Course Book

INTERNATIONAL HEALTH SYSTEMS

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INTERNATIONAL
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APPLIED SCIENCES

LEARNING OBJECTIVES

If healthcare systems were to choose a common mission statement, it would probably be the following: “We provide universal access to high quality healthcare based on need regardless of ability to pay.” Today, this statement is largely accepted around the world, but it raises fascinating questions on how this mission is achieved.

An essential starting point is the understanding of the aims and principles on which healthcare systems are built. What are the typical building blocks and how are systems governed to respond to changing needs? How are they held accountable if needs are not met? **International Health Systems** looks at healthcare systems from a delivery point of view: What are general principles of the organization of primary care, specialist care, inpatient care, and the pharmaceutical sector? Once this basis is established, general trends regarding the medical workforce are analyzed. This topic ranges from medical education to the distribution of the medical workforce across a territory. Next, efficiency considerations and equity are examined. When healthcare resources compete with other political priorities, such as housing, transportation, and defense, questions regarding the efficiency of healthcare expenditure become relevant. Are cross-country comparisons of healthcare system efficiency meaningful? If so, under what conditions?

Throughout the course book, references to national healthcare system strategies are used to make topics such as equity, efficiency, and service organization tangible. A dedicated presentation of national healthcare systems is reserved for the final part of this course. Three models of healthcare organization in a national setting are presented: the German social health insurance model (Bismarck model), the British National Health Service or Beveridge model, and the more market-based healthcare system of the U.S. A brief review of healthcare systems in emerging countries concludes the course book.

UNIT 1

HEALTHCARE SYSTEMS INTERNATIONALLY: POLITICS, ECONOMICS, AND POLICY?

STUDY GOALS

On completion of this unit, you will be able to …

- understand aims and principles of healthcare systems.
- identify major building blocks of healthcare systems.
- analyze how healthcare systems are governed.
- describe contextual factors impacting healthcare systems.

1. HEALTHCARE SYSTEMS INTERNATIONALLY: POLITICS, ECONOMICS, AND POLICY?

Introduction

Caring for health needs is part of the human condition. Inevitably, humans had to develop organized or ritualized ways of maintaining good health since the dawn of humankind. Most modern-day healthcare systems are built on the principle of universal access to care based on need, not ability to pay. They provide state-of-the-art medical services based on a scientific and mechanistic view of human health, resulting in the high level of specialization of medical services.

A comparative lens on healthcare systems benefits from a clear description of typical healthcare system building blocks. On an abstract level, health systems organize resources (workforce, capital, and technology) to provide services to the population. The World Health Organization (WHO) calls these components building blocks (World Health Organization, 2010a).

Healthcare systems are also embedded in a wider cultural and social context, which determines the shape and priorities of healthcare systems. It also limits their ability to achieve a perfect state of health and well-being for every citizen due to socio-economic determinants of health. Acknowledging these determinants has led to a “health in all policies” approach that integrates housing, the labor market, the transportation policy, and many more.

To conclude this unit, issues of healthcare system governance are raised. How do political priorities translate into healthcare policy? The policy cycle is a useful analytical tool used to understand how strategy translates into policy that is implemented, evaluated, and eventually revised.

1.1 Aims and Principles of Healthcare Systems

Modern-day healthcare systems need to balance competing requirements of cost, quality, and access while staying true to their commitment to provide healthcare to the population. Understanding the historic roots of healthcare systems and the many aspects of health is important when considering current healthcare system challenges.

Roots of Healthcare Systems

Healthcare systems have a long history. Ancient civilizations, such as Mesopotamia and Egypt, had rules about healthcare delivery. In Europe, the spread of Christianity and monasteries gave rise to early forms of institutionalized healthcare and, later, hospital-focused care (Mills & Kent-Ranson, 2018). Guilds were also an important social basis for solidarity in communities; they organized healthcare on their members' behalf. The German public health insurer *Knappschaft* was founded by a medieval association of miners with the first traces of a hospital dating back to the late thirteenth century (Knappschaft-Bahn-See, n.d.).

Definitions and models of health have also changed over time. Adinolfi (2014) describes pre-modern concepts of healthcare and healing as theurgical and magical models. He underlines that the connection of humans and supernatural powers was at the center of medical reasoning, rather than a rational method. As a result "[healers] acted not by virtue of scientific knowledge, but thanks to a supernaturally endowed gift; therefore, they were not schooled in the art of medicine, but rather were consecrated by ancestral faith healers" (Adinolfi, 2014, p. 226).

In the absence of actual "healing," it becomes apparent that the aim of historical models of healthcare was not a reestablishment of perfect health in our current understanding. Rather, healthcare systems in the past were self-organized communities of solidarity (in the case of the aforementioned *Knappschaft*) that sought to prevent an economic catastrophe for workers.

Health and Healthcare

It seems almost trivial to state that the aim of healthcare systems is to enable good health, but is this a good starting point for healthcare systems research? The World Health Organization's (n.d.-a) definition of health is "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (p. 1), which raises more questions than it answers. What are the inputs for such an ideal state of health? Are they individual behavior, the environment, genetics, and social interactions? Is it realistic to expect healthcare systems to provide for or even influence all of these inputs? International healthcare systems are not and cannot be organized for such a mission. Instead, a commonly accepted WHO definition of the purpose of a healthcare system is to improve health, and this depends on access to healthcare services. If and how these are used is determined by organizational and individual factors. A useful concept is the **co-production of health** continuum that places the individual on a range between their citizen role, where lifestyle and prevention activities dominate health, and a telemedicine-assisted patient who is being cared for in the hospital (Kalra et al., 2014, p. 185). It clearly shows that the health system's role in the "production of health" is a small part of this continuum.

Co-production of health
An individual can co-produce their state of health by living a healthy lifestyle in addition to seeking care.

In line with the idea of improving health, healthcare systems tend to focus on a continuum of activities ranging from disease prevention to treatment and rehabilitation. The implied objective is to prevent the onset or worsening of disease, treat diseases that manifest themselves, and tackle the consequences of infirmity. To this day, the prevention dimen-

sion of healthcare systems is the most poorly developed because of the various factors that contribute to good health: a clean environment, personal hygiene, a balanced diet, physical activity, education, and wealth. It is therefore unsurprising that the infrastructure of healthcare systems, doctor's offices, hospitals, pharmacies, and rehabilitation clinics all focus on the treatment of diseases and rehabilitation. This can be explained by multiple historic factors.

A key motivation for the introduction of the social health insurance model in Germany under chancellor Otto von Bismarck (1815–1898) in the 1880s was addressing the growing social plight of industrial workers (Greve, 2006, p. 23). The devastating effects of accidents and infirmity in the German industrial revolution led to a workers' movement with political clout that threatened the political status quo. It is not entirely unfair to argue that the aim of Bismarck's health insurance model was the preservation of an individual's ability to work and provide for a family. Hence, the financing principle of joint employer–employee contributions into a mandatory insurance scheme was introduced, which was soon complemented by an accident and retirement insurance scheme (Blümel et al., 2021, pp. 14–15).

Access Cost and Quality as Benchmarks

A healthcare system that is improving health through a collection of healthcare services can be analyzed across three dimensions from which the principles in the introduction are derived (Johnson et al., 2017):

1. Access and coverage
2. Cost and affordability
3. Quality

The access and coverage dimension deals with the accessibility of healthcare services. This can have an organizational and a financial dimension. In health insurance systems, access and coverage relate to the groups of people that are covered by health insurance. Is access limited to the working population that pays insurance contributions? What about special population groups, such as the homeless, prisoners, military personnel, or civil servants? In many countries, separate access and coverage rules exist for different population groups. Tax-financed systems tend to work on the principle of universal coverage for all population groups with services provided for free at the point of care. Even if financial access to care is ensured, access to care may have a socio-economic and organizational dimension. On this level of analysis, healthcare systems research deals with the distribution of healthcare resources across a territory and barriers to access caused by health literacy problems or socio-economic disadvantages. The table below summarizes typical indicators used to measure access and coverage from both supply and demand sides.

Table 1: Access and Coverage Indicators

	Access indicators	Coverage indicators
Supply side	• Availability of healthcare resources (general practitioners [GPs], specialists, nurses, and medicines) • Geographical distribution (hospitals within a 30-minute drive, GPs, or pharmacies within public transport reach)	• Existence of a health insurance system (public or private) • Share of co-payments or out-of-pocket payments, and the role of deductibles • Existence of mandatory insurance coverage
Demand side	• Citizens' understanding of their own health problems and ability to seek access to care when needed	• Share of people opting out of insurance (usually not relevant due to mandatory coverage laws in most countries)

Source: Jörg Artmann (2022).

1.2 Structural Features of Healthcare Systems

The term "healthcare system" should be accompanied by a definition of its components. A comparative approach to healthcare systems research needs to develop a conceptual framework to reach general conclusions about their similarities and differences. An important attempt was proposed by Roemer in 1991 (as cited inMills & Kent-Ranson, 2018, p. 6). He proposes the following categories of analysis.

Table 2: Healthcare System Components

Category	Example	Comment
Production of resources	Trained staff and commodities, such as drugs, facilities, and knowledge	Large but not exclusive role for the government
Organization of programs	Government ministries, private providers, and voluntary agencies	
Management methods	Planning, administration, regulation, and legislation	See section 1.5 on "health system governance"
Economic support mechanisms	Tax, insurance, and user fees	Investment funding for infrastructure usually comes from central government funds
Delivery of services	Preventive and curative personal health services; primary, secondary, and tertiary services; public health services; and services for specific population groups, such as children, or for specific conditions, such as mental illness	

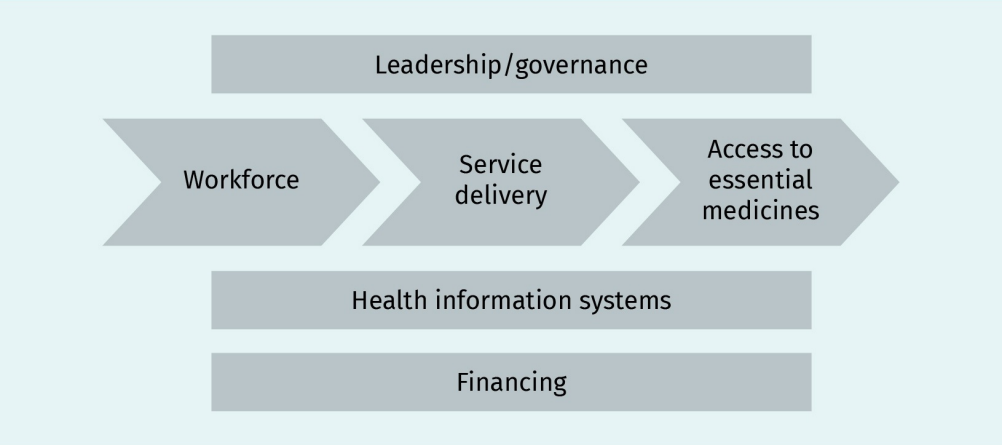
Source: Jörg Artmann (2022), based on Mills & Kent-Ranson (2018).

The proposed categories are broad enough to encompass items such as the medical device industry and medical research activities at universities. They are also dynamic in emphasizing mechanisms, methods, and organization. This is relevant because other approaches tend to label systems according to static categories, such as "social insurance model," "tax-funded model," and "market-based model." The categories are not suitable for a refined analysis of individual aspects of a healthcare system.

1.3 Health System Building Blocks

The World Health Organization proposes a conceptual approach to healthcare system research and improvement through "building blocks." These building blocks are summarized in the figure below.

Figure 1: The WHO Health System Building Blocks



Source: Jörg Artmann (2022), based on World Health Organization (2010a, 2010b).

Note that the building blocks are different. Process-oriented aspects, such as service delivery and leadership or governance, are mixed with normative components, such as access to essential medicines, and horizontal issues, such as information systems and financing. The building blocks serve healthcare system goals, such as an improved state of health or social and financial risk protection, responsiveness, and efficiency. This conceptualization is valuable when understanding how healthcare systems are embedded in wider political systems. The financing mechanism, for example, can be directly "health related" in the sense of risk-adjusted premiums, such as in private health insurance settings. It can be organized through a state-sponsored or state-supervised **public health insurance** scheme. However, the financing mechanism may also be tax revenue collected by central government. The information systems component of healthcare systems is not only concerned with documentation of healthcare delivery but may have a general citizen identification or provider identification component. In Scandinavian healthcare systems, the citizen and the healthcare identifier are one and the same.

Public health insurance
This is health insurance provided or supervised by state entities through tax or contribution rates.

Each of the building blocks is accompanied by a set of recommended indicators to monitor its maturity and progress. The top three indicators for each building block are summarized in the table below.

Table 3: Indicators for Selected WHO Health System Building Blocks

Building block	Indicator one	Indicator two	Indicator three	Comment
Service delivery	Health facilities per 10,000 population	Inpatient beds per 10,000 population	Outpatient visits per 10,000 population	Further indicators concern service readiness determined by facility surveys.
Health workforce	Number of health workers per 10,000 population	Distribution of health workers by occupation or specialization, region, place of work, and biological sex	Annual number of graduates of health professionals from educational institutions per 100,000 population, by level and field of education	Information is extracted from administrative records or license registries wherever professional practice requires a license.
Health financing	Total expenditure on health	General government expenditure on health as a proportion of general government expenditure (GGHE/GGE)	The ratio of household out-of-pocket payments for health to total expenditure on health	Out-of-pocket payments are often considered proxies for the social protection level of healthcare systems.

Source: Jörg Artmann (2022), based on World Health Organization (2010a, 2010b).

Health information indicators are more complex and cannot be easily presented in a tabular format. The World Health Organization (2010a) proposes two types of indicators: 1) data collection indicators based on the capacity to collect data from health surveys, civil registration databases, and the tracking of healthcare expenditure, and 2) data synthesis and analysis indicators that measure a country's capacity to make use of and validate available data. Recommended areas of action according to the WHO are health surveys, birth and death statistics, data collection on maternal health and child mortality, and regular data collection on health facilities.

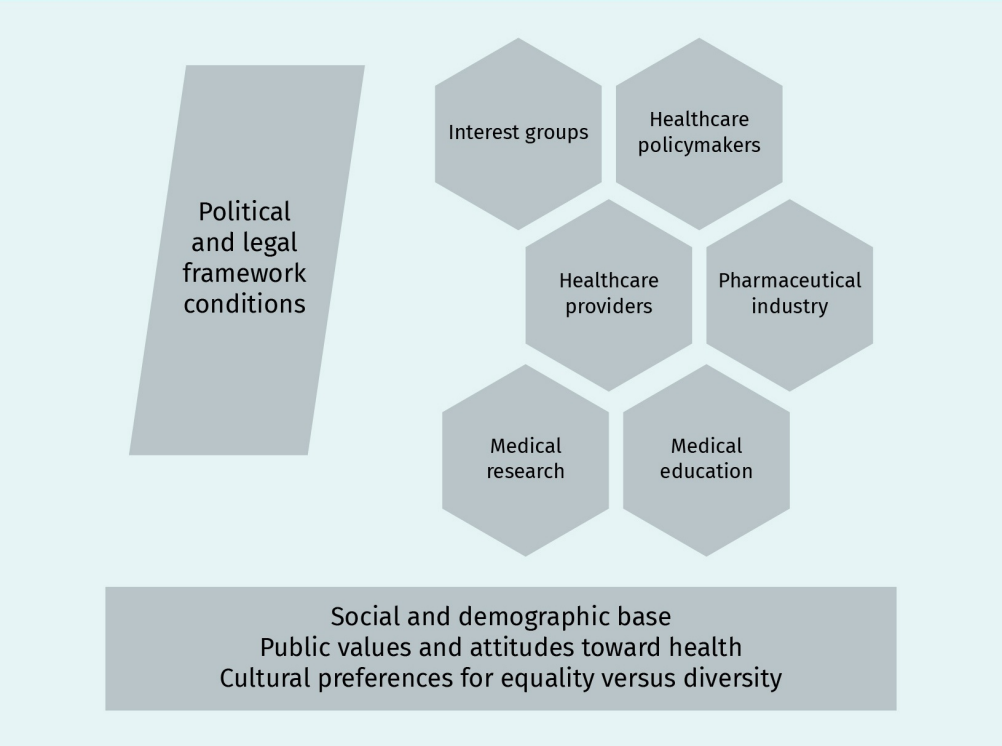
The building blocks approach of the WHO is oriented toward healthcare systems in developing countries. However, it also highlights the many levels of analysis of healthcare systems that are relevant, irrespective of whether industrialized or emerging countries are concerned. It is noteworthy that aspects of care quality are not separately addressed with specific indicators in this framework. However, a concern for quality can only arise when enough healthcare resources are in place and health information is available for policymakers.

1.4 Contextual Factors

Healthcare systems are embedded in wider contexts. These can be derived from individual expectations, social structures, the legal and political context, etc. A comprehensive visualization is provided in the figure below. Rising awareness for the complex interdependencies between healthcare and its social contexts has given rise to a "**health in all policies**" (HiAP) approach. A comprehensive example of the legal and political context for healthcare systems in Europe is the role of European integration and resulting European Union (EU) law.

Health in all policies
This is an approach to healthcare that emphasizes the need for action from all policy areas, including housing, employment, etc.

Figure 2: Health Policy Context in Developed Nations



Source: Jörg Artmann (2022), based on Blank et al. (2017).

Health in All Policies Approach

The WHO Alma Ata declaration resulted from the 1978 International Conference on Primary Healthcare (PHC). It was jointly organized by the WHO and the United Nations Children's Fund (UNICEF) and held in Alma Ata Kazakhstan upon invitation of the Soviet Union. It was preceded by several regional conferences promoting the importance of primary healthcare (PHC; World Health Organization, 1978b). The final conference declaration already recognized that achieving a high level of health is dependent on "the action of many other social and economic sectors in addition to the health sector" (World Health Organization, 1978b, Section I). At the level of effective healthcare interventions for the entire population, healthcare systems increasingly adopt a HiAP approach. The World Health Organization defines it as "an approach to public policies across sectors that sys-

tematically takes into account the health implications of decisions, seeks synergies, and avoids harmful health impacts in order to improve population health and health equity" (World Health Organization, 2013, p. 1).

The realization that socio-economic factors, such as poverty, and other related factors, such as poor housing, hygiene, and diet can impact an individual's level of health is not new. The German virologist, Paul Virchow, concerned with outbreaks of typhus in nineteenth-century Germany, postulated that "medicine is social science and politics nothing but medicine on a grand scale" (as cited inLange, 2021, p. 149). Lange, therefore, credits him with inventing the concept of social medicine.

Present-day public policies can attempt to improve health through efforts in public housing, public transport, agriculture, and more. Green et al. (2021) briefly review concrete national experiences. Scotland stands out as a country with many activities. Healthcare policymakers engage with representatives of spatial planning or housing and Scottish authorities have published a "place standard tool" that allows for the structured analysis of a space using a predefined set of categories. These include "public transport," "work and the local economy," "housing and community," etc. The assessment tool can be viewed online (Public Health Scotland, 2021).

European Union Integration and the Impact of EU Law on Health

The internal market of the EU and its related freedoms of movement for people, services, goods, and capital is a supranational legal framework that affects all healthcare systems in the EU. At the same time, there is no primary legal competence for the European Commission to interfere with the healthcare priorities of member states. For a comprehensive overview of this topic, see the literature by Greer et al. (2019).

From the perspective of the citizen, the freedom of movement within the European Union is associated with elaborate rules that govern access to healthcare and health insurance. At the most basic level, EU citizens have the right to access and be reimbursed for healthcare services up to the level that they can expect from their country of origin. More permanent relocation to another member state and working there for an extended period is made possible by an electronic European Exchange of Social Security Information (EESSI). Details on the EESSI can be found in the literature by the European Commission (2021).

The purchasing of goods and services is subject to European legislation on procurement. In the healthcare sector, this has repercussions when medical devices or any kind of medical goods are purchased. When a threshold amount is surpassed, public procurers are bound to publish a procurement notice on a European public portal (Official Journal of the European Union, n.d.).

