

**Health**

**7**



## 7.1 Introduction

7.1 Health expenditure accounts for a large share of GDP in EU Member States and OECD Member Countries. Both governments, as providers of health services, and households, as recipients of the services, are interested in knowing whether the differences in expenditure across countries reflect different amounts of health services being consumed or health services having different price levels. International price and volume comparisons of health expenditures provide countries with a means to assess their national health systems – at least in principle. In practice, inter-country comparisons of health expenditures are difficult to carry out because health services are comparison resistant with the institutional arrangements for their provision and payment varying from country to country.

7.2 Medical goods and services can be provided by market producers at economically-significant prices; they can also be provided by non-market producers at prices that are not economically significant. Patients can be private patients or public patients with each facing a different tariff of prices for the same services from the same providers. Pharmaceutical products can be proprietary brands or generic whose medical equivalence is not reflected in their respective prices. Furthermore, while the sale of a good or a service usually involves a transaction between a seller and a buyer, sales of medical goods and services can involve a transaction between a seller and two buyers with each paying a share of the total price independently. There is also the question of whether producers of health services in different countries provide services of comparable quality. An additional complication is that each treatment given for a specific illness is to some extent unique as no two patients are alike.

7.3 This chapter describes how Eurostat and OECD comparisons of health expenditures are organised and how the difficulties mentioned in the previous paragraph are addressed. It concludes with an outline of the new methodology that is to be introduced for hospital services.

## 7.2 Classification of health expenditures

7.4 In the Eurostat-OECD expenditure classification, individual consumption expenditure on health is spread over three institutional sectors - households, non-profit institutions serving households (NPISHs) and government – and 25 basic headings as shown in Box 7.1. Expenditure by households is broken down by the type of good or service purchased. Expenditure by NPISHs is not disaggregated as most participating countries are unable to provide the breakdown that would be required if it were. Also the share of health services provided by NPISHs is relatively low for most countries. Expenditure by government is divided between medical goods and services that government buys in whole or in part from market producers - labelled *health benefits and reimbursements* - and health services that government produces itself. Purchases from market producers are broken down by the type of good or service bought. Expenditure on government-produced health services is broken down by cost components.

7.5 The breakdown of government purchases from market producers is the same as that for household purchases. This allows a common approach to be adopted for the two sets of expenditures when calculating PPPs. The approach followed is the standard approach used for consumer goods and services whereby PPPs are computed with economically-significant purchasers' prices collected from a sample of outlets. The approach is sometimes referred to as the *output-price approach* because, being economically significant, the prices can be used to value the outputs of market producers by multiplying the quantities produced by the prices at which they are sold.

7.6 The health services produced by government are non-market services because they are generally supplied free or at prices that are not economically significant. Government as a non-market producer of health services has to be treated as any other non-market producer. No economically-significant prices with which to value the quantities produced means that the expenditure on the goods and services provided by a non-market producer cannot be obtained by summing its sales. Instead, in line with national accounting practice, the expenditure is estimated by

summing the costs of producing the goods and services. To preserve consistency with the prices underlying the expenditure estimate, Eurostat and the OECD calculated PPPs for the goods and services provided by a non-market producer with the prices of its inputs (hence the breakdown of expenditure by cost components). The approach is called the *input-price approach*.

