HOSPITALS IN EUROPE HEALTHCARE DATA

2012





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FOREWORD AND METHODOLOGICAL PREMISES

Hospitals are subject to increasing pressure. Scientific innovations and technological advances open up many opportunities to improve quality of care and patient satisfaction, but the financial constraints, consequence of the economic crisis, and the increasing number of chronic patients add to the natural complexity hospital and healthcare services are facing. In the next decade hospitals will be expected to be even more efficient, to continue reducing inappropriate admissions and length of stay and to further improve the coordination between inpatient care and out of hospital treatments. Moreover, they will be increasingly facing issues around healthcare workforce, such as progressive ageing of healthcare professionals and increasing mobility of personnel.

All over Europe, many efforts are being made to overcome these problems and face these challenges.

Looking at the past, with an eye towards the future, data and indicators presented in the next pages will be providing evidence of all the efforts already done to ensure a high value and quality of hospital care, to build more efficient and appropriate services, streamlining and rationalizing the supply of secondary care.

Trends regarding the core hospital provision and the structure of the workforce will illustrate how healthcare services and in particular hospitals across Europe have been addressing these problems and meeting their objectives. They testify how the changes in the clinical and demographical characteristics of population and the financial sustainability in the area of healthcare always represent a very topical issue for national healthcare systems, greatly affecting the features of hospital activity.

A few simple data concerning hospital activity will also provide some evidence about the amount of work performed within hospital and inpatient settings, and will hopefully represent a first step for a deeper analysis of quality and appropriateness of hospital care and the pathways of integration between primary, secondary and community/social care.

The aim of this publication is to increase awareness about hospital capacity and, more generally, secondary care provision, at the largest possible extent within the European countries. Yet, it does not want to provide answers, but look at some facts which can rather generate questions, stimulate debate, and, in this way, foster the exchange of information and knowledge sharing.

The report offers a picture of the hospital situation for which most recent data are available compared to the situation ten years before. The considered trend is normally the decade 2000-2010.

The source of data and figures is the Health For All Database of the World Health Organisation (WHO/Europe, European HFA-DB, January 2013) unless otherwise specified; while data referring to the expected trends of population in the upcoming decades have been taken from "Europe in figures-EUROSTAT yearbook"¹. Some figures are disputed for not being precise enough but they at least give a good indication of the diversity.

¹EUROSTAT database, updated at 16.01.2013 and "Europe in figures-EUROSTAT yearbook 2011":



All European Member States are considered plus Switzerland. Whenever appropriate two groups have been compared: EU15, the countries that joined the EU before 2004 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom) and EU12, the countries that joined the EU in 2004 and 2007 (Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia).

<u>http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-</u> <u>CD-10-220</u>



1 HEALTHCARE SYSTEM AND POPULATION HEALTH

1.1 DEMOGRAPHIC TRENDS

From the sixties up to now the **population number** in Europe has steadily increased, growing at a faster pace during the 1960s, and slowing down after the 1970s.

Between 1980 and 2010 the European inhabitants have risen by about 10%, but the increase between 2000 and 2008 has only been close to 4%.

Conversely, during the next decades the number of European inhabitants is expected to increase rather slowly until 2035 (about +5% between 2008 and 2035), then to start falling until 2060. This trend will be strongly driven by the EU12, whereas the population in most EU15 is projected to continue expanding.

The most relevant aspect highlighted by the projections about the number of European inhabitants in the next decades is the considerable shift in the age structure.

The share of older persons in the total population is expected to increase significantly from 2010 onwards. The post-war baby-boom generation starts to reach retirement age, the life expectancy is still increasing and the birth rate sharply falls down.

Persons aged 65 or over will account for 30% of the EU27's population by 2060, compared to a 17% share in 2010. The ratio of the number of working-age people to those aged over 65 will be reduced from 4 to 1 in 2008 to less than 2 to 1 by 2060.

The rate of **people aged 80 and over** will shift in Europe from about 4,4% in 2008 to 8% in 2035 and 12,1% in 2060.

The highest rates of increase will be registered in most EU12 Member States, such as Cyprus (+169% between 2008 and 2035), Slovakia (+139% between 2008 and 2035), Slovenia (+134% between 2008 and 2035) and Czech Republic (+133% between 2008 and 2035).

Nevertheless the highest shares of inhabitants aged more than 80 years will be registered in some of the bigger European countries: Italy (9,1% in 2035 and 14,9% in 2060), Spain (11,3% in 2035 and 14,5% in 2060), Germany (8,9% in 2035 and 13,2% in 2060) and Greece (7,9% in 2035 and 13,5% in 2060).

These changes will have a strong impact on the future design of healthcare systems throughout Europe, since they will likely result in a considerable increase in the need for professional services, social care and healthcare provision.



1.2 FINANCIAL RESOURCES

The amount of **total health expenditure per capita** in 2010 was \$3.230 in EU27, with wide variations around this average value: \$3.708 in EU15, \$1.398 in EU12.