Table 4: The EU Internal Market and Healthcare

	Definition	Implication for healthcare
Freedom of movement	EU citizens move and work freely across the EU.	There is EU-wide access to healthcare services, mutual recognition of diplomas, and freedom to work in other EU countries.

	Definition	Implication for healthcare
Freedom of goods	Goods are exchanged freely across the EU (no tariffs).	Public procurers of health goods and materials can purchase from any provider in the EU and must respect EU procurement law.
Freedom of services	Providers of services can offer their service across the EU.	Health insurers can contract for healthcare services with any qualified provider in the EU.
Freedom of capital	Capital and financial services are offered and move freely across the EU.	Investors from EU member states may invest in healthcare infrastructure, such as nursing homes or private hospitals.

Source: Jörg Artmann (2022).

In addition to the four freedoms of the internal market, EU primary law also affects health in more subtle ways, such as primary EU competence for cross-border public health action. Additionally, the working time directive affects the way hospitals can employ their staff (details on the EU's direct role in health and healthcare are contained in the literature by Greer et al. [2019]).

1.5 Health System Governance

When healthcare system resources are limited, trade-offs between affordability and coverage or access are inevitable. A healthcare system, therefore, needs mechanisms of control and accountability, and instruments need to be in place to correct system activity that is not aligned with healthcare system goals.

The Policy Cycle

The policy cycle is a conceptual framework used to understand the process of governance. It consists of five distinct stages (Jones, 2017):

1. Agenda setting
2. Formulation
3. Adoption
4. Implementation
5. Evaluation

Agenda setting is the process in which problems are identified and declared as urgent. In democracies, this process can encompass inputs from various actors, not just governments and political parties; the media, think tanks, and non-governmental organizations (NGOs) can all play a part. In the formulation stage of the process, more detailed research on the identified problem is carried out, hearings are organized, and draft laws are formulated. The adoption stage is usually the formal setting of parliamentary law-making or international diplomacy where laws are promulgated and international treaties are adopted. Implementation is the process of making a law work in practice. Technical decrees or the setup of permanent institutions play a key role. The final (often underdeveloped) step

in the policy process deals with the evaluation of a policy measure. Here, formal government-sponsored evaluations may coexist with evaluations carried out by think tanks or other private entities. Naturally, results of an evaluation may feed back into the agenda-setting process when failures or gaps are identified.

Governments naturally play a central role in the policy process and the way healthcare systems work. They prioritize which healthcare objectives should be pursued and determine benchmarks for the measurement of success. They also hold actors accountable for their behavior and introduce corrective action when needed. Thorlby (2016, p. 39) summarized the different dimensions of government intervention, as presented in the following table.

Table 5: Government Role in Healthcare Governance

Healthcare priorities	Performance monitoring	Accountability mechanisms
• Legislation and regulation • Target specification • Resource allocation between regions, populations, and services • Scope of healthcare services definition • Setting quality standards for treatment • Health economic analysis and standards (cost-effectiveness)	• Data collection from providers • Analysis and publication of data to providers and consumers • Tracking of priority data on population health, healthcare safety, cost of treatments of drugs, waiting times, etc.	• Ensuring markets deliver choice and competition (anti-trust regulation) • Democratic processes that allow the public to voice their opinion on performance • Using economic or regulatory incentives (payment or accreditation systems) • Regulation of providers and professionals

Source: Jörg Artmann (2022), based on Thorlby (2016).

From a governmental perspective, law-making and **regulation** are central tools used to steer the healthcare system. Laws are formulated and passed in a parliamentary setting with a government's right of initiative, whereas regulation can be defined as "a category of delegated decision-making involving the use of secondary legislation" (Clarke, 2016, p. vii) where secondary legislation comprises "decrees, regulations, rules, orders and bylaws … to give full effect to primary legislation" (Clarke, 2016, p. 4). An example of regulation is the imposition of quality standards on healthcare providers that usually takes the form of healthcare law. This is followed by the delegation of activity to a government agency capable of setting standards regarding the types of quality information to be provided, format of transmission, and rules regarding publication.

Regulation
This is government activity that determines policy after parliamentary legislation is completed.

Dimensions of Governance

The term "governance" is central to understanding how healthcare systems work because it adopts a larger view of control and accountability than merely government activity. It acknowledges that non-governmental actors can play an important role, too. A broad introduction to the topic is given in the literature by Chambers (2016). Regarding quality-of-care information, many countries have set up independent organizations, such as the National Institute for Clinical Excellence (NICE) in the UK, the German Institute for Quality and Efficiency (IQWIG), and the French High Authority for Health (HAS). Information on

hospital quality, although routinely collected in many countries by official bodies, only reveals its competitive relevance when picked up by consumer-oriented public websites. In Germany, a "health navigator" is hosted as a public website by public health insurance groups. It combines routinely collected quality of care information on hospitals with its own quality of care analysis based on hospital invoicing data (Blümel et al., 2021, p. 62).

Self-governance is another dimension of governance in modern healthcare systems. In many healthcare systems that rely on self-employed healthcare professionals, the right to self-regulate is granted to medical councils that represent a certain professional group, such as doctors, pharmacists, or nurses. This right usually includes the development of professional standards of conduct and processes of accountability, as well as the details of continuous medical education. It may go as far as revoking a healthcare professional's license in a case of misconduct. Rights to self-regulate for healthcare professionals are usually a historic reflection of the importance of this group in society and an acknowledgment that these groups should be independent from direct state interference. Similar self-regulation rights are often granted to lawyers.

On a systemic level, self-governance in healthcare can include all day-to-day interactions between payers and providers. This is the defining characteristic of the German social health insurance model. *Selbstverwaltung* in the German context relies on the principle of framework legislation by the federal government and subsequent delegation of activity to corporations under public law (*Körperschaften des öffentlichen Rechts*), which can be understood as *de facto* public agencies with a very high degree of autonomy. Both the provider and the payer sides (insurance companies) in Germany are organized as corporations of public law and can negotiate prices, quality standards, etc. (Blümel et al., 2021, p. 40).

Finally, market-based governance is considered a powerful organizing principle of healthcare systems. The healthcare systems of the industrialized world have adopted various degrees of payer and provider competition to reap the efficiency benefits of marketplaces. However, considering the failures related to information asymmetry, it is challenging to organize the market for provider competition efficiently. Governments have three powerful regulatory tools: antitrust legislation; quality of care information; and payment based on quality, also known as **pay for performance** or pay for results. Antitrust legislation is designed to avoid the concentration of providers such as large hospital corporations. Quality of care information can be used to collect structural data on hospitals. These may include number of beds, types of specialty wards, availability of diagnostic capacities, etc. Information on the clinical quality of care is more relevant to patients but difficult to collect.

Pay for performance
This is a method of payment that rewards the achievement of health-relevant outcomes.

Table 6: Market-Based Governance Measures

Regulatory measure	Example	Comment
Antitrust legislation	Ensure the hospital competition is not concentrated with few providers.	Hospital concentration may not be harmful for prices but may harm quality of care.

Regulatory measure	Example	Comment
Quality of care information	Share of hospital patients with a particular condition that receive appropriate pain medication	Indicators based on routine hospital documentation and/or invoicing data are easy to build.
Pay for performance	• Link payment to minimum volume of interventions for complex procedures. • Pay for achievement of screening quotas for a diabetic population (e.g., diabetic foot or retinopathy).	• Minimum volume rules need to allow for capacity build-up in hospitals before introduction. • Screening quota rules are easy to implement.

Source: Jörg Artmann (2022).

Pay for performance is the most challenging tool for regulators. A commonly used tool is minimum volume standards (there is evidence that the outcome quality of certain hospital procedures is linked to their volume). The regulator may determine specific hospital procedures that are subject to minimum volume standards; failing to achieve a minimum volume precludes the hospital from offering this intervention. de Cruppe et al. (2015) provide a review of the German experience with minimum volume standards. In the U.S., discussions on healthcare reform exemplified by Porter and Teisberg (2006) underline the importance of "[collecting and disseminating] high-quality information on provider outcomes and prices for every medical condition" (p. 21). Most European healthcare systems have dedicated institutions that monitor healthcare quality and publish results for the public. The strong free-market orientation of the U.S. healthcare system has, so far, limited the availability of nationwide, publicly-collected quality indicators.

SUMMARY

Universal access to care based on need rather than ability to pay is the mantra of most healthcare systems. They need to balance competing claims of access, cost, and quality in pursuing that mission. From a structural perspective, healthcare systems can be analyzed through their building blocks of resources, programs, and financing mechanisms. Contextual factors that influence healthcare systems are political, legal, and socio-economic in nature. This complexity has led to a health in all policies approach that emphasizes the importance of other policy areas for healthcare.

UNIT 2

ORGANIZING THE PROVISION OF SERVICES

STUDY GOALS

On completion of this unit, you will be able to …

- understand the different service delivery components of healthcare systems.
- differentiate between primary, specialist, and hospital care.
- describe the components of medicines supply.

2. ORGANIZING THE PROVISION OF SERVICES

Introduction

It is useful to analyze a healthcare system through its care delivery components and the interactions between them. In this unit, the analysis is limited to primary, specialist, hospital, and pharmaceutical care. These sectors are responsible for most of the healthcare expenditure and focus on the curative dimension of care. The provision of dental care, public health, and rehabilitation services is not addressed because the maturity of these services differs widely between healthcare systems.

Primary care usually addresses non-acute healthcare needs from the general internal medicine spectrum. Its role is considered pivotal in all healthcare systems. Depending on the healthcare system context, primary care acts as the gatekeeper and coordinator for patients. Specialist care is provided in both in- and outpatient settings to address healthcare needs that go beyond a primary care spectrum. The required expertise and diagnostics tend to produce waiting times in publicly-funded systems that require a multidimensional response on both the supply and demand sides.

The hospital is the centerpiece of 24-hour specialist intensive care and subject to complex payment and quality rules. Case-based payments modeled along diagnosis-related groups (DRGs) have become the norm in the majority of healthcare systems, but they tend to coexist with numerous additional payments that reflect the complexity of hospital care.

In the final section of this unit, the economic relevance and distribution process of medicines in healthcare systems is presented. Given the weight of medicines in total healthcare expenditure, a particular focus is placed on cost containment.

2.1 Primary Care

Seeing a general practitioner (GP) in their office for consultation is usually the first step into the healthcare system for patients who are not acutely ill and in critical condition. In the World Health Organization (WHO) European region, outpatient contacts, defined as “the total number of primary healthcare or ambulatory care contacts divided by the population” (World Health Organization Regional Office for Europe, 2021, p. E992801.T), range from 11.8 in Hungary, to 2.9 in Sweden, and 9.9 in Germany. The WHO defines the content of such a contact as “one episode of examination/consultation performed by a physician or by a nurse in the presence of a physician, in relation to one outpatient at one time and location, normally at the physician’s office or the patient’s home” (World Health Organization Regional Office for Europe, 2021, p. E992801.T).

Primary Care and the WHO Alma Ata Declaration

The importance of primary care to serve populations for their everyday health needs was first recognized formally in the WHO Alma Ata declaration of 1978. The declaration provided a very comprehensive view of the approach of primary care: "[it addresses] the main health problems in the community, providing promotive, preventive, curative and rehabilitative services" (World Health Organization, 1978a, Section VII), which translates into the provision of the following concrete services: "maternal and child healthcare, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs" (World Health Organization, 1978a, Section VII). The declaration clearly had the challenges of developing countries in mind when formulating these principles. However, the declaration also points to managerial and process-oriented issues that are universally relevant to this day. In particular, the WHO draws attention to the importance of "integrated referral systems" and the organization of different healthcare professionals "as a health team" that serves "the expressed health needs of the community" (World Health Organization, 1978a, Section VII). Indeed, healthcare system integration and referrals without loss of information are continuing challenges for many healthcare systems.

Primary and Integrated Care

There are several ways in which the delivery of primary care services can be organized and financed. A common organizational distinction is between **gatekeeping** and non-gatekeeping models. Many countries know self-employed, independently practicing GPs who practice in their own office. This is the case, for example, in France, Germany, and Switzerland. On the other hand, primary care can be delivered in larger group practices (such as in Sweden) with salaried doctors or even public, civil-servant doctors. In low- and middle-income countries, primary healthcare can be nurse-led.

Gatekeeping
General practitioners in some healthcare systems control access to more specialized services.

The complexity of modern healthcare systems and available treatments for chronic conditions in industrialized countries has led to calls for more integrated and personalized care. Primary care is frequently called upon to act as the gatekeeper and process manager of the patient's journey across the healthcare system. Two main components of integrated care can be distinguished: care coordination across healthcare organizations and care continuity on personal and information levels.

The success of care coordination across organizations faces many challenges: the difference in funding mechanisms between the outpatient and inpatient sector is a central one. When GPs are paid according to a fee-for-service or global budget mechanism and hospitals are subject to a case-based payment system, the effort required for care coordination is often lost between the sectors. One provider's effort is the other provider's gain and vice versa. Continuity of care on the information level is even more challenging in healthcare systems that have not yet reached full digital integration of electronic health records. Failure to coordinate care and loss of information between different care settings is a recognized cause of resource waste and severe adverse events.

For the U.S., Poku et al. (2019) outline the success factors that are required for healthcare to transform from coordinated to truly integrated care. Crucially, they define the difference between coordinated and integrated care by distinguishing a patient-centric integrated versus a provider-centric – merely coordinated – perspective: "Care coordination and care integration are inversely related, as services become more integrated, the need for coordination decreases" (Poku et al., 2019, p. 1906). Three pillars are essential in order to achieve this vision: 1) a shared vision to deliver care that is focused on outcomes; 2) an information system that is shared and delivers actionable information; and 3) an incentive structure that aligns the sectors, for example, by capitation payments for a given population (Poku et al., 2019, pp. 1906–1908).

Outpatient Care as the Way of the Future

Progress in medicine results in increasingly fewer patients needing overnight stays in inpatient facilities to address their health concerns. Many countries have, therefore, tried to steer patients away from expensive inpatient care in hospitals toward more cost-effective outpatient care in multidisciplinary primary care centers or day clinics. **Ambulatory care sensitive conditions** (ACSC) are a group of health conditions that are more suitable to outpatient treatment than expensive hospital care. The U.S. Agency for Healthcare Research and Quality (AHRQ) defines them as "conditions for which good outpatient care can potentially prevent the need for hospitalization, or for which early intervention can prevent complications or more severe disease" (Agency for Healthcare Research and Quality, 2002, p. 1).

Ambulatory care sensitive conditions
These are medical conditions that can more suitably be treated in an ambulatory care setting.

An analysis of Schuettig and Sundmacher (2019) addressed the question of the preventability of emergency department visits in the German healthcare system. In a combination of expert interviews and claims data analysis, their list of health conditions that should preferably be kept out of the emergency department includes common infections, dermatitis, lesions, bronchitis, and many more (Schuettig & Sundmacher, 2019, p. 1027). In the open-access context of the German healthcare system, patients nevertheless present themselves with these conditions in the emergency department for reasons that relate to ignorance about outpatient alternatives organized by GPs, as well as convenience and accessibility considerations.

2.2 Specialist Care

Whenever a GP cannot adequately treat a medical condition outside of the internal medicine spectrum, care by a specialist is required. With few exceptions, specialist care in developed healthcare systems is provided in hospital settings. Only Germany and the U.S. have specialist care in the ambulatory setting, which coexists with hospital-based specialist care (Blank et al., 2017, p. 182).

Objectives of Specialist Care

Specialist acute care is understood by the Organization of Economic Co-operation Development (OECD) to encompass several activities: dealing with obstetric labor, curing illness through surgery, addressing severity of illness, and protecting against its exacerbation. This includes the performance of diagnostic and therapeutic procedures (Organization for Economic and Co-operation Development [OECD], 2013, as cited in Crump & Edwards, 2016, p. 191).

It follows that specialist care usually requires access to a laboratory; diagnostic imaging; and a set of medical devices, such as catheters and defibrillators. These resources are expensive, yet accessibility is important, so healthcare systems develop elaborate ways to organize and control access to specialist care.

Waiting Times for Specialist Care

Many healthcare systems have waiting times for access to specialist care. Generally, **waiting times** exist whenever demand for a healthcare service exceeds supply. In public or social health insurance systems with access to care being free of charge at the point of care, waiting times are the only rationing instrument available. In a theoretical model of free market competition, customers' willingness to pay would result in higher prices until demand and supply are balanced. Bolstering supply of specialist care services is not possible at short notice due to the investments required in the education and training of specialist doctors.

Waiting times
A sign of demand exceeding supply in non-price sensitive healthcare services is long waiting times.

The OECD publishes waiting time data for a small number of specialist healthcare services. As of 2019, the share of patients requiring cataract surgery who wait for more than three months from specialist assessment to surgery ranges from 10.6 percent in Hungary to 62.7 percent in Finland (OECD.Stat, n.d.). Cataract surgery can typically be performed in an outpatient setting; no overnight stay is required. For access to hip replacement, typically performed as an overnight surgery in a hospital setting, OECD figures for 2019 show that 29.3 percent of Swedish patients wait for more than three months, as opposed to 77.4 percent in Estonia (OECD.Stat, n.d.).

Addressing the Waiting Times Problem

Given the high public expectations regarding timely access to required care, many healthcare systems have developed waiting time guarantees or similar measures. An interesting regional healthcare system setting that has employed a number of different measures to address waiting times for elective outpatient procedures is the region of Emilia-Romagna in Italy (Toth, 2020). Their regional government combined several measures successfully, which led to an almost 100 percent achievement of the target set, namely having access to a first specialist consultation within 30 days and a first diagnostic test within 60 days. The table below summarizes the measures taken by the regional health authority.

Table 7: Measures Tackling Waiting Times in Emilia-Romagna

Demand side measures	Supply side measures	Other measures
Sanctions for no-show patients	Expanded opening hours for outpatient clinics (evenings and weekends)	Appointing regional waiting time managers at the health agency
The regional observatory for waiting times publishes data	New healthcare staff recruited	Rewarding healthcare managers financially for achieving waiting time objectives
Improving adequacy of referrals (indication quality)	Accreditation of previously private practices into the public domain	

Source: Jörg Artmann (2022), based on Toth (2020).

This overview clearly demonstrates that waiting times need to be addressed on both the demand and supply side. In addition, healthcare managers need to have an incentive to enforce changes and be rewarded for success.

Sweden is another country with an established waiting time guarantee. The experience of its implementation as described in the literature by Ebbevi et al. (2021) underlines the importance of publishing waiting time data that are useful both for management and healthcare providers. As a result of the Swedish implementation of a waiting time guarantee, which is implemented at the regional level, public satisfaction with public services in general (and access to specialist care in particular) increased (Rönnerstrand & Oskarson, 2020).

2.3 Hospital Care

The hospital is the centerpiece of acute (intensive) care that requires elaborate diagnostics and a 24-hour availability of specialist doctors. In most healthcare systems, hospital care accounts for approximately one-third of expenditure on healthcare. In European healthcare systems, the number of hospital beds has slowly decreased over time. Whereas 650 beds per 100,000 inhabitants were provided in the EU-15 region in the 1990s, this number has fallen to around 430 in 2014. The total inpatient expenditure as a percentage of total health expenditure in the same period has converged to a range of between 30 to 35 percent for these countries (World Health Organization Regional Office for Europe, 2021). Hospitals are among the most capital-intensive healthcare resources in any healthcare system.

Organizational Forms of Hospitals: Public and Private

The historic roots of hospitals in ancient Egypt and Greece as religious institutions, or later as institutions for the care of the poor and infectious diseases, partly explain the diverse ownership structure and the lasting role of charitable organizations up to this day (Folland et al., 2017, p. 379). In most European countries, a mix of public and private hospitals

determines the provider landscape. Public ownership can rest with municipalities or public foundations, and private ownership with larger healthcare corporations that work for profit (EU Committee of the Regions, 2017). Research on the role of ownership and treatment choices of hospitals has, so far, not produced clear-cut results. The role of competition from other hospitals in the vicinity and the organization of one hospital as part of the larger healthcare system explains market behavior better than a mere focus on ownership. The distinction between organizational forms is still relevant in most healthcare systems because of different levels of specialization between private and public hospitals, and partly because public hospitals benefit from tax exemptions or different pricing calculation methodologies. This is the case for French hospitals in particular, where payments made to private, for-profit hospitals are based on a different calculation methodology than payments to public hospitals (Or, 2014, p. 147).

