



**PHILIPS**

Consulting services

Research paper

Acute unscheduled care  
in seven developed nations:  
**a cross-country comparison**

# Sponsors

## **Philips Healthcare Transformation Services**

Excellence in process improvement and operations

Philips Healthcare Transformation Services is at the forefront of providing consulting services to assist healthcare organizations achieve sustainable change. Our consultants have the experience and commitment to implement real and effective change, regardless of organization or department size or obstacles encountered. Working collaboratively with clinical and management teams to improve processes and deliver quantifiable results, consultants tackle each project with a hands-on, in-the-trenches approach and are strengthened by a genuine dedication to the quality of care.

## **Philips Research North America**

Leading innovations in Acute Care

Philips Research is a global organization that helps Philips introduce meaningful innovations that improve people's lives. With over 100 years of innovation, Philips Research is positioned at the front-end of the innovation process. From spotting trends and early ideation to proof of concept and – where needed – first-of-a-kind product development. In the Acute Care Solutions Department, we create innovative and personalized acute care decision support and clinical analytic solutions to help improve patient care and healthcare value across the care continuum.

## **Urgent Matters**

Leveraging global and clinical expertise

Urgent Matters is a program housed in the Center for Healthcare Innovation and Policy Research at George Washington University. Since 2002, Urgent Matters has been dedicated to studying, implementing, and disseminating best practices for acute and emergency care. Programs include webinars, podcasts, blogs, an Innovation of the Year Award, and a yearly meeting in collaboration with the American College of Emergency Physicians.

# Contents

---

<b>Executive summary</b>	<b>7</b>
--------------------------	----------

---

<b>Key principles and recommendations</b>	<b>8</b>
---	----------

---

<b>Introduction</b>	<b>10</b>
What is acute unscheduled care?	11
Objectives	12
The conceptual model of acute unscheduled care	14
Methodology	18

---

<b>Social determinants of health</b>	<b>20</b>
Introduction	21
Results – key indicators	22

---

<b>Care decision making and delivery</b>	<b>40</b>
Introduction	41
Results – key indicators	42

---

<b>Outcomes</b>	<b>62</b>
Introduction	63
Results – key indicators	64

---

<b>Summary</b>	<b>76</b>
----------------	-----------

---

<b>References</b>	<b>88</b>
-------------------	-----------

---

<b>Authors</b>	<b>90</b>
----------------	-----------

---

<b>Acknowledgments</b>	<b>91</b>
------------------------	-----------

---





# Executive summary

Over the past two decades, there has been tremendous growth in the science and technology of delivering acute unscheduled care to ill and injured patients. Despite this growth, there are differences in the way acute unscheduled care is paid for and delivered across the world. While many developed countries deliver high-quality emergency care to the critically ill and injured, some emergency care systems do not meet all the needs of their communities. Specifically, there is variation in care delivery in episodic settings like emergency departments (EDs). Variation also exists in the accessibility and capabilities of longitudinal care settings like primary care and specialty care to deliver needed services and meet the demands for acute unscheduled care.

In many countries, episodic care is disconnected from the longitudinal care system, which generates crowding and long waits. There are also broad differences in available treatments, provider training, and care quality. Many care systems do not have robust ways to measure and report quality in order to aid with improvement efforts and accountable outcomes. In addition, there are differences in the quality and costs of care which depend heavily upon how care is paid for and how systems are developed and integrated across the continuum.

In this paper, we explore issues in acute unscheduled care delivery by comparing acute care systems across seven developed countries: Australia, Canada, Germany, the Netherlands, Switzerland, the United Kingdom, and the United States. We describe factors that lead to demands for acute care, how people make choices about whether to seek care in specific settings, how care is delivered, and how the quality of acute care leads to differences in costs and outcomes.

To achieve this, we employ a mixed-methods approach and explore recent, publicly available data from each country. In addition, we include the input of local emergency physicians to help understand the local acute care environment. Through this process, we propose 10 general principles of acute care systems in developed countries and identify 10 recommendations on how countries can learn from one another with respect to improving the quality of care delivery and controlling cost.

# Key principles and recommendations

## Principle #1:

Social determinants such as smoking, eating, substance use, violence, and poverty are an important contributor to the demand for acute unscheduled care.

Recommendation #1: While developed countries have implemented programs to address social determinants, continued focus is needed on expanding and improving the effectiveness of these programs.

## Principle #2:

Lack of access to health insurance contributes to poorer population health and higher demands for acute unscheduled care.

Recommendation #2: Increasing access to comprehensive health coverage and reducing out-of-pocket costs should be a central focus of countries with gaps in coverage and high costs of care.

## Principle #3:

Ill or injured individuals, may not make the most effective decisions about where and when to seek care because of the lack of knowledge of health and healthcare systems.

Recommendation # 3: Processes to help people make appropriate choices about where and when to seek acute care should be developed. Education should be provided about the capabilities and capacities of care delivery systems.

## Principle #4:

Inadequate access to general practitioners and medical homes for acute unscheduled care leads to higher use of episodic settings, particularly EDs.

Recommendation #4: Programs should focus on increasing access to general practitioners and medical homes, which in turn should focus on increasing linkages with episodic settings and with specialists.

## Principle #5:

Despite the presence of a centrally coordinated system of care with a medical home or general practitioner, EDs deliver complementary services. EDs are a necessary and efficient way to deliver time-sensitive critical care and rapid diagnostic services for the ill and injured.

Recommendation #5: Policies should promote sustaining high-quality EDs.

## Principle #6:

Providers of emergency services require extensive training to deliver high-quality care.

Recommendation #6: Countries should continue to focus on ensuring that emergency providers are properly trained and that an adequate number of training programs exist.

## Principle #7:

To deliver efficient acute care, interoperable healthcare information across providers and facilities is necessary. Information should not only be accessible but should also be usable for providers and patients.

Recommendation #7: Policies should be developed that promote fully interoperable health information technology, information sharing, and increase the usability of healthcare information for providers and patients.

## Principle #8:

To understand and improve the quality and value of acute care delivery, measurement is needed to assess care delivery for accountability and also to provide feedback to providers. Quality measures for acute unscheduled care are immature and have not been standardized across all countries.

Recommendation #8: Quality measures for acute care should be developed and deployed across systems and used to monitor the quality of care and access for ill and injured patients.

## Principle #9:

Fee-for-service payments for acute and nonacute care promote increased access to care but can also increase costs. Payment approaches that move away from fee-for-service may lower cost but also may limit access to acute care.

Recommendation #9: While it is important to control costs, payment models for acute unscheduled care should ensure that access to high-quality care is promoted and maintained.

## Principle #10:

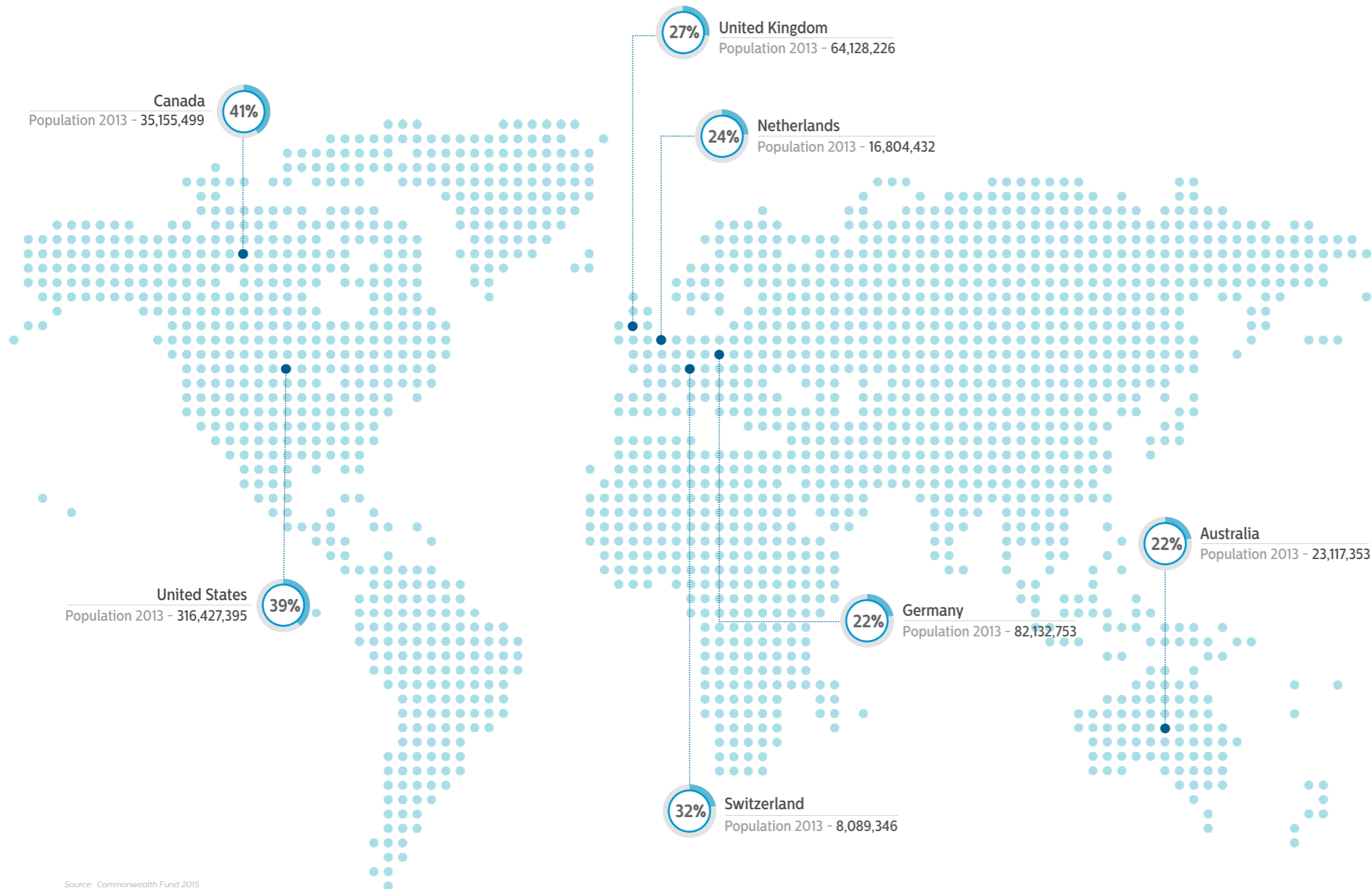
Generalizable structures and processes for delivering acute unscheduled care can translate across settings. Evidence-based practices exist to improve quality and reduce waiting times for acute care, particularly within complex settings such as EDs.

Recommendation #10: Acute care providers and facilities should learn from the successes and failures of groups of providers and institutions that are focused on similar goals.



# Introduction

## Emergency Department Utilizations



Source: Commonwealth Fund 2015

## What is acute unscheduled care?

Acute unscheduled care is medical care delivered to patients who are injured or acutely ill as a result of medical illness or acute exacerbation of chronic disease, such as heart failure or diabetes. A broad array of medical services are delivered during an episode of acute care by different types of providers in different locations.

These services range widely from life-saving services for critically ill trauma patients, to diagnostic services for those with abdominal or chest pain, to more minor procedures such as laceration repair. Acute unscheduled care can be delivered in settings such as emergency departments, urgent care centers, doctors' offices, or through telemedicine.

# Objectives



The demand for acute unscheduled care is determined by a combination of factors that include social determinants such as the health of the population, socio-environmental factors, and how public health systems and insurance services are managed. When it comes to handling the acute care needs of their population, countries studied use different systems, technologies, and approaches. Different ways of delivering acute unscheduled care result in different costs and outcomes for patients and for countries' investment in healthcare services for the population.

**Based on data from seven developed countries: Australia, Canada, Germany, the Netherlands, Switzerland, the United Kingdom, and the United States, this paper has two main objectives:**

1. To describe similarities and differences in factors that lead to acute care demands, how countries deliver care, and how this leads to observable outcomes such as mortality and costs.
2. To analyze differences in the structure and delivery of care so as to propose general principles and best practices for designing systems to deliver acute unscheduled care.



# Acute unscheduled care

## The conceptual model\*

To meet these objectives, a conceptual model was used to describe an episode of acute unscheduled care using these domains:



**Social determinants of health** include socio-environmental factors (i.e. poverty, demographics, geography), individual factors (i.e. health, health literacy, behaviors), and public health factors (i.e. insurance, health-related laws, vaccination efforts).

**Care decision-making and delivery** consists of two related segments. Care decision-making involves community resources (i.e. healthcare facilities) and individual resources (i.e. financial and family resources), along with preferences for care (i.e. where and if the individual and/or family decides to seek care), and finally condition-specific needs (i.e. what services are needed to care for a condition). These all intersect leading to a decision to seek care at a specific location during an episode of acute care. Care delivery can occur in a variety of settings including episodic settings such as EDs and longitudinal settings such as doctors' offices or medical homes. The Agency for Healthcare Research and Quality (AHRQ) defines a medical home as a team-based health delivery model aimed at providing comprehensive and continuous primary care intended to allow increased access and coordination of healthcare services.<sup>1</sup> Care may also be delivered by an individual (i.e. home care) or by the community (i.e. with help from the family or other individuals). During an episode of acute unscheduled care, delivery often transitions between different settings. For example, care may be transitioned from an ED or hospital back to a clinic for follow-up.

**Outcomes** are related to the quality of care delivery provided and the differences in costs for the individual and for the community. In other words, this is the value of the care delivered based on quality and results achieved as they relate to the cost of providing the services. This is the healthcare value proposition and can be realized by both the patient and the community as a whole.