According to OECD publication "Health at a Glance: Europe 2012", total health expenditure per capita decreased in real terms in 2010 in many European countries (mainly in EU12), reversing a trend of steady increase during the years 2000-2009. On average across EU member states, total health expenditure per capita increased in real terms between 2000 and 2009, but this was followed by further and deeper cuts in 2010 due to the financial crisis. While government health spending tended to be maintained at the start of the economic crisis, cuts in spending really began to take effect in 2010 in response to budgetary pressures and the need to reduce large deficits and debts².

A major part of health expenditure is handed over to the public finance (<u>*Chart*</u>). It includes expenditure incurred by state, regional, local governments and social security schemes, encompassing publicly-financed investment in health facilities and capital transfers to the private sector for hospital construction and equipment. In 2010, the share of **public sector health expenditure** was higher than 60% in all European countries, with four exceptions: Cyprus (41,5%), Bulgaria (54,5%), Switzerland (59,2%) and Greece (59,4%).

Between 2000 and 2010 the **share of public spending on healthcare** markedly rose in the Netherlands (+16.6 p.p.), Estonia (+10.9 p.p.), and Romania (+10,4 percentage points) and whereas it sensibly declined in Slovakia (-23,5 p.p.), Malta (-7,00), Czech Republic (-6,6 p.p.) and Bulgaria (-6,4 p.p.).

http://dx.doi.org/10.1787/9789264183896-52-en

² OECD (2012), "Health expenditure per capita", in *Health at a Glance: Europe 2012*, OECD publishing.



Luxembourg									84%
Netherlands	'				1	86%	14%	6	6
Denmark	· · · · ·		1		85%	15%			
Austria				7	8% 22	%	ī		1
Germany	- · ·		1	7	7% 23%	6			1
Switzerland			1	59%	41%	1			
France				78%	22%				1
Sweden				81%	19%				
Belgium				75%	25%				1
nited Kingdom	· · · · ·			84%	16%				1
EU 15				78%	22%				
Ireland			69	% 31%	6				
EU			76%	24%		i			1
Finland			75%	25%					
Italy]		78%	22%					
Spain			73%	27%					
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zech Republic		84%	16%		1 				
Greece		59%	41%		 			1	
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Slovakia	66	5% 34	4%		1 1 1				
Poland	73%	27%			 			1	
Hungary	69%	31%			1			i.	
EU 12	72%	<mark>28</mark> %			 				
Estonia	79%	<mark>2</mark> 1%	i i		1			l	
Lithuania	73%	<mark>27</mark> %			 			I	
Cyprus	42% 5	8%			 			1	
Latvia	61% 39	%			 			į	
Romania	78% 22	%			1 			1	
Bulgaria	55% 45%				1				1





About a third of total **health expenditure supports the delivery of inpatient care**. This means that a third of health payments finances running expenses, excluding investments and capital outlays, of inpatient institutions for acute, chronic and convalescent care. All funds allocated to outpatient institutions or outpatient hospital departments are excluded from this computation. They are covered under ambulatory care expenses. Nevertheless, this separation is sometimes not statistically possible for some countries, hence a quote of overlap must always be assumed.

In 2010, expenditure on inpatient care represented on average 35% of overall healthcare spending, ranging from 19,6% and 20,1% respectively in Portugal and Slovakia, to 50,2% in the Netherlands and 46.3% in Italy (*Chart 2*).

Here, only those countries for which complete data are available are considered, but the information provided is sufficient to remark the importance of the inpatient sector in the overall health system.

A common feature to all the European countries is the massive predominance of **public funding in inpatient care**: even if a part of the total health expenditure is always funded by private insurances and out-of-pocket payments, almost the entire amount of inpatient health expenditure is publicly financed.

Between 2000 and 2010, expenditure on inpatient care has been growing faster than the total health expenditure. In most European countries spending on inpatient care as a percentage of overall healthcare spending remained, more or less, the same or decreased, as a result in several cases of policies aiming at controlling expenses, gain efficiency and increase productivity in hospitals. In Sweden and in the Netherlands, spending on inpatient care as percentage of total health expenditure increased more than 10% from 2000 to 2010 and respectively: 23,9% and 13,6%.





CHART 2. EXPENDITURE ON INPATIENT CARE AS PERCENTAGE OF TOTAL HEALTH EXPENDITURE, VALUES IN PPP\$ PER CAPITA - YEAR 2010



2 HOSPITAL CAPACITY AND DELIVERY OF CARE

During the last decade almost all European countries made changes in their hospital services. The number of hospital facilities, as well as the number of hospital beds dropped off. Major efforts were addressed to delivering better services, increasing quality of care and safety of population and improving productivity.

The streamlining of care delivery started from a sharp reduction in the size of secondary care institutions and moved towards more integrated and efficient patterns of care, overcoming almost everywhere the hospital-centric model of healthcare system.

This was possible thanks to a package of financial and organizational measures addressed to improve coordination between acute care, tertiary care and social care, foster integration between primary, hospital and ambulatory care, increase the use of dayhospital and day-surgery and introduce new and more efficient methodologies of hospital financing in order to incentivise appropriateness (e.g. the replacement of daily payments known to encourage longer hospitalization - by prospective payment).