Paying for Hospital Services: The Role of DRG Systems

Hospital payment based on cases or diagnosis-related groups (DRGs) has become normal in industrialized healthcare systems over the past decades. **Case-based payment** stands in contrast to a fee-for-service logic and global budgets. The principal components of a case can be distinguished as follows (Scheller-Kreinsen et al., 2009, pp. 2–3):

Case-based payment
Hospitals receive a case-based payment that covers all care activities for one patient.

- a patient classification system from a clinical and economic perspective
- a catalog of all possible diagnoses documented for a particular case
- a catalog of procedures
- a system of classification regarding clinical severity
- a grouping of cases with comparable costs into one group
- a relative weight system (usually expressed in points) of case groups with reference to a baseline case

Such a classification system is accompanied by length of stay rules with a minimum and maximum length of stay determined for each case. This is designed to avoid bloody discharges (minimum length of stay) and overtreatment (maximum length of stay).

Case-based payment systems always coexist with other (supplementary) forms of payment or top-up payments. Complex hospital care cannot be standardized completely into homogenous groups. Cost-outliers typically receive extra payments for expensive treatments, such as organ transplants or dialysis (Scheller-Kreinsen et al., 2009, p. 3). The use of complex medical technology that may have evolved after the first cost-calculation of DRGs is another example. Next to specific treatments, hospitals may also receive payments to reflect their specialist role. University hospitals and cancer centers are a case in point. In the French hospital payment system, these payments are summarized under the category "*mission d'intérêt general*," meaning mission of general interest (Or, 2014, p. 147).

Health economic research expects hospitals to pursue a specific "product strategy" in reaction to a case-based payment system. Under a fee-for-service model and with information asymmetry intact, hospitals will expand their offer even beyond what may be clinically necessary. This model guarantees access and quality but comes at a high cost for the regulator, as cost control and technical efficiency are disregarded. A global budget model based on last year's budget adjusted for inflation has the clear advantage of administra-

tive simplicity but lacks the transparency for the regulator to influence hospital behavior according to changing healthcare needs. The following table provides a summary of hospital payment models and their effects on different dimensions of healthcare policy. Cells market with a "+" sign denote a positive (inflationary) effect, "0" a neutral, and "-"a negative effect.

Figure 3: Hospital Payment Models and Their Effects on Selected Healthcare Priorities

Payment model/ dimension	Cases	Services/case	Cost control	Technical efficiency	Quality	Administration	Transparency
Cost reimbursement/ fee-for-service	+	+	–	0	0	–	0
Case-based system	+	–	0	+	0	–	+
Global budget	–	–	+	0	0	+	–

Source: Jörg Artmann (2022), based on Geissler et al. (2011).

Ensuring Quality of Hospital Care

Although DRG-based payment systems contain length of stay and re-admission rules designed to deter bloody discharges or overtreatment, many countries complement their payment reform with additional measures. Germany introduced mandatory hospital quality reports in parallel to its DRG reform. However, the reports only contain structural quality indicators (number of beds, number of cases, etc.) and do not reflect the clinical quality of care. There are no financial consequences for failing to meet target indicators. More targeted quality instruments are the minimum case number or **minimum volume requirements** for particularly complex cases. These include liver and renal transplants, pancreatic surgery, knee replacements, etc. Case number thresholds and types of interventions are updated regularly. A hospital must not provide and cannot invoice cases in this catalog if it doesn't meet the annual minimum case number. Public health insurers publish additional hospital quality indicators based on claims data and customer surveys without a legal obligation to do so.

Minimum volume requirements
A sign of demand exceeding supply in non-price sensitive healthcare services is long waiting times.

In France, financial incentives for quality are paid out in the framework of the *incitation financère à l'amélioration de la qualité* (IFAQ) program. It is designed to be solely rewarding. Hospitals receive top-up payments if they reach a small number of indicators. In acute

care hospitals, these are, for example, the share of patients receiving an appropriate pain assessment, the timeliness of patient discharge records being produced, or the share of cases with documented electronic medication prescriptions (Lalloué et al., 2017). In 2019, 200 million euros were distributed according to the IFAQ criteria (Ministère des Solidarités et de la Santé, 2021).

Financial rewards for inpatient care quality in the German setting are the result of negotiations between insurers and providers under the umbrella of "quality contracts." These contracts are limited to a small number of care settings: endoprosthetic care, prevention of post-surgery delirium, and weaning and care for severely disabled patients (Gemeinsamer Bundesausschuss, n.d.). Starting in 2022, public health insurers are required to spend 0.30 euros per member on quality contracts (Bundesamt für Justiz, n.d.). It is not yet clear how many euros will eventually be paid out as quality rewards.

2.4 Pharmaceutical Care

Medicines play a critical role in healthcare. Common challenges across developed healthcare systems relate to rising costs and the associated efforts to evaluate the effectiveness of new drugs as they enter the market. This section addresses the economic relevance and the ways that medicines reach the patient. An overview of evaluation principles and examples of reimbursement and pricing mechanisms are presented.

Economic Relevance

Expenditure on medicines in advanced healthcare systems makes up between 25 and 30 percent of the publicly-funded total healthcare budget (World Health Organization Regional Office for Europe, 2021). The figures are, however, difficult to compare because the WHO does not include inpatient pharmaceutical expenditure in its indication. Considering the importance of highly expensive oncological medication that is administered in the hospital, the indicator may be distorted. In the European context, the WHO notes a decline in public pharmaceutical expenditure as a result of cost containment policies that were adopted after the 2008–2009 financial crisis (World Health Organization, 2018, p. 1).

How do Medicines Reach the Patient?

The first step for any medicine to enter the public domain is **market authorization**. The authorization attests to the general safety, quality, and efficacity of the product (Panteli et al., 2016, p. 17). It does not, however, guarantee that it provides an additional therapeutic benefit once distributed to the population outside of the clinical trial environment that was the basis for market authorization (Panteli et al., 2016, p. 18).

Market authorization
A new drug receives market authorization when its safety and efficacity is documented through clinical trials.

Once medicines have received a market authorization, their multinational suppliers (pharmaceutical companies) will begin negotiations with competent national authorities for questions about pricing and reimbursement. This is the second layer of government supply services or third-party payers and regulatory agencies depicted in the figure below.

Table 8: Medicine Supply across Geographical Layers

Level	Private sector	Public sector	Other stakeholders
International	Multinational suppliers	International procurement agencies (e.g., the United Nations)	Donors
National	Local manufacturers	Government supply services and regulatory agencies	Third-party payers
Regional	Wholesale distributors		Regional pharmacy associations
Local	Individual patients	Public sector prescribers	

Source: Jörg Artmann (2022), based on Hanson et al. (2018).

Once a medicine has gained regulatory approval and a manufacturer price is negotiated, wholesaler and pharmacist margins, as well as value-added tax (VAT), are added (Panteli et al., 2016, p. 27). This reflects the organizational effort required to distribute medicines across a territory and the patient consultation that a pharmacist is expected to provide when dispensing the medicine. Note, however, that depending on the care context, doctors themselves may also be medicine dispensers after an initial treatment in a primary care context. Considering the special role that medicines play in healthcare services, VAT rates on medicines across countries vary and reflect different priorities regarding affordability and access (Panteli et al., 2016, p. 35).

Prescriber Roles

Who decides on the kind of medication a patient in need receives? The roles in prescribing medicines vary across countries. Although prescription by a medical doctor is the norm in many countries, prescription by a nurse has gained traction over recent years. In an overview article on the subject, Maier (2019) observes that the right to prescribe for nurses comes with advanced roles and usually requires a nursing degree at master's level (**advanced nurse practitioners**). Also, the range of medications that can be prescribed is adapted to the nursing role. Further differences across countries concern the relationship between a nurse prescriber and the doctor. Is the nurse acting autonomously for specific health conditions or are they always required to liaise with a treating physician who remains liable for the care process?

Advanced nurse practitioners
These are nurses trained at university level with extended competencies for care.

Paying for Medicines: Cost Control and Out-of-Pocket

Balancing availability and cost control of medicines has led to supply and demand side measures by healthcare regulators. In the following section, emphasis is put on the negotiation of manufacturer prices and patient co-payments.

In the process after regulatory approval, the purchaser (central government or health insurer) and the pharmaceutical company negotiate. This negotiation doesn't happen in a vacuum but is determined by national legislation and established pricing mechanisms. Free price setting by the pharmaceutical company is the exception. In Germany, pharmaceutical companies are, in principle, free to set their price, but this is limited to the first year after market introduction, and even here, exceptions apply (Blümel et al., 2021, p. 55). Health insurers may still negotiate individual discounts and rebates with pharmaceutical companies, even after a price negotiation was completed successfully at federal level.

Two widespread pricing mechanisms are external and internal **reference pricing**. External reference pricing is a method of determining a price based on publicly available external data sources from other countries that have already introduced the medicine. Internal reference pricing, in contrast, is a strategy that assigns a price to a new medicine based on already priced medicines in the market that share either the same pharmacological characteristic (active ingredient) or target the same therapeutic group. For a detailed overview of these pricing strategies in European healthcare systems, see the literature by Panteli et al. (2016, pp. 27–33).

Reference pricing
This is a price setting mechanism based on already available prices of comparable products.

Co-payments for medicines play an important role in controlling the cost of pharmaceuticals for the public healthcare budget and the health insurer. In a review of the situation in Europe, the World Health Organization distinguished between three forms of co-payments (World Health Organization, 2018, p. 46):

1. Fixed-rate co-payments that are due whenever a prescription is issued
2. Co-payments representing a fixed percentage of the price
3. Deductibles

Deductibles are usually fixed amounts that need to be borne by the user before insurance coverage or public reimbursement takes effect. Deductibles and co-payments may be used in combination. The effect of co-payments on pharmaceutical expenditure achieves the intended effect of decreasing expenditure; however, co-payments were also found to limit access to medications considered necessary (Stadhouders et al., 2019, p. 73).

The most complex approach to medicine reimbursement focuses on outcomes. It is, in principle, a promising approach to avoid waste and reward improvements in the state of health. Instead of internal or external reference pricing strategies, outcome-based pricing links manufacturer discounts to the achievement of health targets. A review of this approach in the U.S. context identified a small number of contracts based on this mechanism, as well as limitations (Seeley & Kesselheim, 2017). The main challenge is to identify outcomes that reflect true improvements that matter for a patient's health in the long term. Instead, Seely and Kesselheim (2017) found that "the metrics used in these contracts are typically so-called surrogate measures, such as changes in laboratory values or other easy-to-obtain results that may not closely or directly correlate with actual clinical outcomes that are more central to patient health" (p. 4).

SUMMARY

The provision of services in healthcare systems is structured around a distinction between primary, secondary, and tertiary or hospital care. The primary care sector is the first point of contact for patients and usually determines the further course of treatment in gatekeeping systems. Secondary or specialist care in publicly-funded systems tends to suffer from waiting times that are the subject of regulation in many countries. The hospital is at the center of expensive 24/7 specialist care. Case-based payment systems dominate the financing mechanism for hospitals but require additional quality policies. The pharmaceutical sector, which is financially important in all healthcare systems, is subject to complex regulatory processes before a medicine can reach a patient. Reference pricing mechanisms and patient co-payments are ways to control expenditure for pharmaceuticals.

UNIT 3

MANAGING THE HEALTH WORKFORCE

STUDY GOALS

On completion of this unit, you will be able to …

- understand the structure and organization of medical training.
- identify supply and demand factors affecting health workers.
- describe the organization of health workforce governance comparatively.
- analyze factors affecting health worker migration.

3. MANAGING THE HEALTH WORKFORCE

Introduction

The health workforce comprises a variety of professions that are key to sustaining high quality healthcare systems. This unit will begin with a review of the structure of medical education, focusing on doctors and nurses. The combination of academic and practical elements will be highlighted, as well as the importance of continuous professional development.

Training new health workers is not the only factor needed to ensure sufficient supply. Indeed, many healthcare systems face the challenge of providing enough doctors in the right places to meet demand. A combination of financial incentives, targeted immigration, and the reconfiguration of health worker profiles and tasks is part of the policy options available.

Considering the importance of health workers as a profession, it is vital to understand how their interests are organized and defended. This dynamic can be placed on a continuum of large professional autonomy to state-sanctioned autonomy and corporatism, where health professions are an integral part of public health policy and implementation. Because of the high expectations of the quality of healthcare services, disciplinary action against doctors who fail to meet these standards is a particular challenge.

The unit closes with a view on the international migration of health workers. Although difficult to measure appropriately, clear international supply and demand trends can be identified. Migration is not only a phenomenon between developing and developed nations. The example of the European Union's (EU) enlargement shows that intra-European migration is also relevant.

3.1 Medical Education

The Variety of Healthcare Workers

Developed healthcare systems are characterized by a multitude of healthcare workers. Progress in medicine has given rise to subspecialties within medicine as a discipline. More generally, technical progress has also created numerous auxiliary functions for doctors, pharmacists, and nurses. From prosthetists to hearing aid engineers, physiotherapists, and speech and occupational therapists, the range of specialist healthcare workers is wide, and awareness of the social determinants of health has led some countries to employ **community health workers** for purposes of health promotion and prevention of disease (Kane et al., 2021). The line between health and social care is blurred. The medical workforce may even encompass managerial functions in hospitals where health economists or medical professionals with additional training control expenditures, set quality standards, etc. (Mahon & Young, 2006).

Community health workers
These are a group of non-medical health workers focusing on health promotion and prevention.

Health-related employment, unsurprisingly, is a relevant factor in the labor markets of most economies. Across the Organization for Economic and Co-operation Development (OECD), health and social care jobs account for about ten percent of all employment (Organization for Economic and Co-operation Development [OECD], 2016, p. 3).

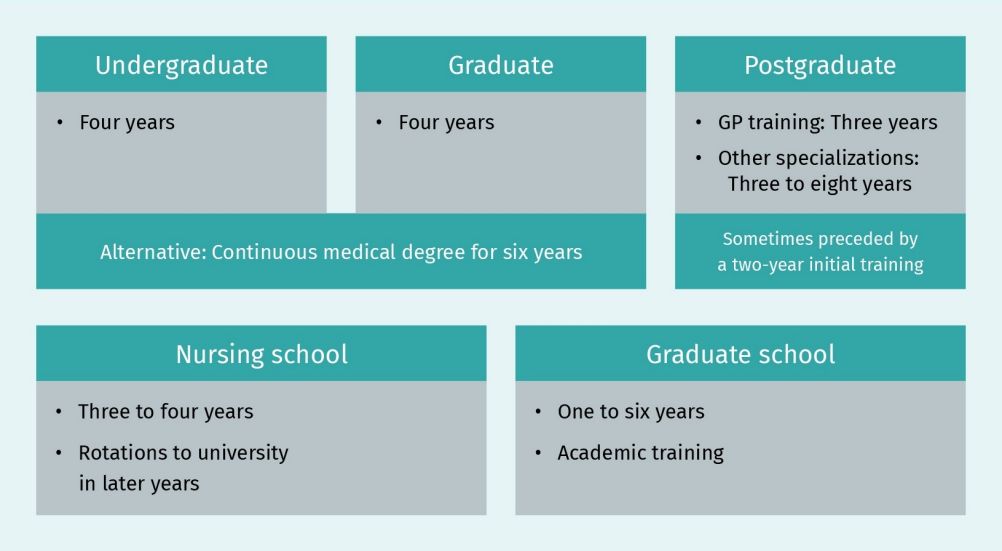
Primary Education (University Level)

The training of doctors and pharmacists is reserved for medical universities in all healthcare systems. Nurses are trained to academic standards, and even physiotherapists are trained academically in some healthcare systems. Access to medical school is usually restricted. Entry exams or access restrictions based on high grades and workforce needs projections are common. An OECD survey on the topic of entry restrictions (*numerus clausus*) highlights the fact that restrictions based on workforce needs projections are increasingly complicated due to the internationalization of labor markets, in particular the free movement of persons within the European Union's internal market (OECD, 2016, p. 67). More fundamentally, Gorman (2018) deplores that medical workforce planning suffers from profession-focused silo thinking and is generally unsuccessful in matching health workers to the needs of the population. He identifies several deficiencies in healthcare systems: A doctor- and hospital-centric approach to healthcare delivery makes flexible innovations focused on social needs difficult. Also, many countries simply lack the necessary planning tools and funding mechanisms to achieve effective workforce planning. Unsurprisingly, according to Gorman (2018), a focus on the simple ratio of doctors to population does not indicate unmet need.

Medical education has undergone significant changes in the past 100 years. The share of scientific versus practical training and the required length of education have changed. In an extensive historical overview of developments in Europe and the U.S., Custers and Cate (2018) highlight the changing balance between medical training from an academic and scientific perspective and the integration of practical experiences into the curricula. For the period following 1950, they note that "more concrete educational objectives were specified" and a focus on competencies "replaced the earlier belief that a student could graduate just by fulfilling a predetermined number of weeks or years in training" (Custers & Cate, 2018, p. 52).

Competencies for medical education are roughly comparable across countries, but the exact scope, timing, and organization of the curriculum differs. The figure below summarizes the key elements of medical and nurse training in Europe.

Figure 4: Structure of Medical and Nurse Training in Europe



Source: Jörg Artmann (2022), based on Kachur & Krajic (2006) and OECD (2016).

The final examination of doctors after initial university training confers the license to practice within the national jurisdiction. Note that countries within the EU usually recognize this qualification mutually, thus conferring the right to practice in every EU member state. Price et al. (2018) provide an extensive overview of licensing exams for medical students. Four different types of examination emerge:

1. All national medical students must pass a national licensing exam to practice in that jurisdiction (this is the predominant form).
2. All students and potential international medical graduates (IMGs) must pass a national licensing exam (this is a variation of the first).
3. IMGs with qualifications not recognized as equivalent must pass a licensing exam (this complements form one).
4. There is no national licensing exam in operation (this applies only to Kuwait and Malta).

Methodologically, the examinations usually combine knowledge tests based on (computer-assisted) multiple choice questions with more practical, case-based exam components (Price et al., 2018, pp. 785–786).

Continuous Professional Development

After a university degree, healthcare workers are usually accredited through medical chambers who are subsequently responsible for defining and enforcing continuous medical education requirements. The term “continuous medical education” has been largely replaced by **continuous professional development** (CPD). This change in terminology acknowledges the need for broader skillsets that include management and communication (Kachur & Krajic, 2006, p. 87). In a large European survey of continuous professional

development, CPD is defined as “the systematic maintenance, improvement and continuous acquisition and/or reinforcement of the life-long knowledge, skills and competencies of health professionals” (Directorate-General for Health and Food Safety, 2013, p. 6).

Continuous professional development
This is a requirement of healthcare professionals that emphasizes the maintenance of knowledge and skills.

The practice of CPD varies widely across European countries. Some countries make it voluntary, but the majority make it mandatory. Depending on the medical specialty, CPD may be mandatory for some healthcare professionals and voluntary for others. The consequences of not meeting mandatory CPD requirements can range from temporary revokation to the complete loss of the license. The survey of the Executive Agency on Health and Consumers (EAHC) also illustrates the wide range of topics included in the CPD curricula of countries. Although patient safety and communication with patients is immediately relevant to the quality of care, CPD topics also include eHealth, information technology (IT) systems, and training on reimbursement topics (Directorate-General for Health and Food Safety, 2013, p. 39).

In most healthcare systems, the ability to practice one’s chosen profession is achieved upon completion of medical training. However, further action may be required if doctors want to charge the healthcare system for the outpatient treatment of patients. In Germany, doctors or dentists who offer outpatient services in their own office need a mandatory membership to the regional association of statutory physicians or dentists to charge the statutory health insurance system. Exclusive private practice exists but is rare (Blümel et al., 2021).

