Performance of the Belgian health system

A first step towards measuring…

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Executive summary

Introduction

This brochure presents the current efforts of Belgium regarding the assessment of health care performance. These efforts have been compiled into a draft report entitled “A first step towards measuring the Belgian health system performance”, published in July 2010[1].

@ Please find the complete report on the website of the Belgian Health Care Knowledge Centre, www.kce.fgov.be, under the heading “publications”.

The report on the Belgian health system performance meets with 2 engagements:

- first of all, an engagement formulated in the governmental agreement of March 18, 2008[2] on public health: “The performances of our health system (including quality), are to be assessed on the basis of measurable objectives.”
- the second engagement, derived from the Tallinn Charter[3] on health systems of June 27, 2008 by which Belgium engaged itself, among other things, “to promote transparency and be accountable for health system performance to achieve measurable results”.

1 Vlayen J, Vanthomme K, Camberlin C, Piérart J, Walckiers D, Kohn L, Vinck I, Denis A, Meeus P, Van Oyen H, Leonard C., A first step towards measuring the performance of the Belgian health care system. Health Services Research (HSR), Brussels: Belgian Health Care Knowledge Centre (KCE), 2010, KCE Reports 128B (D/2010/10.273/26) with a French summary

2 Coalition agreement 2008-2011, March 18 2008.

3 The Tallin Charter: Health Systems for Health and Wealth, Ministers Conference of the WHO European Region on health care systems: “Health systems, health and wealth”, June 27, 2008.

The present report aims:

- on the one hand, to explore how to conceive a performance assessment system for the health system
- on the other hand, to examine its possible application in Belgium while developing a first set of indicators and measuring them.

The report was carried out under the responsibility of the Belgian Health Care Knowledge Centre (KCE), Institute of Public Health (IPH) and the National Institute for Health and Disability Insurance (NIHDI). The administrations in charge of social affairs and public health, whether regional, community based or federal, were also involved in the project.

During 18 months, following steps were taken together:

1. They drew up the inventory of the performance systems in the other countries in order to work out a conceptual framework for Belgium.
2. They made an inventory of the existing information and validated the tools.
3. They drew up the needs inventory for such a tool to the decision makers.
4. They wrote a draft report on the performance of the Belgian health system.

I. Inventory of existing information

Unlike our neighbouring countries, in particular the Netherlands and the United Kingdom, Belgium has limited experience and competences in evaluating the health system performance, a few initiatives and other studies set aside. However, none of those studies comply with the framework of a systematic assessment of the performance.

Moreover, the Belgian health data are not always available at the international level. If one examines the data concerning Belgium that are sent to international organizations such as the OECD and the WHO, one will notice that they are often incomplete or missing. The report reveals that in 2007, respectively 29 % of the OECD data and 73 % of the WHO data are missing or provided with a certain delay.

The gaps mainly concern mortality data and, to a lesser extent, chronic care. It is highlighted that international differences in interpreting those data exist. (See Example 1 “Accessibility of health care: medical density” p. 24).

II. Inventory of the needs

Stakeholders and decision makers have been questioned. They stress the importance of using a common tool that is shared between administrations:

- to validate international comparisons
- to assess health programs
- to improve the health system performance
- to be transparent and accountable.

III. Development of a Belgian health system performance framework

The “Conceptual and contextual framework of the health system performance” contains information that is specific to the Belgian health system and that is essential for interpreting the health system performance.

Having chosen a holistic approach of the health system performance, we distinguished 3 interconnected tiers: health status, non-medical determinants of health and the health system.

The health system includes 5 domains:

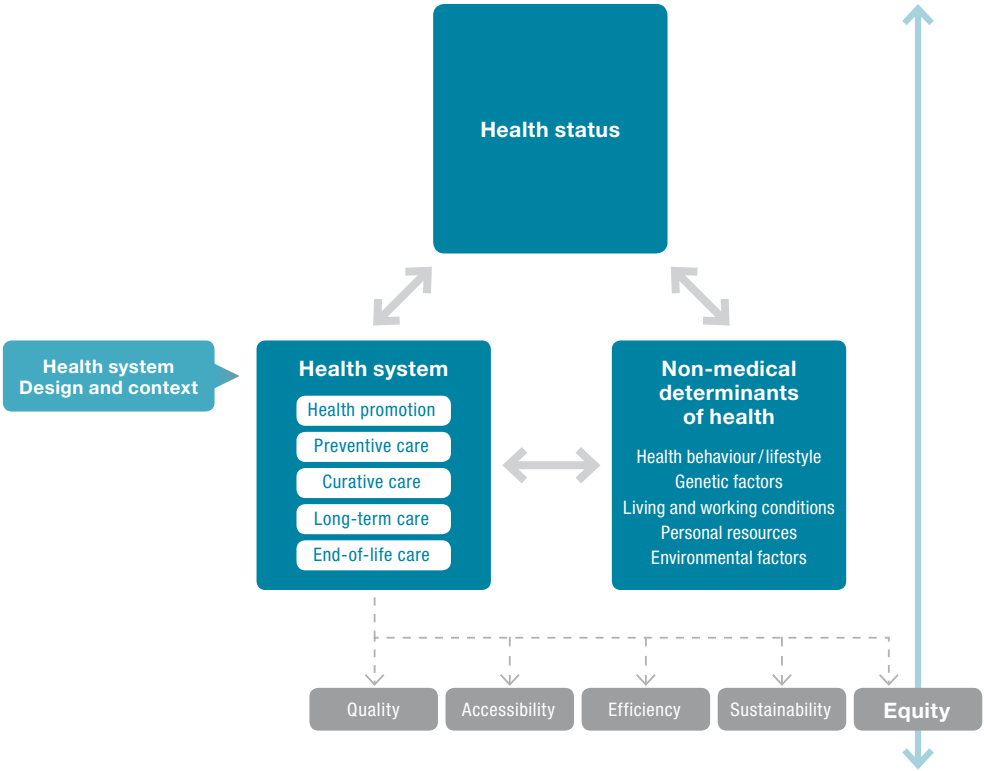
- health promotion
- preventive care
- curative care
- long-term care
- end-of-life care.

