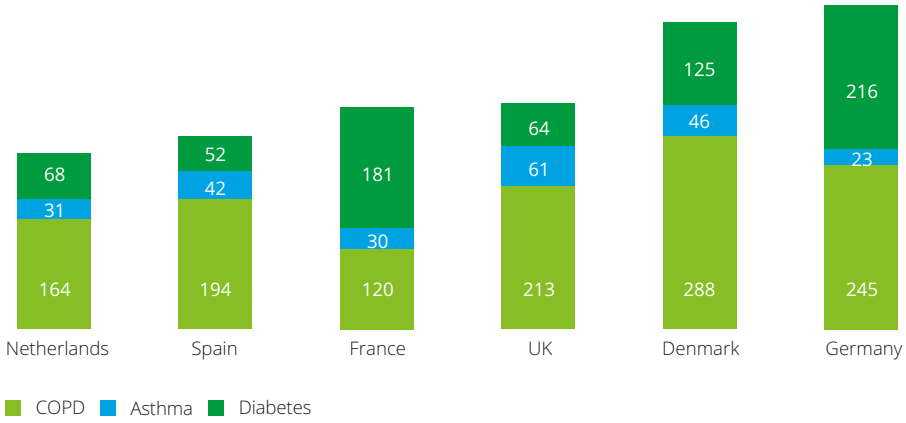
Comprehensiveness

Factors include having access to specialist clinics run by nurses or medical specialists and the availability of medical equipment. The broader the range of services provided in primary care, the less the dependency on secondary care services. Most of our cohort scored highly on this measure.

Primary care models are evolving at different rates

Figure 13 shows a range of conditions that ought to be managed in primary care without the need for hospital admissions. Germany has the highest number of hospital admissions per 100,000 population, which may in part be due to a lack of a formal gatekeeping role which means people can access hospitals directly.[30]

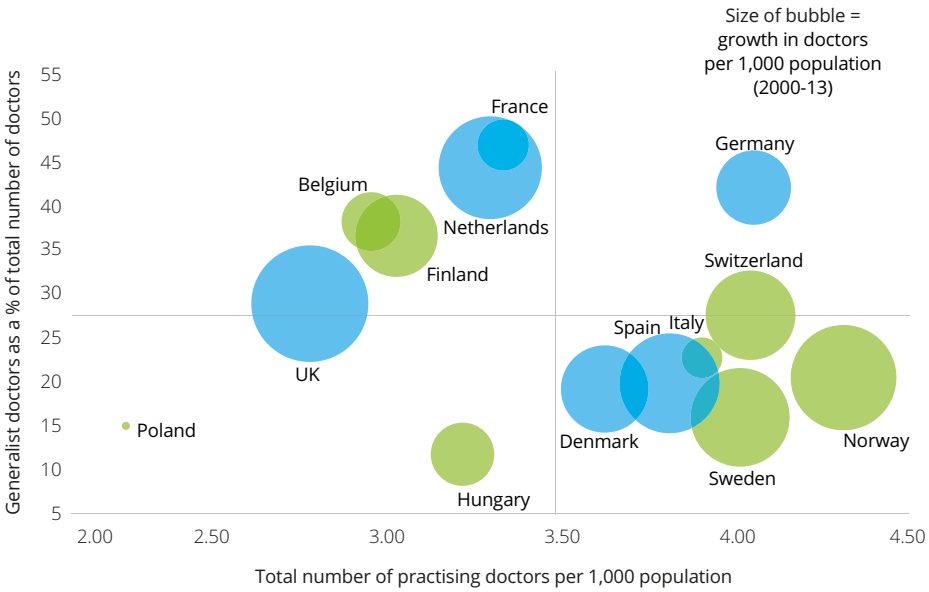
Figure 13. Hospital admissions for conditions amenable to management in primary care per 100,000 population



Source: Deloitte research and analysis; Avoidable hospital admissions, OECD, 2016

Figure 14 shows the difference in workforce dynamics across our cohort. France has the highest proportion of generalist doctors but the lowest growth in numbers of doctors between 2000 and 2013. The UK has experienced the highest growth in the number of doctors, but still has fewer doctors per 1,000 population compared to the other countries in our cohort. Germany has both a high proportion of generalists and above average number of practising doctors per 1,000 population.[3]

Figure 14. Proportion of generalist doctors compared to the number of all doctors (2013 or nearest year)



Source: Deloitte research and analysis; Health workforce, OECD , 2016

Good practice examples of primary care

The key to a cost-effective health system

Patient portrait: Ninke, who has advanced dementia

Having lived all her life in the Netherlands, Ninke was diagnosed with advanced dementia several months ago. Her dearest wish is to remain safely in her own home, despite her cognitive limitations. She was assigned a team of community nurses, who developed a care plan to ensure she takes her medications appropriately. The medications are placed out of reach, and each morning a nurse from the team visits Ninke, and over a cup of coffee helps her with her medications and identifies any other healthcare needs, which the nurse, if required, then brings to the attention of Ninke's family doctor. In addition, once a week a member of the team arrives earlier than usual to assist Ninke with bathing. The nurses and Ninke have established a relationship of mutual trust and respect that is enabling Ninke to live according to her wishes.

Case example 6. Reforming the funding of care for people with chronic long-term conditions in the Netherlands

Since 2010 planned (elective) treatment and management of chronic conditions (diabetes, cardiovascular diseases and COPD) have been reimbursed through a fixed budget. eHealth services are allowed as reimbursable services. This 'bundled' payment system was introduced as a way of reducing fragmentation in care and promoting integration.

A care group, typically led by a family doctor, is responsible for the full spectrum of care-related activities for an individual with a chronic condition. The care group negotiates the bundled payment contract with health insurers and sub-contracts to a multi-disciplinary team. The doctor receives a fixed integrated care fee, plus additional fees for other consultations that are not related to the chronic condition.[32]

Case example 7. A technology enabled primary care practice in the UK

The 'Hurley Clinic WebGP' is designed as a 'first port of call' for patients across 20 general practices serving 133,000 patients. On entering the web site, the patient can search for self-help material, obtain administrative support, access pharmacy advice, contact out-of-hours services, or have an e-consultation with their doctor. An e-consultation involves the patient explaining his or her problem by filling in a form which is then sent to the doctor. Hurley Group reports that the response times for e-consults is 2.9 minutes on average. An analysis in 2014 found that over a period of six months, 40 per cent of e-consults led to a prescription, 40 per cent to an appointment and 20 per cent to a telephone consultation (average 5.5 minutes). Over the six months, estimated savings were about 400 GP hours (after deducting time spent processing e-visits and allowing an average consultation time of ten minutes for those who then saw the GP). Savings were about £420,000 over the assessment period, and continue to increase as GP confidence in using the system improves.[33]

Case example 8. Improving access to primary care in under-served areas in France

Primary care has recently been prioritised in response to increasingly constrained resources and a desire to maintain universal access. The government has introduced financial incentives to move more care from inpatient to primary care-based day case surgery. Initiatives to enhance efficiency include encouraging cost-effective patterns of care in primary care led outpatient clinics, expanding the use of practice guidelines and care protocols, and launching a performance-based contract for family doctors. This contract incentivises preventive care and chronic disease management and controls over prescribing. France already has the highest ratio of generalists to specialists at 46 per cent (compared to 44 per cent in the Netherlands, 43 per cent in Germany and just 28 per cent in the UK). In 2012 the French Ministry of Health and Social Affairs launched a comprehensive 'Health Territory Pact' to promote the recruitment and retention of family doctors in under-served areas and adopt innovative ways of delivering services. The creation of multi-disciplinary 'medical homes' enables physicians and other healthcare professionals to be co-located. The government is also providing financial incentives to promote telemedicine and to transfer competencies from doctors to other healthcare providers.[34]

Case example 9. New models of primary care in the UK

In 2015, as part of the 'NHS's Five Year Forward View', a total of five new types of care models, or vanguards, were announced. One of these models, the Multispecialty Community Providers (MCP), is aimed at transforming primary care. For example the 'All Together Better Sunderland' vanguard is a partnership that brings together health and social care professionals with a range of local support organisations, to improve the lives of local people who need the most help and support to live independently – usually people with several complex conditions or who are frail and need support to look after themselves. Research shows that three per cent of patients in Sunderland account for 52 per cent of NHS costs, with the next 12 per cent of patients accounting for 36 per cent of costs. While there is still work to do on how best to identify who exactly falls into these groups, 'All Together Better' has to date focused closely on the top one per cent. New community integrated teams are working to wrap services around these people, providing more holistic support. 'All Together Better' has seen early signs of a reduction in emergency admissions for over 65 year olds, a significant increase in the number of referrals to the Recovery at Home service, a reduction in the use of community beds at an intermediate care service, a fall in admissions to residential care and fewer delayed transfers of care.[35]

Case example 10. IT solutions for good quality care in Denmark

Healthcare IT is embedded across primary care. Nearly all family doctors work in small private practices, acting as gatekeepers to specialists and hospitals. All practices have access to both the open and secured Danish Health Network and use one of 15 interoperable EPR systems. 90 per cent of all communications in primary care is sent as electronic data interchange. A unique personal identifier is issued to all Danish citizens at birth. A secure web-ID is issued free of charge. Patients are alerted by email if a doctor, pharmacist or nurse views their record. All doctors use standard electronic documents, greatly reducing inaccuracies and speeding up processing. Financial incentives, such as increased payments to doctors who use email, together with centrally-funded technical support, have helped accelerate the adoption of IT. Some IT use is mandated (the 2004 primary care physician contract made it mandatory for practices to use computers and, since 2009, email). Benefits include simplified repeat prescriptions, quicker access to lists of generic drugs, test results and patient information. Electronic prescribing has also helped overcome difficulties with handwriting and enabled services to dovetail better with pharmacies. The Commonwealth Fund rated the country's healthcare IT systems as the most efficient in the world, saving doctors an average of 50 minutes a day of administrative work.[36]

Case example 11. Home care by self-governing Buurtzorg nursing teams in the Netherlands

'Buurtzorg' has transformed home-based healthcare and created an innovative method for nursing care at home. In 2015 it employed 8,000 nurses working across 700 independent teams, caring for 65,000 patients. It is supported by a flat organisational structure and modern IT systems which enable online scheduling, documentation of nursing assessments and services, and billing as well as the sharing of information within and across teams. The nurses provide holistic care to patients in need of home, hospice and dementia care. They work with the family, primary care providers and community resources, to help patients maintain their independence. This service is provided as a national benefit, funded by tax revenues. An independent evaluation of Buurtzorg found it has reduced the administrative burden for nurses, improved the quality of care and raised employee satisfaction levels.[37]

What next for primary care?

Scaling up adoption of new care models and ways of working

A strong, well-resourced primary care system is an essential part of a sustainable, cost-effective health system. However the traditional model of place-based care needs to evolve into a multi-faceted engagement model. There is a need for new business models and incentives that accelerate the use of technologies, integrated, interoperable (EHR), mobile devices, point of care diagnostics and analytics tools). It is also important for primary care staff to adopt more effective ways of working with each other, with other parts of the health system and, importantly, with patients and their families. Key to improving performance is an ability to work across organisational boundaries, develop formal and informal partnerships and establish alliances between family doctors, community nurses, pharmacists and other healthcare professionals, social care and hospital staff. Deloitte considers that among our cohort Denmark, the Netherlands, and the UK are deploying relatively effective approaches to primary care.

Key enablers of a good primary care system

The wide variation in needs of different patient groups requires primary care to provide alternative care models. For example the use of boutique-type, technology-enabled primary care may be more suitable for relatively fit and healthy people who need a quick diagnosis and one-off treatment combining the conveniences of modern technology (virtual visits) with customer services such as e-prescription. Meanwhile, the needs of patients with more complex needs, people with multiple chronic conditions or psychosocial health problems, may require a more coordinated, multi-professional, approach. This should include consistency of caregivers, a designated family doctor supported, as needed, by other healthcare professionals, primary care navigators and health coaches.

Systems and processes

- a single patient identifier and a registered list of patients for each primary care organisation or network
- appropriate levels of funding (estimates in the UK suggest this should be 10 -11 per cent of healthcare spending[41])
- systems that provide access to universal healthcare, free at the point of delivery, but which may include an agreed and transparent level of cost-sharing with patients for specific items, such as paying for prescriptions
- a set of value-based payment models, including 'bundled' payments for chronic conditions
- standardised guidelines and treatment protocols on disease management
- extended opening times, and an efficient and effective system for providing out-of-hours services
- an agreed set of performance metrics for real-time assessment of the effectiveness of different primary care providers, and a national register of approved primary care providers
- use of therapies and technologies that have been approved as part of a Health Technology Assessment[39] and for which agreed prices have been determined as part of an outcome-based pricing scheme.

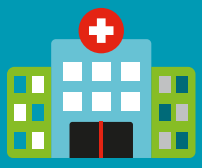
Workforce

- GPs acting as 'medical interpreter' optimising their broad medical knowledge, strong consultation skills, and understanding of the psychosocial aspects of illness
- establishment and deployment of multi-disciplinary teams
- locating mental health staff in primary care, to ensure that a patient's mental and behavioural health are recognised and given parity of esteem with physical health, helping to reduce emergency attendances and admissions to hospital
- providing financial incentives to attract and retain doctors in under-served areas, (including one-off payments on appointment and recurrent payments or bonuses to aid retention)
- telephone triaging by a doctor and/or nurse, flexible appointment lengths, group appointments, primary care-led specialist clinics and rapid access centres
- active engagement with patient advisory forums and patient-led innovation groups.

Technology

- interoperable, integrated EHR that patients can access and interact with, available to all staff who come into contact with the patient, once patient agrees who can access the information
- improved diagnostic capability, including point-of-care diagnostic testing (such as blood tests, atrial fibrillation and tests for bacterial or viral infections)
- direct referral to imaging, such as MRI and CT scans
- technology-enabled communication systems that enable patients to email staff, access on-line appointment booking and obtain e-prescriptions
- deployment of telehealth and telecare to monitor and support people in their own homes
- ability to prescribe digital devices and health apps as an alternative to, or supplementary to, drug prescriptions, alongside technology to monitor compliance and adherence.

3. Productivity in hospitals



Specialist care in a lean, connected, high-quality system

Hospital care accounts for the largest proportion of healthcare spend in the majority of health systems. In the past ten years healthcare reforms across Europe have attempted to rationalise the use and provision of hospital care in order to improve its quality and appropriateness, and reduce costs. These reforms have resulted in an increase in day case surgery, reductions in length of stay and, in some cases, penalties for re-admissions. The result has been a reduction in the number of hospital beds in most countries. The reverberations following the global recession at the end of the last decade led to an even greater focus on improving the productivity of hospital care. With hospital staff accounting for 60-70 per cent of the budget, staff productivity can offer the biggest opportunity for efficiency and productivity savings. Productivity which measures the volume of inputs compared to the quantity of outputs (adjusted for outcomes) is therefore a key metric. International studies estimate that as much as 30 per cent of all hospital spending is essentially wasted, being either unnecessary or inappropriate, but that improving productivity remains extremely difficult.

"Productivity is never an accident, it is always the result of a commitment to excellence, intelligent planning and focused effort".

Paul J Meyer[40]

What does good look like?

In the past decade across Europe, a reduction in hospital length of stay has enabled more patients to be treated while reducing the need for hospital beds. Over the same period, increase in day-surgery rates have resulted in significant savings, enabling more elective procedures to be carried out. In both cases, improved efficiency has had a notable impact on the quality and delivery of care. However, increasing demand for hospital care from ageing, multi-morbid patients appear to be undermining attempts to improve hospital productivity. There is strong international evidence that efficient and effective hospital management practices can deliver both improved outcomes and better productivity; also, that high-performing hospitals are typified by strong leadership, adoption of standardised clinical pathways and treatment protocols, and the use of technology-enabled care. Real-time management information is also key to delivering improvements in procurement and deployment of resources.