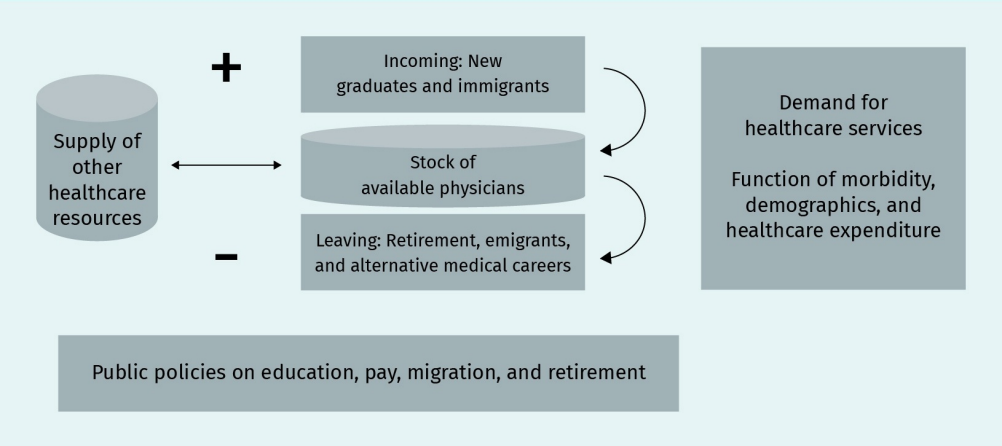
3.2 Supply and Distribution of Health Workers

At first, it may seem obvious that healthcare workers receive training and are then available to deliver healthcare services. However, the actual number of healthcare workers available and the demand for their services depends on many factors that merit careful study. While the number of physician and nursing graduates is at an all-time high in most OECD countries, discussions about the appropriate level of supply and distribution of professionals continue (OECD, 2016, p. 17).

A Model of Supply and Demand Factors

The OECD has published an analytical framework to organize the factors affecting supply of and demand for physicians (OECD, 2016). At any given time, the current stock of health workers can provide services in line with regulations on working hours and the number of available professionals. This number increases with new graduates and qualified immigrants. It also increases due to the provision of physician-type services through other healthcare professionals. Supply decreases because of outflows due to retirement and changes of professional path. Note that new medical graduates may decide not to work directly in the provision of healthcare services, but rather in research or commercial roles for the pharmaceutical industry or in other non-medical functions. Public policies on education, remuneration, migration, and retirement can impact both in- and outflows.

Figure 5: Demand and Supply Factors for Physicians



Source: Jörg Artmann (2022), based on Organization for Economic and Co-operation Development (2016).

Total demand for healthcare services is determined by demographic factors, morbidity, and the level of health expenditure as a percentage of gross domestic product (GDP).

This rough overview of supply and demand factors hides interesting nuances. The degree to which qualified immigrants can alleviate supply shortages depends on the flexibility of accreditation and recognition mechanisms. For professionals moving inside the European Union, this recognition is easier than for professionals from other countries. The "undersupply" of physician services is relative to the organization of the medical skillset across the physician and nursing profession. Doctor-centric healthcare systems with little autonomy for nurses will suffer from shortages sooner than systems with highly-specialized nurses that can offset physician shortages by taking on tasks in the management of chronic conditions and leaving the physicians to a supervisory role. Another factor is the level of technological innovation available for healthcare professionals. Teleradiology and telemedicine services can enhance productivity and quality of care by making physician services available remotely. Finally, the scope of health services available in a healthcare system is determined by health authorities. In the German healthcare system, over- and undersupply of healthcare professionals in the outpatient sector is determined in an elaborate directive agreed at the federal level (Kassenärztliche Bundesvereinigung, n.d.). It specifies physician-to-population ratios structured based on medical specialties for different geographical entities. The regional association of statutory physicians uses the directive to determine whether a general practitioner (GP), a neurologist, or any other type of medical professional is allowed to practice in an area (Kassenärztliche Vereinigung Nordrhein, n.d.). With an ageing population, healthcare needs change and so will the planning requirements for medical professionals. An equilibrium of supply and demand becomes a moving target.

The policy instruments available to countries to address physician undersupply are numerous. The OECD (2016, pp. 48–49) has surveyed its member countries and identified the following types of instruments:

- prolonging the working life of physicians
- targeted immigration policies
- financial (or other) incentives for choosing a general practice specialization
- targeted incentives to take up certain specialties deemed in shortage
- reconfiguring the role of non-physician providers
- increasing admissions to medical education
- financial incentives related to the geographical distribution of physicians

A strong time lag can be expected with increasing admissions to medical education and changes in the training of non-physician providers. Together with the high investments involved, this type of policy must be considered long-term. More immediate effects can be expected from financial incentives and changes to the retirement age of physicians.

The Problem of Undersupply in Rural Areas

The analysis of the geographical distribution of healthcare workers (physicians in particular) is highly relevant to the study of how healthcare systems achieve the objective of access to care. Medical doctors undergo long periods of academic and specialist training and their pay is usually above average. It follows that their preference for a first job is usually oriented toward large hospitals in attractive urban areas. If the perspective of a family with children is included, this trend is reinforced. Job opportunities need to be available for a partner and children need access to high-quality educational opportunities (OECD, 2016, p. 130).

Rural areas in most countries do not provide the economic, cultural, and educational opportunities of urban centers. At the same time, the ageing population needs access to good quality healthcare services. This problem is even more acute in low- and middle-income countries. In a systematic review of how these countries can effectively address the shortage of doctors and nurses, Adynski and Morgan (2021) identified several possible strategies. A central one was public sector employment of doctors and nurses. If the federal government hired required workers, it was also able to mandate the place of work more effectively than local authorities. Further, a career path perspective that led back to urban areas after a mandatory time in rural areas was found to be effective. Additional financial benefits, such as a housing or car allowance and the targeted recruitment of students from rural areas to medical training, were other examples used (Adynski & Morgan, 2021, pp. 179–181).

In more developed healthcare systems of industrialized countries, several factors determine the level of attractiveness of working in rural environments from a doctor's perspective. A primary concern is excess working hours compared to practices in more urban areas. Indeed, the average number of weekly hours worked is higher for general practitioners in rural areas than in urban ones: in Canada, France, and Germany, the average is higher than 50 hours (reaching 60 hours in France), compared to about 50 hours in urban areas (OECD, 2016, p. 137). Another dimension is income. Where physicians are paid on a predominantly fee-for-service basis, a first intuition may be to see more income potential in urban areas, given a higher number of potential patients. However, OECD income data unadjusted for working hours shows that income for rural practicing physicians is slightly higher than for colleagues in urban areas (OECD, 2016). The workplace choice of physi-

cians can also have a more ideological component. Bonica et al. (2020) analyzed the relationship between political preferences and location choice in the U.S. By linking political donations with provider registration data over time, the authors were able to determine that physicians who conclude their residency program in a hospital (often in liberal leaning areas) and decide to practice in an outpatient setting stay in this region. Conservative-leaning doctors move into conservative areas. When most doctors can be classed as liberal, conservative rural areas will likely remain underserved. The authors suggest an incentive scheme that provides free tuition for medical school and free room and board in exchange for practice commitments in affected areas. In parallel, the use of telemedicine technology should be encouraged (Bonica et al., 2020, p. 1054).

3.3 Health Workforce Governance

There is an inherent conflict between the payer's wish to regulate service provision (and therefore also professional conduct) as closely as possible and the quest for professional autonomy. Dubois et al. (2006, p. 174) propose a continuum of control ranging from complete autonomy to state-sanctioned autonomy and full state control. The question of health professional governance is multi-faceted because solutions that tend to favor professional autonomy compete and/or coexist with centralized approaches by public authorities. In most healthcare systems, medical professionals – particularly doctors – are not only an important professional group but also a political force.

Medical Chambers across Countries and Their Competencies

The medical chamber is the prototypical organizational form of doctors. It can be analyzed from multiple perspectives. A generally accepted role is that of a registration or licensing and disciplining body that also addresses continuous professional development (Blank et al., 2017, p. 163). A short review of international examples of health workforce regulation is available in the literature by Imison and Castle-Clarke (2016). In the German healthcare system, the professional autonomy granted to the medical profession transfers oversight power to medical chambers (*Kammern*) in which doctors and pharmacists, as well as dentists, are compulsory members. The legal basis for this is set by the German states or *Länder* in their respective laws governing the healthcare professions, which is, in turn, enabled by a constitutional provision (Wenzel, 2009, p. 929). Typical tasks of the medical chambers, exemplified here for the state of North Rhine Westphalia, are to keep a register of members, support public health authorities, guarantee an out-of-hours emergency service, ensure continuous professional development including certification, oversee the fulfilment of professional duties, take corrective action, and many more (see the literature by Recht.NRW [2022]). The chambers often co-exist with organizations of doctors that fulfill a more "trade-union" type of function. In the United Kingdom (UK), the British Medical Association is the latter, while the General Medical Council is comparable to the German "chambers." The Council's governance handbook lists four central functions (General Medical Council, 2021, p. 5):

1. Keeping up-to-date registers of qualified doctors
2. Fostering good medical practice

3. Promoting high standards of medical education
4. Dealing firmly and fairly with doctors whose fitness to practise is in doubt

This list clearly echoes the provisions in the German *Heilberufegesetz.*

The role of medical chambers as **registration authorities** is analyzed by Bautista and Lopez-Valcarcel (2019). They group organizations according to their legal status as corporations of public law with delegated responsibilities, or independent professional organizations with the principal aim to defend professional interests. In a second step, the professional registration function (centralized or decentralized) is considered. In some countries, registration is centralized; in others, in particular federal states, the function can be decentralized. Membership in corporations of public law is a prerequisite for medical practice, whereas membership in independent professional organizations is voluntary (Bautista & Lopez-Valcarcel, 2019, p. 439). The following table summarizes the international distribution of the models for registration.

Registration authorities
Medical chambers usually act as registration authorities for their members, with membership often being compulsory.

Table 9: Doctor Registration Internationally

	Corporation of public law	Independent professional organization
Centralized registration	Ireland, the United Kingdom, and Luxembourg	Finland, Denmark, Japan, Netherlands, Sweden, and the U.S.
Decentralized registration	Austria, Belgium, Canada, France, Germany, Greece, Italy, Portugal, and Spain	

Source: Jörg Artmann (2022), based on Bautista & Lopez-Valcarcel (2019).

Bautista and Lopez-Valcarcel (2019, pp. 443–444) highlight some of the disadvantages of decentralized registries as follows, although the extent to which these general points apply to specific national approaches varies: Different documentation and admission requirements make comparison of sub-national registries difficult. In addition, decentralized registry solutions also make for a fragmented political positioning of chambers regarding the federal level chamber. Finally, decentralized registry solutions may also complicate a unified disciplinary approach toward members accused of malpractice.

Doctors in Germany wishing to practice medicine need compulsory membership in regional physician chambers (*Kammern*). However, they also need additional regional membership in the association of statutory health insurance doctors if they wish to treat publicly-insured patients and invoice the statutory health insurers (Blümel et al., 2021, p. 17). This is due to the coexistence of a statutory health insurance system with private health insurance for approximately ten percent of the population (mostly self-employed and civil servants).

The U.S. pursues a particular model of medical licensure: After graduation from medical school, American doctors apply to a residency program that is accredited by the Accreditation Council for Graduate Medical Education (ACGME). Its self-declared mission is to "improve healthcare and population health by assessing and enhancing the quality of res-

ident and fellow physicians' education through advancements in accreditation and education" (Accreditation Council for Graduate Medical Education, n.d., para. 2). As Dayaratna et al. (2019, p. 264) point out, board certification depends on graduation from one of the programs that are ACGME certified, and this, in turn, enables a doctor to cooperate with health insurers and receive affordable malpractice insurance. The American Board of Medical Specialties, another not-for-profit private entity, grants specialty certificates to doctors who have completed their residency program (American Board of Medical Specialties, n.d.). Dayaratna et al. (2019) point out that together, these private organizations "effectively monopolize the only pathway to physician licensure and certification in America" (p. 265).

Health Workforce in the Policy Process

The role of healthcare workers and their associations in the policy process can be distinguished along two axes of analysis: The dimension of doctor/provider organization and the dimension of access to the political decision-making process. As Blank et al. (2017) point out, some healthcare systems integrate doctors' interests in "corporatist" arrangements. The statutory physician association at federal and state level in Germany is a case in point. It has a say in all matters relating to the organization and remuneration of social health insurance services for outpatients and coexists with doctors' trade unions that negotiate pay on behalf of hospital doctors. In the UK, the British Medical Association plays the role of trade union and professional representation. In the latter function, it focuses on matters of medical training and continuous professional development (Blank et al., 2017, p. 160).

The dimension of cohesiveness can be analyzed through membership shares among medical professionals. Germany is an example of a fragmented system in which statutory health insurance doctors, hospital doctors, and associations of general practitioners (GPs) and specialists compete for influence, both inside the corporatist structures and outside in traditional trade union structures (Blank et al., 2017, p. 161). Through its large share of members, the British Medical Association is a contrasting example, as it represents a large majority of doctors. However, even here, conflicts of interest between GPs and consultant doctors in hospitals are unavoidable (Blank et al., 2017, p. 160).

Table 10: Doctors in the Policy Process

	Policy access from outside (lobbying)	Policy access from inside (corporatism)
Cohesive interest organization	Australia, the UK, Japan, New Zealand, Singapore, Sweden, and Taiwan	
Fragmented interest organization	The U.S.	Germany and the Netherlands

Source: Jörg Artmann (2022), based on Blank et al. (2017).

Self-Governance and Disciplinary Action

A particular challenge in the governance of the healthcare workforce relates to disciplinary action. Quality problems, such as insufficient training, outdated professional methods, poor patient follow-up, and even criminal misconduct, are present in the healthcare workforce. Risso-Gill et al. (2014) discover a large variety of responses to scenarios of misconduct in several European countries. A set of fictitious cases of professional misconduct was submitted for review by experts in the respective medical chambers of the surveyed countries. Even in a severe case of lack of knowledge of basic clinical concepts and a refusal to retrain, an immediate removal of the license was not the automatic consequence. While Austria, Germany, and the UK did suggest a removal, the Dutch regulatory body only suggested a reprimand. In Estonia, the only disciplinary action possible was direct legal action by the patients themselves (Risso-Gill et al., 2014, p. 352). This variety of responses shows that while medical self-governance is widespread, it exists in a regulatory framework that is country-specific and leads to different outcomes for the same prototypical situation.

The political consequences of malpractice on a doctor's autonomy can be illustrated by the reforms of the British General Medical Council (GMC) as reported by Chamberlain (2010). The 2008 Social Care Act was passed under the impression of malpractice cases and resulted in changes in the composition of the GMC. Members of the public had to be represented (50 percent) and new members were appointed by a new system under public oversight. More importantly, the GMC lost the power to take disciplinary action against members accused of malpractice (Chamberlain, 2010).

The establishment of patient safety ombudsmen or medical error reporting systems are one way to address malpractice concerns. The German physician chambers at state level have set up expert committees to assess cases of suspected medical malpractice and facilitate arbitration procedures. These coexist with and do not prejudice formal legal procedures in a court of law (Bundesärztekammer, n.d.). In the UK, the Parliamentary and Health Service Ombudsman addresses patient safety concerns that could not be resolved within the National Health Service (NHS; Parliamentary and Health Service Ombudsman, n.d.).

3.4 Health Worker Migration

The migration of health workers across borders and the associated loss of talent for their countries of origin is an important challenge for healthcare systems. In countries of Sub-Saharan Africa, the migration and resulting shortage of health workers is cited as one factor contributing to the fast spreading of the Ebola virus, to name one drastic example (Yeates & Pillinger, 2021). It also raises ethical questions regarding the investments made in medical education by countries that are losing health workers to migration. An analysis of the ethical dimension of health worker migration is provided by Snyder (2009) who highlights the fact that the "poaching" argument tends to obscure the many reasons why health workers in developing countries leave, and that there may even be an ethical obli-

gation for high-income countries to help health workers who are fleeing from existential threats. In a survey of African doctors and nurses migrating from South Africa to the UK, Bidwell et al. (2014) found that security considerations were essential pull factors.

The World Health Organization (WHO) has issued a code of practice on the international recruitment of health personnel to support ethical recruitment and strengthen the evidence based on this trend (World Health Organization, 2010b). A selection of the code's guiding principles are summarized in the table below.

Table 11: Selected Guiding Principles of the WHO Voluntary Code of Practice on International Recruitment of Health Personnel

Guiding principle	Comment
Health as basis for peace and security requires adequate resources (Art. 3.1).	Healthcare infrastructure is a critical component, not only for individual health but also for social cohesion and peace.
Addressing worker shortages is important but should be done in a coordinated and equitable way (Art. 3.2).	
Technical and financial assistance should be provided by developed countries to developing countries that are vulnerable to health worker shortages (Art. 3.3).	
Provisions of the code must not infringe on the right of health personnel to migrate (Art. 3.4).	The code is voluntary, and migration is an individual decision.
Recruitment should be fair, transparent, and equitable. Member states should promote and respect labor conditions that are fair (Art. 3.5).	The code further specifies in Article 4.4 that remuneration of foreign-trained personnel should be based on objective criteria.

Source: Jörg Artmann (2022), based on World Health Organization (2010b).

A global view of health worker migration and its governance through international organizations and agencies is provided by Yeates and Pillinger (2021). Their book includes a broad review of international and bilateral agreements impacting migration, including agreements by agencies other than the WHO.

For developed healthcare systems, the major analytical (and quantitative) work on health worker migration comes from the Organization for Economic Co-operation and Development (OECD, 2019). A more dated (but still relevant) work on migration within the European Union was published in 2014 by the European Observatory on Health Systems and Policies, focusing on how European Union (EU) enlargement affects health worker mobility (Buchan et al., 2014). For detailed research on individual countries, students are encouraged to consult the numerous Excel tables available on the OECD website (OECD, 2019).

A Note on Methodology

There are three major ways of measuring the international migration of health workers: nationality, place of birth, or place of training (OECD, 2016). In the specific context of the European Union, "intent to leave data" derived from requests for recognition of qualifications is used to measure the same migration (Buchan et al., 2014). The shortcomings of each method are summarized in the following table.

Table 12: Measuring Health Worker Migration

Measurement criterion	Limitation
Nationality	Workers may hold dual nationality or be raised in their country of practice.
Place of birth	Early childhood migration may distort the data.
Place of training	This is more appropriate than nationality or place of birth but may be distorted by internationalization of medical training (e.g., a German medical student trained in Hungary).
Request for recognition of qualifications as proxy for intention to leave	This is only relevant inside the EU and is not a reliable indicator for actually leaving.

Source: Jörg Artmann (2022), based on Organization for Economic and Co-operation Development (2019) and World Health Organization (2014).

The OECD therefore adopts an approach based on place of training in combination with annual health worker data based on health professional registries.

International Supply and Demand Trends

In OECD countries, the overall number of health workers (doctors and nurses) has increased based on domestic supply. The OECD average number of practicing doctors per 100,000 population has increased from 2.8 to 3.4 between the years 2000 and 2016. A similar picture applies to nurses. A notable difference is in the U.S., with around 25 percent of the increase being due to foreign-trained doctors (OECD, 2019).

Typical destination countries of migration flows, such as the U.S., have a share of around 25 percent of foreign-trained doctors. This share is comparable to other immigration countries, such as Canada (24.7 percent) and the UK (28.5 percent). The share is highest in Israel (57.9 percent). A particularly interesting phenomenon is Ireland, with a share of 42.3 percent of foreign-trained doctors. This share is high, although simultaneously, there is a high share of Irish-trained doctors leaving Ireland for countries such as the U.S. and Australia (OECD, 2019). In an overview article of the situation since 2008, Humphries et al. (2019) find that doctor emigration after the 2008 financial crisis increased (unsurprisingly) but did not return to normal levels after the economic recovery in 2014. While the post-2008 recession and austerity policies served as push factors, the outflow of Irish citizens/trained doctors to Australia continued even after the 2014 economic recovery. The authors point to unpopular healthcare reforms in Ireland, the good reputation of Australia

in the Irish health community for its working conditions, and staffing levels and the important role of Irish professional networks in Australia as factors that facilitated doctor emigration. At the same time, they acknowledge the increased reliance of the Irish system on doctors trained in Sudan, India, and Pakistan (Humphries et al., 2019, p. 8).