More or less in all European countries these policies led to changes in the management of patients within hospitals and offered a possibility for reducing the number of acute care hospital beds.

These policies also resulted in a regular reduction of the acute care average length of stay and, in several countries, in the changes in the rate of acute care hospital admissions.

Bed occupancy rates, on the other hand, registered more disparate trends across Europe, depending also from the demographic and epidemiological structure of population and from the specific organization of local, social and healthcare systems, i.e. the structure of primary care, the presence and the efficiency of a gate-keeping system, the modality of access to secondary care, availability of home care and development of community care.

2.1 GENERAL HOSPITAL PROVISION

In 2010, in Europe there were on average 2,7 hospitals for 100.000 inhabitants, ranging from 1 in Slovenia to almost 11 in Cyprus. There were on average 545 hospital beds every 100.000 inhabitants, ranging from about 273 in Sweden and 825 in Germany.

Between 2000 and 2010, the average **number of hospitals** decreased by about 7%, with values encompassed between -1,6% in Spain (equal to -12 hospitals) and -52,8% in Latvia (equal to -75 hospitals).

In the same period, the total number of hospital beds per 100.000 inhabitants decreased by about 15%. The only countertrend was registered in Greece, where their number increased by about 3%.

In most countries, the decrease in the total number of beds was accompanied by an increase in the number of private inpatient hospital beds. However, in 2010 the share of private hospital beds was still quite low in most countries of EU12 (in average around 13%), while it reached values little higher than 30% in some countries of EU15 (in average around 36%).



2.2 ACUTE CARE HOSPITAL PROVISION

In almost all European countries **acute care hospitals** represent more than half of the total number of hospitals (65% in average).

Between 2000 and 2010 the number of acute hospitals decreased significantly all over Europe. 280 acute care hospitals were closed in France, 245 in Germany, 66 in Latvia and 57 in Italy; their number almost decreased of 61% in Latvia and halved in Finland. In Estonia, the number of acute hospitals decreased more than one third (36%) and in Slovakia, Cyprus and Belgium by about one fifth (respectively 22%, 21% and 18%).

Between 2000 and 2010, the number of **acute care hospital beds per 100.000 populations** in Europe registered an average reduction of 17%, with a slightly faster decrease in the first five years: -10,3% between 2000 and 2005 and -7,4% between 2005 and 2010. The only exception was Greece, with an increase by 8% in the whole period (*Charts 3.1 and 3.2*).

The decrease was remarkable in all European countries. In EU15 it ranged between -1,3% in Netherlands and -30,4% in Italy; in EU12 it was encompassed between -13,9% in Bulgaria and -45,1% in Latvia.

Still, in 2010 there was a difference little higher than 20% in the total number of acute care beds per 100.000 inhabitants between EU15 (on average 352 beds) and EU12 (on average 435 beds).





CHART 3.1. ACUTE CARE HOSPITAL BEDS PER 100.000 INHABITANTS. EU15 PLUS SWITZERLAND - TREND 2000-2005-2010 Note: data for Greece refer to 2009 instead of 2010. Luxembourg: first available data refer to 2004 instead of 2000.





CHART 3.2. ACUTE CARE HOSPITAL BEDS PER 100.000 INHABITANTS. EU12 - TREND 2000-2005-2010



2.3 USE AND EFFICIENCY OF HOSPITAL CAPACITY

In the last ten years the healthcare reforms implemented all over Europe aimed at rationalizing the use and provision of hospital care, improving its quality and appropriateness, and reducing its costs.

These reforms brought to a fall in the number of hospital beds and resulted in a broad reduction of acute care admissions and length of stay, as well as in improvements in the occupancy rate of acute care beds.

HOSPITAL ADMISSIONS/DISCHARGES

The number of **acute care admissions** involves the entire pathway of hospitalization of a patient, who normally stays in hospital for at least 24 hours and then is discharged, returning home, being transferred to another facility or dying.

In 2010, the rates of acute care hospital admissions in the European countries were quite dissimilar, ranging from 9,2% in Cyprus to 26,5% in Austria (<u>*Chart 4*</u>).

Between 2000 and 2010 some countries reduced their rate of admissions or at least stabilized it.

The European average decreased by almost 1 percentage point, from 16,5% to 15,6%. The most remarkable rates of reduction were registered in Latvia, Hungary, France and Italy, respectively -6,0; -4,4; -3,8 and -3,2 percentage points.

In some countries, the rates increase between 0 and 1%: Portugal (+0,3%), Germany (+0,6%), Cyprus (+0,8%), United Kingdom (+0,9%) and Slovenia (+1%).

An increase of more than 1% was registered in the following countries: Malta (+1,3%), Austria (+2,1%), Netherlands (+2,4%) and Greece (+3,4%).