Some common acute unscheduled care episodes can include:

- Serious debilitating medical illness such as myocardial infarction, pneumonia, influenza, sepsis, and the evaluation and treatment of these conditions
- Acute severe, moderate, and minor injuries such as fractures, lacerations, and internal injuries
- Exacerbation of chronic disease such as heart failure, asthma, and chronic obstructive pulmonary disease
- Presentations of acute mental illness such as depression, anxiety, or schizophrenia
- Intoxication and conditions related to substance abuse such as alcohol, smoking, or illicit drug use

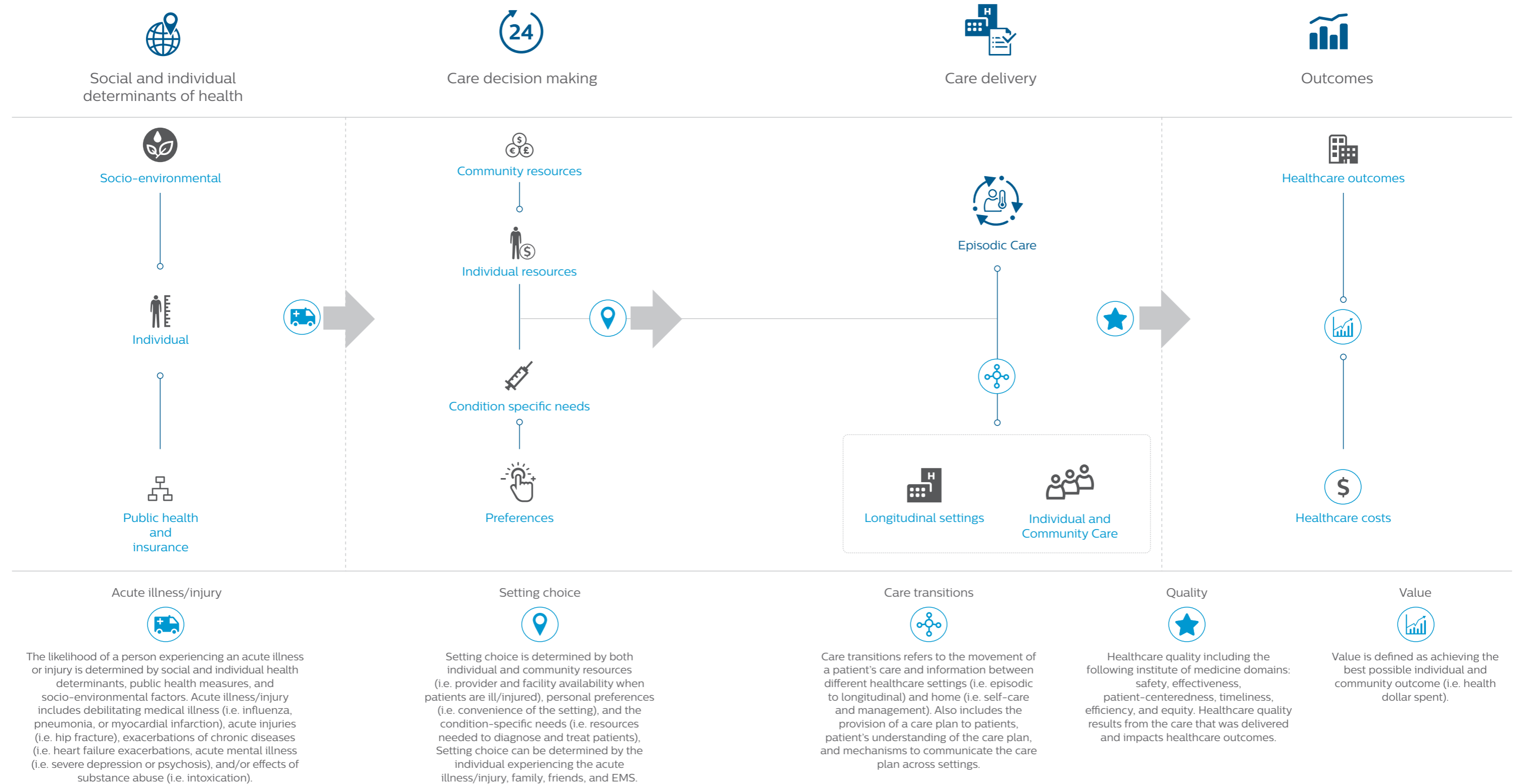
\* This model was adapted from an original conceptual model developed in part by Jesse Pines (Annals of Emergency Medicine: A Conceptual Model for Episodes of Acute, Unscheduled Care. 2016). The original model was informed by extensive literature review, and stakeholder feedback using conceptual mapping and a technical expert panel.





# Acute unscheduled care

## The conceptual model



\* This model was adapted from an original conceptual model developed in part by Jesse Pines (Annals of Emergency Medicine: A Conceptual Model for Episodes of Acute, Unscheduled Care. 2016). The original model was informed by extensive literature review, and stakeholder feedback using conceptual mapping and a technical expert panel.

# Methodology

## Countries included in the study



A mixed-methods approach was used to describe differences in social determinants of health, care decision-making and care delivery, and outcomes across seven developed countries.

These countries represent a wide variety of acute care delivery and payment systems within similarly developed governments and infrastructures. In addition, all countries have available primary data sources related to the domains of our conceptual model. Finally, we believe the countries are similar enough yet different enough to compare and extrapolate how diverse approaches to care may lead to differences in costs and outcomes.

Quantitative methods involved gathering data on comparative indices using several data sources including:

- The CIA World Factbook
- The Commonwealth Fund – International Health Policy Surveys
- Organisation for Economic Co-operation and Development (OECD)
- United Nations Office on Drugs and Crime (UNODC)
- The World DataBank
- World Health Organization – Global Health Expenditure Database
- World Health Organization – Global Health Observatory
- World Health Organization – Mortality Database

Qualitative methods were also used by conducting interviews with emergency physicians from each country to understand how factors lead to the demand for acute unscheduled care and the types of systems in place to care for patients.



# Social determinants of health



## Introduction

The health of the population and its behaviors are major contributors to the demand for acute care, specifically with respect to chronic health problems from behaviors such as smoking, overeating, and inactivity.

This section describes the factors impacting health that influence the likelihood of acute illness and injury. Primary data sources were compared for each country at a population level with respect to individual resources, public health measures, and socio-environmental factors. Here we aim to better understand what contributes to acute episodes in each of the researched countries.

# Results – key indicators

## Individual determinants of health

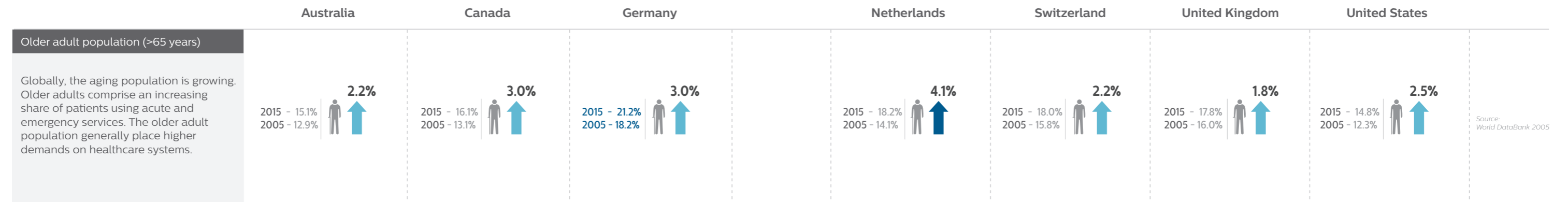
### Demographics – older adult population (>65 years)

The aging population is a factor that can increase demand for acute care: older adults generate a need for more medical care as a result of a greater number of chronic conditions. Across all the seven countries researched, people who are 65 and older make up a considerable portion of the population. In 2005, this ranged from 12.9% of the population in Australia to 18.2% of the population in Germany. By 2015, this had risen most in Germany by an additional 3% to 21.2% of the population. Older adults have unique healthcare needs compared to younger populations, specifically when it comes to management

of multiple co-morbid conditions, geriatric-specific syndromes such as frailty, falls, and delirium, and social service needs.<sup>2</sup> One promising model that has emerged to improve acute care for older adults is the geriatric ED concept, which is being developed in the U.S. Geriatric EDs focus on the specific care needs of older adults by separating the main ED and geriatric ED functions into different areas, reducing potentially inappropriate medications in this population, increasing screening and interventions for geriatric syndromes, and enhancing transitions in care.<sup>3</sup>

**Why is this important?** Across the world, older adults increasingly comprise a greater share of patients requiring acute and emergency services. This is a concern because of the increasing number of ED visits and the need to provide a suitable pathway for hospital admission for this population's specific needs.

**Insights:** In all researched countries, this 65+ year old demographic is expanding with an increase each year over the 10 year period 2005 to 2015. Germany has the largest percentage of older adults at 21.2% in 2015, while the Netherlands has the fastest growing older adult population with an increase of 4.1% over 10 years. This trend is particularly significant for healthcare systems which must adapt to meet the needs of this population and be prepared to deliver acute unscheduled care. Older adults have distinctive healthcare needs compared to their younger counterparts. They tend to require more time and resources, have more co-morbidities, and can be generally more complex to treat. In the U.S., geriatric-focused EDs are a promising model and could be a new option to some markets.





# Results – key indicators

## Individual determinants of health

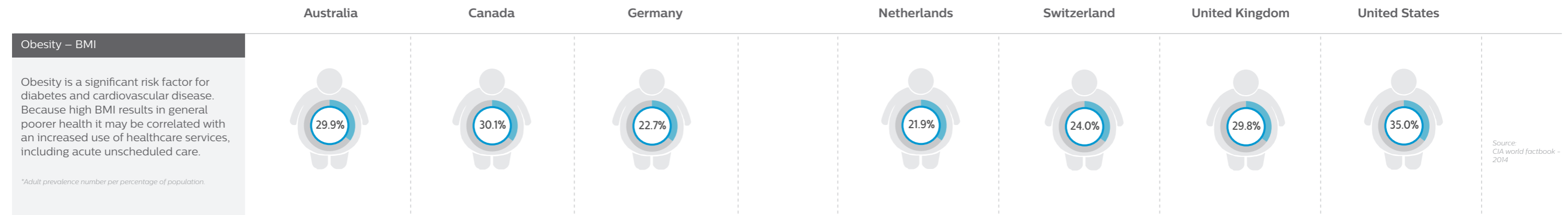
### BMI as an Indicator of the severity of obesity

Obesity is a major contributor to health problems, including heart disease and joint problems. In general, obesity rates are high across all the developed countries ranging from a low of 21.9% in the Netherlands to a high of 35.0% in the U.S. Several factors have led to the epidemic of obesity in the developed world, including increased consumption of carbohydrate-rich processed foods, inactivity, and the lack of access to high-quality food. While government-led programs vary across countries to reduce obesity, the focus is on increasing healthy activity,

particularly among school-age children, increasing adults' activity by promoting activities such as biking and exercise, working to increase calorie transparency, and working to reduce consumption of high calorie, processed foods. For example, Canada has implemented a variety of initiatives at the province-level in its Toward a Healthier Canada program to address many of the underlying factors that contribute to obesity.<sup>4</sup>

**Why is this important?** Higher obesity rates lead to higher rates of diabetes and cardiovascular disease and generally poorer health.<sup>5</sup> Obesity may reflect poor access to healthy food and lack of health education; however, healthy lifestyle is an individual choice.

**Insights:** Given the relationship between obesity, diabetes, and cardiovascular disease, obesity may contribute to higher healthcare utilization in the U.S., particularly acute unscheduled care. In 2008, the estimated medical cost of obesity care in the U.S. was \$147 billion, and the average individual cost for someone who is obese was \$1,429 more than those of normal weight.<sup>6</sup> In the U.S., obesity rates are high because of relatively larger portion sizes, broad accessibility to carbohydrate-rich, fast foods particularly in economically disadvantaged communities, and lower rates of exercise.



### Smoking

Smoking contributes to a variety of acute and chronic health problems including chronic lung disease, coronary heart disease, and lung cancer.<sup>7</sup> In particular, smoking-related disease leads to higher demands for acute care, such as for acute myocardial infarction, pneumonia, and exacerbations of chronic obstructive pulmonary disease. Second-hand smoke can also cause problems, such as an increase in the incidence of bronchitis, pneumonia, and asthma, and it can also increase the risk of lung cancer.<sup>8</sup> Across the seven countries studied, **more than 1 in 10 people are daily smokers**, with the highest rates in Germany at 20.9% and in the U.K. at 20.0%.<sup>9</sup> Rates are lowest in Australia at 12.8%

and in the U.S. at 13.7%.<sup>9</sup> Programs in several countries have been developed in an effort to reduce smoking. Such programs include anti-smoking campaigns that raise education about the harms of smoking, taxes on tobacco products, bans on smoking in specific locations, and limitations on advertising. Programs vary across the seven countries, with the U.S. in general having the least restrictive smoking policies. By comparison, Australia has more stringent policies around smoking. In 2003, the Smoke-Free Public Places Act placed a ban on smoking in enclosed public places.<sup>10</sup>

# Results – key indicators

## Socio-environmental

### Wealth distribution – GINI Poverty Index

The demographics of a population (i.e. age, poverty, and mental health rates) and its behaviors (i.e. smoking, substance abuse, overeating, and inactivity) are major contributors to the demand for acute care, specifically with respect to chronic health problems.

Poverty contributes to poor access to care, and to poor health literacy as people living in poverty tend to have less access to education. As a result, poverty may lead to less positive health outcomes.<sup>11</sup> Per capita incomes vary among the developed countries surveyed with the U.K. on the lower end of the spectrum at \$40,550 and

Switzerland at the top of the range with \$61,930. Poverty levels also vary across the seven countries, with poverty rates as low as 28.7% in the Netherlands to a high of 40.5% in the U.S. High poverty rates in the U.S. may lead to poorer access to care, particularly preventive care that may lead to higher rates of preventable disease.

Low income individuals and families tend to use health services less often, resulting in poorer health, higher morbidity and mortality. Along with the impact of other social determinants, this is one explanation why life expectancy in the U.S. may be below other developed nations.