The key ingredients for a productive hospital

Safe, effective and evidence-based systems and processes that:

- allow for the provision of health interventions to those who need them, when and where needed, with a minimum waste of resources
- standardised, evidence-based healthcare protocols and care pathways
- care processes that avoid, prevent or ameliorate adverse outcomes or injuries that can stem from the processes of healthcare itself
- equitable access to and productive use of essential pharmaceutical and medical technologies whose quality, safety, efficacy and cost-effectiveness has been assessed and their use recommended by Health Technology Assessments[39]
- limiting the range of products that are purchased, with strict controls over procurement processes, including costs.

A competent, well-trained workforce of sufficient capacity and capability, that:

- operates in appropriately-sized and balanced teams, delivering safe, responsive, fair and efficient care
- builds and strengthens leadership at strategic levels throughout the organisation
- is empowered to achieve the best health outcomes within available resources
- treats all patients with dignity and compassion
- feels supported in terms of their health and safety and in being able to maintain their professional standards
- collaborates with patients in process redesign, and seeks real-time feedback about experience, and outcomes.

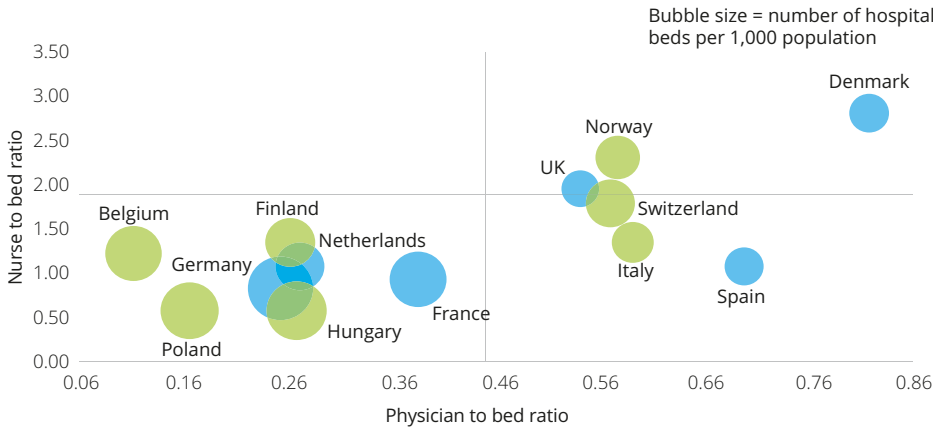
Effective use of innovative technology to contain costs, speed up activity and improve the comfort and safety of patients and staff. For example:

- deploying an interoperable EHR, and making effective use of e-scheduling, e-rostering, e-billing, e-prescribing, e-discharge planning and e-procurement
- using analytics and clinical decision support systems to predict when patients might need interventions and which patients might need follow-up care
- deploying telemedicine and telehealth to improve efficiency of treatment and facilitate safe and earlier discharge.

Hospital productivity metrics

Figure 15 shows how the numbers of medical and nursing staff to hospital beds differs across Europe. Staff represent the single highest cost item for hospitals. Denmark has the highest number of doctors and nurses to hospital beds, but a relatively small number of beds per 1,000 population. Germany has the highest number of beds per 1,000 population.[41,42]

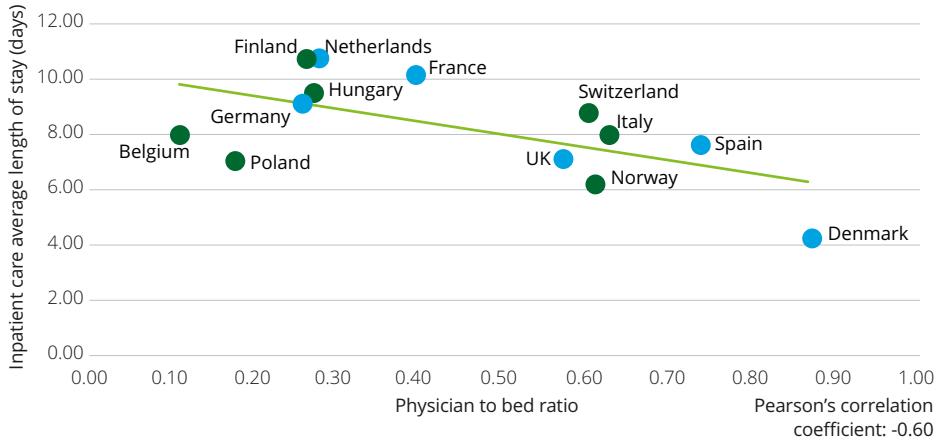
Figure 15. Nurse and physician to bed ratio (head counts, 2013 or nearest year) illustrated by reference to number of hospital beds



Source: Deloitte research and analysis; OECD Health Statistics, OECD, 2015; NHS Workforce Statistics-December 2014, Provisional statistics, Health & Social Care Information Centre, 2015

Figure 16 shows that the higher the ratio of hospital doctors to beds the lower the hospital length of stay. The correlation coefficient of 0.60 is significant. In our cohort, Denmark has the highest ratio of doctors to beds and lowest length of stay.[41,42]

Figure 16. Relationship between hospital physicians per bed and average length of inpatient stay

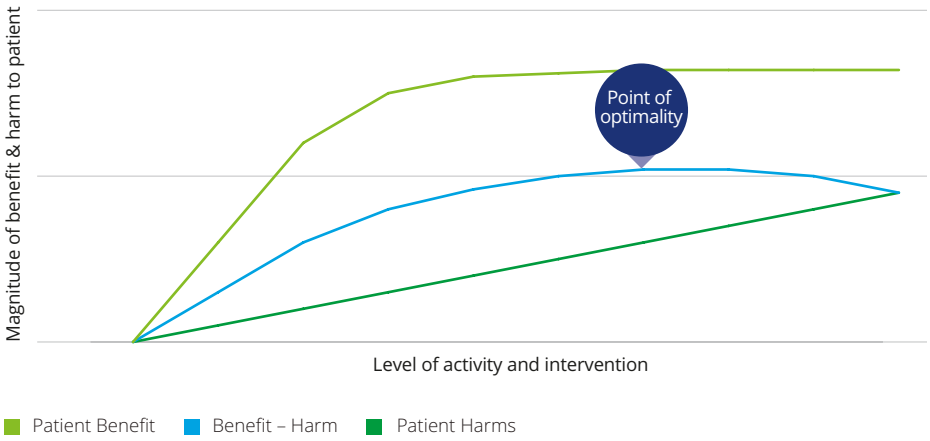


Source: Deloitte research and analysis; OECD Health Statistics, OECD, 2015[41]; NHS Workforce Statistics-December 2014, Provisional statistics, Health & Social Care Information Centre, 2015

Scope to reduce variation in performance

Figure 17 illustrates how the potential for patient harm in many cases increases linearly with the level of healthcare activity in a hospital. The challenge for hospitals is to identify the point at which harms begin to outweigh incremental benefits, so as to design services which hit the point of optimality, defined as the ideal level of activity to achieve maximum return on activity.[43]

Figure 17. The magnitude of patient benefits and harm compared to the levels of hospital activity and intervention

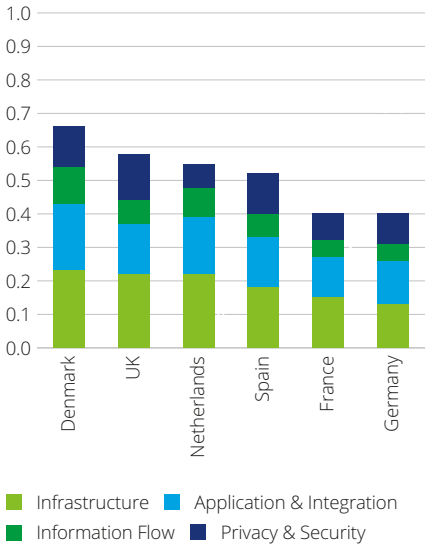


Source: NHS RightCare-Commissioning for Value Roll-out plan 2015-2018, King's Fund, 2016

Figure 18 shows that Denmark is further ahead than other countries in its deployment of eHealth technology. Use of technology to contain cost is a feature of an efficient health system as it speeds up activity, increases accuracy and enables big data analytics to predict which patients are most likely to need follow-up care.[44]

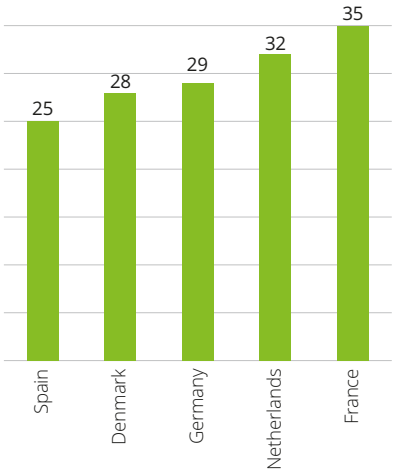
Figure 19 shows the variation in spend on inpatient care in the countries in our cohort. Inpatient cost is a major driver of overall healthcare expenditure, with France spending the highest percentage on inpatient care and Spain the lowest.[45]

Figure 18. 2012 Hospital eHealth deployment composite indicator



Source: European Hospital Survey: Benchmarking Deployment of e-Health Services (2012-2013), European Commission Joint Research Centre, 2013

Figure 19. Spending on inpatient care as a % of total health spending 2013 or nearest year



Source: Health expenditure by function, OECD, 2015

Note: Health at a glance 2015 does not include UK data on spending on inpatient care

Good practice examples of productivity in hospitals

Productive staff, working differently

Patient portrait: Derrick, a stroke survivor

Derrick is 55 and lives in Denmark. He suffered a stroke six months ago, while he was shopping in Copenhagen. The shop assistant recognised that he was slurring his words and that one side of his face was drooping. She also saw he had difficulty raising his hand to pay for his purchases and remembered seeing a poster about the signs of a stroke. She immediately phoned for an ambulance, which arrived eight minutes later and transported him quickly to hospital, alerting the hospital in advance that they were on their way with a suspected stroke patient. Derrick was fast-tracked to a CT scan and diagnosed as having had a large ischaemic stroke. The stroke consultant was called and administered thrombolysis. Derrick was then transferred to the stroke ward where his acute rehabilitation needs were assessed and a care plan developed. He was discharged five days later and was provided with a community rehabilitation package. Apart from his speech, which is still a bit slurred, Derrick is now almost fully recovered and looking forward to returning to work.

Case example 12. Digital solutions to improve hospital productivity in Denmark

Odense University Hospital is the largest and most specialised hospital in Southern Denmark and in 2012 was seen as a world leader in healthcare IT, having reached stage 6 on the HIMSS European EMRAM maturity model. Its deployment of healthcare IT has greatly helped streamline work processes, thereby reducing the length of hospital stay, especially for patients suffering from chronic diseases. The average stay has been reduced to 2.9 days per patient, compared to a European average of approximately seven days. The hospital has also developed healthcare IT solutions to facilitate high-quality hospital-to-home care. For example, patients with COPD are equipped with a "briefcase" that allows live images and sound as well as physiological measurements to be monitored at home and transferred quickly to the hospital via the Internet or a satellite connection. At the hospital, the doctor evaluates and guides the patient in real time, and decides on the treatment needed. Evaluations demonstrate key benefits. For example patients feel safe and comfortable at home, readmission rates are down by more than 50 per cent, inpatient stays have been reduced by five days on average, the relationship between staff and patients is significantly improved and the overall cost of care has been reduced.[46]

Case example 13. Reducing demand pressures on emergency departments in the Netherlands

Many Dutch hospitals collaborate with family doctors located within the hospital to provide after-hours emergency care as an alternative to Emergency Departments (EDs). The intention is to reduce the number of unnecessary cases that EDs have to handle. Collaboration between practice posts and EDs is encouraged, and most hospitals make use of this arrangement. In addition, financial incentives have been developed to keep patients out of the ED. For example, as part of the health insurance system, people have to pay a compulsory annual deductible fee of €375 if they access ED care but not for using primary care services. This incentivises individuals to use primary care rather than EDs. A recent proposal is that insurers will not need to cover patients who go to EDs without first obtaining a referral from a family doctor, in cases where it turns out that emergency care is not required.[47]

Case example 14. A paperless hospital in Spain

Denia Hospital in Valencia is one of the few HIMSS stage 7 hospitals in Europe and, in 2014, was the first non-US recipient of the 'HIMSS Enterprise Davies Award'. It is one of a few hospitals in the world that is truly paperless and has been credited with achieving significant, sustainable improvement in patient outcomes and return on financial investment. The hospital belongs to Marina Salud (a private joint venture company that is also behind the Alzira Model – see case example 29). Marina Salud is responsible for redesigning the region's healthcare and managing the healthcare services for a population of 200,000, funded through capitated budgets. Following introduction of the EHR and associated changes in IT, length of stay has reduced by a day and bed occupancy by six per cent. Standardisation of care has also improved clinical outcomes. For example:

- a one-third drop in hospitalisation rates and 35 per cent reduction in readmission rates for patients with congestive heart failure
- a 42 per cent reduction for cervical and breast cancer patients in the time between identification of cancer risk and initiation of treatment
- the implementation of a sepsis algorithm contributed to a decrease of sepsis mortality from 45 per cent to 32 per cent.

Hospital productivity has been enhanced further through an innovative system of hospital logistics based around the principles of centralisation and automated distribution of medicines, surgical equipment and other healthcare material, reducing stock and waste, while freeing the time of healthcare professionals. Marina Alta, is considered one of Valencia's best-performing health departments.[48,49]

Case example 15. Reconfiguration of emergency services in a UK hospital

The Northumbria Specialist Emergency Care Hospital (NSECH), which opened in 2015, provides specialist emergency care for seriously ill and injured patients from across Northumberland and North Tyneside. It is England's first purpose-built specialist emergency care hospital, with emergency consultants on site 24 hours a day, seven days a week. Consultants in a range of specialties are present for 12 hours, seven days a week. NSECH has 337 inpatient beds covering a population of 500,000 and provides emergency care, critical care, medical and surgical services, a neonatal unit, children and young people's services, maternity services and a full range of outpatient and diagnostic imaging services. The opening of the hospital resulted in new models of care and innovative patient pathways in all of its services. The hospital has received nationwide recognition for restructuring and integrating emergency services with community based care and is viewed as the future model for emergency care in England. Clinical outcomes show a reduction of hospital admissions by almost 30 per cent over the first year of operation and a shortening of length of stay for 20 per cent of patients, resulting in an estimated £6 million savings. The Care Quality Commission (CQC), England's independent regulator of health and social care, has rated the hospital services "outstanding". The CQC said it had found "inspirational leadership and strong clinical engagement" at the trust There was strong integration between the trust's hospital and community services, with the latter also rated outstanding. The trust is also widely recognised as having one of the best patient experience programmes in the NHS.[50,51]

What next for improving productivity in hospitals?

IT enabled interoperable systems providing smart efficient care

There is enormous scope to deliver significant and sustained gains in productivity in hospitals. Key to this is improving the productivity of staff, by giving hospitals the tools and support to manage staff resources better. Three important steps for improving workforce productivity are: standardising clinical workflows; developing and adhering to explicit guidelines; and developing IT systems that cement these practices into the everyday work of staff. Hospitals should also review their staff skills mix, to optimise the use of their highest-skilled professionals. High-quality patient care and sound financial management go hand in hand, requiring hospitals to grasp the management of all their resources (tackling overuse, underuse and misuse) while identifying and removing unwarranted variations in clinical practice, administration and procurement. There is also a need for more transparency on performance metrics, and to establish agreements on closer working arrangements with other providers. Deloitte considers that while all countries in our cohort can point to examples of high-performing hospitals, no one country is consistently performing better than others. Indeed there is wide variation in performance within each country on most metrics.