The performance of the health care system, which is presented and analyzed for each domain of the health system, is grouped into 4 main dimensions including:

- quality
- accessibility
- efficiency
- sustainability/endurance.

and an overarching dimension, equity which is presented across all tiers of the framework

Conceptualisation of the Belgian health system performance framework



IV. Definitions of the performance dimensions

Health care quality is further subdivided into 5 subdimensions:

- **Effectiveness:** the degree of achieving desirable outcomes, given the correct provision of evidence-based health care services to all those who could benefit but not to those who should not benefit.
- **Appropriateness:** the degree to which provided health care is relevant to the clinical needs, given the current best evidence.
- **Safety:** the degree to which the system has the right structures, renders services, and attains results in ways that prevent harm to the user, the provider and the environment.
- **Patient-centeredness:** the degree to which a system actually functions by placing the patient/user at the center of its delivery of health care.
- **Continuity:** the degree to which health care for specific users, over time, is smoothly organized within providers and institutions.

Accessibility is defined as the ease with which health services are reached in terms of physical access (geographical point of view, distribution), costs, time, cultural access (e.g. religion), psychological access and availability of qualified personnel.

Efficiency is defined as the degree to which the right level of resources (e.g. money, time and workforce) is found for the system (macro-level), ensuring that those resources are used to yield maximum benefits or results.

Sustainability is defined as the system's capacity:

- to provide and maintain infrastructure such as workforce (e.g. through education and training), facilities and equipment
- to be innovative
- to be responsive to emerging needs.

Equity is defined as the extent to which a system deals fairly with all concerned. Equity deals both with the reasonable repartition of the health care invoice and with the fair distribution of health care and its benefits among a population.

V. Strengths and weaknesses of the Belgian health system as appeared from the selected performance indicators

Selection of the indicators

In the draft report we deliberately chose to establish a limited set of **55 performance indicators** (see table p. 12 to 19). Our aim was not to be comprehensive in each (sub)dimension, but to choose valid indicators.

Our choices were led by pragmatism: we favoured the indicators validated in the foreign performance reports or proposed at international level, in order to allow, if necessary, a thorough comparison of values.

This is by no means a final set. In the future, this selection could develop towards more specific indicators for the characteristics of our health system, while keeping the aim of steering (measuring the trends).

The interpretation of the results is meant to be holistic: the degree of performance is estimated according to the balance between the various domains/dimensions.
In such a model, **one separate indicator on itself has little significance**. That does not keep us from focusing on certain aspects or formulating priorities.

Not all aspects defined within the conceptual framework are entirely described yet, due to the lack of valid indicators or information available. Thus, 11 indicators out of 55 are not yet documented (see table p. 12 to 19).

- Certain dimensions and subdimensions are badly or hardly covered:
  - patient-centeredness
  - continuity
  - equity
- Certain domains of the health care are not or insufficiently documented:
  - end-of-life care
  - chronic care
  - elderly care
  - psychiatric care.

In brief, the report gives a first overall impression of our system performance, to be interpreted with a lot of mitigation and caution.

Strengths and weaknesses of the Belgian health care system as appeared from selected performance indicators

Dimensions	Indicators
Effectiveness	**Preventive care/health promotion** 1. Breast cancer screening with mammotest of women aged 50-69 2. Other mammogram for women aged 50-69 3. Cervical cancer screening of women aged 25-64 4. Colorectal cancer screening of individuals aged 50 and older 5. Influenza vaccination 6. Vaccination coverage of children aged 2 7. Acute care hospitalization rate for pneumonia and influenza 8. Percentage of daily smokers 9. Consumption of fruit and vegetables 10. Alcohol consumption 11. Salt consumption 12. Breast feeding 13. Annual check-ups at the dentist 14. Decayed, missing, filled teeth at age 12 15. Cardiovascular screening of individuals aged 45-75 **Curative care** 16. Colon cancer 5-year survival rate 17. Infant mortality 18. Premature mortality 19. Breast cancer 5-year survival rate 20. Cervical cancer 5-year survival rate 21. In-hospital mortality rate after hip fracture 22. In-hospital mortality for community-acquired pneumonia **Long-term care** 23. Diabetes related major amputations

In black: main indicators / in blue: secondary indicators / in orange: undocumented indicators

	Strengths	Weaknesses	Evolutions	Suggested actions
	Moderate to good vaccination coverage			
		Low coverage of cancer screening compared to other countries	Increasing cancer screening coverage (+)	Increase efforts to improve cancer screening coverage
		Important differences in cancer screening coverage		
	Overall moderate results for health promotion	Inequalities in health promoting behaviour	Positive tendency in health promotion (+)	Increase efforts to reach socioeconomic less favourable groups
		Lack of national mortality data		The indicators will be available in 2011
		High in-hospital mortality rates (for hip fracture and pneumonia)		Further exploration needed with risk-adjustment
				Indicators to be developed

(+) positive evolution, (-) negative evolution

Strengths and weaknesses of the Belgian health care system as appeared from selected performance indicators