**Why is this important?** Poverty and low incomes are inextricably linked to healthcare access.<sup>12</sup> Those living in poverty tend to use health services less, resulting in more serious consequences to their health. Moreover, for low-income populations, out-of-pocket healthcare costs can be the determining factor in care setting choice and may prevent access to both longitudinal care and episodic care. People living in poverty are often deprived of the information, money or access to health services that would help them prevent and treat disease.<sup>13</sup>

**Insights:** To achieve a global comparison, the seven countries chosen are considered high income with poverty, although it is not the extreme poverty seen in some developing countries with fewer resources. Of the researched countries, the U.S. has the highest GINI index, a measure of income inequality and poverty proportions. In the U.S., the largest proportion of uninsured patients come from low-income families where 46% say they do not have insurance because it is too expensive.<sup>14</sup> According to a Institute of Medicine of the National Academies, the uninsured population in the U.S. delay needed care, live with more serious medical conditions, and are more likely to die before their time than those with health insurance.<sup>15</sup>





# Results – key indicators

## Socio-environmental

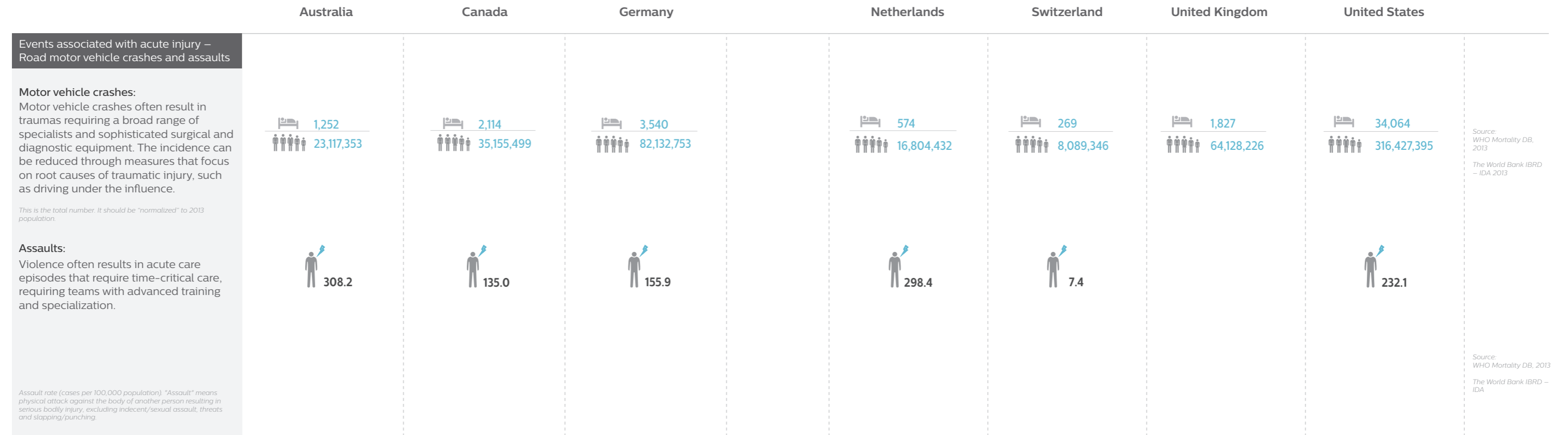
### Events associated with acute injury – motor vehicle crashes and assaults

Two factors that lead to demand for acute care are motor vehicle crashes and assaults. Road traffic deaths are an indirect measure of acute care services for motor vehicle trauma. The U.S. has a higher rate of road traffic deaths at 10.8 per 100,000 inhabitants per year, compared to considerably lower rates across the other six countries, with the U.K. having the lowest rate at 2.9 per 100,000 inhabitants.<sup>16</sup> Generally, European countries

with alternative means of transportation such as public transport, cycling, and walking, have fewer motor vehicle crashes and fewer deaths. Violence and assaults are also a major source of acute unscheduled care, particularly when they lead to injuries. Assault rates varied significantly across the seven developed countries studied, with the lowest rates in Canada and Switzerland.

**Why is this important?** Major trauma often results from serious motor vehicle collisions, major falls, or interpersonal violence such as assaults and gunshot wounds. Severely injured patients require a team with advanced training and specialization (i.e. emergency and surgical care) to deliver treatment within a critical time frame as well as sophisticated surgical and diagnostic equipment.

**Insights:** Previously, Australia struggled with a high rate of road trauma, perpetuated by drunk driving.<sup>17</sup> Today however, random roadside sobriety screening to prevent accidents and a strong anti-drinking and driving campaign have made drunk driving socially unacceptable. Switzerland, the Netherlands, the U.K., and Germany are smaller geographically and have greater access to alternative transport options (e.g. cycling, walking, and public transport). In those countries, traumas associated with vehicular crashes are less frequent.



# Results – key indicators

## Socio-environmental

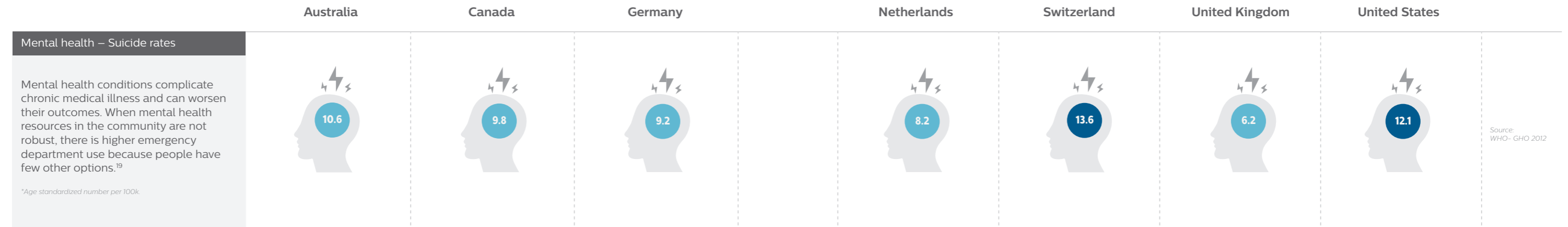
### Mental health – suicide rates

Suicide rates are an indicator of the mental health of the population. Mental health issues creates demands for acute care through mental health emergencies. The interaction between mental health and medical disease can also produce dramatically higher rates of ED use.<sup>18</sup>

Suicide rates are lowest in the U.K. (6.2 per 100k age-standardized population) and the highest, about twice as high, in Switzerland (13.6) and the U.S. (12.1).

**Why is this important?** Mental health conditions can present primarily – i.e. depression or suicidality – or can complicate chronic medical illness. Systems to care for the complex healthcare needs of people with mental illness vary greatly across and within countries. Suicide rates are an indirect indicator of the ability of systems to help manage mental health. Research suggests that patients with mental health conditions seek emergency care at a higher rate than those without. In 2007, 12.0 million or 12.5% of all ED visits involved a diagnosis related to mental health and/or substance abuse (MHSA) in the U.S.<sup>20</sup>

**Insights:** Switzerland’s high rate of suicide should be interpreted carefully as it has permitted assisted suicide (euthanasia) since 1942. By contrast, in the U.S., a large percentage – about 9.5% – of all ED visits, are associated with mental health issues, demonstrating a poor infrastructure to care for acute mental health issues out of hospitals, along with high suicide rates.<sup>20</sup>



# Results – key indicators

## Socio-environmental

### Substance abuse – drug and alcohol rates

Substance abuse – specifically illicit drug use – contributes to demand for acute care, as people often use EDs for intoxication, injuries related to drug use, and medical consequences of illicit drugs (i.e. overdoses leading to death). Drug-related deaths vary nearly 20-fold and are highest in the U.S. at 233.8 per million aged 15-64 and lowest in the Netherlands at 11.1 and Germany at 18.9. Drug-related mortality in the U.S. is driven by the

opioid epidemic with dramatic increases over the past two decades in opioid pain reliever use, along with illicit drug use.<sup>21</sup> Alcohol use, which can also contribute to higher rates of injury and chronic liver problems, varies across the seven countries from 8.68 liters per year in the Netherlands in people 15 and older to a high of 10.32 liters per year in the U.K.

**Why is this important?** Substance abuse is a common cause of preventable healthcare expenditures including visits to emergency departments. According to the World Health Organization, approximately 10-18% of ED visits globally are related to alcohol.

**Insights:** Drug-related deaths are highest in the U.S. which, at 233.8 per million among people age 15-64, is more than double the rate of Australia and more than twenty times higher than the Netherlands. This is due in part to the U.S. opioid epidemic related to high rates of use of prescription drugs.<sup>22</sup> In Switzerland, robust substance abuse treatment clinics result in lower utilization of EDs by this patient population.<sup>23</sup>





# Results – key indicators

## Public health and insurance

Public health factors such as **insurance and vaccination rates** can impact the demands for acute unscheduled care. Of the seven countries included, the sole country that does not provide universal health coverage to all its citizens is the U.S. Other countries have various combinations of public and private insurance programs, from single-payer in Canada to the National Health Service (NHS) in the U.K. Across all countries, except the U.S., out-of-pocket costs for individuals were reasonable. When people do not have health insurance, their health suffers and they avoid preventive care and lack medical homes. Recent efforts in the U.S. have expanded health insurance through state-level Medicaid expansions and the implementation of health insurance exchanges; however, changes in the political climate in the U.S. threaten these programs. In the U.S. there are a variety of safety nets for the uninsured, particularly hospital-based EDs that are required by federal law to provide medical screening examinations for all who present for care, regardless of ability to pay.

The **structure of health insurance coverage** can also play a major role in the way care is designed. Specifically, fee-for-service insurance promotes higher volumes of care but it can also increase access to care. For example, many of the European countries (Germany, the Netherlands, and Switzerland) operate under a broad fee-for-service system for hospitals and patients have greater access to both general practitioners and specialists. The U.S. is currently transforming from a fee-for-service system to alternative payment models such as bundled payments, episode-based payments, and capitation. Moving away from fee-for-service has the risk of reducing access to care and should be a high-priority consideration in this transition.





# Results – key indicators

## Public health and insurance

### Insurance

The availability of insurance and individual care costs can impact care decision-making, particularly where and if patients seek care. Patients may go without preventative care, potentially allowing conditions to worsen which can lead to an increase in demand for acute unscheduled care.

**Why is this important?** Health insurance coverage ensures that people can obtain health services they need without suffering financial hardship. When the cost of insurance is high or insurance leaves patients with significant out-of-pocket costs, patients may forgo needed medical care, allowing their conditions to worsen. The availability of insurance and varying out-of-pocket cost requirements impact where and if patients seek care.

**Insights:** While the approach and coverage of insurance varies between the surveyed countries, some are more comprehensive than others. In the U.K., people have virtually no out-of-pocket costs, while in the U.S. healthcare costs are high and a leading cause of bankruptcy. The U.S. also has the highest rates of people without health insurance.

	Australia	Canada	Germany	Netherlands	Switzerland	United Kingdom	United States
<b>Insurance</b>							
Automatic coverage (Tax financed)	100%	0%	0%	0%	0%	100%	32.2%
Compulsory insurance coverage	0%	0%	100%	100%	100%	0%	0%
Voluntary coverage	0%	0%	0%	0%	0%	0%	63.9%
Not insured	0%	0%	0%	0%	0%	0%	15.7%
<small>* The sum of the U.S. percentages is higher than 100% because some people have both public and private coverage.</small>							
<b>Government role</b>	Regionally-administered, joint (national & state) public hospital funding; universal public medical insurance program (Medicare).	Regionally-administered universal public insurance program that plans and funds (mainly private) provision.	Statutory health insurance system, with 124 competing SHI insurers ("sickness funds" in a national exchange); high income can opt out for private coverage.	Statutory health insurance system, with universally-mandated private insurance (national exchange); government regulates and subsidizes insurance.	Statutory health insurance system, with universally-mandated private insurance (regional exchanges); some federal legislation, with cantonal (state) government responsible for provider supervision, capacity planning, and financing through subsidies.	National health service (NHS).	Medicare: age 65+, some disabled; Medicaid: some low-income; for those without employer coverage, state-level insurance exchanges with income-based subsidies; insurance coverage mandated, with some exemptions (10.4% of adults uninsured).
<b>Public system financing</b>	General tax revenue; earmarked income tax.	Provincial/federal general tax revenue.	Employer/employee earmarked payroll tax; general tax revenue.	Earmarked payroll tax; community-rated insurance premiums; general tax revenue.	Community-rated insurance premiums; general tax revenue.	General tax revenue (includes employment-related insurance contributions).	Medicare: payroll tax, premiums, federal tax revenue; Medicaid: federal, state tax revenue.
<b>Private insurance role</b>	~47.3% buy complementary (e.g. private hospital and dental care, optometry) and supplementary coverage (increased choice, faster access for non-emergency services, rebates for selected services).	~67% buy complementary coverage for non-covered benefits (e.g. private rooms in hospitals, drugs, dental care, optometry).	~11% opt out from statutory insurance and buy substitutive coverage. Some complementary (minor benefit exclusions from statutory scheme, co-payments) and supplementary coverage (improved amenities).	Private plans provide statutory benefits; 84% buy complementary coverage for benefits excluded from statutory package such as dental care, alternative medicine, physiotherapy, eyeglasses, contraceptives and co-payments.	Private plans provide universal core benefits; some people buy complementary (services not covered by statutory insurance) and supplementary (improved amenities and access); no coverage data available.	~11% buy supplementary coverage for more rapid and convenient access (including to elective treatment in private hospitals).	Primary private voluntary insurance covers ~66% of population (employer-based and individual); supplementary for Medicare.

Source: OECD 2012

Source: Mossialos et al. 2015 International Profiles of Healthcare Systems. The Commonwealth Fund, January 2016.

# Results – key indicators

## Public health and insurance

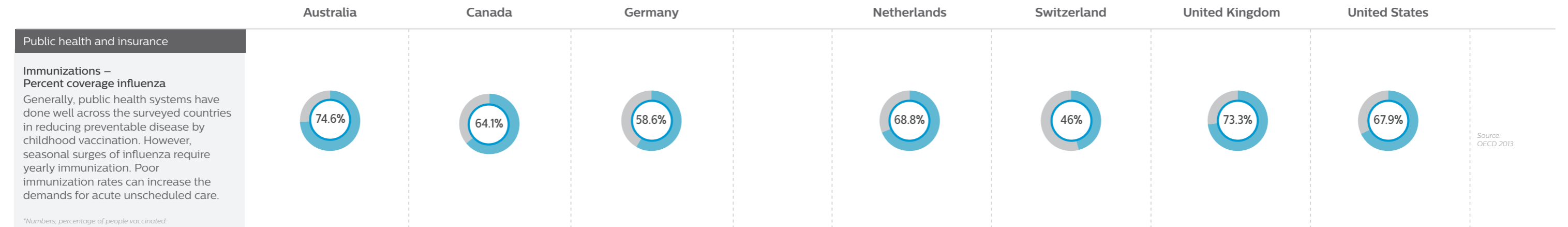
### Vaccination

Vaccination can reduce the demand for acute unscheduled care by reducing the incidence of vaccine-preventable infectious disease such as influenza, measles, and hepatitis. For many vaccine-preventable diseases, all seven countries have high-rates of vaccine uptake with rates over 90%, particularly in childhood vaccinations.<sup>24</sup> Efforts are continuously being implemented to push these rates even higher in developed countries. For example, despite having high rates of immunization, the Immunise Australia program provides incentives to providers for ‘catch-up’ vaccinations, promotes education about the

benefits of vaccination, and enhances data used to assist immunization providers in identifying people who are not immunized.<sup>25</sup> By contrast, influenza vaccinations have been more of a logistic challenge because they must be administered every year. There are relatively low acceptance rates across the seven developed countries with the highest rates in Australia, the U.K., and the U.S. and the lowest rates in Switzerland. Increasing access to these vaccines can improve vaccination rates. For example, in the U.S., retail clinics – in drug and grocery stores – have increased access to vaccinations.