Key enablers of hospital productivity

To improve productivity and quality of care, hospitals need to standardise their use of resources, not just staff but also equipment and consumables. They also need consistent strategies for the adoption of the more specialised medicines and devices that come onto the market. The recent development in technology can help optimise operational performance given the growing capacity and capability of diagnostic and surgical equipment, as well as the proliferation of smart devices, increase in computational power and the pervasiveness of data science and machine learning algorithms.

Systems and processes

- evidence-based, standardised clinical pathways, for example frailty pathways
- real-time performance dashboards to enable hospital Boards and Executive teams to monitor performance of inputs, outputs and outcomes, including a single and consistent way of recording and reporting staff deployment (for example care hours per patient day)
- evidence-based protocols and approaches to manage flow of patients through emergency departments, including ambulatory care pathways, clinical decision units, and specialist triaging at first point of contact
- consultant-approved acute care plan, containing expected date of discharge and clinical criteria for discharge-partnering agreements with social care, and the voluntary sector, to support discharge planning and reduce admissions
- remote patient monitoring as a viable alternative to keeping low-acuity patients in hospital
- standardising the types of, and price paid for, equipment and disposable resources.

Workforce

- clinical and non-clinical leadership development programmes, and succession planning for leadership posts
- mandatory education and training programmes to maintain healthcare professionals' competencies
- workforce planning tools and new staffing models including agreed job plans and benchmarking tools
- adequate numbers of specialist staff, including radiologists, specialist nurses and clinical pharmacists to ensure optimal use of assets.

Technology

- meaningful use of EHRs, linking hospitals, clinics and care homes into a single, unified records system (which patients can also access), providing a holistic view of patient histories
- clinical informatics technology such as e-rostering, e-discharge, e-prescribing, patient monitoring and robotics
- artificial intelligence technologies that aid clinical decision-making and help clinicians to keep up with the growth in medical knowledge to help reduce unwarranted variations and achieve improvements in quality of care
- sophisticated forecasting algorithms, to predict the daily volume and mix of patients and orchestrate appointments
- data science and machine learning, to enable continuous monitoring of the deployment of imaging equipment
- real-time location tracking systems, enabling the tracking of patient and medical equipment and assets, with Wi-Fi triangulation software and radio frequency identification (RFID) tags
- bedside use of mobile devices (including tablets and smartphones), enabling specialist telemedicine consultations
- hospital apps and bespoke patient portals that enable patients to manage appointments and communicate with their clinicians online, help prepare them for admission, support them during their hospital stay, provide discharge and post-discharge support, and enable them to access their own medical information
- other automated processes that can improve productivity, such as automation of meal ordering and inpatient pharmacy and warehouse management systems that use RFID technology and automatic re-stocking.

4. Palliative and end-of-life care

Dying your way matters

As populations in Europe age, more people are living with serious chronic illnesses and increasingly require access to palliative and end-of-life care. Palliative care aims to prevent or alleviate suffering associated with life-limiting illness, and to provide support and care at the end-of-life. A 'good death' involves meeting the needs of the individual, not just treating their medical condition. This requires support from multi-professional, inter-disciplinary teams and a focus on physical, social, psychological and spiritual concerns. Meeting these needs is a significant public health challenge. Currently it is estimated that in Europe some 69-82 per cent of those who die are in need of some form of palliative care, but access to care varies within and between countries. Palliative care should be seen as an essential service and a human right for individuals. Importantly there is also a need to normalise the inevitability of death.

"If end-of-life discussions were an experimental drug, the FDA would approve it." Atul Gawande[55]

What does good look like?

Responsible societies ensure that everyone is able to 'live well until they die'. Death is something that no one can avoid, yet too often a taboo subject. How a country cares for its dying is a litmus test of a good health system. The specialty of palliative and end-of-life care is relatively new. In many countries there are, as yet, relatively few speciality-trained professionals. Remedying this should be a priority for all countries who face an increase in the number of people dying at a later stage in life, often with multiple and complex health conditions, increasing the likely demand for palliative care.

Main elements of good palliative and end-of-life care

An up-to-date government strategy for palliative and end-of-life-care that includes:

- universal healthcare coverage for palliative and end-of-life care, of sufficient quality and affordability
- national guidelines and palliative care programmes that ensures all people who need it have access to essential care, such as oral morphine and home care services
- palliative care as a recognised specialty/ sub-specialty in medical and nursing education and training programmes.

Equitable access to services for all patients in need of palliative care that:

- ensures individuals are treated with dignity, respect and compassion at all times
- is underpinned by a shared (and ideally digital) care record linked to a register of people with end-of-life and palliative care needs, containing details of the individual's wishes, updated with details of services provided
- includes hospice-standard care for all that need it, such as access to pain medication, available wherever the dying person is located, whether in the home, hospital, residential care home, nursing home or hospice
- provides psychological support for the family, throughout the end-of-life care phase and during bereavement.

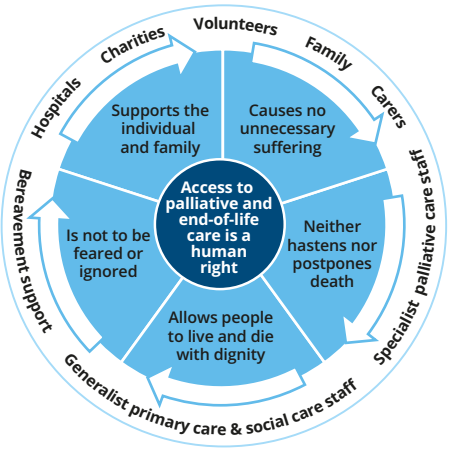
Sufficient specialist and generalist staff, across all care settings, who are confident and competent to care for the dying:

- all staff receiving mandatory end-of-life care training on the physical, social, psychological and spiritual needs of the dying
- key staff trained to identify, in a timely manner, those people who are approaching the end-of-life phase, and able to communicate with, advise and guide those who are dying and their families
- staff that are capable of helping individuals develop end-of-life care plans
- healthcare professionals with expertise in the management of pain and other complex symptoms
- staff who care for dying patients have access to psychosocial supports
- a focus on partnerships and joint working between providers and the voluntary sectors, underpinned by agreements on levels of funding and subsidies for palliative and end-of-life care.

Research to enhance understanding of palliative care that:

- has appropriate research funding (at present spending on research is less than 0.5 per cent of funding for cancer research)
- fosters collaboration amongst researchers to establish a best-practice evidence base for the provision of high-quality outcomes.

Figure 20. Good practice end-of-life care



Source: Dying Healed- Transforming End-of-Life Care Through Innovation, WISH, 2013.[53]

Palliative and end-of-life care metrics

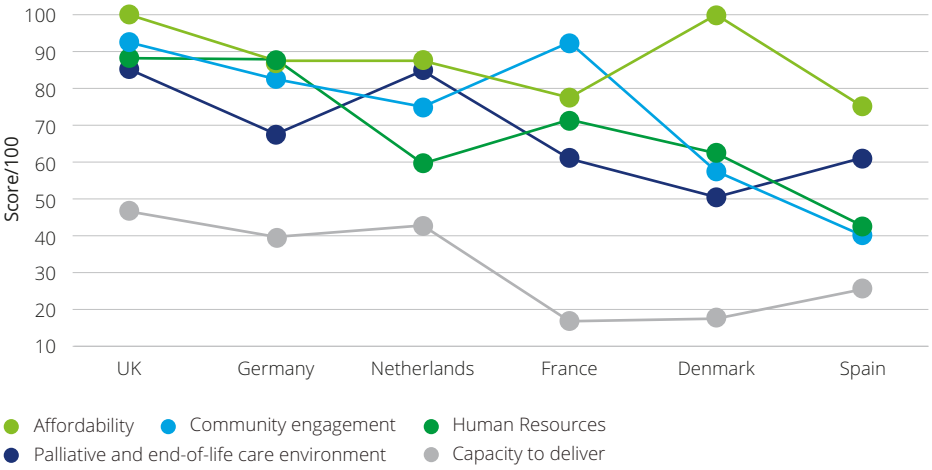
Figure 21 shows the UK's top place ranking in the Economist Intelligence Unit's Quality of Death Index 2015, constructed with input from international palliative care experts. The UK's ranking is based on it having comprehensive national policies, extensive integration of palliative care into its NHS and a strong hospice movement. It also earned top score in the quality of care indicator. The index is intended to provide a tool to be used as a framework in identifying palliative care issues at the national level, with the opportunity for countries to compare provision with countries in the same region or income groups. It can also be used to assess demand for palliative care, and support planning of future quality and affordable palliative care.[54]

Figure 21. EIU 2015 Quality of Death Index – scores and ranking for cohort countries

Source: The 2015 Quality of Death Index-Ranking palliative care across the world, The Economist Intelligence Unit, 2015

Figure 22 ranks our cohort countries on the five sub-indices of the Quality of Death Index. It shows that there is variability in performance on the sub-indices on the capacity to deliver (a measure of palliative care services available compared to the number of deaths). There is considerable scope for improvement for all countries in our cohort.[54]

Figure 22. 2015 EIU Quality of Death sub-indices

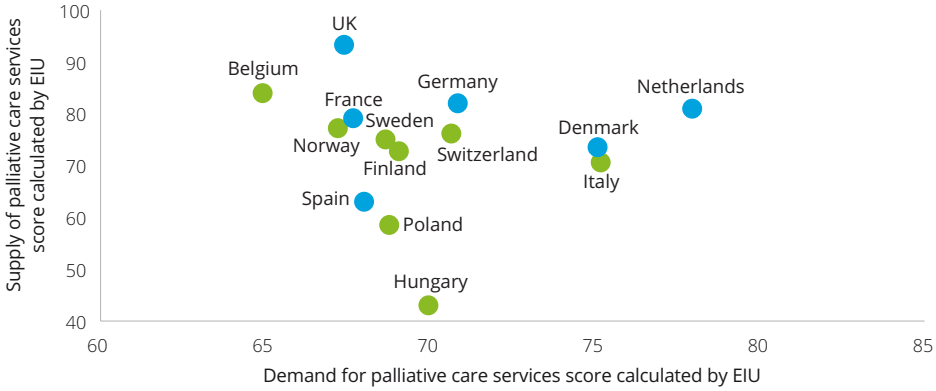


Source: The 2015 Quality of Death Index-Ranking palliative care across the world, The Economist Intelligence Unit, 2015

Scope to improve access to care

Figure 23 shows the gap between demand for and supply of palliative care. The supply is based on the overall ranking of the Quality of Death Index (20 indicators in five categories). The demand ranking has been calculated by the EIU based on three indicators – estimated burden of diseases requiring palliative care, old-age dependency ratio and speed of population ageing (2015-2030). Countries such as the UK have the highest supply and a relatively lower demand compared to Denmark with medium supply but high demand.[54]

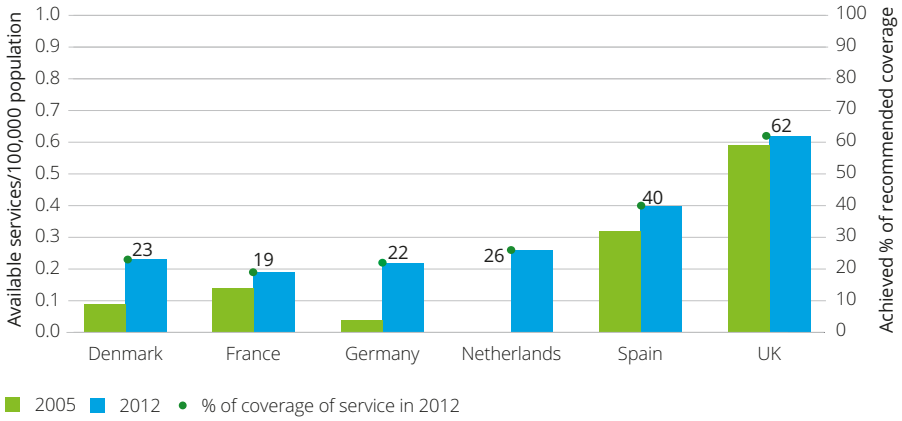
Figure 23. Palliative care demand vs supply



Source: The 2015 Quality of Death Index-Ranking palliative care across the world, The Economist Intelligence Unit, 2015

Figure 24 uses data from the European Association of Palliative Care Atlas of Palliative Care in Europe and shows that in many countries the number of palliative care home teams increased between 2005 and 2012. Despite these improvements services in most countries are still insufficient to meet the recommendations.[55]

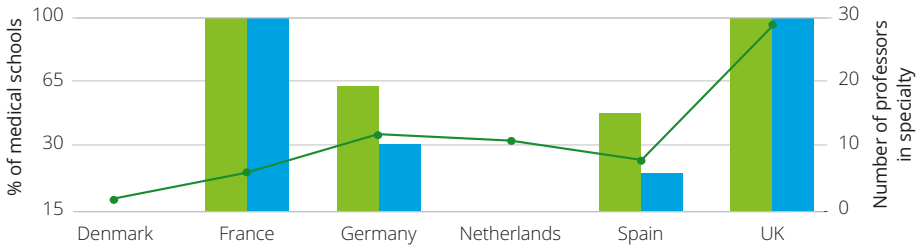
Figure 24. Extent to which countries have developed palliative care home care teams



Source: Deloitte research and analysis; Coverage and development of specialist palliative care services across the World Health Organization European Region (2005-2012): Results from a European Association for Palliative Care Task Force survey of 53 countries, Palliative Medicine, 2015

Figure 25 shows that the UK and France have mandatory teaching of palliative care in all medical schools. The UK has the highest number of professors with palliative care as a specialty.[56]

Figure 25. Palliative care in medical education and academic workforce



- % of medical schools with mandatory undergraduate palliative care teaching
- % of medical school with optional undergraduate palliative care teaching
- Number of professors in palliative care (full, assistant and others)

Source: Palliative Care Medical Education in European Universities: A Descriptive Study and Numerical Scoring System Proposal for Assessing Education Development, Journal of Pain and Symptom Management, 2015

Note: Reported numbers for universities with undergraduate palliative care teaching in Denmark are zero. Data for Netherlands are not available.

Good practice examples in palliative and end-of-life

Meeting the wishes of people at the end of their life

Patient portrait: Urwin, who has end-stage lung cancer

Urwin lives in the UK, is 64 years old and is dying of lung cancer. Following an exacerbation in his condition, his wife, Lynn, rang the Ambulance Service for assistance and it automatically flagged up on their computer screen that he had a Coordinate My Care (CMC) record in place. Even as the call handler was talking to Lynn, the crew in the ambulance knew the diagnosis and the prognosis of the patient. The plan also told them about Urwin's preferences and that he was under the care of a palliative care team and did not want to go to hospital. When the crew arrived, they found Urwin was experiencing high levels of distress; Lynn told them he did not want to go to hospital, as per the plan. With telephone support and direction from the palliative care team, who were also on their way, the ambulance crew administered midazolam to reduce Urwin's agitation and quickly settled him as he continued to weaken, his wife and an ambulance crew member held his hand until he peacefully died. The palliative care team arrived 10 minutes later but stayed on to care for and support Lynn and her family.