**Box 7.1: Health expenditure by basic heading**

BH Code	Basic heading	PPPs used
<b>INDIVIDUAL CONSUMPTION EXPENDITURE BY HOUSEHOLDS</b>		
11.06.11.1	Pharmaceutical products	PPPs calculated with prices from the sixth survey of the three-year cycle of price surveys for consumer goods and services: Furniture and health
11.06.12.1	Other medical products	
11.06.13.1	Therapeutic appliances and equipment	
11.06.21.1	Out-patient medical services	
11.06.22.1	Out-patient dental services	
11.06.23.1	Out-patient paramedical services	
11.06.31.1	Hospital services	PPPs for production of health services by government (without receipts from sales)
<b>INDIVIDUAL CONSUMPTION EXPENDITURE BY NPISHS</b>		
12.02.11.1	Health services	PPPs for production of health services by government (without receipts from sales)
<b>INDIVIDUAL CONSUMPTION EXPENDITURE BY GOVERNMENT</b>		
<b>Health benefits and reimbursements</b>		
13.02.11.1	Pharmaceutical products	PPPs calculated with prices from the sixth survey of the three-year cycle of price surveys for consumer goods and services: Furniture and health
13.02.11.2	Other medical products	
13.02.11.3	Therapeutic appliances and equipment	
13.02.12.1	Out-patient medical services	
13.02.12.2	Out-patient dental services	
13.02.12.3	Out-patient paramedical services	
13.02.12.4	Hospital services	PPPs for production of health services by government (without receipts from sales)
<b>Production of health services</b>		
13.02.21.1	Compensation of employees: Physicians	PPPs calculated with prices from the annual survey of compensation of government employees
13.02.21.2	Compensation of employees Nurses and other medical staff	
13.02.21.3	Compensation of employees: Non-medical staff	
13.02.22.1	Intermediate consumption: Pharmaceutical products	PPPs for pharmaceutical products
13.02.22.2	Intermediate consumption: Other medical products	PPPs for other medical products
13.02.22.3	Intermediate consumption: Therapeutic appliances and equipment	PPPs for therapeutic appliances and equipment
13.02.22.4	Intermediate consumption n.e.c.	PPPs for individual market consumption (see Box 12.3B for coverage)
13.02.23.1	Gross operating surplus	PPPs for gross fixed capital formation
13.02.24.1	Net taxes on production	PPPs for production of health services by government (without net taxes on production and receipts from sales)
13.02.25.1	Receipts from sales	PPPs for production of health services by government (without receipts from sales)

### 7.3 Price collection: purchases from market producers

7.7 PPPs for household purchases of medical goods and services from market and non-market producers and for government purchases of medical goods and services from market producers are calculated with prices collected during the *furniture and health survey*, the sixth and last survey in the three-year cycle of price surveys for consumer goods and services. The health part of the survey covers pharmaceuticals and other medical goods (including therapeutic appliances and equipment) and medical, dental and paramedical services delivered to out-patients. It does not cover hospital services. When surveying prices for medical goods and out-patient services, participating countries are required to collect prices paid to market producers only. Medical goods and out-patient services provided by non-market producers are covered under government-produced health services for which input prices are required.

#### 7.3.1 Full market price

7.8 An essential consideration when surveying the prices for medical goods and out-patient services is to ensure that the full market price is collected. The full market price is the total amount paid to the provider of the good or service. Most consumer products when they are sold involve a transaction between a seller and a single buyer. The seller's offer price – adjusted, if necessary, to include discounts, taxes, etc. – is the purchasers' price that the buyer will have to pay. It is a price that price collectors can readily observe. This is not always the case with medical products which can entail a transaction involving a seller and two independent buyers when they are sold. There are three possible ways that medical products can be purchased from market producers, none of which are mutually exclusive. They can be purchased and paid for in full by a household (either with or without subsequent reimbursement by the government); they can be purchased and paid for in full by the government; or they can be purchased and paid for in part by a household and in part by the government. Participating countries are required to report purchasers' prices for medical products whichever way or ways they are sold in their domestic market.

7.9 The first possibility is straightforward. As with most consumer products, there is one buyer involved – the household – and purchasers' prices can be collected by visiting a sample of outlets. That the purchaser may be partially or fully reimbursed by the government is immaterial since the price required to calculate PPPs is the price before reimbursement. The second possibility is also straightforward. It too involves one buyer – the government. Normally, the purchasers' prices paid by the government for medical goods and services are regulated and can be obtained from the appropriate government authority. The third and last possibility is more complicated since it involves two purchasers and two payments. For PPP purposes, the purchasers' price needed is the total or composite price – that is, the sum of the price paid by the household and the price paid by government. If composite prices are not used to calculate PPPs, the volume of medical products purchased will be twice what it should be as demonstrated in Box 7.2. Usually there are regulations that determine what the household should pay and what the government will pay. And, as with the second possibility, information on composite prices can be obtained from the government office responsible.

#### Box 7.2: Full market price avoids double counting

Suppose that the quantity of a pharmaceutical product purchased is 1000 units and that the price per unit is 10 euros of which households pay 2 euros and government 8 euros. In the national accounts, 2000 euros will be recorded as household expenditure and 8000 euros will be recorded as government expenditure under health benefits and reimbursements. If the amounts actually paid – that is, 2 euros by households and 8 euros by government – are used to deflate these expenditures, it will seem that both households and government have each purchased 1000 units or 2000 units in total. But if the total amount paid – that is, 10 euros – is used, households will appear to have purchased 200 units and government 800 units - a total of 1000 units.