Dimensions	Indicators
Appropriateness	**Preventive care/health promotion** 24. Breast cancer screening with mammography of women aged < 50 or > 71 **Curative care** 25. Use and speed of diffusion of minimal and non-invasive surgical techniques 26. Use of special protocols or guidelines for high risk or complex processes 27. Number of caesarean sections per 1000 live births 28. Hysterectomy by social class **Generic** 29. Prescription according to guidelines

In black: main indicators / in blue: secondary indicators / in orange: undocumented indicators

	Strengths	Weaknesses	Evolutions	Suggested actions
		High rate of mammograms in group of women not eligible for population screening		Investigate appropriateness of these mammograms (KCE Project 2010)
	High rate of minimal invasive techniques		Quick penetration of minimal invasive surgical techniques (+)	Increase efforts with regard to EBM
	Number of caesarean sections below international average	High number of hysterectomies compared to other countries	Increasing number of caesarean sections (-) Decrease in overall number of hysterectomies (+)	
		High exposure of patients to medical ionizing radiation	Increasing medical radiation exposure (-)	Stimulate use of less irradiating procedures where appropriate

(+) positive evolution, (-) negative evolution

Strengths and weaknesses of the Belgian health care system as appeared from selected performance indicators

Dimensions	Indicators
Safety	**Curative care** 30. Incidence of serious adverse effects of blood transfusion 31. Incidence of health care related infections 32. Incidence of decubitus in hospitals 33. Incidence of post-operative surgical site infections **Long-term care** 34. Incidence of decubitus: a. In long-term care facilities b. In individuals at risk **Generics** 35. Number of nosocomial MRSA infections 36. Number of AB prescriptions 37. Medical radiation exposure
Continuity	**Curative care** 38. Average length of stay **Generic** 39. Number of people who are not registered with a GP
Accessibility	**Preventive care/health promotion** 40. Coverage of preventive child health care in high-risk groups **Long-term care** 41. Additional illness related costs for chronically ill patients **Generics** 42. Number of physicians and nurses 43. Insurance status of population 44. Amount of out-of-pocket payments of insured people

In black: main indicators / in blue: secondary indicators / in orange: undocumented indicators

	Strengths	Weaknesses	Evolutions	Suggested actions
	Relatively good inpatient safety		Decreasing incidence of MRSA (+) Increasing medical radiation exposure (-)	Continued information of population and prescribers
		Lenght-of-stay above EU15 average Relatively low number of people with a global medical file (GMD), with important regional differences	More registrations (+)	Investigate and develop alternatives to hospitalization Continued information of population and prescribers
	High insurance coverage Good social protection system, important geographical accessibility of curative care	Difficult to assess personnel availability Relatively high out-of-pocket expenses		A cadastre of health personnel is needed International comparability of SHA (System of Health Accounts) data

(+) positive evolution, (-) negative evolution

Strengths and weaknesses of the Belgian health care system as appeared from selected performance indicators

Dimensions	Indicators
Efficiency	**Curative care** 45. Surgical day case rates **Long-term care** 46. Use of home care technologies and proportion of renal dialysis patients using home dialysis
Sustainability	**Generics** 47. Health care expenditure according to the System of Health Accounts (SHA) 48. Maximum billing 49. Qualification level of health care providers 50. Medical graduates 51. Nursing graduates 52. Annual amount of Special Solidarity Fund 53. Number of GP's using an electronic medical file 54. Acute care bed days, number per capita 55. Number of acute care beds

In black: main indicators / in blue: secondary indicators / in orange: undocumented indicators

	Strengths	Weaknesses	Evolutions	Suggested actions
	Overall more efficient organisation of inpatient care (use of minimal invasive surgical techniques, clinical pathways) Surgical day case rate above international average	However, lenght-of-stay above EU15 average Inappropriate care	Recent evolution towards more ambulatory and day care (+)	Increase efforts to develop EBM
	High number of medical and nursing graduates Moderate use of computer for first-line health care providers	Relatively high total of health expenditures Unsure if personnel availability is tailored to the population's needs		Need for in-depth analysis of health personnel needs taking into account demographic and epidemiological evolutions and population health status Improve information technologies development

(+) positive evolution, (-) negative evolution

VI. What are the results?

The results are challenging[4] in more than one way.

1. Overall results

- In 2007, Belgium spent over 32 billion Euro on health, which accounts for one of the highest figures in Europe in terms of percentage of the gross national product or in terms of per capita expenditure (Example 2 p. 28).
- These figures enable Belgium to be in a good position with regards to availability of resources or with regards to the penetration of new techniques.
- Almost the entire population is insured by health insurance. However, the share of personal expenditure (out-of-pocket) seems high compared to other countries (Example 3 p. 30).

2. Do the results follow the invested means?

The report gives a mitigated answer to this question. The Belgian situation is not bad and evolves in a positive direction, but, in some fields we lag behind the European average.

- The markers relating to health care quality challenge with regards to appropriateness (Example 4 p. 34), safety (Examples 5 and 6 p. 38 and 42) and continuity of care. It is difficult to assess the overall effectiveness of the health care due to the lack of complete data on mortality and survival.

4 In order to illustrate this brochure, we have selected, from the documented indicators, those that we consider to be the most “robust” indicators.

- In the field of health prevention and promotion, even with vaccination rates in Belgium among the highest in Europe (Example 7 p. 46), efforts should be made with regards to cancer screening (cervical-PAP, breasts, colorectal) and with regards to health promotion, the coverage being very different according to the recipient's socioeconomic situation.

3. What is the final score?

This project brought about several positive points:

- the development of a continuous and periodical active collaboration between administrations, an essential conversion factor in the development and perception of the report
- a critical reflection on the nature of the data to be transmitted to the international level and on the conclusions that those international bodies draw on the Belgian situation
- a reflection regarding optimization and exploitation of data bases that are available in Belgium.