Case example 16. Empowering the palliative care workforce in the UK through standardised training programmes

Enabling people to live well until the end of their lives is important wherever the individual lives, including those spending their remaining days in a care home. In the UK about a fifth of deaths occur in care homes. While many receive a high standard of care, standards can be inconsistent, leading to overuse of emergency services and unwanted hospitalisation. Delivery of high-quality end of life care is dependent upon an effective, skilled and knowledgeable workforce. The UK's 'Gold Standard Framework Care Home (GSFCH) Training Programme' is a systematic, evidence-based approach to optimising care for all patients approaching the end-of-life. It is based on a well-evidenced quality improvement programme and accreditation process, endorsed by Care Home organisations, the Department of Health, the End-of-Life Care Programme and England's quality regulator, the Care Quality Commission. Since its launch in 2004, staff in over 2,500 care homes have been trained, with up to 200 care homes a year accredited. Evaluations show:

- improvements in quality of care experienced by people. For example, 100 per cent of residents are offered an advance care plan discussion
- confidence and competence of staff – staff confidence levels increased from 24 to 28 per cent
- reduction in number of hospital admissions in the last 6 months of life from 44.4 to 12 per cent, and a 58 per cent reduction in length of stay in hospital
- 50 per cent decrease in hospital deaths of residents in GSFCH homes – 13 per cent compared to 28.1 per cent
- 75 per cent of first time GSF accredited homes achieve above 80 per cent home death rates with care homes that have undergone a third round of accreditation having home death rates averaging 90 per cent.[57]

Case example 17. Enhancing standard of care through new clinical guidelines in Germany

In 2011 one in every fourth death in Germany was due to cancer. Alongside comprehensive oncological management, integrating palliative medicine into the care of cancer patients plays a vital role in attaining the German 'S3 Guideline on Palliative Care of Adult Patients With Incurable Cancer'. This guideline was developed under the leadership of the '*Deutsche Gesellschaft für Palliativmedizin*'. The guideline development group's aim was to systematically gather and assess the scientific evidence relating to seven aspects of palliative medicine and formulate recommendations to help maintain the best possible quality of life for cancer patients. They concluded:

- opioids are the drugs of first choice for severe and moderately severe cancer-related pain, and for breathlessness
- depression should be treated even in patients with a short life expectancy
- communication skills are an essential component of palliative care and play a major role in conversations between the physician and the patient about the diagnosis, prognosis, and patient's wishes
- when the dying phase begins, tumour-specific treatments should be stopped.[58]

Case example 18. Integrated models for palliative care in Spain

The 'New Health Foundation' was established in February 2013 as a not-for-profit organisation devoted to exploring and promoting new models of care for people with advanced chronic conditions and in need of palliative care. Based in Seville, the Foundation works in three areas: developing high-quality palliative care networks and resources, including:

- 'NewPalex', a tool to develop programmes and organise palliative care teams in integrated networks. Applicable to both large territories and small organisations, and currently being implemented in various settings in Spain and Latin America
- integrating health and social care services (through the Spanish Observatory on Integrated Care Models (Observatorio de Modelos Integrados en Salud)
- rolling out the 'Compassionate Communities and Cities' 'Todos contigo' ('We are all with you') project, which aims to increase public awareness and involvement through collective learning networks.

In 2015 its founder, palliative care physician *Emilio Herrera*, was awarded the European Journal of Palliative Care (EJPC) Palliative Care Policy Development Award.[59]

Case example 19. Innovative communication tools for end-of-life care in the UK

In 2014, the HELIX Centre for Design in Healthcare (a partnership between Imperial College London and the Royal College of Art, with a design team embedded in St Mary's Hospital Imperial College London) developed a suite of simple and intuitive communication aids (a mobile app, posters and leaflets) for healthcare workers to use to embed good practice in the care of dying people. These simple tools (now used across the NHS) articulate basic principles and practices for practitioners to have on hand in their day-to-day work. The research conducted in developing these communication tools demonstrated that there is further potential to use technology and design to develop a suite of products to support healthcare workers as they care for patients at the end of their lives. Other initiatives include the HELIX team redesigning a refresh of the 'Do Not Attempt Cardiopulmonary Resuscitation' form and launch of an end-of-life care design challenge.[60]

Case example 20. A new national plan for palliative care and end-of-life care in France

In December 2015, the French Health Minister announced a new national palliative care plan 2015-18, comprising 14 measures and 40 defined actions. The central aim was to engage the public, palliative and non-palliative healthcare professionals, carers, volunteers, providers and payers in redesigning the country's approach to end-of-life care. New funding of €190 million is targeted on four main areas: improving patients' rights and participatory decision-making; developing community-based care; addressing regional inequalities of access; and improving training of healthcare professionals in palliative care. A particular emphasis will be on having timely conversations about advance care directives, guided by the French Palliative Care Society, creating 'life projects' to record the wishes of terminally ill patients and their families and making them available to all professionals involved in their care. The national plan encourages 'hospital at home' structures of care, building on closer collaboration between palliative care teams and social care, GPs and hospital departments. It also recognises the need to reduce the wide variation in access to services by creating 30 new mobile palliative care teams (currently 414 teams); six new palliative care units and additional funding for palliative care beds in hospitals. A new organisation was established in January 2016, the '*Centre National des Soins Palliatifs et de la Fin de Vie*', to centralise surveys and prioritise research studies in palliative care. It will also conduct a national campaign to inform people of their rights, especially around advance care directives and use of advocates for people who are no longer able to express their wishes themselves.[61]

What next for palliative and end-of-life care?

Effective end-of-life care requires collaborations and partnerships

Free access to effective end-of-life and palliative care is a human right. As European countries struggle to cope with rising healthcare costs, palliative care could be a more cost-effective way of managing the needs of an ageing population. Shifting from strictly curative health interventions to more holistic management of pain and symptoms has been shown to reduce costs and improve the patient experience. Although the UK, with its comprehensive national policies, extensive integration of palliative care into its NHS and a strong hospice movement, is the top-performing country out of the 80 countries in the EIU Quality of Death Index, numerous national surveys and reviews indicate wide variation in services across the UK.[68] Indeed, our research found wide variations in availability and quality of services across our cohort countries and a need for all countries to improve the availability and quality of care, community engagement, and the knowledge and skills of staff.

Key enablers of good palliative and end-of-life care:

Systems and processes

- a comprehensive palliative and end-of-life care strategy and national palliative care development plans, including an agreed set of outcome measures on the quality, effectiveness, efficiency and availability of palliative care; information about the percentage of people who are supported to die in the place of their choice and programmes for the collection of Patient Reported Outcome Measures (PROMs)
- innovative approaches to providing and funding care
- campaigns that encourage conversations about death and dying and raise public awareness of palliative care, including engaging local communities (community assets), for example the UK's Dying Matters Coalition campaign[62] and the Death over Dinner[63] and Death Cafes[64] initiatives in the US
- adoption of the WHO Model List of Essential Medicines[65], including comprehensive access to opioid analgesics and other classes of drugs suitable for control of symptoms in the final days of life
- promotion of advanced care planning, and advance care directives, so that people's end-of-life preferences are known and communicated
- consultant-approved acute care plan containing expected date of discharge and clinical criteria for discharge partnering agreements with social care (and voluntary sector) to support discharge planning and reduce re-admissions
- remote patient monitoring as a viable alternative to keeping low-acuity patients in hospital
- standardising the types of and price paid for equipment and disposable resources.

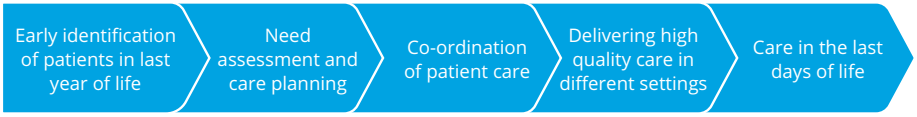
Workforce

- staff education and training to increase confidence in having conversations on end-of-life care at the earliest opportunity. Regular clinical assessment of patient needs; agreement of an end-of-life care plan and allocation of resources to enable people to die in the place of their choice (often their own home)
- mandatory training for all health and social care professionals in care of the dying, including ways of communicating and listening effectively, and understanding the emotional needs of the dying and their families
- E-learning training modules for staff and volunteers working in local communities.

Technology

- use of interoperable EHR (or its equivalent) to record the wishes of dying persons, including funeral and last will and testament arrangements. Examples include Patients Know Best©[66] and Coordinate my Care[67]
- telehealth and digital health technologies to improve 24/7 access to support, information and advice on end-of-life care
- accessible information for the public, patients and their families, about end-of-life care choices and availability.

Figure 26. An effective end-of-life care pathway



Source: Transforming care at the end-of-life – Dying well matters, Deloitte Centre for Health Solutions, 2014[68]

5. Patient engagement and empowerment

People who are engaged in their own health have better outcomes

Definitions of the term 'patient engagement' vary widely. Patient engagement is not just concerned with communication and education, it is also about developing individuals' knowledge, ability, and willingness to manage their own and their family's health and care. It requires healthcare organisations to prioritise and support patients and carers to engage in decisions about their treatment, and involve them in collaborating on designing, managing and achieving positive health outcomes. No health system can be sustainable without engagement with patients and carers, and there are advantages to be gained from training patients (and where relevant their families) in how to engage. Patient engagement is an essential strategy for achieving the 'triple aim' of health systems: improving the experience of care, improving the health of the populations and reducing per capita costs of healthcare.

"If patient engagement were a drug, it would be the blockbuster drug of the century and malpractice not to use it." Leonard Kish[69]

What does good look like?

There is no such thing as an average patient and each patient will have different preferences for how they want to engage in understanding and managing their own health and well-being. For any health condition there will be individuals with limited health literacy and understanding of how to improve their health; ones who are highly engaged in their own health; and ones who belong to well-organised patient advocacy groups and patient associations. There will also be people who proactively search the Internet for information and advice, while others lack the ability or will to engage. Accordingly, healthcare providers need to employ a range of engagement strategies and activities.

The key elements of good patient engagement and empowerment

Patient engagement as a national strategy for a sustainable health system includes:

- changing the basic starting point for healthcare legislation, by expressing laws on healthcare in terms of the rights of individuals/patients
- providing government funding for programmes to improve and evaluate progress on health literacy and engagement.

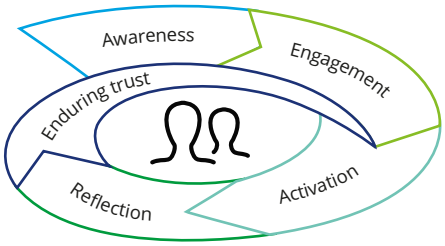
Providers with systems processes and interventions for delivering effective patient engagement, includes:

- defining the organisation's vision for patient engagement
- having an investment plan, that incentivises staff to work in partnership with the public, patients and carers in developing and implementing key engagement and patient activation initiatives
- identifying opportunities for adopting new channels and approaches to engaging people in improving their health and well-being, such as establishing a patient portal
- empowering clinicians to create a culture of trust with regard to patient engagement
- empowering patients to become collaborators/co-producers of their own care
- monitoring progress and responding to feedback (look, listen and learn).
- deploying appropriate technology and services to facilitate effective engagement.

Equipping health and care staff with the skills to improve engagement in their own and their family's health includes:

- encouraging use of approved tools, such as the Patient Activation Measure, to identify individuals' skills, confidence and knowledge to manage their own and their family's health
- providing staff with information and data to help staff target initiatives, such as education and training programmes, to increase engagement levels and improve individual's ability, and willingness to manage their and their family's health
- enabling people to access their own health records and provide them with support to understand and navigate them
- collaboration between patients and providers in designing, managing and achieving good health outcomes
- recognising that patient engagement strategies and action plans are critical for the life sciences industry
- helping innovations to become better solutions, not just better drugs or vaccines
- helping to improve the efficiency of clinical trials by improving recruitment, retention and adherence.

Figure 27. Patient engagement forms lasting partnerships between individuals and healthcare professionals

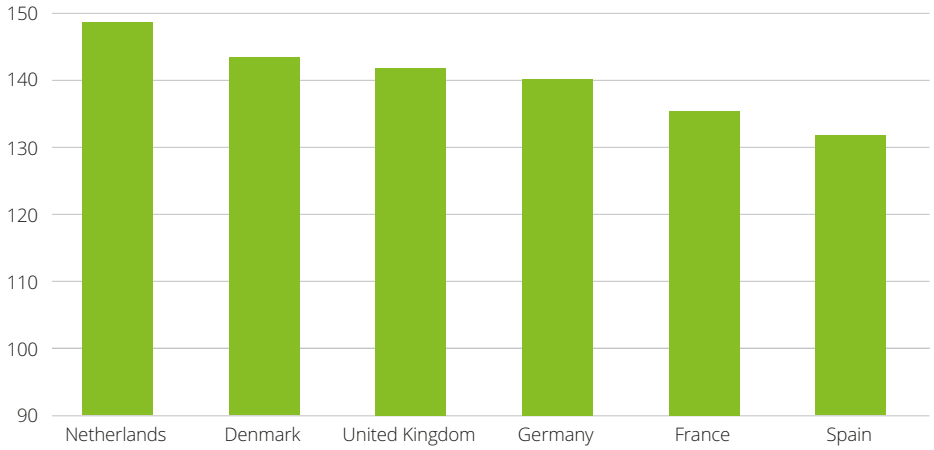


Source: Deloitte Centre for Health Solutions' Research, 2016

Patient engagement metrics

Figure 28 shows the Health Consumer Index 2015 scores in the category 'patient rights and information' that Deloitte is using to obtain some comparative assessment of the degree of engagement patients have with the health system. This score comprises 12 indicators (for example the existence of laws on patient rights, access to own medical record, availability of provider quality rankings, and 24/7 access to healthcare information via web or telephone line). The Netherlands has the highest score on this index.[70]

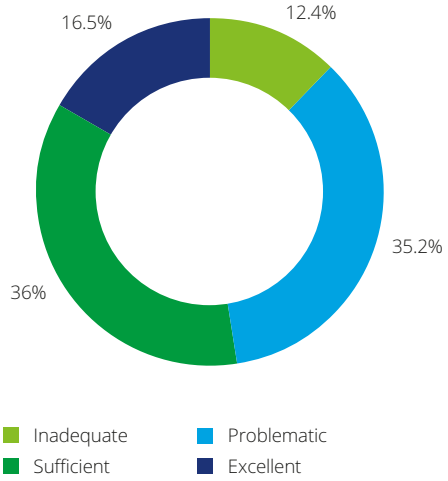
Figure 28. Health Consumer Index score on patients' rights and information (score out of 150)



Source: Euro Health Consumer Index 2015, Health Consumer Powerhouse Ltd., 2016

Figure 29 shows that the percentage of Europeans reporting inadequate and problematic health literacy is 12.4 per cent and 35 per cent respectively. Patients and the public in general need an appropriate level of health literacy to access and use health and social care information and services. Low levels of health literacy can prevent people from understanding the diagnosis they have been given and can also lead to treatment errors due to misunderstandings about medication instructions.[71]

Figure 29. Average EU general health literacy (% of population)

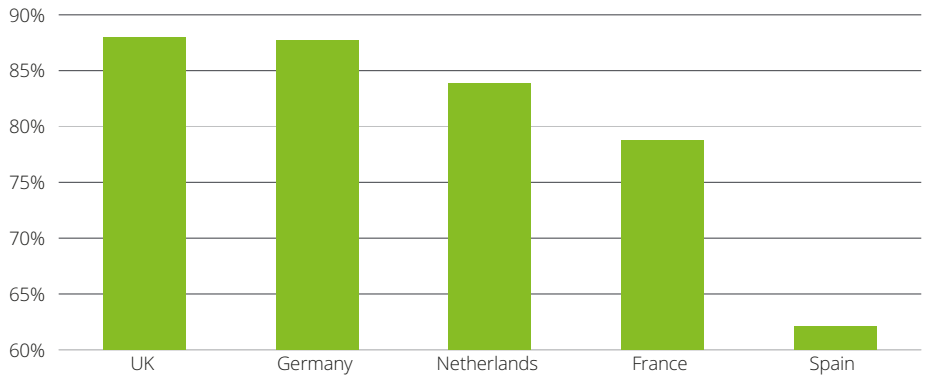


Source: Health literacy in Europe: comparative results of the European health literacy survey (HLS-EU), European Journal of Public Health, 2015

