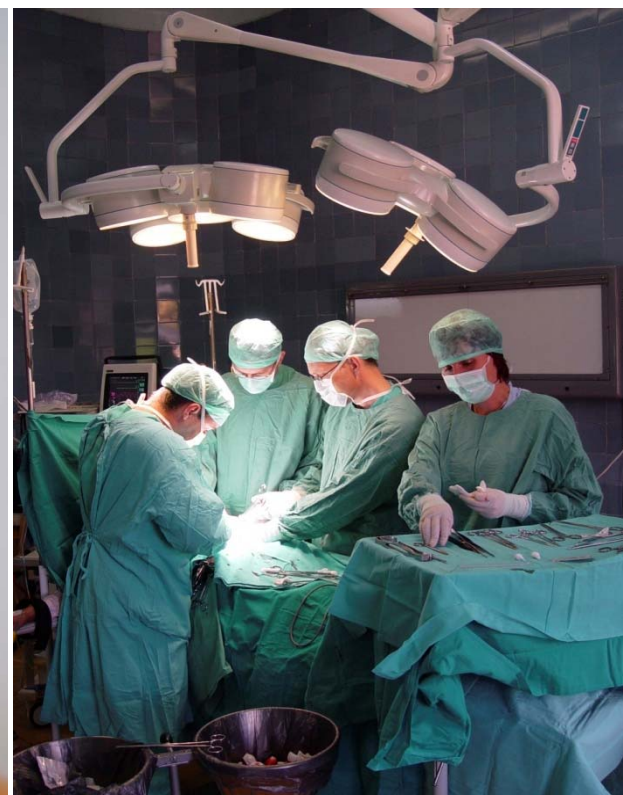
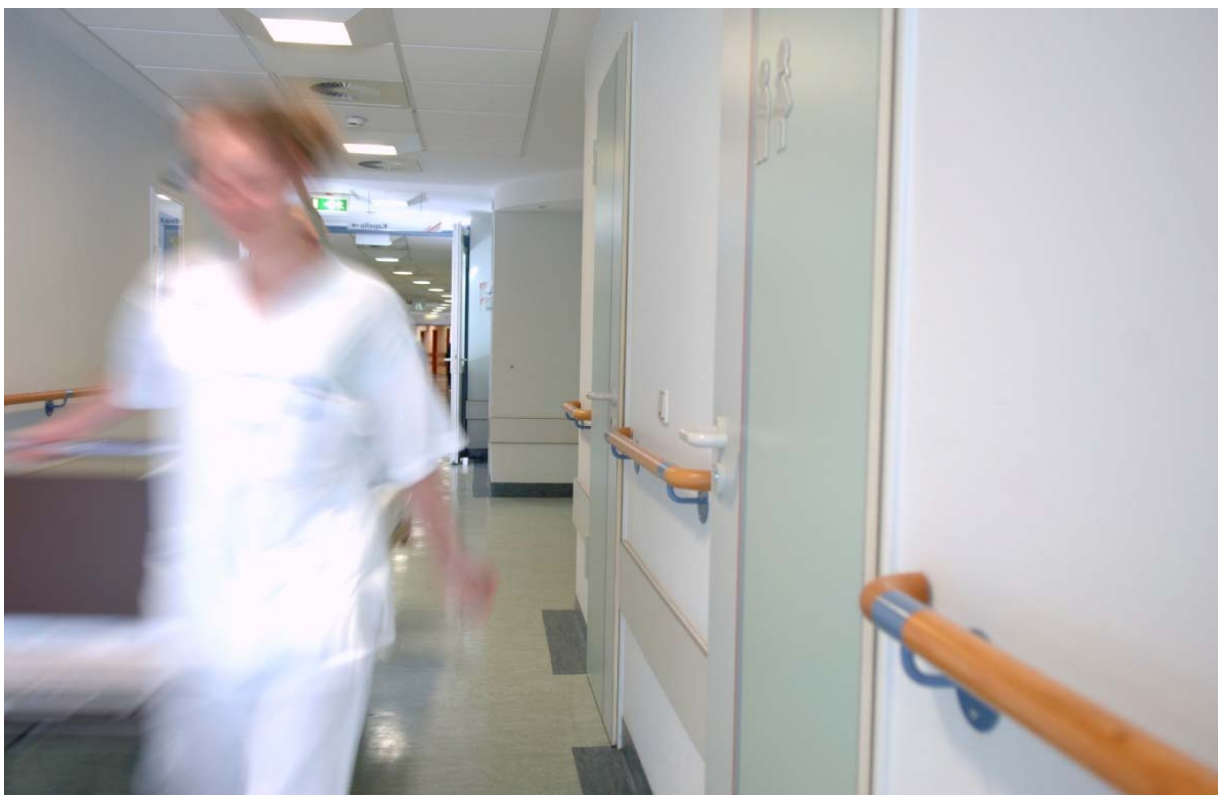


MANUAL FOR COST-BASED PRICING OF HOSPITAL INTERVENTIONS





Belgian Health Care Knowledge Centre

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MANUAL FOR COST-BASED PRICING OF HOSPITAL INTERVENTIONS

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■ FOREWORD

As the craftsman, KCE experts not only need expertise but also good tools to carry out their work. The tools allow to work much faster, more accurately and to ensure that study reports are of standard quality. In general, good quality tools are freely available or can be purchased, such as bibliographic databases, search engines, statistical processing software... But there are cases where nothing is available or at least not with the desired level of quality. We must then either do without the tool and work "by hand", or build ourselves our own tool.

The decision to do without or to create one tool depends on the frequency with which the "homemade" tool will be used. For the assessment of hospital costs, we estimated that the use of the tool would be frequent enough to justify the time spent building it. So here is it, in a report that, in contrast to other KCE reports, is not directly relevant for decision-making and has no recommendations.

Besides the time saving that we can record each time it is used, this tool standardizes the assessment of costs and makes our studies more comparable. With this tool, we also hope to help those who produce studies in Belgium outside the KCE and who sometimes need an assessment of hospital costs.

A tool is never perfect and can always be improved. We are aware of some shortcomings and of an obsolescence risk after a few years. We will strive to update and improve it regularly. Already a warm thanks to those who helped us building it and especially to hospitals that agreed to participate in our survey. We hope that these collaborations will continue and become more systematic.

Jean-Pierre CLOSON
Assistant Chief Executive Officer

Raf MERTENS
Chief Executive Officer



■ EXECUTIVE SUMMARY

OBJECTIVE AND SCOPE OF THE MANUAL

This manual aims to provide guidance to researchers who wish to calculate the costs of hospital services from a provider's perspective. The objective is to enhance consistency within and comparability between cost studies. The manual will primarily be of use when making cost analyses for cost-based pricing decisions or when re-evaluating the price of existing services, in order to verify whether prevailing tariffs still correspond to current costs. To a smaller extent, the manual may also be useful in the context of cost analyses for health economic evaluations, e.g. for new health care services that have not been priced yet.

The manual covers the main types of hospital costs. It provides a list of average (unit) cost values for salaried personnel costs (chapter 1), physicians' costs (chapter 2), medically supporting department costs (chapter 5) and overhead costs (chapter 6). It also provides guidelines for calculating investment costs (chapter 3) and pharmaceutical costs (chapter 4), and guidelines for indexation of the costs (chapter 7). It is clear that a regular updating will be required.

UNIT COSTS AND GUIDELINES

Costs of salaried hospital personnel

Average costs per hour, per category of personnel, are calculated on the basis of a 2010 IF-IC wage study (section 1.2.3). IF-IC conceptualizes and implements a system of function classification in the healthcare sector, and collects wage data. The 2010 wage study covers 15 hospitals and 14 658 FTE. Average costs per hour are calculated for nursing personnel, caring personnel, scientific personnel and paramedical personnel only, as top and middle management and administrative personnel are considered as indirect costs. The costs are based upon a snapshot of the current situation and social agreements and should therefore be regularly updated.

Extra costs related to irregular hours are dealt with separately in section 1.2.4.

An approach for measuring the number of nursing hours per patient day is given in section 1.2.5.



Costs of physician input

The cost of hospital physicians' time investment for hospital services is considered to equal the gross income they generate minus the deductions agreed between hospital management and medical board and/or minus the costs covered by the physicians themselves. This is referred to as the "GHIMD" (Gross hospital income minus deductions) in this manual.

The gross income of physicians is the sum of :

- the invoiced fees for services, on the basis of the RIZIV/INAMI nomenclature or on the basis of pseudo-nomenclature used in the hospital;
- permanence, availability and duty fees;
- physicians' share in hospital allowances for RIZIV/INAMI Care Programme Agreements;
- lump sum payments for medical imaging and clinical biology;
- any other income, incl. supplements to the fees. The latter were collected separately.

An average GHIMD per half-day, by specialty, was calculated on the basis of a KCE-Deloitte survey in 13 hospitals and representing 1 511 physicians FTE.

Results can be found in section 2.4.3. The variability in the data is large and the number of observations is relatively small. Nevertheless these are the best estimates currently available for Belgium. We observe huge differences between the GHIMD per half-day of the different specialities.

Medically supporting departments costs

A cost per hour for the use of the operating theatre and associated departments (anaesthesia and sterilization) was calculated on the basis of Finhosta 2006 data and standard operation times, i.e. the operation times used for the calculation of the Budget of Financial Means. This cost per hour covers only direct costs, incl. pharmaceuticals, pharmaceutical products, medical consumables, disposables, medical equipment and staff (except physicians). This cost per hour and per nurse is estimated at 156.22 euros for 2012 (see section 5.1).

A cost per emergency admission was calculated by means of Finhosta 2006 data. This cost, estimated at 79.58 euros per admission, covers only direct costs of the emergency services (see section 5.2)

Overhead costs

Overhead costs were calculated by means of Finhosta 2006 data as a percentage of the direct costs, excluding physician costs. The latter only appear in the cost accounts of some Belgian hospitals, and there is a large variety in how they are registered. In this manual, overhead costs include general, cleaning, heating, laundry, catering and administration costs, maintenance, depreciation and financial costs for all equipment except medical equipment, top and middle management, administrative and blue collar personnel costs.

The general overhead rate applicable to the direct costs is 56.6% (see section 6.4).

Guidelines for investment costs

Direct versus indirect investment costs

Only costs of medical equipments should be considered as direct costs in cost analyses. Other investment costs and financial costs for all types of non-medical equipment are included in the general overhead rate calculated above

Method for calculating the cost of medical equipment

The depreciation method with parameters reflecting the actual lifetime of the equipment is the recommended approach for spreading investment costs over the life years of the asset. The formula to apply to calculate the yearly cost of a medical equipment is:

Annual depreciation cost = $(K - S) / n$

With: K= value of initial investment (historical purchase or replacement cost); S= present resale value at the end of the useful life span; n= useful life span of the equipment, in years.

For new assets, we recommend to use the current purchase price as initial investment cost. For old assets, we recommend to use the replacement cost of the equipment.



Guidelines for pharmaceuticals

The costs of pharmaceuticals should be measured and valued bottom-up whenever possible.

Data on drug consumption can be derived from IMA/AIM and AZV/SHA databases or requested from the hospital financial administration.

Data on retail prices can be looked up at the website http://www.riziv.fgov.be/inami_prd/ssp/cns2/pages/SpecialityCns.asp. The cost of the products for the hospital pharmacy is the price ex-factory, including V.A.T., minus the rebates. Information on rebates obtained by the hospital should be requested from the hospital pharmacy.

On top of the cost of the pharmaceuticals and pharmaceutical products, there are general costs related to the pharmacy. These should be allocated to the cost objects in function of the consumption of pharmaceuticals and pharmaceutical products. Therefore an average mark-up percentage was calculated, to be added to the total pharmaceutical costs. Analysis of the Finhosta 2006 database resulted in an average mark-up estimate of 3.95%.

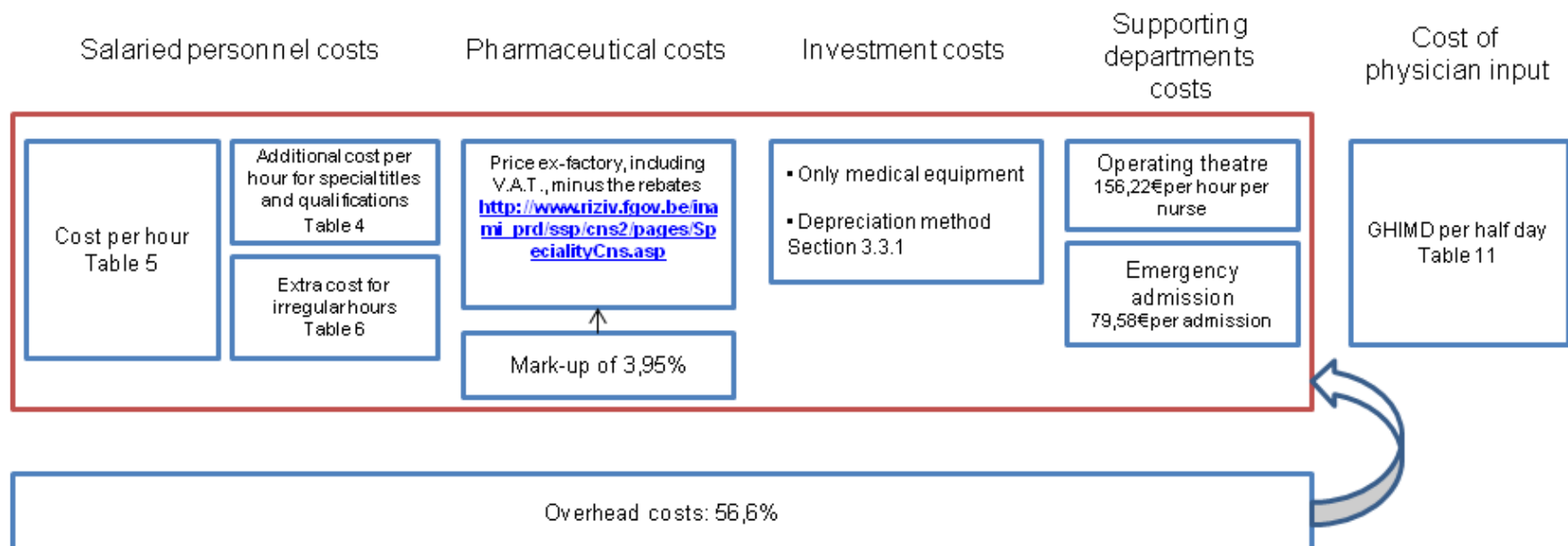
Guidelines for indexation

Costs from previous years should be inflated using the health index, except for wages and investment goods. For wages, we recommend to use the wage revaluation coefficient (“verhogingscoëfficiënt/coefficient d'augmentation”) as related to the “spilindex/indice pivot 138.01” (see section 1.3). For investment goods, we recommend to use the replacement value.

To extrapolate current costs into the future, expected inflation rates should be applied. One-year inflation prognoses are published by the Federal Planning Bureau. For the subsequent years, we recommend to use the three-year moving average inflation as a simple forecasting method. For investment goods, the replacement value is the preferred cost base.



OVERVIEW OF COST COMPONENTS INCLUDED IN THIS MANUAL



CONCLUSION

Despite the fact that this manual is based on limited data sources and many assumptions, it provides the best available figures, whenever more accurate or precise information cannot directly be obtained for a specific study.



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LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
ABC	Activity based costing
ADH - HJA	Anonieme daghospitalisatie - Hospitalisation de jour anonyme
ADV	Arbeidsduurvermindering
Atac	Average total annual cost
AZV - SHA	Anoniem ziekenhuisverblijf - Séjour hospitalier anonyme
BBT-BBK	Bijzondere beroepstitels en bijzondere beroepsbekwaamheden
BFM/BMF	Budget van Financiële Middelen - Budget des Moyens Financiers
CAO	Collective arbeidsovereenkomst
COPD	Chronic obstructive pulmonary disease
CP - PC	Commission paritaire - Paritair comité
DRESS	Direction de la recherche, des études, de l'évaluation et des statistiques
DRG	Diagnostic Related Group
EAC	Equivalent annual cost
FBP	Federal Planning Bureau
FTE	Full time equivalent
GHIMD	Gross hospital income minus deductions
GP	General practitioner
HR	Human resources
IF - IC	Instituut voor Functieclassificatie - Institut de Classification de Fonctions
IGAS	Inspection Générale des Affaires Sociales
IMA – AIM	Intermutualistisch Agentschap - Agence Intermutualiste
MRI	Magnetic resonance imaging
MZG - RHM	Minimale ziekenhuisgegevens - Résumé hospitalier minimal
NACE	Nomenclature générale des Activités économiques dans les Communautés Européennes - Algemene Nomenclatuur van de Economische Activiteiten in de Europese Gemeenschappen
OECD	Organisation for Economic Co-operation and Development



ONSS - RSZ	Office national de la sécurité sociale - Rijkdienst voor Sociale Zekerheid
ONSSAPL - RSZPPO	Office national de la sécurité sociale des administrations provinciales et locales - Rijkdienst voor Sociale Zekerheid van de provinciale en plaatselijke overheidsdiensten
PFA	Patient Flow Analysis
RIZIV - INAMI	Rijksinstituut voor ziekte- en invaliditeitsverzekering - Institut national d'assurance maladie-invalidité
SD	Standard deviation
SMEs	Small and medium enterprises
TPP	Titre professionnel particulier
TTP	Trusted third party
VAT	Value added tax
VG-MZG - DI-RHM	Verpleegkundige Gegevens - Minimale Ziekenhuis Gegevens - Données Infirmières - Résumé Hospitalier Minimum
VIPA	Het Vlaams Infrastructuurfonds voor Persoonsgebonden Aangelegenheden



■ INTRODUCTION AND METHODS

1. OBJECTIVES AND SCOPE OF THE MANUAL

This manual aims to provide guidance to researchers who wish to calculate the costs of hospital services from a provider's perspective. Nevertheless, it will not be directly useful to hospital administrators who would evaluate the costs of their own institution. It is rather intended for policy makers who need an overview of the costs made in a hospital context. It gives an overview and description of available data sources for cost analyses in Belgium as a whole. It provides a list of **average** (unit) cost values for a number of cost items or cost categories in a hospital context that are difficult to obtain or calculate based on publicly available databases or for which the cost-benefit of the effort required to calculate them in detail for every single cost analysis would be unacceptably high. The ultimate objective is to enhance consistency within and comparability between cost studies. It is clear that such a list will require regular updating.

The manual is deliberately kept brief for ease of use. Basic theoretical knowledge of the principles for cost calculation is presumed. A brief theoretical background to cost calculation is given in the appendices.

This manual is complementary to a number of other methodological documents published by the KCE, notably "Guidelines for pharmacoeconomic evaluations in Belgium" (KCE report vol. 78 – to be updated in 2012)¹ and "Inventory of health care databases" (KCE report vol. 30).³ This manual refers to these documents wherever relevant.



1.1. Focus of this manual

The manual will be useful mainly when making cost analyses for cost-based pricing decision-making or re-evaluating the pricing of existing services in order to verify whether existing tariffs still correspond to current costs.

To a smaller extent, the manual may also be useful in the context of cost analyses for health economic evaluations, but only for those new health care services that have not been priced yet. Otherwise the analysis should be based on existing tariffs, fees and charges (i.e. the health care payers' perspective), according to the guidelines for pharmacoeconomic evaluations in Belgium.¹

This manual is therefore not an attempt to build a case-mix costing model, nor to reassess the medical nomenclature or to evaluate health care personnel's revenues. It should not be used to assess the profitability of hospital interventions, or for cost analysis from a health care payers' perspective.

This manual provides certain input data for cost analyses. However, it does not provide guidelines for all aspects of a cost analysis. A cost is generally obtained by multiplying the quantity or volume of resource use by its unit price. Our guide provides unit prices for some resources and helps to calculate the price of others. It does not give guidance on how volumes or quantities should be measured in the specific context of each study. However, some appendices may be useful for resources use measurement: Appendix 2.1 on historical versus standard costing ; Appendix 2.2 on micro-versus gross-costing; Appendix 2.4 on traditional versus activity based costing; Appendix 4 on primary data collection methods and Appendix 7 on scale and capacity utilization.

1.2. Context of cost calculation in hospitals

The particular focus on hospital costs in this manual merits some justification, as it might be considered superfluous to develop guidelines for calculating costs of services performed in hospital, given the legal system for cost calculation developed in Belgium. This legal system, however, does not suffice to provide an answer to all costing questions in hospital setting.

With the law "Wet op de Ziekenhuizen – Loi sur les Hôpitaux" of 1963, a uniform per diem price by type of hospital department was introduced. Hospitals that could prove that the uniform per diem price was insufficient to cover their actual costs, could request a higher price. In order to standardize these requests, a legal system for cost calculation, with an agreed list of cost objects and allocation keys for indirect costs, was introduced. The agreed cost calculation system (called "het laken – le drap de lit") was used to calculate the costs of the hospital units financed through the "verpleegdagprijs – prix de journée".^a Although this legal cost calculation model is still used for general reviews of the "Budget of Financial Means" (BFM/BMF) and for comparisons between hospitals (with view on budgeting of the B1 and, to a smaller extent, B2 part of hospital financing), the model does not and cannot provide an answer to all costing questions.⁴ Given its objective, the legal analytical cost accounting system provides more detailed and standardized information on the costs for the services financed through the BFM than for the services financed mainly by medical fees (consultations and medico-technical services), while for policy purposes, one might also be interested in services not financed by the BFM.

One of the main limitations of the legal cost system is that the cost objects are predefined units, wards or departments, whereas often the relevant cost objects are a certain health care intervention, a treatment episode or a full disease management program. As for the latter, it can be noted that costing per DRG has become increasingly important. Internationally, many countries have introduced financing based on DRGs and their financing system is (at least partially) based on cost calculations per DRG.⁵ However, this manual does not focus on DRG costing in particular, nor does it intend to present a cost per DRG or take a stance with respect to DRG financing. Instead, this manual intends to formulate guidelines on how to calculate the costs of in-hospital health care services, which can then be used –if desired- as building blocks for bottom-up costing per DRG or as a basis for defining the financing of services in any other way.

a These encompass the so-called nursing units (e.g. pediatrics, geriatrics, heart surgery), the medical-technical units and pharmacy and non-hospital units (e.g. catering).



2. DEFINITION OF THE COST OBJECT, PERSPECTIVE AND TIME FRAME

2.1. Cost object and provider setting

At the start of each cost analysis, the cost object should be clearly described. A cost object is anything for which costs are being estimated. In the context of health care, cost objects can be a specific type of consultation, diagnosis, therapy, rehabilitation care, a full care programme or a treatment episode for a specific pathology. When a full treatment episode is considered, specifications should be given on whether treatment of adverse events, complications and co-morbidities are included, what are the criteria of discharge or transfer, etcetera.

The detailed description of the health care cost object may also include information on the provider setting, as a number of aspects may considerably influence costs:

- Type of facility;
- Location of the facility;
- Expertise and qualification level of health professional staff involved;
- Target population;
- Service intensity and workload;
- Service mix (range of delivered services);
- Irregular hours / provision of continuity of care.

An example of costs calculation for a given cost object (appendectomy) is given at the end of this report, in section 8.4.

2.2. Perspective

Besides the cost object, the perspective needs also to be stated upfront. This manual focuses on cost analyses from the hospital perspective. Whenever another perspective is envisaged, the data presented in this report should be handled cautiously. For example, extrapolation of the overhead rate presented in this manual to a small private physiotherapist practice is not correct, as the overhead rate contains indirect costs which are not borne in such a small private unit (e.g. general management, medical direction, etc.).

2.3. Time frame

A cost analysis should be explicit about the time frame. For cost analyses from the provider's point of view, it is important to know the exact year the costs refer to, as obviously costs of human resources, consumables etcetera evolve year by year. In order to compare costs from different years they need to be adjusted for inflation (see chapter 7).



3. DATA SOURCES FOR RESOURCE USE MEASUREMENT AND VALUATION

This chapter focuses on the measurement of resource use in natural units and the valuation of resource use in monetary units. Data from national databases, tariff lists or previous research can be used for this purpose. This chapter gives an overview of the different available data sources. When data are not available or not coherent with the perspective of the study, the analyst will need to collect data by himself, by means of questionnaires, direct observation, analysis of accounting data, interviews or expert panels (see appendix 4).

3.1. Sources for resource use measurement

A variety of methods exist for volume data collection. These can be categorized into observer- versus participant-based measurement methods, and retrospective versus prospective methods.⁷ Participant refers to either the provider or the patient. Retrospective studies look backwards in time and can use information that has usually been collected for reasons other than research, such as administrative data and medical records. Prospective studies track data or information as they occur. Retrospective data can be found for instance in the national databases such as the MZG/RHM and AZV-ADH/SHA-ADJ databases^b, the VG-MZG/DI-RHM database^c, the RIZIV/INAMI databases, IMA/AIM^d database and Finhosta. These databases contain information on volumes of patients, medical interventions, consultations, length of hospital stays etc. Not all of these databases are publicly available.

- b MZG ('Minimale ziekenhuisgegevens')/ RHM ('Résumé Hospitalier Minimal'), AZV-ADH ('Anonieme Ziekenhuisverblijven – Anonieme Daghospitalisatie')/ SHA-HJA ('Séjour Hospitalier Anonyme- Hospitalisation de Jour Anonyme').
- c VG-MZG ('Verpleegkundige Gegevens – Minimale Ziekenhuis Gegevens') / DI-RHM ('Données infirmières – Résumé Hospitalier Minimum'). Is combined with the MKG/RCM database from the year 2008 onwards.
- d IMA ('Intermutualistisch Agentschap') / AIM ('Agence Intermutualiste').

For more detailed information on the databases, the availability for researchers and the type of data they provide, we refer to the KCE report vol. 30³ and vol. 121.⁵

In general, observer-based methods will be more accurate than participant-based methods, but they are also more resource-intensive. Participant-based methods bear more risk of misinterpretations, incomplete responses or unclear answers than observer-based methods.