In the light of those encouraging results, the Belgian authorities decided to keep using the tool.

More concretely, a next report on the performance will be published at the end of December 2012 with the following objectives:

- to refine and adapt the set of indicators by taking into account the specific characteristics of the Belgian health system and to follow the system's evolution
- to add the domains and dimensions that are not yet covered in the present report.

Appendices

Examples of indicators illustrating certain performance aspects

Example 1 - Accessibility of health care: medical density

Medical density seemingly above the EU15 average

According to data of the Federal Public Service (FPS) Health, Food Chain Safety and Environment, **the absolute number of physicians** (i.e. all the physicians, whatever their activity level is) has increased from 43,620 in 2005 to 44,727 in 2007. Remarkable observation: the FPS data clearly demonstrate the increasing feminization of the medical profession.

When estimating the total number of active physicians in Belgium, one comes across different readings/interpretations. For its international comparisons, the OECD uses the number of physicians registered at the NIHDI. On that basis, one might consider that there are 4.03 physicians per 1000 inhabitants in Belgium, i.e. one of the **highest densities in the world**. See figure 1

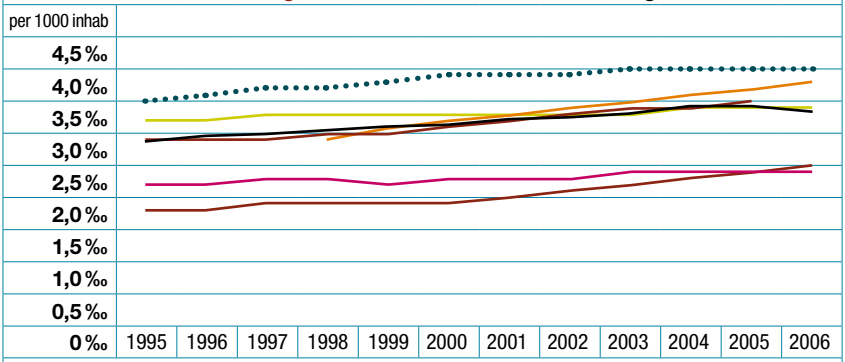
But if one considers only the profiled physicians (i.e. those physicians who performed at least one clinical service [consultation, visit, technical acts]), the number of physicians per 1,000 inhabitants drops to 3.18 in 2007, which is **below the EU15 average**.

That being so, nor the data concerning the physicians “in activity” nor those data on the profiled physicians take into account the real (clinical) activity level of those practicing physicians and consequently they can be regarded as overrated.

Indicator: number of physicians / 1,000 inhabitants
Dimension: accessibility of the health care

Figure 1 - Medical density per 1000 inhabitants in Belgium and in selected OECD countries - 1995-2006 Evolution

Belgium - France - Netherlands - Sweden - United Kingdom - United States - EU-15 average



Source: OECD

Establishing the right activity level is very important, as is shown by the example of the **general practitioners**.

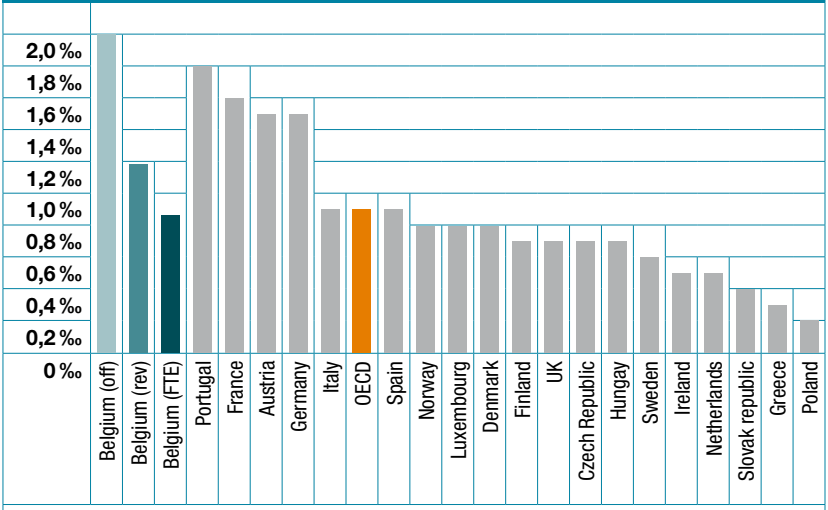
In 2008, the NIHDI published a census on the number of practicing general practitioners in 2005 with the corresponding number of full-time equivalents (FTE). Instead of the 20,800 physicians listed by the OECD, only 12,097 practicing general practitioners were found to have over 500 patient contacts a year.

Another method to assess the activity level is to calculate the number of full-time equivalents (FTE). That number has been estimated at 8,642 FTE (defined as 41-42 working hours per week and 14-27 patient contacts per day).

In Belgium, depending on the calculation method used, the density of general practitioners per 1.000 inhabitants (including the physicians in training) varies from 2,00 (number registered) to 1,19 (when considering those practitioners that have 500 or more patient contacts per year) and to 0,85 (in full-time equivalents).

In figure 2, it is possible to compare the results of these different calculation methods for measuring the number of general practitioners with the international figures.

Figure 2 - International comparison of the density of general practitioners in Belgium in 2007 - Density per 1,000 inhabitants - General practitioners



Source: OECD and NIHDI - Health Care Service - Department on Research, Development and Quality Promotion (RDQ)

- The 1e column represents the 2007 figure, provided to the OECD and calculated on the basis of the registered general practitioners (Belgian Official figures 2007).
- The 2e column represents the number of general practitioners that had 500 or more patient contacts (Belgium, revised figures 2008).
- The 3e column represents the number of full-time equivalent (FTE) general practitioners (Belgium, figures 2008 in FTE).