**Why is this important?** Unvaccinated people are at higher risk to develop illnesses that require acute unscheduled care. In developed countries, seasonal surges of preventable cases of influenza can increase ED utilization, and may thereby compromise the care of high acuity patients and increase the risk of transmission to vulnerable populations, such as adults older than 65 years of age.

**Insights:** The surveyed countries are, in general, doing well delivering childhood vaccinations such as polio, MCV, Hib, DPT, and Tetanus; however, there are still gaps in vaccinations. There are greater gaps for yearly vaccinations, for influenza in particular. In surveyed countries, many still go unvaccinated or wait until later in the season when vaccination is less effective. The annual global influenza infection rate is estimated at 5-10% in adults and 20-30% in children.<sup>26</sup> In the U.S. and Canada, just over half of high risk patients are vaccinated.<sup>27,28</sup>





# Care decision making and delivery



## Introduction

When people become ill and injured, they often decide to seek care in specific settings where they think they will receive the best treatment. They may get guidance or advice about using a specific setting (i.e. referrals), may be brought to a specific setting (i.e. in an ambulance), may defer care to a later time, or may rely on themselves or their families for treatment.<sup>29</sup> These decisions are often made in the context of health system knowledge, available access to care, personal preferences, condition-specific needs and available resources, and any associated out-of-pocket costs.

Care can be delivered in a variety of settings from longitudinal care settings (doctors' offices) to episodic settings such as emergency departments or urgent care centers. After care is delivered in a specific setting, it may continue in the same setting, particularly if there are ongoing care needs, or be transitioned to another setting such as a clinic for follow-up or referral for specialized treatment. How and whether care is delivered and how it is transitioned to other settings, is important to quality, outcomes, and costs. Acute care episodes often occur across multiple settings.

# Results – key indicators

## Care decision making – Community and individual resources

### Longitudinal care accessibility

Across the seven countries studied, there is great variation in both access to general practitioners and whether care can be accessed with same-day appointments for sick care. In 2013, same- or next-day appointments were least available in Canada and U.S. at 41% and 48% respectively, compared to Germany which was highest at 76%. Similarly, 33% of Canadians and 26% of U.S. citizens had to wait for six days or more for care, compared to 14-16% across the remaining five countries. Longer wait times were associated with increased ED use and an increased percentage of patients who could have been treated outside the ED.<sup>30</sup>

**Why is this important?** The following metrics are indicators of accessibility of longitudinal care:

- Access to after-hours care (very or somewhat easy to get)
- Same-day or next-day appointment
- Six or more day wait for appointment
- Percent of patients with chronic conditions who have a regular physician or place to receive care
- One month or less wait to see a specialist

**Insights:** The U.K.'s efficient health system provides affordable healthcare in comparison to the other researched countries. There are few cost-related barriers in the U.K. and many options for patients who require urgent treatment. In an effort to improve accessibility, the U.K. National Health Service (NHS) has developed physician and/or nurse-led minor injury units, urgent care centers, and telephone advice systems such as NHS Direct.

However, these initiatives may not have a large impact on ED use, which is a complimentary service. Similarly, new models of after-hours care have been implemented in the Netherlands, providing large-scale after-hours care, telephone consultations, advice centers, primary care co-ops, telephone triage, and other options to treat less acute cases.



Source: Commonwealth Fund 2015

Source: Commonwealth Fund 2011, 2013



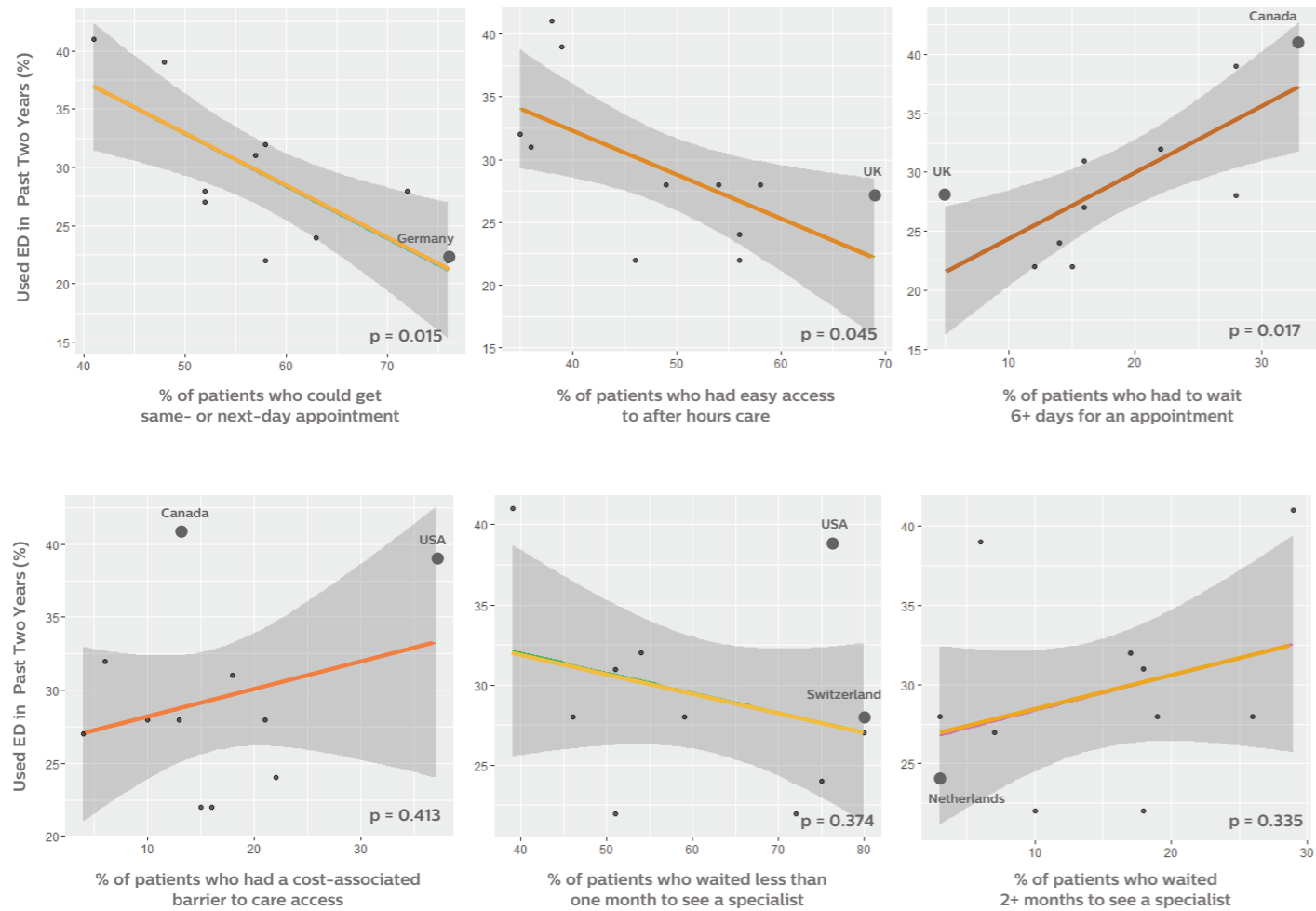
# Results – key indicators

## Care decision making – Community and individual resources

### Longitudinal care accessibility

Accessibility to longitudinal care settings was statistically related to ED utilization in surveys of patients across the sample countries. Ill or injured patients with lower accessibility to longitudinal care settings had higher ED use. Accessibility is measured by:

- Ability to make a same- or next-day appointment
- Six or more day wait period for an appointment
- Ease of access to after-hours care



Source: Commonwealth Fund 2015.





# Results – key indicators

## Care decision making – Community and individual resources

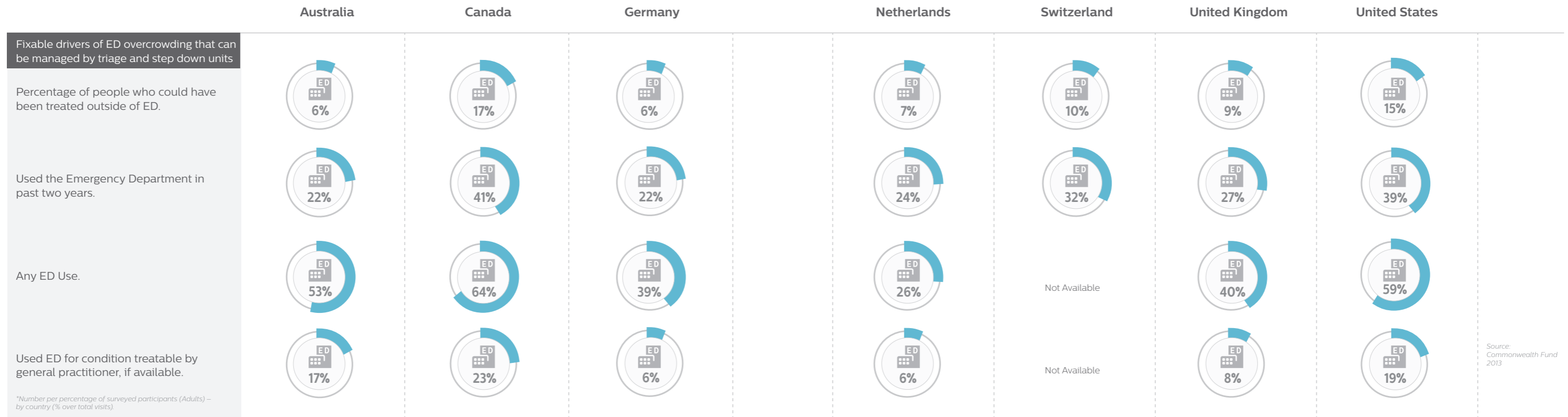
### ED utilization

Of the countries reviewed, the highest ED utilization occurs in Canada (41%) and the U.S. (39%) and the lowest in Germany (22%) and Australia (22%). The percentage of patients who could be treated outside the ED was 17% in Canada and 15% in the U.S. and the lowest in Germany and Australia at 6%. This construct was validated

by interviews with local emergency physicians. For example, Germany, the Netherlands, and Switzerland are all described as having excellent access to general practitioners, while longer waiting times for primary care are prominent in Canada and the U.S.

**Why is this important?** ED utilization is an important measure of availability of acute unscheduled care, as well as an indirect measure of access to primary care. Evidence of poor access to primary care can be observed in the high percentage of patients that could have been treated outside the ED in many countries. Across all countries, EDs can often be viewed as convenient sources of care, are open 24 hours a day, and typically do not turn patients away; often making them susceptible to over use.

**Insights:** Canada had the lowest scores for access to longitudinal care which likely results in the highest ED utilization numbers, particularly for those visiting an ED for a condition that could have been treated by a general practitioner. Similarly, the U.S. has poor access to primary care and also high ED use. Countries that have more robust primary care systems have lower ED use, such as Germany and Australia.



# Results – key indicators

## Care decision making – Community and individual resources

### Coordinated care in managing chronic conditions

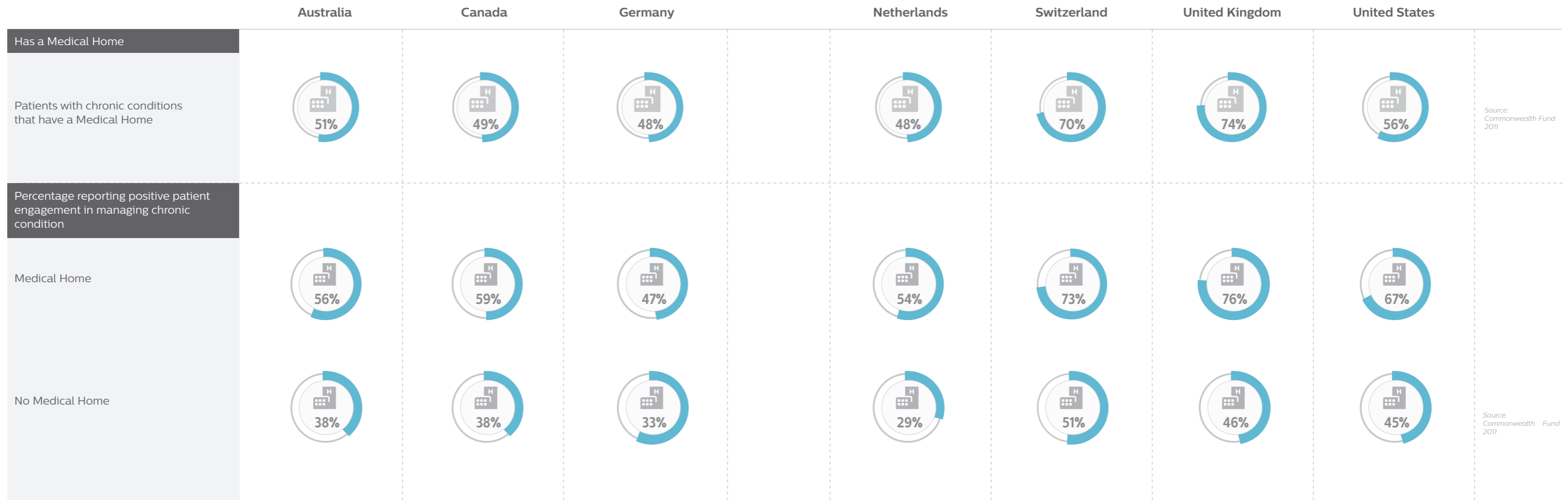
Access to care coordination also varied considerably across the seven countries studied. Most people reported having a regular place for care across all countries. Having a “medical home” was highest in the U.K. at 74% and around 48–56% across the remaining six countries. Specialist care access also varied considerably with the greatest access being in the U.S. and the Netherlands where 88% and 81% of

patients respectively wait less than a month to see a specialist. The longest wait to see a specialist was in Canada where only 52% wait less than a month. See pages 42–43. During the interviews, differences were noted in access to general practitioners versus specialty care. For example, in Germany despite having excellent access to general practitioners, rapid access to specialists such as orthopedists and dermatologists is limited.