Data on resource use may also be derived from published articles on clinical trials or naturalistic studies. The volume data however need to be validated in the new context before they can be used in the new cost analysis. Clinical trials will likely have good internal validity, but as resource utilisation can be influenced by the protocol and patient or site selection, their external validity may be reduced. Naturalistic studies, on the other hand, may have good external validity but poor internal validity.⁷

3.2. Sources for resource use valuation

Different sources can be explored to attach a monetary value to resource use. Some resources have a fixed market price, for instance pharmaceutical products. Their price can be found in a national price list. Other values can be calculated based on existing databases, such as hospital accounting data. This approach was applied in this manual for calculating average cost values for a number of hospital cost items or cost categories. For some cost components, the researcher will still need to gather primary data in the field.

Costs can be calculated "top-down" or "bottom-up". The terms refer to whether the primary data source for the valuation of resources consists of aggregate or individual data. In a top-down approach central data (e.g. from the financial administration, human resources, logistic or other departments of a hospital or at a national level) are used as primary source and allocated to the cost objects based on predefined allocation keys. This costing approach can be applied when there is a relatively homogenous production with a limited number of products. When there are various heterogeneous products or when no central cost information is available, a bottom-up costing approach is more appropriate. In this approach, the costs of personnel, equipment and materials are analysed per product and summed to calculate the total cost.



This section comprises a non-exhaustive overview of potential secondary data sources that can be useful for the valuation of cost components.

3.2.1. Price lists

3.2.1.1. Pharmaceutical products

Tariffs of pharmaceutical products also used in ambulatory settings are available through the website

http://www.riziv.fgov.be/inami_prd/ssp/cns2/pages/SpecialityCns.asp.^e

This website provides not only the retail price, but also the ex-factory price (prix ex-usine/buiten bedrijf prijs) and a “hospital price”, which is the ex-factory price including the value added tax (VAT). The cost of the products for the hospital pharmacy is the ex-factory price, VAT included, minus rebates. Information on rebates that were obtained should be requested at the administration of the hospital pharmacy.

3.2.1.2. Implants

Retail prices of some implants can be downloaded from the website <https://www.riziv.fgov.be/webprd/appl/pimplants/XmlList.aspx>.^f The cost of the products for the hospital pharmacy is the ex-factory price, VAT included, minus rebates. Information on rebates that were obtained should be requested at the administration of the hospital pharmacy.

3.2.1.3. Other medical products

Other medical products which are not included on one of the previously mentioned lists (e.g. sterile patches), should be measured by observation. Unit costs for these products should be obtained from the manufacturer or the administration of the hospital pharmacy.

3.2.2. Average cost values

This manual comprises average cost values for personnel, physicians, supporting departments and indirect costs. By applying these cost values in analyses of the costs of a treatment or intervention from a hospital's perspective, consistency between cost analyses can be improved. This does not mean, however, that these data are applicable to all kinds of settings (see 2.2). Assumptions of external validity of these average cost values should always be justified. The data are listed in the second part of this report, in chapters 1, 2, 5 and 0.

3.2.3. Finhosta: the hospital accounting database

For the calculation of the Budget of Financial Means (“Budget van Financiële middelen/Budget des Moyens Financiers”), the Belgian Federal Public Service for Health, Food Chain Safety and Environment organizes a yearly data collection that is mandatory for all hospitals. The dataset, called Finhosta, includes detailed accounting, statistical (number of admissions, discharges, deaths ...) and personnel data. The accounting system contains data on accounting cost and revenue data for a list of cost centers. The list of cost centers can be consulted on the website of the Federal Public Services for Health, Food Chain Safety and Environment on Finhosta^g and in appendix 13. Due to problems in data collection, the most recent data available at present are from 2006. Data for 2007 until 2010 are expected to be available soon.

e Cited June 2010.

f Cited January 2012.

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[http://www.health.belgium.be/eportal/Healthcare/Healthcarefacilities/Registrationsystems/Finhosta\(HospitalFinancing\)/Publications/index.htm](http://www.health.belgium.be/eportal/Healthcare/Healthcarefacilities/Registrationsystems/Finhosta(HospitalFinancing)/Publications/index.htm)



Often, however, the Finhosta database does not provide sufficiently detailed data for cost calculations. First of all, hospitals do not register costs in a strictly uniform way. Some hospitals, for instance, register drug costs in a more aggregate way, on one central cost centre, to be reallocated across the final cost centres, whereas other hospitals register those separately per cost centre. Some hospitals register financing costs centrally, whereas other register those costs separately per cost centre. Secondly, in many cost analyses, there is no overlap between the cost object and the predefined cost centres. Even when all costs would be perfectly registered for each of the cost centres, they would need to be reallocated to the cost object with allocation keys not available in Finhosta. Thirdly, there may be problems with the validity of the database. Since hospitals do not receive feedback on how their own Finhosta registrations benchmark with those of other hospitals, there is little incentive nor pressure for hospitals to improve the uniformity and consistency of this obligatory registration. Unfortunately, so far, no detailed studies are available that analyse the validity/uniformity of the Finhosta database.

Despite its limitations, it is the only database comprising data on all hospitals and therefore it was used to calculate a number of average cost values for this manual.

3.2.4. National statistics on Belgian economy, labour and energy market

A number of useful statistics on the Belgian economy, labour and energy market are provided by federal agencies.

- The Federal Public Service Economy, S.M.E.s, Self Employed and Energy (www.statbel.fgov.be), for instance provides statistics on energy prices, indexes for material costs in construction, cost of land and real estate etcetera.
- The Federal planning bureau (www.plan.be) provides inflation forecasts.
- The National Bank of Belgium (belgostat online) (www.nbb.be) provides statistics on interest rates, consumer prices and cost of labour.
- The Federal Public Service Employment, Labour and Social Dialogue (Federale overheidsdienst Werkgelegenheid, Arbeid en Sociaal Overleg) (www.werk.belgie.be) provides an index for conventional wages by industry, including changes based on changes in consumer price index (as stipulated in the “paritaire comités”), the conventional wage increases, as fixed for instance by collective labour agreement (“collectieve arbeidsovereenkomst/convention collective de travail”) and the reduction in working hours.



■ GUIDELINES AND UNIT COSTS

1. SALARIED HOSPITAL PERSONNEL

1.1. Methodological choices

1.1.1. *Top-down versus bottom-up analysis*

In the cost accounts, personnel costs are allocated to cost centres. These cost centres are usually not the relevant cost objects, and therefore personnel costs can often not be immediately derived from the accounting data. Therefore they will need to be derived top-down or examined bottom-up.

The bottom-up approach consists of measuring the number of working hours and applying a cost per working hour for the different types of personnel to this number of hours dedicated to the cost object.

The top-down approach consists of allocating part of the departmental personnel costs to the cost object based on time-driven allocation keys. A first limit of this method is that in cost accounts, personnel costs can either be registered directly on cost centres, or centrally on indirect accounts (this is the case for e.g. administration personnel, maintenance personnel) which are then allocated to the cost centres afterwards. There is no uniformity in which costs are registered on which cost centre.

The top-down approach calculates the average number of working hours dedicated to a cost object (e.g. an intervention) by dividing the total number of working hours on a department by the total number of interventions on that department. Data from the finance or human resources department or from the Nursing Minimum Dataset^h can be used for this calculation.

This simple way of estimating the time investment per intervention is however most often not possible as the personnel involved usually works on different types of interventions characterized by unequal time investment and personnel load. Therefore, hypotheses have to be made about the relative importance of different activities on a department. This

^h Data available: nursing hours and nursing interventions per registration day.



estimation is often difficult to obtain, especially if there is a large heterogeneity of activities in a department.

The top-down method also has the disadvantage that excess staff capacity cannot be examined as it is not known how much time is productively versus unproductively used. Existing inefficiencies in the allocation of personnel are included in the estimates.

It is recommended to use the bottom-up approach for measuring the non-medical personnel costs associated with a cost object.

1.1.2. Direct versus indirect personnel costs

- Direct costs are costs for which there is a direct, causal relationship between the considered cost and the cost object.⁹ They have an unambiguous, quantifiable link with the cost object and can thus be allocated directly to it. Indirect costs (or overhead) do not have such unambiguous link with the cost object either because the measurement or registration of the specific costs per unit is not possible, or simply does not happen or because it is a general cost.⁶
- This chapter further focuses on calculation of direct personnel costs. The indirect personnel costs are included in the general overhead rate (see chapter 9).

Classification of costs into direct and indirect costs actually depends on the cost object. Nevertheless, in this manual the following costs are considered as direct personnel costs:

- nursing personnel;
- caring personnel;
- scientific personnel;
- paramedical personnel;
- physicians (see chapter 2).

1.2. Cost per hour of the salaried hospital personnel

Two types of data are needed for estimating the salaried hospital personnel cost of a specific intervention according to the bottom-up approach:

- a cost per hour per type of personnel involved in the intervention
- the time investment for the intervention.

Despite its limitations, the most practical method for measurement of time investment is time-registration by the care provider (self-administrated timesheets) or by a researcher.

The cost per hour, estimated for different functions of the hospital personnel, is calculated by dividing the annual cost per full-time equivalent (FTE) by the number of productive hours per FTE per year. The annual cost per full time equivalent is calculated on the basis on IF-IC data (see section 1.2.2.2 for the methodology used). This annual cost is then adjusted to take into account specific measures to keep older employees at work (see section 1.2.2.3). This adjusted annual cost is divided by the number of productive hours per FTE per year (see section 1.2.1). The results can be found in Table 5, section 1.2.3. Extra costs related to irregular hours are treated separately in section 1.2.4.

1.2.1. Number of productive hours

The number of productive hours per year is calculated taking into account the legal considerations with respect to working time and based on figures furnished by SD Worxⁱ on sick leave and on other absences paid by the employer^j. The data are specific for the health care sector.

The legal number of hours for a FTE must be adjusted for holidays paid by the employer and public holidays, training days, sick leave, accident and other absences paid by the employer.

i SD Worx is an European company specialised in human resources management providing different services to its clients: payroll, HR and legal advice.

j Data from year 2009, private sector, NACE code « human health care», 34 439 employees.



Table 1 gives the calculation of the adjusted number of productive hours per FTE per year. Adjustments for specific measures to keep older employees employed ("ADV – Arbeidsduurvermindering – CAO 45+ / dispenses de prestations pour travailleurs de 45 ans et plus") are not included in this table.

Table 1: Average number of productive hours per FTE per year

Calculation of the number of productive hours per FTE per year	Number of hours
Baseline number of hours per year per employee (52 weeks * 5 days * 7.6hrs)	1976.0
Holidays (paid by employer) comprising legal holidays and agreed extra holidays (24 days)	182.4
Public holidays (10 days)	76.0
Education and training (during working hours) (estimation: 3 days)	22.8
Sick leave and accident leave paid by employer (source: SD Worx)	53.9
Other absence paid by employer (source: SD Worx) ^k	35.7
Average number of effectively productive working hours per FTE per year	1605.2^l

Source: Own estimates and SD Worx

k Includes paternity or adoption leaves, leaves for civil or trade-union obligations, absences for job application and any other absences to be paid by the employer.

l Studies of the "Conseil National des Etablissements Hospitaliers – Nationale Raad voor Ziekenhuisvoorzieningen" use an average number of productive hours of 1 520 hours per year.

Details over SD Worx data can be consulted in appendix 14.

The number of productive hours par FTE per year is estimated at 1 605.2 hours

1.2.2. Annual cost per FTE

The annual cost of personnel comprises both monthly recurrent costs (such as gross wage, payment for social contributions) and non-monthly recurrent costs (such as the end of year bonus, accident insurance and company medical insurance).

1.2.2.1. Source of data

For the collection of hospital statistics, two data sources were identified: Finhosta and IF-IC.^m Broadly, Finhosta collects statistics at the level of the employee's diploma and IF-IC at the level of their function.

Finhosta data

The Finhosta dataset has two major limitations. First, the personnel classification is mainly based on diplomas, with a limited reference to functions, and does not always reflect the real activity of the non-medical personnel. Therefore, it limits its relevance. Second, the last figures available are related to the year 2006, requiring an update of the personnel costs by using extrapolation and indexation methods.

m IFIC: « Institut de Classification des Fonctions/ Instituut Functieclassificatie ».



IF-IC Data

IF-IC, a Belgian non-profit organization managed by the social partners belonging to the “Joint Commission of health care services” (“Commission paritaire des établissements et des services de santé / Paritair Comité voor de gezondheidsinrichtingen en –diensten”: CP/PC 330), has a counselling function. One of the main tasks of IF-IC is the conceptualisation and implementation of an analytical system of function classification in the healthcare sector. The organization collects wage data. We used the results of the recent wage study (2010) in the hospital sector in this manual to derive the cost per hour of non-medical personnel. The hospital functions are integrated in a theoretical function scale – the IF-IC classification – which allows a comparison between the different institutions participating in the survey. The theoretical classification contains 205 functions, based on mission, task and responsibility.

The IF-IC sample consists of:

- 15 hospitals (12 private, 3 public, no academic hospitals) / (8 in Flanders, 3 in Brussels, 4 in Wallonia);
- 14 658 FTE and 20 351 people;
- Data for 2010.

The dataset contains no data on the cost of managing staff (direction) and non-active personnel

Appendix 15 gives more details on the dataset.

1.2.2.2. The annual costs per FTE

Table 2 presents the methodology used for calculating the annual costs per FTE, according to the function. We used three sources of data: the wage survey carried out by IF-IC, the collective labour agreementsⁿ of the Joint Commission of health care services (CP/PC 330) and Finhosta; the main source was IF-IC. To facilitate the calculations, we used only the private system of reference, because there are multiple public system of references and because the majority of personnel is working in private hospitals (70% of FTE). However, we used a weighted mean of public/private sector social contributions.

ⁿ The collective labour agreements for private hospitals can be consulted on the website of the Federal Public Service Employment, Labour and Social Dialogue (www.emploi.belgique.be/searchCAO.aspx?id=4708, cited January 2012).



Table 2: Calculation of the annual cost per FTE (€)

Cost element	Source	Value
A. Gross « basic » wage (sample mixture of seniority levels and salary scales)	IF-IC	Mean
B. « Complément ou supplément de fonction » - « Functiecomplement of supplement »	IF-IC	Mean
C. « Allocation de foyer ou de résidence » - « Haard- of standplaatsstoelage »	IF-IC	Mean
D. Attractiveness bonus (Prime d'attractivité - Attractiviteitspremie)	CP-PC 330	€ 587.21 + (12*0.55%* (gross wage of October+B+C))
E. End of year bonus	CP-PC 330	€ 311.22 + (12*2.5%* (gross wage of September+B+C))
F. Holiday pay		92% of (A+B+C)
G. Annual gross wage		12*(A+B+C) +D+E+F
H. Employers' social contributions	ONSS-RSZ, ONSSAPL-RSZPPO	32.71% (weighted mean* of public/private hospitals' social contributions for 2010 – weighted mean for 2011 is 34.30%)
I. Other costs for personnel (social subscriptions, statutory insurance against work-related accidents, occupational medicine, extralegal insurance)	Finhosta	2.7% of annual gross wage (percentage does not vary much according to functions or diploma)
Total annual cost / FTE (without adjustment for extra holidays as function of age to keep older employees employed, i.e. "ADV 45+ - dispenses de prestations 45+")		G+H+I

* Weight definition: number of FTE in public/private hospitals. Source of the number of FTE: data of "accord social-sociaal akkoord 2005-2010", with an expected growth of 1% per year.



1.2.2.3. *Methodology used to consider specific measures in the estimation of the cost per hour.*

Specific measures to keep older employees at work (arbeidsduurvermindering / dispenses de prestations)

In order to keep older employees at work, extra holidays are granted to the personnel aged 45 years and more. Table 3 below provides, per age category, the official extra annual holiday hours granted to the personnel (nursing functions and other) related to age.

Table 3: Legal extra holiday granted, by age category (2010)

Nursing personnel or similar functions, age category	Hours of extra holidays granted, per year
45 - 49 years	96h
50 - 54 years	192h
55 years and more	288h
Other functions, age category	
50 - 51 years	38h
52 - 54 years	76h
55 years and more	152h

Source: Collective labour agreements

These extra holidays reduce the number of productive hours and therefore increase the cost per hour. The formula used to adjust the cost per hour for nursing and caring functions, is:

$$\text{Atac. p FTE} * \left(\frac{\text{Proportion FTE } < 45y}{1605.2 \text{ hours}} + \frac{\text{Proportion FTE } 45 - 49y}{1605.2 - 96 \text{ hours}} + \frac{\text{Proportion FTE } 50 - 54y}{1605.2 - 192 \text{ hours}} + \frac{\text{Proportion FTE } > 54y}{1605.2 - 288 \text{ hours}} \right)$$

Atac. P FTE = Average total annual cost per FTE



Annual bonus for some categories of nurses

In order to make the profession more attractive, some special titles and qualifications were identified in a Royal Decree (27/09/2006). They are called “porteurs d’un titre professionnel particulier (TPP) ou d’une qualification professionnelle particulière / bijzondere beroepstitels en bijzondere beroepsbekwaamheden (BBT-BBK)”. For those specific functions, an extra bonus is allocated:

- The specialised nurses in intensive care, oncology, geriatrics: € 4 500 (including employer’s social contributions, 2011)
- The qualified nurses in geriatrics: € 1 500 (including employer’s social contributions, 2011)

This bonus has therefore to be included in the cost per hour for nurses in oncology, geriatrics and intensive care. For these nurses, it is recommended to increase the cost per hour by: (% estimated of nurses working in geriatrics or oncology having a special title * bonus)/ 1605.2

Note that this specialised personnel may be working on different units, and not necessarily on the unit of their specialisation (e.g. qualified nurses in oncology can work on any ward where patients with cancer are treated).

Table 4 shows an estimation of bonuses’ impact on the cost per hour, for 2012.

Table 4: Estimation* of additional cost per hour generated by the bonus for special titles and qualifications, 2012

Department	Bonus	Estimated % of nurses with a special title or qualification	Cost per hour to be raised by
Intensive care	4500€	70%	1.96€
Oncology	4500€	20%	0.56€
Geriatrics	4500€	50%	1.44€
	1500€	5% (qualification)	

* Based on a survey in the nursing department of Cliniques universitaires Saint-Luc, CHIREC and Clinique Saint-Jean.

1.2.3. Cost per hour by function

Table 5 lists, for a selection of functions^o, the cost per hour, with adjustments for extra holidays as a function of age. Due to the fact that these data are based on the current situation, some figures may seem inconsistent. For example, functions that seem similar at first sight can have a different cost per hour. This is related to the fact that the results are dependent on the age pyramid within each function.

^o Function definition can be found on <http://www.if-ic.org/l-ventail-de-fonctions/>, cited January 2012.



Table 5 Cost per hour of hospital personnel for a selection of functions*

Function (French)	Function (Dutch)	Cost per hour (March 2012)
ADMINISTRATION / ADMINISTRATIE		
Secrétaire médicale: Assurer la bonne gestion du secrétariat d'un ou plusieurs médecins afin que les consultations et examens soient réalisés dans les meilleures conditions et que les protocoles et résultats soient transmis au plus vite.	Medisch secretaris: Het verzekeren van een goed beheer van het secretariaat van één of meerdere artsen teneinde de consultaties en onderzoeken in de beste omstandigheden te laten verlopen en de protocols en onderzoeksresultaten zo snel mogelijk over te maken.	31.31€
SERVICE TECHNIQUE / TECHNISCHE DIENST		
Technicien spécialisé: Entretenir et exécuter des travaux de réparation et d'adaptation des installations, de l'appareillage et du matériel techniques et/ou d'infrastructure, dans la spécialisation, afin d'éviter ou de résoudre des problèmes techniques et d'assurer le bon état des installations et/ou des bâtiments.	Gespecialiseerd vakman: Het onderhouden en uitvoeren van herstellings- en aanpassingswerken aan technische installaties, apparatuur en materiaal en/of van de infrastructuur, binnen het vakdomein, teneinde technische storingen te voorkomen of op te lossen en de goede staat van de installaties en/of de gebouwen te verzekeren.	30.12€
Biotechnicien: Veiller au maintien de la performance des équipements médicaux, à leur adaptation, à leur mise en conformité par rapport aux lois et réglementations en vigueur et à leur sécurité afin de diminuer le risque d'incident et de temps d'indisponibilité du matériel.	Biotechnicus: Het waken over het behoud van het prestatievermogen van de medische uitrustingen, over hun aanpassing, over het overeenstemmen met de van kracht zijnde wetten en reglementeringen en over hun veiligheid teneinde de kans op ongelukken en de tijd waarin het materiaal onbeschikbaar is te verminderen.	36.90€
Technicien: Entretenir et exécuter des travaux de réparation et d'adaptation des installations, de l'appareillage et du matériel techniques et d'infrastructure afin d'éviter ou de résoudre des problèmes techniques et d'assurer le bon état des installations et des bâtiments.	Vakman: Het onderhouden en uitvoeren van herstellings- en aanpassingswerken aan technische installaties, apparatuur en materiaal en van de infrastructuur, teneinde technische storingen te voorkomen of op te lossen en de goede staat van de installaties en de gebouwen te verzekeren.	28.65€



PHARMACIE ET MEDICO-TECHNIQUE/ APOTHEEK EN MEDISCH-TECHNISCHE

Pharmacien: Assurer l'approvisionnement, en temps voulu, des unités de soins et des services médico-techniques en médicaments, matériels et produits adéquats ainsi que conseiller le personnel soignant et médical afin de garantir un service de qualité de la Pharmacie.	Apotheker: Het verzekeren van tijdige levering van aangepaste geneesmiddelen, materialen en producten aan de verpleegeenheden en medisch-technische diensten en het adviseren van het verzorgend en medisch personeel teneinde een kwaliteitsvolle dienst van de Apotheek te garanderen.	55.08€
Magasinier à la pharmacie: Veiller à la mise à disposition correcte et dans les délais des médicaments, matériels et produits afin de garantir l'approvisionnement, en temps voulu, des unités de soins et des services médico-techniques.	Magazijnier apotheek: Het waken over een tijdige en correcte voorziening van geneesmiddelen, materialen en producten teneinde de tijdige levering aan de verpleegeenheden en medisch-technische diensten te garanderen.	32.17€
Assistant en pharmacie: Assister les Pharmaciens dans l'exécution de leurs tâches afin de garantir l'approvisionnement en temps voulu des unités de soins et des services médico-techniques en médicaments, matériels et produits adéquats.	Apotheek assistent: Het bijstaan van de Apothekers bij het uitvoeren van hun taken teneinde de tijdige levering van aangepaste geneesmiddelen, materialen en producten aan de verpleegeenheden en medisch-technische diensten te garanderen.	29.66€
Fysicien: Gérer les applications thérapeutiques des rayons ionisants et prendre en charge les aspects de sécurité liés à ceux-ci afin d'assurer une thérapie par rayons efficace et sécurisée suivant les dispositions légales en vigueur.	Fysicus: Het beheren van de therapeutische toepassingen van ioniserende stralen en het instaan voor de veiligheidsaspecten hieromtrent teneinde een doeltreffende en veilige stralingstherapie te verzekeren volgens de geldende wettelijke bepalingen.	51.57€
Technologue Service Médico-Technique: Planifier, coordonner et réaliser les examens et les traitements médico-techniques en collaboration avec le prestataire concerné afin de permettre un diagnostic et/ou un traitement adéquat et rapide.	Technoloog Medisch Technische Dienst: Het plannen, coördineren en realiseren van de medisch-technische onderzoeken en behandelingen in samenwerking met de betrokken dienstverlener teneinde een adequate en snelle diagnose en/of behandeling toe te laten.	37.32€
Technicien Service Médico-Technique: Fournir un support technique au service lors de l'exécution des examens ou des traitements médico-techniques afin de permettre un diagnostic et/ou un traitement adéquat et rapide.	Technicus Medisch Technische Dienst: Het verlenen van technische ondersteuning aan de dienst bij het uitvoeren van medisch-technische onderzoeken of behandelingen teneinde een adequate en snelle diagnose en/of behandeling toe te laten.	37.25€
Auxiliaire en stérilisation: Garantir une stérilisation correcte et en temps voulu du matériel médical afin que le bloc opératoire, les services de consultation ainsi que les unités de	Centrale sterilisatie-assistent: Het verzekeren van een correcte en tijdige sterilisatie van medisch materiaal zodat het operatiekwartier, de consultatiediensten en de	29.33€



soins puissent disposer d'un matériel stérile à tout moment.

verpleegeenheden op elk moment over steriel materiaal kunnen beschikken.

PARAMEDICAL/ PARAMEDISCH

Kinésithérapeute: Traiter des patients/résidents souffrant de problèmes moteurs, physiologiques, respiratoires ou cardiovasculaires afin de maintenir et/ou de récupérer leur mobilité et leur motricité.

Kinesitherapeut: Het behandelen van patiënten/bewoners met motorische, fysiologische, respiratoire of cardiovasculaire problemen teneinde hun mobiliteit en motoriek te behouden en/of te herwinnen.

43.40€

Ergothérapeute: Traiter des patients/résidents souffrant de problèmes dans leur fonctionnement quotidien afin d'améliorer leur autonomie

Ergotherapeut: Het behandelen van patiënten/bewoners met problemen in hun dagelijks functioneren teneinde hun zelfredzaamheid te verbeteren.

33.90€

Logopède: Traiter des patients/résidents souffrant de problèmes d'élocution, de déglutition ou de langage, des troubles de la voix, des problèmes d'audition ou d'apprentissage afin d'améliorer le niveau de fonctionnement de leur communication.

Logopedist: Het behandelen van patiënten/bewoners met spraak- of taalproblemen, slikproblemen, stemstoornissen, gehoorproblemen of leerproblemen teneinde hun functioneringsniveau op het vlak van communicatie te verbeteren.

37.09€

Diététicien: Participer à l'établissement du menu et donner un avis diététique aux patients/résidents afin de mettre sur pied un programme d'alimentation équilibré et adapté aux besoins des patients/résidents.

Diëtist: Het mee samenstellen van het menu en het verlenen van dieetadvies aan patiënten/bewoners teneinde een evenwichtig voedingsprogramma op te stellen aangepast aan de behoeften van patiënten/bewoners.

36.90€

Psychologue: Traiter des patients/résidents souffrant de problèmes psychiques ou psychosomatiques afin d'améliorer leur bien-être psychologique et psychosocial.

Psycholoog: Het behandelen van de patiënten/bewoners met psychische of psychosomatische problemen teneinde hun psychologisch en psychosociaal welzijn te verbeteren.