Example 2 - Sustainability of health care: health expenditure

Seemingly high health expenditure per inhabitant

In Belgium, the total health expenditure (THE) increased with 17.3 % between 2003 and 2007, and fluctuated between 9.5 % and 10.1 % of the GDP during this period. The THE-figures per capita increased from 3,066 US$ PPP[5] in 2003 to 3,461 US$ PPP in 2007, i.e. a 12.9 % increase.

In 2007 expenditure on curative care services accounted for more than 46 % of the THE. Of the 15,236 millions of Euro spent on curative care services, 9,003 millions of Euro (59 %) was spent on in-patients care.

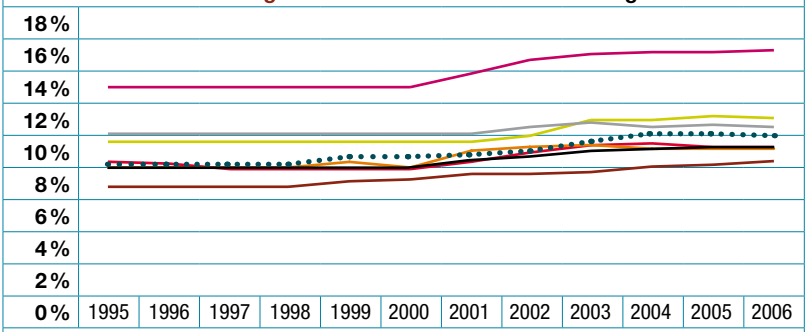
Expressed as a percentage of the GDP, Belgium has a THE-value that is among the highest in Europe. However, France, Germany and, outside Europe, the United States have a markedly higher THE. Similar results were found when expressed per capita. Again, caution is required when comparing total health care expenditure values. Indeed, when the registration of health expenditure is done with better quality and more sense of detail, the expenditure level will rise. The content may vary as well, so one must check the degree of detail in the expenditure that is compared before jumping to conclusions.
See figure 1 and 2

5 Purchasing Power Parity

Indicator: health care budget per inhabitant
Dimension: sustainability / endurance of health care

Figure 1 - Comparison of total health expenditure expressed as a percentage of GDP in Belgium and in selected OECD countries - Evolution 1995-2006

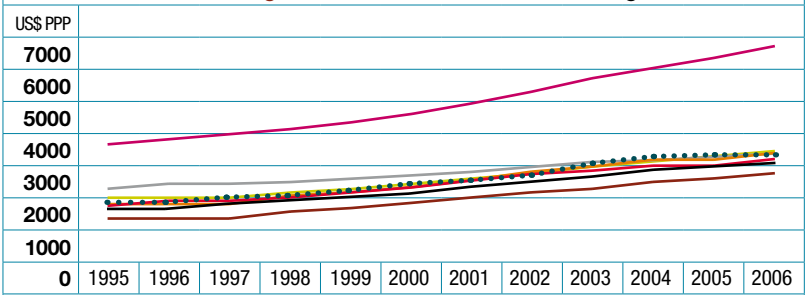
Belgium - France - Germany - Netherlands - Sweden - United Kingdom - United States - EU-15 average



Source: OECD

Figure 2 - Comparison of total health expenditure (in US$ PPP) per capita, GDP in Belgium and in selected OECD countries - Evolution 1995-2006

Belgium - France - Germany - Netherlands - Sweden - United Kingdom - United States - EU-15 average



Source: OECD

Example 3 - Accessibility of health care: financial coverage

The health insurance coverage seems to be outstanding, ...

In Belgium, almost the whole population is covered by the compulsory health insurance system; depending on the year, only between 0.6 and 0.8 % of the population is not ensured. A slightly higher percentage than that reported for the Netherlands (1.6 % in 2006), but slightly worse than other European countries, such as Sweden and the United Kingdom, that reach 100 %. See figure 1

... but the out-of-pocket expenditure appears to be high

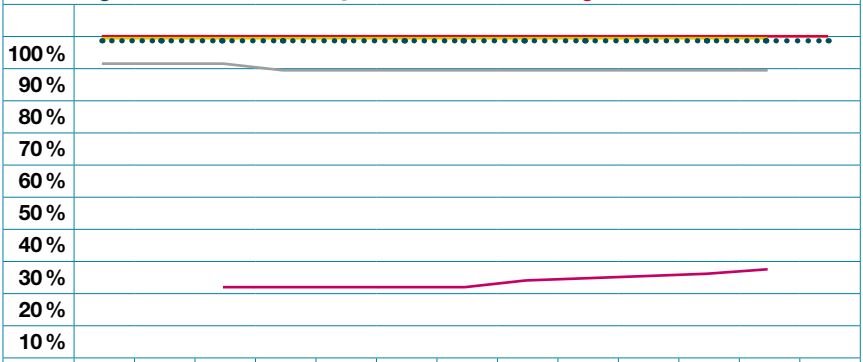
Despite of being insured in the compulsory system, households also spend money on the noninsured part of health care. Between 2003 and 2006, the out-of-pocket expenditure rose from 5.46 to 6.23 billion Euro. Per capita, the out-of-pocket expenditure rose from 526 Euro in 2003 to 586 Euro in 2007. Compared to other countries, Belgium has a high share of out-of-pocket expenses (19 % of total health expenditure in 2007). In the Netherlands, for instance, out-of-pocket expenditure constituted only 6.2 % of the total health care expenditure in 2006. In France and Germany the out-of-pocket share was 6.9 % and 13.7 % respectively.