Hospitals in Europe: Healthcare data



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20																								
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	Cypru	Spai	ierland	Malt	ltal	enmar	ingdor	Irelan	Latvi	EU 1	tzerlan	Ξ	Estoni	Belgiur	Franc	Slovaki	loveni	Hungar	EU 1	Finlan	ldudi	thuani	erman	Austri
			Neth			0	United K				Swit						01				Czech F		5	

CHART 4. RATE OF ACUTE CARE HOSPITAL ADMISSIONS/DISCHARGES (PERCENTAGE) - TREND 2000-2010

Note: data for Bulgaria, Luxembourg, Poland and Romania are not available. Data for Greece, Portugal and Sweden refer to 2007, data for Belgium and Cyprus refer to 2008, data for Austria, Germany, Ireland, Italy, Netherlands, Spain, EU and EU15 refer to 2009. Data for France refer to trend 1998-2009.



LENGTH OF STAY

The **average length of stay** measures the total number of occupied hospital bed-days, divided by the total number of admissions or discharges.

In 2009, the average length of stay in acute care hospitals roughly ranged from 4 to 8 beddays, in all the European countries.

Between 2000 and 2009, almost all European countries were able to reduce the length of stay by 1 bed-day in average <u>Chart 5</u>). The exceptions were the smallest countries Malta and Cyprus but also France, where the figure was almost stable in the year under analysis.

In EU12 the average reduction was 1,4 bed-day. In fact, the most relevant improvements happened in Slovakia (-2,7 bed-days) and Latvia (-2,4 bed-days). In EU15, the reduction was in average 1 bed-day. The Netherlands is the country which registered the most significant decrease (-3,4 bed-days).

Hospitals in Europe: Healthcare data





CHART 4. AVERAGE LENGTH OF STAY IN ACUTE CARE HOSPITALS - TREND 2000-2009

Note: data for Bulgaria, Denmark, Poland and Romania are not available. Data for Greece refer to 2007, data for Belgium and Cyprus refer to 2008. First available data for France refer to 1999.



BED OCCUPANCY RATE

The **bed occupancy rate** represents the average number of days when hospital beds are occupied during the whole year and generally mirrors how intensively hospital capacity is used.

In 2009, the average acute care occupancy rate in Europe was equal to 75,6%, but the gap between the highest and the lowest rate was close to 37 percentage points. However, the lowest values were registered in the Netherlands, with 52,7% and in Belgium, with 64,0%. The highest rates were in Ireland (89,2%), Cyprus (88,2%) and Switzerland (87,9%).

Between 2000 and 2009 there was no clear trend across Europe (<u>Chart 6</u>). In some countries the rate of occupancy of acute care hospitals increased, like in many countries of EU15, in other cases it dramatically decreased, like in the Netherlands (-13,0 percentage points) and Latvia (-12,4 percentage points). These large variations are usually due to changes in the number of admissions, average length of stay and the extent to which alternatives to full hospitalization have been developed in each country.

Hospitals in Europe: Healthcare data





CHART 6. BED OCCUPANCY RATE FOR ACUTE CARE HOSPITALS (PERCENTAGE) - TREND 2000-2009

Note: data for Bulgaria, Denmark, Finland, Luxembourg, Poland and Romania are not available. Data for Belgium, Cyprus, Italy and EU15 refer to 2008. Data for Greece refer to 2007.



2.4 HOSPITAL ACTIVITY

The amount of activities performed and the dimension of the use of hospital resources can vary a lot from one country to another.

To discuss this issue and to better analyse the different patterns of care adopted by hospitals in the European countries, some high-volume and high-cost procedures have been examined: surgical procedures, caesarean sections and a particular typology of cancer - malignant neoplasm of trachea, bronchus and lung.

Data and information presented in the following paragraphs actually allow identifying wide and sometimes unexplained variations in the use of different procedures across countries, highlighting the possible overuse or underuse of certain interventions in each one of them.

They can stimulate further analysis within countries, especially when explanations about the variation in clinical practices and outcomes have to be found in regional and local situations.

Yet, these finding can highlight the areas deserving further comparisons, fostering knowledge exchange and mutual learning for all the States of the European Union.

INPATIENT SURGICAL PROCEDURES

Inpatient surgical procedures are defined as all invasive therapies performed as in-patient surgery, where in-patient surgery is a surgical operation or procedure that is performed with an overnight stay in an in-patient institution³.

In 2009, at least 43% of population hospitalized was concerned by surgical procedures (<u>*Chart 7*</u>), excluding the lowest value of Slovakia (3%). The highest rates of inpatient surgical procedures to inpatient admissions were registered in Hungary (80%), Denmark (77%) and the UK (67%). In particular, about **6.778 inpatient surgical procedures per 100.000 inhabitants**, 6.599 in EU15 and 8.148 in EU12, were performed in 2009 in Europe.

Only 4 countries had more than 10.000 procedures per 100.000 inhabitants: Hungary, (14.475), Austria (14.333), Finland (10.840) and Denmark (10.058).

Adversely, less than 5.000 procedures per 100.000 inhabitants were performed only in Slovakia, with a particularly low value (458), Ireland (3.154), Cyprus (3.367), the Netherlands (4.065), Spain (4.865) and Italy (4.951).