43.96€

INFIRMIER ET SOIGNANT/ VERPLEGING EN VERZORGING

Aide logistique dans une unité de soins ou de résidence: Soutenir, d'un point de vue logistique, les collaborateurs de l'unité afin de leur permettre de se concentrer sur les soins aux patients/résidents et d'améliorer leur confort.

Logistiek medewerker in een verpleeg- of verblijfseenheid: Het logistiek ondersteunen van de medewerkers van de eenheid, teneinde hen toe te laten zich te concentreren op de zorgverlening van de patiënten/bewoners en hun comfort te vergroten.

28.68€

Employé transport interne des Patients: Transporter les patients/résidents dans l'institution afin qu'ils arrivent en toute sécurité et à temps dans le service désigné.

Medewerker intern patiëntenvervoer: Het vervoeren van de patiënten/bewoners binnen de instelling, zodat ze in veilige omstandigheden en tijdig aankomen in de toegewezen dienst.

28.05€



Infirmier en chef en hôpital: Assurer le bon fonctionnement de l'unité afin d'optimiser la qualité des soins	Hoofdverpleegkundige ziekenhuis: Het verzekeren van het goed functioneren van de eenheid teneinde de kwaliteit van de zorgverlening te optimaliseren	47.88€
Sage-femme en chef: Assurer le bon fonctionnement de la maternité / l'unité de soins afin d'optimiser la qualité des soins à la mère et l'enfant avant, pendant et après la grossesse et l'accouchement.	Hoofdvroedkundige: Het verzekeren van het goed functioneren van de dienst materniteit of de verpleegkundige eenheid teneinde de kwaliteit van de zorgverlening aan de moeder en de pasgeborene voor, tijdens en na de bevalling te optimaliseren.	55.69€
Infirmier en chef-adjoint en hôpital: Soutenir l'Infirmier(e) en Chef en Hôpital afin d'assurer le bon fonctionnement de l'unité ainsi qu'exécuter les tâches déléguées par l'Infirmier(e) en Chef en Hôpital et le (la) remplacer le cas échéant.	Adjunct hoofdverpleegkundige ziekenhuis: Het ondersteunen van de Hoofdverpleegkundige Ziekenhuis teneinde het goed functioneren van de eenheid te verzekeren alsook het uitvoeren van de door de Hoofdverpleegkundige Ziekenhuis gedelegeerde taken en het vervangen van de Hoofdverpleegkundige Ziekenhuis indien nodig.	46.58€
Infirmier en Urgences: Assurer les premiers soins aux patients aigus dans l'unité des urgences et estimer le degré d'urgence de leur traitement afin de stabiliser les patients aussi rapidement que possible et de rendre possible les soins ultérieurs.	Spoedverpleegkundige: Het instaan voor de eerste zorgen aan acute patiënten in de spoedafdeling en het inschatten van de urgentiegraad van hun behandeling, teneinde de patiënten zo spoedig mogelijk te stabiliseren en een verdere verzorging mogelijk te maken.	39.52€
Infirmier en Soins Intensifs: Assurer la veille des paramètres vitaux et donner des soins globaux (infirmiers et psychosociaux) à un groupe de patients attribués, afin de permettre leur stabilisation le plus rapidement possible et de rendre possible les soins ultérieurs.	Verpleegkundige Intensieve Zorgen: Het verzekeren van toezicht op de vitale parameters en het verlenen van integrale zorg (verpleegkundig en psychosociaal) aan een toegewezen groep patiënten, teneinde hun situatie spoedig te stabiliseren en verdere zorgen mogelijk te maken.	36.57€ (+ 1.96€, cf Table 4)
Infirmier au Bloc Opératoire: Préparer le bloc opératoire ainsi qu'assister le médecin, l'anesthésiste et l'instrumentiste et accompagner les patients dans le bloc opératoire (aussi bien sur le plan infirmier que psychosocial) afin de garantir la sécurité et le bon déroulement des opérations.	Verpleegkundige Operatiekwartier: Het voorbereiden van het operatiekwartier alsook het assisteren van de arts, de anesthesist en de instrumentist en het begeleiden van patiënten in het operatiekwartier (zowel verpleegkundig als psychosociaal) om een veilig en vlot verloop van de ingreep te garanderen.	35.17€
Infirmier en hôpital: Donner des soins globaux (infirmiers et psychosociaux) à un groupe de patients désignés, afin de maintenir, d'améliorer ou de rétablir leur santé et leur bien-être	Verpleegkundige ziekenhuis: Het verlenen van integrale zorg (verpleegkundig en psychosociaal) aan een toegewezen groep patiënten, teneinde hun	36.30€



et d'augmenter leur autonomie.	gezondheid en welzijn te behouden, te verbeteren of te herstellen en hun autonomie te bevorderen.	
Sage-femme: Donner des soins globaux et aider la mère et l'enfant avant, pendant et après la grossesse et l'accouchement, afin que la grossesse, l'accouchement et la période post-partum se déroulent de manière optimale.	Vroedkundige: Het verlenen van integrale zorg en helpen van de moeder en de pasgeborene voor, tijdens en na de zwangerschap en de bevalling, teneinde de zwangerschap, de bevalling en de postpartum periode optimaal te laten verlopen.	36.30€
Aide-soignant hôpital: Donner des soins globaux (soignants, infirmiers et psychosociaux) à un groupe de patients attribués, afin de maintenir, d'améliorer ou de rétablir leur santé et leur bien-être.	Zorgkundige ziekenhuis: Het verlenen van integrale zorg (verzorgend, verpleegkundig en psychosociaal) aan een toegewezen groep patiënten, teneinde hun gezondheid en welzijn te behouden, te verbeteren of te herstellen.	29.63€
Infirmier en Consultation: Planifier, coordonner et réaliser les examens médicaux et les traitements dans une unité de consultation en collaboration avec le médecin afin de permettre un diagnostic et/ou un traitement adéquat et rapide.	Verpleegkundige in een Consultatie afdeling: Het plannen, coördineren en realiseren van medisch-technische onderzoeken en behandelingen in een consultatieafdeling in samenwerking met de betrokken arts teneinde een adequate en snelle diagnose en/of behandeling toe te laten.	40.16€
Puéricultrice: Donner des soins globaux (soignants et psychosociaux) à un groupe de patients attribués (nourrissons) après la naissance, afin de contribuer au bon fonctionnement de la Maternité.	Kinderverzorgende: Het verlenen van zorg (verzorgend en psychosociaal) aan een toegewezen groep patiënten (pasgeborenen) na de geboorte, teneinde bij te dragen aan de goede werking van de dienst Materniteit.	32.57€

* As IF-IC data are from 2010, results have been indexed by a factor of 1.061242 (wage index mid 2010= 1.4859, wage index March 2012= 1.5769. See section 1.3.



1.2.4. Extra costs related to irregular hours

Besides age, which influences the number of productive hours (denominator), the timing of the services delivered determines also the cost per hour (numerator). Evening, night, week-end hours and working hours during public holidays are more expensive.

These so-called “irregular hours” are defined as follows :

- Working hours on Saturdays and Sundays and during public holidays;
- Evening working hours (between 7 PM and 8 PM);
- Working hours at night (between 8 PM and 6 AM);
- Interrupted services (working hours interrupted by at least 4 consecutive hours).

There used to be two different approaches to remunerating irregular working hours, roughly depending on the type of the hospital (private or public). However, public hospitals are currently increasingly using the approach applied by private hospitals. Therefore, we applied the private sector approach for our calculations (Table 6). It should be noted that gross wage supplements for irregular working hours cannot be cumulated. In case of combinations, the highest supplement applies.

Table 6: Gross wage supplements for irregular working hours in the private sector

Type of irregular hours	Gross wage supplements in private hospitals
Evening: 7 PM-8 PM	20% of hourly gross wage
Night: 8 PM-6 AM (on week days and Saturdays)	35% of hourly gross wage
Night: 8 PM-6 AM (on Sundays and public holidays)	56% of hourly gross wage
Saturday 6 AM-8 PM (daytime)	26% of hourly gross wage
Sunday and public holidays 6 AM-8 PM (daytime)	56% of hourly gross wage

Source: Collective labour agreement - CP/PC330

The cost for a specific function, must be adjusted as follows :

$(\text{Hourly cost} * \text{number of regular hours}) + (\text{hourly cost} * \text{number of evening hours} * 1.2) + (\text{hourly cost} * \text{number of night hours} * 1.35)$

We recommend to use week-end tariffs only if the hospital stay associated with a specific procedure or service is longer than 5 days.

1.2.5. Hypothetical example of a calculation of the number of nursing hours for a patient in a general acute-care unit on weekdays

This section gives an example of a methodology to calculate the number of nursing hours per patient day. It should be noted that the data used in this example are only based on a survey in three hospitals^p and should be validated. Staff required for the different shifts, for example, can vary significantly between hospitals.

Table 7 presents the ventilation of the working hours, according to the morning, afternoon and night shift.

Table 7: Shift and working hours in a general acute-care unit

Number of nurses present	Shift	Hours/nurse	
4	AM: 7h to 15h30	7.6	regular hours
2	PM: 14h to 22h	4.6	regular hours
		1	evening hour
		2	night hours
1	Night: 21h30 to 7h30	8.5	night hours
		1.5	night hours*

* hours from 6 AM to 7.30 AM - for the night shift - are considered as night hours since 10 July 2010 (collective labour agreement) – CP/PC 330).

Table 8 gives an overview of the occupancy rates for the most important hospital services in 2009.

^p Cliniques universitaires Saint-Luc, CHIREC and Clinique Saint-Jean

**Table 8: Occupancy rate of hospital services (2009)**

Type of unit	Average of week and week-end occupancy rate (2009)*	Estimation of week average occupancy rate**	Estimation of week-end average occupancy rate**
C: Diagnostic and chirurgial treatment (without chirurgial day hospital)	64%	68%	53%
D: Diagnostic and medical treatment	77%	83%	63%
E: Paediatrics	57%	63%	43%
G: Geriatrics	87%	88%	84%
I: Intensive care	88%	88%	88%
M: Maternity	63%	64%	60%

Source: *Federal Public Service for Health, Food Chain Safety and Environment: number of patient days / (number of authorized beds*365); ** own estimates



Hypothesis: the hospital unit consists of 30 beds.

Regular hours per patient day =

$$\frac{7,6h * 4 + 4,6h * 2}{30 * occupancy\ rate} = \frac{39,6h}{30 * occupancy\ rate}$$

$$\text{Evening hours per patient day} = \frac{1h * 2}{30 * occupancy\ rate}$$

Night hours per patient day =

$$\frac{2h * 2 + 10h * 1}{30 * occupancy\ rate} = \frac{14h}{30 * occupancy\ rate}$$

Appendix 17 gives additional examples of the nursing hours for a patient in a general acute-care unit, on Saturdays and Sundays and for a patient on the intensive care unit, during the weekdays, on Saturdays and on Sundays.

1.3. Updating the unit cost estimates

Given that personnel costs change regularly, the unit costs provided in this manual may need to be updated. To update the unit costs, a number of elements influencing the personnel costs need to be taken into account, amongst which:

- Wage indexation

The wage revaluation coefficient (“verhogingscoëfficiënt”/“coefficient d’augmentation”) is linked to the “spilindex”/“indice-pivot” 138.01 for both private and public hospitals. For the indexation linked to the “spilindex”/“indice-pivot” 138.01, the website “www.wedden.fgov.be” can be consulted.

When the average value of the health index over the past 4 months (i.e. the levelled health index - “afgevlakte index”/“indice lissé”) exceeds the “spilindex”, the salaries increase by 2%. The wage revaluation coefficient at publication of the report is 1.5769.

Table 9: Wage revaluation coefficient (“verhogingscoëfficiënt”/“coefficient d’augmentation”) as related to the “spilindex/indice pivot 138.01”

Date of index adjustment	revaluation coefficient
30/08/2005	1.3728
30/10/2006	1.4002
30/01/2008	1.4282
29/05/2008	1.4568
29/09/2008	1.4859
01/10/2010	1.5157
01/06/2010	1.5460
01/03/2012	1.5769
future	See prognoses on the website of the Federal Planning Bureau:

<http://www.plan.be/databases/indprix.php?lang=fr>

- Changes in collective labor agreements:
 - o Changes in the number of working hours;
 - o Changes in definition of irregular working hours;
 - o New premiums or changes in premiums
- Nationwide shifts in the seniority pyramid. Currently there appears to be a tendency towards ageing of the nursing personnel
- Changes in employers’ contributions



2. HOSPITAL PHYSICIANS

2.1. Inclusion of physician cost in the cost analysis

For cost-based pricing decisions, physician's input should be included as a cost, irrespective of whether this cost figures on the income statement of the hospital. The cost of physician input in a health care service equals the opportunity cost of the time the physician spends on that service. As for other personnel inputs, this opportunity cost is best reflected by the actual income of the physician. Income is this used as a proxy for the market value of a resource input. In economics, the market price of a product or service represents its market value. We are aware that the tariff scheme ("nomenclature/nomenclatuur"), defining the remuneration for health care services, is the result of negotiations at the RIZIV/INAMI as well as re-allocations within hospitals and therefore not necessarily value-based. However, it cannot be ignored that the negotiated fees also implicitly take into account differences in income between different types of specialists. KCE considers this as a fact of life, without making any value judgments about the justification of these differences. In other words, we accept the existence of differences between physician costs and consider the current prevailing incomes as appropriate proxies for the relative value of the services provided by the respective physicians.

The vast majority of specialists working in Belgian hospitals are self-employed, and only a small percentage of specialists are salaried. Generally this is the case for specialists working at university hospitals, but also at other hospitals specialists can be salaried (a limited number of general hospitals employ a combination of salaried and self-employed physicians).

Specialists sign an agreement with the hospital, allowing the hospital to retain a proportion of the fees as compensation for the space, equipment, staff and overhead services provided to the physician.¹⁷

In cost analyses, the cost of physicians is considered to equal the gross hospital income minus the deductions (GHIMD) agreed between hospital management and medical board ("Medische Raad/Conseil Médical").

Later in this report, we will use the abbreviation "GHIMD" for this concept.

2.2. Limitations of the physician cost registration on hospitals' income statement

There is a large variety in how costs of physicians are registered in the hospital cost accounts.

For **salaried physicians**, a large part of the costs are registered on the 62 and 617 accounts. However, besides the wage costs registered on the 62 and 617 accounts, salaried physicians receive other compensations, such as "wachtvergoedingen – honoraires de garde", private supplements and other compensations. These compensations are not uniformly registered in the cost accounts of the hospitals. Furthermore, at some university hospitals, physicians may be part time (e.g. 80%) on the payroll of the hospital and for the remainder time on the payroll of the university, whereas in other university hospitals, physicians are 100% on the payroll of the hospital.

For **self-employed physicians**, a distinction needs to be made between hospitals where honoraria are centrally collected by the hospital administration and hospitals where honoraria are centrally collected by the physicians' council ("Medische Raad/Conseil Médical"). Central collection of honoraria is mandatory for hospitalized patients, but not for ambulatory patients. When the honoraria are collected by the hospital, the gross honoraria are registered on the 709 accounts of the hospital's income statement. The part of the honoraria reserved for the physicians (the net honoraria fee) are considered as a cost for the hospital and are registered on the 619 accounts "bezoldigingen voor artsen – rétributions de médecins".

When the honoraria are collected by the physicians, only the part of the honoraria allocated to the hospital is registered on the 709 accounts of the hospital's income statement. The part of the honoraria allocated to the physicians is then not registered in the hospital's income statement.

Due to this large variety in how costs of physicians are registered in the cost accounts and the limitations of the registered data, net honoraria cannot be deducted from the income statements. Therefore, we decided to conduct a survey among hospitals in order to determine the net fee by specialty.



2.3. Actual versus normative remuneration

In cost analyses, the opportunity cost of physicians' input can in principle be taken into account in two different ways.

One approach is to base the cost of physicians in each specialty on the average remuneration for the physicians' time in this relevant specialty. The advantage is that this is the best proxy of the current market value of physicians' time. The disadvantage of this approach, however, is that the actual remuneration of independent physicians may not adequately reflect what would be the true market value in an ideal fully open and competitive market. Indeed, current remunerations are also (partly) determined by negotiations at the level of RIZIV/INAMI and by reallocations within hospitals. The implication is that fees levels may vary significantly between specialties without a clear justification in terms of workload, required skills, associated risk, scarcity, or societal value.

An alternative approach would be to base the cost analysis on a normative cost per hour. In some countries, policy makers and physicians agree explicitly on what is a just income per hour for physicians in the different specialties. This hourly rate then serves as a departure point for re-evaluating existing tariffs and setting new ones. The Dutch Ministry of Public Health, Welfare and Sports ("Ministerie van Volksgezondheid, Welzijn en Sport"), for instance, agrees since 2003 with the "Orde van Medische Specialisten" on an hourly rate for specialists. In 2008 this rate was set at €132.50^q. The normative hourly rate was determined by adding the normative income to the normative costs and dividing the total by the normative working hours. As there is no agreed normative hourly rate in Belgium and as it is beyond the remit of the KCE to determine such a rate, we cannot apply this second approach.

q Source: http://www.rvz.net/cgi-bin/nieuws.pl?niew_srcID=192, cited 16 February 2010.

2.4. KCE-Deloitte survey

Deloitte invited 77 Belgian hospitals to participate in a survey about the cost per half-day by specialty. The calculation of this cost was based on the tariff scheme ("nomenclatuur- nomenclature"), adjusted with potential reallocations within each hospital, minus the deductions agreed between hospital management and medical board and/or minus the costs covered by the physicians themselves. Supplements on the fees were separately recorded.

2.4.1. Hospital sample

- Hospitals with salaried physicians (university hospitals and some general hospitals) are not included.
- Of the 77 hospitals contacted, only 16 accepted to participate, after approval of their Medical Council. Four hospitals retracted in the final phase of the survey. The final sample is 13 hospitals (5 from Flanders, 6 from Wallonia and 2 from Brussels). This represents 1 511 FTE.

2.4.2. Methodology

Hospitals have furnished aggregate data by specialty for the year 2010. The specialty of each physician has been determined on the basis of his RIZIV/INAMI number.

2.4.2.1. Gross hospital income

The following components of the gross hospital income of physicians were collected:

- Invoiced fees for services on the basis of the RIZIV/INAMI nomenclature^r or on the basis of pseudo-codes used in the hospital (fees for services for which no classification exists or which are additionally charged);
- Lump sum payments for medical imaging and clinical biology;
- Permanence fees («honoraires de permanence – permanentiehonoraria»);

r Consultations fees were declared separately.



- Availability fees (“beschikbaarheidshonoraria – honoraires de disponibilité”);
- Duty fees (« honoraires de garde – wachtvergoedingen »);
- Physician share in hospital allowances for RIZIV/INAMI Care Programme Agreements (“conventions RIZIV/INAMI conventies”), e.g. diabetics, oxygen therapy, ...;
- Supplements on the fees;
- Any other income: income from insurance, foreign patients, income allocated to a specific discipline in the context of solidarity within the hospital, ...).

2.4.2.2. Deductions (“inhoudingen –retenues”)

All applied deductions on fees were provided per discipline. The various deductions on fees provided for in art. 133 of the Hospital Act, 7 August 1987 were taken into account: deductions for central collection costs (“coûts de perception centrale – centrale inning kosten”) (art. 133, 2°), deductions to cover the costs incurred by the performance of medical services that are not covered by the “budget of financial means” (art. 133, 3°), and deductions as a contribution to the implementation of measures designed to maintain or promote medical activity in hospitals (art. 133, 4°).

If, after deductions from gross income agreed between hospital management and medical board, physicians had still to cover some costs themselves (e.g. surgical instruments, operating nurses, secretaries), these costs have also been deducted from the gross income.

2.4.2.3. Number of FTE per medical discipline

Hospitals provided the number of FTE by specialty. The criterion used to determine the activity level of physicians was the number of half-days reported for the election of the Medical Board.^s This criterion seemed the best available because it is internally controlled. But it is likely that half-days are not counted in the same way for specialties where physicians spend most of their time in hospital (anaesthesia) than for specialties where physicians may have a significant activity outside the hospital (for example gynaecology, ophthalmology, ...). This could bias the estimate of gross income per half day of these specialties.

The numbers of half-days were corrected in a few cases, when changes had occurred during the year.

2.4.2.4. Number of half days per year

A week of a specialist usually represents 11 half days of work (11 x 52 = 572 half days per year). From this, holidays, participations to congresses, illnesses, etc., have to be subtracted. Table 10 presents the calculation of the actual number of half days per year attributable to clinical work or to work related to health care services.

Table 10: Number of half days worked per year for clinical services

	Number of half days
Baseline number of half days per physician (52 weeks * 11 half days)	572
Holidays, participation to conferences, illnesses, ... (35 days)	70
Public holidays (10 days)	20
Average number of half days per FTE per year	482

Source: survey conducted in some hospitals

^s For elections to the Medical Council, a vote is assigned to each physician, weighted by its level of activity in the hospital in terms of half days.



2.4.2.5. Cases and solutions

- Supplements to the fees

Supplements to the fees were recorded separately, and also deductions on these supplements (if different from deductions on other fees). This allowed to calculate the gross hospital income and the GHIMD per FTE including and excluding the supplements. Gross income and GHIMD per FTE, including the supplements, can be found in appendix 18.

For a limited number of hospitals, gross income excluding supplements could not be delivered. In this case, the amount of supplements was estimated on the basis of the average percentage of supplements of the others hospitals, and on the basis of the deductions made on supplements of the hospital considered.

- Pooling of fees

The survey showed that in most cases, hospitals had a poor knowledge of the pooling of fees among specialties. In several hospitals, just a small number of physicians of one specific specialty were part of a pool.

- Exclusion of specialties

If revenues and costs could not be calculated accurately enough or if only partial data could be provided for a specialty, this specialty was excluded from the calculation. However, if for example deductions on fees were specifically attributed to a specialty (e.g. solidarity funds), the amount was added to the gross income of this specialty.

Some specialties were ill-represented in the survey. For confidentiality reasons, specialties for which less than 5 hospitals reported data were excluded (i.e. haematology, haemato-oncology, cardiac surgery).

- Emergency and Intensive care

Intensive care physicians cannot be recognized as such by a specific INAMI-RIZIV number, and, can belong to several different specialties.

Emergency medicine is a defined physician specialty, but emergency departments are actually staffed with different specialties. Moreover, physicians not belonging to these services are occasionally or commonly called to give opinions or to perform specialized acts.

As a basis for the calculation, we used thus the total fees charged in these cost centres, regardless of the physician specialty. We then considered fees for those physicians working only occasionally for emergency care or intensive care departments as a cost for these services. Fees for physicians working commonly for these services were considered as an income, and the corresponding portion of FTE was included in the total number of FTEs of these services

The total GHIMD was divided by this number of FTEs. The result of this division is considered as the GHIMD of an intensivist or of an emergency physician.

- Costs covered by physicians themselves

Cost covered by physicians themselves are mainly personnel costs. When the precise amount paid by physicians was not known, an estimation was made on the basis of the number of staff FTE employed (secretaries, theatre nurses, ...) and on the average estimated cost for the staff. Each calculation was validated by the hospital in question.

- Salaried physicians

In a very limited number of cases, some physicians were salaried. In this case, the salaried physicians were considered as self-employed and integrated into the number of FTEs of the specialty. Their fees were added to the gross income of the specialty.

- Income from outpatient consultations

For one hospital, outpatient consultation incomes could not be specified for each discipline, because no consultation activities were conducted within the hospital. In that case, an estimated income was added to the gross income of each discipline. This amount was estimated on the basis of the outpatient consultation income average (per specialty) of the other hospitals in proportion to all hospitalization activities.

- Central collection

If fees were not collected centrally only for a limited number of specialties, the data of these specialties were not included in the study. If physicians collected themselves consultation fees and declared this income to the hospital, consultation fees were included in the calculation of the gross income. Costs covered by the physicians or deductions applied were then retrieved to calculate the GHIMD. Physicians working in several services



In case of physicians from one specialty working in different medical services, their FTEs have been allocated proportionately to the specialists' activities in each service and thus allocated proportionally to different specialties.

2.4.3. GHIMD per half day, by specialty

The results of the survey conducted by Deloitte can be summarized as follows:

Table 11: Average GHIMD, by specialty

Specialty	Total FTE in the sample	Annual GHIMD excluding supplements: weighted mean (€)	Inter hospital weighted standard deviation (€)	Coefficient of variation (SD/mean)	Average GHIMD per half day (€)
Cardiology	82.9	216.669	91.739	42%	449.52
Gastroenterology	54.6	211.171	108.463	51%	438.11
Pneumology	47.2	169.449	58.970	35%	351.55
Rheumatology	7.4	142.371	66.868	47%	295.37
Neurology	49.1	151.096	54.730	36%	313.48
Psychiatry	42.7	167.781	56.277	34%	348.09
Paediatrics	68.2	148.158	50.409	34%	307.38
Geriatrics	34.5	170.921	55.454	32%	354.61
Endocrino-diabetology	13.9	255.014	99.941	39%	529.07
Oncology	13.5	172.886	27.673	16%	358.69
Dermatology	15.3	126.858	46.020	36%	263.19
Anaesthesia	155.3	212.546	62.258	29%	440.97
Physical and rehabilitation medicine	24.2	234.172	63.458	27%	485.83
General surgery	55.9	175.038	66.552	38%	363.15



Specialty	Total FTE in the sample	Annual GHIMD excluding supplements: weighted mean (€)	Inter hospital weighted standard deviation (€)	Coefficient of variation (SD/mean)	Average GHIMD per half day (€)
Neurosurgery	18.7	246.534	131.585	53%	511.48
Cardiac surgery	10.4	321.345	146.332	46%	666.69
Vascular surgery	21.6	186.310	101.236	54%	386.53
Plastic surgery	21.6	165.514	49.795	30%	343.39
Gynaecology - Obstetrics	105.9	147.833	44.757	30%	306.71
Ophthalmology	46.7	248.220	110.790	45%	514.98
Otorhinolaryngology	41.7	196.632	63.470	32%	407.95
Urology	34.5	174.319	45.102	26%	361.66
Orthopaedics	96.0	195.082	87.319	45%	404.73
Stomatology	30.2	250.095	102.296	41%	518.87
Clinical biology	58.7	344.757	158.088	46%	715.26
Pathological anatomy	26.0	220.698	133.115	60%	457.88
Radiology	137.0	298.465	140.733	47%	619.22
Radiotherapy	26.5	256.240	93.347	36%	531.62
Nuclear medicine	21.3	219.481	91.082	41%	455.36
Emergency medicine	51.7	189.045	63.952	34%	392.21
Intensive care	39.1	249.701	86.989	35%	518.05
Nephrology dialysis	27.4	415.600	301.939	73%	862.24
ALL PHYSICIANS	1511.0	212.781	70.353	33%	460.56



More data can be found in appendix 18.1: average gross income and GHIMD per FTE, including and excluding supplements and average deduction rates for Belgium, Wallonia and Flanders (Brussels is not shown for confidentiality reasons).