7.10 PPPs for medical goods and out-patient services purchased by households and for medical goods and out-patient services purchased from market producers by government are calculated with the full market prices collected during the health survey. The same PPPs are used for household expenditure and for government expenditure on health benefits and reimbursements. By using the same PPPs for both sets of expenditures, double counting is avoided and the correct volumes are arrived at as explained in Box 7.2. The PPPs are also employed as reference PPPs for intermediate consumption relating to government-produced health services as indicated in Box 7.1.

### 7.3.2 Pharmaceuticals and other medical products

7.11 The specifications for pharmaceutical products distinguish between propriety branded products<sup>1</sup> and generic products. The distinction is necessary because, while from a medical point of view propriety products and generic products with the same active substance and the same strength may be equivalent, from an economic perspective they are not as propriety brands generally have a brand value and a higher price. Comparing the prices of like with like – that is the propriety product prices with propriety product prices and generic product prices with generic product prices - ensures that the price differences observed between countries are pure price differences that translate into pure volume differences when expenditures are deflated by the PPPs to which the prices give rise.

7.12 Participating countries are required to select and price a minimum of 50 pharmaceutical products from a product list with some 150 to 200 products specified. When choosing pharmaceutical products to be priced, countries are expected to ensure that the selection is a representative cross-section of the various types of pharmaceutical products listed and that it reflects the respective shares of propriety products and generic products in the value of pharmaceutical sales. For example, if 60 per cent of sales are purchases of propriety products and 40 per cent purchases of generic products, the selection should comprise 60 per cent propriety products and 40 per cent generic products or, in terms of the minimum 50 products to be priced, 30 propriety products and 20 generic products. Maintaining a balance between packet sizes, dosages and presentation (pills, tablets, syrup, injection, powder, cream, etc.) is also important.

7.13 Prices of pharmaceutical products can be obtained in most countries from centrally maintained databases which are frequently publically available. In some cases prices are collected direct from pharmacies. Not all the medical products specified are pharmaceuticals. Also included on the product list are *other medical products* and these can be sold not only in pharmacies but also in supermarkets, petrol stations, drug stores, as well as through the internet. Therapeutic appliances and equipment, for example, are sold by suppliers of medical equipment. Participating countries are expected to include such outlets in their sample of outlets when pricing other medical products. Full market prices should be collected for both pharmaceutical products and other medical products.

### 7.3.3 Out-patient health services

7.14 The specifications for out-patient health services make a distinction between the services market producers provide private patients and the services they provide public patients. Private patients purchase health services without any reimbursement from government. Public patients either receive health services free of charge or, if they pay for the health services, are partially or fully reimbursed by government. Both private patients and public patients may have complementary private health insurance. Prices for private patients are usually determined by the market producer and so are generally higher than prices for public patients which are normally fixed or regulated by government. The distinction between private and public patients is made because the quality of services provided by the market producer may also differ between the two types of patients. Participating countries are required to report the full market price for each health service priced irrespective of whether the patient is private or public.

<sup>1</sup> Also referred to as *original brands* because they are produced and sold, usually under a patent, by the pharmaceutical companies that invested in the research and development.

## 7.4 Price collection: government-produced health services

7.15 PPPs for expenditure on government-produced health services are obtained by the input-price approach. For this the expenditure is broken down by the cost components shown in Box 7.1: compensation of employees, intermediate consumption, gross operating surplus<sup>2</sup>, net taxes on production and receipts from sales<sup>3</sup>. Of these cost components, compensation of employees is by far the most important and so in practice prices are only collected for compensation of employees. As prices are not collected for the other cost components, no PPPs are calculated for them and the reference PPPs listed in Box 7.1 are used instead. Reference PPPs are discussed in Chapter 12, Section 12.3.4.