**Why is this important?** Improved care coordination can lead to better quality of care and better patient care. Medical homes help patients coordinate care and are associated with positive experiences.<sup>32</sup> Generally, patients that have medical homes are likely to have better management of their chronic conditions. In particular, medical homes provide the patient with a regular place of care where the practice staff knows the patient’s history and often have a designated person coordinating their care. Medical homes can also reduce ED use for ambulatory medical conditions.<sup>33</sup> To provide a working definition of the medical home concept, we used positive responses to four domains of patient experiences to create a composite indicator. These responses were as follows: The adult reported having a regular doctor or place of care;

the practice staff always or often knew important information about the patient’s medical history; the adult received an appointment the same or next day the last time he or she was sick, or the practice always or often called back the same day to answer questions; and the practice always or often helped coordinate or arrange care from other providers, or, if the adult reported a chronic condition, there was one person responsible for care received for that condition.<sup>34</sup>

**Insights:** Medical homes are most common in the U.K. and Switzerland, where nearly three-quarters of the chronically ill patients surveyed had a medical home. These patients from the U.K. and Switzerland reported more positive health experiences than the other seven countries.



Source: Commonwealth Fund 2011

Source: Commonwealth Fund 2011

# Results – key indicators

## Care decision making – Community and individual resources

### Hospital bed density

There is great variation in healthcare infrastructure and provider coverage across the seven countries. According to OECD, Germany had by far the highest hospital bed density at 8.28 beds per 1,000 population with the Netherlands second at 4.7 per 1,000 population. Canada, the U.S., and the U.K. had the lowest hospital bed density at 2.72, 2.89, and 2.76 beds per 1,000 population respectively. Germany also had the highest number of practicing physicians per 1,000 population at 4.05, compared to lower rates in Canada, the U.S., and the U.K. at 2.48, 2.48, 2.67, and 2.77 respectively.

**Why is this important?** Hospital bed density is measured as the total number of acute care beds staffed and immediately available for delivering services relative to the total population of the same given service area. This standardized indicator provides a measure of service availability and access to acute care across countries and allows for comparisons within and between regions, and populations and even specific health programs. Underserved populations can also be identified using hospital bed statistics. Shortages in hospital beds can cause increased demand for acute care in episodic settings such as EDs, causing crowding and worsening patient outcomes. Multiple measurements of hospital bed density longitudinally over time can help researchers and policy makers to determine if increases in health services have occurred.

**Insights:** Many countries are able to maintain similar outcomes with considerably fewer hospitals and beds. Recent studies suggest that health systems which can deliver services efficiently, in an organized manner are necessary to improve health outcomes.<sup>35,36,37</sup> The U.S. in particular is creating new models that aim to reduce the use of hospitals for medical care moving care into the outpatient arena in an effort to reduce costs. The size of hospitals and numbers of inpatient beds may vary considerably making comparisons difficult. Consequently, comparisons of service availability and utilization of services between countries and populations needs to be done with caution. While there is no 'ideal' hospital or bed density, as global population's age, there will be increased demands for services that can only be delivered in hospitals, specifically critical care services.

	Australia	Canada	Germany	Netherlands	Switzerland	United Kingdom	United States
<b>Available beds and hospitals per 1K population</b>							
Hospital bed density	3.74	2.72	8.28	4.7	4.68	2.76	2.89
Hospital density	58.79	20.54	39.47	16.01	26.22	N.A.	17.97
Acute Care hospital beds.	3.4	1.7	5.3	3.3	2.9	2.3	2.5
<small>*Hospital Bed Density: Beds/1,000 population. *Hospital Density: per 1 million population.</small>							
<b>Hospital discharges</b>							
Discharges per 1k population.	173	83	252	119	166	129	126

Source: OECD 2009-2015

Source: OECD 2013



# Results – key indicators

## Care decision making – **Community and individual resources**

### Shortages of care providers

**Why is this important?** Clinician shortages in emergency medicine and primary care impact both care delivery and clinical outcomes. In emergency care, the lack of availability of qualified providers can impact outcomes for time-sensitive illness. For primary care, the lack of access to primary, longitudinal care providers diminishes population health as there is less disease prevention, chronic conditions are not as closely managed, and care is less coordinated.

**Insights:** In the U.S., between 1980 and 2000, the population grew from 227 million to 281 million and this is projected to increase to 388 million by 2050.<sup>38</sup> Medical school enrollments were constant from 1980 to 2005 and only rising slightly since 2005.<sup>39</sup> This will result in an increasing shortage of physicians in coming years. There is a growing demand for clinicians with the aging population and provider supply may not keep up with care demands. Even though Germany and Switzerland have the highest numbers of clinicians of the surveyed countries, some areas – particularly rural areas – have shortages. In addition, in Germany there is a talent drain where some clinicians leave for higher salaries in countries such as the U.K., Switzerland, and the U.S. Switzerland appears to have enough doctors at first glance, coming in seventh of the countries; however, 30% of physicians have foreign diplomas because Switzerland does not produce enough home-trained physicians.<sup>40</sup>



	Australia	Canada	Germany	Netherlands	Switzerland	United Kingdom	United States
Professionally active caregivers per 1k population							
Professionally active nurses.	11.53	9.52	12.96	Not Available	17.36	8.18	11.13
Professionally active physicians.	3.40	2.46	4.04	Not Available	4.04	2.79	2.56

Source: OECD 2013

# Results – key indicators

## Care decision making – Condition-specific needs and preferences

### Cost associated preferences

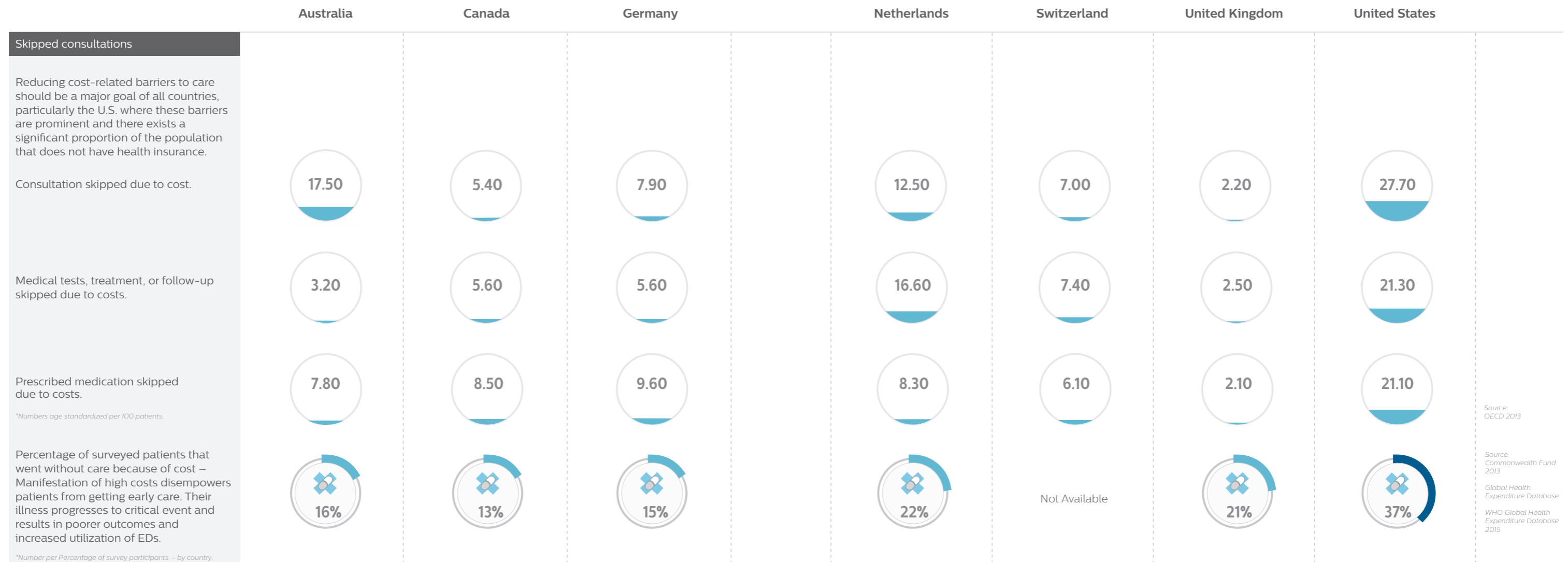
Condition-specific needs represent diagnostics and treatments required for a particular condition such as acute myocardial infarction (i.e. medications and procedures) or something minor like a laceration repair. During interviews with emergency physicians, no significant qualitative differences were identified in the treatment practices for acute and emergency care in the countries studied. There are several differences in how economics and healthcare costs impact decisions to seek care in the seven countries studied. According to the Commonwealth Fund, the U.S. demonstrated

the highest rates of cost-related barriers to care, with 23% reporting serious problems or inability to pay medical bills, compared to much lower rates across most countries (7-9%), and the lowest rate (1%) in the U.K. A total of 37% of Americans go without care because of cost, compared to lower rates of 13-16% in Germany, Canada, and Australia, and somewhat higher rates in the Netherlands (22%) and the U.K. (21%). The U.S. also ranked highest when it came to consultations, medical tests, and prescriptions being skipped due to cost constraints.

**Why is this important?** The following metrics are indicators of cost associated care decisions:

- Went without care
- Consultation skipped
- Medical tests, treatment, or follow-up skipped
- Prescribed medications skipped because of cost

**Insights:** In the U.S., many patients go without care due to cost barriers. This means that patients will not get necessary preventive care and may end up requiring more expensive and time-sensitive care when their conditions worsen or becomes critical. The ED is a safety net for these patients.



Source: OECD 2013

Source: Commonwealth Fund 2013

Global Health Expenditure Database

WHO Global Health Expenditure Database 2015

# Results – key indicators

## Care decision making – Condition-specific needs and preferences

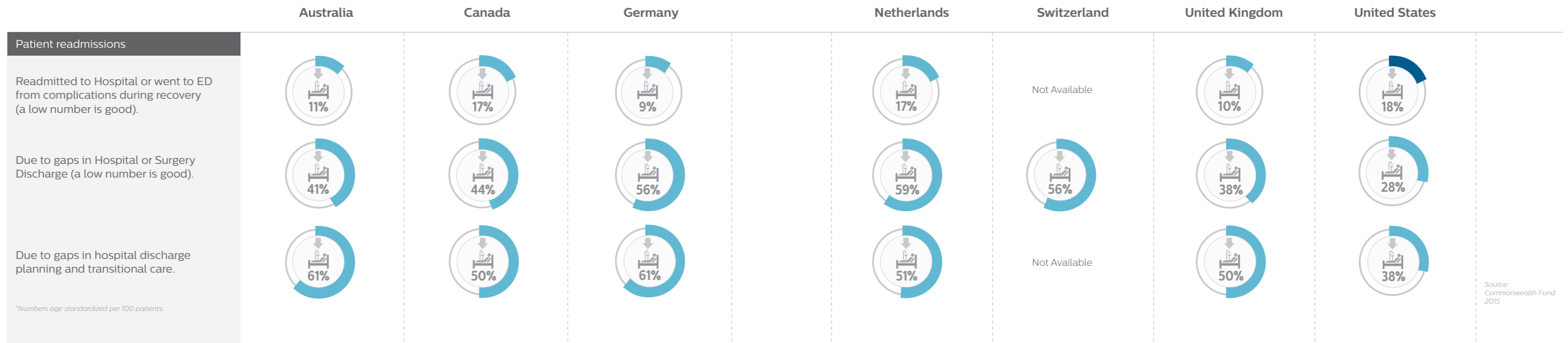
### Transitions of care

As the condition and care needs of individuals change, they move between care settings, practitioners, and their home. This movement is defined as transitions of care and can create adverse events if not managed properly. Transitions in care across providers and care settings are an important measure of how well care is coordinated. There are several measures of transitions in care across countries; including those:

- Readmitted to hospital or seen in the ED from complications
- Readmitted due to gaps in hospital or surgery discharge
- Readmitted due to gaps in hospital discharge planning and transitional care.

**Why is this important?** Older adults and their caregivers are especially vulnerable during care transitions. With their multiple chronic conditions, higher frequency of providers and visits, and complex therapeutic regimens, the elderly are particularly susceptible to failures in communication and may present the greatest need for effective transitions of care.

**Insights:** To improve quality of care and reduce the need for acute unscheduled care, significant improvements must be made in communication during transitions of care. Ineffective care transitions can lead to a lack of coordination in care and readmission to the hospital. Both adverse events and readmissions to the hospital result in higher healthcare costs to the system. Improving transitions of care can reduce adverse events and readmissions to the hospital and avoid unnecessary costs. The U.S. has instituted several programs with payment incentives that have been effective in reducing hospital readmissions and improving transitions in care across settings. Under the Patient Protection and Affordable Care Act, U.S. hospitals now face financial penalties when patients are readmitted to the hospital at an unacceptably high rate.





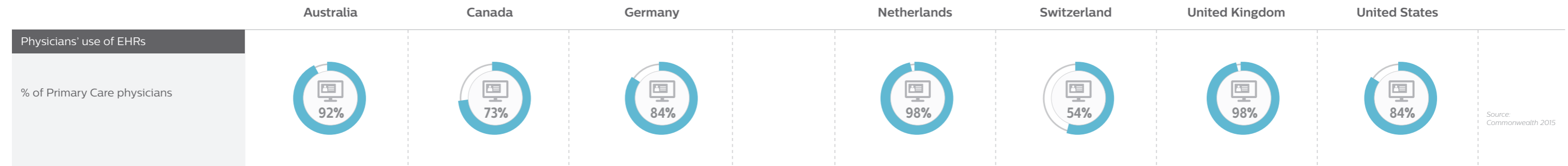
# Results – key indicators

## Care decision making – **Condition-specific needs and preferences**

### Electronic Health Record utilization

**Why is this important?** Our world has been transformed by the seamless digital flow of information. Healthcare is an information-rich industry where safe and effective care is contingent on dependable access to comprehensive patient health information. With electronic health records (EHRs), providers have access to more complete patient information when and where it is needed and can improve their ability to make care decisions that are well-informed, timely, and support quality care delivery. More complete patient information can improve care coordination and decrease fragmentation of care, reducing unnecessary tests and errors thus improving patient care. EHRs can also promote care collaboration between providers and patients, supporting well-informed decision making and patient participation in care. Coordinated patient information at the individual and community level has been utilized to facilitate quality improvement efforts and population health management.