2.5. Conclusions

- The figures presented in the table above obviously do not reflect the reality of each physician in each specialty. The variability in the data is large and the number of observations is small. More accurate data would require the participation of more hospitals in an updated study. Nevertheless these are the best estimates currently available for Belgium, and there is no reason to believe that the data obtained for this study would be false or biased, nor that the participating hospitals would be very different from the majority of their non-participating counterparts in terms of physician revenues.
- There is a wide variation within, but also between the different specialities. This is not entirely unexpected. Similar disparities between specialities are found in France (see appendix 18.2) where the incomes of doctors are better known and measured.
- Another remarkable finding in our sample is the variability of gross incomes of physicians between regions (see appendix 18.1). These incomes are generally higher in Flanders. The causes of these disparities are not the object of this report and have not been investigated further.
- The usability of the figures presented above should be assessed according to the research questions of each study, and also depends on the possibilities of collecting more accurate data.

3. INVESTMENT COSTS

3.1. Direct versus indirect investment costs

Unlike operational (or recurrent) costs, investment costs are one-time expenses. Capital costs are costs related to the use of land, buildings, IT, vehicles, furniture or medical equipment.

In the Finhosta cost accounts, capital costs are registered in the depreciation accounts (see Table 12). Because it is often time consuming to measure the capital costs related to **buildings, land and non-medical equipment** (i.e. all accounts in Table 12, except for those related to medical equipment) that can be attributed directly to a specific health care intervention in hospital, and because the relative weight of these costs in the total costs of an intervention is usually limited, we included these costs in the indirect costs used for calculating the general overhead cost rate (see chapter 0 and annex), even if these depreciations are registered directly on definitive cost centres. Costs of **medical equipment**, however, should be considered as direct costs in cost analyses.

**Table 12: Depreciation cost accounts in Finhosta**

63 Afschrijvingen en waardeverminderingen op vaste activa - toevoeging	63 Amortissements, réductions de valeur et provisions pour risques et charges
6300 Op oprichtingskosten	6300 Sur frais d'établissement
6301 Op immateriële vaste activa	6301 Sur immobilisations incorporelles
6302 Op gebouwen	6302 Sur constructions
6303 Op materieel voor medische uitrusting	6303 Sur matériel d'équipement médical
6304 Op materieel voor niet-medische uitrusting en meubilair	6304 Sur matériel d'équipement non médical et mobilier
6305 Op vaste activa in huur, financiering en soortgelijke rechten	6305 Sur immobilisations détenues en location financement et droits similaires
63050 Gebouwen	63050 Constructions
63051 Materieel voor medische uitrusting	63051 Matériel d'équipement médical
63052 Meubilair	63052 Mobilier
63053 Materieel voor niet-medische uitrusting	63053 Matériel d'équipement non médical
63054 Rollend materieel	63054 Matériel roulant
63055 Materieel en meubilair voor informatieverwerking	63055 Matériel et mobilier informatiques

3.2. Financial costs

Financial costs related to investments for medical equipment are in this manual included in the general overhead rate derived in chapter 0. The reason for this approach is that in Finhosta financial costs are not consistently booked directly on the definitive cost centres. Hence, it is difficult to make the distinction in Finhosta between financial costs related to non-medical equipment and financial costs related to medical equipment.

The option to include all financial costs in the general overhead rate is disputable, but so is any approach for calculating the financial costs (being a proxy for the opportunity cost of capital) of medical equipment. As we are constrained by the structure of the accounting scheme –note that this scheme was not developed in the first place to calculate the costs of particular health interventions- we considered this to be the most appropriate approach.

The next paragraph gives a brief overview of methods for calculating the yearly cost of medical equipment, with or without taking the opportunity cost of capital into account. A more complete background on these methods is provided in appendix 6.

- **Medical equipment costs should be calculated directly.**
- **Other investment costs and financial costs are included in the general overhead rate calculated in chapter 0.**



3.3. Cost of medical equipment

As assets have an economic life that is longer than one year, investment costs need to be spread over the lifespan of the asset. Moreover, investments imply opportunity costs of capital, which is reflected in the interest rate hospitals have to pay on loans taken for making the investments. Even if no loan are taken, capital investments from own resources also implies an opportunity cost which should be taken into account in the calculations.

Once the cost per year of the medical equipment has been calculated, a unit equipment cost per service should be calculated. The intensity of use of the equipment heavily influences this unit cost: the more intensive the equipment is used, the lower will be the unit equipment cost. If cost calculations are used for cost-based pricing, it is important to apply the optimal (i.e. efficient) intensity of use as the denominator in the calculations, in order to avoid prices that reward inefficient use of the equipment.

There are different ways to calculate the cost per year of medical equipment. The following methods are discussed:

- Depreciation method
- Equivalent annual cost method
- Rental value method

3.3.1. Depreciation

The depreciation method is based on accounting practices. Different depreciation approaches can be applied. In Belgium, the straight line and reducing balance method are the only accepted depreciation methods for tax purposes.

The Belgian hospital accounting system imposes certain lifetimes for different durable assets, but the true clinical lifetime may actually be shorter and in some cases longer⁴. The depreciation data originating from the accounting statements of hospitals therefore do not necessarily reflect actual economic costs. For reasons of consistency across cost analyses, it is recommended to use the accounting lifetime of assets, unless there is evidence that the actual lifetime deviates from the accounting lifetime.

The formula that can be applied to calculate the yearly cost of a medical equipment is then:

$$\text{Annual depreciation cost} = \frac{K - S}{n}$$

With:

- K = value of initial investments (historical purchase or replacement cost)
- S = present value of the resale value at the end of the useful life
- n = useful life of the equipment (yrs)

The disadvantages of this approach is that it does not take the opportunity cost of capital into account nor the impact of inflation. This opportunity cost, reflected in Finhosta in the financial cost accounts, are in this manual included in the general overhead cost rate. This implies an overestimate of the overhead costs of interventions that are not making use of medical equipment.

3.3.2. Equivalent annual cost (EAC)

In contrast to the depreciation method, the EAC method takes the opportunity cost of capital explicitly into account, by annuitizing the investment costs over time (including costs of upgrades or restoration during the equipment's lifetime).

The difficulty in the EAC method is the definition of the real interest rate, required for the definition of the annuity factor. The real interest rate should reflect both inflation and time preference for capital. In applications of the EAC method, forecasts by the National Planning Bureau can be used.

Although the EAC approach has its merits, it also has weaknesses. The choice of one method –in this particular case the use of a general overhead cost including financial costs of medical equipment investments– has implications for the choice of the method for calculating annual investment costs of equipment. Using the EAC in combination with a general overhead rate that includes the financial costs of investments in medical equipment, would imply double counting. Therefore, we recommend not to use this approach in combination with the general overhead rate calculated in chapter 0.



3.3.3. Annual rental value

When medical equipment is predominantly leased by the hospital, the asset would appear in the accounts as an operational (recurrent) cost rather than an investment cost. However, the annual rental or lease cost should not be used as such in cost analyses as recommended in this manual, because the rental or lease value implicitly includes a compensations for the opportunity cost of capital (interest). This opportunity cost of capital is already included in the general overhead rate calculated for this manual (see chapter 0). Therefore, using the annual rental value approach in combination with the general overhead rate which includes all financial costs, would be double counting.

Using the depreciation method with parameters reflecting actual lifetime of the equipment is the recommended approach to spread investment costs over the life years of the asset. Financial costs related to the investments are calculated as part of the general overhead rate. This is considered the best option given the available cost registration in Finhosta.

3.4. Lifespan of an asset

The useful lifetime of a certain medical equipment can vary significantly depending on the specifications of the asset (brand, type, technology, ...) but may also vary largely between providers as providers may have different expectations on advancements in for instance technology, speed or quality and as they may be subject to tighter or looser cost constraints. The lifespan of assets may furthermore be influenced by current financing policies. The researchers will therefore need to be clear and explicit about the basis for the estimated lifespan: is it the lifespan as currently observed in Belgium (even though it may be influenced by current financing policy), or is it the lifespan observed internationally or defined in international guidelines? Often, especially for assets with a relatively long lifetime and for fast-moving technologies, it will not be possible to draw conclusions on the actual lifespan observed in Belgium as lifetime data on replaced assets may concern already obsolete technology. In case of large uncertainty or variation around this parameter, sensitivity analysis should be undertaken.

3.5. Purchase price or replacement cost

For new assets, we recommend to base the investment cost calculation on the current purchase price. For old assets, we recommend to use the replacement cost of the equipment or the actual value of the historical purchase price, whilst taking into account a full lifetime (see chapter 7 for indexation guidelines).¹⁰ Merely indexing the historical cost will, however, often not provide a good basis for analysis, as it does not take into account price fluctuations which are not linked to inflation, such as price erosion due to increased competition or price increases linked to technology advancements. In such cases, it will be more suitable to derive the replacement cost from actual list prices. The replacement cost is the cost to replace the asset by a new one. The replacement cost differs from the market value of the asset in use, which is its selling price at that point in time. When list prices are considered, the price net of all rebates should be taken. The level of these rebates may differ between asset types. Therefore they need to be analysed case by case. Sometimes the manufacturers provide extra functionalities instead of lowering their price and not infrequently they provide price reductions on other products in their portfolio as promotion.

It is recommended to base the investment cost on the replacement cost. In some cases, the replacement cost can be estimated by indexing the historical cost to current euros, but often merely indexing the historical cost will not be a good basis for analysis.



3.6. Cost of maintenance of medical equipment

Maintenance of medical equipment may be outsourced, for instance when the maintenance requires certain specialized skills, but may also be done in-house. Accounting data are usually insufficiently precise to allocate the cost of maintenance to a particular type of equipment. In some cases, maintenance costs for a specific period of time will be included in the purchase price, in others separate maintenance contracts will be established. In both these cases, it is recommended to request the cost of the maintenance contract or the percentage of the price charged by the supplier as maintenance (+ period covered) at the hospital administration. When maintenance is done in-house, an estimate could be made of the time and materials used for the maintenance activities. However, attention should be paid to the fact that some of these costs will already be included in the general overhead rate (chapter 0). Double counting should be avoided.

4. PHARMACEUTICALS, OTHER PHARMACEUTICAL PRODUCTS AND MEDICAL CONSUMABLES

4.1. Pharmaceuticals

Generally, pharmaceuticals are direct costs, as they can be directly allocated to a cost object. Often there is a clear causal relationship (e.g. 1 dose of a specific drug per patient with a given diagnosis or medical intervention). In the cost accounts, the cost of pharmaceuticals can be found per cost centre in the accounts 6000 and 6004. However, it is difficult to use the Finhosta database, as most of the hospitals register pharmaceuticals in the cost centre “pharmacy”, and not in direct cost centres. It is therefore recommended to measure the use of pharmaceuticals bottom-up.

Data on drug consumption for all hospitalized patients are available in the IMA-AIM and AZV-SHA databases. In Belgium, there is a precise registration of pharmaceutical specialties consumed per hospitalized patient (date, name of patient, name of specialty, form and administered dose). None of these databases are, however, public.

Retail prices for pharmaceutical products are available through the website http://www.riziv.fgov.be/inami_prd/ssp/cns2/pages/SpecialityCns.asp.^t The cost of the products for the hospital pharmacy is the price ex-factory, including VAT, minus the rebates. Information on rebates that were obtained should be requested at the administration of the hospital pharmacy.

Data on drug consumption and unit prices can also be requested at hospital financial administrations (patients' hospital bill).

Besides the direct costs of the pharmaceuticals, there are also general direct costs of the pharmacy. This is explained in section 4.3.

^t Cited June 2010.



- It is recommended to measure and value the costs of pharmaceuticals bottom-up.
- Data on drug consumption can be consulted in IMA/AIM and AZV-SHA databases or requested at hospital financial administrations.
- Data on retail prices can be consulted through the website http://www.riziv.fgov.be/inami_prd/ssp/cns2/pages/SpecialityCns.asp.

4.2. Other pharmaceutical products and medical consumables

Other pharmaceutical products and medical consumables are listed in Table 13. Depending on the cost object, some of these items are relevant, whereas others are not. These products appear in the cost accounts 600 per cost centre. However, as for pharmaceuticals, it is difficult to use the Finhosta database, as most of the hospitals register these products in the cost centre “pharmacy”, and not in direct cost centres. It is therefore difficult to calculate the cost of the applicable items top-down. For a bottom-up calculation, the consumption of each product can be based on observations (number of items per patient) and the price of the products available at the financial administration of the hospital.

**Table 13: Other pharmaceutical products and medical consumables**

Courante producten	Produits courants
Steriele materialen en producten	Produits et matériels stériles
Steriele afdekverbanden	Pansements stériles de couverture
Chirurgische Ligaturen	Ligatures chirurgicales
Injectie-, infuus-, transfusie-, drainagemateriaal	Matériel d'injection, de perfusion, de transfusion, de drainage
Steriel verwijderingsmateriaal	Matériel de prélèvement stérile
Steriel linnen voor uniek gebruik	Linge stérile à usage unique
Synthesemateriaal en farmaceutische handel in zwachtels en breukbanden	Matériel de synthèse et bandagisterie pharmaceutique
Materiaal voor viscerosynthese en endoscopie	Matériel de viscérosynthèse et endoscopie
Andere farmaceutische producten	Autres produits pharmaceutiques
Therapeutische verbanden	Pansements thérapeutiques
Irrigatie geneesmiddelen	Solutions d'irrigation
Farmaceutische voedingsproducten	Produits de nutrition pharmaceutiques
Niet-steriele medische producten	Produits médicaux non stériles
Disposables en klein medisch materieel	Disposable et petit matériel médical
Medische gassen niet-farmaceutische specialiteiten	Gaz médicaux non-spécialités pharmaceutiques
Zwachtels, niet-steriele verbanden	Bandages, pansements non stériles
Niet-steriel hechtingsmateriaal	Produits de sutures non stériles
Niet-steriel afnamemateriaal	Matériel de prélèvement non stérile
Reagentia	Réactifs
Radioactief materiaal en isotopen niet-farmaceutische specialiteiten	Produits radio-isotopes non-spécialités pharmaceutiques
Filmen en ontwikkelingsmateriaal	Films et produits révélateurs
Moedermelk	Lait maternel
Bloed, plasma, afgeleiden	Sang, plasma, dérivés
Gipsen en gipsverbanden	Plâtres et bandes plâtrées



- **It is recommended to calculate the costs of pharmaceutical products and medical consumables bottom-up.**
- **Data on prices should be obtained from hospital administrations.**

4.3. Pharmacy

On top of the cost of the pharmaceuticals and pharmaceutical products, there are general costs related to the pharmacy. These general costs of the pharmacy should be allocated to the cost objects in function of the consumption of pharmaceuticals and pharmaceutical products. Therefore an average mark-up percentage was calculated to add on top of the pharmaceutical costs. Analysis of the Finhosta 2006 database resulted in an average mark-up of 3.95% (see Table 14). This mark-up covers all direct operational, personnel and capital costs related to the pharmacy other than the cost of the pharmaceuticals and pharmaceutical products. Most hospitals register pharmaceutical costs centrally on the cost centre pharmacy, but some hospitals register costs as much as possible on the consuming cost centres. Therefore, all decentrally registered pharmaceutical costs were added to the costs of the central pharmacy cost centre. Indirect costs related to pharmacy are included in the general overhead rate derived in chapter 0.

Table 14: Average mark-up percentage for cost of pharmaceuticals (direct costs)

Sum of all direct net costs of the cost centre 'pharmacy' (cost centre 830) (excluding cost accounts 6000 to 6008 and 6090)	75 210 422
Sum of all pharmaceuticals and pharmaceutical products (cost accounts 6000 to 6008 and 6090) for all cost centres	1 928 627 688
Sum of all discounts and rebates	-25 213 469
→ mark-up %	3.95%

This mark-up is based on total costs, and not on the volume of pharmaceuticals consumed. This means that in case of expensive, low-volume pharmaceuticals (e.g. some cancer drugs) this mark-up will overestimate the real pharmacy costs. It is impossible, however, estimate based on the Finhosta data the actual costs of handling each type of medication or medication dose.

A mark-up of 3.95% has to be applied to the costs of pharmaceutical products and medical consumables.



5. MEDICALLY SUPPORTING DEPARTMENTS

This chapter provides data for the operating theatre, anaesthesia, sterilization and emergency department. Definitive cost centres (as intensive care, surgical or medical services, medical imaging and laboratories) are not covered in this chapter, because the costs of these services can be calculated by adding the cost of personnel (see chapter 1), physicians (see chapter 2), investments (see chapter 3), pharmaceutical products (see chapter 4) and overheads (see chapter 0).

5.1. Operating theatre, anaesthesia and sterilization department

There is often a large diversity of equipment and products used in these supporting departments as well as services provided by these departments. Gathering of primary data on the duration of the intervention, the staff presence, the use of medical equipment, the consumption of pharmaceuticals and the consumption of sterile products can be difficult and time-consuming. Therefore, we used a top-down methodology to calculate a cost per hour.

The cost per hour for the use of operating theatre and the departments associated (anaesthesia and sterilization) was calculated on the basis of Finhosta 2006 data and standard operation times, i.e. operation times used by the Belgian Federal Public Service for Health, Food Chain Safety and Environment for the calculation of the Budget of Financial Means ("Budget van Financiële middelen/Budget des Moyens Financiers"). The cost was actualized for 2012. This cost per hour covers all direct costs of the departments in question, i.e. :

- Operational costs as pharmaceuticals, pharmaceutical products (pharmacy mark-up included), medical consumables, disposables (41% of the total direct costs);
- Medical equipment of the total direct costs) and;
- Staff, physicians excepted (48% of the total direct costs).

Indirect costs are included in the general overhead rate derived in chapter 0.

Table 15: Direct cost per hour per nurse for the operating theatre

Sum of all direct costs of operating theatre (cost centre 180), anaesthesia (cost centre 170) and sterilization (cost centre 160) (2006)	609 977 228€
Sum of standard operation times* (2006)	4 466 322h
Cost per hour (2006)	136.57€
Weighted actualisation rate 2006-2012 ^u	1.143866428
Cost per hour (per nurse) (2012)	156.22€

**Source: Belgian Federal Public Service for Health, Food Chain Safety and Environment.*

A "standard operation time" is the estimated total nursing working time for a specific intervention. This time reflects the number of nurses required simultaneously. Therefore, the cost per hour calculated in Table 15 is a cost per hour per nurse. If the intervention requires two nurses, the cost per hour must be doubled.

An limitation of this approach is that on the one hand there is inconsistency between hospitals in the registration of costs. Some hospitals register cost of operating theatre in central cost centres, and not directly into the operating theatre cost centre. The cost per hour calculated in this manual could therefore be slightly underestimated. On the other hand, standard operation times have not been estimated for all types of interventions. New interventions or interventions not reimbursed by the social security are not included in the sum of standard times. Therefore, the cost per hour could be overvalued. This would lead to an overestimation of the cost per hour operating theatre. The net over- or underestimation cannot be determined.

^u See Table 16.



If accurate data on the duration of the intervention are not available, standard operation times can be consulted in the appendix 9 of the Royal Decree of 26 November 2011 (published on 29 November 2011). These times already reflect the number of nurses required for the intervention, so the cost per hour does not have to be adapted to the number of nurses.

As the operating theatre combines operational costs, wages and investment goods, a combination of different indexation rates was used to actualize the cost per hour (see Table 16 and chapter 7).

Table 16: Actualisation rate

Type of cost	Proportion in operating theatre	Actualisation rate	Actualisation rate 2006-March 2012
Operational costs	41%	Health index	1.142944181 ^v
Wages	48%	Wage revaluation coefficient (see section 1.3)	1.14486553 ^w
Investments	11%	Health index	1.142944181
			Weighted mean: 1.143866428

The direct cost per hour of utilization of an operating theatre is 156.22€ per hour per nurse.

^v Average health index for the year 2006: 103.9508333; health index in March 2012: 118.81.

^w For the year 2006, the weighted average index (pro rata for the number of month) was 1.377367 (10/12 * 1.3728 + 2/12 * 1.4002).

5.2. Emergency department

The objective of this section is to calculate the cost associated with an admission to the emergency department (followed or not by a hospitalisation), on the basis on Finhosta 2006 data and on the total number of emergency admissions in 2006. The cost was actualized for 2012. This cost per admission covers all direct costs of the emergency department (see section 1.1.2). Indirect costs are included in the general overhead rate derived in chapter 0 and need to be added to this cost per admission.

Table 17: Cost per emergency admission

Sum of all direct costs of emergency departments (cost centre 150 and 151)	193 766 526€
Sum of emergency admissions* (2006)	2 787 458
Cost per admission (2006)	69.51€
Actualisation rate 2006- March 2012 ^x	1.14486553
Cost per emergency admission (2012)	79.58€

* Source: Belgian Federal Public Service for Health, Food Chain Safety and Environment.

^x This actualization rate is only based on the wage index, as the proportion of wages into total costs of the emergency department is 88%.



6. OVERHEADS

In some countries, a standard overhead rate has been determined for cost analyses in a hospital setting. In the Netherlands, for instance, generic rates were calculated for the following items:

- Overhead costs related to building and land, comprising
 - Depreciation;
 - Personnel costs related to building and land.
- Other overhead costs, comprising
 - Personnel costs for general and administrative functions;
 - General costs;
 - Depreciation of inventory and immaterial fixed assets;
 - Contributions to provisions;
 - Interest payments.

The Dutch rate for overhead costs was estimated at 45% of direct costs (medical, paramedical and nursing personnel, consumables and equipment).⁸

For future cost analyses of health care services in Belgium from the hospital perspective, we also advocate a relatively simple uniform approach to the calculation of overhead costs. The alternative would be to define allocation keys for each overhead cost item and allocate overhead costs according to the “consumption” of these keys. Although this might be considered more accurate, it needs to be stressed that allocation keys can always be criticized and might also be imprecise.

Overhead rates (indirect costs as a percentage of direct costs, including costs of physician inputs) similar to the Dutch rates cannot be calculated for the Belgian hospitals, as physician costs only appear in the cost accounts of some Belgian hospitals. Moreover, there is a large variety in how costs of physician inputs are registered in cost accounts, depending on physician statutes.

We recommend to calculate the overhead costs as a percentage of the direct costs-excluding costs of physician inputs.

6.1. Definition of overhead costs

In this manual, we define overhead costs as all costs not covered so far. They include the following components:

- General costs;
- Maintenance and cleaning costs (except maintenance costs of medical equipment);
- Heating costs;
- Laundry costs;
- Catering and dietetics costs;
- Administration costs;
- Direction, middle management, administrative personnel costs;
- All depreciations, except those on medical equipment;
- Financial costs, except long term financial costs related to investments in medical equipment;
- Infection control costs;
- Mortuary costs;
- Mobile emergency unit costs.

6.2. Data sources used for the general overhead rate calculation

The calculation of the overhead percentage is based on Finhosta 2006 data, aggregated per cost account and per cost centre for all Belgian hospitals. The list of costs considered as overhead, per account type, is presented in appendix 19. Hospitals are requested to register costs as much as possible in a direct way per cost centre. However, direct allocation is not always possible and there are large differences in registration between hospitals. Some costs are registered on the temporary cost centres that are allocated to the definitive cost centres afterwards, other are registered directly on the definitive cost centres.



6.3. Assumptions taken for the general overhead rate calculation

6.3.1. *Personnel costs*

The classification of personnel costs into direct costs and overhead costs and the justification of this classification is presented in Table 18.

Indirect personnel costs included in the overhead rate are costs of:

- Direction;
- Administrative personnel, regardless of whether registered directly on final cost centres;
- Direction nursing and middle management;
- Blue collar workers ("vak- en dienstpersoneel – personnel de maîtrise et gens de métier").

**Table 18: Classification of personnel costs**

Personnel type	Costs included in overhead	Costs not included in overhead
Salaried employees (i.e. ouvriers/werkman, techniciens/technicus, ingénieurs techniciens ou industriels/technisch of industrieel ingenieur, ingénieurs civils dans les services d'entretien/burgerlijk ingenieur in de onderhoudsdiensten)	All costs	
Administrative personnel	All costs	
Nursing personnel	Costs registered on temporary cost centres (« centres de frais à répartir – te verdelen kostenplaats »). Costs of nursing management are usually registered on temporary cost centres, such as « direction/directie », « frais médicaux / medische kosten ». About 5% of total nursing cost is registered in this way. Nursing personnel can also be employed in administrative units or in infection control units and thus registered on temporary cost centers “administration/administratie”, or “hygiène hospitalière/ziekenhuishygiène”. About 7.5% of total nursing costs are considered as overhead costs in these two ways	Costs registered on definitive cost centres Costs registered on cost centre “operating theatre”. The costs of this supporting department are calculated separately (see chapter 5) Costs registered on cost centre “emergency unit” The costs of this supporting department are calculated separately (see chapter 5)
Paramedical personnel	Costs registered on temporary costs centres. Costs of paramedical management are usually registered on temporary cost centres such as “direction/directie”, “frais médicaux / medische kosten”. Moreover, some paramedical personnel is employed in administrative units or in catering/dietetics and thus registered on temporary cost centers “administration/administratie”, “alimentation/voeding” and “diététique/dieet”. About 10% of total paramedical costs are considered as overhead costs in this way	Costs registered on definitive costs centres Costs registered on cost centre “operating theatre” Costs registered on cost centre “emergency unit”



Other personnel (i.e.scientific personnel: biochemists, pharmacists, physicists, psychologists, sociologists, ...)	Costs registered on temporary costs centres. About 16% of total “other personnel” costs are considered as overhead costs in this way	Costs registered on definitive costs centres Costs registered on cost centre “operating theatre” Costs registered on cost centre “emergency unit”
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6.3.2. Financial costs

Financial costs related to investments (account 6500) are considered as overhead costs (see section 3.2)

6.4. General overhead rate

The general overhead rate as a percentage of direct costs, excluding physician costs, is 56.6%.