Improving health literacy and activating patients

Figure 30 shows that patients in the UK and Germany are most likely to consider themselves involved in decision-making about care and treatment. Patient involvement in healthcare decision-making has been linked to higher patient satisfaction, more informed patients and better adherence to medicines and control of chronic disease.[72]

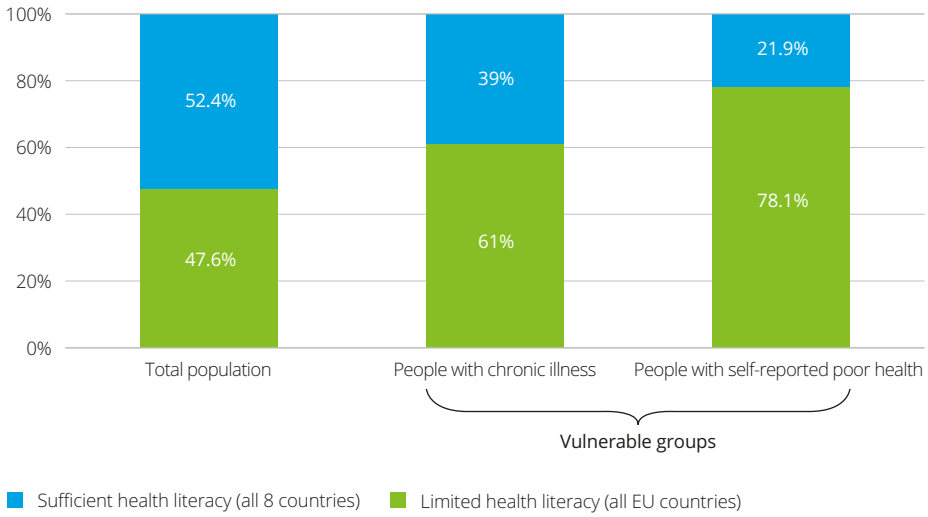
Figure 30. Percentage of patients reporting regular involvement in decisions about care and treatment (2013)



Source: Patient experience with ambulatory care, OECD, 2016

Figure 31 shows the results of a survey based on responses from 7,795 adults across eight European countries. Results show that people who report themselves to be in bad health or have more than one long-term condition are also more likely to report limited health literacy.[73]

Figure 31. Health literacy in different patient groups across eight countries in Europe



Source: Health literacy in Europe: comparative results of the European health literacy survey (HLS-EU), European Journal of Public Health, 2015

Note: Countries included in study were: Austria, Bulgaria, Germany, Greece, Ireleand, the Netherlands, Poland and Spain (n = 1000 per country, n = 8000 total sample).

Good practice examples on patient engagement

Designing services around the patient

Patient portrait: Sofia, who has been diagnosed with breast cancer

Sofia is 44 and lives in Spain. Her doctor found a small lump during a routine physical and referred her for a mammogram. Sofia subsequently had to undergo an ultrasound and needle biopsy, but it wasn't until she was introduced to a nurse navigator that she realised her medical team thought she had cancer. The cancer diagnosis was a Stage 1, Grade 2 tumour and although small, was somewhat aggressive. Her medical team suggested chemotherapy. Sofia had to quickly decide whether to have a lumpectomy or full mastectomy and agree which treatment plan she wanted to pursue. She sought information from a variety of sources, met with her surgeon, collected advice from other breast cancer survivors and researched online to assist her decision-making process. She was totally overwhelmed by the extent of information available. She ultimately decided to have a lumpectomy, intraoperative radiation and chemotherapy. Sophia was terrified at her first treatment but knew, from her research, that she had to conquer her fear and although the chemotherapy was hard on her body, it wasn't as bad as she had expected. The number of people who didn't mention her cancer surprised Sofia. She understood that people often don't know what to say so they say nothing, but now that she's experienced cancer she has a better idea of what to say to someone facing a cancer diagnosis, and hopefully provide support.

Case 21. A framework measuring patient engagement in the UK (adopted from research in the US)

The 'Patient Activation Measure (PAM)®' provides a means of assessing engagement for research or intervention purposes. It specifies four stages of patient engagement: (1) believing the role of the patient is important; (2) having the confidence and knowledge to take action; (3) taking action to maintain and improve one's health; (4) staying the course even under stress. Research underpinning the development of the PAM® shows that patients with the lowest activation scores have the least confidence and ability to engage in their own healthcare and that this is directly linked to health outcomes. For example, people who are more activated are significantly more likely to attend screenings, have check-ups and immunisations, adopt positive behaviours (such as diet and exercise), and have clinical indicators in the normal range (body mass index, blood sugar levels (A1c), blood pressure and cholesterol). Research shows that less activated patients have a two- to three-fold risk of having unmet medical needs, most likely due to reduced capability to communicate with healthcare professionals over symptoms and treatments. A large US study including more than 25,000 patients demonstrated that, for every ten additional points of a PAM® score, the probability of visits to emergency services was one per cent lower than for less activated patients and cost between eight and 21 per cent more than patients with the highest activation levels. The application of the PAM® framework in the UK includes planning and monitoring activities to enhance patient engagement and risk stratification, to assess the needs of vulnerable subgroups within local health economies.[74]

Case example 22. How self-management is improving outcomes for patients with chronic conditions in the UK

Initially launched in 2002 as a government programme known as the 'Expert Patients Programme', in 2007, 'self management uk' was re-branded as a charity, responsible for providing generic and disease-specific programmes for patients with long-term conditions. 'self management uk' programmes are mostly based on self-care groups led by patient peers with weekly three hour sessions. Outcomes include an improvement in self-rated health, reduction of health distress, pain and fatigue and an increased notion of self-efficacy. The programme has also been shown to reduce emergency attendance and improve adherence to therapeutic regimes resulting in an estimated saving of £1,400 per patient per year. The charity has launched a flexible, online course comprising seven modules helping to increase accessibility for patients with mobility difficulties and those living in rural areas. Further specialist programmes are targeted at carers, including a bespoke course for young carers and healthcare professionals. There is also an X-PERT Diabetes Programme which has been formally evaluated as significantly improving clinical, lifestyle and psychosocial outcomes (estimated as saving the NHS £367 million per annum.[75]

Case example 23. The pharmaceutical industry's performance in meeting patient group expectations

'PatientView' is a UK-based research organisation that, among other things, surveys patient-advocacy groups worldwide on the key challenges facing the industry. Its annual survey of 'the Corporate Reputation of Pharma', considers the extent to which pharma companies are meeting the expectations of patients and patient groups. It identified 2015 as a watershed year for pharma's investment in its relationships with patient groups and in developing person-centric health activities. It found that many of the major pharma companies had announced new strategies to expand their approach to patient centricity and, as a result, the pharma industry's corporate reputation has improved. Imaginative patient partnerships were mentioned as the reason for the positive response. Nearly 48 per cent of the 1,075 respondent patient groups stated that pharma had an "excellent" or "good" corporate reputation in 2015, compared with 34 per cent in 2012 (28 per cent believed the industry's corporate reputation had improved during the year). The main reason for the more positive feedback was pharma's ability to produce high-quality products of value to patients (72 per cent felt the industry as a whole was excellent or good at producing high-quality products). However only 15 per cent thought that pharma was excellent or good at having fair pricing policies. Patient groups in our cohort with the least positive view of pharma were in France, Germany, and the Netherlands, whereas Spain and the Nordics had the most positive responses.[76]

Case example 24. The 'National Alliance for Health Literacy's' approach to patient participation in the Netherlands

The National Alliance for Health Literacy was created in 2010 and brings together more than 60 member organisations from patients to providers, insurers, academia and industry. Its aim is to advocate for health literacy in the daily operations of all institutions.

Specifically:

- to encourage clients and patients to obtain higher levels of literacy by taking courses and joining (online) training programmes;
- to support health professionals in recognising and addressing health literacy issues in patients, in order to plan adequate treatments;
- to make written, digital and oral communication in healthcare understandable for everybody.

The European Consumer Index 2015 considers the Netherlands to have the best and most structured arrangements for participation by patients and patient organisations in healthcare decisions and policy-making in Europe.[78]

Case example 25. The 'European Patients' Academy's' cross-European initiative to enhance patient cooperation in planning for R&D

The 'European Patients' Academy on Therapeutic Innovation' (EUPATI) was launched in 2012 under the 'Innovative Medicines Initiative' (IMI). It is intended to provide scientifically reliable, objective, comprehensive information to patients on medicines research and development. It also aims to equip well-informed patients and patient organisations to be effective advocates and advisors in medicines research (including in clinical trials, with regulatory authorities and ethics committees). Supported by a public-private initiative between the European Union and the European Federation of Pharmaceutical Industries and Associations (EFPIA), EUPATI focuses on educating and training patients and patient representatives across Europe. It provides a 14-month online 'Patient Expert Course' supplemented by two face–to-face training sessions. Its first cycle, involving 55 participants, ran from October 2014 to December 2015 and the second cycle, involving 50 participants, was launched in September 2015 and concludes in November 2016. In addition to the training courses, the national member platforms offer a variety of web-based educational tools on medicines development and an internet library aimed at supporting patient advocates across Europe.[79]

What next for patient engagement and empowerment?

Improving health literacy and activating patients

Deloitte considers that effective patient engagement is crucial for the achievement of a sustainable and cost-effective health system. However, patient engagement is dependent on health literacy and people having the appropriate knowledge and confidence to evaluate and navigate healthcare. Poor health literacy can prevent people understanding the diagnosis they have been given and can also lead to treatment errors due to misunderstanding medication instructions. Engagement is the notion that patients and carers are actively involved in the process of care, processing information, deciding what types and timing of treatment would fit best with their lives, and acting on their decisions. The countries in our cohort that appear to have made the most progress in creating a culture and environment for effective patient engagement are the Netherlands and UK.

Key enablers of patient activation and engagement

Systems and processes

- a clear vision and a strategy for each organisation's approach to patient engagement
- a culture that prioritises and supports patient engagement
- use of patient activation measures to assess patients knowledge and skills
- formal channels for involving patients in the design, management and achievement of positive health outcomes
- processes to chart progress on patient engagement which can be quickly adapted for example using surveys to collect feedback, including feedback on patient reported outcome measures (PROMs)
- improve health and well-being through peer support, self-management education, health coaching, and group activities
- encourage patients to join relevant patient groups, use patient portals and social media.

Workforce

- training in the use of patient activation measurement and in assessing levels of patient engagement
- support to develop confidence in identifying and responding to individuals' preferences for learning, and when and how to use traditional communication methods, such as clinician information and printed materials
- skills in use of interactive technology and automatic information-delivery methods
- confidence to empower patients and give them a greater sense of control over their care without them feeling overwhelmed by too much information.

Technology

- employing the right technology and services to empower patients to become collaborators in their own care
- developing a hospital consumer app, in partnership with users, which has focus, is simple to navigate and use, and helps staff and individuals be more productive. A bespoke hospital mobile app should also create a more consistent patient experience for patients and visitors by:
  - helping them to navigate their journey to the hospital and throughout the facility
  - providing individuals with convenient and personalised appointment reminders
  - providing value-added content to enrich engagement and enable more productive waiting
  - enabling 24/7 access to hospital and other health-related information
  - sending prescription reminders and support to facilitate patient compliance with treatment plans
  - simplifying contact features, such as direct email inquiries and departmental contact lists
  - engaging individuals in patient feedback surveys
  - sending appointment reminders.

Figure 32. Levels of patient engagement

Starting to take a role	Building knowledge and confidence	Taking action	Maintaining behaviours
Individuals do not yet grasp that they must play an active role in managing their own and their families health. They are content to be passive recipients of care.	Individuals still lack the basic health-related facts or have not connected these facts into understanding how their behaviours impact their health.	Individuals have the key facts and are beginning to take action but lack confidence and the skill to improve their own and their families behaviours.	Individuals have adopted new behaviours but may need support to maintain them in the face of stress or health crises.

Increasing level of patient activation

Source: Supporting people to manage their health, King's Fund, 2014[74]

6. Population health management

Improving whole person health today and tomorrow

'Population health' is a term that is increasingly used in healthcare, but is still not universally understood. The goal is to improve the collective physical and mental health status of a defined group of the population. Population health management means assuming responsibility for improving the quality of care and outcomes of that defined population (whether demographic, clinical diagnosis or geographical) and being accountable for those outcomes within an agreed cost envelope. It involves transitioning care delivery to a model that is value-based and includes better case management of patients with multiple co-morbidities, partnering in care delivery with other providers, managing use of resources more efficiently, adopting standardised care pathways and caring for patients in the most appropriate setting. PHM is intended to help address the challenges in matching healthcare demand to supply and tackle the emerging gaps in health inequalities, care delivery and funding that exist in most European countries.

"We are moving away from a time that largely concentrated on the delivery of commodities to a time focused on the building of capacities in health systems." Dr Margaret Chan, Director-General of the WHO.[80]

What does good look like?

PHM targets specific chronic conditions and diseases and balances intensive care management for individuals at the highest level of health risk with personal health management for those at lower levels of predicted health risks. Accountability for a population's health is shared across relevant organisations and communities, with interventions targeted at addressing the underlying social, economic and environmental determinants of health across the population. PHM can only be accomplished through a combination of (1) behaviour change, which has to be promoted in a tailored manner, using an array of appropriate tools and communication; and (2) evidence-based medicine focused both on prevention and treatment of injury and disease and on improving function and well-being for individuals in the defined population.

The key elements of good PHM

A compelling vision and strategy for collective care, underpinned by strong clinical and managerial leadership and robust clinical and financial governance, consisting of:

- joint working and collaboration between agencies and across different sectors
- accurate risk stratification of the defined population, using pooled data
- value-based payment models that pay for outcomes (e.g. capitation, population or clinical pathway-based budgets)
- standardised processes and pathways
- patient engagement and involvement in mapping of community assets, community-wide education campaigns and the design of local health delivery services.

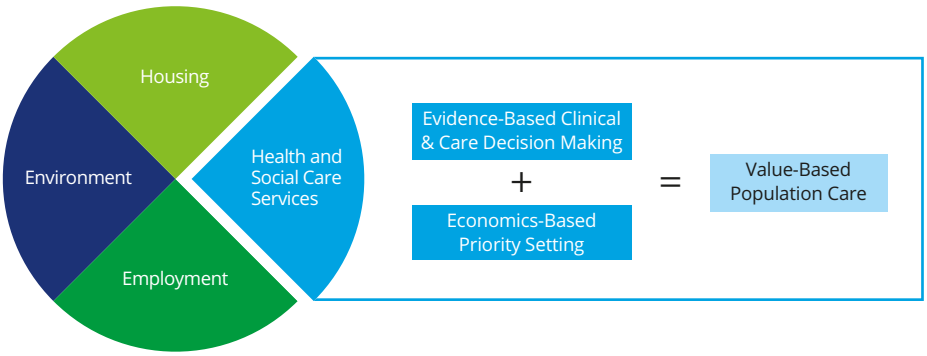
A risk stratification-based approach which requires providers and payers to:

- use actuarial skills to identify the cost base of the entire clinical pathway and for different segments of the population
- target intervention to the populations that have the biggest impact on outcomes and cost
- assign accountability to manage all aspects of care for a specified population of patients
- integrate care across the full continuum of the services (prevention, primary and acute care, chronic care, rehabilitation and end-of-life care).

A workforce willing to adopt new ways of working:

- clinical leadership that is based on collective and collaborative accountability for patients
- recruitment and retention policies that attract appropriately skilled and adaptable staff
- a multi-disciplinary approach to staff training and development that incentivises collaborative working
- understanding the benefits of technology-enabled care strategies, and appropriate use of digital technology.