What are some generalizable conclusions regarding the factors that drive health workers to emigrate? Economic conditions and "better prospects" abroad are a recurring feature but certainly not the full picture. In a case study on twin doctors from Ghana, with one emigrating to the U.S. and the other staying in Ghana, Tankwanchi et al. (2021) point out the instrumental (economic) motivation of one and the strong attachment to country, friends, and family of the other. Closely related to the economic rationale is the idea of better medical training and working conditions.

Health Workforce Migration in the European Union

The EU is a particularly interesting field of study for health worker migration because of its highly-developed internal market and related freedom of movement for citizens and wide-ranging rules on the recognition of professional qualifications (Greer et al., 2019). In addition, the internal market provides a system of social security co-ordination between member states that provides access to healthcare and transfer of pension claims (European Commission, 2021).

The most significant effect of EU enlargement in 2004 and 2007 was the inclusion of former Soviet Union countries, such as the Baltic States, Poland, Hungary, the Czech Republic, and Slovakia, and the corresponding enlargement of the EU internal labor market (Buchan et al., 2014). As a result, in the period from 2003 to 2007, the number of medical doctors and dentists from enlargement countries working in the "old" European Union of 15 member states increased both in absolute and relative terms. The share of medical doctors in certain EU15 countries increased from 0.7 percent in 2003 to 1.5 percent in 2007 (Buchan et al., 2014, p. 71).

SUMMARY

The health workforce is a multifaceted group including community health workers, therapists, doctors, dentists, nurses, etc. Doctoral training is only done at medical universities in all countries and encompasses scientific and practical elements. Despite high numbers of available doctors and nurses, health systems struggle to distribute their health workers across the territory to meet health needs, particularly in rural areas. Reconfiguration of the role of nurses and financial incentives are ways to address this distribution problem. In developing countries, public sector employment of doctors and rotation schemes are used.

With regard to workforce governance, healthcare systems impose different limits on professional autonomy. In corporatist countries, such as Germany, medical chambers operate under a paradigm of self-gover-

nance, largely free of direct state interference. In others, such as the United Kingdom, reforms were introduced to limit this autonomy for many reasons, including concerns for quality and patient safety.

The international migration of healthcare workers is a complex phenomenon with ethical implications, particularly for developing countries that are losing talent that were trained on their limited resources. A voluntary WHO code of practice addresses recruitment and pay for this group. South-East Asian nations, such as India, Pakistan, and Bangladesh, are important exporters of doctors to the UK and the U.S. Ireland is an importer of doctors from these countries, while its own domestic workforce is increasingly emigrating to Australia and the U.S. This highlights the fact that migration is not limited to developing countries.

UNIT 4

HEALTH SYSTEM EFFICIENCY

STUDY GOALS

On completion of this unit, you will be able to …

- understand the importance of efficiency analysis for healthcare.
- identify typical health system outputs used in efficiency analysis.
- analyze the relevance and limitations of efficiency analysis.
- describe healthcare system efficiency comparatively.

4. HEALTH SYSTEM EFFICIENCY

Introduction

Healthcare systems strive to maintain access to care while ensuring quality at acceptable costs. They also compete with other societal priorities, such as education, social security, and defense. This is why questions regarding efficiency of healthcare systems are highly relevant.

This unit is dedicated to the analysis of healthcare systems' efficiency, broadly understood as the ability of a system to produce a pre-defined output with minimum inputs. The relevance of operational and allocative efficiency is discussed, as well as how they are linked to free market competition. The choice of relevant outputs, such as life expectancy or disease-specific morbidity, is at the center of the first section. This also requires a conceptual framework of how inputs, processes, outputs, and outcomes are linked. The dominant model for a healthcare system with regard to efficiency considerations is an "input–output" model (Gerber et al., 2006, p. 199). Common output metrics for healthcare systems available through the World Health Organization (WHO) and Organization for Economic Co-operation and Development (OECD) are presented and discussed.

Given that all healthcare systems pursue the efficient production of outputs, a comparison of efficiency across national boundaries is highly relevant. The second part of this unit therefore tracks efforts in this domain, starting with the WHO World Health Report 2000, which attempted to rank healthcare systems worldwide. The conceptual and methodological approaches of the WHO are critically discussed. More recent efforts of efficiency comparisons across borders focus on mortality amenable to healthcare to acknowledge that healthcare systems alone cannot be held accountable for health outcomes.

4.1 Measuring and Comparing Health System Outputs

The first step in the analysis of efficiency is the clarification of the underlying assumptions and dimensions of efficiency, derived from the health economic literature. The consequences of this analysis lead us to a healthcare system model of inputs, throughputs, and outputs.

A Conceptual Framework for Efficiency Analysis

Efficiency has two dimensions in the health economic literature: operational (or technical efficiency) and allocative efficiency. Operational efficiency is concerned with the analysis of how inputs should be organized to achieve a given output with minimum costs. It is usually "an ex-post examination of whether the outputs produced by the entity under scrutiny were maximized, given its inputs and external circumstances" (Cylus et al., 2016,

p. 6). Allocative efficiency considers which outputs are worth pursuing or, put differently, which reflect the societal preferences of the healthcare system (Donaldson & Gerard, 1993a, pp. 68–71). It can also be used to analyze whether the input factors used to generate a desirable health outcome were combined efficiently. This is called the "input side" of allocative efficiency (Cylus et al., 2016, p. 3).

It is important to note that both dimensions of efficiency are achieved in a perfectly functioning, competitive market. Key conditions of perfect markets and their limitations with regard to healthcare can be summarized as follows (Donaldson & Gerard, 1993b, pp. 21–25). A more condensed version of the arguments can also be found in the literature by Folland et al. (2017, pp. 486–487).

Perfect information of consumers and providers (certainty)

Consumers are perfectly informed about their health consumption needs across time and know where they can purchase the required services and the quality of these services. Providers also know the demand for their services and charge the marginal price that reflects the equilibrium of supply and demand. On the consumer side, this assumption is obviously flawed regarding the planned character of consumption and the information about appropriate healthcare services that address individual health needs. On the provider side, the reality of healthcare systems is a landscape of accredited providers that face limited competition and have an informational advantage regarding the services that an individual needs. They can therefore influence demand for their services (Donaldson & Gerard, 1993b, pp. 21–25).

Absence of externalities

Whenever consumers benefit from or are harmed by consumption decisions of other market participants without being able to reap the benefits or offset costs thereof, a positive or negative externality exists. It is an externality because it cannot be accounted for in market transactions. An example of a positive externality in healthcare is the vaccination decision of individuals or adherence to hygiene standards. In contrast, environmental pollution or the non-adherence to hygiene standards can be considered a negative externality. Because neither positive nor negative externalities can be accounted for in the marketplace, they tend to be underproduced (in the case of positive externalities) and overproduced (in the case of negative externalities, such as pollution; Donaldson & Gerard, 1993b, pp. 21–25).

Sovereign consumers act without being influenced by providers

This assumption is most difficult to uphold for healthcare insofar as the information about medical needs of patients often rests exclusively with doctors. To make matters worse, it also depends on information provided by the patient, which may not always be accurate. In this situation, providers can steer the patient according to their (economic) interests (Donaldson & Gerard, 1993b, pp. 21–25).

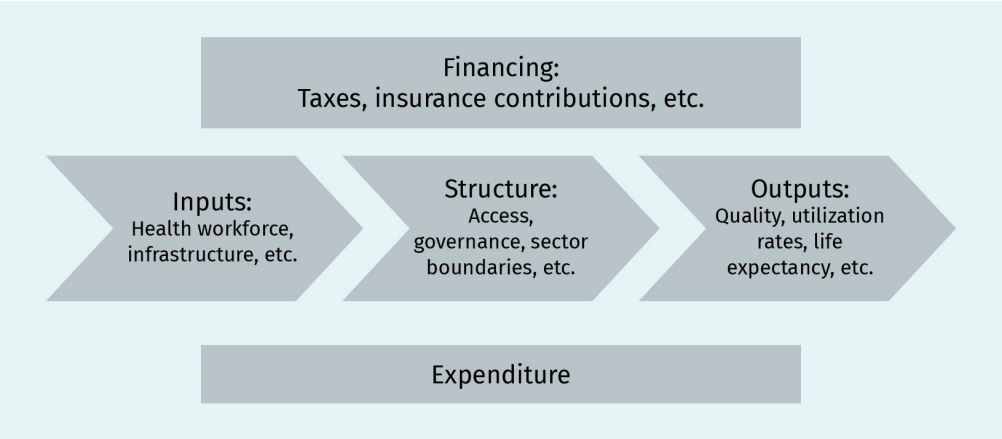
No barriers to market entry for providers

A competitive marketplace depends on barriers to entry being low for providers. The effects of competition can only play out if patients have a choice between numerous doctors or hospitals. The experience of healthcare systems worldwide is that of regulated entry into the medical profession (by restricting access to medical schools) and into the marketplace for healthcare (through accreditation rules and/or hospital planning rules; Donaldson & Gerard, 1993b, pp. 21–25).

The above review of the theoretical underpinnings of efficiency clearly shows that achieving efficient healthcare services is a challenge. It also shows the importance of modeling efficiency analysis, not only by comparing inputs with outputs, but also considering how inputs are translated into outputs. The processes and regulations that affect healthcare delivery are important.

Gerber et al. (2006) propose an analytical model of healthcare systems that combines inputs such as healthcare workers and hospitals with structures (e.g., access and governance), that lead to outputs such as life expectancy, quality, and satisfaction. Every element in the process is influenced by healthcare expenditure and healthcare financing. A visualization is provided in the following figure.

Figure 6: Healthcare Systems Comparison Framework



Source: Jörg Artmann (2022), based on Gerber et al. (2006).

The appeal of the model is its relative simplicity and the focus on interdependencies between inputs, structure, and outputs, as well as the means to achieve and sustain them. Although Gerber's model is analytically compelling, the variety of possible structures, financing models, and factors outside of the formal healthcare system show the complexity of efficiency comparisons. A healthcare system in the industrialized world may, for example, emphasize access to healthcare services from the supply side. It invests heavily in hospitals and allows outpatient healthcare providers to practice with only limited barriers to market entry. This input level of the process is then combined with a private insurance financing model and laws and regulations that favor competition. Although not entirely accurate, the U.S. comes close to such a model. If we now assume equal distribu-

tion of medical knowledge and equal access to medical technology in the world, another healthcare system might organize its inputs and outputs in a different structure, which may lead to different levels of efficiency for the same output. An in-depth discussion of these issues is reserved for the second part of this unit.

Commonly-Used Output Metrics for Healthcare System Performance

If efficiency is about input and output relationships, then the choice of output metrics for the measurement of health system performance is crucial. Many contributors in the field, such as Nixon and Ulmann (2006), conflate healthcare system outputs with a health outcome, such as life expectancy. It is important, however, to bear in mind that the immediate output of healthcare systems can also be analyzed through utilization indicators, such as the number of patients treated in a hospital, outpatient contacts per year, prescription drugs issued, etc. It is these indicators that dominate the respective WHO and OECD databases. If we accept that a healthcare system should ultimately pursue meaningful health outcomes, such as disability-free life years, we encounter the problem of causality. What part of the input-throughput-output-outcome model can be attributed to a health outcome? What role did factors such as economic wealth and social equality play?

An analysis of health system outputs, understood as utilization levels of healthcare resources (number of hospital discharges, number of consultations, etc.), provides interesting insights into the priority setting of a health system.

The OECD.Stat Database (OECD.Stat, n.d.) provides an interesting set of healthcare utilization data that can be interpreted as the output resulting from available resources and insurance/coverage mechanisms. In the following table, the major utilization indicators are briefly presented. Students are advised to carefully study the full definitions of each indicator, including their country-specific differences (OECD.Stat, n.d.); only an abbreviated definition is provided in the table for accessibility purposes.

Table 13: OECD Healthcare Utilization Data (Selection)

Indicator	Definition (abbreviated)	Comment
Doctor consultations (all settings)	Excluding inpatient consultations and telephone/email contacts	Output of available healthcare professionals
Immunization (percentage of children immunized)	Diphtheria tetanus polio immunization: percentage of children under age one having received three doses in a year	Reflects accessibility of primary care/pediatric services
Inpatient care discharges (all hospitals)	Discharge after admittance for treatment and a minimum stay of one night	Can be interpreted as the performance/weight of the inpatient sector (disease-specific discharge data also available)

Indicator	Definition (abbreviated)	Comment
Total number of computer tomography (CT) exams	One diagnostic imaging session to study an organ or body part	Data for magnetic resonance imaging (MRI) and positron emission tomography (PET) scans also available, can be interpreted as proxy for the accessibility of modern diagnostics

Source: Jörg Artmann (2022), based on OECD.Stat (n.d.).

If the argument is accepted that outputs are healthcare services made available to the population, then these outputs can be linked with overall levels of healthcare expenditure to gain an understanding of the weight of different healthcare sectors within a healthcare system.

The following healthcare expenditure-related items in the OECD.Stat Database (OECD.Stat, n.d.) can help profile relationships between the aforementioned outputs of a healthcare system and the related sector-specific expenditure. Only the most important items in each category are presented.

Table 14: OECD Healthcare Expenditure Profiles

Financing scheme	All schemes	Government/ compulsory	Voluntary healthcare payments	Household out-of-pocket payments
Function	Current expenditure on health (all functions)	Inpatient care	Outpatient care	Long-term care
Provider	All providers	Hospitals	Residential long-term care facilities	Ambulatory care providers
Measure	Share of gross domestic product (GDP)	Share of current expenditure on health	Current prices	Per capita current prices

Source: Jörg Artmann (2022), based on OECD.Stat (n.d.).

Utilization data and expenditure profiles in combination allow for an interesting characterization of the relevance of healthcare sectors in a healthcare system. For example, a high absolute number of hospital discharges or discharges relative to 100,000 population could be expected to result in a high weight of inpatient care expenditure as a percentage of the total current expenditure on health. Differentiated by financing schemes, such an analysis may yield a first hypothesis of the public-private mix in provision. A high share of household out-of-pocket payments for inpatient care may indicate that the healthcare system has established per diem co-payments for hospital stays or that certain hospital treatments are only available outside the public realm and must be covered by voluntary private health insurance. Similarly, an analysis of outpatient contacts in relation to the expenditure weight of outpatient care in the healthcare system can yield first clues on whether a healthcare system prioritizes access to care over cost control considerations.

The key test of a healthcare system's ability to achieve allocative efficiency is the analysis of health outcomes relative to the input of resources. A look at utilization rates and expenditure profiles doesn't say anything about a system's ability to achieve an improvement in health for its population. Again, the OECD.Stat database provides valuable information in this regard (OECD.Stat, n.d.).

Table 15: Selected OECD Health Status Data

Indicator	Definition (abridged)	Comment
Preventable mortality per 100,000 population	Causes of death preventable through public health and primary care interventions	A high rate of preventable mortality could be a sign of an inefficient organization of public health and/or primary care.
Treatable mortality per 100,000 population	Causes of death due to lack of timely and effective healthcare interventions, such as screening and treatment	Same as for preventable mortality
Perceived health status by age and gender	Percentage of the population in each age group that deem their health to be "good" or "very good"	The survey instrument is not yet fully standardized across OECD countries; nonetheless, a high share of "good" or "very good" health, especially in higher age groups, can be a sign of an efficient and effective healthcare system.

Source: Jörg Artmann (2022), based on OECD.Stat (n.d.).

Preventable and treatable mortality can be considered measures of allocative efficiency in the sense that healthcare systems should value minimizing this mortality through effective interventions.

Perceived health status is among the variables that are difficult to link exclusively to the performance of the healthcare system. The socio-economic determinants of health, such as educational level, employment, housing conditions, and income, may affect self-perceived health status or influence health beliefs and health-seeking behavior positively or negatively. A detailed discussion of this issue can be found in the literature by Mahon (2016). Nonetheless, a high share of self-reported good or very good health in age groups above 65 should be taken as a sign that the healthcare system serves these populations well, considering that chronic conditions tend to be more prevalent in this age group.

There are several other outcome parameters to assess the burden of disease in countries. Although a direct link to a healthcare system's performance is more difficult to establish, these indicators shall be briefly presented.

Disability-adjusted life expectancy (DALE)

This reflects life expectancy that can be lived free of disease: "As the DALE approaches life expectancy, the burden of disease descends" (Preedy & Watson, 2010, p. 4190).

Quality-adjusted life years (QALY)

The QALY combines information on survival with information on whether this time is spent in good health-related quality (Howren, 2013). One year lived in a perfect state of health equals one QALY. The information on health-related quality is usually derived from surveys of individuals who assign a score between 0 and 1 to their health-related quality in each period. The main challenge for QALY calculations is the methodologically sound collection of health status information (Lüngen et al., 2015, pp. 142–143). Considering the way a QALY is built, the measure lends itself to comparisons of different healthcare interventions, but it is rarely used to assess the aggregate performance of a healthcare system.

Methodological Issues with Output Comparisons

The execution of an efficiency analysis at health system level based on routinely collected data faces several methodological challenges, especially in time series or cross-national analysis. The main points are summarized in the table below.

Table 16: Methodological Challenges with Output Comparisons

Topic	Challenge	Comment
Timely data	Data may not be available for recent years.	Time lag implies that recent developments are not reflected in the data. This is problematic when major health reforms were enacted recently.
Source	Available data on a topic may be limited to public providers.	Data may cover only public hospitals, providing an incomplete picture when private providers play an important role.
Definition	Data definitions may change over time and/or differ between countries.	Although the WHO and the OECD provide common definitions of concepts, changes in the national statistics collection methodology can affect comparability over time. Such changes are usually highlighted in the database.

Source: Jörg Artmann (2022).

With regard to the measurement of health-related quality of life, additional problems arise. When patients are asked to value a period of time spent in a state of health, two general approaches are available to illicit this value judgment: a direct approach in which patients are presented with a rating scale to value their health state, and an indirect approach. The indirect or multi-attribute approach presents patients with health status questionnaires (Feeny, 2006). The result is summarized in a single index value that lies between 0 (dead) and 1 (perfect health). Brazier and Roberts (2006) review general challenges of constructing health state classifications and point to problems in the following domains.

Distinguishable

Selected health states must be distinguishable. This results in health state questionnaires with limited thematic domains and levels. Otherwise, respondents may no longer be able to distinguish between states of mild or very mild pain, for example.

Specific

Survey instruments need to be specific. Generic health state and condition-specific health state instruments are available. Generic health state instruments may lack specificity for a particular condition, whereas condition-specific questionnaires limit comparability and aggregation.

Sensitive

Finally, health state class functions need to be sensitive to changes in the underlying condition over time. When the health condition determining the quality of life changes, the survey instrument should be able to produce changing values of health-related quality of life.

Health-related quality of life surveys need to be particularly careful to measure the multifaceted dimensions of quality of life without losing touch with the underlying clinical reality of disease.

The EQ-5D as a Generic Health State Valuation Instrument

The EQ-5D is an example of a generic health state valuation instrument that is widely used. It features five dimensions relevant to healthcare-related quality of life: mobility, self-care, usual activities, pain or discomfort, and anxiety and depression. Each of these domains is accompanied by three questions. In the domain of self-care, for example, these questions focus on the individual's ability to get dressed and wash (Euroquol, n.d.). It is accompanied by a visual analog scale on which the respondent is asked to rate their state of health on a scale from 0 to 100. The EQ-5D instrument has evolved to include versions for young adults and versions with five answering dimensions (the EQ-5D-5L) in response to criticism that it may not be sensitive enough to changes in health states (Devlin & Brooks, 2017). In their methodological review of health system efficiency comparisons, Cylus et al. (2017) acknowledge that efficiency is usually based on output or activity comparisons. However, they express confidence that instruments such as the EQ-5D can be used for before and after comparisons "whenever there are likely to be material differences in the clinical quality of different organizations" (Cylus et al., 2017, p. 10). A recent survey on the use of EQ-5D in a national healthcare setting comes from Ernstsson et al. (2020) analyzing the use of the instrument in the Swedish quality registries. They find that the EQ-5D was mostly used in registries tracking the quality of care for conditions of the musculoskeletal system, closely followed by conditions of the nervous and circulatory system. The survey is administered as a tool for before and after comparisons, with varying degrees of additional follow-up reporting.