**Box 7.3:** References to ISCO-08

Code	Occupation	Skill level	ISCO-08
13.02.21.1.01.aa	Hospital doctor	4	2211 Generalist medical practitioners
13.02.21.1.01.ab	Specialist doctor	4	2212 Specialist medical practitioners
13.02.21.2.01.aa	Hospital nurse (skill level 4)	4	2221 Nursing professionals
13.02.21.2.01.ab	Hospital nurse (skill level 3)	3	3221 Nursing associate professionals
13.02.21.2.01.ac	Laboratory assistant	3	3212 Medical and pathology laboratory technicians
13.02.21.2.01.ad	Nursing aide (clinic or hospital)	2	5321 Health care assistants
13.02.21.3.01.aa	Executive official	3	3343 Administrative and executive secretaries
13.02.21.3.01.ab	Secretary	2	4120 Secretaries (general)
13.02.21.3.01.ac	Cleaner	1	9112 Helpers and cleaners in offices, hotels and other establishments

7.16 The prices that are collected for compensation of employees are the compensation that general government pays to employees in a selection of medical and non-medical occupations in hospitals. Collection takes place annually as part of the *survey of compensation of government employees* which also covers a selection of occupations engaged in the production of collective services. The occupations are defined using job descriptions taken from the ISCO-08<sup>4</sup>. A table cross-referencing the medical and non-medical occupations and their ISCO job descriptions is given in Box 7.3. The reporting form to be completed for these occupations is reproduced in Box 7.4. Details of the survey are available in Chapter 9, Section 9.4, and will not be repeated here. How to complete the reporting form is explained in Box 9.3B and the full definition of compensation of employees is given in Box 9.7.

<sup>2</sup> Gross operating surplus will be equal to consumption of fixed capital as net operating surplus is expected to be negligible.

<sup>3</sup> Receipts from sales are negative. It is netted off from gross output to obtain government final consumption expenditure on the production of health services. In this way double counting is avoided since household purchases of government-produced health services are included under household expenditure.

<sup>4</sup> International Standard Classification of Occupations 2008, International Labour Office, Geneva.

## 7.5 Hospital services

7.17 The breakdown of health expenditure by basic headings in Box 7.1 identifies household expenditure on hospital services as well as government expenditure on hospital services purchased from market producers. Expenditures on hospital services by NPISHs and hospital services produced by government are not identified separately. The expenditure on government-produced health services is not broken down by outputs but by inputs as required by the input-price approach described in the previous section.

7.18 Early attempts by Eurostat and the OECD to collect prices for hospital services were unsuccessful. The services were specified in terms of the type of hospital room occupied, type being defined primarily by the number of beds in the room. Not all countries could supply the prices requested and the prices that were provided were neither comparable nor representative. As a result, it was decided not to collect prices for hospital services and to use reference PPPs. This remains the current practice. The reference PPPs that are applied are the PPPs obtained for government-produced health services by the input-price approach. It is assumed that government-produced health services consist primarily of services provided to in-patients by government hospitals and that the input prices paid by market producers are the same as those paid by government. (The same PPPs are also used as reference PPPs for individual consumption expenditure by NPISHs on health services.)

7.19 The current practice is considered to be unsatisfactory because the reference PPPs are based on input prices (compensation of employees) and proxies for input prices (reference PPPs) of a non-market producer. More generally, a major limitation of the input-price approach is that it does not take account of productivity differences between the countries being compared. As it is unrealistic to assume that the productivity is uniform across countries, the volume measures generated by PPPs based on the input-price approach represent the volume of inputs consumed in the production of the output and not the volume of output produced. In other words, the reference PPPs used for hospital services do not provide volume measures that relate to the output of hospital services.



**Box 7.4:** Reporting form for the survey of compensation of government employees (hospital services)

SURVEY OF COMPENSATION OF GOVERNMENT EMPLOYEES																		
Country:		Year:		2012														
<i>only the shaded fields are to be filled in by the countries</i>																		
Basic heading code Basic heading	Weight group	Percentage weight within the basic heading	Occupation code	Occupation (see Box 9.4 for references to ISCO-08)	Requested skill level	Observed skill level	Average annual gross salary	Employers' actual social contributions		Employers' imputed social contributions		Annual average compensation	Contractual working week (number of hours)	Holiday entitlement (number of days)	Public holidays (number of days)	Annual contractual hours worked	Adjusted annual average compensation	
								national accounts ratio	value	national accounts ratio	value							
(1)(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
				<b>EXAMPLE</b>	4	4	10000	10%	1000	5%	500	11500	37,5	30	10	1650	11918	
13.02.21.1 Physicians	Physicians	100	13.02.21.1.01.aa	Hospital doctor	4				0		0	0				0	0	
			13.02.21.1.01.ab	Specialist doctor	4					0		0	0				0	0
13.02.21.2 Nurses and other medical staff	Nurses and other medical staff	100	13.02.21.2.01.aa	Hospital nurse (skill level 4)	4				0		0	0				0	0	
			13.02.21.2.01.ab	Hospital nurse (skill level 3)	3					0		0	0				0	0
			13.02.21.2.01.ac	Laboratory assistant	3					0		0	0				0	0
			13.02.21.2.01.ad	Nursing aide (clinic or hospital)	2					0		0	0				0	0
13.02.21.3 Non-medical staff	Non-medical staff	100	13.02.21.3.01.aa	Executive official	3				0		0	0				0	0	
			13.02.21.3.01.ab	Secretary	2					0		0	0				0	0
			13.02.21.3.01.ac	Cleaner	1					0		0	0				0	0