Figure 33. Population health management

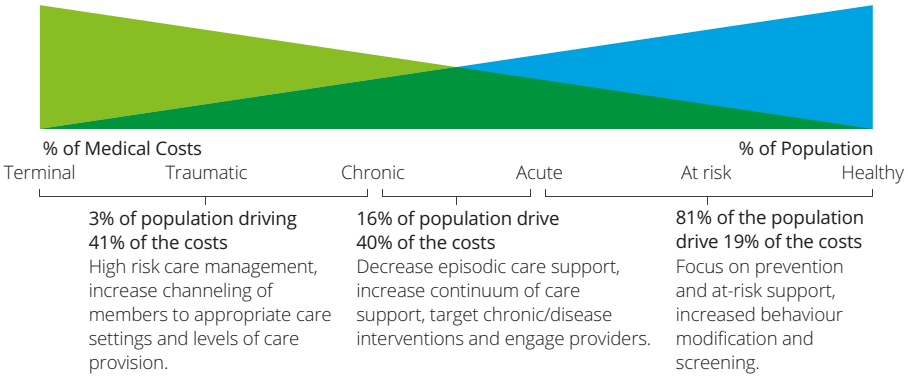


Source: Deloitte research and Analysis, 2016

Population health management metrics

Figure 34 shows that patients with complex co-morbidities (highest risk patients) use the largest proportion of resources. An important part of a population health management approach is risk stratification and assessments on in-country unwarranted variation to identify how best to target finite healthcare resources.

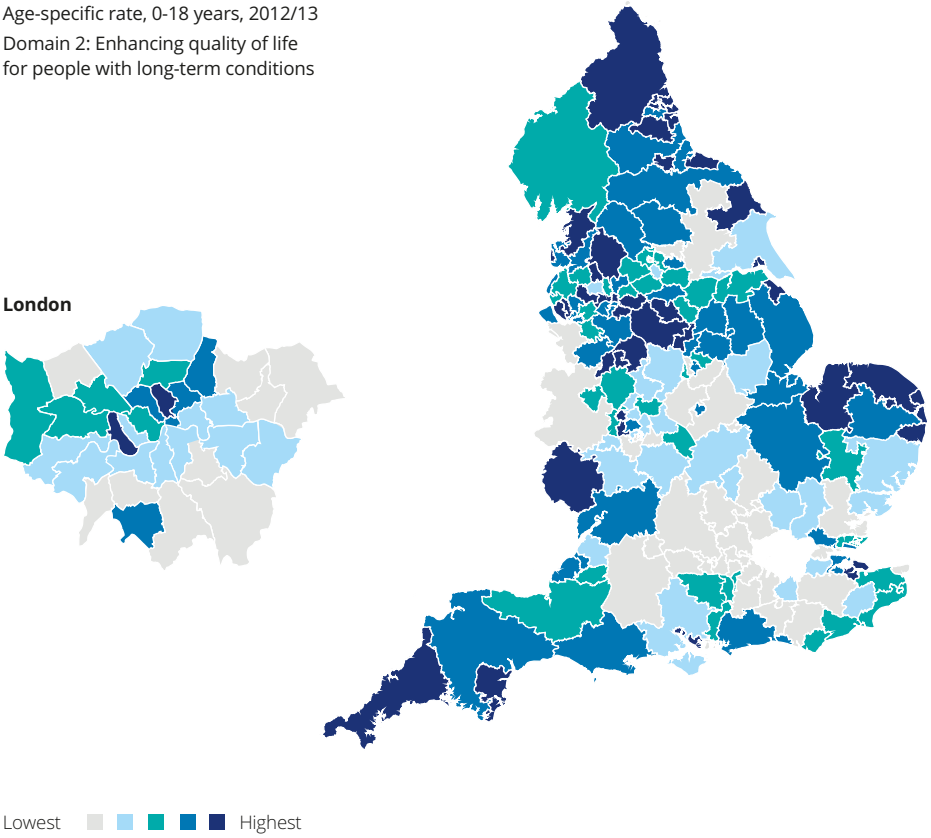
Figure 34. Model of population health management for a typical urban population



Source: Deloitte research and analysis, 2016

Figure 35 from the English NHS Atlas of Variation in Healthcare 2015, shows a 5.3-fold variation for hospital admissions due to mental health problems for children and young people. A key reason for this is the variation in provision of and access to ambulatory care services. Taking a PHM approach could allow for a reduction of these healthcare inequalities and of overall expenditure (see case example 26).[81]

Figure 35. Rate of children and young people aged 0-18 years with three or more admissions to hospital per year for mental health problems per population by Clinical Comissioning Groups (CCGs) in England



Note: CCGs are Clinical Commissioning Groups in England who are responsible for commissioning services for their local population.

Source: The NHS Atlas of Variation in Healthcare, 2015

Risk stratification to allow more targeted solutions

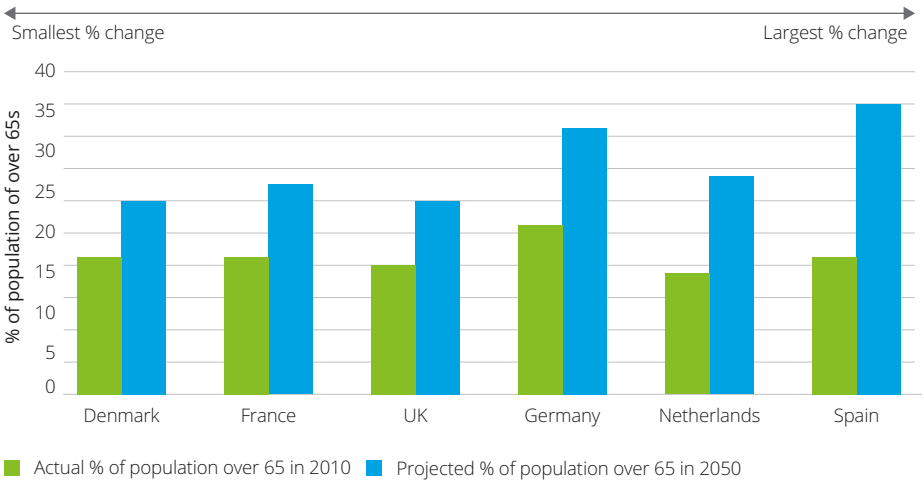
Figure 36. Demand for healthcare resources is unevenly distributed between patient groups and disease classes and better managing the most resource intensive populations using a PHM approach has many advantages

Circulatory diseases (such as strokes and heart attacks) account for **more than 10% of current health expenditure** as well as the largest share of inpatient and pharmaceutical spending.	**Dental care** accounts for **5%** of all health spending – and for a fifth of all outpatient spending.
Circulatory, digestive and muscular conditions together with cancer and mental health account for almost **60% of current health spending.**	**Women** account for **56% of health spending**, with higher expenditure on mental health (e.g. depression and dementia) and musculoskeletal conditions (e.g. arthritis and back pain).
Mental health accounts for up to **14% of health spending** and the share is growing.	Per capita health spending is **highest among the very old** with as much as a six-fold difference between those aged over 85 and those aged between 55 and 59 years.

Source: Focus on Health Spending-Expenditure by disease, age and gender, OECD, 2016[82]

Figure 37 shows the extent to which the population over 65 is projected to change between 2010 and 2050. Spain is predicted to have the greatest percentage change in its population of over 65s, expected to grow from 17 to 36 per cent of total population. Together with the increase in average per-capita healthcare spend associated with older people, this highlights the importance of targeted population health approaches to improve quality and control health care spending.[4]

Figure 37. Actual and projected % of population over 65



Source: Health at a Glance 2015, OECD, 2015

Case examples on population health management

Improving the collective health of defined groups of people

Patient portrait: Gerrit has been diagnosed with schizophrenia

Gerrit is 23 years old and lives in Germany. He has recently spent the last three months in an acute psychiatric hospital following a fifth acute psychotic episode of schizophrenia. As part of the hospital's discharge planning process, he was encouraged to sign up for the coordinated care programme offered by his insurance company. This involved twice-weekly visits from his specialist psychiatric nurse and daily access to his neighbourhood psycho-social centre. His social worker visited him pre-discharge to coordinate appointments with a psychotherapist and psychiatric specialist and a family medicine member of the network. His doctors have helped him understand his disorder and the reasons for the symptoms of metabolic syndrome he experienced under his current medication. Gerrit has enrolled in physiotherapy and sports classes at the psycho-social centre. His regular visits are encouraged by both his psychiatric nurse and social-worker. He has now lost weight and his test results have also improved. Gerrit and his family are now confident that any concerns about a relapse or side-effects of his medication will be identified quickly and addressed jointly by his integrated care team.

Case example 26. The 'THRIVE' model of PHM for mental health services in the UK

The 'THRIVE' model, developed by the 'Anna Freud Centre' and The Tavistock and Portman NHS Foundation Trust, is transforming the way that mental health services for children and adolescents are conceptualised. It delivers, reviews and adapts its approach in response to performance outcomes. It is based around a concept of population health management – grouping sub-populations of young service users and their families in accordance with their need for mental health services. Ranging from anticipatory and well-being community interventions to crisis response and extensive specialist treatment. Each of the service clusters is matched to a distinct set of resources and skills according to needs. There is a clear distinction between treatment and support, self-management and intervention, rather than around the notion of severity or type of problem. The approach sets out to address the shortcomings of traditional approaches to children and adolescent mental health services, where long waiting times and insufficient focus on outcomes means that generally only 33 per cent of service users achieve full recovery by the time their treatment ends. It includes a more targeted funding and performance management system, better allocation of service provision and a better alignment with emerging payment systems. The model has recently been redesigned as a model of care for implementation ('i-THRIVE') and has been selected to be a national 'NHS Innovation Accelerator' with 10 sites across England now working to implement this model.[83]

Case example 27. Integrating health and care services in Germany: Gesundes Kinzigtal (GK)

GK is a joint venture between physicians and a Hamburg-based healthcare management company. It is responsible for organising care and improving the health of half the 71,000 population in Kinzigtal. Since 2006 GK has held long-term contracts with two German not-for-profit sickness funds to integrate health and care services for their insured customers. About one-third of the defined population has enrolled free of charge in GK. Enrolment gives access to health improvement programmes, including targeted care management and prevention programmes for high-risk population groups (older people, those in nursing homes and those with a high body mass index). Health professionals are trained in shared decision-making and have access to a system-wide integrated EHR, for effective coordination of care. GK runs health promotion programmes in schools and workplaces and also for unemployed people. Evaluations have demonstrated improvements in: health outcomes (notably reduced mortality rates); the efficiency of services; and patients and carers' experience of care. Between 2006 and 2010, GK generated a saving of 16.9 per cent compared to its neighbours. In particular, emergency hospital admissions increased by only 10.2 per cent for patients in Kinzigtal, compared to 33.1 per cent elsewhere.[84]

Case example 28. Disease management programmes in Germany

Disease management programmes (DMPs) are a proactive, multicomponent approach to healthcare delivery, integrating care across the spectrum of a disease and its complications, with the intention of reducing the variation of care and improving conformance with evidence-based medicine. DMPs were introduced across Germany, in 2002, following legislation to enable sickness funds to receive additional payments for chronic disease patients if they enrol them in a qualified DMP. Evidence-based treatment guidelines were established by a national panel, including requirements for patient education and restricted medications alongside requirements for mandatory documentation, quality assurance and scientific evaluation. To participate, patients must agree to regular check-ups from their doctors and to adhere to treatment recommendations. The doctors must agree to adhere to the protocols of the programmes and to educate patients about self-care. The programmes provide both patients and doctors with an incentive to participate. For example, doctors are given additional money for each patient they enrol, and co-payments, for example for medication, are lower for enrolled patients. The health insurers also benefit, because their programmes are designed to reduce costs by preventing disease exacerbations and reducing complications. By 2013, there were some 10,501 registered regional DMPs with about 6 million enrolled patients. Since risk adjustment was strengthened in 2009, sickness funds receive only a per-capita administration compensation of €147.87 per year for each enrolled person. Outcomes have been very positive. For example, Germany's diabetes programme has reduced the incidence of complications and has lowered the overall cost of care by 13 per cent. Furthermore, patient satisfaction with treatment has risen markedly, and the small increases in outpatient and pharmaceutical costs have been more than offset by a drop of more than 25 per cent in inpatient costs.[85, 89]

Case example 29. Spain's innovative population health management model, Alzira, Ribera Salud

The Alzira model of care, run by Ribera Salud, was first piloted in the Valencia Region more than ten years ago before being extended to other regions. Under this model, providers receive a fixed annual sum per capita from the regional government for the duration of the contract (usually 15 years). In return it is required to offer free, universal access for the local population to a range of primary, acute, mental health and specialist health service. It is a highly integrated clinical and business model, stretching across primary and secondary care. Incentives for the different providers in the system are aligned across the whole patient pathway to ensure that work is carried out in the most appropriate, and therefore efficient, care setting. An important feature of the model is the use of a unified IT system across all services, with a shared patient record between family doctors and specialists, enabling joint consultations and reducing transaction costs. There is a rigorous management culture requiring compliance with a standardised set of procedures and guidelines. It also offers a range of incentives to encourage staff adherence. Patients are free to go elsewhere for care, thereby costing the provider money, which drives the provider to focus on quality and customer service. Comparing the Alzira model with other hospitals in the region:

- emergency admission rates are 10 per cent compared to 14 per cent elsewhere
- only four re-admissions within three days per 1,000 discharges, compared to six in other hospitals
- day surgery rates of over 73 per cent compared to 50 per cent
- patient satisfaction scores of 9/10 compared to 7/10.

Importantly, it has refocused the entire health system towards population health and admission avoidance.[87]

What next for population health management?

Providing the right treatment to the right people at the right time

Deloitte believes that the adoption of a PHM approach is a 'must do' if people across Europe are to enjoy equitable and sustainable healthcare. This is not simply about integration as it requires a fundamental shift in focus from the individual-level curative approach to one that encourages doctors, hospitals and other healthcare providers to form networks or joint ventures, to coordinate patient care and share financial and non-financial risks and benefits. It also means addressing the broader range of factors that impact the health of a given population. PHM is a fundamentally different economic model of healthcare, based on actuarial analyses and aligning incentives to drive clinical integration and create value. Its focus is on changing behaviours and improving health and well-being. The process of moving to a population-based healthcare model, however, is an evolution that can take up to five years to implement. To date, progress with PHM in Europe has been fragmented, and is at a relatively early stage of development. Some parts of Germany, in mirroring developments in the US, and specific regions in Spain appear to be the most advanced in our cohort.

Key enablers of population health management

Key to PHM is having an integrated, interoperable EHR and using health actuarial skills, analytics and digital technology to facilitate the collection of patient data, develop a clear understanding of the needs of individuals and groups within a defined population. It is also about staff working differently.

Systems & processes

- a population-based lens to develop plans, programmes and interventions that assign accountability for the physical and mental health of a defined population
- new organisational forms that clarify roles, responsibilities and accountabilities on a new collaborative delivery model and which remove historical boundaries between organisations to realise the full potential of all stakeholders
- population-based capitation budgets that align financial incentives with improving population health, and with all provider organisations agreeing shared incentives to deliver optimum value for patients, including parity of funding for mental health and sufficient funding for primary care, prevention and, where appropriate, social care
- risk-based contracts including measures for monitoring clinical performance and cost metrics
- agreeing common/shared quality measures and performance goals across care providers and services
- adopting standardised care pathways and clinical practice guidelines
- integrated approaches to tackle health inequalities through interventions such as housing support, education programmes, employment advice and health promotion activities identified in the prevention 'Vital Sign' of this report.

Workforce

- implementing new place-based leadership models and PHM training modules included in clinical and healthcare professional training courses
- employing people with strong actuarial skills and others with an understanding of behavioural economics is key to cost allocation
- developing collaborative relationships between staff and patients and patient groups. Using patient portals to ensure optimal patient engagement working closely with individuals to support and empower them and their families to manage their health, through supported self-management and improved medication management
- equipping more complex patients with care plans, access to named healthcare professionals and care navigators
- developing an information toolkit to help people manage their own health and well-being.