4.2 Cross-National Efficiency Comparisons of Health Systems

With the framework for efficiency analysis being set, it is tempting to ask what kind of insights we can gain from cross-national comparisons. Is it possible to identify the "best healthcare system" in the world? This section begins with a review of the WHO's World Health Report 2000 (World Health Organization, 2000). It is credited as the beginning of the debate on cross-national efficiency comparisons of healthcare systems (Smith, 2014, p. 145).

The WHO World Health Report 2000: Searching for the "Best Healthcare System"

In its introductory remarks, the authors of the World Health Report try to establish key messages around healthcare system performance. At the center of the report is the conviction that "[dollar] for dollar spent on health, many countries are falling short of their performance potential. The result is a large number of preventable deaths and lives stunted by disability" (World Health Organization, 2000, p. viii). Allocative efficiency of healthcare systems is thus the major concern for the analysis. What determines the optimal healthcare system according to the WHO? Five dimensions are in focus (World Health Organization, 2000, p. 27):

1. The overall level of health in the population
2. The distribution of health in the population
3. The overall level of responsiveness
4. The distribution of responsiveness
5. The distribution of financial contribution

Disability-adjusted life expectancy
This is a measure of life expectancy that takes into account periods of disability and mortality.

The overall health of the population is expressed as **disability-adjusted life expectancy** (DALE). This measure relates mortality, survival free of disability, and disability in age groups where the severity of disability is weighted according to the Global Burden of Disease study (Murray & Lopez, 1997). The report highlights life expectancy disparities between males and females, but also disparities due to socio-economic status across countries (World Health Organization, 2000, p. 31).

The WHO assessment of the five healthcare system dimensions culminates in a league table of health system performance. Each of the five indicators is scored and weighted relative to the others. Disability-adjusted life expectancy carries a weight of 50 percent (composed of overall DALE at 25 percent and distribution at 25 percent). The dimension of responsiveness and fair financial contribution carry a weight of 25 percent each (World Health Organization, 2000, p. 39). At the time of publication, the French healthcare system achieved the top overall score. Several conclusions were drawn by commentators. First, the overall level of expenditure for health as a percentage of gross domestic product (GDP) was obviously not enough for achieving first place, otherwise, the U.S. would have won, spending around 13.7 percent on health at the time, which was more than any other developed country (Kmietowicz, 2000). Observers such as McKee (2001) highlighted the

many factors affecting health outcomes from areas outside the healthcare system. Among these are improvements in vehicle safety or simply the role of a healthy diet; indeed, countries with a Mediterranean diet fared well in the report.

Mortality Amenable to Healthcare

The report was also criticized for its overall performance measurement approach. Central to the achievement of healthcare systems is the concept of disability-adjusted life expectancy, but which share of this indicator is attributable to the workings of the healthcare system? Nolte and McKee (2004) address this issue by focusing on **mortality amenable to healthcare**. The basis for this approach is mortality data for causes that "should not occur in the presence of timely and effective healthcare" (Nolte & McKee, 2004, p. 1). Examples of health conditions amenable to interventions are diabetes, maternal health, and ischemic heart disease. Introducing this concept led to important changes in the ranking of countries compared to the DALE concept. Japan, Greece, and the United Kingdom lost places in the ranking, whereas Canada, Norway, Finland, and Germany moved up (Nolte & McKee, 2004, p. 3). In a research update four years later, Nolte and McKee (2008) refined this analysis by introducing an age limit of 75 for their analysis, with a diabetes-specific age limit of 50. Tracking amenable mortality over time between 1997/98 and 2002/03 for several industrialized countries and comparing the data with the U.S., Nolte and McKee (2008) found an overall reduction of mortality by 17 percent, but only four percent in the U.S. They conclude that "if the United States could reduce amenable mortality to the average rate achieved in the three top-performing countries, there would have been 101,000 fewer deaths per year by the end of the study period" (p. 59).

Mortality amenable to healthcare
This is the share of mortality that is amenable to healthcare services and therefore a performance attribute of healthcare systems.

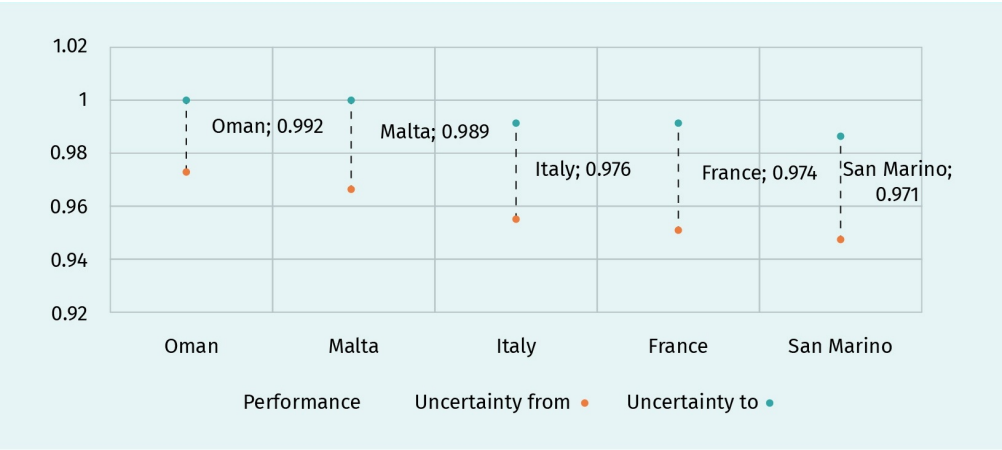
Nolte and McKee's 2004 analysis clearly shows that a focus on disability-adjusted life expectancy provides an incomplete picture of a healthcare system's performance. The overall wealth of a country may lead to a high level of DALE, but neglects issues of access to care that are crucial for amenable mortality.

Healthcare Expenditure and Outcomes

Although the World Health Report ranked the highest spending country (the U.S.) only thirty-seventh in overall performance, there is a body of research linking healthcare expenditure to health states or outcomes.

In an accompanying study to the World Health Report, Evans et al. (2001) analyze healthcare systems with a performance definition that focuses on "the current level of population health, in excess of the estimated minimum, compared with the maximum achievable level of health given the inputs" (p. 307). Both ends of the spectrum of achievable health are estimated, assuming the total absence of a formal health system for the minimum. The maximum achievable level of health is estimated based on healthy life expectancy in relation to inputs, with the highest-ranking country set as a benchmark. The minimum was determined based on a sample of 25 countries without a formal health system as of the year 1908 and the health information available then. For the minimum scenario, literacy was the main determinant of health. In a regression analysis that uses average years of schooling as proxy for education and healthcare expenditure as coefficients, the authors then rank healthcare systems.

Figure 7: Country Ranking: Achievable Level of Health (Top Five)



Source: Jörg Artmann (2022), based on Evans et al. (2001).

A logical consequence of this model, assuming the absence of a healthcare system as the minimum level of achievable health, is the positive correlation of healthcare expenditure with health. Indeed, the authors find that healthcare system performance increased considerably up to a per capita expenditure of $80 on health, but they also underline that variations in achievable health still exist at much higher levels of per capita healthcare expenditure, suggesting that there is always room for efficiency improvements (Evans et al., 2001, p. 309).

In a systematic literature review, Nixon and Ulmann (2006) compile further evidence of the relationship between healthcare expenditure and health. Levels of infant mortality in particular, as well as levels of GDP, total per capita healthcare expenditure, and availability of healthcare resources were found to be linked. On the other hand, life expectancy in developed countries only marginally benefitted from increased healthcare expenditure, suggesting diminishing returns due to a slowing of medicine's contribution to improving health since the 1980s (Nixon & Ulmann, 2006, p. 15).

Caring for Diabetes Efficiently

The performance of a healthcare system can also be analyzed based on how the system cares for people with specific chronic conditions. Diabetes mellitus is a chronic condition that is increasingly prevalent in low- and middle-income countries (LMICs). Manne-Goehler et al. (2019) attempt a performance measurement along a prototypical diabetes care process, ranging from testing to diagnosis, treatment, and control. The underlying assumption of such an approach is that generally accepted standards of care for diabetes, such as providing sufficient testing capacity, treatment, and continuous control, should be an obvious health policy objective. Failing to uphold these standards is thus a sign of poor performance.

Performance measurement in the study rests on representative national surveys from 28 LMICs in the years 2008 to 2016. Surveys that met criteria for representativeness and included a biomarker for diabetes were included. In addition, the surveys had to include questions dealing with access to health services that reflected the diabetes care process (testing, diagnosis, counseling, and treatment or control; Manne-Goehler et al., 2019).

The authors found that the highest performance gap occurred at the stage of testing. Only two-thirds of surveyed patients with diabetes had received a test with a blood glucose measurement and 44 percent of patients with diabetes were aware that they suffered from the disease. Around 38 percent of patients had received lifestyle-related advice to tackle the disease, and finally, around 23 percent of patients reported to be in control of the condition (Manne-Goehler et al., 2019).

Looking at regional variations in the quality of diabetes care, the authors identified well-performing countries in Latin America, the Caribbean, the Middle East, and Central Asia. Unsurprisingly, quality of care was better in countries with higher healthcare expenditure and therefore poorer in countries in Sub-Saharan Africa and Southeast Asia. Individual examples of excellence were reported for Costa Rica, which the authors praise for its system of universal healthcare coverage and focus on primary care and cardiovascular risk factors (Manne-Goehler et al., 2019, p. 15). The findings support the link between healthcare expenditure and healthcare performance although, in this case, performance is expressed not in clinically relevant outcomes but rather the ability to provide access to care services along a predefined process of care.

SUMMARY

Health system efficiency or performance is the theoretical result of perfect competition. However, important preconditions for perfect competition, such as certainty, sovereign consumers, and the absence of externalities, are not met in healthcare systems. The input-throughput-output model is the dominant theoretical approach to efficiency analysis.

Examples of healthcare system outputs are utilization indicators, such as the number of GP visits, the share of children being vaccinated, and the number of hospital discharges. These indicators do not provide a clear picture of health outcomes. The measurement of health-related quality of life through survey instruments such as the EQ-5D is a more appropriate approach to measure the effect of healthcare interventions on a patient-relevant outcome.

A central problem of efficiency analysis of healthcare systems remains the contribution of healthcare system activity to health outcomes, as opposed to other factors, such as the level of literacy or overall wealth of a society. The concept of mortality amenable to healthcare is a useful alternative. It measures mortality for health conditions that can be influ-

enced by preventive healthcare services. A comparative look at healthcare system efficiency was first attempted by the World Health Organization in its World Health Report 2000. It measured the performance of healthcare systems expressed as potentially achievable disability-adjusted life expectancy considering health system inputs and weighted this result against criteria for responsiveness and fair financial contribution.

UNIT 5

HEALTH EQUITY

STUDY GOALS

On completion of this unit, you will be able to …

- understand the philosophical underpinnings of equity discussions.
- formulate horizontal and vertical equity objectives.
- distinguish between different indicators of equity.
- understand the equity implications of different healthcare financing sources.

5. HEALTH EQUITY

Introduction

Health equity is an enduring concern for healthcare systems around the world. Even though most systems subscribe to the objective of universal access to care based on need and not ability to pay, differences in utilization and outcomes persist across population groups and can be linked to socio-economic status.

This unit begins with a review of equity principles in political philosophy and introduces the concept of horizontal and vertical equity. Simply put, “horizontal equity is about equal treatment of equals” (Donaldson & Gerard, 1993a, p. 75) and vertical equity is “the extent to which individuals who are unequal in society should be treated differently” (Donaldson & Gerard, 1993a, p. 77). For healthcare systems, equal need should receive equal treatment and different needs should receive different treatment.

The degree of equity in the delivery of healthcare can be analyzed through a benefit incidence analysis, which focuses on utilization levels for healthcare services across different socio-economic groups, based on household surveys. Several equity indicators are presented. Screening and preventive services based on income groups is a frequently used indicator of inequity.

In terms of financial inequity of healthcare, different sources of funding have different equity implications. The progressivity and regressivity of funding arrangements is presented. Whereas value-added tax (VAT) disproportionately affects low-income households, insurance contributions can be designed progressively, meaning that contributions rise with rising incomes.

5.1 Equity in Healthcare Delivery

Most healthcare systems and the societies they serve care about equity in healthcare delivery. A focus on healthcare delivery rather than health itself is important to keep in mind. Indeed, achieving equitable health outcomes such as healthy life expectancy for all population groups is a tremendous challenge. Health is the result of many factors outside the control of a healthcare system. Instead, equity is understood here as fairness in the access to healthcare services, irrespective of non-health-related characteristics of individuals, such as wealth (Rice, 2021, p. 247). In time, such fairness should lead to similar mortality rates for conditions that are amenable to healthcare.

Principles of Equity in Healthcare Delivery

In the analysis of equity, two main dimensions are distinguished: **horizontal equity** and vertical equity. Horizontal equity is concerned with treating individuals equally if they are equal in some measure. Vertical equity is concerned with treating individuals differently if

they differ in some measure. The perspective is that of society and not that of individual preferences, meaning that health-related characteristics of individuals need to be objective; for a given health condition, only the perspective of medical science and not individual preferences (e.g., for waiting times) should be considered.

Horizontal equity
A conception of equity that emphasizes the equal treatment of equals is called horizontal equity.

In political philosophy outside of health economics, there was a focus on proportionality and need as distribution principles. Walzer (1983) highlights the Talmudic tradition and Greek antiquity as origins of this principle. He also draws our attention to the nature of public health efforts, not simply being a mutually equal exchange, but redistributive in character, as it disproportionately benefits the poor. According to Walzer, this redistribution is justified in principle because it creates and sustains an experience of community among individuals. However, the exact scope of communal provision and health (or any other needs) being provided for by the community remains a matter of political dispute. Ultimately, "people's sense of what they need encompasses not only life itself but also the good life, and the appropriate balance between the two is itself a matter of dispute" (Walzer, 1983, p. 83).

Walzer's focus on political struggle as the ultimate resolution of distributive questions stands in contrast to another influential approach: John Rawls' *A Theory of Justice*. Rawls (1982) proposes an *ex-ante* approach to arriving at distributive principles in a society. He posits an original state in which individuals come together, ignorant about their own future status in a society. The decisions and commitments they make take account of their whole life span and are not motivated by envy or resentment toward others. Individuals will try to achieve political rights, life opportunities, income and wealth, and the social basis of self-respect (Freeman, 2019). Rawls calls these primary social goods. The result of Rawls' principles on distribution is that inequalities in society are considered just as long as they are "to the greatest benefit of the least-advantaged members of society; and … attached to offices and positions open to all under conditions of fair equality of opportunity" (Rawls, 1982, p. 162). Although healthcare does not appear explicitly in Rawls' list, it could arguably be an important precondition for pursuing life opportunities. It is difficult to imagine an individual achieving the aforementioned objectives while being disabled.

A final strand of political thought that is influential mostly in North America is libertarianism. The central focus is individual freedom and rejection of most state authority over the conduct of individuals. In terms of distributive principles, libertarianism considers all exchanges to be fair if the individuals legitimately acquire these goods. Equity in this perspective is about the respect and enforcement of private property rights (Williams & Cookson, 2000, p. 1890). An attempt at achieving an equal health outcome for individuals based on redistribution through state authority is rejected (van der Vossen, 2019). An obligation to sign up for health insurance coverage would therefore also violate libertarian principles.

Returning to the notions of horizontal and vertical equity, this brief review of political philosophy shows that there are important differences in the approach to what makes individuals equal. For Walzer, individuals are equal in the sense that they all belong to a community whose purpose is the good life. The communal provision of healthcare can be viewed as one pillar of achieving the good life. In Rawls' view, individuals are equal in the

sense that they can rationally agree on distributive principles while refraining from a clear definition of what the good life is. Libertarian thought – somewhat an outlier – focuses solely on the legitimacy of distributions without seeking or endorsing a distribution goal.

Equity Objectives

Most healthcare systems subscribe to the principle of equal access to care based on need and not ability to pay. In terms of specific equity objectives for policymakers, Donaldson and Gerard (1993a, p. 75) suggest the following horizontal equity objectives:

1. Equal expenditure for equal need
2. Equal utilization for equal need
3. Equal access for equal need
4. Equal age and sex-adjusted standardized mortality rates across health regions

In terms of vertical equity, they suggest the principle of unequal treatment for unequal need. For example, people with minor injuries should receive unequal treatment to those suffering from serious injuries.

The proposition of these four horizontal equity objectives is challenging regarding utilization and equal standardized mortality rates. How is "need" determined? What level of utilization is optimal for each expressed need? What if a patient in need of healthcare is unable to express this need? There is a wide body of literature dealing with health literacy and health beliefs, for example, by Mahon (2016). There may also be problems in the doctor–patient relationship. This communication problem may be exacerbated by financial incentives of doctors who do not see an individual with health problems but rather the most lucrative health problems of an individual.

Having expressed a healthcare need, what is the appropriate degree of access to what kind of services? Medicine as a science gives answers about what treatments should be provided, but it does not necessarily prescribe the organizational delivery of services and the timeliness of access to services. Quickly, questions of equity turn into ethical issues, for example, when access to needed services is rationed and patients with muscular-skeletal issues experience pain. What level of pain is socially acceptable and for how long if there is no medical imperative to attend to pain immediately?

With regard to equal age- and sex-adjusted standardized mortality rates, it is important to note that, so far, no research on the equity of mortality rates amenable to healthcare has been conducted (Rice, 2021, p. 263). It is therefore difficult to judge a healthcare system as inequitable based on mortality rates, so the focus is on access and utilization of care, with the advantage being that it is easier to operationalize.

Benefit Incidence Analysis: Who Benefits from Public Healthcare?

When we accept that there are elements of inequity in every healthcare system, a relevant question to ask is how government action can help remedy this inequity. How does public spending benefit populations most in need of healthcare services or, put differently, how well does the delivery of care meet the needs of the least advantaged? **Benefit incidence**

analysis (BIA) is one methodology used to answer these questions. McIntyre and Ataguba (2011) outline the key steps necessary to come to a meaningful answer. Based on a classification of socio-economic status, the utilization of key healthcare resources (outpatient and hospital) is measured and utilization levels are multiplied by unit costs. The BIA process according to McIntyre and Ataguba (2011) is summarized in the following table.

Benefit incidence analysis
The analysis of the utilization of healthcare resources across socio-economic groups is called a benefit incidence analysis

Table 17: The Benefit Incidence Analysis Process

Step	Content	Comment
1	Define a measure of socio-economic status to describe a population.	This can relate to strata of household income or educational status (or a combination of both).
2	Estimate the utilization of health services by individuals or groups in the classification of step one.	Commonly used services are out- and inpatient services, as well as prescription drugs.
3	Calculate the cost of each utilized unit of service.	
4	Multiply utilized services with the respective unit costs for each group.	
5	Clear out out-of-pocket payments if only public benefits are considered.	For inpatient services, for example, this would imply deducting per diem payments or, in the case of prescription drugs, deducting co-payments.
6	Sum up benefits in € or $ terms.	
7	Analyze whether this distribution conforms to a measure of need/appropriateness.	Unequal utilization across different socio-economic groups may be appropriate in certain circumstances.

Source: Jörg Artmann (2022).

McIntyre and Ataguba (2011) highlight a number of methodological issues with the use of household survey data. First, respondents usually report information on recent illnesses and may underreport utilization of services for other non-acute health needs. A further challenge is the degree of detail in the type of utilized services, particularly for hospital services. Many households, when surveyed, are unable to distinguish between the types of inpatient services used, for example, whether a community or private hospital was used (McIntyre & Ataguba, 2011).