The percentage of people covered by private insurance provided by a private insuring company rose from 37.9 % in 2001 to 49.8 % in 2007.

Indicators: insured population, amount of the insured persons' financial contribution
Dimension: accessibility of the health care

Figure 1 - The health insurance coverage in Belgium compared to selected OECD countries - Evolution 1995-2007

Belgium - France - Germany - Sweden - United Kingdom - United States



Source: OECD

Nethertheless, caution is needed when comparing personal expenditure in different health care systems. The personal participation seems to be higher in Belgium, but contains all paramedical purchases, all non-reimbursed drugs, medical devices and materials. The net premiums (premiums minus reimbursements) paid to private insurers or mutualities are included as well. See table 1

Belgium provides additional protection mechanisms for exceptionally high health expenditure

Patients suffering from chronic disease or special needs patients represent a particularly vulnerable group to additional health care costs. In Belgium, many social care nets are available to finance exceptional health care related costs. That involves, in particular, the maximum billing (MAB), the Omnio statute, the system of preferential treatment (BIM), the regulation on orphan drugs and the Special Solidarity Fund (FSS).

The MAB, for instance, was implemented in 2002. When certain income conditions are met, households whose total annual co-payments exceed a ceiling may benefit from reimbursement of co-payments. The first upper limit values are fixed at 450 Euro and 650 Euro for people with a low or modest income.

Since the implementation in 2002, the total MAB reimbursements rapidly increased to 304 million Euro in 2009.
In 2003, the MAB represented about 0.73 % of total health expenditure. In 2007, that percentage rose to 0.87 %.
In recent years, the MAB took a share of 1,3 % up to 1,4 % of the total public health expenditure.

Table 1 - Personal expenditure in health care in Belgium - Evolution 2003-2007

	2003	2004	2005	2006	2007
Out-of-pocket (% of total):					
absolute number (*)	5.458	5.812	5.743	5.691	6.227
% of total	19,50 %	19,00 %	18,50 %	18,00 %	19,00 %
per capita	526,05	557,68	548,11	539,53	586,03
Total health care expenditure (*)	**27.387**	**29.488**	**30.838**	**31.675**	**32.774**

(*) In million EUR

Source: FPS Social Security

Example 4 - Appropriateness of care

New surgical techniques have been adopted fast in Belgium

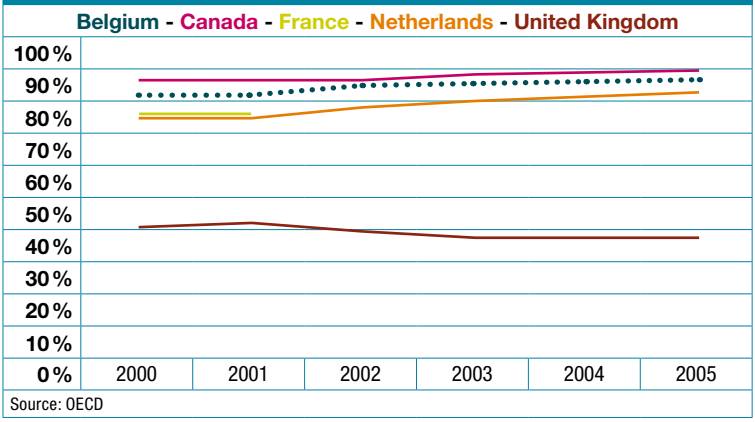
The use of minimal invasive surgical techniques is a means for reducing postoperative complications, length-of-stay and costs. However, these techniques are not considered appropriate for all patients and careful patient selection is needed.

Take for instance the case of laparoscopic cholecystectomy. From all the cholecystectomies performed in 2004, 85.6 % were laparoscopic. This rate slightly rose to 86.7 % in 2005. Between 2000 and 2005, the trend was slightly upwards in Belgium, in line with that of other countries. See figure 1

Importantly, to evaluate if this upwards trend is justified (i.e. appropriate), clinical information on the indication is needed for each individual patient receiving one of these procedures. Unfortunately, this information is lacking.

Indicators: minimal invasive surgical techniques, rates of caesarian sections, rates of hysterectomies
Dimension: appropriateness

Figure 1 - Penetration of laparoscopies in Belgium and in selected OECD countries - Evolution 2000-2005



Source: OECD

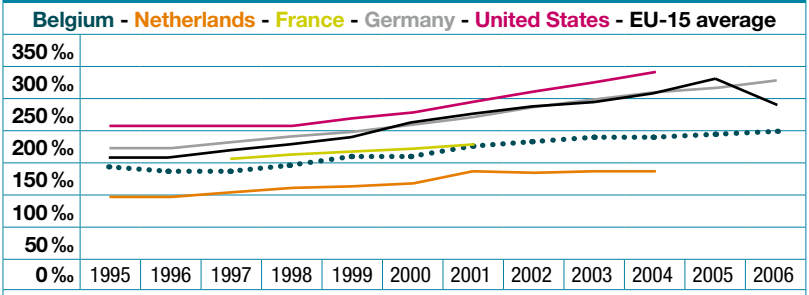
The rate of caesarian sections remains well below the EU15 average but is rising

Another classical indicator for appropriateness is the caesarian section rate. The indication for caesarian section delivery depends on the patient's characteristics, but it is known that individual physicianpractice patterns account for a significant portion of the variation in the caesarian section rate. As in other OECD countries, the number of caesarian sections per 1000 live births is increasing in Belgium (199 for 1,000 live births in 2006). Nethertheless, Belgium stays well below the EU15 average. Only The Netherlands, Finland and Sweden have a lower number. See figure 2