Technology

- analytical tools that aggregate and segment population level data, to give an accurate picture of the population being served and enable outcomes to be tracked
- electronic health registries with unique patient identifiers (using data from EHRs and other clinical systems)
- integrating analytics and interoperable IT (including EHRs) across the defined population
- using financial modelling tools to assess fund flows and pay for health outcomes, which also promote ambulatory care and keep people out of hospital
- data visualisation tools to help coordinate care across the patient pathway and provide dashboards for clinicians to identify and monitor high-risk patients
- digital technology and devices to increase clinician productivity, improve disease detection and reduce hospital admissions/re-admissions
- sophisticated machine-learning and advanced predictive analytics software models to predict risk at an aggregate population or at a discrete patient level
- data-driven triggers to manage patient relationships proactively, by automating targeted communications to patients in order to ensure regular engagement with care teams and doctors.

7. Partnerships between industry, providers and academia

Collaborating to improve health outcomes and societal wealth

All patients, given a choice, would want to be treated with the latest drugs and medical devices, by clinicians who are at the top of their profession, using the most innovative services in the clinical pathway. Health systems that encourage basic research, translational science and innovative care delivery succeed in serving patients better and delivering better outcomes. Three areas of partnerships between industry, academia and the health system make this possible:

- basic science research, funded by partnerships between governments and industry for the discovery of new treatments, often measured by the number of early patents for drugs, devices and services
- translational research and applied medicine that support the development of new drugs and devices in clinical trials, using investigators and clinicians who are leading academics in their field
- partnering in the development of innovation, not just procuring, aimed at delivering person-centric health services and research to optimise clinical service delivery.

These partnerships create a virtuous circle of excellence, including enabling healthcare to generate wealth rather than be perceived as simply a cost. Industry, academia and health system partnerships, in building a research base, also create key knowledge-based employment. In short, a strong vital sign of a healthy economy is a well-integrated medical research community with trusted partnerships between healthcare providers, academia and industry leading to better health outcomes and a stronger economy.

"A knotty puzzle may hold a scientist up for a century, when it may be that a colleague has the solution already and is not even aware of the puzzle that it might solve." Isaac Asimov.[88]

What does good look like?

A favourable economic environment to drive investment in research that includes:

- a clear vision and strategy for the industry supported by government policies that encourage domestic research and development (R&D), including R&D tax credits, defined bio-medical clusters and life sciences 'enterprise zones' which offer incentives to attract investment, and act as catalysts for new businesses
- direct government investment in R&D. For example through grants and provision of supporting infrastructure
- availability of venture capital funding for early-stage life sciences companies and academic institutions, to help innovation
- alternative sources of funding for research including a dynamic philanthropic environment and a strong charitable sector that focuses on fundraising for research for specific conditions such as cancer, dementia and antibiotic resistance

A strong life sciences academic community, comprising:

- a sense of trust between industry, academia, the health system, government and the public
- high-quality academic institutions, with clinical and basic research academics
- specialised healthcare and life sciences research (with citations in world-renowned medical journals)
- substantial involvement in life sciences R&D – basic and translational research (trials)
- national and multinational R&D collaborations with other academic institutions, and between academia and the private sector
- specialisation in key areas of science, for example genomics.

A strong life sciences industry presence:

- large networked industry presence (measured by the number of global and regional HQs)
- companies of different sizes: ranging from start ups and mid-cap biotechnology companies to large pharmaceutical and medical technology companies
- investment by industry in domestic R&D – from clinical trials to basic research and person-centric service delivery
- internationalised R&D model involving collaboration between countries
- concentration of life sciences in clusters of excellence, where academia and industry work hand in hand.

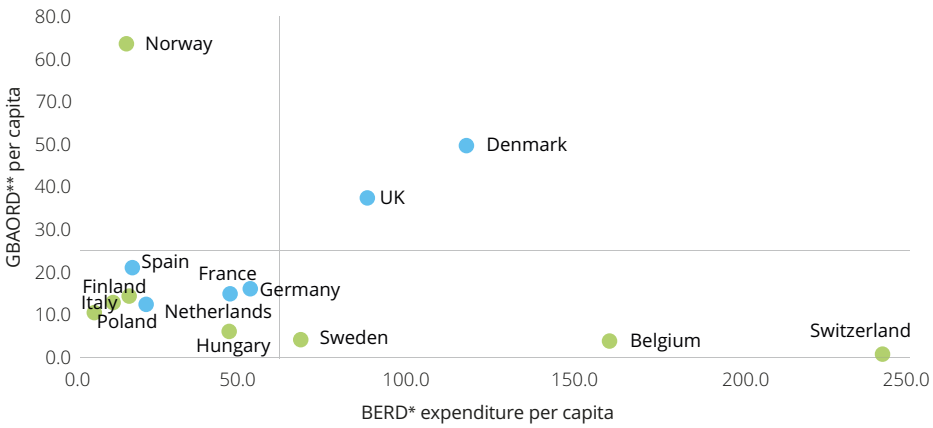
Collaboration in R&D, translational medicine and delivery of healthcare service:

- high-performing healthcare providers collaborating and sharing expertise, risk and reward to enable innovative services and products to reach patients
- healthcare providers that actively prioritise recruitment of patients to clinical trials and support patients to adhere to the regime and remain on the trial
- access to a large, diverse population, in terms of genetics and types of health conditions, for clinical trials and research.

Key metrics on partnerships with industry and academia

Figure 38 compares the level of business and government funding for health related R&D. The UK and Denmark have a higher than average level of per capita business and government investment in healthcare and life sciences R&D. Engagement of government and the private sector is important to create a healthy R&D ecosystem.[89, 90]

Figure 38. Government vs. private healthcare and life sciences research spend (Purchasing Power Standard (PPS), 2014 or nearest year)



* BERD: Business expenditure on R&D
** GBAORD: Government budget appropriations or outlays for research and development
Note: Other European countries include: Norway, Portugal, Finland, Italy, Poland, Austria, Hungary, Sweden, Iceland, Belgium and Switzerland

Source: Deloitte research and analysis; Research and development in the pharmaceutical sector, OECD, 2016; Eurostat, European Commission, 2016

Figure 39 shows the number of life sciences clusters in our cohort of six countries. Germany, France and the UK have the most life sciences clusters. Life sciences clusters bring together multiple stakeholders in the drug development pathway to encourage sharing of ideas and expertise to speed up the discovery, development and adoption of new medicines.[91]

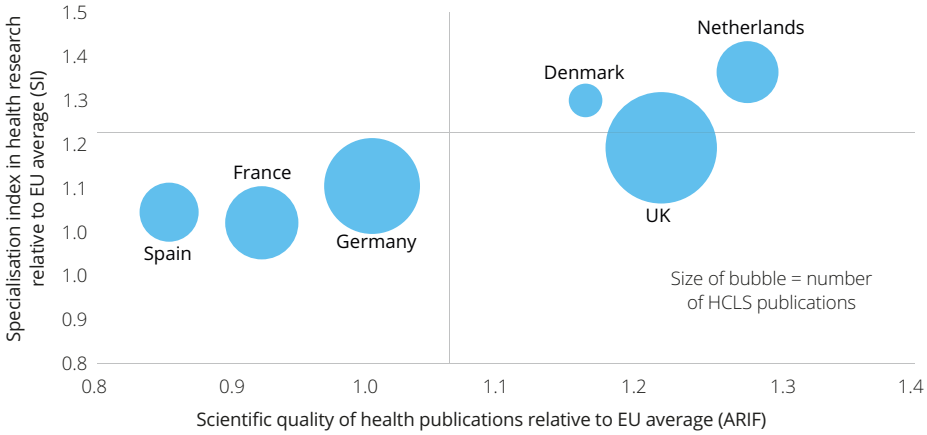
Figure 39. Number of life sciences clusters in our cohort countries

Source: European Biotechnology Network, 2016

Variation in life sciences R&D ecosystems

Figure 40 shows that academic research in the UK, Netherlands and Denmark has a higher degree of life sciences specialisation and is more impactful compared to our other focus countries. The academic community is an important part of a countries innovation ecosystem, fostering ideas and new innovations. The Specialisation index (y-axis) is an indicator of research intensity in a given research area. An index value above 1 means that a given entity is specialised relative to the reference (EU 27). Scientific quality of health publications is a measure of the scientific impact of publications reflecting the average citation rate of the publication.[92]

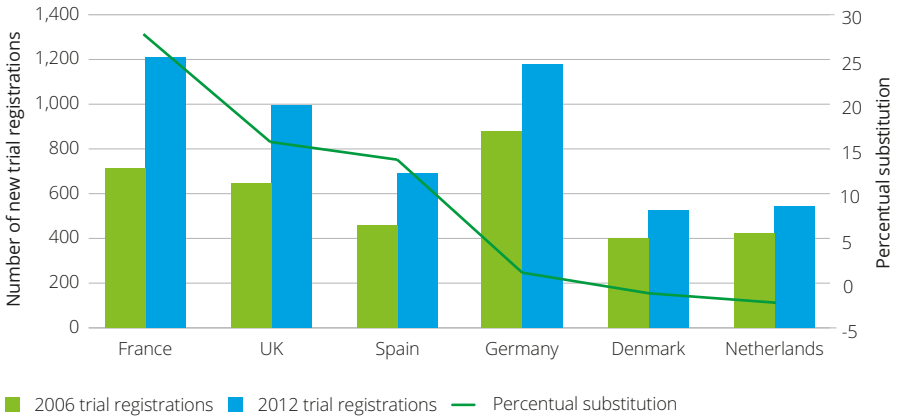
Figure 40. Academic research: quality and volume of highly cited scientific publications



Source: Deloitte research and analysis; Country and Regional Scientific Production Files, European Commission, Directorate-General for Research and Innovation, 2013

Figure 41 shows the change in the number of new clinical trial registrations in the context of global clinical trial growth. While raw clinical trial numbers for our cohort of countries have increased between 2006 and 2012, when factoring in the overall absolute number of registered trials globally, the global share of trials recorded by Denmark and the Netherlands has in fact decreased.[93]

Figure 41. Clinical trial registration in the context of global trial growth



Source: Decline of Clinical Trials in Central and Eastern Europe, Fluctuation or Trend?, 2014

Good practice examples of partnership working

Driving adoption of health innovation

Case example 30. Maastricht University Medical Centre's partnership model of care delivery in the Netherlands

The cardiovascular clinic of Maastricht University Medical Centre (MUMC) was faced with the challenge of balancing an increasing number of complex patients with maintaining quality without increasing costs. They partnered with Medtronic's 'Integrated Health Solutions' (IHS) business unit to address this challenge. IHS brings together Medtronic's medical device technology and an expertise in process optimisation and therapy knowledge. The long-term partnership business model that was adopted is based on sharing risks and value creation.

At the MUMC, IHS optimised operational processes and clinical pathways for Cardiac Resynchronisation Therapy (CRT) and coronary artery bypass surgery (CABG), and took on the management of the catheter laboratory and engaged hospital staff. This partnership has led to:

- $120,000 savings from the CRT pathway optimisation, by cutting length of stay by 33 per cent, time to intervention by 50 per cent and decreasing the number of consultations required
- $1,785,000 savings from the CABG pathway optimisation, by cutting length of stay by 30 per cent, decreasing cancellations by 50 per cent and increasing the number of procedures per year that can be carried out.[94]

Case example 31. The UK's NHS '100,000 Genomes Project'

Genomics England's '100,000 Genomes Project' aims to enable new scientific discoveries, medical insights and advanced diagnostics. When completed, the project will enable the NHS to offer genomic medicine and personalised treatments to patients with conditions like cancer and rare diseases that are currently hard to treat. The UK Department of Health has established Genomics England as a wholly owned, limited company. Genomics Enterprises is the arm of Genomics England responsible for engaging and managing the relationship with industry, recognising that such engagement will be the most effective way of accelerating the development of new diagnostics and treatment. Genomics Enterprises aims to provide pharma, biotech and diagnostic companies with the ability to access whole human genomic sequences and to link these sequences to longitudinal patient data (medical records and outcomes) on a scale that has not been undertaken anywhere else in the world.[95]

Case example 32. Accelerating market entry of MedTech solutions in Denmark

CoLab Denmark, launched in 2014, is a cross-sector accelerator bringing together companies, local communities and hospitals to develop new healthcare technology. CoLab uses a collaboration model to coordinate six local development and test facilities. The regional CoLab centres offer advice and guidance on the development of healthcare technologies including accessing their 'user-friendliness'. Patients and carers are surveyed for their views and participate in the development process.

At CoLab 'Plug&Play' new products are tested for interoperability to the Danish Health Data Network (SDN) and standard IT infrastructure to assess operational readiness. CoLab Odense, a partnership between Odense University Hospital, Odense Municipality and The Health Innovation Centre of Southern Denmark is focused on preventing hospitalisation. Participants have rated the cooperation highly, particularly with regard to mutual learning. This has resulted in faster adoption of new technology strategies including a smart technology-based diabetes management system and projects to support telepsychiatry and assisted living.[96]

Case example 33. Innovation cluster of leading research institutions, companies and business incubators, the UK's 'Corridor Manchester'

Corridor Manchester is the largest clinical academic campus in Europe, with a workforce of over 60,000 people, with over half of the jobs in education, health, science and technology. It is home to two universities (70,000 students) and five hospitals which treat about a million patients each year. The Central Manchester University Hospital Foundation Trust (CMFT) is encouraging collaboration between its hospitals, researchers and the private sector via:

- 'Citylabs' – a biomedical centre of excellence located on the CMFT campus. Private life sciences companies and researchers can rent office and laboratory space giving them direct access to specialist clinical resources, clinicians and procurement teams
- 'MedTECH Centre Incubator' – a joint partnership between the CMFT and TRUSTECH (an NHS Innovation Hub established in 2001 to act as an access point for companies who are seeking to introduce innovative products and services to the NHS in the North West of England). The partnership rents workspace to private companies and facilitates the adoption of new innovations in the NHS.

Corridor Manchester is to receive £1.5 billion of committed and planned investment in capital builds, infrastructure and public realm enhancements over the next 10 years.

It is also receiving support from the government, which in 2015 awarded the local partnership a life sciences enterprise zone classification, providing incentives to local life sciences businesses and attracting further investment. Manchester was also voted the European City of Science 2016.[97]

Case example 34. A cross-European partnership to accelerate development and commercialisation

The European Institute of Innovation and Technology (EIT) Health Initiative was launched in 2015 and is a Europe-wide network that connects more than 50 core partners and 90 associate partners from public and private organisations such as universities and research facilities, pharmaceutical and MedTech Industry and insurers. The EIT is part of EU's Horizon 2020 programme for research and innovation. EIT Health aims to invest a two billion euro budget until 2020 in supporting entrepreneurial and scientific talents to accelerate the development and commercialisation of health services and solutions to promote well-being across Europe.

All locations provide access to laboratories, test beds, offices and seminar rooms. The initiative aims to support 90 new products and healthcare services annually by 2018 and expects to incubate approximately 80 new business ideas in its first full year of operation in 2016.[98]

Case example 35. EU-EFPIA's Innovative Medicines Initiative

The Innovative Medicines Initiative 2 (IMI 2) 10-year programme, launched in 2014, is Europe's largest public-private initiative. It brings together companies, universities, public laboratories, innovative SMEs, patient groups and regulators in collaborative projects to pave the way for breakthrough vaccines, medicines and treatments to tackle Europe's growing health challenges. In particular IMI 2 aims to deliver:

- a 30 per cent better success rate in clinical trials of priority medicines identified by the WHO
- clinical proof of concept in immunological, respiratory, neurological and neurodegenerative diseases in five years
- new and approved diagnostic markers for four of these diseases and at least two new medicines which could either be new antibiotics or new therapies for Alzheimer's disease.