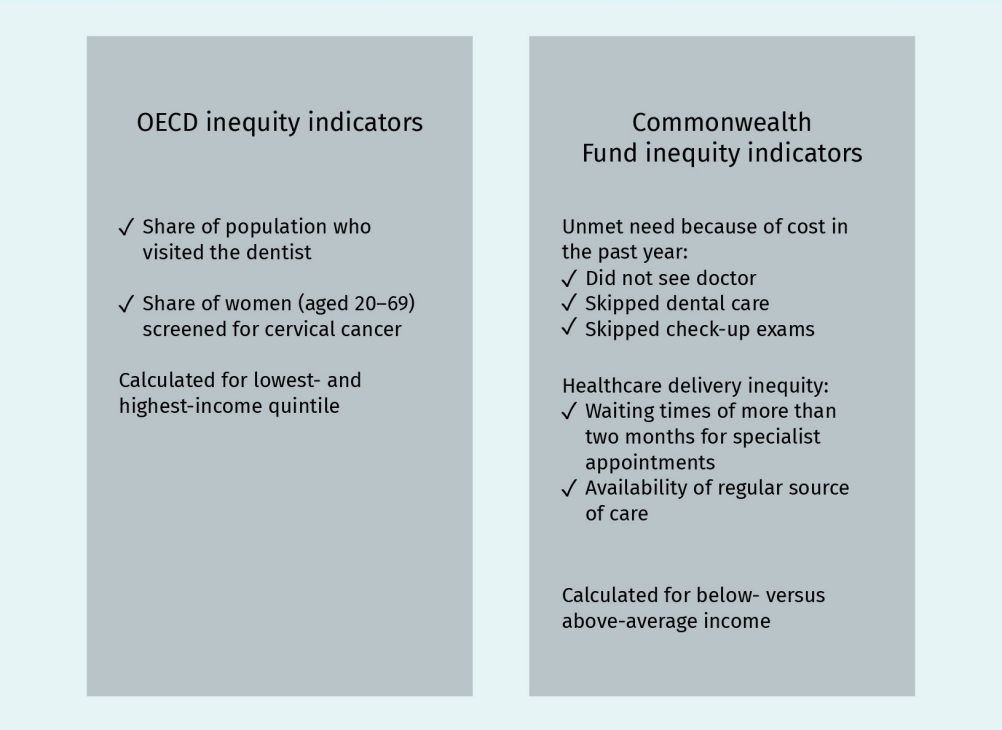
The resulting distribution may yield statements such as “the distribution of diabetic foot screening is 15 percent in the lowest income group versus 25 percent in the highest income group”. In addition, the result may be contextualized by providing the share of the lowest income group in the overall population to assess whether the service delivery system benefits richer or poorer households (dis)proportionally. However, as McIntyre and Ataguba (2011) point out, this distributional statement tells us nothing about whether the utilization level for this service is appropriate. For example, prevalence of diabetic foot may be much higher in lower-income groups because general diabetes care and self-man-

agement is not optimal in this group. A public policy priority should therefore be to increase the uptake of screening for diabetic foot. In this sense, BIA can be “a powerful means of evaluating the performance of the service delivery component of the overall health system” (McIntyre & Ataguba, 2011, p. 174).

Indicators of (In)Equity

Rice (2021) provides an overview of the practical indicators that can be used to measure equity in healthcare delivery and the use of healthcare resources. Based on various international sources, he proposes the following overview, abridged for clarity.

Figure 8: Indicators of Health-Related (In)Equity



Source: Jörg Artmann (2022), based on Rice (2021).

For the U.S., the Commonwealth Fund tracks inequities across all state healthcare systems. The indicators used to assess inequity are grouped into three domains (Radley et al., 2021).

Table 18: U.S. Health Inequity Indicators (Commonwealth Fund)

Outcomes	Access	Quality/Usage
• Premature death • Health status • Health risk behaviors	• Insurance coverage • Access to providers • OOP expenses and other cost-related barriers	• Preventative care • Preventable hospital and emergency department use • Primary care spending as a share of total Medicare spending

Source: Jörg Artmann (2022).

As previously noted regarding health outcomes, the challenge of attributing these to the healthcare system remains.

Equity Monitoring on a Population Basis in the English NHS

Cookson et al. (2018) provide an insight into ways in which the equity of healthcare delivery can be analyzed using population level data in the English National Health Service (NHS). Data on the deprivation of neighborhoods were linked with data on ambulatory care sensitive conditions (ACSC), meaning health conditions that should be treated in an outpatient setting. If patients seek emergency care for these conditions, the care system is not functioning well. Put differently, the organization of care delivery for ambulatory care sensitive conditions is inequitable if deprivation can be linked with high levels of ACSC treated in an emergency care setting.

The authors focus on 209 clinical commissioning groups, which are responsible for purchasing healthcare on a regional level in the English NHS. The neighborhood deprivation index combines data on income, unemployment, crime, and poor housing. The benchmark against which equity was measured was twofold: national and "similar population structure." Key findings of the analysis are that clinical commissioning groups (CCGs) in deprived regions performed worse on health equity than those in wealthier areas. About a third of this variation can be explained by average deprivation (Cookson et al., 2018, p. 151).

5.2 Equity in Health Financing

As with equity in healthcare delivery, the financing of healthcare services can be analyzed as a problem of horizontal and vertical financial equity. Individuals with an equal financial ability to pay for services should contribute to healthcare costs to an equal degree, and individuals with different financial capacities should contribute in line with their ability to pay.

Sources of Financing and Their Equity Implications

Out-of-pocket payments
The share of household expenditure for healthcare that comes directly from household income is called an out-of-pocket payment.

An understanding of different sources of healthcare financing facilitates the debate about equity. On a continuum from full tax financing to 100 percent out-of-pocket financing, there are important intermediate steps. Most healthcare systems today rely on a mix of tax-based financing, (voluntary or compulsory) insurance contributions, and **out-of-pocket payments** (OOPs). In Organization for Economic Co-Operation and Development (OECD) countries, this mix has evolved over time, away from prototypical tax-based or insurance financing models and toward hybrid systems combining taxation, insurance contributions, and OOPs (Götze & Schmid, 2012). A healthcare system's financing mechanism can be considered progressive when people's expenditure for healthcare increases with income. The more you earn, the more you will have to pay for healthcare. The system is considered regressive when households pay less for healthcare as their earnings increase. In other words, a household's ability to pay should determine the level of healthcare spending, which should increase proportionally to ability to pay. McIntyre & Kutzin (2016) propose the following classification of healthcare system revenue sources.

Table 19: Healthcare System Revenue Sources

Type of source	Example	Comment
Compulsory	Government revenue through direct or indirect taxation	Indirect taxation includes taxes, such as value-added tax (VAT), strongly regressive
	Government revenue from state-owned enterprises	Relevant in countries with high reliance on natural resource income
	Earmarked revenue from taxation of tobacco or alcohol "sin tax"	Enforcement difficulties in developing countries; no reliable source of healthcare financing (Javadinasab et al., 2020)
	Social health insurance contributions ("payroll taxes")	Compulsory membership makes this insurance contribution a *de facto* tax with progressive effect.
Voluntary	Community-run health insurance schemes or insurance by for-profit or non-profit entities	In Western healthcare systems, supplementary insurance for services is not covered by the public system.
Household out-of-pocket payments	Per diem payments for hospital stays, medication co-payments	Total amount of OOPs is usually restricted to a share of annual household income; nevertheless, it is a regressive financing source.
Foreign funding sources	Development assistance	

Source: Jörg Artmann (2022), based on McIntyre & Kutzin (2016).

The overview of revenue sources points to several equity implications. Indirect taxes, such as value-added tax (VAT), represent a larger share of expenditure for disadvantaged population groups. A healthcare system relying largely on indirect tax revenue is therefore a heavier burden on poorer households. It also raises questions about the accountability of the healthcare budget if taxes are not specifically earmarked for healthcare purposes.

Health insurance contributions are usually expressed as a percentage of income. This makes it more equitable because, as incomes increase, households pay more insurance contributions in absolute terms. However, contribution rates for health insurance in Germany are capped at an annual income of €58,050 (for 2022), meaning that any income above that threshold is not subject to health insurance contributions (Bundesministerium für Arbeit und Soziales, 2021).

What Can You Afford to Pay? Deductibles and Out-Of-Pocket Payments

OOPs are frequently used as an indicator of how equitably a healthcare system is organized. The equity issue arises whenever access to care is blocked for financial reasons, leading to an unmet need. Low- and middle-income countries' healthcare systems in particular are frequently characterized by high shares of OOPs in the overall financing mix. Countries such as South Africa have a moderately developed public healthcare system and a thriving private sector healthcare system.

An in depth analysis of the situation in Europe was carried out by the WHO Regional Office in 2019 (Thomson et al., 2019). Central to the analysis are two indicators of financial hardship from out-of-pocket healthcare spending:

1. Impoverishing health spending, which the WHO defines as a household income that is pushed below the poverty line after paying out-of-pocket for healthcare
2. Catastrophic health spending, which is defined as a situation in which "the household can no longer afford to meet other basic needs like food, housing and heating ... without drawing on savings, selling assets or borrowing" (Thomson et al., 2019, p. 5)

Out-of-pocket payments can affect patients as follows (Thomson et al., 2019, p. 12):

- as a fee for seeing a doctor
- as a payment for prescription drugs or medical supplies
- for laboratory services
- as co-payments or per diem payments during inpatient stays

Countries in Europe with a share of impoverished households above seven percent are Moldova, Albania (eight percent), and Ukraine (nine percent). Further disaggregation of households into age groups reveals that pensioners above 65 years of age are at much higher risk of impoverishment than the population as a whole. The situation is particularly dire in Estonia, Latvia, and Bulgaria where pensioners face a high incidence of catastrophic health spending, ranging from 42 percent in Estonia to almost 50 percent in Bulgaria (Thomson et al., 2019, p. 35).

The most extreme case of healthcare affordability is in the U.S. Although public insurance components exist for the elderly, the poor, members of the armed forces, and children, the bulk of insurance policies for the working population is offered through private health insurance companies. The health plans on offer are characterized by high out-of-pocket payments, compounded by co-insurance and deductibles. Richard et al. (2018) analyzed the relationship between out-of-pocket costs and medical debt for households with chronic conditions. On the basis of household survey data that included questions regarding outstanding medical bills and with a classification of households according to the number of chronic conditions, the authors find that "households in which members (the head and spouse) had 1 to 3 and 4 or more chronic health conditions were associated with higher odds of having … medical debt … compared to those households where members had no chronic conditions" (Richard et al., 2018, p. 7).

Healthcare Financing in the Italian Regions: A Vertical Equity Analysis

In light of the different sources of financing discussed above, a look at the progressive or regressive character of healthcare financing in Italy can illustrate the practical relevance of financing sources for achieving equity. Citoni et al. (2022) focus their analysis on the progressivity/regressivity of the different financing sources of the Italian (regional) healthcare systems: regional taxes, indirect taxes (VAT), voluntary private insurance, and out-of-pocket payments.

The authors find that vertical inequities exist when regions are compared, as well as at the national level. The relatively poor Italian South is regressive, and wealthier Northern regions are less so. As could be expected, OOP payments and VAT had a regressive effect. In contrast, corporate and household income taxes had a progressive effect. The interregional differences are mediated by a national compensation mechanism that transfers funding from the wealthier to the poorer regions.

SUMMARY

Equity in healthcare delivery is about the achievement of equal access and equal utilization for equal need. This form of equity is called horizontal equity. In contrast, unequal treatment for unequal need is called vertical equity. Benefit incidence analysis is a tool to analyze how utilization differs between socio-economic groups. It can reveal inequities regarding the uptake of screening and preventive healthcare services.

Regional variations in the treatment of ambulatory care sensitive conditions were linked to regional levels of socio-economic deprivation in the English NHS. Inequity in healthcare financing arises when healthcare spending exceeds a household's ability to pay. Financing sources are considered progressive when expenditure rises with ability to pay and regressive when expenditure decreases relative to ability to pay. Indirect

taxes and out-of-pocket payments are usually regressive financing sources, while insurance contributions and income tax can be used as progressive financing sources.

UNIT 6

HEALTH SYSTEMS BY COUNTRY – AN ANALYTICAL APPROACH

STUDY GOALS

On completion of this unit, you will be able to …

- analyze healthcare systems comparatively based on typical models.
- understand the main features of the German, British, and U.S. healthcare systems.
- compare advanced healthcare systems with the typical challenges of less developed healthcare systems.

6. HEALTH SYSTEMS BY COUNTRY – AN ANALYTICAL APPROACH

Introduction

Healthcare systems across the world vary in organizational, financial, and governance dimensions. This unit presents three examples that reflect prototypical experiences within three dimensions.

The German healthcare system, based on a social health insurance model and organized in a decentralized, corporatist way stands in contrast with the national health service (NHS) model practiced in the United Kingdom. The NHS rests on a financial model based on taxation. England, Scotland, Wales, and Northern Ireland each have their own version of the NHS with certain degrees of autonomy in how healthcare is delivered. Both Germany and the United Kingdom pursue the political objective of universal coverage and access to services that is free at the point of care.

In the U.S., healthcare for the working population is organized in a free-market competition environment with no explicit healthcare objective set at the federal level. This system coexists with state-sponsored health insurance programs for the poor (Medicaid), pensioners (Medicare), and soldiers (Veterans Administration). The regulatory framework is largely set at state level. With the Affordable Care Act, the Obama administration set out to widen health insurance coverage within the existing system structures.

This unit closes with a view on the South African and Indonesian healthcare systems as examples of systems in less developed parts of the world.

6.1 Germany

The German healthcare system is considered the oldest in the world, dating back to the imperial decree by chancellor Otto von Bismarck of 1883. The decree was a response to rising worker unrest caused by the “late” industrial revolution in Germany. It set up the social health insurance system, funded by joint employer–employee contributions and covering existential health risks and invalidity, although at first in the form of cash payments rather than benefits in kind (Lüngen et al., 2006, pp. 99–100). In the years and decades following the decree, accident and pension insurance were added. A long-term care insurance system was established in the 1990s. The German healthcare system is best known for its corporatist self-governance that involves providers and payers at the state and federal levels, with relatively little central government interference.

Table 20: Key Facts about the German Healthcare System

Category	Value	WHO Euro region	Year
Total health expenditure as percentage of GDP (OECD Data for 2019)	11.7	7.3	2017
Public sector health expenditure as percentage of total expenditure	77	68	2014
Acute care hospital beds per 100,000 population	621	433	2014
General practitioners per 100,000 population	67	62	2014

Source: Jörg Artmann (2022), based on World Health Organization (n.d.-b) and OECD.Stat (2022).

Governance Principles and Financing

The German healthcare system is an expression of constitutional values. The founding fathers had established Germany as a social constitutional state (*sozialer Rechtsstaat*). The governing principle of the German welfare state can be summarized as corporatist self-regulation with limited intervention by the federal government.

Health insurers and providers (doctors' associations and hospital associations) negotiate remuneration at both state and federal level. The highest decision-making body is the **Federal Joint Committee** (*Gemeinsamer Bundesausschuss* [G-BA]), which represents the interests of the federal sickness funds association, the federal association of statutory physicians, the federal association of statutory dentists, and the federal hospital association. It is presided by an impartial chairperson.

Federal Joint Committee
The highest decision-making body at federal level that groups payers and providers is the Federal Joint Committee.

The power of the G-BA resides in the numerous directives (*Richtlinien*) that govern the delivery of healthcare in Germany. The directives cover everything from prescription drugs, cancer screening, and preventive health services, to health workforce planning and quality assurance, to name but a few of a total of 113 directives (Gemeinsamer Bundesausschuss, n.d.). The federal ministry of health sets the framework legislation that determines the strategic direction of the system. However, it does not interfere with the autonomy of the corporatist arrangements at federal and state level. Instead, legislation often tasks the G-BA to come up with new directives or update existing ones considering new political priorities. Only a persistent failure of the G-BA to formulate directives would give the federal Ministry of Health the right to preempt G-BA action through discretionary action (*Ersatzvornahme*).

Healthcare in the statutory health system in Germany is financed by payroll contributions with a current rate of 14.6 percent of gross wages, with employer and employee each shouldering half. In addition, some health insurers levy a *Zusatzbeitrag* or additional rate, which, on average, is set at 1.00 percent (Blümel et al., 2021, p. xxiv). Membership is mandatory, except for civil servants and the self-employed. Beyond an annual income threshold of around 64,000 Euros, opting out of social health insurance is possible. Public and private health insurance co-exist. Private health insurance covers approximately 11 per-

cent of the population as full-fledged health insurance (Blümel et al., 2021, p. 14). Additional top-up insurance is also available. The main features of the two systems are presented in the following table.

Table 21: Social and Private Health Insurance in Germany

	Statutory (public) insurance	**Private health insurance**
Membership	Compulsory for all dependent employees with annual earnings of below 64,350 Euros (in 2022); dependents insured free of charge	Civil servants, self-employed, people earning in excess of 64,350 Euro (in 2022); separate premiums for dependents
Financing source	Centrally determined payroll contributions from employer and employee	Individual premium payments, co-funded by employers
Premium calculation	Aggregate expenditure and income estimation for the whole system determines statutory contribution rate	Individual risk-adjusted premium
Morbidity risk	System-wide morbidity risk redistribution through the health fund	Individual morbidity risk calculation and capital-based risk provision
Legal basis	Public law ("*Sozialgesetzbuch*")	Private law
Supervisory authority	State-level ministries of health and federal authority for social security (BAS)	Financial services supervisory authority (BaFin)

Source: Jörg Artmann (2022).

Financial Flows

Insurance contributions paid jointly by employers and employees do not flow directly to the roughly 100 health insurance corporations. Instead, the funds are pooled at the federal level in the *Gesundheitsfonds* or "health fund" supervised by the federal office for social security. The fund redistributes insurance contributions according to the morbidity risk of the insurance companies, thus ensuring a level playing field for regulated competition for the funds. It is a necessary counterpart to the mandatory insurance coverage provision and the sickness funds are obliged to offer everyone insurance coverage, regardless of pre-existing conditions. A small federal tax contribution of 14.5 billion Euros annually flows into the fund to cover the free insurance of dependents (Blümel et al., 2021, p. 77).

The contribution rate in the system is also linked to the federal health fund. An expert committee estimates the aggregated in- and outflows of the fund prospectively for each year and determines the system-wide contribution rate accordingly. Health insurance companies that cannot meet their financial obligations with this federal rate must levy an additional top-up rate or "*Zusatzbeitrag*." This instrument is designed to encourage competition between sickness funds against the backdrop of free choice of insurer.

From the federal level downwards, the annual funding that flows to insurance companies is then redistributed through complex negotiation procedures between the state-level associations of statutory physicians and the state-level insurance associations. A notable feature of these negotiations is the redistribution of the funds within the statutory physician associations. The health insurance companies do not interfere in redistribution issues inside the physician association, which indicates the relative power of general practitioners (GPs) versus specialist doctors. Instead, health insurers pay an aggregate sum to the physician association with "liberating effect," meaning that all further distribution is an internal matter of the physician association.

Sectoral Organization

A particularity of the German healthcare model is its strong sectoral split. The outpatient and inpatient sectors are organized within separate regulatory and financial arrangements. Public and private hospitals with for-profit and non-profit motives provide inpatient care. The state-level governments are responsible for hospital planning (Blümel et al., 2021, p. 14). Hospital payment is based on diagnosis-related groups (DRGs), the G-DRG system.

In contrast, the outpatient sector is based on a mix of fee-for-service and global payments that are negotiated at federal and state level. Outpatient capacity planning is enshrined in a G-BA directive. General practitioners and specialists practice side by side, whereas specialist care in other healthcare systems is usually reserved for the hospital sector. Germany is one of the few countries that allows specialists to practice both in an in- and outpatient setting.

Recent developments point to a slow dissolution of these sectoral barriers. A key reform item of the current German government is the development of an intersectoral payment system. The introduction of "hybrid-DRGs" aims at a harmonization of in- and outpatient payment modalities. This is supposed to strengthen the outpatient capacity of the system and keep patients out of inpatient care as much as possible. In addition, organizational reforms inside the outpatient care sector have strengthened the interprofessional delivery of care. In medical practice centers (*Medizinische Versorgungszentren*), a multitude of different medical specialities can join forces, share resources, and offer holistic care under one roof. This model stands in contrast to the (still dominant) single practice physician who refers patients to other specialists if necessary.