## 7.6 Towards an output based approach

7.20 One alternative to the assumption of equal productivity would be to make productivity adjustments but, as explained in Chapter 9, Section 9.5, Eurostat and the OECD do not make productivity adjustments when applying the input-price approach. The method preferred by Eurostat and the OECD is to adopt an output based approach. The approach envisaged is an output-price approach and will entail replacing the survey of compensation of government employees with a price survey covering hospital services. Establishing such a survey involves first identifying and defining those units of hospital output that can be measured and priced across countries and then identifying and defining the output prices with which to price them. In the health domain, output prices which are the result of market transactions are not readily observable, but alternative sources of information through reimbursement schemes managed by health care providers and health administrations could provide *quasi prices*. These quasi prices would be economically significant in that they cover the average cost of producing the output and affect decisions relating to reimbursements of costs borne by patients, health financing and the allocation of hospital resources.

7.21 These preparatory steps have already been taken. Measurable outputs have been specified and the feasibility of collecting economically-significant quasi prices for them has been tested in several rounds of pilot data collection<sup>5</sup>. From 2013 onwards, the survey will be part of the regular work programme for countries and the data collected will be included in official PPP results. It will run in tandem with the survey of compensation of government employees for a number of years until it is sufficiently well established for the input-price approach for hospital services to be discontinued. The methodology of the survey is outlined in the paragraphs below.

### 7.6.1 Defining output

7.22 The Eurostat national accounts handbook on price and volume measures<sup>6</sup> defines health output as “the quantity of health care received by patients, adjusted to allow for the qualities of service provided, for each type of health care. (...) The quantity of health care received by patients should be measured in terms of complete treatments.”<sup>7</sup> In other words, for national accounting purposes, health output is defined as complete treatments provided irrespective of outcome<sup>8</sup>.

7.23 Typically a complete treatment comprises a basket of discrete services obtained from a varying number of independent health care providers. For example, treatment may start with a series of consultations – the first with a general practitioner, the others with a specialist - which may need to be complemented by visits to an X-ray centre and a medical analysis laboratory. It may continue with admission first to a hospital for surgery and post-surgical care and then to a nursing home for convalescence. The ease with which a complete treatment can be measured depends on the extent to which the various services constituting the treatment are supplied by different providers. The more providers involved, the more difficult it becomes to measure a complete treatment. Data to map a treatment fully from one provider to another are usually not readily available.

7.24 For practical reasons, a narrower definition of a treatment has to be applied when measuring health output. The one adopted by national accountants, and for the survey, defines a treatment as that part of a complete treatment delivered by a single provider. In other words, the original basket of services constituting a complete treatment is broken up into its component services according to the provider of the service. Hence, in the example above, the providers – the general practitioner, the

<sup>5</sup> Results and full description of the methodology used in the second pilot study can be found in *Comparing Price Levels of Hospital Services Across Countries: Results of a Pilot Study*, Statistics Directorate Working Paper No.32, OECD, Paris, July 2010: [http://www.oecd-ilibrary.org/social-issues-migration-health/comparing-price-levels-of-hospital-services-across-countries\\_5km91p4f3rzw-en](http://www.oecd-ilibrary.org/social-issues-migration-health/comparing-price-levels-of-hospital-services-across-countries_5km91p4f3rzw-en)

<sup>6</sup> *Handbook on price and volume measures in national accounts*, Eurostat, Luxembourg, 2001: [http://epp.eurostat.ec.europa.eu/portal/page/portal/product\\_details/publication?p\\_product\\_code=KS-41-01-543](http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-41-01-543). See as well Chapters 4 and 5, *Towards measuring the volume output of education and health services: a handbook*, Paul Schreyer, Statistics Directorate Working Paper No 31, OECD, Paris, April 2010.

<sup>7</sup> Section 4.13.