With a total budget of around €3 billion – €1.64 billion from the EU's Horizon 2020, and €1.4 billion in contributions from the European Federation of Pharmaceutical Industries and Associations (EFPIA) and €213 million from other members or partners in individual projects.[99]

What next for healthcare partnerships?

Collective belief that collaborative models benefit all stakeholders

Deloitte believes that trusted partnerships between industry, academia and healthcare providers are an essential feature of a country's innovation, health and wealth strategy. Governments across Europe need to work in partnership with industry to set the long-term direction needed to attract life sciences investment and ensure that this investment translates into better care for patients. This includes speeding up the healthcare and life sciences innovation process to help new medicines and technology move more quickly from conception to adoption at scale. The UK is the country in our cohort that has demonstrated the most holistic approach to partnering, collaboration and innovation.

Key enablers of the development of effective partnerships

- trust in partnerships and collaborations between industry, academia, providers and payers, underpinned by government support
- an environment that encourages collaboration between industry, academia and healthcare providers and adoption of innovation
- government support and information to encourage commercialisation of medical innovation (device, drugs, and services)
- a strong public-goods ethos, underpinning the research infrastructure, for example providing access to real world evidence and genomics data to help research
- established channels to engage the patient and clinicians in steering research focus and evaluating outcomes
- consistent and stable procurement frameworks and a supportive funding landscape
- a health system and provider structure willing to take well-thought-through risks and accept revolutionary (rather than evolutionary) change.
- clear systems and processes for registering intellectual property rights.

The emergence of new partnership models

Already in evidence

Delivery partnerships – given the emphasis on value-based care, boundaries between partners are blurring. New partnership models are emerging – In the UK, the Devolution Manchester project is providing new opportunities to collaborate. More widely, health technology companies, healthcare providers, pharmaceutical and medical technology companies are forging new care delivery partnerships.

Research partnerships – focused on developing new clusters – e.g. investments in The Francis Crick Institute[100] Golden triangle in UK (Oxford, Cambridge and London MedCity)[101] and the Karolinska Institute in Sweden with its multiple collaborations.[102]

Patient partnerships to ensure patient perspectives are integrated – Scientific journals are also pressing for any published work to include the patient perspective. The British Medical Journal set up an international patient advisory panel in 2014[103], and requests all research authors to outline how (and whether) they involved patients in their work, including in determining outcome measures, as well as study design and implementation.

Evolving, but sporadic evidence

Internet of Things (IoT) – a suite of inter-connected health technologies that provide continuous monitoring information and data, which is stored and accessed via 'secure cloud-based platforms,' is opening up new ways to create value from the information provided, creating opportunities to improve health prevention and treatment.

Clinical partnerships – the doctor of the future will require more integrated clinical decision aids. Treatment options are becoming increasingly complex – much like precision treatment requires sophisticated computer diagnostics, so will doctors. IBM's Watson[104] and other integrated decision tools are examples of how the future could evolve.

Collaborative R&D partnerships – competitive R&D is replaced with government-supported collaborative R&D. Anti-infective research, as well as recent research for an Ebola vaccine, signal a move to an environment where governments steer research explicitly. There are also proposals to incentivise R&D by 'de-linking' the profitability of a drug from its volume of sales. For example, asking three or four companies to partner to undertake R&D for the development of new antibiotics and other specific unmet needs.

8. Do the 'Vital Signs' really matter?

Developing a better health system today and tomorrow

'Vital Signs' today

Deloitte considers that the 'Vital Signs' identified in this report should matter to everyone: patients, clinicians, industry employees, medical academics, the general public, and governments seeking to build a healthier and wealthier society, and a sustainable health system within a vibrant economy. We believe that addressing the seven 'Vital Signs' will, over time, help reduce health inequalities and enable countries to achieve these goals in an economic, efficient and effective way. In our view, the Netherlands (among our cohort of countries) has a health system that appears to be making the most progress towards achieving a patient-centred, accessible and efficient health system. However, it is also the country that currently spends the most per head of population on healthcare. As for all the countries in our cohort, however, there is seemingly more variation in performance within the country than between countries, leading to health inequality, meaning that all countries have scope for improvement.

The 'Vital Signs' in this report are intended to provide a lens for examining the 'health' of a country's health system. While all the 'Vital Signs' are important, their impact is felt in different ways. For example:

- a lack of investment in **prevention** severely weakens the overall health of the population and increases the cost of healthcare, due to the need to treat preventable diseases
- an effective **primary care** system is crucial for providing patients with consistency and continuity of care and for controlling unwarranted demand for expensive hospital-based interventions; requiring primary care doctors to interpret large amounts of structured and unstructured information and make sense of it for their patients, and for the wider health system
- while **hospitals** will always be an important player in the health ecosystem, and a much needed resource for acute and emergency care, our review of the literature and benchmarking reports on hospital performance has highlighted significant variations within and between countries, in the quality and cost of care, with enormous scope to improve productivity and provide hospital services more cost-effectively, especially through standardising patient pathways and integrating them across care settings
- **palliative care and patient engagement** are the two 'Vital Signs' that testify to the quality of the health system. A country that engages people in their own healthcare and ensures that they live as well as possible until they die is the mark of a high-quality system
- **population health management** signifies the movement from a silo-focused delivery of medicine to a communal effort with the purpose of improving the overall health outcomes of a population, outcomes that are intended to meet the triple aim of reducing cost and improving quality and patient experience
- **partnerships** between industry, academia and healthcare, implemented effectively, have real potential to help deliver economic benefit alongside improvements to health and well-being for people across Europe.

We believe that all countries can improve on their 'Vital Signs', with some countries in our cohort having more to do than others, but all could use their existing resources more effectively. In some cases, countries may need to spend more if they are to perform on a par with the best. The ambition of all countries, however, should be to speed up adoption of innovation and consider the applicability of the case examples highlighted in this report, in order to deliver a more sustainable and cost-effective health system.

'Vital Signs' tomorrow

All the 'Vital Signs' will remain important in the future. However, given the ambitions explored in population health management, with its focus on keeping people healthy in a coordinated fashion while delivering better clinical outcomes at a lower cost, it is an approach that all countries need to consider. We also believe that all stakeholders must work together more effectively to address unmet needs for treatment. Only then can we leverage advances in technology and innovation while managing costs in the interests of better patient outcomes. Over the next few years we can expect to see innovators from within existing providers (especially new integrated care organisations) operating new models of care while moving incrementally towards value-based care payment models. There will also be disruption from new players, who respond to the opportunities presented by new payment models, such as capitated payments, to develop new models of healthcare and the development of precision medicine to target treatment more effectively.

Appendix 1. Overview of the health systems in our cohort of six countries

Denmark: Total population: 5.6 million, healthcare spend: 10.4 per cent of GDP in 2013, US$4,553 per capita; numbers of hospital beds: 3.07/1,000; numbers of doctors (2012): 3.62/1000; life expectancy: 82.4 years.[4]

The Danish health system is based on a tax-based public National Health System, with only 14.7 per cent of expenditure being private sector spending. Healthcare services are governed jointly by national, regional and municipal institutions, with a strong focus on IT connectedness, including an EHR, health portal and telehealth. Individuals can choose between two ways of accessing primary care. Most choose free-of-charge medical care by one central coordinating family doctor, with referrals to specialists from this chosen gatekeeper; and only a small number opt for case-by-case freedom of choice of any physician, with partial state reimbursement of medical bills. Healthcare in publicly-owned and managed hospitals is regionalised with free-of-charge treatment, reimbursed via a Diagnose Related Group (DRG) payment system. There is an emphasis on prevention, with a large number of campaigns by public health authorities on infectious diseases, sexual health and perinatal guidance and assistance.

The current focus for reforms in hospitals is a reorganisation of acute care, emphasising stronger pre-hospital services, larger specialised emergency departments, 'temporary care units' and new types of health centres. These reforms coincide with a reorganisation of governance structures to improve surveillance and accountability.

France: Total population: 63.8 million; healthcare spend: 10.9 per cent of GDP in 2013, US$4,124 per capita, numbers of hospital beds: 6.29/1,000; numbers of doctors (2013): 3.19/1,000; Life expectancy: 82.3 years.[4]

Two features are of central importance for the French health system: universal access to healthcare funded through a compulsory insurance system, paid for by employer and employee contributions and income tax; and patient choice. Central governance of the system lies with the Ministry of Health, but a trend towards decentralisation of planning in recent years has led to the creation of Regional Health Agencies. Access to care is direct, with services in public hospitals reimbursed via a DRG-like payment system and fee-for-service ambulatory care. Health education and promotion is mainly provided on an individual basis.

Additional revenue for healthcare has been generated through broadening the tax base, increasing levies and creating new ones. A number of social security exemptions such as those that apply to low wages or to overtime work have been reduced or abolished. A new two per cent levy on non-wage income such as that stemming from employee savings schemes was created in 2009 and since then increased to 20 per cent. Finally, excise duties on tobacco and alcohol have been raised and a new tax on soft drinks with excessive sugar has been introduced.

French policymakers are addressing budgetary constraints by prioritising primary care and using financial incentives to encourage gatekeeping and a shift from inpatient to day-case surgery. Other changes include encouraging cost-effective patterns of use of outpatient care, introducing and/or expanding use of practice guidelines and care protocols as well as launching a new, performance-based contract for family doctors (which has been strongly opposed by physicians' unions). There is increasing emphasis on preventative care and chronic disease control, incentives to adopt technological improvement as well as new incentives to increase generic prescribing. Reforms also show a strong commitment to prevention, tackling addiction, eating disorders and obesity.

Germany: Total population: 80.6 million; healthcare spend: 11.0 per cent of GDP in 2013 – US$ 4,819 per capita; numbers of hospital beds: 8.28/1,000; numbers of doctors (2012): 3.96/1,000; life expectancy: 80.9 years.[4]

Germany's universal healthcare coverage is funded mainly through mandatory statutory insurance that secures universal access to all major health services. Individuals must choose between more than 150 competing statutory insurance funds, with membership fees split between employer and employees. Approximately ten per cent of the population is privately insured. The health system is coordinated between the federal government and the Bundesländer (states), although application and enforcement of regulations is carried out largely by self-governing associations of the sickness funds.

Primary care is provided by family doctors (operating individually) and directly-accessible specialists in ambulatory care, and reimbursed through fee-for-services. Secondary care is provided through a mix of public hospitals, not-for-profit facilities and private for-profit facilities. Prevention activities are shared between specialists; for example childhood immunisation and gynaecological screening are carried out by paediatricians and gynaecologists respectively.

Germany currently faces a challenge to implement a significant number of new healthcare laws directed at strengthening care in under-served rural areas by establishing medical treatment centres. Prevention is growing in importance, with special focus on vaccination, screening schemes and health education. A restructuring process for hospital planning and payments is focusing on patients' rights and outcomes. Several other healthcare-related bills are pending in the legislative process.

The Netherlands: Total population: 16.8 million; healthcare spend: 11.1 per cent of GDP in 2013 – US$ 5,131 per capita; numbers of hospital beds: 4.6/1,000 (2009); numbers of doctors: 3.3/1,000; life expectancy: 81.4 years.[4]

The health system is funded by a mix of compulsory social and private insurance provided by a large number of competitive insurance organisations. Private spending on healthcare is five per cent of domestic spending. Governance of the system is through highly-structured arrangements for patient participation and with a prominent role for health insurers; politicians and bureaucrats have only limited influence over operational decisions.

Primary care follows a gatekeeping approach. Secondary care is obtained mainly from private not-for-profit facilities and paid for through a DRG-like system. There are a large number of beds in nursing homes and psychiatric inpatient facilities. Family doctors are closely involved in preventive care activities (including the National Immunization Programme) infectious disease screening, sexual health and family planning and other health promotion activities.

After years of rapid growth in spending, the Dutch health system is now undergoing fundamental reforms, with special focus on newly-established ways of providing long-term and hospital care while retaining competition between insurers and providers, despite strong public opposition. There are also measures directed at controlling the prescribing of expensive drugs.

Spain: Total population: 46.9 million; healthcare spend: 9.8 per cent of GDP in 2009 – US$ 2,898 per capita; numbers of hospital beds: 2.96/1,000; numbers of doctors (2012): 3.82/1,000; life expectancy: 83.2 years.[4]

The current Spanish health system was established by the General Health Law of 1986, confirming a universal right to healthcare. The Spanish state comprises the central state and 17 highly decentralised regions (termed *Comunidades Autónomas*), with their own governments and parliaments. The Spanish National Health System is publicly financed, mainly through general taxation. Decentralisation and regional autonomy mean that there are wide variations in spending and performance across the regions, healthcare areas and hospitals.

Primary care acts as a gatekeeper, with secondary care provided by publicly-owned and managed hospitals. Health promotion and preventive measures are integrated into primary healthcare and delivered by multi-disciplinary primary care teams. An exception to free-at-the-point-of-delivery is medicines prescribed to people aged under 65, who make a 40 per cent co-payment. The national Ministry of Health and Social Policy is responsible for certain strategic areas, such as legislation governing use and payment of pharmaceuticals and as guarantor of the equitable functioning of health services across the country.

More recently, regional health services have created single-area management structures, integrating primary care and specialist care. Indeed, the decentralised system has allowed for substantial innovation, including a large number of innovative population health management (PHM) reform measures involving public-private partnerships. There is increasing evidence of a willingness to re-evaluate ineffective treatments, involve patients in decision-making and commit to a greater integration of healthcare provision. There is also pressure on Spanish health authorities to measure value as a proportion of cost more widely. Healthcare accountability in Spain is also evolving, but adoption of value-based measures is fragmented.

UK: Total population: 63.2 million; healthcare spend: 8.5 per cent of GDP in 2013 – US$ 3,235 per capita; numbers of hospital beds: 2.76/1,000; numbers of doctors (2012): 2.75/1,000, life expectancy: 81.1 years.[4]

The UK's National Health Service (NHS) is centrally funded through taxation and free at the point of need. Scotland, Wales and Northern Ireland have had devolved administrations since 1997 and, with much smaller populations, have largely followed a more integrated model of care. There are wide variations in funding and health outcomes, both within and between the devolved nations.

In England, both primary and specialist care are commissioned and paid for through some 220 local clinical commissioning groups. GPs are responsible for registered lists of patients, acting as gatekeepers for specialist care. Hospitals, mental health and community providers operate as independent trusts. Prevention is funded through local government Health and Well-being Boards with services provided through primary care practice teams. The Health Act 2012 introduced widespread structural reforms. In October 2014, NHS England, along with other national bodies, published the NHS Five Year Forward View. It outlined how NHS services must move towards new models of care. It confirms that the vision of universal healthcare "remains the founding principle of the NHS" and that the NHS needs to take advantage of science and technology to help staff, patients and carers. It is a five-year plan for evolving the NHS, to create a more equitable care landscape, cope with surging demand for services and tackle the estimated £22 billion funding gap that will develop by 2020-21 unless changes are made.

Key measures currently under way include:

- greater emphasis on prevention and public health, with comprehensive action to tackle obesity, alcohol and other health risks, new workplace incentives and stronger public health powers for local government
- parity between mental and physical health
- giving patients more control of their own care, including shared budgets and support for unpaid carers
- delivering new models of care, providing meaningful local flexibility, with more investment in workforce, technology and innovation
- list-based primary care, underpinned by a commitment to provide a 'new deal' for GPs over the next two years, including more investment
- a £8 billion increase in NHS funding in real terms, between 2015-16 and 2020-21, of which £6 billion will be delivered by the end of 2016-17; plus £4.8 billion capital funding
- integration of health and social care services by 2020, supported by up to £2 billion hypothecated local taxation
- partnerships between the NHS and private sector to modernise buildings, equipment and services and deliver efficiencies of £22 billion by 2020-21
- actions to tackle deficits and ensure good financial management across the NHS. Investment in new NHS technology, and mental health services, transforming the NHS into a seven-day service.

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