6.5. Limitations

In order to calculate a general overhead rate, we had to take multiple decisions about the classification of costs into indirect and direct costs. We tried to establish an overhead cost percentage that would be useful for more types of cost analysis of hospital interventions from the hospital perspective. However, for specific purposes or specific interventions, it might be considered insufficient, because the classification of costs actually depends on the cost object.

We consider that the costs of paramedical and other personnel should be, as often as possible, calculated directly in costs analyses. These costs are therefore considered as direct cost in our calculation. If, for a specific cost object, there is no paramedical costs, the overhead rate will be overvalued.

Finhosta data limits:

- Hospitals do not register costs in a strictly uniform way. Some hospitals, for instance, register IT costs on one central cost centre, to be reallocated across the final cost centres, whereas other hospitals register those separately per cost centre. Some hospitals register financing costs centrally, whereas other register those costs separately per cost centre. For indirect depreciations for instance, all depreciations are registered in one large depreciation pool, without distinguishing between building, medical equipment and non-medical depreciations. This low level of detail makes it impossible to check

whether medical equipment depreciation is also registered indirectly or not. Therefore a number of assumptions needed to be made and the validity of the general overhead rates relies on these assumptions.

- There may be problems with the validity of the database. Since hospitals do not receive feedback on how their own Finhosta registrations benchmark with those of other hospitals, there is little incentive nor pressure for hospitals to improve the uniformity/consistency of this obligatory registration. Unfortunately, so far, no detailed studies are available that analyse the validity/uniformity of the Finhosta database. Secondly, the costs per unit allocation key are based on the accounting input from the hospitals and these do not allow for a precise and detailed interpretation. There is no detail available on the indirectly registered overhead costs. Although double-counting of costs should be avoided, it is difficult to ensure it with certainty. For depreciation costs, for instance, it was assumed that depreciation on medical equipment was strictly registered directly on the applicable cost centres. When this assumption would not be valid, the general overhead for other depreciation would be an overestimate.
- Thirdly, the overhead cost calculation relies entirely on accounting data, although these often do not reflect actual economic costs. Cost of building, furniture, IT and other investments (other than on medical equipment) are based on depreciations which do not always reflect the replacement value of the asset, nor the real expected lifetime of the asset. The financing costs furthermore fully rely on the actual financial costs incurred by hospitals and thus only take into account the cost of debt whilst ignoring the (opportunity) cost of equity.



7. INDEXATION

7.1. Indexation from past to present

To convert the costs of previous years to the current year, historical inflation rates should be used. Ideally, service specific inflation rates should be applied since inflation of maintenance contracts may differ from that of energy prices, consumables, wages etcetera. However, such service specific inflation rates are not available for all services in Belgium.

The following indexes are published on regular basis for Belgium:

- The Belgian Federal Planning Agency provides a general consumer price index and a health index;
- Agoria (federation for the technology industry) provides data on market prices of materials and on reference wages which are regularly used by manufacturers for price revision stipulations in contracts;
- The OECD provides inflation data for food and energy versus other items and for producer prices of manufacturing versus industrial activities.

Table 19 shows the indexation rates that are recommended to be applied in KCE cost analyses. As stipulated in the guidelines for pharmacoeconomic analysis¹, costs from past years should be inflated using the health index, except for past indexation of wages and investment goods. For wages and investment goods, we refer to the respectively section 1.3 and section 3.5, as specific indexation rules apply.

7.2. Indexation from present to future

To extrapolate current costs to future years, expected inflation rates should be applied. One-year inflation prognoses are published by the Federal Planning Bureau. No long term prognoses however are published on regular basis. We recommend to use the three-year moving average inflation as simple forecasting method. Even though some future costs may be fixed (e.g. due to long-term contracts) or decline (e.g. due to efficiency gains or market competition), we recommend to apply a general inflation rate for wages and other operational costs.

For investment goods, the replacement value is the preferred cost base (see section 3.5).

Table 19: Indexation guidelines

	Indexation from past to present	Indexation from present to future
Operational costs other than wages	Health index ^y	1 st year: indexation prognoses published by the FPB Following years: three-year moving average inflation
Wages	Wage revaluation coefficient (see section 1.3)	1 st year: indexation prognoses published by the FPB Following years: three-year moving average inflation
Investment goods	Replacement value is the preferred cost base (see section 3.5) or health index (if the replacement value is not known)	(Estimated) replacement value is the preferred cost base

Abbreviation: FPB: Federal Planning Bureau.

If the cost object combines operational costs, wages and investment goods, it is recommended to estimate the proportion of each type of goods and to apply a proportional combination of the different indexation rates (see for example indexation of the cost per hour of the operating theatre, section 5.1).

For correction of international price differences, we refer to appendix 10.

^y The Belgian health index and one-year prognoses can be consulted on the website of the Federal Planning Bureau (<http://www.plan.be/databases/indprix.php?lang=nl&TM=30>; cited January 2012).



8. CONCLUSION

8.1. Limitations

The average cost values provided in this manual are not applicable to all kinds of settings. For example, extrapolation of the overhead rate presented in this manual to a small private physiotherapist practice would not be correct, as the overhead rate contains indirect costs which are not borne in such a small private unit (e.g. general management, medical direction, etc.). Assumptions of external validity of these average cost values should always be justified.

Finhosta is the only database comprising data on all hospitals and was therefore used for a large part of the calculations. The use of Finhosta inherently poses a series of limitations to this manual. Hospitals do not register costs in a uniform way (and have no legal obligation to do so), and, more importantly, there are problems with the validity of the database. Since hospitals do not receive feedback on how their own Finhosta registrations benchmark with those of other hospitals, there is little incentive nor pressure for hospitals to improve the uniformity and consistency of this obligatory registration. Moreover, Finhosta registrations are used with a large delay (data available at the time of this study were from 2006), which does not encourage hospitals to enhance the registration quality.

The average cost values in this manual come from a snapshot of the current Belgian situation, and are dependent on the current collective agreements, on the current legislation (about, for example, social contributions rates), and on the seniority pyramid. These average data should therefore be often updated.

Last, the hospital sample used to calculate the costing of physician input was rather small, since we were confronted with many refusals to participate to the survey. A widened survey should be useful to enhance the quality of this part of the manual.

Despite the fact that this manual is based on limited data sources and many assumptions, it provides the best possible data when more accurate or precise information cannot be obtained for a specific study. This manual allows to provide answers to decision makers within a reasonable timeframe.

8.2. Stakeholders comments

At the end of the research process, a stakeholders meeting was organized on March 22, 2012, including representatives from hospital federations, association of hospital physicians, nurses association, and hospital managers. The main objectives of this meeting were to promote transparency of the research process in terms of methodology and numerical results, and to facilitate their acceptance in cost studies.

The main observations of participants concerned the methodology used and the results obtained for the costing of the physician input. Some stakeholders consider that it would have been preferable to recommend normative remunerations based on the workload, toughness of the specialty, training effort, etcetera, considering the overall budget constraint. According to some stakeholders, working conditions vary so widely between hospitals that the variance of results is too large in relation to the sample size of the survey. They argue that the calculation of an average therefore does not make sense. The stakeholders also consider that the remunerations calculated do not reflect the real income of physicians, nor the cost for social security, and therefore are useless.

Representatives of KCE have clarified the objective of the study: to enhance consistency within and comparability between *cost analyses for cost-based pricing decision-making* or *re-evaluating the pricing of existing services*. This manual should not be used to build a case-mix costing model, to evaluate actual physician revenues, to assess the profitability of hospital interventions, or for cost analysis from a health care payers' perspective.

The costs of physician input were estimated on the basis of the historical context of Belgium and not on a normative basis. It is up to policy makers and not to the KCE to decide whether or to what extent society should stick to the negotiation model for physician fees, by judging the acceptability of its resulting disparities between physicians' incomes.

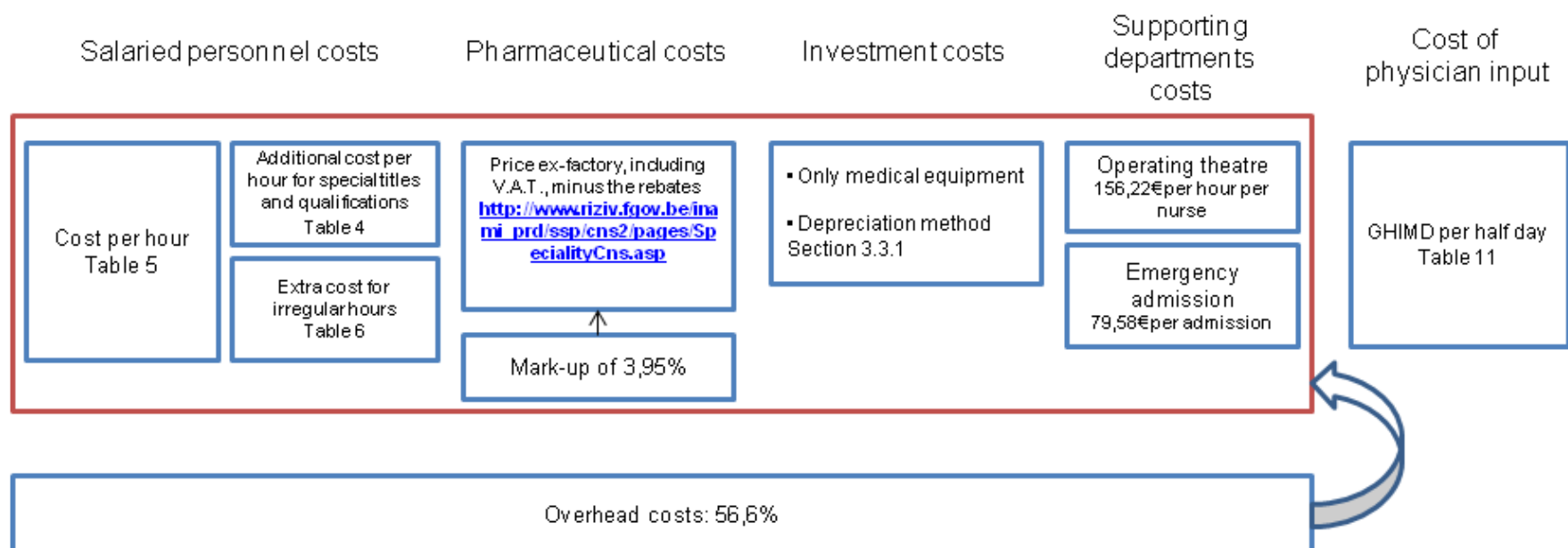


The sample size could actually have been bigger but the KCE was faced with many refusals to participate. The results could be refined with a revision of this manual and a new (widened) survey.

Next to the costing of physician input, stakeholders questioned the calculation of personnel costs. Social contribution rates and the number of working hours per year used for the calculation are not exactly those of the public or the private hospitals. Representatives of KCE indicated that the objective was to use a single figure for all the studies and not to stick to each particular situation. These figures were confirmed by experts. While recognizing some approximations, these figures seem the best available.

Participants also made some purely technical remarks which were taken into account whenever possible.

8.3. Overview of cost components included in this manual





8.4. Application example of the manual: hypothetical case

Objective: to evaluate partially the cost of an appendectomy (with an emergency admission). Costs of laboratory testing and medical imaging are not evaluated.

8.4.1. Data

- Average length of stay: 3 days (source: national average lengths of stay, patient < 75 years)
- Occupation time of the operating room: 110 minutes (source: "standard operation times")
- Drug consumption: amoxicillin 4g (Clamoxyl 1g)
- No use of specific medical equipment
- Hypothesis: stay in a surgical unit of 30 beds, with an average occupancy rate of 70%
- Input of the general surgeon: 3/16th day
- Input of the anesthetist: 3/16th day
- Input of the emergency physician: 1/8th day

8.4.2. Nursing cost (in the surgical unit)

8.4.2.1. Nurses

Regular hours per patient day= $39.6\text{h}/30 \text{ (beds)} \times 0.7 \text{ (occupancy rate)} = 1.89\text{h}$

Evening hours per patient day= $2\text{h}/(30 \times 0.7) = 0.05\text{h}$

Night hours per patient days= $14\text{h}/(30 \times 0.7) = 0.67\text{h}$

Regular hours per stay= $3 \times 1.89\text{h} = 5.67\text{h}$

Evening hours per stay= $2 \times 0.05\text{h} = 0.1\text{h}$ (20% gross wage supplement)

Night hours per stay= $2 \times 0.67\text{h} = 1.34\text{h}$ (56% gross wage supplement)

Nurse cost per stay= $36.30\text{€} \times 5.67 + 36.30\text{€} \times 120\% \times 0.1 + 36.30\text{€} \times 156\% \times 1.34 = 286.05\text{€}$

8.4.2.2. Logistic assistant cost

(hypothesis: one per unit)

Regular hours per patient day= $7.6\text{h}/(30 \times 0.7) = 0.36\text{h}$

Regular hours per stay= $3 \times 0.36\text{h} = 1.08\text{h}$

Logistic assistant cost per stay= $28.68\text{€} \times 1.08 = 30.97\text{€}$

8.4.2.3. Head nurse cost

(hypothesis: one per unit)

Regular hours per patient day= $7.6\text{h}/(30 \times 0.7) = 0.36\text{h}$

Regular hours per stay= $3 \times 0.36\text{h} = 1.08\text{h}$

Head nurse cost per stay= $47.88\text{€} \times 1.08 = 51.71\text{€}$

8.4.3. Pharmaceutical costs

Cost of Clamoxyl, 4g: 1.2€

No relevant other pharmaceutical product or medical consumables

Direct costs of the pharmacy: $3.95\% \times 1.2\text{€} = 0.04\text{€}$

Total pharmaceutical cost= **1.24€**

8.4.4. Cost of operating theatre, anaesthesia and sterilization departments

Standard operation time: 110 minutes= 1.83h

Cost= $1.83 \times 156.22\text{€} = 286.4\text{€}$

8.4.5. Cost of emergency department

One admission: **79.58€**

8.4.6. Overhead costs

Sum of nursing costs, pharmaceutical costs, supporting departments costs: $286.05\text{€} + 30.97\text{€} + 51.71\text{€} + 1.24\text{€} + 286.4\text{€} + 79.58\text{€} = 735.96\text{€}$

Overhead costs= $56.6\% \times 735.96\text{€} = 416.55\text{€}$



8.4.7. *Physician costs*

8.4.7.1. *Cost of the general surgeon input*

Input: 3/16th day

Cost= 3/8 cost of an half day= **136.18€**

8.4.7.2. *Cost of the anaesthetist input*

Input: 3/16th day

Cost= 3/8 cost of an half day= **165.38€**

8.4.7.3. *Cost of the emergency physician input*

Input= 1/8th day

Cost= 1/4 cost of an half day= **98.05€**

8.4.8. *Total cost*

286.05€ + 30.97€ + 51.71€ + 1.24€ + 286.4€ + 79.58€ + 416.55€ +
136.18€ + 165.38€ + 98.05€= **1553.11€**



■ APPENDICES

APPENDIX 1. TYPES OF COST ANALYSES

Different types of cost analyses can be distinguished, depending on the nature of the cost object, the aim of the study and the perspective.

1. Cost analyses can be categorized depending on the **cost object**.

The cost object can be a particular health care service (e.g. a surgical or diagnostic procedure, a GP visit, a specialist intervention) or a particular service unit (e.g. an MRI service or an anticoagulation clinic). The cost object can also be a full treatment episode in a hospital, e.g. the inpatient stay for a given APR-DRG. Furthermore, the cost object can be a specific patient group for which the cost of illness is calculated spread over multiple years and different types of providers (e.g. the cost of illness for a COPD patient).

2. Cost analyses can be categorized depending on the **aim of the study**.

Cost analyses can be used as input for cost-based decision-making on financing of new services, or revision of pricing of already existing services. The aim of the analysis is then to assess the costs of a particular service, to analyse the cost structure and to design a financing policy which provides the right incentives to providers to ensure qualitative and efficient health care.

Cost analyses can also be used to assess an intervention's cost-effectiveness compared to its alternative(s). The aim of the analysis is then to assess whether a particular service is good value for money, and both costs and benefits will be assessed. The analysis provides an answer to the question whether, for a given price (or range of prices), a particular intervention is more beneficial to the health care payer (or society) than other interventions. This knowledge can lead to price negotiations if, for instance, the cost per life year gained is considered too high. Decision making on pricing in this context is value-based instead of cost-based.

Besides these two main areas in which cost analyses are important, cost analyses can also be used for other reasons, such as to assess the importance of a certain illness or health care service in the national health care budget, or to do a cross-country cost comparison, or a comparison between providers.



3. Cost analyses can be categorized depending on the **perspective of the study**. The perspective can be that of the provider, the payer (national health insurer and the patient) or the society.

On the one hand, when the analysis is done in the context of health economic evaluations in Belgium, then the perspective of the payer should be adopted in the base case scenario. This is stipulated in the guidelines on pharmacoeconomic evaluations (see KCE reports 78 on the Guidelines for Pharmacoeconomic Evaluations in Belgium ¹). When the viewpoint of the payer is adopted, costs can be based on the existing tariffs and fees as they represent the actual financial costs to the payers. This is at least the case for health care interventions that have already been priced. When health care interventions have not been priced yet, the analysis will need to be based on actual costs incurred by the provider.

On the other hand, when the analysis is done in the context of cost-based pricing decisions, then the perspective of the provider will generally be adopted. Existing tariffs and fees cannot be used, as they are subject to revision, and they will be an output of the analysis instead of an input.

APPENDIX 2. OVERVIEW OF COSTING METHODS

Appendix 2.1. Historical versus standard costing

Historical costing is a costing approach based on historical or current cost data as observed in the field. It is the opposite of *standard costing*, which is based on standards defined for efficient care. Standard costs are target costs to which existing costs are compared for cost control purposes. In the context of health care however, standard costs are difficult to set, as there is often no well-defined input-output relationship which makes it difficult to define the necessary inputs to obtain efficient care. Historical costing will in most cases be the only possible approach. An exception can be found in service units with quasi industrial character such as the laboratories for clinical biology.

When specific accreditation norms are stipulated in the legislation, it makes sense to base the cost analysis on those specified criteria (such as architectonic and functional requirements, the availability of certain equipment and different staff qualifications) even though actual costs can be lower or higher ⁴. However, these norms merely outline infrastructural and functional requirements and are not precisely dictating the processes required for a standard level of care. A cost analysis based on these norms can therefore not be considered as a 'standard costing' analysis. The norm requirements will need to be complemented with (historical) data in-the-field for the unregulated aspects.

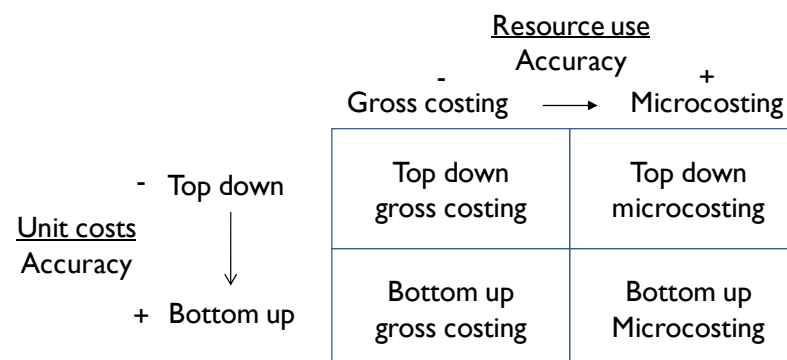
Appendix 2.2. Micro- versus gross-costing and bottom-up versus top-down and mixed approaches

The terms used for top-down and bottom-up costing do not necessarily coincide with gross and micro-costing. According to Tan et al. (2009)¹⁴, the terms gross and micro-costing refer to the level of accuracy in the *identification* of cost components, whereas top-down and bottom-up refer to the level of accuracy in the *valuation* of cost components. The authors describe four different methodologies for cost estimation of hospital services: bottom-up micro-costing, top-down micro-costing, bottom-up gross costing and top-down gross costing (Figure 1).



Bottom-up micro-costing is generally believed to be the gold standard costing methodology. The methodology is reliable because all relevant cost components are identified and valued at the most detailed level. However, it is very time consuming and often not feasible.¹⁴ Therefore, less accurate costing methodologies may be considered for the smaller cost components. Tan et al.¹⁴ compared different methodologies for the cost estimation of hospital services and concluded that restricting the use of bottom-up micro-costing to those cost components that have a great impact on the total costs (i.e. labour and inpatient stay) likely also results in reliable cost estimates.

Figure 1: Methodology matrix based on the level of accuracy addressed in resource use and unit cost measurement



Source: Tan, 2009¹⁴

Appendix 2.2.1. Top-down versus bottom-up costing

The terms top-down versus bottom-up indicate whether the primary data source of the valuation of resources consists of aggregate or single data. A top-down approach indicates that central data (this can be financial administration, human resources, logistic or other data at department, hospital or national level) are used as primary source and spread over the cost objects based on predefined allocation keys. This costing approach

can be applied when there is a relatively homogenous production with a limited number of products.

When there are various heterogeneous products or when no central cost information is available, a bottom-up costing approach will be the way to go. In this approach, the resources of personnel, equipment and materials are analysed separately per product and added up to calculate the total cost.

In practice, both approaches will be combined frequently. Personnel costs may be calculated bottom-up (recording staff time spent on certain activities and multiplying this with the cost per hour) whilst costs of materials may be calculated top-down (total material cost of the department allocated to different products). When using the terms, it is therefore recommended to specify to which cost parameters specifically the terms apply.

Appendix 2.2.2. Gross versus micro costing

Identification and measurement of cost components can vary along a spectrum of accurateness. On one side of the spectrum, components are identified at a very detailed level. This is the approach taken in micro-costing. Micro-costing starts with a detailed inventory and measurement of all inputs consumed (staff time, supplies, medications and other cost items). Once the resources have been identified and quantified, they are valued in monetary terms to produce a cost estimate.^{10,11}

On the other side of the spectrum, identification and measurement of components is done at aggregate level. This is the approach taken in gross-costing. Gross-costing bases cost estimates on more aggregated information on resource use. It starts with the identification of a sequence of relatively large events associated with the intervention. These events may for instance include the number of inpatient days and a number of physician consultations (instead of an inventory of the different services rendered to the patient during his inpatient stay and a registration of the time spent by physicians). The processes of measurement and valuation of resources, which are distinct in micro-costing, are more blurred in gross-costing.¹¹ When the aggregate, gross data are not very precise, they may still suffice to estimate (a group of) smaller cost items with less impact on the total cost estimates. Only when the aggregate costs are precise, representative and generalizable to the context of the conducted cost



analysis, they can also be the preferred source to estimate larger cost items.

Appendix 2.3. Marginal versus average costing

Marginal costing methodology is used to calculate the cost of one additional unit of service. As the fixed costs are constant in a given range of volume, the marginal costs are in fact equal to the variable costs. Therefore, marginal costs only encompass variable costs, while average costs include all the direct and indirect costs.⁷

Marginal costing is useful for short term decisions such as changes in volume and activities, because the fixed costs remained unchanged.

Appendix 2.4. Traditional versus activity based costing

For cost-based pricing of hospital interventions, a choice needs to be made between traditional and activity based costing (ABC) (see appendix 2.4.2). The guidelines and average (unit) costs, provided in this manual, can be applied in both methodologies.

Appendix 2.4.1. The concept of ABC

ABC was initially introduced in the manufacturing sector, where increasing technology and productivity improvements have reduced the relative proportion of the directly attributable costs of labour and materials and increased the relative proportion of indirect costs. In traditional costing, indirect costs are often grouped in one pool and allocated to cost objects based on volume related allocation keys such as number of produced units, FTE employees, or m². When the relative share of indirect costs however, is quite large, a more profound analysis of indirect costs may be required to obtain more accurate cost data. The activity-based costing approach provides an answer to this need by calculating the costs of the activities performed to produce that service or product.⁹

ABC consists of four steps. First, the main activities on which resources are spent, are defined. Second, the cost per activity is calculated by allocating the financial and/or human resources costs to the activities based on resource drivers. Third, these costs per activity are allocated to the cost objects based on activity drivers. Fourth, for each cost object, the different activity costs are added up.

Appendix 2.4.2. The application of ABC in hospital setting

So far, the application of ABC in hospital setting has mostly focused on those hospital units with quasi industrial character, such as the laboratories for clinical biology, medical imaging or radiotherapy. The application of ABC in clinical units however is far more complex, given the large diversity in hospital products and activities, and consequently rather uncommon practice.¹⁵

Furthermore, ABC may be difficult in individual clinical unit settings, the more difficult it is to perform such analysis across hospitals (although it is not impossible). A precise application of the ABC approach requires a detailed cost analysis with a collection of direct costs, indirect costs, resource and activity drivers within each hospital separately. The current legal cost registration in Belgium does not support the ABC approach. In the past, the federal government has initiated a project "Analysis of financial flows of Belgian hospitals according to patient-mix", executed by three university hospitals. This project aimed at developing a systematic financial model which makes the revenue and cost structure of hospitals according to patient groups transparent, using an ABC methodology. However, the results of this project have not yet been translated into current legal registration practice.



APPENDIX 3. IDENTIFICATION AND CLASSIFICATION OF COST COMPONENTS

Appendix 3.1. Identification

Appendix 3.1.1. Cost components and aim of the analysis

Which cost components need to be included, depends on the aim of the analysis. When a cost analysis is undertaken to compare costs with financing, then the inclusion of cost components needs to be consistent with the coverage of the financing components.

In full (integral or absorption) costing, all cost components are analysed. In variable costing, only variable costs are analysed. In direct costing the analysis is limited to direct costs.