**Insights:** Even in developed countries, full adoption of EHRs is not realized. In 2015, only 73% EHR utilization was noted in Canada and 54% in Switzerland.<sup>41</sup> Moreover, along the care continuum, integrated healthcare data was not available in any of the seven countries. Today, data is typically shared between settings via telephone, fax, or letter, and interoperability of data between settings is rare. In the Netherlands, records are not nationally standardized and lack interoperability between domains of care. While the U.S. still has gaps in adoption, there has been significant progress in improving functionality of EHRs via the Meaningful Use Incentive Program.<sup>42</sup> The American Recovery and Reinvestment Act (ARRA) of 2009 invested \$19 billion towards the adoption of electronic health records in hospitals and physician offices. Since that time, significant investments in time, energy, and other resources have been made by health systems, professional organizations, researchers, and others in the U.S. to determine how to integrate electronic systems into care practices to improve quality and increase efficiency. The U.S. is also leading the development and adoption of new artificial intelligence platforms. However, most platforms remain in beta testing or clinical trials.





## Results – key indicators

### Care decision making – **Episodic settings**

Episodic care settings vary considerably across the seven countries. Specifically, some countries have a wide variety of episodic settings for care, while others have a more limited options. The U.S. has traditional doctors' offices as well as freestanding and hospital-based EDs, urgent care centers, retail clinics, and the growing industry of telemedicine. The majority of other countries, by comparison, rely primarily on doctors' offices and hospital-based EDs.

Both provider training in emergency medicine and staffing in emergency departments varies considerably across the countries. With constantly evolving technology in EDs and increasing complexity, there is an expanding need for highly trained providers. Some countries like the U.S. and Canada have highly developed training programs for emergency medicine, while others like Germany have less mature training approaches. Within all seven countries, the distribution of trained emergency physicians varies, with notable gaps in expertise in rural areas as compared to urban EDs.





# Outcomes



## Introduction

Outcomes define the impact of care-seeking decisions and care delivery and is often determined by care quality. Outcomes are a result of the trajectory of an acute episode, where social determinants and care decision making affect the quality of care that can be delivered. Moreover, system feedback from outcomes can influence earlier phases of the acute episode, where outcomes can motivate improvements or change care decision making. Across the seven countries studied, there are differences in healthcare outcomes, disease burden, and mortality amenable to healthcare.



# Results – key indicators

## Healthcare outcomes

### Mortality amenable to healthcare

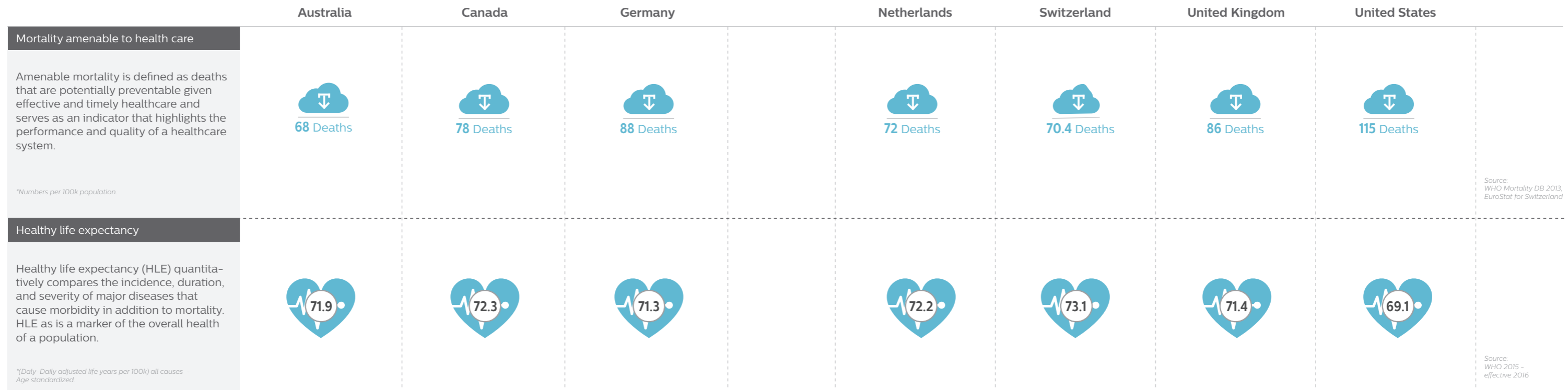
**Why is this important?** Amenable mortality are deaths from a collection of diseases, such as diabetes and appendicitis, which are potentially preventable given effective and timely healthcare. Although not a definitive metric, amenable mortality is an indicator that highlights the performance and quality of a healthcare system.

**Insights:** The U.S. has had slower progress in improving amenable mortality compared to Germany and the U.K.<sup>43</sup> and lags behind the other researched countries. Heart disease is the leading cause of amenable and preventable deaths, accounting for over 32% of amenable deaths.<sup>44</sup> Of the researched countries, the U.S. also has the highest cardiovascular disease mortality rate at 37%, and the highest incidence due to obesity.<sup>45</sup> However, the U.S. is one of the top two performers in 30-day mortality following an acute myocardial infarction (AMI). See pages 68–69. This suggests that the U.S. acute care services are performing well once patients become ill.

### Healthy life expectancy

**Why is this important?** A key healthcare outcome is the amount of time that persons are expected to live in full health. Healthy life expectancy (HLE) quantitatively compares the incidence, duration, and severity of major diseases that cause morbidity, in addition to a more discrete measure of mortality. HLE is a marker of the overall health of a population. From the literature, it is clear that morbidity and mortality can be reduced by improving access to emergency care settings such as EDs, particularly in rural areas where critical access hospitals are closing. In addition, healthy life expectancy is a good measure of preventive care, and how different countries lifestyles promote positive health behaviors.

**Insights:** All of the researched countries perform well on this metric with little variation. Switzerland has the highest HLE at 73.1 years with a narrow margin over the other six countries. When interview participants in the seven countries were asked “how is your health in general?”, the majority responded favorably. Six countries, Australia (85%), Canada (89%), the Netherlands (76%), Switzerland (81%), the U.K. (74%), and the U.S. (88%) received high marks with a higher than OECD country average (69%) of respondents reporting that they were in “good or very good” health. Only Germany fell below the OECD average at 65%.<sup>46</sup>



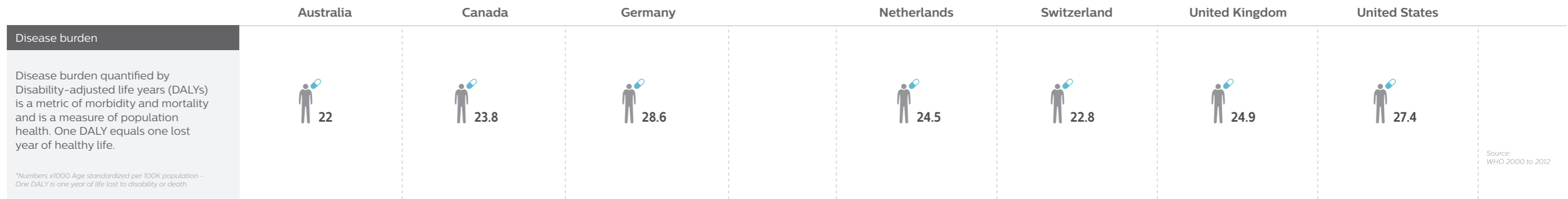
# Results – key indicators

## Healthcare outcomes

### Disease burden

**Why is this important?** Disability-adjusted life years (DALYs) equals the sum of years of life lost and years lived with disability. DALY is another metric of morbidity and mortality, but highlights the disease burden. One DALY equals one lost year of healthy life.

**Insights:** Germany, followed by the U.S. has the highest DALYs of the survey countries as well as the highest number of Years Lived with Disability (YLDs).<sup>47</sup> In Germany, this is likely related to the large older adult population.



# Results – key indicators

## Healthcare outcomes

### Acute care quality indicators

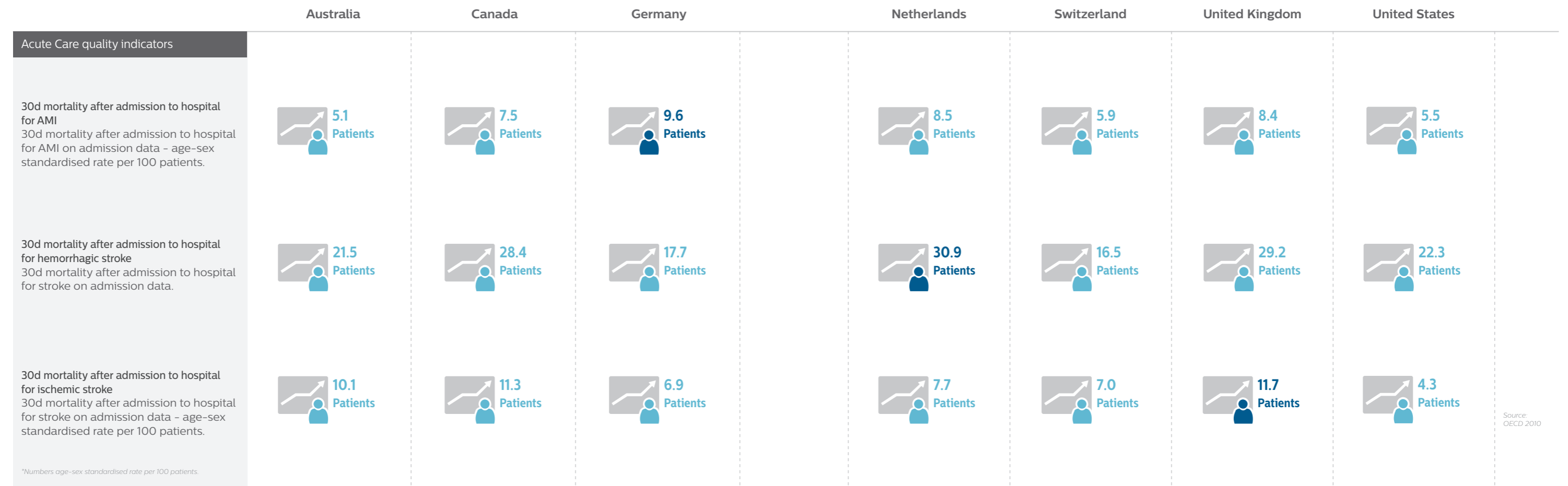
**Why is this important?** An acute care quality indicator is the percentage of patients with 30-day mortality after admission to hospital following:

- Hemorrhagic stroke
- Ischemic stroke
- Acute myocardial infarction

Three common conditions treated in acute care that are critical and resource-demanding. 30-day readmission to the hospital following a serious acute event is an indicator of the quality of acute care.

**Insights:** The U.S. has the best performance with the lowest 30-day mortality scores following ischemic stroke and second lowest for acute myocardial infarction. Despite discouraging scores in the U.S. across other metrics, these Acute Care Quality Indicators suggest that patients in the U.S. are getting quality care in acute settings and a higher

disease incidence plays a role on other metrics. On this metric, there appears to be a tradeoff between healthcare costs and delivery of quality of acute care. Specifically, the U.K. and Canada operate with the least amount of resources (clinicians, beds, hospitals) delivering care at lowest costs to the patient.<sup>48</sup>





# Results – key indicators

## Healthcare outcomes

### Healthy life expectancy

Healthy life expectancy is the longest in Switzerland at 73.1 years and the shortest in the U.S. at 69.1 years. See page 64. Overall life expectancy is also shortest for the U.S. at 79.3 years.<sup>49</sup> Disease burden or the number of years lost due to overall poor health as measured as Disability-Adjusted-Life Years (DALY) is also highest in the U.S. at 22,775 and lowest in Australia at 17,696.<sup>50</sup>

A recent study published in JAMA reported that 48% of the reason for lower life-expectancy in the U.S. was due to injury-related reasons, 21% of which came from differences in firearm-related injuries, 14% from drug poisoning, and 13% motor vehicle crashes.<sup>51</sup> Mortality amenable to healthcare is also highest in the U.S. at 115 deaths and lowest in Australia at 68 deaths. Infant mortality rates are highest in the U.S. at 5.87 and lowest in Germany at 3.62. This has been explained by higher rates of preterm births in the U.S. and other factors such as the lack of prenatal care. Importantly, while infant mortality in other developed countries has been decreasing for the past two decades, it has been increasing in the U.S.<sup>52</sup>



# Results – key indicators

## Healthcare costs

### Total health expenditure

In 2013, annual per capita spending was highest in the U.S. at \$8,745. It is considerably lower in other countries with the lowest per capita cost of \$3,289 in the U.K. See pages 74–75. The U.S. also leads in the proportion of people with out-of-pocket costs that exceeded \$1,000, with 39% reporting exceeding this figure compared to a second of 36% in the Netherlands to a low of 1% in the U.K. Similarly, the U.S. leads in the amount spent on healthcare administration costs at \$667 per capita compared to a low of \$57 per capita in the U.K.<sup>53</sup>

**Why is this important?** Total expenditure on health as a percentage of gross domestic product (USD\$) is a measurement of health system costs.