<sup>8</sup> Outcome cannot be ignored completely, especially when considering the quality of a treatment. Differences in outcomes between countries (or over time) are indicative of differences in the quality of the treatments being compared.

specialist, the X-ray centre, the medical analysis laboratory, the hospital and the nursing home – are supplying a set of separate treatments rather than a single complete treatment. Each treatment is a unit of output, each is a product.

### 7.6.2 Case types

7.25 With the output-price approach PPPs are calculated with the market prices that participating countries collect for a sample of comparable and representative products. Before prices can be collected, the products to be priced have to be selected and defined. Therefore, prior to collecting prices for hospital services, it is first necessary to select and define the products – that is, the treatments – that participating countries have to price. When doing this for the survey, a distinction is made between general and specialist hospitals and mental health and rehabilitation facilities.<sup>9</sup> Products are only defined for general and specialist hospitals.

7.26 The products defined for the survey are called *case types*. A case type refers to categories of hospital services that are similar from a clinical perspective and in terms of their consumption of resources. Two categories of case types are specified: medical and surgical. The medical case types specified refer only to in-patients. The surgical case types specified are divided between those that require hospitalisation and apply only to in-patients and those that can be performed either with hospitalisation on in-patients or without hospitalisation on out-patients (day care patients). The specifications provide a description of the case type followed by the relevant ICD codes. Medical case types are defined with ICD-10 codes<sup>10</sup> while surgical case type specifications are defined with ICD-9-CM codes<sup>11</sup>. The codes promote comparability among countries by enabling them to locate the case types specified within national classification and coding systems.<sup>12</sup> Finally, the specifications give rules – for example, all the medical case type specifications rule out operating room procedures - and criteria for inclusion and exclusion. Examples of case type specifications are presented in Box 7.5.

7.27 To be selected for the survey, case types had to be common procedures or diagnoses and account for a significant percentage of hospital expenditure. In addition, surgical case types had to be procedures that would be the principal procedure within one hospitalisation and medical case types had to be for conditions that were clearly identifiable. The case types meeting these criteria that have been selected for the survey are listed in Box 7.6.

<sup>9</sup> A general hospital is a licensed establishment engaged primarily in providing general diagnostic and medical treatment to in-patients with a wide variety of medical conditions. A specialist hospital is a licensed establishment engaged primarily in providing diagnostic and medical treatment as well as monitoring services to in-patients with a specific type of disease or medical condition. A mental hospital is a licensed establishment engaged primarily in providing diagnostic and medical treatment and monitoring services to in-patients who suffer from mental illness or substance abuse disorders.

<sup>10</sup> ICD-10 is the tenth revision of the *International Classification of Diseases* that was first disseminated by the World Health Organisation (WHO) in 1992. It provides codes to classify diseases and a wide variety of signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury or disease. It is standard diagnostic tool for epidemiology, health management and clinical purposes and is used worldwide for morbidity and mortality statistics and reimbursement systems.

<sup>11</sup> ICD-9-CM is an adaption of ninth edition of the *International Classification of Diseases* by the United States National Center for Health Statistics. Besides including additional detail on morbidity, it provides a classification system for surgical, diagnostic and therapeutic procedures. CM stands for *clinical modification*.

<sup>12</sup> If a country uses a different coding system to the ICD, the ICD-9-CM or ICD-10 codes in the specification for the case type are taken as reference and the national classification is mapped to the international classification accordingly.