The terms incremental, marginal and differential cost are frequently used interchangeably.⁷ In this manual, the incremental cost measures the difference in costs between two or more decision alternatives.⁶ The term marginal cost is used to denote the additional cost incurred for producing one extra product or delivering one extra service whereas differential cost denotes the additional cost incurred for producing a certain increase (more than one unit) of the cost object.^{8,7}

Appendix 3.1.2. Charting the health care process

In order to identify all relevant cost items, it may help to chart a trajectory of care, including the different steps in the health care process. clinical care pathways, (national) guidelines, accreditation norms, literature, interviews and expert consultations may be useful to complete this flowchart.⁷ Based on this chart, an exhaustive list of cost components can be made.

Appendix 3.1.3. Assessing the impact of cost components on total costs

The research effort should be concentrated on the cost parameters with the strongest impact on total costs. These parameters can be identified based on simple and preliminary sensitivity analyses. This means that by varying price and volume parameters in the cost calculation, the sensitivity of the total costs to changes in these parameters needs to be examined.

Appendix 3.2. Classification

Appendix 3.2.1. Direct versus indirect costs^z (overhead)

Cost items can be split into direct and indirect costs. Direct costs are costs for which there is a direct, causal relationship between the considered cost and the cost object.⁹ They have an unambiguous, quantifiable link with the cost object and can thus be allocated directly to it. Indirect costs (or overhead) do not have such unambiguous link with the cost object either because the measurement or registration of the specific costs per unit is not possible, or simply does not happen or because it is a general cost.⁶ Indirect costs therefore need to be spread over the cost objects with allocation keys. As described *infra*, the allocation of indirect costs can be done in different ways.

Whether costs are considered direct or indirect may depend on the cost object. The following cost components are most often considered as direct:

- Physicians;
- nursing and paramedical staff;
- materials and consumables.

Costs related to technical and administrative personnel and medical equipment (investment and maintenance) may be considered either as direct or indirect. If the studied cost object, for instance, is a diagnostic examination, the diagnostic equipment will be considered as a direct cost. If the cost object is the inpatient stay of a given patient group, this diagnostic equipment will be considered as indirect cost as the equipment is used for a variety of patient groups, and costs will need to be allocated via allocation keys.

^z In this manual, the term 'indirect costs' is used in its accountancy and business meaning and thus denotes overhead. In the context of cost analysis from the perspective of the patient or the society, however, the term 'indirect costs' has a different meaning and denotes the costs that are not directly related to the treatment of the disease, both within and outside health care, i.e. productivity losses (indirect costs outside health care) and health care costs for unrelated diseases in future life years (indirect costs within health care).¹



Costs that are generally considered as indirect are the following:

- Hospital building and non-medical equipment (beds, IT, furniture, kitchen infrastructure...);
- Financial charges;
- General maintenance (cleaning personnel, cleaning products, general technical maintenance and security and utilities (water, gas and electricity));
- Heating costs (cost of fuel and cost of personnel dedicated to heating);
- General costs (parking, gardens, security, transport of patients and materials, taxes, insurance costs, religious service and mortuary);
- Nursing direction and middle management;
- General administration costs;
- Laundry and meals.

Appendix 3.2.2. Capital (investment) versus operational (recurrent) costs

Costs can also be split between capital or investment costs and operational or recurrent costs. Capital costs are the costs to purchase major capital assets, generally equipment, IT park, buildings and land. They differ from operational costs as they represent investment costs at a single point in time rather than (annually) recurring costs.¹⁰

Appendix 3.2.3. Fixed, semi-fixed, semi-variable and variable costs

Variable costs vary in relation to the volume of total activities whilst fixed costs remain unchanged within a certain activity range and time frame. When the number of products or services delivered increases or decreases, variable costs will increase or decrease respectively, but fixed costs will not change.⁹ Examples of fixed costs include the cost of a rent, capital charges, insurance premiums or a maintenance contract. Variable costs include drugs, disposables, bandages, patient transport, patient food, nurses recruited from temping agencies to cover short-term peaks etcetera.⁷

Semi variable (or mixed) costs contain both fixed and variable cost components. Vehicle costs are an example. They comprise annual fixed costs (such as car insurance, road tax and yearly vehicle test) and variable costs such as fuel costs.⁷

Semi fixed (or step-fixed, step-variable, step-function) costs are fixed within a particular range of output (however this range is smaller than for true fixed costs), and increase sharply in a stepwise manner after exceeding specific volumes of services. Many costs in health care fall in this category, for instance staff costs, administration costs and IT costs.⁷

Whether costs are classified as fixed or variable/semi-fixed/semi-variable depends on the time horizon of the analysis. In the short term some costs can be fixed, but in the long term, all costs are variable.



APPENDIX 4. PRIMARY DATA COLLECTION METHODS

When no secondary data is available, the researcher will need to gather data by himself. To do this, the researcher has a variety of methods at his disposal. These can be divided into two subgroups. On one hand, there are observer-based measurement methods: time and motion studies, interviews and observer-rated questionnaires, medical case record review and analysis of accounting data from individual hospitals and encounter data from clinicians. On the other hand, there are participant-based measurement methods: self-reported questionnaire (from providers or patients), self-reported activity logs, cost diaries and patient flow analysis.^{7,11} In order to ensure anonymity, data collection can be done by a trusted third party (TTP).

In Table 1, the different methods of primary data collection are classified according to whether they are observer or participant based and retrospective or prospective. Besides the observer- and participant-based methods, also an expert panel may be consulted.

Table 1: Overview of primary data collection methods for obtaining data on resource use.^{7,11}

	Observer-based	Participant-based*
Retrospective	• interviews • observer-rated questionnaires • medical case records • accounting data from individual hospitals • (electronic) encounter data or appointment books • operating room register	• self-reported questionnaires (from providers or patients)
Prospective	• time and motion studies	• self-reported activity logs • cost diaries • patient flow analysis

* Participant refers to either the provider or the patient.

Each method has its advantages and disadvantages. In general, observer-based methods will be more accurate than patient-based methods, but they are also more resource-intensive. Participant-based methods bear more risk of misinterpretations, incomplete responses or unclear answers than observer-based methods. However, the observer will need to be trained to report the answers as consistent and as accurate as possible. Interviews and questionnaires can be subject to a recall bias, but they may still be a valid alternative when prospective methods appear too resource-intensive and when medical case records and accounting data are not readily available. Regardless of the method, the sample frame needs to be



representative of the provider population. Careful attention thus needs to be paid to the risk of a selective non-responder or non-participant bias.

Appendix 4.1. Time and motion studies

Health care professionals often cannot report precise data on the time they spend on certain activities. A time and motion study will deliver the most precise data as observers directly measure time on-site and in real-time. The required sample to get representative data will depend on the variance in the time registrations. Although time and motion studies were found to be significantly more accurate than other methods such as interviews, self-reported timesheets or a patient based method, they usually require a lot of effort.¹² An example of time and motion study applied in cost calculation in health care can be found in the study of van Zanten et al. (2003).¹³

Time and motion studies can be combined with any costing approach. When it is combined with the activity based costing approach, the method is called time-driven activity based costing.

Appendix 4.2. Interviews and observer-rated questionnaires

Observer-rated questionnaires and interviews can generate more precise and consistent data than self-reported questionnaires. A trained interviewer can ask clarifying questions and ensure consistent interpretation of the questions. Interviews can be done over the phone or face-to-face. Especially when questions are complex or potentially ambiguous, this method will be preferred over self-reported questionnaires.

Appendix 4.3. Medical case record review

Medical case records, case notes and patient notes may provide more accurate information than questionnaires or interviews, which are subject to recall bias. They may however be difficult to access as informed consent of the patients will be required.⁷

Appendix 4.4. Account classification from individual hospitals

When accounting data from Finhosta does not provide the necessary details, or when the data are not recent enough, accounting data can be requested separately at the hospitals. For some items, volume data may be deducted from the accounts by dividing the total relevant cost by the (average) cost per unit.

Appendix 4.5. (Electronic) encounter data

The time spent per patient can also be derived from encounter data.¹¹ When computerized encounter data are not available, data could be collected manually based on paper encounter agendas. However, the latter method will be significantly more time consuming.

Appendix 4.6. Self-reported survey or questionnaire (from providers or patients)

Questionnaires can be a mean to gather operational data (such as the number of opening hours), human resources data (number of FTE's) and financial data. Questionnaires however may deal with a number of weaknesses. They may be subject to a recall and selective non-responder bias. They may suffer from low response rate and consequently not be representative for the full population of providers. They may also be subject to misinterpretations and therefore suffer from low reliability.

When setting up a survey, a number of general rules thus need to be born in mind, both on how to sample the respondents, how to draw up the questionnaire and how to interpret the results. The questionnaire should ideally be tested for reliability and validity. Particular attention should be paid to formulating questions unambiguously so that respondents know clearly which data exactly are needed. When reliability and comparability of the answers is in doubt, the respondents should be invited for a common discussion on the data. This should enable the analyst to reveal all inconsistencies and, where possible, to eliminate them. All remaining inconsistencies should be explicit in the report.



Questions on operational data, such as the number of opening hours of a department, should preferably be answered by the physicians. Questions on the number of staff (or full time equivalents) employed at a department should preferably be directed to both the physicians and the HR or financial department, as physicians know better who is actually working on their department, but the HR and financial department have a better view on how this translates into the number of FTEs employed (taking into account replacements for holidays and sick leaves).

Appendix 4.7. Self-reported activity logs and cost diaries

The use of self-reported activity logs can be compared with time and motion studies, but reported by the provider instead of an observer. This method requires training and monitoring of the providers to ensure qualitative reporting. In a cost diary, not only time but also other resources are tracked.

Appendix 4.8. Patient flow analysis (PFA)

Patient flow analysis is a technique developed to improve client flow in clinics, but has also been used to measure the duration of the time providers spend with patients. Upon entering the clinic, each patient receives a pre-coded form. The patient presents this form to all clinic staff with whom he interacts. Clinic staff uses synchronized watches to record the time at the beginning and the end of each contact. To measure clinician time not involving client contact the PFA method can be supplemented with interviews.¹²

Appendix 4.9. Expert opinion

Although expert opinions are generally seen as the least reliable source of information, it can be a last resort when no direct observation source is available.

APPENDIX 5. GENERAL CRITERIA FOR THE CHOICE OF SOURCES

The larger the impact of a specific parameter, the more precise it should be measured.¹⁰ The appropriateness of a data source can be evaluated based on the perspective of the data source and its internal and external validity. Besides the qualitative criteria also practical considerations, such as the feasibility of data collection, will finally need to be taken into account to select the most appropriate and feasible source:

- Perspective of the data source

Is the perspective taken in the data source consistent with the perspective of the cost analysis? NIHD reimbursement data, for instance, are not a good proxy for the actual costs incurred by the health care provider.

- Accurateness and reliability (internal validity)

In general, data from a large sample and from randomized providers are to be preferred to small samples and data from selected providers. When only data are available from health care providers who were willing to share data, there is a potential bias in terms of their operating characteristics. The following elements regarding accurateness and reliability need to be checked, both for primary and secondary sources:

- o Do the data measure what they intend to measure?
- o Are the data accurate and complete?
- o Is the sample size large enough and representative for the population?
- o Is there no recall, selection or non-responder bias?
- o Were the instructions given to participants consistent?



- Transferability and generalisability (external validity)

Can the setting of the data source be generalized to the setting of the cost analysis? A number of elements need to be checked:

- o Characteristics of the providers (type and location of facilities, grade of health professional staff, workload at the departments,...);
- o Type of patients (case mix, socio-economic characteristics) and patient load;
- o Resource utilization (which may be driven by a research protocol);
- o Timing of the data collection.

- Practical considerations

Practical considerations, such as the workload involved and the speed of data availability, may also influence the choice of sources.

APPENDIX 6. OVERVIEW OF METHODS FOR CALCULATING INVESTMENT COSTS

Appendix 6.1. Depreciation

The depreciation method is based on accounting practices. The simplest and most commonly used depreciation method, notably the straight line (linear) depreciation, is calculated by taking the purchase or acquisition price of an asset subtracted by the resale value (the net scrap or salvage value) divided by the assumed lifetime of the asset. Besides the straight line method, there is also the reducing balance method. Rather than charging a fixed amount every year, a (fixed) percentage of the remaining value of the asset is then charged every year. The straight line and reducing balance method are the only accepted depreciation methods in Belgium for tax purposes.

The Belgian hospital accounting system imposes certain lifetimes for different durable assets, but the true clinical lifetime may actually be shorter and in some cases often longer.⁴ A distinction in this section is therefore made between the use of actual depreciation data directly originating from the income statements of the health care providers, on one hand, and the application of the depreciation method by the researcher, on the other hand. In the first approach, which is not recommended, the depreciation parameters (depreciation period, net asset cost and the depreciation method) are determined based on accounting rules and do not necessarily reflect actual economic costs, whereas in the second approach, the researcher controls all depreciation parameters and adapts them to follow a true economic approach.



Appendix 6.1.1. Depreciation data from income statements

Depreciation data from income statements generally do not provide a good source for measuring actual costs of investments, mainly because actual lifetime of the investment often differs from the depreciation period. In Belgium, the legislation on hospital accounting has divided assets in classes which determine a normal depreciation period for the asset (e.g. 33 years for commercial buildings, 10 years for furniture and machinery, 5 years for vehicles,...). These depreciation periods are generally used in accounting practice, regardless of the estimated actual lifespan. As the actual lifetime of the investment may thus be longer than the depreciation period, depreciation data may, on the one hand, considerably overestimate actual economic costs when the providers are still in the depreciation period, and may, on the other hand, underestimate actual economic costs when the providers have passed the depreciation period. The actual lifetime of the investment may also be shorter than the depreciation. This is for instance the case for computers and printers which are depreciated on 5 years. Furthermore, when the equipment or building was obtained through a generous gift, it is not always depreciated in the cost accounts. For instance, the investment parts subsidized by VIPA are not depreciated since 2007. Those subsidized before 2007 are depreciated for 100% in combination with a registration of the depreciated part on the income accounts.

Appendix 6.1.2. Depreciation method applied by the researcher

Despite the shortcomings of depreciation data originating from the income statements, the depreciation method as such may be applied, as long as the parameters are chosen in accordance with the actual economic situation. The depreciation method appears an easy method to spread investment costs over the actual lifespan, especially when it concerns an investment with a one-time cash outflow (in year 0):

$$\text{Annual depreciation cost} = \frac{K - S}{n}$$

With:

- K = value of initial investments (historical purchase or replacement cost)
- S = resale value at the end of the useful life
- n = useful life of the equipment (yrs)

Appendix 6.2. Equivalent annual cost (EAC)

The disadvantage of the depreciation method is that it does not take into account differential timing of costs and thus does not correct for the time preference of money. Firstly, the resale value should be discounted to the present year. Similarly, when there is a stream of investments spread over the lifespan of the asset, comprising not only the initial purchase in year 0, but also extra upgrade or restoration investments in year X, then it is not correct to simply add up the investment costs and divide by the total life years without correcting for the timing of the costs. In order to correct for differential timing, the investment costs need to be annuitized, applying a discount rate, which results in an *equivalent annual cost* (EAC).

By using a nominal interest rate, a nominal EAC is calculated. The nominal EAC represents a yearly payment equal in nominal terms and thus decreasing in real terms. The annuitization not only corrects for the time preference (real interest rate) but also for the inflation, and thereby covers the full cost for financing the investment. In other words, the equivalent annual cost equals the amount that needs to be repaid yearly when the full investment cash flows (initial investment amount K and possibly a number of intermediate update or restoration investments in year j (U_j)) are borrowed at a rate r% and repaid over a period of n years, taking into account the resale value (S) at the end of the useful life.

By using a real interest rate, a real EAC is calculated. The real EAC represents a yearly payment equal in real terms (and therefore increasing in nominal terms). When a real interest rate is applied, all other inputs need to be expressed in real terms as well. The annuitization then covers only part of the cost for financing the investment (the real interest rate).



The EAC is calculated using the following formula, when repayments are considered to be done at the beginning of each year^{aa}:

$$K + \sum \frac{U_i}{(1+r)^i} - \frac{S}{(1+r)^n} = EAC + \frac{EAC}{1+r} + \frac{EAC}{(1+r)^2} + \dots + \frac{EAC}{(1+r)^{n-1}}$$

$$EAC = \frac{K + \sum \frac{U_i}{(1+r)^i} - \frac{S}{(1+r)^n}}{A_{n-1,r} + 1}$$

With:

- EAC = nominal/real equivalent annual cost
- n = useful life of the equipment (yrs)
- r = nominal/real interest rate
- A_{n,r} = the annuity factor (n years at nominal/real interest rate r)
- K = nominal/real value of initial investments (historical purchase or replacement cost)
- U_i = nominal/real update cost in year i
- S = nominal/real resale value at the end of the useful life

The EAC thus covers the cost per year for depreciating and (partly) financing an asset over its entire lifespan.

Appendix 6.3. Annual rental value

When the asset is predominantly leased by the health care providers, it makes sense to base (part of) the analysis on the annual rental or lease value of the asset. In this case, however, the asset is considered as an operational (recurrent) cost rather than an investment cost.

APPENDIX 7. SCALE AND CAPACITY UTILIZATION

The analyst's assumptions about the physical scale of a department (which is largely determined by the number of units of a certain equipment and the personnel availability), on one hand, and the operational schedule (operational hours) and capacity utilization (which is determined by the number of interventions in relation to the physical size and operational model of a department), on the other hand, do not only influence the total cost of the department but also the cost per intervention.

It is therefore of paramount importance to relate the costs to the assumed or observed operational scale, working schedule and capacity utilization. In many cases, it will be interesting to undertake different sensitivity (or scenario) analyses, as these parameters may have a large impact on costs, especially when fixed costs are relatively large.

Attention should also be paid to the issue of under- or overcapacity. When there is a problem of undercapacity (such as insufficient staffing levels) in the field, then the associated costs will be lower than the justified cost. Whereas when there is a problem of overcapacity (such as a machine which is only used part time), then the associated costs will be higher than justified. This issue also relates to the choice between standard costing (based on optimal capacity utilization) and historical costing (based on capacity utilization observed in the field).

aa It may be argued that the assumption where the annuity is paid at the beginning of the year, is the most realistic assumption.



APPENDIX 8. VALUE ADDED TAX

For general health care activities, hospitals pay VAT on the products and services they purchase but are not entitled to VAT-deduction.^{bb} VAT charges thus need to be included in the cost analysis.

^{bb} This applies to the general health care activities of the hospital. There are a number of exceptions to this rule such as activities outside health care service such as laundry services to another hospital, the letting of medical equipment to another hospital etcetera. (source: <http://209.85.229.132/search?q=cache:VmQWzwMRuuMJ:www.hospitals.be/pdf/n2vol3p17.pdf+ziekenhuis+btw&cd=2&hl=fr&ct=clnk>).

APPENDIX 9. HANDLING UNCERTAINTY AND VARIABILITY

Besides showing total costs or cost components as actually observed in the field for each of the providers separately, a cost model can be built to simulate results based on data combined from different sources. Although the model creates a theoretical distribution of costs, it can be helpful by demonstrating relationships and interactions between different factors.¹⁰ Instead of a point estimate value, a distribution is assigned to all uncertain parameters in the model.^{cc} Each time the model is run, the software will randomly 'select' one value for each parameter and record the model's results. If the model is run a great number of times (e.g., more than 100,000 'iterations'), the software will record the result each time, and present the variation in results. The results can be shown in boxplots.

Besides probabilistic modelling, the decision-maker may be interested to know the sensitivity of the model to changes in its inputs. This can be done through one-way, multiway sensitivity and scenario analysis.

One-way sensitivity analysis allows the decision-maker to assess the impact that changes in a single parameter will have on the total cost. Sensitivity analysis can help to determine which parameters are the key drivers of a providers' costs. It can also be used to judge the threshold at which a certain level of costs is reached.

Sensitivity analysis can also be two- or three-way. In this case, the impact of simultaneous change in two or more different parameters is assessed. The presentation and interpretation however becomes increasingly difficult as the number of parameters involved increases. Therefore, the analysis is often limited to a number of scenarios relevant to decision makers. One type of scenario analysis is 'extreme scenario analysis', in which all of the parameters are varied to their 'best' and 'worst' case.¹⁰ Furthermore, when different technologies are used, it may be interesting to build different scenarios for each of the technologies used, as the decision maker may consider adapted financing for each of the technologies. When investment

^{cc} Various computer software can be used for probabilistic modelling, such as @risk, Crystal Ball, TreeAge, WinBUGS.



costs are large relatively to other cost components, it may also be interesting to build different scenarios depending on the capacity utilization. When investment costs are large, costs will vary significantly depending on operational hours (used 8 hours per day or 12 hours per day?). Providing different scenarios leaves the decision-maker the choice on which operational model should be considered as standard.

In principal all model inputs are candidate for sensitivity analysis, but in general, the most interesting variables are those that¹⁸:

- are most in the control of policy-makers (e.g. price of a new drug);
- are key to explain how costs vary across settings (e.g. university versus general hospitals, different technologies used, capacity utilization);
- are the most uncertain;
- have the greatest sampling variability;
- are based on the weakest quality evidence;
- influence the largest percentage of total costs;
- are more likely to differ from other published data;
- are subject to disagreements regarding methods.

Ideally, analysts also justify why some parameters have not been examined in sensitivity analysis.

APPENDIX 10. PRICE INFLATION AND CURRENCY CONVERSION

Currency conversion should be done using sector specific purchasing power parities (available from OECD^{dd}). The price index for the local currency should be applied before the currency conversion.¹⁹ For the price index for foreign currencies we recommend to use the consumer price index (all items) published by the OECD.^{ee}

dd The purchasing power parities can be consulted on the OECD website (<http://stats.oecd.org>).

ee The consumer price index can be consulted on the OECD website.



APPENDIX 11. FINHOSTA DATABASE

Health care institutions are required to transfer their accounting data to the FPS of Health, Food Chain Safety and Environment on an annual basis (Royal Decree of 14 December 1987). To verify these data, the computer application “Finhosta” (collection of statistical and financial data) was developed.

The Finhosta-registration contains the following files:

- general balance
- analytical balance
- applied indirect cost allocation drivers
- monthly report of nursing days and admissions
- quarterly report of the dismissed patients
- quarterly report of the lump sums
- days per sickness fund
- annual number of nursing days
- financial statement of registered rent
- charges of investment loans
- charges of cash credits
- depreciation
- personnel expenses
- irregular performances of staff
- employed staff
- social balance, containing the following subtables:
 - state of the employees registered in the personnel register
 - temporary employees and persons available for the hospital
 - staff turnover during the financial year
 - state of employment measures during the financial year
 - information about training during the financial year

- state of preliminary flotation, intangible assets and financial assets
- state of fixed assets
- guaranteed debts
- debts concerning taxes, salaries and social charges

A detailed description of the records included in Finhosta can be found in the brochure 'FOD Health, Food Chain Safety, Environment, Application FINHOSTA: version 2.6; Collection of statistical and financial data from the hospitals: Formats of the data files'.



APPENDIX 12. COST ACCOUNTS

The latest version of the cost accounts can be consulted in the Finhosta brochure on the website of the Federal Public Service Health, Food Chain Safety and Environment.^{ff}

Hospital cost accounts: Dutch titles

Hospital cost accounts: French titles

60 Voorraden en leveringen

600	Inkopen van farmaceutische producten
6000	Farmaceutische specialiteiten
6002	Courante producten
6003	Steriele materialen en producten
6004	Magistrale bereidingen
6007	Synthesemateriaal en farmaceutische handel in zwachtels en breukbanden
6008	Andere farmaceutische producten
601	Inkopen van niet-steriele medische producten
6010	Disposables en klein medisch materieel
6011	Medische gassen niet-farmaceutische specialiteiten
6012	Zwachtels, niet-steriele verbanden
6013	Niet-steriel hechtingsmateriaal
6014	Niet-steriel afnamemateriaal
6015	Reagentia
6016	Radioactief materiaal en isotopen niet-farmaceutische specialiteiten
6017	Filmen en ontwikkelingsmateriaal
6018	Andere Producten

60 Approvisionnements et fournitures

600	Achats de produits pharmaceutiques
6000	Spécialités pharmaceutiques
6002	Produits courants
6003	Produits et matériels stériles
6004	Prescriptions magistrales
6007	Matériel de synthèse et bandagisterie pharmaceutique
6008	Autres produits pharmaceutiques
601	Achats de produits médicaux non stériles
6010	Disposable et petit matériel médical
6011	Gaz médicaux non-spécialités pharmaceutiques
6012	Bandages, pansements non stériles
6013	Produits de sutures non stériles
6014	Matériel de prélèvement non stérile
6015	Réactifs
6016	Produits radio-isotopes non-spécialités pharmaceutiques
6017	Films et produits révélateurs
6018	Autres produits

^{ff} https://portal.health.fgov.be/portal/page?_pageid=56,512870&_dad=portal&_schema=PORTA ; cited in June 2010 (Home → Gezondheidszorg → Zorginstellingen → Registratiesystemen → Finhosta (Financiële statistieken) → Publicaties.