6.2 The United Kingdom

The "Beveridge Model" of Healthcare

The healthcare system of the United Kingdom (UK) is known as the "Beveridge model," dating back to post-World War II reforms introduced by Lord William Henry Beveridge. The key feature is a tax-funded universal healthcare system that provides care for free to all UK residents regardless of ability to pay, with a strong focus on general practitioners as gatekeepers of access to care. The bulk of NHS resources comes from general taxes, supple-

mented by an NHS insurance tax (payroll tax) jointly paid by employers and employees. Funding is paid out as capitation payments to local areas where **clinical commissioning groups** organize the purchasing of care (Rice, 2021). Additional income is generated through co-payments.

Clinical commissioning groups
The entity responsible for commissioning healthcare in the English NHS for a given population is the Clinical Commissioning Group.

A key challenge of all tax-based public healthcare systems is the (artificial) separation of the payer and provider roles that are natural to social health insurance models. This challenge has led to major reforms since the introduction of the NHS, with the 2012 Health and Social Care Act being the most recent major reform.

Table 22: Key Facts about the United Kingdom's Healthcare System

Category	Value	WHO Euro region	Year
Total health expenditure as percentage of GDP	9.6	7.3	2017
Public sector health expenditure as percentage of total expenditure	83.1	67.86	2014
Acute care hospital beds per 100,000 population	228	433	2014
General practitioners per 100,000 population	80	62	2014

Source: Jörg Artmann (2022), based on World Health Organization (n.d.-b) and OECD.Stat (2022).

The 2012 Health and Social Care Act

For the NHS in England, the 2012 Health and Social Care Act marks the healthcare reform that has repercussions to this day. Central to the reform was the establishment of clinical commissioning groups (CCGs) to organize the purchasing of most hospital, mental health, and community health services. On average, CCGs serve a population of about a quarter of a million people (Rice, 2021). NHS England and the CCGs together are the "third-party payer" of the English healthcare system. The 2012 Act put clinicians themselves at the center of CCGs, where previously they had to negotiate with primary care trusts.

CCGs decide the type and scope of services required for a given population. They act both as the planning and purchasing entity of care. General practitioners, as well as healthcare professionals such as nurses, are assigned to a CCG. Oversight rests with NHS England. CCG commissions include the majority of elective inpatient care, as well as community and mental healthcare services (Rice, 2021, p. 43; NHS England, n.d.). From an organizational standpoint, CCGs are composed of general practitioners who contract with NHS service providers that meet NHS standards. General practitioner services are, in turn, commissioned by NHS England, with a co-commissioning role for the CCGs.

A second important pillar of care provision is NHS trusts (in the form of hospital trusts and some community health and ambulance care trusts). These organizations are established by decree and report to the Secretary of State for health. A subset of NHS trusts (foundation trusts) are directly accountable to their local communities and governed by a mix of professional managers and citizens (NHS Providers, 2015).

The Health and Social Care Act also defined an NHS outcomes framework to measure the success of CCGs in several domains. The framework serves as an accountability mechanism by the Secretary of State for Health to control the NHS England (Anderson et al., 2022, p. 28). The framework is grouped into five analytical domains and specifies indicators in each. An abridged version of the framework is presented in the following table.

Table 23: The NHS Outcomes Framework (Abridged)

Domain	Indicators
Prevention of premature death	• Potential years of life lost from mortality amenable to healthcare • Life expectancy of 75 years
Enhancing quality of life for people with long-term conditions	• Health-related quality of life for people with long-term conditions
Helping people recover from episodes of ill health or injury	• Emergency admissions for ambulatory care sensitive conditions • Emergency readmission within 30 days of discharge from hospital
Measuring the care experience	• Patient experience of primary care and hospital care • Friends and family test
Patient safety	• Patient safety incidents reported • Safety incidents involving severe harm or death • Hospital deaths attributable to problems in care

Source: Jörg Artmann (2022), based on Vittal Katikireddi et al. (2014).

The NHS regularly publishes dashboards with up-to-date progress in each of the domains. The commitment to meaningful reporting is illustrated by the fact that indicators are labeled as having “no data” if the indicator has not accumulated at least five consecutive years of data. The March 2022 dashboard results show that progress has been made, particularly with regard to mortality amenable to healthcare and the avoidance of emergency care admissions related to ambulatory care sensitive conditions (NHS Digital, 2022).

The NHS outcomes framework is interesting, as it reveals major underlying challenges of the English healthcare system; the relatively low level of healthcare spending as a percentage of gross domestic product (GDP) when compared to other developed countries (Germany spends 11.7 percent; OECD.Stat, n.d.) has led to an underfunding of inpatient care and waiting times for non-emergency services. As a result, concerns for patient safety and the quality of the patient experience have emerged.

Four Systems in One

A particularity of the UK healthcare system is decentralization, which was introduced in the late 1990s. The home country governments in England, Scotland, Wales, and Northern Ireland are in charge of organization and delivery of healthcare. In England, a dedicated healthcare budget is decided and allocated. In contrast, Northern Ireland, Scotland, and

Wales receive an overall public spending grant that is at their respective discretion to use (Anderson et al., 2022). The following table provides a brief overview of the major components of each NHS system in the United Kingdom.

Figure 9: Structural Features of the Four National Health Services

	England	Scotland	Wales	Northern Ireland
Strategic level	Department of Health and Social Care	Scottish Government Health and Social Care Directory	Welsh Government/ Department of Health and Social Care	Department of Health, Social Services, and Public Safety
Planning/ Commissioning level	• NHS England Clinical Commissioning Groups	• Local authorities • NHS boards	• Department of Health and Social Services • Hosted bodies • Local authorities • NHS trusts	• Health and social care trusts • Ambulance trusts • Primary care providers • Third sector
Provider level	• NHS trusts • NHS foundation trusts • Primary care providers • Private providers • Third sector	• Hospitals • Primary care providers • Third sector	• Tertiary care providers • Primary care providers • Secondary care providers • Community services • Third sector	• Health and social care trusts • Ambulance trust • Primary care providers • Third sector

Source: Jörg Artmann (2022), based on Anderson et al. (2022).

This tabular overview shows that strategic governance, planning, and providing are of different levels and involve different actors. In the case of Wales, the purchaser/provider split was removed entirely in 2009 (Anderson et al., 2022, p. 23). This is a notable difference to the German model of self-governance, in which every level of the system involves organizations of payers and providers and the federal government setting the framework. The different NHS or foundation trusts are organizational units with different degrees of autonomy that serve a population in a region or alternatively provide a specific function, such as an ambulance trust.

All four systems have additional bodies that supervise and scrutinize the quality of care and provide scientific evidence on healthcare innovations, with the best-known entity being the National Institute for Health and Care Excellence (NICE), which provides the scientific information on cost effectiveness of interventions. Only interventions passing a cost-effectiveness threshold are funded by the NHS. Interventions must achieve "on average an additional quality-adjusted life year (QALY) for every 20,000 to 30,000 British pounds (approximately $27,000 to $40,000 US) or else they will not be covered" (Rice, 2021, p. 40).

6.3 The United States

The U.S. healthcare system is a mix of private and public pillars, characterized by decentralization and marketplace competition. Central to the organization and delivery of health services in the U.S. is the "managed care" paradigm (Lüngen & Stock, 2006). Although known for its market orientation and subsequent gaps in coverage, the U.S. provides state-sponsored healthcare for disadvantaged populations, the elderly, and its veterans. Following a brief review of Medicare and Medicaid, as well as the Veterans Health Administration, this section will focus on the Affordable Care Act as the central healthcare reform of recent years. This section concludes with a review of the evidence on accountable care organizations (ACOs), which are a recent feature of care delivery in the U.S.

Insurance Policies: Co-Pays, Deductibles, and More

The U.S. healthcare system in its non-public expression is complex. Private insurance companies offer a multitude of insurance plans with varying degrees of coverage and provider integration. Depending on the type of insurance plan, large amounts of costs are not covered and remain the financial risk of the insured. The following table provides an overview of Blue Cross Blue Shield (BCBS) health plans for 2022 (Blue Cross Blue Shield, 2022). Blue Cross Blue Shield is a private insurance company based in Illinois, operating across several U.S. states. For the sake of simplicity, only three variations of the "Bronze" plan are illustrated, alongside a selection of the essential healthcare services. They are plans with a relatively low monthly premium, but very high out-of-pocket costs. Common to all plans is the restriction of providers to a "PPO network," which is a **preferred provider organization** (PPO), that also includes preferred provider pharmacies. All patient contacts outside of this PPO incur additional out-of-pocket costs.

Preferred provider organization
This is a health plan that contracts with a group of providers to form a network.

Table 24: Blue Cross Blue Shield Health Plans for 2022

	Bronze 201	Bronze 302	Bronze 601
Individual deductible	$6,100	$6,350	$7,000
Coinsurance	50%	40%	50%

	Bronze 201	Bronze 302	Bronze 601
Out-of-pocket maximum (including deductible) excluding prescription drug copay	$8,700	$7,000	$8,700
Primary care office visit	$45 copay	40%	40%
Urgent care	$60 copay	40%	50%
Outpatient prescription drugs	$10, $20 copay, afterward varying degrees of coinsurance depending on drug type	No copays, varying degrees of coinsurance depending on drug type	$20, $30 copay, afterward varying degrees of coinsurance depending on drug type

Source: Jörg Artmann (2022), based on Blue Cross Blue Shield (2022).

The individual deductible is the amount of money that each insured individual needs to pay before any type of insurance coverage takes effect (Healthcare.gov, n.d.). The out-of-pocket maximum limits the total amount of money that an insured needs to spend annually; however, it does not include prescription drug copays. Co-insurance is the level of insurance coverage provided by BCBS once the deductible is reached and before the annual out-of-pocket maximum takes effect. Information on the monthly premium to be paid is only available to U.S. citizens. It is estimated to be several hundred dollars per month.

The Public Pillars of U.S. Healthcare: Medicare, Medicaid, and the VA Health System

Through the 1965 Social Security Act, the two public pillars of the U.S. healthcare system – Medicare and Medicaid – were set up. Medicare is directed at individuals aged 65 or older and individuals with certain disabilities, while Medicaid addresses the care needs of low-income families, people with blindness, and individuals with disabilities (Tikkanen et al., 2019). The two programs are overseen by the Centers for Medicare and Medicaid Services (CMS).

Medicare services are structured around three pillars: Medicare Part A covering hospital care, Medicare Part B dealing with outpatient and preventive services, and Medicare Part D covering prescription drugs. If offered through a private health insurance company, these Medicare Parts are bundled as Medicare Part C or Medicare Advantage (Medicare.gov, n.d.-a). Although financed mainly through taxation, Medicare services are not entirely free. For 2022, the **deductible** is set at $1,556, and there are important co-payments per day for all hospital stays over 60 days. In part B covering outpatient care, the monthly premium is $170.10, and the annual deductible is set at $233 for 2022. Prescription drug coverage (Medicare Part D) prices vary depending on the individual insurance plan selected (Medicare.gov, n.d.-b). Data from the U.S. census show that in 2020, around 59.8 million Americans were covered by Medicare (Keisler-Starkey & Bunch, 2021, p. 4).

Deductible
The deductible is the share of costs that are the patient's responsibility before insurance coverage takes effect.

In contrast to Medicare as a federal program, Medicaid insurance coverage is administered by the states based on federal-level regulation. This means that eligibility criteria for Medicaid coverage vary from state to state, with certain groups being covered by virtue of the federal framework; these include children and adolescents, parents with adolescent children, pregnant people, people with blindness or certain other disabilities, seniors, and adolescents growing up in foster care (Centers for Medicare & Medicaid Services, 2018). In 2020, around 58 million Americans were Medicaid beneficiaries (Keisler-Starkey & Bunch, 2021, p. 4).

The Affordable Care Act

In 2020, approximately 28 million Americans did not have comprehensive health insurance coverage (Keisler-Starkey & Bunch, 2021, p. 2; Peterson, 2020; French et al., 2016). When the Affordable Care Act (ACA) was passed in 2010, its major political objective was to approach universal health coverage for the U.S. population, much like in Western European healthcare systems, and to control the cost of healthcare (Peterson, 2020).

Rice et al. (2020) summarize the major features of the ACA as follows: It relied on the existing healthcare system structure characterized by employer-sponsored private health insurance and the Medicare/Medicaid system. The ACA expanded coverage in two ways: (1) mandatory insurance purchasing through the ACA marketplaces and (2) Medicaid expansion. Those failing to purchase insurance through the ACA marketplace were subject to a fine. Concrete measures to expand coverage included the following (Rice et al., 2020):

- prohibiting insurance refusal due to pre-existing conditions
- offering preventive services without co-payments for the Medicare population
- “allowing children to remain on their parents’ health plan until the age of 26” (p. 311)
- “providing tax credits to employers offering health insurance to their employees” (p. 312)
- providing states with consumer assistance to choose a health plan

The operation of the ACA insurance marketplaces is characterized by a number of constraints on the type of insurance plan that can be offered (Rice et al., 2020, p. 312). First, health insurers operating under ACA marketplace conditions must offer a health plan to any interested party. Second, the price of these policies is predetermined according to age category, tobacco use, and family size in a given area. Third, premiums charged to older adults cannot exceed those of younger adults by a factor of three or more. Further important constraints on ACA insurance plans concern out-of-pocket payments, capped at $7,900 annually for individuals and $15,800 for families as of 2019 (Rice et al., 2020, p. 312). Also, regulations on what kind of services need to be included in the health insurance plans were enacted. This measure addressed the problem of under-insurance, meaning that even with insurance coverage, important health services might not be included in the plan.

Organization of Delivery: Accountable Care Organizations (ACOs)

A relatively recent feature of healthcare delivery in the U.S. is Accountable Care Organizations (ACOs) that organize care for a target population and are held accountable for costs, process quality, and health outcomes. Kaufman et al. (2019) review the evidence on ACOs' impact on utilization, care, and outcomes. The conceptual link between ACO organization, activities, and outcomes is illustrated in the table below.

Table 25: The Accountable Care Organization Model

Levels of analysis of the accountable care organization model	
Contracts	• Financial accountability • Quality measurement • Data sharing
Provider characteristics	• Governance structure • Information technology (IT) infrastructure • Patient population
Implementation	• Care coordination • Population health management • Care management programs
Outcomes	• Reduced resource use • Processes of care • Outcomes and patient experience

Source: Jörg Artmann (2022), Kaufman et al. (2019).

Focusing on ACO contracts with Medicare, the authors find a reduction in inpatient facility use and emergency department visits. Preventive care uptake and chronic disease management also improved. Among the reviewed studies that focused on clinical outcomes and patient experience, only a non-negative impact of ACOs could be demonstrated. The studies on clinical outcomes are limited to Medicare patients and may thus be of little use for general statements on the effects of ACOs in the healthcare system.

The dominant form of health plan remains the preferred provider organization (PPO) plan (Rice et al., 2020, p. 240). When first introduced in the 1980s, the concept attracted a lot of attention but was soon identified as problematic because it failed to contain rising costs (Gabel & Ermann, 1985). Recently, consumer-driven health insurance plans were introduced. They are characterized by high patient upfront payments (deductibles) but were found to raise awareness of costs with the consumer and altered healthcare spending as a result (Ferguson et al., 2020).

6.4 Healthcare Systems in Other Parts of the World

The healthcare systems in other parts of the world (outside the U.S. and Western Europe) are often recent political inventions and do not easily fall into categories such as "Bismarckian" or "Beveridge." In the following, the healthcare systems of South Africa and Indonesia serve as examples of hybrid systems in less developed countries.

The South African Healthcare System

The South African healthcare system is characterized by the coexistence of a public and a private system, the former suffering from underfunding and understaffing, and the latter growing in economic importance. The public health sector is used by the black African population. It offers free primary healthcare services (PHC), as well as secondary and tertiary care in public hospitals. In contrast, the private sector offers facilities at international standards for the insured population and clients who pay for services out-of-pocket. Revenue for the system comes from general taxation and is distributed by the South African provinces according to their own healthcare needs and priorities (Delobelle, 2013).

Starting in 2012, the South African government began a 14-year reform plan to introduce national health insurance (NHI; South African Government, n.d.). The strategy rests on a policy paper from the Department of Health (2017). Key features of the transition to NHI include the following (Delobelle, 2013):

- the establishment of a single-payer system, which purchases services from accredited providers
- pooling of financial resources (general taxes, mandatory payroll, and surcharge taxes) in a central health fund
- assignment of a unique healthcare ID to every citizen as a token of access to the system and mandatory registration of citizens with regional health facilities

At the origin of the government's ambition for NHI are problems with escalating costs, understaffing, and general availability of services. Private sector health insurance, according to the policy paper, "has always been unaffordable for the majority of South Africans" (Department of Health, 2017, p. 14). The document further acknowledges weak governance mechanisms, poor accountability, health workforce challenges, and escalating costs in the private healthcare sector that leave those subscribed to private insurance at high financial risk (Delobelle, 2013).

The Indonesian Healthcare System

Not unlike the South African experience, Indonesia is made up of a multitude of ethnicities and religious beliefs. The healthcare system is characterized by a multi-level governance that leaves strategic direction, standard setting, and resource provision to the central government. At the provincial level, governments oversee hospitals and monitor district health services. Local and municipal governments are mainly responsible for district hos-

pitals and the oversight of the community health centers. The provider side is a mix of public and private providers with for-profit, charitable, and not-for-profit motives. Individual doctors and midwives can practice in private and public roles simultaneously (Mahendradhata et al., 2017).

Indonesia has introduced a national health insurance program (JKN) that is managed by the Social Security for Health Agency. Its responsibilities include the collection of insurance contributions, managing membership, and contracting and paying providers. Primary care providers are paid in a capitation model, while hospital payment follows a diagnosis-related groups (DRGs) logic. The tariffs applicable to providers are set at the central government level. In parallel to the JKN, private insurance companies operate in Indonesia under the supervision of the ministry of finance. In coordination with JKN, private insurance companies can provide top-up policies for the wealthier members of the JKN scheme (Mahendradhata et al., 2017).

In terms of financing sources, Indonesia exhibits trends that are typical of healthcare systems in emerging countries. In 2017, out-of-pocket payments made up 46.9 percent of total health expenditure and public expenditure was approximately 38 percent. Total health expenditure as a percentage of GDP was at 2.8 percent (Mahendradhata et al., 2017, p. 92).

Notable Features of Other Healthcare Systems around the World

A further exploration of healthcare systems around the world would identify Singapore as an interesting model due to its multi-payer system and reliance on health savings accounts as a major source of financing (Earn, 2020). High out-of-pocket payments are not necessarily restricted to healthcare systems in developing countries.

India's healthcare system, a mix of public insurance schemes and limited private health insurance, is still on its way to achieving universal coverage. As of 2018, approximately 37 percent of the population were covered by some form of health insurance. Various public programs exist to address the healthcare needs of the poor; however, high levels of out-of-pocket payments are still common (Gupta, 2020).

SUMMARY

Healthcare systems in the developed world tend to be grouped based on their primary financing logic as either Bismarckian systems that rely on social health insurance contributions or Beveridge models that are single-payer and tax-financed systems. The German model is the Bismarckian type and is characterized by its focus on self-governance, involving payers and providers at state and federal level in complex negotiations. The United Kingdom, which is largely tax financed, uses the Beveridge model, which includes general practitioners as gatekeepers and a cost-effectiveness logic in the assessment of healthcare innovations. The U.S. is an outlier in this regard. It mixes a highly competitive market for

health insurance for the working population and important public sector health insurance in the form of Medicaid, Medicare, and the Veterans Administration healthcare system. South Africa and Indonesia are two examples of healthcare systems in emerging countries. While South Africa is still on its way toward a single-payer national insurance program, Indonesia has already implemented one. Both countries have a thriving private provider sector in parallel to the public system.