**Box 7.5:** Examples of case type specifications

<b>In-patient medical case type: M04 Heart failure</b>	
<b>Case type description</b>	<i>Heart failure occurs when the heart cannot pump enough blood to meet the body's needs, and it typically develops after other conditions have weakened or damaged the heart. The chronic variant tends to develop slowly over time. However, patients may also experience a sudden onset of symptoms, which is known as acute heart failure. Congestive heart failure is defined as blood backing up into the liver, abdomen, lower extremities, and lungs.</i>
<b>ICD-10 codes</b>	I50.0, Congestive heart failure I50.1, Left ventricular failure I50.9, Heart failure, unspecified
<b>Rules</b>	No operating room procedure is performed.
<b>Inclusion</b>	
<b>Exclusion</b>	Hypertensive heart failure (I11.0) Rheumatic heart failure (I09.9)
<b>In-patient surgical case type: S01 Appendectomy</b>	
<b>Case type description</b>	Procedure to surgically remove appendix through laparoscopic intervention or traditional (open) appendectomy.
<b>ICD-9-CM codes</b>	47.01, Laparoscopic appendectomy 47.09, Other appendectomy 47.11, Laparoscopic incidental appendectomy 47.19, Other incidental appendectomy
<b>Rules</b>	Principal diagnosis of diseases of appendix (K35-K38)
<b>Inclusion</b>	Incidental appendectomy
<b>Exclusion</b>	
<b>In-patient and out-patient surgical case S18 Arthroscopic excision of meniscus of knee</b>	
<b>Case type description</b>	Knee arthroscopic surgery is a procedure performed through small incisions in the skin to repair injuries to tissues such as ligaments, cartilage, or bone within the knee joint area. The surgery is conducted with the aid of an arthroscope, a very small instrument guided by a lighted scope attached to a television monitor. Arthroscopic surgeries range from minor procedures such as flushing or smoothing out bone surfaces or tissue fragments (lavage and debridement) associated with osteoarthritis, to the realignment of a dislocated knee and ligament grafting surgeries.
<b>ICD-9-CM codes</b>	80.26, Arthroscopy, knee and 80.6, Excision of semi-lunar cartilage of knee
<b>Rules</b>	Any principal diagnosis code. The two codes should be reported at the same time for the same case.
<b>Inclusion</b>	
<b>Exclusion</b>	

**Box 7.6:** Selected medical and surgical case types

<b>In-patient medical case types</b>	
M01	Acute myocardial infarction
M02	Angina pectoris
M03	Cholelithiasis
M04	Heart failure
M05	Malignant neoplasm of bronchus and lung
M06	Normal delivery
M07	Pneumonia
<b>In-patient surgical case types</b>	
S01	Appendectomy
S02	Caesarean section
S03	Cholecystectomy
S04	Colorectal resection
S05	Coronary artery bypass graft
S06	Discectomy
S07	Endarterectomy: vessels of head and neck
S08	Hip replacement: total and partial
S09	Hysterectomy: abdominal and vaginal
S10	Knee replacement
S11	Mastectomy
S12	Open prostatectomy
S13	Percutaneous transluminal coronary angioplasty (PTCA)
S14	Peripheral vascular bypass
S15	Repair of inguinal hernia
S16	Thyroidectomy
S17	Transurethral resection of prostate (TURP)
S18	Arthroscopic excision of meniscus of knee
S19	Lens and cataract procedures
S20	Ligation and stripping of varicose veins - lower limb
S21	Tonsillectomy and/or adenoidectomy
<b>Out-patient surgical case types</b>	
S18	Arthroscopic excision of meniscus of knee
S19	Lens and cataract procedures
S20	Ligation and stripping of varicose veins - lower limb
S21	Tonsillectomy and/or adenoidectomy

**7.6.3 Quasi prices**

7.28 The objective of the survey is to collect average quasi prices for the selected case types. The quasi prices are to be extracted from the databases that health administrations and national insurance funds in participating countries maintain for the purposes of reimbursement and health financing. The quasi prices in these databases can be negotiated prices or administered prices. Negotiated prices are prices that have been established through negotiations between purchasers (third party payers) and providers of hospital services. Administered prices are regulated prices that typically reflect the average costs of the service provided. Whether the quasi prices are negotiated prices or administrative prices, it is important that the costs they cover are the same for all participating countries. They should reflect direct costs as well as the capital costs and overhead

costs relating to the production of the health service. The cost items to be included are listed in Box 7.7.<sup>13</sup>

7.29 Average quasi prices have to be determined for each of the case types specified. Quasi prices can be available at the level of individual patients as, for example, when price (cost) information is provided for each discharge from hospital. When they are, the average quasi price for a case type is the mean of the prices of those discharges whose characteristics match the codes and rules specified for the case type. The quasi prices should be for typical cases only. Quasi prices for atypical cases and for long-stay cases should be excluded as explained below.

7.30 If quasi prices are not available at the individual patient level, they are generally available at the category level of *Diagnosis Related Groups* (DRGs). DRGs are a clinically coherent set of patient classes defined on the basis of diagnoses, surgical procedures and the age, sex and discharge status of the patients treated. Each DRG is associated with a quasi price. The correspondence between case types and DRG categories is not necessarily one to one as a DRG category may encompass more than one case type. Moreover, a case type may correspond to more than one DRG category. When a case type is linked to a single DRG category, the quasi price attached to the DRG category becomes the average quasi price for the case type. When the case type is linked to more than one DRG category, the average quasi price for the case type is the weighted average of the quasi prices of the DRG categories with which it is linked where the weights are case numbers for typical cases.