Between 2000 and 2009 the registered number of inpatient surgical procedures per 100.000 inhabitants was almost stable in average in EU (+0,7%). It increased in EU12 (+16%) and decreased in EU15 (-1,4%).

The increase in EU12 was greatly affected by the data registered in Bulgaria, where the number of surgical procedures increased almost the 88%: from 299.723 in 2000 to 522.832 in 2009. Significant decreases characterized Slovakia and Germany, where the number of inpatient surgical procedures dropped off respectively about 26% and 19%.

³ WHO and OECD definitions.



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CHART 7. COMPARISON BETWEEN INPATIENT CARE SURGICAL PROCEDURES AND INPATIENT CARE ADMISSIONS WITH THE PERCENTAGE OF SURGICAL PROCEDURES ON TOTAL ADMISSIONS HIGHLIGHTED IN THE BOXES - YEAR 2009 Note: All data refer to 2009 except for Belgium and Cyprus (year 2008) and Czech Republic (year 2010). Data for Bulgaria, Greece, Luxembourg, Malta, Portugal, Poland, Romania and Sweden are not available.



CAESAREAN SECTIONS

In the last decade, the rate of caesarean deliveries in the European countries has significantly increased.

In 2009, about a quarter of children was delivered by means of **caesarean section**, and this value reached up to a third of total deliveries in Italy (38,3%) and Portugal (36,2%), while Switzerland and Bulgaria have around 32%.

The countries where the caesarean deliveries were less common, representing less than 20% of the total deliveries, were the Netherlands⁴ (14,3%), Finland (15,7%) and Sweden (16,7%), Slovenia (17,9%) and France (18,8%).

Between 2000 and 2009 the rate of caesarean sections (*Chart 8*) strongly increased in Bulgaria (+168%), Czech Republic (+114%), Slovenia (+94%), Romania (+93%) and Slovakia (+87%).

Conversely, less relevant rates of increase happened in Finland (+6%), Portugal (+8%), Malta (20%), Italy (21%) and Germany (26%). In the other European Countries, the rate of caesarean section increased in average around the 40%.



CHART 8. CAESAREAN SECTIONS PER 1000 LIVE BIRTHS - TREND 2000-2009

Note: All data refer to 2009 except Sweden (2006), France and the Netherlands (2007).

⁴ In the Netherlands home births are a usual option for women with low-risk pregnancies: in 2004 30% of all births occurred at home (Euro-Peristat, 2008).



In general terms, as highlighted in some OECD publications, reasons for the increase in the number of caesarean deliveries relate to scheduling convenience for physicians and patients, reductions in the risk compared to normal delivery, malpractice liability concerns, and some structural and social factors such as the rising number of childbirths among older women and the rise in multiple births resulting from assisted reproduction. The implications of this kind of intervention are debated. Main concerns regard the increase in maternal mortality, maternal and infant morbidity, and complications for subsequent deliveries.

Nonetheless, it can be noticed that main indicators concerning health status of infants and mothers show a positive trend over the European countries in the last ten years. In fact, between 2000 and 2010, the number of live births per 1000 inhabitants has been generally stable and the neonatal deaths have decreased especially in EU12.

In particular, the **early neonatal deaths**, which indicate the number of deaths in infants under 7 days of age in a year, decreased in the European Union by about one unit per 1000 live births (from 2,73 to 1,97). In EU12 they dropped off about 2 units (from 4,41 to 2,64) and the difference in EU15 reduced from 2,31 to 1,80 units (*Chart 9*).

These data depend from a wide range of clinical and social factors. They of course are not necessarily directly linked to modes of delivery and caesarean interventions, nonetheless they are a small element that helps to contextualize this situation analysing it from a broader perspective.





	Caesarean sec 2000-2009	tions per 1000 live births - difference												
	Early neonatal deaths per 1000 live births - difference 2000-2009													
Austria	-25%	67%												
Bulgaria	-20%	144%												
Czech Republic	-47%	65%												
Denmark	-42%	42%												
Estonia	-63%	42%												
Finland	-10%	6 0%												
France	-19%	10%												
Germany	-12%	45%												
Hungary	-49%	55%												
Ireland	-39%	23%												
Italy	-22%	15%												
Latvia	-18%	55%												
Lithuania	-43%	65%												
Luxembourg	-49%	58%												
Malta	-89	% 26%												
Netherlands	-28%	20%												
Portugal	-34%	30%												
Romania	-40%	103%												
Slovakia	-42%	68%												
Slovenia	-59%	63%												
Spain	-24%	16%												
Sweden	-26%	15%												
Switzerland		4% 69%												
United Kingdom	-17%	16%												
EU	-26%	28%												
EU 15	-21%	22%												
EU 12	-37%	72%												

CHART 9. CAESAREAN SECTIONS AND EARLY DEATHS RATES PER 1000 LIVE BIRTHS - DIFFERENCE IN PERCENTAGE BETWEEN 2000 AND 2009 Note: All variations refer to the period 2000-2009 except: Caesarean sections in France and the Netherlands (trend 2000-2007), Sweden (trend 2000-2006). Data for Belgium, Cyprus, Greece and Poland are not available.