The high hysterectomy rate causes for debate, but is decreasing

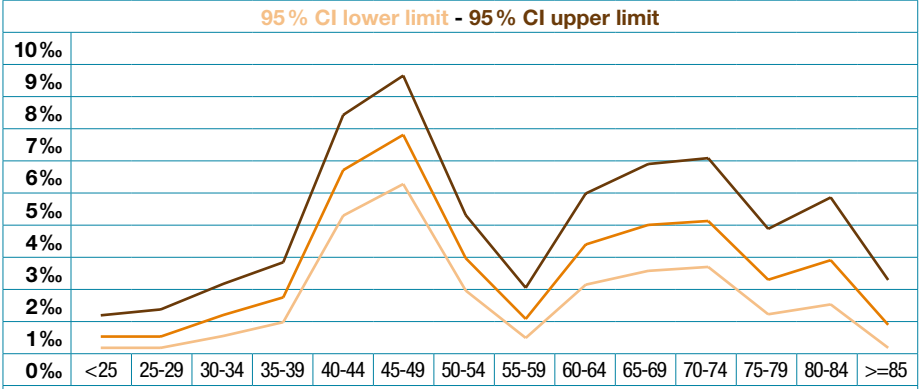
The hysterectomy rate has also been considered to be a relevant indicator of appropriateness, since a report of the National Alliance of Christian Mutual Benefit Societies was published in 1999.
It showed important regional variations in the incidence of hysterectomies in Belgium, raising an important question about the correct indication for the intervention. In 2007, the highest rates concerned 45-49-year-old women (6.82 for 1,000 women). Compared to other countries, Belgium shows a high rate (only vaginal hysterectomies). Between 2002 and 2007, the overall hysterectomy rate per 1,000 adult women (18+) fell from 3.67 to 2.80. See figure 3

Figure 2 - Percentage of caesarian sections for 1,000 live births in Belgium and in selected OECD countries - Evolution 1995-2006



Source: OECD

Figure 3 - Hysterectomy rate per 1,000 adult women by 5-year age group in 2007



Source: IMA, échantillon permanent 2002-2007

Example 5 - Safety: infections and antibioresistance

Luckily, the number of infections in the hospital is declining

Back in 2001-2003, the cumulative incidence and incidence density of postoperative infections were very high compared to other countries. Especially the incidence of infections after colon surgery and hip replacement were higher than in other countries.

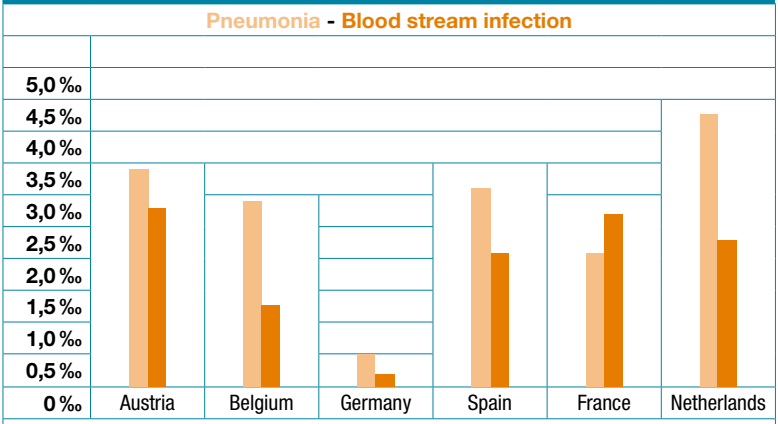
The incidence of nosocomial septicemia decreased from 7.2 infections per 1,000 admissions in 2005 to 6.1 in 2008. In the 1997-2003 period, 6 % of the patients staying in an intensive care unit acquired a pneumonia, while 2.1 % acquired a bacteraemia.

Compared to other European countries, Belgium has an average incidence of infection among patients staying in an intensive care unit. See figure 1

The incidence of nosocomial MRSA infections (Methicillin Resistant Staphyloccocus aureus) peaked in 2004 (3.25 per 1,000 admissions) but decreased to 2 per 1,000 admissions in 2008.

Indicators: incidence of health care related infections, incidence of postoperative infections of the surgical site, incidence of nosocomial infections with MRSA and number of antibiotic prescriptions
Dimension: safety

Figure 1 - Incidence of pneumonia and blood stream infection after a stay on the intensive care unit per 1,000 admissions



Source: HELICS (Hospitals in Europe Link for Infection Control through Surveillance)

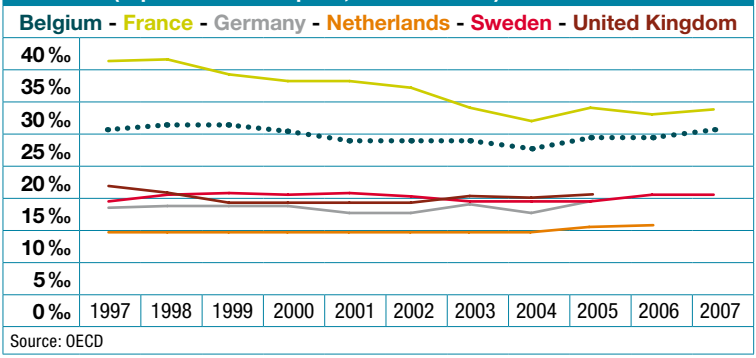
However, antibiotic prescriptions, the nidus of resistance, remain high in spite of awareness campaigns

Although the number of antibiotics prescriptions decreased between 1998 and 2004, the trend is again increasing in recent years.

In comparison to other countries, the antibiotics prescription rate remains high. See figure 2

Belgium tries to raise the awareness of patients and medical staff with yearly information campaigns.