#### 7.6.4 Weights

7.31 In addition to collecting an average quasi price for each case type, the survey will also collect the number of cases recorded for each case type. The average quasi prices and the case numbers should refer to typical cases only. Atypical cases and long-stay cases should be excluded. Typical cases are cases where the patient has undergone a normal and expected course of treatment. Atypical cases are cases for which the standard profile of care is not followed because the patient dies, signs out or transfers to other facilities. Long-stay cases are those with a number of days of stay higher than 1.5 standard deviations from the mean stay for the case type in question.

7.32 Multiplying the average quasi prices by the corresponding case numbers provides each case type with a value. These case type values can be summed across case types to give a total value for all case types with which the individual case type values can be converted into percentage shares. The percentage shares are used as weights when calculating PPPs for hospital services. Hospital services comprise a basic heading and generally quasi-expenditure weights rather than actual weights are employed to calculate PPPs for a basic heading. A description of how basic heading PPPs are calculated with percentage shares as weights can be found in Chapter 6, Section 6.4.1.

#### 7.6.5 PPPs for actual individual consumption of health<sup>14</sup>

7.33 When the new method is in place, the scheme of PPP calculations indicated in Box 7.1 will change. There will no longer be a distinction between services produced by market producers and services produced by non-market producers, thereby producing PPPs for actual individual consumption of health directly. The expenditures on health will be classified by goods and services - pharmaceutical products, out-patient services, hospital services, etc. - and by the three institutional sectors - households, NPISHs and general government. The PPPs derived for each of the products will be used for all three sectors to ensure broad consistency with the national accounts at the level of total health expenditures per sector.

<sup>13</sup> In some reimbursement schemes, a point system is used in the place of quasi prices. A benchmark treatment is assigned a score of 100 for example with more points being assigned to treatments that are more costly and less points for treatments that are less costly. How much to pay per point – the base rate - is determined by negotiation or regulation. The base rate is adjusted periodically as costs increase. Participating countries with such schemes will have to convert reimbursement points into monetary values to obtain the quasi prices required.

<sup>14</sup> The approach to calculating PPPs for actual individual consumption of health is similar to that used to calculate PPPs for actual individual consumption for education and described in Chapter 8, Paragraph 8.30.

7.34 The relative weight of each of the products included in the new classification will be calculated using the data from the system of health accounts<sup>15</sup>, in particular data on health providers and from the functional classifications, and will represent the share of health expenditure on each product in the total expenditure on health care, whereas the total health expenditure of each sector will be drawn from the national accounts.

**Box 7.7: Costs to be covered by quasi prices**

Overhead costs	Medical infrastructure	Laundry
		Sterilization
		Patient transport within the hospital
		Food service to patients
		Other (includes patient transport outside the hospital, staff transport, transportation of samples/blood)
	Non-medical infrastructure	Administrative staff
		Cleaning
		Security
		Gardening
		Desk officers
		Telephone
		Printing and stationery
		Rent
		Taxes
		Energy
Water		
Waste disposal		
IT/IS services		
Building maintenance		
Equipment maintenance		
Capital costs <sup>1</sup>		Consumption of fixed capital
Direct costs	Compensation of employees	Medical staff
		Nursing staff
		Technical staff
		Administrative staff
	Goods and services	Medical and surgical equipment <sup>2</sup>
		Laboratory equipment <sup>2</sup>
		Disposables (including medical and surgical supplies)
		Drugs
Medical gases		
Dressings		
Prosthesis		

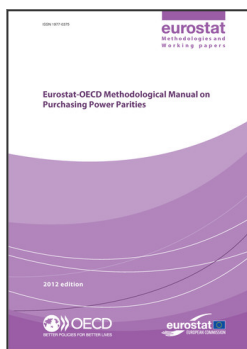
<sup>1</sup> Capital costs should also cover research and development (R&D) but as countries have difficulty determining the cost of this item, R&D is not included in the quasi prices reported.

<sup>2</sup> Includes small tools - that is goods that may be used repeatedly or continuously in production over many years but may nevertheless be small, inexpensive and used to perform relatively simple operations

<sup>15</sup> A detail description of the system of health accounts can be found in OECD et al (2011) *System of Health Accounts 2011*, OECD Publishing, Paris.







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