MALIGNANT NEOPLASMS OF TRACHEA, BRONCHUS AND LUNG

Cancer is one of the leading causes of death and illness throughout Europe and it gathers great efforts from governments of Member States as well as from the European Union to tackle this big burden through interventions of prevention, case and operational management, effective use of resources and increased quality of care.

In Europe, about 65% of mortality of people aged between 35 and 65 is related to cancer. Malignant neoplasm of trachea, bronchus and lung are among the most diffuse kind of tumour. In particular, lung cancer is the leading cause of cancer mortality in the European population: it is responsible for 24,5% of cancer deaths for both sexes, increasing up to almost a third of cancer related deaths among male people⁵.

In the following paragraphs some data concerning the hospital activity related to trachea, bronchus and lung are compared. Data are extracted from the Hospital Morbidity Database (HMDB) published by the WHO Regional Office for Europe. The main diagnosis or reason for the hospital admission is coded using the International Shortlist for Hospital Morbidity Tabulation (ISHMT) – a list of 149 categories where available data in ICD-9 and ICD-10 are aggregated⁶.

The rate of incidence represents the number of new cases per a specific population number. It is the number of patients with newly diagnosed illness in a specified period of time.

In 2008, the **rate of incidence per 100.000 inhabitants** of malignant neoplasm of trachea bronchus and lung in EU was 55,9. It was 52,1 ten years before.

The highest rates were registered in Hungary (118,5 new cases per 100.000 inhabitants), Denmark (76,6 new cases per 100.000 inhabitants), Belgium (67,1 new cases per 100.000 inhabitants) and UK (66,6 new cases per 100.000 inhabitants). The lowest rates⁷ happened in Cyprus (25,6), Portugal (25,9), Luxembourg (29,9), Malta (36,2) and Sweden (36,6).

In 2010, the **age-standardized admission rate per 100.000 inhabitants** was below 50 in Cyprus (30,0), Portugal (35,0) and Malta (40,9). Conversely, it was very high, being over 150 in Croatia (152,5), Germany (167,0), Austria (216,0) and Hungary (269,2).

In the same year, the **average length of hospital stay** for the treatment of these kinds of cancer was 9,5 bed-days, whereas the **percentage of day-cases** was 14,9% (<u>*Chart 10*</u>).

The highest percentages of day-cases were registered in the UK (61,5%), Ireland (45,1%), the Netherlands and Austria (39%). Hungary, Malta and the Netherlands had the lowest average length of stay in bed days, respectively: 5,6; 5,7 and 6,4.

Instead, the higher same-day rate of hospitalization, the length of stay in Luxemburg, Ireland and Portugal, was around 12 (3 points over the European average).

⁵ Source of data: ECO/OEC. European Cancer Observatory, Observatoire Européen du Cancer. International Agency for Research on Cancer, Lyon, 2009.

⁶ The Hospital Morbidity Database (HMDB) contains hospital discharge data by detailed diagnosis, age and sex, which were submitted by European countries to the WHO Regional Office for Europe. Data presented are as provided by countries and may contain some coding errors or be effected by specific national practices of applying ICD codes for certain reasons of hospitalization.

⁷ Last data available for Malta and Cyprus refer to 2007.





CHART 10. MALIGNANT NEOPLASMS OF TRACHEA, BRONCHUS AND LUNG – AVERAGE LENGTH OF STAY AND PERCENTAGE OF DAY CASES - YEAR 2010 Data refer to the last available year: 2009 or 2010, with the only exceptions of Spain (2005) and Portugal (2008). Data are not available for Bulgaria, Estonia, Greece, and Romania. . Source: European hospital morbidity database. Copenhagen, WHO Regional Office for Europe, [2012]



3 HEALTHCARE AND HOSPITAL WORKFORCE

In the EU, it is estimated that almost 9% of the working population, including health professionals, administrative workers and labourers, work in the health and social sectors.

The financial constraints, also consequence of the economic crisis, are leading in most European countries to a reduction in the resources available for healthcare professionals, reducing the possibilities of hiring new staff. At the same time, the number of healthcare professionals is expected to dramatically drop off over the next decade due to ageing while several countries, especially in central and Eastern Europe are experiencing migrations of their healthcare workforce.

These trends are likely to have major impacts on the hospital sector, since inpatient care, alone, absorbs about a third of the healthcare resources and hospital sector gives work to half of active physicians.

The European countries, European Organizations and EU institutions are discussing the possible impacts and achievable solutions to these issues. Several countries are changing their patterns of care. For example, they are shifting competencies from doctors to nurses, creating new educational pathways and bachelor degrees addressed to nurses. In many cases they are relieving the burden of hospital care by enforcing primary care institutions and community services.

3.1 HEALTH PROFESSIONALS' PROFILE

The profile of health professionals and the way they are managed differs a lot throughout Europe. The increasing diffusion of part-time working, the progressive ageing of hospital staff, high rates of early retirements and decrease in the total number of new medical professionals are common features and make comparison difficult. Moreover, the free movement of professional within the European internal market sometimes create distortions in the interpretation of actual workforce figures.