**Insights:** It is well known that the U.S. has exceptionally high healthcare expenditures but in recent years growth has slowed as a result of major efforts to improve performance in relation to the other OECD countries. In the U.S., high health-sector prices explain much of the difference and coverage challenges. Other high-spending countries are able to keep expenditures down with policy changes.<sup>54</sup>

The U.K., followed by Australia, perform the best along this metric. In the U.K., costs are controlled by a global NHS budget that cannot be exceeded. NHS budgets are set at the national level, usually on a three-year cycle. Clinical Commissioning Groups (CCGs) are expected to achieve a balanced budget each year. Despite rising demand, the NHS budget has remained flat. Financial pressure has been associated with deterioration in the quality of care, most notably on waiting time targets.<sup>55</sup>





# Results – key indicators

## Healthcare costs

### Individual cost of healthcare

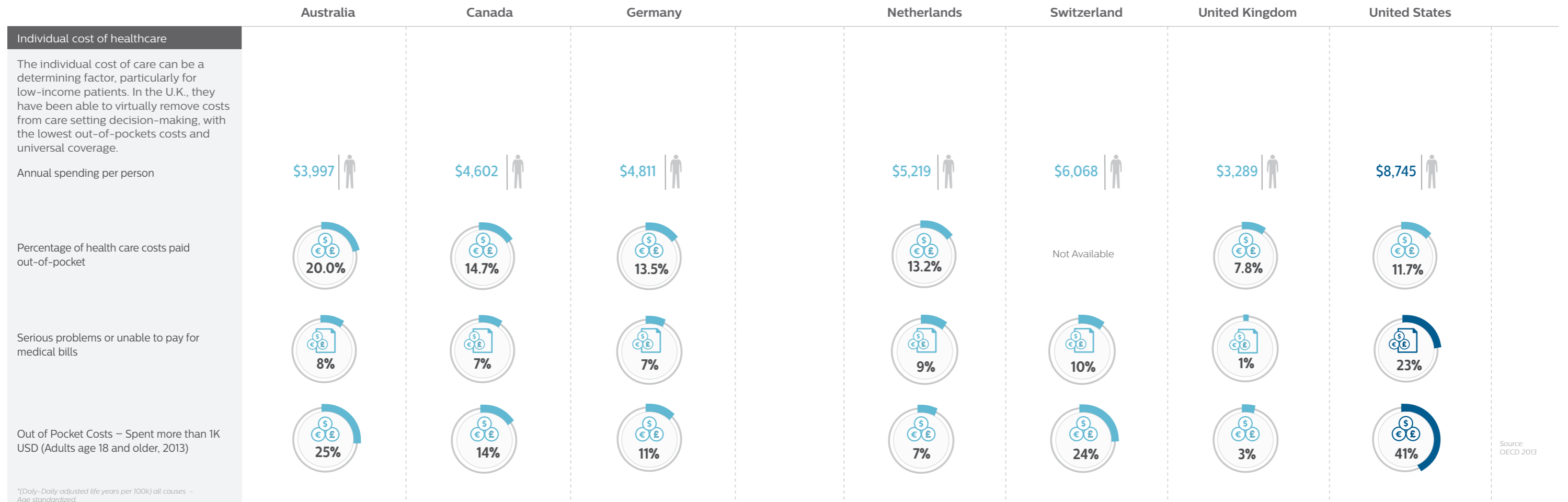
While the U.S. is an outlier when it comes to the high costs of care, high disease burden and mortality amenable to healthcare performance is the best of the surveyed countries for acute care quality indicators, such as 30-day readmission after myocardial infarction and ischemic stroke. Quality measurement for acute care and transitions in care is immature across all

countries, but the U.S. has a great focus on adherence to specific metrics such as 30-day readmission rates. This demonstrates that a focus on quality improvement can be effective in improving quality and transitions in care. However, additional work is needed to develop measures of quality for acute unscheduled care across the continuum.

**Why is this important?** The following metrics are indicators of personal expense of healthcare to patients:

- Spent more than \$1,000 USD in Out-of-Pocket costs
- Serious problems or unable to pay for medical bills
- Percentage of healthcare costs paid Out-of-Pocket
- Annual Spending Per Person. Cost of care can be a determining factor, particularly for low-income patients

**Insights:** In the U.S., care setting decisions and delayed medical care are largely driven by costs. In the U.K., they have been able to virtually remove costs from care setting decision-making with the lowest out-of-pockets costs and universal coverage. In addition to the U.S., Switzerland's healthcare costs for patients are also among the highest in the world. In the U.K. in 2014, approximately 95,000 patients waited up to 12 hours to be seen and approximately 7.4% of patients waited more than four hours to be seen, where both indicators have dramatically increased since 2004.<sup>56</sup> Opposed to a global budget, Switzerland has installed "Regulated competition" which is aimed at lowering costs and ensuring high-quality care.





# Summary



## Introduction

Ten general principles about the delivery of acute unscheduled care emerged while exploring health systems across these seven developed countries. Successful strategies that have been implemented to improve acute unscheduled care are discussed herein. Given the wide differences revealed by this study, all countries researched have opportunities to learn from each other.



# Summary

## General principles and recommendations



### Social and individual determinants of health

- Socio-environmental
- Individual
- Public health



### Care decision making and delivery

- Resources
- Preferences and needs
- Episodic care
- Longitudinal settings
- Community care



### Outcomes

- Healthcare outcomes
- Healthcare costs



# Summary

## General principles and recommendations

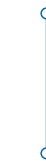


### Social and individual determinants of health

- Socio-environmental
- Individual
- Public health



Social Determinants of Health



Episodic Care

**Social determinants** are an important contributor to the demand for acute unscheduled care. These social determinants include health behaviors such as smoking, unhealthy eating, and the use of alcohol and illicit substances, all of which increase the incidence of acute illness and injury and chronic disease. In addition, violence is a major contributor to acute unscheduled care. Poverty and access to affordable housing also affects the demand for acute unscheduled care as they impact the ability to access primary care, increase allostatic load, and can create barriers to healthy behaviors. Finally, as the population ages across the developed and developing world, this will also increase the demand for acute care, and increase the need for robust systems that can manage increasingly complex care delivery. Many countries have implemented policies that seek to address social determinants to varying degrees. However, most countries continue to struggle with social determinants, such as the U.S., which has a high incidence of obesity.

**Recommendation:** Programs should continue to be developed and implemented that directly address social determinants, with a focus on areas that create high demand for acute unscheduled care. Emergency care providers must prepare for this unique patient population and consider its effects when allocating staff and resources and designing workflow.



Public Health and Insurance



Care Decision Making

Lack of access to health insurance contributes to poorer population health and higher demand for acute unscheduled care. In general, when people have or gain health insurance coverage, they have better access to preventive services and to longitudinal care settings to help manage chronic illness. Lack of access or loss of health insurance can contribute to higher rates of acute and chronic illness, and can lead to postponing necessary care. This can lead to an increase in the demand for acute unscheduled care. Cost-related barriers to receiving care are worse when there are gaps in health insurance coverage and high out-of-pocket costs.

**Recommendation:** Increasing access to comprehensive **health insurance coverage** and **reducing out-of-pocket costs** should be a central focus for countries with gaps in coverage and high costs of care.



# Summary

## General principles and recommendations

24

Care Decision Making



Care Delivery

When people become ill, some may not make the most efficient decisions about where and when to seek care because of the lack of knowledge of health and healthcare systems. Programs that aid with **choice decisions** for individuals can be effective in ensuring that patients are cared for in the setting that will best meet their needs in the most efficient manner. In addition, improving education about the capacities and capabilities of healthcare systems should be a priority. Some countries such as the Netherlands and Switzerland have systems – specifically call-in phone numbers and even decision support for operators in some cases – that can help patients decide where and when to seek acute unscheduled care. In the U.S., examples of these systems exist but are not available for much of the population.

**Recommendation:** Systems should be developed that can help people make choices about where and when to seek acute care, and should also provide general education about the capabilities and capacities of care delivery systems.



Longitudinal Settings



Episodic Care



Individual & Community Care

Inadequate **access to general practitioners and medical homes** for acute unscheduled care leads to higher use of episodic settings, particularly emergency departments. Having a regular source of care as a central point of contact for acute and chronic healthcare needs can improve health and reduce the demands for acute unscheduled care. In addition, a central medical home to coordinate care across settings is even more important for patients with complex healthcare needs. Many developed countries have robust networks of general practitioners who are the first point of contact for illness and injury, such as Germany and the U.K. However, some countries such as the U.S. have examples of effective medical home models, but a shortage of primary care physicians which creates disparities in access for a large part of the population.

**Recommendation:** Programs should focus on increasing access to general practitioners and medical homes, who in turn should increase coordination of care and health maintenance and reduce the need for acute unscheduled care.



Care Delivery




Healthcare Outcomes

Despite the presence of a centrally coordinated system of care within a medical home or general practitioner, emergency departments deliver complementary services and are a necessary, effective, efficient way to deliver time-sensitive critical care and rapid diagnostic services for the ill and injured. EDs are an important and necessary safety net. Episodic settings like urgent care centers, retail clinics, and direct to consumer telemedicine can increase the convenience of care delivery, but they do not replace EDs. In addition, while there are examples of integrated care delivery in developed countries, there are many gaps in care coordination across providers, particularly at the intersection of acute unscheduled care delivered in episodic settings, and longitudinal care. In addition, because delays in **access to critical care** can worsen healthcare outcomes, it is important that these services be available to the entire population, including the underserved and those in rural areas.

**Recommendation:** Policies should promote and sustain high-quality emergency departments for the acutely ill and injured and promote other episodic or longitudinal care setting for those with non-acute conditions.

# Summary

## General principles and recommendations



**Care decision making and delivery**

- Resources
- Preferences and needs
- Episodic care
- Longitudinal settings
- Community care



Care Delivery



Outcomes

Providers of emergency services require **extensive training to deliver high-quality care**. With increasing complexity of technology and care delivery processes, high-functioning emergency care systems require providers – physicians and nurses – who have dedicated training in emergency care. This requires an organized approach to training and assessment of competency. Dedicated training for emergency medicine is still evolving in developed countries such as Germany. There is variation in the requirements to practice emergency medicine across the seven surveyed countries. The U.S. and Canada are leaders in the training of emergency medicine providers.

**Recommendation:** Highly trained emergency physicians and nurses bring time-sensitive care to communities and save lives. This requires focused training in emergency care. Countries should continue to develop such programs or create them where needed.



Episodic Care



Longitudinal Settings


To deliver efficient acute care, **interoperable healthcare information** is necessary. Many electronic health record systems (EHRs) are not designed to maximize the user experience and the sharing of health records across the care continuum. As the complexity of care and technology improves, ensuring that providers have complete, accessible, and usable patient record systems is increasingly important. While the adoption of EHRs and digitization (i.e. PACS, RIS, LIS) has increased access to health information, healthcare still significantly lags behind most industries in translating information technology to improvements in efficiency. Using health information technology for population health management is also a promising practice that is gaining traction in the U.S., and has the potential to improve health and lower costs. Currently, none of the developed countries studied have fully interoperable health information technology or standards for usability; however, the U.S. is beginning to move in that direction.

**Recommendation:** Policies should be developed that promote fully interoperable health information technology, information sharing, and which increase the usability of healthcare information for providers and patients.



# Summary

## General principles and recommendations



### Outcomes

- Healthcare outcomes
- Healthcare costs



Care Delivery

In order to understand and improve the quality and value of acute care delivery, measures are needed to assess care delivery. Currently, quality measures for acute unscheduled care are immature and have not been standardized. Measures exist for specific care processes and outcomes such as throughput and for time-sensitive conditions such as stroke and acute myocardial infarction. There is great variation across countries in how measurement of acute care is or is not deployed.



Outcomes

**Recommendation: Quality measures for acute care** should be developed and deployed across healthcare systems and used to monitor the quality of care and access for ill and injured patients.



Healthcare Outcomes

The way that payment is structured for acute unscheduled care is important. Fee-for-service payment systems can increase costs because of the lack of incentive to control volume. However, moving away from the fee-for-service model, such as the current movement in the U.S., can have an impact on healthcare access. For example, the payment system in the National Health Service in the U.K., where facilities have fixed budgets, can result in lower access to services and longer waiting times. Episodic settings are traditionally paid through fee-for-service mechanisms because they meet community needs and



Healthcare Costs

they do not inherently control volume. There is no clear way to pay for acute unscheduled care in episodic settings that radically departs from fee-for-service and will not impact access.

**Recommendation:** While consideration should be given to controlling costs of care, payment models for acute unscheduled care should ensure that access to high-quality care is promoted and maintained.



Episodic Care

There are processes for delivering acute unscheduled care that can translate across settings. Specifically, there are a variety of **evidence-based ways** to reduce waiting times for acute care within complex settings such as EDs. This includes how people enter the system (i.e. triage), how people receive care, how care is organized, and how transitions of care are managed after discharge or admission.



Outcomes

**Recommendation:** Acute care providers and facilities should learn from the successes and failures of groups of providers and institutions that are focused on similar goals. Evidence-based best practices and strategies that have demonstrated reductions in wait times for acute care should be implemented.