Figure 2 - Antibiotics prescribed in Belgium, France, Germany, Sweden, the United Kingdom in ambulatory services (expressed in DDD per 1,000 inhabitants) - Evolution 1997-2007



Source: OECD

Example 6 - Safety: exposure to ionizing rays

Medical radiation exposure on the rise, in spite of scientific recommendations

Exposure to radiations of medical origin is a topical issue. Recent guidelines/recommendations (2004) stress the need of reducing medical radiation exposure by encouraging the use of the most recent diagnostic technologies (in particular MRI). In spite of that, medical radiation exposure in Belgium has risen from 2.15 to 2.42 mSv per capita between 2005 and 2008. See figure 1

Compared to other European countries, medical radiation exposure in Belgium is quite high. For 2002, the Netherlands reported an exhibition to medical radiation of 0.45 mSv per capita.

The most important contributor to medical radiation levels is CT Scan, accounting for 52.6 % of the radiation exposure for diagnostic purposes in 2005 and even 58.4 % in 2008. The contribution of x-rays and scintigraphies is decreasing. See figure 2

Belgium plans to raise the awareness of patients and medical staff with information campaigns.

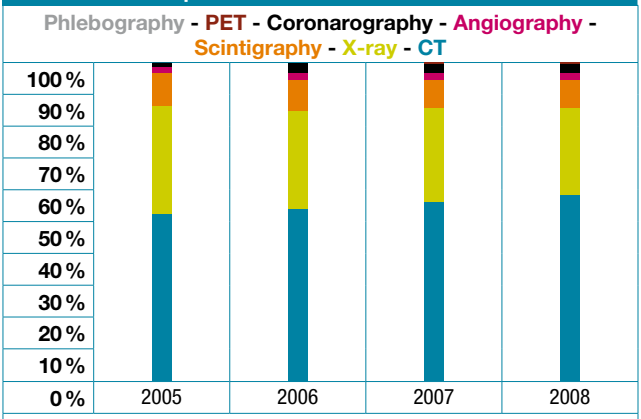
Indicator: medical radiation exposure
Dimensions: safety and appropriateness

Figure 1 - Theoretical exposure to medical radiation in Belgium - mSv/capita - 2005-2008 Evolution

2005	2,15	
2006	2,21	
2007	2,31	
2008	2,42	

Source: NIHDI Health Care Department - Department on Research, Development and Quality Promotion (RDQ)

Figure 2 - Relative contribution to the medical radiation exposure according to the diagnostic imaging technique



Source: NIHDI Health Care Department - Department on Research, Development and Quality Promotion (RDQ)

Example 7 - Prevention policy: vaccination

Vaccination coverage in 2-year-olds is good, but not for all vaccines

Vaccination coverage in 2-year-old children is good. In recent years immunization rates have risen for all vaccines and they all pass the 90 % threshold.
The vaccination coverage of diphtheria, pertussis, tetanus and haemophilius influenza type B are among the highest rates. But in an international perspective, Belgium holds an average position for vaccination coverage for the mumps, rubella and measles.

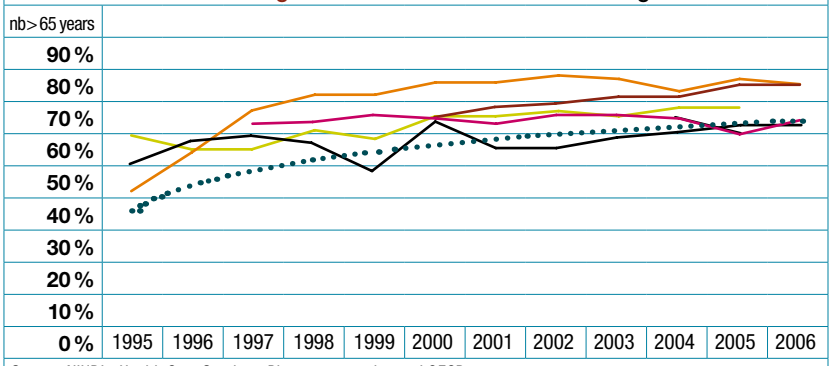
Influenza vaccination coverage in elderly people: average score, but constantly rising

The total coverage in people aged 65 and older was approximately 63 % in 2006. With such a vaccination rate, Belgium obtains an average result within Europe. However, the coverage is continually growing.
See figure 1

Indicators: vaccination against influenza, vaccination coverage in children aged 2, hospitalization rates for acute care in cases of pneumonia or influenza
Dimension: real effectiveness of the preventive care

Figure 1 - Vaccination against influenza in persons aged 65+ in Belgium and in some other OECD countries - Evolution 1995-2006

Belgium - France - Netherlands - Sweden - United Kingdom - United States - EU-15 average



Source: NIHDI - Health Care Service - Pharmanet section and OECD

List of abbreviations

BIM	Recipient of the increased reimbursement
DDD	Defined daily dosis: the assumed average maintenance dose per day for a drug used for its main indication in adults.
EU-15	The number of member states in the European Union before the May 1st 2004 enlargement. The EU15 countries are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.
FPS	Federal Public Service
FTE	Full-time equivalent
GDP	Gross Domestic Product
IMA	Intermutualistic Agency
IPH	Institute of Public Health
KCE	Belgian Health Care Knowledge Centre
mSv	millisievert (measure of radiation dose)
NIHDI	National Institute for Health and Disability Insurance
OECD	Organisation for Economic Co-operation and Development
PPP	Purchasing Power Parity
THE	Total health expenditure
WHO	World Health Organisation

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Responsible editor: J. De Cock, Avenue de Tervueren 211, 1150 Bruxelles
Graphic design: Ab initio Graphic Design, Brussels, www.abinitio.be
Publication: August 2010