A solution would be the use of Full Time Equivalents (FTE), which measures the real amount of work absorbed by an activity. Unfortunately the FTE method is still applied differently. Figures, such as the number of working hours per week, may vary from country to country, data are often gathered and treated with different levels of accuracy and not always consistently available.

This section will then compare the figures about healthcare professionals considering the crude number of physicians and nurses physical persons, normally compared to the countries' population.

Box 1. PHYSICIANS AND NURSES: DEFINITIONS

The **number of physicians** includes: all active physicians working in public or private health services, including health services under other ministries than the Ministry of Health; interns and residents (i.e. physicians in postgraduate training); stomatologists, who are physicians with the specialty of oral diseases/surgery (In some Eastern European stomatologists are dentists, practising dental care only, in this case they should be excluded from the total number of physicians).

The **number of nurses** includes: qualified nurses; first- and second-level nurses; feldschers (physician's assistants - a category of health personnel present in some Eastern European countries); midwives; and nurse specialists. It excludes: nursing auxiliaries and other personnel without formal education in nursing.



PHYSICIANS AND NURSES

An overview of the composition of the healthcare workforce (physicians and nurses) in the European Union over the last decade shows the presence of about 1.100.000 doctors and 3.100.000 nurses, with a more or less stable rate of 3 nurses per each doctor in average.

In 2010, in the European Union there were **about 3 physicians and almost 8 nurses every 1.000 inhabitants**. In the same year graduated **about 10 physicians and 30 nurses every 100.000 inhabitants** (*Charts 11 and 12*). Unfortunately, these figures do not fairly mirror the situation across countries. Comparing the values in EU12 and EU15 a sharp difference in the total number of physicians and nurses can be observed.

Almost all EU12 Member States had in 2010 a number of physicians per thousand inhabitants lower than the EU average (3,3). The only

Between 2000 and 2010 the number of physicians per 1000 inhabitants increased by 22,8% in EU15 and 2,7% in EU12. The number of nurses per 1000 inhabitants increased by 13,3% in EU15 and by 4,5% in EU12.

exceptions were Lithuania, Bulgaria and Czech Republic, though with less than 3,7 doctors per 1.000 inhabitants.

In the same year, all EU12 Member States had a number of nurses per thousand inhabitants of 1 to 4 points lower than the EU average (8,3), with the only exception of Czech Republic and Slovenia, which values equalled the average.

In EU15 figures seem to generally provide some evidence of the policies implemented for the management of healthcare professionals, especially concerning the allocation of resources and responsibilities between doctors and nurses.

Greece and Austria had in 2010 the highest rates of doctors per population. At the same time, Greece had also the lower rates of nurses per populations. These data clearly represent the situation in countries having consolidated doctor-based systems. Conversely, countries where the shift of competencies from physicians to nurses is advanced, like Luxemburg, Belgium and Denmark, registered in 2010 a share of doctors per population lower or equal than the European average, and the highest rates of nurses (16 nurses per 1.000 inhabitants).

Between 2000 and 2010 the number of physicians graduated per 100.000 inhabitants increased by 7% in EU15 and by 14% in EU12.

The number of nurses graduated per 100.000 inhabitants increased by 20% in EU15 and by 39% in EU12.

The situation concerning the number of nurses and doctors graduated is much more complex and fragmented.

In 2010, there were 10 doctors graduated per 100.000 inhabitants in Europe, encompassed between 7,9 in Bulgaria and 17,6 in Ireland. The only exceptions was Austria (22,8)⁸, where this number had registered an increase since the beginning of 2000s.

⁸ Last data available for Austria refer to 2009 instead of 2010.



The average number of nurses graduated per 100.000 inhabitants in Europe in 2010 reached 32. In EU12 this value is slightly higher than the EU average and equal to 35. Conversely, in EU15 countries, there are in average 30 nurses graduated per 100.000 inhabitants. Trend is variable in the all Europe: value decreased from 2000 to 2010 and it is lower than the average in Bulgaria (4,0), Malta (11,5) and Czech Republic (12,2).

Instead, figures massively over the average characterized Finland (58,7), Romania (60,6) and Slovenia (66,8). Finland registered a high value despite a continuous reduction between 2000 and 2010 (-15%). In Romania the value increased in the last decade (+5%), but the trend was variable.

The major increases in the number of graduated nurses between 2000 and 2010 happened in Portugal, Italy, Latvia and Poland. In some cases this was due to the introduction of bachelor degrees and, in general, new career opportunities for nurses. Except for Portugal, where trends of nurses and doctors graduated is almost equal, in all of these countries, trends in the number of nurses graduated is higher than trends in the number of graduated doctors. Once more it puts some evidence on countries' healthcare system organization, testifying how the healthcare systems in these countries continue to be doctors-led and the central element of the system is likely to be represented by the hospital inpatient care.