	6019	Diversen niet-steriele medische producten		6019	Divers produits médicaux non stériles
602		Inkopen van diverse leveringen	602		Achats fournitures diverses
	6020	Specifieke leveringen voor eredienst		6020	Fournitures spécifiques au culte
	6021	Specifieke leveringen voor mortuarium		6021	Fournitures spécifiques à la morgue
	6022	Specifieke leveringen voor revalidatie		6022	Fournitures spécifiques pour la rééducation fonctionnelle
	6029	Diversen		6029	Divers
603		Inkopen van producten en klein materieel voor onderhoud	603		Achats de produits et de petit matériel d'entretien
	6030	Producten en klein materieel voor onderhoud, reiniging en toiletartikelen		6030	Produits et petit matériel d'entretien, nettoyage et toilette
	60300	Onderhoudsproducten en klein onderhoudsmaterieel		60300	Produits et petit matériel d'entretien
	60301	Reinigingsproducten en klein kuismaterieel		60301	Produits et petit matériel de nettoyage
	60302	Toiletartikelen (inclusief kleine) en soortgelijke		60302	Produits et petit matériel de toilette et assimilés
	60303	Wasproducten		60303	Produits de lessive
	60304	Afwasproducten		60304	Produits de vaisselle
	6031	Zonder bestemming		6031	Sans affectation
	6039	Diversen		6039	Divers
604		Inkopen van brandstoffen, calorieën, energie en water	604		Achats de combustibles, calories, énergie et eau
	6040	Verwarming		6040	Chauffage
	60400	Kolen		60400	Charbon
	60401	Elektriciteit		60401	Electricité
	60402	Gas		60402	Gaz
	60403	Mazout		60403	Mazout
	60404	Stoom		60404	Vapeur
	60409	Diversen		60409	Divers
	6041	Andere bestemmingen		6041	Autres destinations
	60410	Kolen		60410	Charbon
	60411	Elektriciteit		60411	Electricité



	60412 Gas		60412 Gaz
	60413 Mazout		60413 Mazout
	60414 Stoom		60414 Vapeur
	60415 Brandstoffen voor voertuigen		60415 Carburant pour véhicule
	60419 Diversen		60419 Divers
	6042 Water		6042 Eau
605	Inkopen van bureelbenodigdheden en materieel voor informatieverwerking	605	Achats de fournitures de bureau et informatiques
	6050 Bureelbenodigdheden		6050 Fournitures de bureau
	6051 Materieel voor informatieverwerking		6051 Fournitures informatiques
	6052 Drukwerken		6052 Imprimés
	6059 Diversen		6059 Divers
606	Inkopen van linnen, beddengoed, was	606	Achats de lingerie, literie, buanderie
	6060 Linnen en beddengoed		6060 Linge et literie
	6061 zonder bestemming		6061 Sans affectation
	6062 Werkkledij		6062 Vêtements de travail
	6063 Disposables		6063 Disposable
	6064 Klein wasmaterieel		6064 Petit matériel de buanderie
	6069 Diversen		6069 Divers
607	Inkopen van voeding en leveringen voor keuken	607	Achats de denrées et fournitures de cuisine
	6070 Voedingswaren		6070 Denrées alimentaires
	6073 Dranken		6073 Boissons
	6074 Dieetproducten		6074 Produits diététiques
	6075 Wegwerpbestekken		6075 Vaisselle disposable
	6076 Ander vaatwerk		6076 Autre vaisselle
	6077 Klein keukenmaterieel		6077 Petit matériel de cuisine
	6079 Diversen		6079 Divers
608	Verkreten kortingen en ristorno's	608	Remises, ristournes et rabais obtenus
609	Voorraadwijzigingen	609	Variations de stocks
	6090 Inkopen van farmaceutische producten		



6091	Inkopen van niet-steriele medische producten	6090	Achats de produits pharmaceutiques
6092	Inkopen van diverse leveringen	6091	Achats de produits médicaux non stériles
6093	Inkoop van producten en klein materieel voor onderhoud	6092	Achats fournitures diverses
6094	Inkopen van brandstoffen, calorieën, energie en water	6093	Achats de produits et de petit matériel d'entretien
6095	Inkopen van bureelbenodigdheden en materieel voor informatieverwerking	6094	Achats de combustibles, calories, énergie et eau
6096	Inkopen van linnen, beddengoed, was	6095	Achats de fournitures de bureau et informatiques
6097	Inkopen van voeding en leveringen voor keuken	6096	Achats de lingerie, literie, buanderie
61	Diensten en Bijkomende goederen	6097	Achats de denrées et fournitures de cuisine
610	Huur, huurlasten en schulden voor erfpacht	61	Services et fournitures accessoires
6102	Terreinen en gebouwen	610	Loyers, charges locatives et redevances emphytéotiques
6103	Materieel voor medische uitrusting	6102	Terrains et constructions
6104	Materieel voor niet-medische uitrusting en meubilair	6103	Matériel d'équipement médical
61040	Meubilair	6104	Matériel d'équipement non médical et mobilier
61041	Materieel	61040	Mobilier
61042	Rollend materieel	61041	Matériel
61043	Materieel en meubilair voor informatieverwerking	61042	Matériel roulant
611	Externe diensten	61043	Matériel et mobilier informatiques
6111	Medische kosten	611	Services extérieurs
61110	Externe medische verstrekkingen	6111	Frais médicaux
61111	Prestaties geleverd door verpleegstersscholen en paramedici	61110	Prestations médicales exécutées à l'extérieur
61111	Prestaties geleverd door verpleegstersscholen en paramedici	61111	Prestations fournies par les écoles d'infirmières et de paramédicaux
6112	Algemene externe diensten	6112	Services généraux extérieurs
61120	Bewakings- en veiligheidsdiensten	61120	Services de surveillance, garde et sécurité
61121	Inzamelingen behandeling van afval	61121	Collecte et traitement des déchets
61129	Overige algemene externe diensten	61129	Autres services extérieurs généraux
6113	Externe onderhouds- en reinigingsdiensten		



	61130	Onderhoudsdienst	6113	Services extérieurs d'entretien et de nettoyage
	61131	Reinigingsdienst	61130	Service d'entretien
6115		Externe administratieve diensten	61131	Service de nettoyage
	61150	Sociaal secretariaat	6115	Services extérieurs en matière administrative
	61151	Comptabiliteitskantoor	61150	Secrétariat social
	61152	Dienst voor informatieverwerking	61151	Bureau de comptabilité
	61159	Overige externe administratieve diensten	61152	Service informatique
			61159	Autres services extérieurs en matière administrative
6116		Externe diensten voor wasserij - linnen	6116	Services extérieurs de buanderie-lingerie
6117		Externe diensten voor voeding	6117	Services extérieurs d'alimentation
6118		Externe diensten voor internaat	6118	Services extérieurs d'internat
612		Algemene onkosten	612	Frais généraux
	6120	Transportkosten door derden	6120	Frais de transports par tiers
	61200	Interne transporten	61200	Transports internes
	61201	Externe transporten	61201	Transports externes
	61202	Bloedtransport	61202	Transports du sang
	61203	Patiëntentransport	61203	Transports de patients
	61204	Verplaatsingen van personeel	61204	Déplacement du personnel
6121		Niet-personeelsgebonden verzekeringen	6121	Assurances non relatives au personnel
	61210	Brandverzekering	61210	Assurance incendie
	61211	Verzekering Burgerlijke aansprakelijkheid	61211	Assurance responsabilité civile
	61212 tot 61219	Andere	61212 à 61219	Autres
6129		Diverse algemene onkosten	6129	Frais généraux divers
613		Onderhoud en herstellingen	613	Entretien et réparations
	6130	Onderhoud en herstellingen van terreinen en omgeving	6130	Entretien et réparations des terrains et abords
	61300	Onderhoudscontracten	61300	Contrats de maintenance
	61301 tot 61309	Andere prestaties	61301 à 61309	Autres prestations
6131		Onderhoud en herstellingen van onroerende goederen	6131	Entretien et réparations des immeubles



	61310 Onderhoudscontracten		61310 Contrats de maintenance
	61311 tot 61319 Andere prestaties		61311 à 61319 Autres prestations
6132	Onderhoud en herstellingen van onroerende goederen bij bestemming	6132	Entretien et réparations des immeubles par destination
	61320 Onderhoudscontracten		61320 Contrats de maintenance
	61321 tot 61329 Andere prestaties		61321 à 61329 Autres prestations
6133	Liften	6133	Ascenseurs
	61330 Onderhoudscontracten		61330 Contrats de maintenance
	61331 tot 61339 Andere prestaties		61331 à 61339 Autres prestations
6134	Verwarmingsinstallatie	6134	Chaufferie
	61340 Onderhoudscontracten		61340 Contrats de maintenance
	61341 tot 61349 Andere prestaties		61341 à 61349 Autres prestations
6135	Onderhoud en herstellingen van medische uitrusting	6135	Entretien et réparations d'équipement médical
	61350 Onderhoudscontracten		61350 Contrats de maintenance
	(61351 tot 61359 Andere prestaties)		61351 à 61359 Autres prestations
6136	Onderhoud en herstellingen van meubilair	6136	Entretien et réparations de mobilier
	61360 Onderhoudscontracten		61360 Contrats de maintenance
	61361 tot 61369 Andere prestaties		61361 à 61369 Autres prestations
6137	Onderhoud en herstellingen van materieel	6137	Entretien et réparations de matériel
	61370 Onderhoudscontracten		61370 Contrats de maintenance
	61371 tot 61379 Andere prestaties		61371 à 61379 Autres prestations
6138	Onderhoud en herstellingen van rollend materieel	6138	Entretien et réparations de matériel roulant
	61380 Onderhoudscontracten		61380 Contrats de maintenance
	61381 tot 61389 Andere prestaties		61381 à 61389 Autres prestations
6139	Onderhoud en herstellingen van materieel voor informatieverwerking	6139	Entretien et réparations de matériel et mobilier informatiques
	61390 Onderhoudscontracten		61390 Contrats de maintenance
	61391 tot 61399 Andere prestaties		61391 à 61399 Autres prestations
615	Administratie	615	Administration
6150	Kantoor en administratie		



	61500 Verzendingskosten	6150 Bureau et administration
	61501 Telefoon, telegram, telex	61500 Frais d'expédition
	61503 Aanwervingskosten voor personeel	61501 Téléphone, télégramme, télex
6151	Notoriëteitsuitgaven	61503 Frais de recrutement de personnel
	61510 Congressen en informatievergaderingen	6151 Relations publiques
	61511 Recepties en representatiekosten	61510 Congrès, sessions de formation
	61512 Lidgeld ziekenhuisverenigingen	61511 Réception et frais de représentation
	61513 Andere bijdragen	61512 Frais d'affiliation aux organisations hospitalières
	61514 Werkingskosten voor de verschillende raden en comités	61513 Autres cotisations
	6152 Gerechtskosten en kosten voor dekking van vorderingen	61514 Frais de fonctionnement des différents conseils et comités
	6159 Diversen	6152 Frais de justice et de recouvrement de créances
616	Niet-medische honoraria	6159 Divers
	6160 Advocaat	616 Honoraires non médicaux
	6161 Revisor	6160 Avocats
	6162 Andere	6161 Réviseurs d'entreprises
617	Uitzendkrachten en personen ter beschikking gesteld van het ziekenhuis	6162 Autres
	6170 Medisch personeel	617 Personnel intérimaire et personnes mises à disposition de l'hôpital
	6171 Loontrekkend personeel	6170 Personnel médical
	6172 Administratief personeel	6171 Personnel salarié
	6173 Verplegend personeel	6172 Personnel administratif
	6174 Paramedisch personeel	6173 Personnel soignant
	6175 Ander personeel	6174 Personnel paramédical
618	Bezoldigingen, premies voor buitenwettelijke verzekeringen, ouderdoms- en overlevingspensioenen van bestuurders, zaakvoerders, werkende vennoten en bedrijfsleiders, die niet worden toegekend uit hoofde van een arbeidsovereenkomst	6175 Autre personnel
619	Bezoldigingen voor geneesheren, tandartsen, verplegend	618 Rémunérations, primes pour assurances extralégales, pensions de retraite et de survie des administrateurs, gérants, associés actifs et irigeants de l'entreprise, qui ne sont pas attribués en vertu d'un contrat de travail.



	personeel en paramedici	619	Rétributions de médecins, dentistes, personnel soignant et paramédical
	6190 Geneesheren	6190	Médecins
	6191 Tandartsen	6191	Dentistes
	6192 Verplegend personeel	6192	Personnel soignant
	6193 Paramedici	6193	Paramédical
62	Bezoldigingen en sociale lasten		
620	Bezoldigingen en rechtstreekse sociale voordelen	62	Rémunérations et charges sociales
6200	Medisch personeel	620	Rémunérations et avantages sociaux directs
6201	Loontrekkend personeel	6200	Personnel médical
6202	Administratief personeel	6201	Personnel salarié
6203	Verplegend personeel	6202	Personnel administratif
6204	Paramedisch personeel	6203	Personnel soignant
6205	Ander personeel	6204	Personnel paramédical
621	Werkgeversbijdrage voor sociale verzekeringen	6205	Autre personnel
6210	Medisch personeel	621	Cotisations patronales d'assurances sociales
6211	Loontrekkend personeel	6210	Personnel médical
6212	Administratief personeel	6211	Personnel salarié
6213	Verplegend personeel	6212	Personnel administratif
6214	Paramedisch personeel	6213	Personnel soignant
6215	Ander personeel	6214	Personnel paramédical
622	Werkgeverspremies voor bovenwettelijke verzekeringen	6215	Autre personnel
6220	Medisch personeel	622	Primes patronales pour assurances extralégales
6221	Loontrekkend personeel	6220	Personnel médical
6222	Administratief personeel	6221	Personnel salarié
6223	Verplegend personeel	6222	Personnel administratif
6224	Paramedisch personeel	6223	Personnel soignant
6225	Ander personeel	6224	Personnel paramédical
623	Andere kosten voor personeel	6225	Autre personnel
6230	Medisch personeel	623	Autres frais de personnel



6231	Loontrekkend personeel	6230	Personnel médical
6232	Administratief personeel	6231	Personnel salarié
6233	Verplegend personeel	6232	Personnel administratif
6234	Paramedisch personeel	6233	Personnel soignant
6235	Ander personeel	6234	Personnel paramédical
624	Ouderdoms- en overlevingspensioenen	6235	Autre personnel
6240	Medisch personeel	624	Pensions de retraite et de survie
6241	Loontrekkend personeel	6240	Personnel médical
6242	Administratief personeel	6241	Personnel salarié
6243	Verplegend personeel	6242	Personnel administratif
6244	Paramedisch personeel	6243	Personnel soignant
6245	Ander personeel	6244	Personnel paramédical
625	Loonvoorzieningen	6245	Autre personnel
6250	Dotaties	625	Provisions salariales
62500	Loonvoorzieningen: Medisch personeel	6250	Dotations
62501	Loonvoorzieningen: Loontrekkend personeel	62500	Provisions salariales: Personnel médical
62502	Loonvoorzieningen: Administratief personeel	62501	Provisions salariales: Personnel salarié
62503	Loonvoorzieningen: Verplegend personeel	62502	Provisions salariales: Personnel administratif
62504	Loonvoorzieningen: Paramedisch personeel	62503	Provisions salariales: Personnel soignant
62505	Loonvoorzieningen: Ander personeel	62504	Provisions salariales: Personnel paramédical
6251	Besteding en terugneming	62505	Provisions salariales: Autre personnel
62510	Loonvoorzieningen: Medisch personeel	6251	Utilisations et reprises
62511	Loonvoorzieningen: Loontrekkend personeel	62510	Provisions salariales: Personnel médical
62512	Loonvoorzieningen: Administratief personeel	62511	Provisions salariales: Personnel salarié
62513	Loonvoorzieningen: Verplegend personeel	62512	Provisions salariales: Personnel administratif
62514	Loonvoorzieningen: Paramedisch personeel	62513	Provisions salariales: Personnel soignant



	62515 Loonvoorzieningen: Ander personeel		62514 Provisions salariales: Personnel paramédical
63	Afschrijvingen en waardeverminderingen en voorzieningen voor risico's en kosten		62515 Provisions salariales: Autre personnel
630	Afschrijvingen en waardeverminderingen op vaste activa - toevoeging	63	Amortissements, réductions de valeur et provisions pour risques et charges
6300	Op oprichtingskosten	630	Dotations aux amortissements et réductions de valeur sur immobilisations
6301	Op immateriële vaste activa	6300	Sur frais d'établissement
6302	Op gebouwen	6301	Sur immobilisations incorporelles
6303	Op materieel voor medische uitrusting	6302	Sur constructions
6304	Op materieel voor niet-medische uitrusting en meubilair	6303	Sur matériel d'équipement médical
63040	Meubilair	6304	Sur matériel d'équipement non médical et mobilier
63041	Materieel		
63042	Rollend materieel	63040	Mobilier
63043	Materieel en meubilair voor informatieverwerking	63041	Matériel
6305	Op vaste activa in huur, financiering en soortgelijke rechten	63042	Matériel roulant
63050	Gebouwen	63043	Matériel et mobilier informatiques
63051	Materieel voor medische uitrusting	6305	Sur immobilisations détenues en location financement et droits similaires
63052	Meubilair	63050	Constructions
63053	Materieel voor niet-medische uitrusting	63051	Matériel d'équipement médical
63054	Rollend materieel	63052	Mobilier
63055	Materieel en meubilair voor informatieverwerking	63053	Matériel d'équipement non médical
631	Waardeverminderingen op voorraden	63054	Matériel roulant
6310	Toevoeging	63055	Matériel et mobilier informatiques
6311	Terugneming (-)	631	Réductions de valeur sur stocks
633	Waardeverminderingen op vorderingen op meer dan één jaar	6310	Dotations
6330	Toevoeging	6311	Reprises (-)
		633	Réductions de valeur sur créances à plus d'un an



	6331	Terugneming (-)		6330	Dotations
634		Waardeverminderingen op vorderingen op ten hoogste één jaar		6331	Reprises (-)
	6340	Toevoeging	634		Réductions de valeur sur créances à un an au plus
	6341	Terugneming (-)		6340	Dotations
635		Voorzieningen voor pensioenen en soortgelijke verplichtingen		6341	Reprises (-)
	6350	Toevoeging	635		Provisions pour pensions et obligations similaires
	6351	Besteding en terugneming (-)		6350	Dotations
636		Voorzieningen voor grote herstellingswerken en grote onderhoudswerken		6351	Utilisations et reprises (-)
	6360	Toevoeging	636		Provisions pour grosses réparations et gros entretiens
	6361	Besteding en terugneming (-)		6360	Dotations
637		Voorzieningen voor andere risico's en kosten inbegrepen loonvoorzieningen		6361	Utilisations et reprises (-)
	6370	Toevoeging	637		Provisions pour autres risques et charges
	6371	Besteding en terugneming (-)		6370	Dotations
64		Andere bedrijfskosten		6371	Utilisations et reprises (-)
	640	Bedrijfsbelastingen	64		Autres charges d'exploitation
	6400	Voorheffing onroerende goederen		640	Charges fiscales
	6401	Taks op voertuigen		6400	Précompte immobilier
	6402	Taks op drijfkracht		6401	Taxes sur véhicules
	6403	Taks op tewerkgesteld personeel		6402	Taxes sur force motrice
	6404	Taks op patrimonium		6403	Taxe sur personnel occupé
	6405	Belastingen voor de milieubescherming		6404	Taxe sur patrimoine
	6409	Diverse taksen		6405	Taxes pour protection de l'environnement
642		Minderwaarde op de realisatie van commerciële kredieten		6409	Taxes diverses
643 tot 648		Diverse bedrijfskosten	642		Moins-values sur réalisation de créances sur prestations
649		Exploitatiekosten geactiveerd als herstructureringskosten	643 à 648		Charges d'exploitation diverses
			649		Charges d'exploitation portées à l'actif au titre de frais de restructuration
65		Financiële kosten			



650	Lasten van investeringsleningen	65	Charges financières
6500	Intresten	650	Charges des emprunts d'investissement
651	Waardevermindering op circulerende activa VII	6500	Intérêts
6510	Dotaties	651	Réductions de valeur sur actifs circulants
6511	Terugnemingen (-)	6510	Dotations
652	Minderwaarden op de realisatie van vlottende activa	6511	Reprises (-)
654	Koersverschillen	652	Moins-values sur réalisation d'actifs circulants
655	Omrekeningsverschillen van deviezen	654	Différences de change
656	Kosten voor kredieten op korte termijn	655	Ecart de conversion de devises
6560 tot 6569	Kredietinstellingen	656	Charges des crédits à court terme
657 tot 659	Diverse financiële kosten	6560 à 6569	Organismes financiers
66	Uitzonderlijke kosten	657 à 659	Charges financières diverses
660	Afschrijvingen en uitzonderlijke waardeverminderingen	66	Charges exceptionnelles
661	Waardeverminderingen op financiële vaste activa	660	Amortissements et réductions de valeurs exceptionnelles
662	Voorzieningen voor risico's en uitzonderlijke kosten	661	Réductions de valeurs sur immobilisations financières
663	Minderwaarden op de realisatie van vaste activa	662	Provisions pour risques et charges exceptionnelles
664 tot 668	Andere uitzonderlijke kosten	663	Moins-values sur réalisations d'actifs immobilisés
669	Kosten met betrekking tot voorgaande boekjaren	664 à 668	Autres charges exceptionnelles
6690	Vorraden en leveringen met betrekking tot voorgaande boekjaren	669	Charges relatives aux exercices antérieurs
6691	Bijkomende diensten en leveringen met betrekking tot voorgaande boekjaren	6690	Approvisionnements en fournitures relatives aux exercices antérieurs
6692	Bezoldigingen en sociale lasten met betrekking tot voorgaande boekjaren	6691	Services et fournitures accessoires relatifs aux exercices antérieurs
6693	Afschrijvingen met betrekking tot voorgaande boekjaren	6692	Rémunérations et charges sociales relatives aux exercices antérieurs
6694	Andere exploitatiekosten met betrekking tot voorgaande boekjaren	6693	Amortissements relatifs aux exercices antérieurs
6695	Financiële kosten met betrekking tot voorgaande boekjaren	6694	Autres charges d'exploitation relatives aux exercices antérieurs
		6695	Charges financières relatives aux exercices antérieurs



69 Resultaatverwerking

- 690 Overdragen verlies van het vorig boekjaar
- 691 Toevoeging aan de wettelijke reserve
- 692 Toevoeging aan de andere reserves
- 693 Over te dragen winst

69 Affectations et prélèvements

- 690 Perte reportée de l'exercice précédent
 - 691 Dotation à la réserve légale
 - 692 Dotation aux autres réserves
 - 693 Bénéfice à reporter
-



APPENDIX 13. COST CENTERS IN FINHOSTA

The latest version of the cost centers can be consulted in the Finhosta brochure on the website of the Federal Public Service Health, Food Chain Safety and Environment.⁹⁹

Dutch version

1. Rekeningen van kosten die wachten op een bestemming

- 000 Afschrijvingen
- 001 Afschrijvingen
- 002 Afschrijvingen
- 003 Afschrijvingen
- 004 Afschrijvingen
- 010 Financiële lasten
- 012 Financiële lasten
- 013 Interesten op kaskredieten
- 014 Andere

2. Te verdelen kostenplaatsen

2.1 Gemeenschappelijke kostenplaatsen

- 020 Algemene onkosten
- 021 Algemene onkosten
- 022 Brandbeveiliging
- 023 Ophaling en behandeling van afvalstoffen
- 024 Algemene onkosten
- 030 Onderhoud
- 031 Onderhoud
- 040 Verwarming
- 041 Verwarming
- 050 Administratie

French version

1. Comptes de charges en attente d'affectation

- 000 Amortissements
- 001 Amortissements
- 002 Amortissements
- 003 Amortissements
- 004 Amortissements
- 010 Charges financières
- 012 Charges financières
- 013 Intérêts des crédits à court terme
- 014 Autres

2. Centres de frais à répartir

2.1 Centres de frais communs

- 020 Frais généraux
- 021 Frais généraux
- 022 Protection Incendie
- 023 Collecte et Traitement des immondices
- 024 Frais généraux
- 030 Entretien
- 031 Entretien
- 040 Chauffage
- 041 Chauffage
- 050 Administration

gg https://portal.health.fgov.be/portal/page?_pageid=56,512870&_dad=portal&_schema=PORTAL; cited in June 2010



051 Informatieverwerking

052 Administratie

060 Wasserij - Linnen

061 Wasserij - Linnen

070 Voeding

071 Dieet

072 Voeding

080 Internaat

090 Medische kosten

091 Directie nursing + middenkader

092 Ziekenhuishygiëne

093 Intern ziekenhuisvervoer

2.2 Hulpkostenplaatsen

100 Klooster

110 Eredienst

120 Mortuarium

130 Functionele readaptatie (ten laste van de verpleging)

139 Ontspanningstherapie

140 Medisch secretariaat

141 Gecentraliseerde medische archieven

142 Morbiditeitsdossiers - M.K.G.

150 Spoedgevallen

151 Wachtdienst

152 M.U.G.

160 Sterilisatie

170 Anesthesie

180 Operatiekwartier

181 Gipskamer

190 Bloedbank

051 Informatique

052 Administration

060 Buanderie – Lingerie

061 Buanderie – Lingerie

070 Alimentation

071 Diététique

072 Alimentation

080 Internat

090 Frais Médicaux

091 Direction nursing + cadre intermédiaire

092 Hygiène hospitalière

093 Transport interne patient

2.2 Centres de frais auxiliaires

100 Couvent

110 Culte

120 Morgue

130 Réadaptation fonctionnelle (à charge de l'hospitalisation)

139 Thérapie de relaxation

140 Secrétariat médical

141 Archives médicales centralisées

142 Dossiers de morbidité - RCM

150 Urgences

151 Service de garde

152 S.M.U.R.

160 Stérilisation

170 Anesthésie

180 Bloc opératoire

181 Salle de plâtre

190 Banque de sang



3. Definitieve kostenplaatsen**3.1 Verpleegdiensten**

- 200 Dienst voor TBC-behandeling (algemeen ziekenhuis)
- 210 Dienst voor diagnose en heelkundige behandeling
- 219 Hartchirurgie
- 220 Dienst voor diagnose en geneeskundige behandeling
- 230 Dienst voor kindergeneeskunde
- 239 Ziekenhuisdienst voor diagnose of preventieve behandeling van wiegendood
- 240 Dienst voor gewone verpleging
- 250 Dienst voor besmettelijke aandoeningen
- 260 Kraamdienst (hospitalisatie-eenheden)
- 261 Bevallingskwartier
- 262 Dienst voor niet-intensieve neonatale zorgen
- 263 Dienst M.I.C.
- 270 Dienst voor intensieve neonatale zorgen
- 279 Ziekenhuisdienst voor diagnose of preventieve behandeling van wiegendood (niet gebruiken voor bedden)
- 280 Dienst voor gemengde hospitalisatie (C+D)
- 290 Eenheid voor de behandeling van zware brandwonden.
- 300 Dienst voor geriatrie
- 310 Gespecialiseerde dienst voor behandeling en revalidatie bestemd voor patiënten met cardio-pulmonaire aandoeningen
- 311 Gespecialiseerde dienst voor behandeling en revalidatie bestemd voor patiënten met neurologische aandoeningen
- 312 Gespecialiseerde dienst voor behandeling en revalidatie bestemd voor patiënten met locomotorische aandoeningen
- 313 Gespecialiseerde dienst voor behandeling en revalidatie bestemd voor patiënten met chronische aandoeningen
- 314 Dienst voor palliatieve zorgen