# References

1. Agency for Healthcare Research and Quality (AHRQ). *Defining the PCMH*. <https://www.pcmh.ahrq.gov/page/defining-pcmh>.
2. Inouye, S.K., Studenski S., Tinetti M.E., and Kuchel, G.A., *Geriatric syndromes: clinical, research, and policy implications of a core geriatric concept*, J Am Geriatr Soc. 2007 May; 55(5):780–91.
3. *The Geriatric Emergency Department Guidelines*, American College of Emergency Physicians, The American Geriatrics Society, Emergency Nurses Association, and the Society for Academic Emergency Medicine, Copyright © 2013, [https://www.saem.org/docs/default-source/saem-documents/education/geri\\_ed\\_guidelines\\_final.pdf?sfvrsn=6](https://www.saem.org/docs/default-source/saem-documents/education/geri_ed_guidelines_final.pdf?sfvrsn=6).
4. *Towards a Healthier Canada – 2015 Progress Report on Advancing the Federal / Provincial / Territorial Framework on Healthy Weights*, Pan-Canadian Public Health Network, Date modified: 2016-01-22, <http://www.phn-rsp.ca/thcpr-vcpsre-2015/index-eng.php>.
5. Bertakis, K. D. and Azari, R., *Obesity and the Use of Health Care Services*, Obesity Research, 13: 372–379. doi:10.1038/oby., 2005.49.
6. Finkelstein, E.A., et al., *Annual Medical Spending Attributable To Obesity: Payer-And Service-Specific Estimates*. Health Affairs 28, no.5 (2009):w822–w831. doi: 10.1377/hlthaff.28.5.w822.
7. *A Report of the Surgeon General. How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease*, Atlanta (GA): Centers for Disease Control and Prevention (US); 2010. ISBN-13: 978-0-16-084078-4.
8. *Health Effects of Secondhand Smoke*, Centers for Disease Control and Prevention, Page last updated: January 11, 2017, [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/secondhand\\_smoke/health\\_effects/](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/secondhand_smoke/health_effects/).
9. World Health Organization. 2005. *Global Health Observatory (GHO) data - Prevalence of tobacco smoking*. <http://www.who.int/gho/tobacco/use/en/>.
10. *Smoke-Free Public Places Act 2003*, A2003-51, Australian Capital Territory, Republication No 7, Effective: 1 August 2016, <http://www.legislation.act.gov.au/a/2003-51/current/pdf/2003-51.pdf>.
11. The World Health Organization. *Health and development: Poverty and health*. <http://www.who.int/hdp/poverty/en/>
12. Health Poverty Action. *The Cycle of Poverty and Poor Health*. <https://www.healthpovertyaction.org/info-and-resources/the-cycle-of-poverty-and-poor-health>.
13. *The World Bank. Poverty and Health Brief*. August 25, 2014. <http://www.worldbank.org/en/topic/health/brief/poverty-health>.
14. *Key Facts about the Uninsured Population*, The Henry J. Kaiser Family Foundation, Sep 29, 2016. <http://kff.org/uninsured/fact-sheet/key-facts-about-the-uninsured-population/>.
15. *America's uninsured crisis: consequences for health and health care*, Committee on Health Insurance Status and Its Consequences, Board on Health Care Services, Institute of Medicine of the National Academies, National Academy Press, 2009. Downloaded from <https://www.nap.edu/download/12511>.
16. World Health Organization. 2013. Mortality Database. [http://www.who.int/healthinfo/mortality\\_data/en](http://www.who.int/healthinfo/mortality_data/en).
17. Bureau of Infrastructure, Transport and Regional Economics (BITRE). 2016. *Road trauma Australia, 2015 statistical summary* BITRE. Canberra ACT. <https://www.cdc.gov/heartdisease/facts.htm>.
18. Colligan E.M., Pines J.M., Colantuoni E., Howell B., and Wolff J.L., *Risk Factors for Persistent Frequent Emergency Department Use in Medicare Beneficiaries*, Ann Emerg Med. 2016 Jun; 67(6):721-9.
19. Nock MK, Hwang I, Sampson N, Kessler RC, Angermeyer M, Beautrais A, et al. (2009) *Cross-National Analysis of the Associations among Mental Disorders and Suicidal Behavior: Findings from the WHO World Mental Health Surveys*. PLoS Med 6(8): e1000123. <https://doi.org/10.1371/journal.pmed.1000123>.
20. Owens, P. L., Ph.D., Mutter, R., Ph.D., Stocks, C., R.N., M.H.S.A., *Mental Health and Substance Abuse-Related Emergency Department Visits among Adults*, 2007 Statistical Brief #92, July 2010, Healthcare Cost and Utilization Project, <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb92.jsp>.
21. *Guideline for Prescribing Opioids for Chronic Pain*, USDHHS, Centers for Disease Control and Prevention, [https://www.cdc.gov/drugoverdose/pdf/guidelines\\_factsheet-a.pdf](https://www.cdc.gov/drugoverdose/pdf/guidelines_factsheet-a.pdf).
22. *Substance Abuse and Mental Health Services Administration*. 2013. Strategies and interventions for reducing nonmedical use of prescription drugs: a review of literature (2006–2013). Rockville, MD. <http://captus.samhsa.gov/access-resources/strategies-and-interventions-reducing-nonmedical-use-prescription-drugs-review-lite>.
23. Vu, F., Daeppen, J. B., Hugli, O., Iglesias, K., Stucki, S., Paroz, S., ... & Bodenmann, P. (2015). *Screening of mental health and substance users in frequent users of a general Swiss emergency department*. BMC emergency medicine, 15(1), 27.
24. World Health Organization (WHO). 2016. Global Health Observatory (GHO) data – Vaccination coverage. <http://www.who.int/gho/immunization/en/>.
25. *Improving immunisation coverage rates*, Immunise Australia Program, Australian Government Department of Health, Page last updated: 21 April 2015, <http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/improving-immunisation-coverage-rates>.
26. *Influenza*, Biologicals, World Health Organization, 2017, <http://www.who.int/biologicals/vaccines/influenza/en/>.
27. Gionet, L., *Flu vaccination rates in Canada*. Health at a Glance, Statistics Canada, Health at a Glance, Statistics Canada Catalogue no. 82-624-X, <http://www.statcan.gc.ca/pub/82-624-x/2015001/article/14218-eng.htm#a6>.
28. *11-Country Survey: U.S. Adults Most Likely to Forgo Care Due to Cost, Have Trouble Paying Medical Bills; U.S. Stands Out For Highest Out-Of-Pocket Costs And Most Complex Health Insurance*, New York, NY, November 18, 2010, The Commonwealth Fund, Page last reviewed: September 29, 2016, <http://www.commonwealthfund.org/publications/press-releases/2010/nov/11-country-survey>.
29. Ragin, D.F., et al., *Reasons for using the emergency department: results of the EMPATH Study*, Acad Emerg Med. 2005 Dec;12(12):1158–66.
30. R. Osborn, D. Moulds, E. C. Schneider et al., “Primary Care Physicians in Ten Countries Report Challenges Caring for Patients with Complex Health Needs,” Health Affairs, Dec. 2015 34(12):2104–12.
31. *New International Health Survey of Sicker Adults Finds Those with a Medical Home Fare Better*, New York, NY, November 9, 2011, The Commonwealth Fund, <http://www.commonwealthfund.org/publications/press-releases/2011/nov/international-health-policy-survey>.
32. Cathy S., et al., *Toward Higher-Performance Health Systems: Adults' Health Care Experiences in Seven Countries, 2007*, Health Affairs, doi: 10.1377/hlthaff.26.6.w717 Health Aff November 2007 vol. 26 no. 6 w717-w734, <http://content.healthaffairs.org/content/26/6/w717.ful>.
33. Pines, J.M., Keyes, V., van Hasselt, M., and McCall, N., *Emergency department and inpatient hospital use by Medicare beneficiaries in patient-centered medical homes*, Ann Emerg Med. 2015 Jun; 65(6):652–60.
34. Cathy S., et al., *New 2011 Survey Of Patients With Complex Care Needs In Eleven Countries Finds That Care Is Often Poorly Coordinated*, Health Affairs, Published online before print November 2011, doi: 10.1377/hlthaff.2011.0923, December 2011 vol. 30 no. 12 2437-2448, <http://content.healthaffairs.org/content/30/12/2437.full?keytype=ref&siteid=healthaff&ikey=dNO43VvqkWOW>.
35. OECD 2010, “Health care systems: Getting more value for money”, OECD Economics Department Policy Notes, No. 2. <https://www.oecd.org/eco/growth/46508904.pdf>.
36. Chisholm, D. and Evans, D. (2010). *Improving health system efficiency as a means of moving towards universal coverage*. World Health Report Background Paper, No 28. <http://www.who.int/healthsystems/topics/financing/healthreport/28UCefficiency.pdf>.
37. Berman, P., Pallas, S., Smith, A., Curry, L. and Bradley, E. (2011). *Improving the delivery of health services: A guide to choosing strategies*. Health, Nutrition and Population Discussion Paper, The World Bank. <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/ImprovingDeliveryofHealthServicesFINAL.pdf>
38. United States Census Bureau 2017. <https://www.census.gov/>.
39. *U.S. Medical School Applicants, Enrollment, and Graduates, 1924–25 to 2014–15*. Association of American Medical Colleges. 2014. <http://www.aamcdiversityfactsandfigures2016.org/report-section/section-5/applicants-enrollment/#tablepress-1>.
40. OECD (2013). OECD Stat. (database). <http://stats.oecd.org/>.
41. *Physicians' Use of EMRs (% of Primary Care Physicians)*, International Health Care System Profiles, The Commonwealth Fund, 2015, [http://international.commonwealthfund.org/stats/use\\_of\\_emrs/](http://international.commonwealthfund.org/stats/use_of_emrs/).
42. Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs. Centers for Medicare and Medicaid Services, 2011, <https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html?>
43. Ramkissoon, F.E., HBSc., Commentary on “In Amenable Mortality – Deaths Avoidable Through Health Care – Progress in the US Lags That of Three European Countries”, Annals of Medicine & Surgery, 2013 Volume 2, Issue 1, Pages 5–7, [http://www.annalsjournal.com/article/S2049-0801\(13\)70018-9/abstract](http://www.annalsjournal.com/article/S2049-0801(13)70018-9/abstract).
44. Gay J, Paris V, Devaux M, de Looper M. *Mortality amenable to health care in 31 OECD countries: estimates and methodological issues*. Paris: Organization for Economic Cooperation and Development; 2011.
45. National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention. 2015. *Heart Disease Facts - Heart Disease in the United States*. <https://www.cdc.gov/heartdisease/facts.htm>.
46. OECD Better Life Index, <http://www.oecdbetterlifeindex.org/topics/health>.
47. GBD 2015 DALYs and HALE Collaborators. *Global, regional, and national disability-adjusted life-years (DALYs) for 315 diseases and injuries and healthy life expectancy (HALE), 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015*. The Lancet. 2016 Oct 7; 388:1603–1658.
48. World Health Organization. 2015. Global Health Expenditure Database. <http://www.who.int/health-accounts/ghed/en/>.
49. OECD (2013). OECD Stat. (database). <http://stats.oecd.org/>.
50. World Health Organization. Mortality database. World Health Organization, 2009. [www.who.int/healthinfo/mortality\\_data/en](http://www.who.int/healthinfo/mortality_data/en).
51. Fenelon, A., Chen, L.H., and Baker, S.P., *Major Causes of Injury Death and the Life Expectancy Gap Between the United States and Other High-Income Countries*, JAMA. 2016 Feb 9; 315(6):609-11.
52. MacDorman, M.F., et al., *Recent Increases in the U.S. Maternal Mortality Rate: Disentangling Trends from Measurement Issues*, Obstet Gynecol. 2016 Sep; 128(3):447-55.
53. Commonwealth Fund International Health Policy Survey. Commonwealth Fund, 2013. <http://www.commonwealthfund.org/topics/current-issues/international-surveys>.
54. Lorenzoni, L., MSc, Belloni, A., MSc, and Sassi, F., PhD, *Health-care expenditures and health policy in the USA versus other high-spending OECD countries*, The Lancet, Volume 384, No. 9937, p83–92, 5 July 2014, [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)60571-7/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60571-7/abstract).
55. Robertson, Ruth, *Six ways in which NHS financial pressures can affect patient care*, The King's Fund, March 31, 2016, <https://www.kingsfund.org.uk/publications/six-ways>.
56. OECD (2013). OECD Stat. (database). <http://stats.oecd.org/>.



# Authors

## Ryan Oglesby

Ryan Oglesby, PhD, MHA, RN, CEN, CFRN, NEA-BC, is a principal and the North American Lead for Emergency Department Assessments at Philips. Ryan brings 20+ years of clinical and administrative experience in pre-hospital, emergency, trauma, and critical care settings. He is an active member of the Emergency Nurses Association, the Air and Transport Nurses Association, and the American Organization of Nurse Executives. Ryan lectures on a number of leadership and clinical topics pertaining to emergency care, leadership, and performance improvement. He holds a BS in Nursing as well as a Master of Science in Nursing and a Master of Health Administration from the University of North Carolina. Ryan also obtained a PhD in Nursing with a focus in healthcare administration at UNC. As a Certified Emergency Nurse, Certified Flight Registered Nurse, and a Nurse Executive Advanced – Board Certified, he maintains an expertise in emergency care and nursing administration.

## Jesse Pines

Jesse Pines, MD, MBA, MSCE, is the Director of the Center for Healthcare Innovation and Policy Research and a Professor of Emergency Medicine and Health Policy & Management at George Washington University. His research focuses on understanding trends in quality and outcomes in acute unscheduled care. He served on the faculty at the University of Pennsylvania School of Medicine for 5½ years. Dr. Pines also leads Urgent Matters, a program that disseminates information on best practices in emergency care. Jesse holds a BA in the Biological Basis of Behavior, a Master's in Clinical Epidemiology, an MBA and an MD, completing his residency in emergency medicine at the University of Virginia Health Sciences Center and a fellowship in research at University of Pennsylvania.

## Christine Swisher

Christine Swisher, PhD, is a scientist at Philips Research North America who specializes in artificial intelligence with a background in bioinformatics, computer vision, and physics. Prior to joining Philips, she did her doctoral training in bioengineering at UCSF & UC Berkeley followed by post-doctoral training at Massachusetts General Hospital/Harvard Medical School focusing on precision medicine. At Philips, she is part of the Deep Learning team and Acute Care Solutions Department. She has created innovations in critical care alarm management, ED triage, and camera-based monitoring.

## Kanu Goel

Kanu Goel is an experienced design researcher specializing in stakeholder needs assessment and environmental analysis as well as emergency department design, processes, and data analytics. She leverages co-creative methodologies to develop insights-based recommendations. Kanu is trained in interior architecture with a Master's degree in design management and is EDAC (Evidence-based Design Accreditation and Certification) certified.

# Acknowledgments

Helene Beaugrand

Sean Carney

Mark Feinberg

Stefan Martens

Donna McHale

Laura McNally

Gordon Murtaugh

Joe Robinson

Sophia Zhou

# Interviewees

- Australia:  
**Drew Richardson**, MD, BMedSc, MBBS, FACEM, GradCertHE  
Australian National University, Canberra Hospital and Health Services
- Canada:  
**Dr. Howard Ovens**, MD  
Department of Emergency Medicine, Sinai Health System
- Germany:  
**Hans-Joerg Busch**, MA, PhD  
University Emergency Center, Albert-Ludwigs-Universität Freiburg
- Netherlands:  
**Harm Haak**, MD, PhD  
Department of Internal Medicine, Maxima Medisch Centre and Department of Internal Medicine, Maastricht University Medical Centre
- Switzerland:  
**Christian Nickel**, MD  
Department of Emergency Medicine, University Hospital Basel, Basel  
**Urs Schneider**, MD, MBA  
Chief Medical Officer, Philips Healthcare DACH
- UK:  
**Suzanne Mason**, MBBS, FRCS, FFAEM, MD  
School of Health and Related Research, The University of Sheffield
- U.S.:  
**Philip Anderson**, MD, FACEP  
Department of Emergency Medicine, Beth Israel Deaconess Medical Center  
**Jay Kaplan**, MD, FACEP  
American College of Emergency Physicians (ACEP) and Ochsner Health System