Hospitals in Europe: Healthcare data





CHART 11. NUMBER OF PHYSICIANS PER 100.000 INHABITANTS AND PHYSICIANS GRADUATED PER 100.000 INHABITANTS - YEAR 2010

Note: For Denmark, Italy and the Netherlands last data available for Number of Physicians per 100.000 inhabitants was 2009. For Finland, data refer to year 2008.

For Sweden, data refer to year 2009.



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	Spain	Portugal	Italy	Austria	Netherlands	EU 15	France	Finland	United Kingdom	Germany	Ireland	Denmark	Belgium	Switzerland	Luxembourg	Bulgaria	Latvia	Romania	Poland	EU 12	Hungary	Estonia	Malta	Lithuania	Slovenia	EU	Czech Republic	

CHART 12. NUMBER OF NURSES PER 100.000 INHABITANTS AND NURSES GRADUATED PER 100.000 INHABITANTS - YEAR 2010

Note: For Denmark data refer to 2008. Last data available for Number of Nurses is 2008 for the Netherlands and 2009 for Finland and Greece. Last data available for Number of Nurses graduated in Austria is 2009.



The following chart is meant to highlight the most important trends in the number of physicians and physicians graduated in the European countries. It compares the variation in the total number of physicians and the variation in the number of physician graduated per 100.000 inhabitants (*Chart 13*).

The time period considered is 2000-2010 for reason of simplicity and because data are more consistent. All countries are represented except Cyprus, Luxembourg and Malta whose data are not available or incomplete.

Countries of EU15 are blue, countries of EU12 are pink.

- Most countries are situated in the quadrant right aloft increase both in the total number of physicians and in the number of physicians graduated – with some notably differences:
 - in Austria, Germany, Greece, Sweden and United Kingdom the increase in the total number of doctors was higher than the increase in the number of doctors graduated;
 - in Hungary, Ireland and Finland the increase in the total number of physicians was lower than the increase of the number of physicians graduated;
 - conversely, in Czech Republic, Denmark, Latvia, Lithuania, Portugal and Slovenia the increase in the number of doctors graduated was much higher than the increase in the total number of doctors; in particular in Latvia, Slovenia and Portugal the number of doctors increased less than 25 percentage points, while the number of graduated more or less doubled;
 - In Italy and France the variations in the total number of doctors were quite limited, but the physicians graduated decreased just by 3 percentage points in Italy, and by 8 points in France.
- Poland and Estonia are the only countries to be localised in the quadrant left aloft decrease in the total number of physicians and increase in the number of physicians graduated;
- Slovakia is in the quadrant at the bottom left decrease in both considered parameters – the variation in the number of physicians graduated is three time higher the variation in the total number of physicians.
- Many countries are also localised in the quadrant at the bottom right increase in the total number of physicians and decrease in the number of physicians graduated – and also here there are some notably differences:
 - In Bulgaria the increase in the total number of doctors was almost 10%, but the decrease in the number of doctors graduated was three time higher;
 - Belgium and Spain were characterized by small variations both in the total number of doctors than in number of doctors graduated. In Spain, these variations were higher than in Belgium;
 - In the Netherland and in Romania, the variation of total number of doctors was higher than the variation in the number of doctor graduated.





CHART 13. COMPARISON OF THE VARIATION IN THE TOTAL NUMBER OF PHYSICIANS AND THE VARIATION OF THE NUMBER OF PHYSICIANS GRADUATED IN EACH EU COUNTRY – DATA PER 100.000 INHABITANTS - Δ 2000-2010

Note: Where data referring to 2008 is not available the variation has been computed considering the closest year available.



4.2 HEALTH PROFESSIONALS' WORKING IN HOSPITALS

Statistical comparison of hospital staff is often limited. On one hand, this is due to the frequent lack of consistently-used measurement tools; on the other, this is linked to the development of outsourcing of auxiliary services (maintenance, catering, etc.) whose staff is no longer directly employed by the hospital, and thus no longer counted as hospital staff.

In general, the most available and reliable data show that in the last decade the greatest part of nurses and physicians in the European countries has been working in hospitals.

Complete data for nurses are available only in a few countries, and show a percentage of nurses working in hospitals not lower than 40% (Ireland) and up to 100% (Austria and Greece) between 2005 and 2010.

In 2010, **doctors working in hospitals** (*Chart 14*) were around 40 to 60% of the total number of physicians. Low rates were registered only in Belgium (23%) and Cyprus (26%). The highest rates were in Estonia (67%), Switzerland (68%) and Denmark (71%).

While relevant variation did not happen in any European country, between the beginning of 2000s and the end of the first decade, Greece registered a significant reduction of its physicians working in hospitals (-10,3 percentage points), while only Lithuania, Bulgaria Spain and Romania had a considerable increase (respectively +22,8%, +13,7%, +12,9% and 10,5%).





CHART 14. TOTAL NUMBER OF PHYSICIANS AND SHARE OF PHYSICIANS WORKING IN HOSPITALS - YEAR 2010

Note: data for Finland refer to 2008, data for Denmark, Italy and the Netherlands refer 2009. For Belgium and Greece last data available for Physicians working in hospital is 2009. For Sweden last data available for Total number of Physicians is 2009.



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