3. Centres de frais définitifs**3.1 Services hospitaliers**

- 200 Service de traitement de la TBC (hôpital général)
 - 210 Service de diagnostic et traitement chirurgical
 - 219 Services de chirurgie cardiaque
 - 220 Services de diagnostic et traitement médical
 - 230 Services de pédiatrie
 - 239 Section hospitalière de diagnostic ou traitement préventif de la mort subite du nourrisson
 - 240 Service d'hospitalisation simple
 - 250 Service de maladies contagieuses
 - 260 Service de maternité (Unités d'hospitalisation)
 - 261 Quartier d'accouchements
 - 262 Service de soins néonataux non intensifs
 - 263 Services M.I.C.
 - 270 Service de soins néonataux intensifs
 - 279 Section hospitalière de diagnostic ou traitement préventif de la mort subite du nourrisson
 - 280 Service d'hospitalisation mixte (C+D)
 - 290 Unité de traitement des grands brûlés
 - 300 Services de gériatrie
 - 310 Service spécialisé pour le traitement et la réadaptation fonctionnelle destiné à des patients atteints d'affections cardio-pulmonaires
 - 311 Service spécialisé pour le traitement et la réadaptation fonctionnelle destiné à des patients atteints d'affections neurologiques
 - 312 Service spécialisé pour le traitement et la réadaptation fonctionnelle destiné à des patients atteints d'affections locomotrices
 - 313 Service spécialisé pour le traitement et la réadaptation fonctionnelle destiné à des patients atteints d'affections chroniques
 - 314 Service de soins palliatifs
-



315 Dienst psycho-geriatrie
316 Andere diensten voor specialiteiten (betreft enkel pilootprojecten)
320 Chirurgische daghospitalisatie
340 Dienst neuro-psiatrie voor kinderen
350 Dagverpleging in K-dienst
360 Nachverpleging in K-dienst
370 Dienst neuro-psiatrie voor observatie en behandeling
380 Dagverpleging in A-dienst
390 Nachverpleging in A-dienst
410 Psychiatrische dienst voor behandeling
411 Gezinsplaatsing intra-muros
420 Dagverpleging in T-dienst
430 Nachverpleging in T-dienst
460 Psychiatrische verzorging in familieverband
470 Psychiatrische dienst voor behandeling in progressieve omschakeling
490 Intensieve zorgen

3.2 Medisch-technische diensten, consultaties en apotheek

500 Radiologie
501 Nucleaire magnetische resonantie
502 Scanner
503 Andere diensten voor medische beeldvorming
510 Laboratorium voor scheikunde
511 Laboratorium voor hematologie
512 Laboratorium voor coagulatie en hemostase
513 Laboratorium voor immuno-hematologie
514 Laboratorium voor serologie
515 Laboratorium voor microbiologie
516 Laboratorium voor hormonologie

315 Service de psycho-gériatrie
316 Autres services de spécialités
320 Hôpital chirurgical de jour
340 Service de neuropsychiatrie infantile
350 Hospitalisation de jour en service K
360 Hospitalisation de nuit en service K
370 Service neuro-psiatrique d'observation et de traitement
380 Hospitalisation de jour en service A
390 Hospitalisation de nuit en service A
410 Service psychiatrique de traitement
411 Placement familial intra-muros
420 Hospitalisation de jour en service T
430 Hospitalisation de nuit en service T
460 Placement familial extra-muros
470 Service psychiatrique de traitement en reconversion progressive

490 Soins Intensifs

3.2 Services médico-techniques, consultations et pharmacie

500 Radiologie
501 Résonance magnétique nucléaire
502 Scanner
503 Autres services d'imagerie médicale
510 Laboratoire de chimie
511 Laboratoire d'hématologie
512 Laboratoire de coagulation et hémostase
513 Laboratoire d'immuno-hématologie
514 Laboratoire de sérologie
515 Laboratoire de microbiologie
516 Laboratoire d'hormonologie



517 Laboratorium voor anatomo-pathologie	517 Laboratoire d'anatomo-pathologie
518 Laboratorium voor radio-isotopen in vitro	518 Laboratoire de radio-isotopes in vitro
519 Laboratorium	519 Laboratoire divers
520 Andere laboratoria	520 Autres Laboratoires
550 Medische daghospitalisatie	550 Hôpital de jour médical
551 Daghospitalisatie voor kinderen	551 Hôpital de jour pédiatrique
552 Andere daghospitalisatie	552 Hôpital de jour autres
553 Geriatrische daghospitalisatie	553 Hôpital de jour gériatrique
554 Zonder bestemming	554 Sans affectation
555 Revalidatiecentra - conventies RIZIV	555 Centres de revalidation - conventions INAMI
560 Hemodialyse	560 Hémodialyse
570 Radiotherapie	570 Radiothérapie
580 Andere medisch-technische	580 Autres services médico-techniques
650 Weefselbank (wachtrekening)	650 Banques de tissus (compte d'attente)
651 Fermurkopen, bot, locomotorisch stelsel	651 Têtes de fémur, os ou appareil locomoteur
652 Huid	652 Peau
653 Keratinocyten	653 Kératinocytes
654 Beta-pancreatische cellen	654 Cellules bêta-pancréatiques
655 Tympanio-ossiculaire allogreffen	655 Greffes tympano-ossiculaires
656 Cornea	656 Cornées
657 Vaten, hartkleppen en andere kleppen	657 Vaisseaux sanguins et/ou valves cardiaques et autres valves
658 Amnion membranen	658 Membranes amniotiques
659 Tanden en maxillo-faciaal beenderen	659 Dents et os maxillo-facial
660 navelstrengbloed	660 Sang de cordon
661 Hematopoïetische stamcellen	661 Cellules souches hématopoïétiques
662 Chondrocyten	662 Chondrocytes
663 Myoblasten	663 Myoblastes
664 Hepatocyten	664 Hépatocytes
665 Toe te kennen reserve	665 Réserve restant à attribuer



680 Andere weefselbanken
690 Zonder bestemming
700 Nuclaire geneeskunde in vivo
701 PET scan
702 Nuclaire geneeskunde in vivo
710 Andere medisch-technische diensten
830 Apotheek
840 Consultaties

3.3 Niet-ziekenhuisactiviteiten

900 Ziekenwagen
910 Rust- en verzorgingstehuizen
920 Rusthuizen
930 School verpleegkunde
935 O.C.M.W. lokalen
940 Beschut wonen
950 Psychiatrische verzorgingstehuizen
960 Andere niet-ziekenhuis activiteiten
980 Kosten niet toewijsbaar aan diensten
990 Opbrengsten niet toewijsbaar aan diensten

680 Autres banques de tissus
690 Sans affectation
700 Médecine nucléaire in vivo
701 PET scan
702 Autre médecine nucléaire in vivo
710 Autres services médico-techniques
830 Pharmacie
840 Consultations

3.3 Activités non hospitalières

900 Ambulance
910 Maison de repos et de soins
920 Maison de repos
930 Ecole infirmières
935 Locaux C.P.A.S.
940 Habitations protégées
950 Maison de soins psychiatriques
960 Autres activités non hospitalières
980 Charges non imputables aux services
990 Produits non imputables aux services



APPENDIX 14. SICK LEAVE AND OTHER ABSENCE PAID BY THE EMPLOYER (SD WORX)

Data are based on a dataset of SD Worx.

Appendix 14.1. Data selection

- Private sector;
- Selected NACE code "Menselijke gezondheidszorg" (comprising hospitals, physician and dentist practices and 'other human health care');
- Data from year 2009 on 34 439 employees.

Appendix 14.2. Calculation of absence rate

For the calculation of percentages, the number of days of absence is divided by the number of "working days". "Working days" means the sum of all days actually comptabilised in the payroll of an employee. A full time employee, in service all the year, works + / - 260 days (depending on the year). A full-time employee in service only 9 months works (+ / -) 195 days. The end result is an average of all the underlying individual percentages.

Table 2: SD Worx data on paid absence rates (other than legal holiday, extra holidays as function of age, paid holidays and training)

	Total Employees
% paid sick leave (worker)	0.01%
% paid sick leave 1s week (worker)	0.04%
% paid sick leave 2nd week (worker)	0.01%
% paid sick leave 3th and 4th week (worker)	0.01%
% guaranteed wage (employee)	2.57%
% accident at work 1st week (worker)	0.00%
% accident at work following weeks (worker)	0.00%
% guaranteed wage accident at work (employee)	0.08%
% other paid absences *	1.81% ^{hh}
Number workforce	30 652

* Other paid absences includes paternity or adoption leaves, leaves for civil or trade-union obligations, absences for job application and any other absences to be paid by the employer.

hh 4.77% if extra holidays as function of seniority to keep older employees employed, i.e. "ADV 45+ - dispenses de prestations 45+" are included.



For the KCE analysis, sick leave is considered to be paid by the employer the 1st month of sickness.

The following absences are considered not to be paid by the employer for the KCE analysis (but are included in the SD Worx data):

- sick leave longer than the above stated periods, since these are paid by the RIZIV/INAMI;
- educational leave since the employer is reimbursed for the wage he pays for this absence (it is also assumed that these fees are deducted from the 743 account).

The following absences are considered not to be paid by the employer for the KCE analysis (and are also not included in the SD Worx data):

- absence due to delivery and maternity;
- adoption;
- absence due to social or familial circumstances;
- interruption of the activities;
- 7 days parental leave;
- illegitimate sick leave.

APPENDIX 15. IF-IC DATASET AND COST PER HOUR BY FUNCTION

Appendix 15.1. Sample

	FTE	heads
Number of employees	14 658	20 351
Not included		
Members of direction		- 104
Long term absence (sickness > one)		- 683
Long term absence (Other reasons)		- 256
Early retirement		- 363
Full-time time credit		- 304
Mixed fonctionsⁱⁱ		934
Ventilated in 3 fonctions		+ 41
Ventilated in 2 fonctions		+ 893
Missing fonctions		- 675
Private	10 622	13 764
Public	4 035	5 176
TOTAL		18 940

ii If an employee holds concurrently 2 or 3 positions, 2 or 3 functions are allocated.



Appendix 15.2. Database IF-IC and calculation of the annual cost per FTE

Section	Column	Comment
Function	Department	
	Family	
	Code IF-IC	
	Title (Dutch)	
	Title (french)	
Number	Number men	
	Number women	
	Total men women	
	FTE men	
	FTE women	
	FTE total	
Basic Wage	Mean	Wage for Full Time equivalent, based on financial seniority
	Group by 5 Years of service	
	Median	Wage for Full Time Equivalent, based on financial seniority
	Group by 5 Years of service	
Allocation de résidence – Standplaatsstoelage	Mean	
	Number of people	
Allocation de foyer/ Haardtoelage	Mean	
	Number of people	
Supplément de fonction/ Functiesupplement	Mean	
	Number of people	
Complément de fonction / Functiecomplement	Mean	
	Number of people	
Age	Number of people	
	Number of people	



Seniority level	Number of people	
Financial seniority	Number of people	
Calculations	Gross basic wage	12x (basic wage (mean) + Allocation de foyer / haardtoelage + Supplément de fonction / Functiesupplement + Complément de fonction / Functiecomplement)
	End of year bonus	Amount 2010= 311.22 € + (12 x 2.5 % Gross Wage of September)
	Attractiveness bonus	Amount 2010= 587.21 + (12 x 0.55% Gross Wage of October))
	Holiday pay	92 % Gross Basic Wage
	Annual gross wage	Sum yearly basic wage + end of year bonus + attractiveness bonus + holiday pay

Appendix 15.3. Functions used in the IF - IC sample and Cost per function (per hour)

Description in French	Description in Dutch	Cost per hour (€) March 2012
Chef de Service Administratif	Dienstverantwoordelijke Administratie	€ 44.04
Chef-Adjoint du Service Administratif	Adjunct-Dienstverantwoordelijke Administratie	€ 38.57
Attaché aux Affaires Juridiques	Juridisch Stafmedewerker	€ 55.06
Coordinateur Qualité	Kwaliteitscoördinator	€ 49.50
Attaché à la Communication	Stafmedewerker Communicatie	€ 54.68
Secrétaire de Direction	Directiesecretaris	€ 38.06
Secrétaire de Service ou de Département	Secretaris op een Dienst of Departement	€ 32.43
Employé Accueil / Réception / Téléphonie	Medewerker Onthaal / Receptie / Telefonie	€ 30.16
Secrétaire Médical	Medisch Secretaris	€ 31.31
Employé Admissions	Medewerker Opname	€ 29.20
Employé Administratif	Administratief Bediende	€ 29.71
Employé Administratif Archives	Administratief Medewerker Archief	€ 27.77
Aide Administrative Secrétariat	Administratieve Hulp Secretariaat	€ 28.17
Employé Administratif Consultation	Administratief Bediende Consultatie	€ 28.40
Chef Comptable	Hoofdboekhouder	€ 56.78



Description in French	Description in Dutch	Cost per hour (€) March 2012
Chef du Service Facturation	Dienstverantwoordelijke Facturatie	€ 50.30
Attaché à la Gestion Budgétaire	Stafmedewerker Budgetbeheer	€ 43.89
Comptable	Boekhouder	€ 35.88
Employé Contentieux	Medewerker Klachtendienst	€ 32.77
Employé Facturation	Bediende Facturatie	€ 32.21
Aide-Comptable	Hulp Boekhouder	€ 33.14
Aide à la Facturation	Hulp Facturatie	€ 30.46
Chef du Service Informatique	Dienstverantwoordelijke Informatica	€ 55.26
Gestionnaire Système	Systeembeheerder	€ 37.21
Analyste	Analist	€ 40.81
Gestionnaire des Réseaux	Netwerkbeheerder	€ 35.94
Employé PC Support	Medewerker PC Support	€ 29.37
Employé Entretien PC	Onderhoudsmedewerker PC	€ 38.01
Programmeur	Programmeur	€ 38.23
Chef du Service Administration du Personnel	Dienstverantwoordelijke Personeelsadministratie	€ 43.92
Collaborateur Spécialisé Développement RH	Gespecialiseerd Medewerker HR Ontwikkeling	€ 35.91
Employé Spécialisé Administration du Personnel	Gespecialiseerd Medewerker Personeelsadministratie	€ 35.46
Employé Administration du Personnel	Medewerker Personeelsadministratie	€ 26.60
Chef du Service Entretien Ménager	Dienstverantwoordelijke Huishoudelijk Onderhoud	€ 43.20
Chef-Adjoint du Service Entretien Ménager	Adjunct-Dienstverantwoordelijke Huishoudelijk Onderhoud	€ 31.51
Brigadier	Voorwerker	€ 27.18
Technicien de Surface	Schoonmaker	€ 23.22
Couturier	Naaier	€ 25.88
Préposé Buanderie	Medewerker Wasserij	€ 24.74



Description in French	Description in Dutch	Cost per hour (€) March 2012
Chauffeur	Chauffeur	€ 25.40
Chef du Service Technique	Dienstverantwoordelijke Technische Dienst	€ 49.97
Conseiller en Prévention - Chef du Service	Preventieadviseur - Dienstverantwoordelijke	€ 46.99
Conseiller en Prévention - Chef-Adjoint du Service	Preventieadviseur - Adjunct-Dienstverantwoordelijke	€ 46.89
Attaché à la Gestion des Bâtiments	Stafmedewerker Gebouwenbeheer	€ 50.43
Chef d'équipe Service Technique	Ploegverantwoordelijke Technische Dienst	€ 37.07
Technicien Spécialisé	Gespecialiseerd Vakman	€ 30.12
Biotechnicien	Biotechnicus	€ 36.90
Technicien	Vakman	€ 28.65
Préposé Polyvalent Entretien Technique	Polyvalent Medewerker Technisch Onderhoud	€ 29.57
Garde	Bewaker	€ 24.72
Aide-Technicien	Hulpvakman	€ 27.64
Préposé Maintenance	Onderhoudsmedewerker	€ 23.95
Chef du Service Achats	Dienstverantwoordelijke Aankoop	€ 50.30
Acheteur	Aankoper	€ 40.47
Employé Administratif Achats	Administratief Medewerker Aankoop	€ 28.97
Magasinier	Magazijnier	€ 28.39
Employé Économat	Medewerker Economaat	€ 31.13
Aide-Magasinier	Hulpmagazijnier	€ 25.66
Chef du Service Alimentation	Dienstverantwoordelijke Voeding	€ 49.83
Chef-Cuisinier	Chef-Kok	€ 37.29
Cuisinier	Kok	€ 27.57
Préposé Restaurant/Cafétéria	Medewerker Restaurant/Cafetaria	€ 24.61
Aide-Cuisinier/Commis	Hulpkok	€ 24.73
Aide-Cuisine	Keukenhulp	€ 24.52



Description in French	Description in Dutch	Cost per hour (€) March 2012
Pharmacien en Chef	Hoofdapothecker	€ 75.76
Pharmacien en Chef-Adjoint	Adjunct-Hoofdapothecker	€ 69.17
Pharmacien	Apothecker	€ 55.08
Magasinier à la Pharmacie	Magazijnier Apotheek	€ 32.17
Assistant en Pharmacie	Apotheek Assistent	€ 29.66
Employé Distribution à la Pharmacie	Medewerker Distributie Apotheek	€ 28.26
Aide en Pharmacie	Hulp in de Apotheek	€ 30.74
Chef-Technologue de Laboratoire Médical	Hoofdtechnoloog Medisch Laboratorium	€ 58.75
Chef-Adjoint Technologue de Laboratoire Médical	Adjunct-Hoofdtechnoloog Medisch Laboratorium	€ 43.73
Technologue Laboratoire Médical	Technoloog Medisch Laboratorium	€ 40.00
Employé Réception et Distribution d'Échantillons	Medewerker Ontvangst Stalen en Verdeling	€ 30.86
Préleveur	Prikker	€ 44.86
Chef du Service Médico-technique	Dienstverantwoordelijke Medisch Technische Dienst	€ 52.86
Chef du Service Stérilisation	Diensthoofd Centrale Sterilisatie Afdeling	€ 56.21
Physicien	Fysicus	€ 51.57
Technologue Service Médico-Technique	Technoloog Medisch Technische Dienst	€ 37.32
Technicien Service Médico-Technique	Technicus Medisch Technische Dienst	€ 37.25
Auxiliaire en Stérilisation	Centrale Sterilisatie-Assistent	€ 29.33
Chef des Services Paramédicaux	Dienstverantwoordelijke Paramedische Diensten	€ 52.65
Chef du Service Kinésithérapie	Dienstverantwoordelijke Kinesithérapie	€ 56.93
Chef du Service Ergothérapie	Dienstverantwoordelijke Ergotherapie	€ 48.31
Chef du Service Diététique	Dienstverantwoordelijke Diëtiëk	€ 52.62
Kinésithérapeute	Kinesitherapeut	€ 43.40
Ergothérapeute	Ergotherapeut	€ 33.90
Logopède	Logopedist	€ 37.09



Description in French	Description in Dutch	Cost per hour (€) March 2012
Diététicien	Diëtist	€ 36.90
Animateur	Animator	€ 30.11
Audiologue	Audioloog	€ 35.08
Chef du Service Psychologie	Dienstverantwoordelijke Psychologische Dienst	€ 43.78
Chef du Service Social	Dienstverantwoordelijke Sociale Dienst	€ 49.02
Psychologue	Psycholoog	€ 43.96
Accompagnateur Spirituel	Spiritueel Begeleider	€ 40.07
Collaborateur au Service Social	Medewerker Sociale Dienst	€ 36.16
Médiateur	Bemiddelaar	€ 45.77
Médiateur Interculturel	Intercultureel Bemiddelaar	€ 25.38
Infirmier - Chef de Service	Verpleegkundige - Diensthoofd	€ 56.92
Attaché à la Gestion des Soins	Stafmedewerker Zorgbeleid	€ 52.09
Infirmier Premier Responsable	Verpleegkundige Eerste Verantwoordelijke	€ 43.17
Aide Logistique dans une unité de soins ou de résidence	Logistiek Medewerker in een verpleeg- of verblijfseenheid	€ 28.68
Employé Transport Interne des Patients	Medewerker Intern Patiëntenvervoer	€ 28.05
Infirmier Chargé Accueil et Encadrement du Personnel Infirmier Nouveau, Rentrant et Stagiaire	Begeleider Verpleegkundige Intreders, Herintreders en Stagiaires	€ 42.92
Infirmier en Chef - Coordinateur	Hoofdverpleegkundige - Coördinator	€ 50.64
Infirmier en Chef en Hôpital	Hoofdverpleegkundige Ziekenhuis	€ 47.88
Sage-Femme en Chef	Hoofdvroedkundige	€ 55.69
Infirmier en Chef en Hôpital (petite unité)	Hoofdverpleegkundige Ziekenhuis (kleine afdeling)	€ 50.73
Infirmier en Chef-Adjoint en Hôpital	Adjunct-Hoofdverpleegkundige Ziekenhuis	€ 46.58
Infirmier Référence Discipline	Referentieverpleegkundige	€ 42.95
Infirmier-Hygiéniste	Verpleegkundige Ziekenhuishygiënist	€ 48.41
Infirmier Chargé d'Études	Studieverpleegkundige	€ 36.38



Description in French	Description in Dutch	Cost per hour (€) March 2012
Infirmier en Urgences	Spoedverpleegkundige	€ 39.52
Infirmier en Soins Intensifs	Verpleegkundige Intensieve Zorgen	€ 36.57
Infirmier SMUR	MUG Verpleegkundige	€ 35.80
Infirmier au Bloc Opératoire	Verpleegkundige Operatiekwartier	€ 35.17
Infirmier en Hôpital	Verpleegkundige Ziekenhuis	€ 36.30
Sage-Femme	Vroedkundige	€ 36.30
Aide-Soignant Hôpital	Zorgkundige Ziekenhuis	€ 29.63
Ambulancier	Ambulancier	€ 28.84
Sage-Femme Post-Partum	Vroedkundige Postpartum	€ 36.25
Infirmier en Consultation	Verpleegkundige in een Consultatieafdeling	€ 40.16
Puéricultrice	Kinderverzorgende	€ 32.57
Employé à la Morgue	Bediende Mortuarium	€ 31.00
Infirmier en Salle de Plâtres	Gipsverpleegkundige	€ 40.69
Infirmier en Chef dans une Unité Psychiatrique	Hoofdverpleegkundige in een Psychiatrische Eenheid	€ 51.24
Infirmier dans une Unité Psychiatrique	Verpleegkundige in een Psychiatrische Eenheid	€ 36.55
Aide-Soignant dans une Unité Psychiatrique	Zorgkundige in een Psychiatrische Eenheid	€ 38.67
Educateur / Accompagnateur dans une Unité Psychiatrique	Opvoeder / Begeleider in een Psychiatrische Eenheid	€ 33.38



APPENDIX 16. SUPPLEMENTARY HOLIDAYS AS A FUNCTION OF AGE

Appendix 16.1. Caring functions

- The formula below gives the cost per hour for nursing and caring functions, adjusted for the percentage of personnel in each age-class category and for the legal aspects with regard to the supplementary holidays for age. Atac= Average total annual cost.

$$\text{Atac. p FTE} * \left(\frac{\text{Proportion FTE} < 45y}{1605.2 \text{ hours}} + \frac{\text{Proportion FTE } 45 - 49y}{1605.2 - 96 \text{ hours}} + \frac{\text{Proportion FTE } 50 - 54y}{1605.2 - 192 \text{ hours}} + \frac{\text{Proportion FTE} > 54y}{1605.2 - 288 \text{ hours}} \right)$$

Appendix 16.2. Other functions

- The formula below gives the cost per hour for the other functions, adjusted for the percentage of personnel in each age-class category and for the legal aspects with regard to the supplementary holidays for age. Atac. p FTE= Average total annual cost per FTE.

$$\text{Atac.p FTE} * \left(\frac{\text{Proportion FTE} < 50y}{1605.2 \text{ hours}} + \frac{\text{Proportion FTE } 50 - 51y}{1605.2 - 38 \text{ hours}} + \frac{\text{Proportion FTE } 52 - 54y}{1605.2 - 76 \text{ hours}} + \frac{\text{Proportion FTE} > 54y}{1605.2 - 152 \text{ hours}} \right)$$



APPENDIX 17. NURSING WORKING HOURS IN A GENERAL ACUTE-CARE UNIT AND IN INTENSIVE CARE

Appendix 17.1. Hypothesis

- Distinction between general acute-care unit and intensive care unit
 - The general acute-care unit consists of 30 beds;
 - The intensive care unit consists of 13 beds.
- Application of the occupancy rate to the care unit
- We made a survey in 3 hospitals (Cliniques Universitaires Saint-Luc, CHIREC and Clinique Saint-Jean) to determine the number of nurses present during the 3 shifts:
 - AM (7h to 15h30);
 - PM (14h to 22h);
 - Night (21h30 to 7h30).
- Distinction between the Weekdays, the Saturdays and the Sundays

Appendix 17.2. General acute-care units

Appendix 17.2.1. Week days

Nb of nurses	Shift	Hours/nurse	
4	AM: 7h to 15h30	7.6	regular hours
2	PM: 14h to 22h	4.6	regular hours
		1	evening hour
		2	night hours
1	Night: 21h30 to 7h30	8.5	night hours
		1.5	night hours*

*hours from 6 am to 7.30 PM, for the night shift, are considered as night hours since 10 July 2010.

Regular hours per patient day=

$$\frac{7,6h * 4 + 4,6h * 2}{30 * occupancy\ rate} = \frac{39,6h}{30 * occupancy\ rate}$$

$$\text{Evening hours per patient day} = \frac{1h * 2}{30 * occupancy\ rate}$$

Night hours per patient day =

$$\frac{2h * 2 + 10h * 1}{30 * occupancy\ rate} = \frac{14h}{30 * occupancy\ rate}$$

Appendix 17.2.2. Saturdays

Remark: the occupancy rate, for general units, is lower during week-ends than during the week.

Nb of nurses	Shift	Hours/nurse	
3	AM: 7h to 15h30	7.6	"Saturdays" hours
2	PM: 14h to 22h	5.6	"Saturdays" hours
		2	night hours
1	Night: 21h30 to 7h30	8.5	night hours
		1.5	night hours*

* hours from 6 am to 7.30 PM, for the night shift, are considered as night hours since 10 July 2010.

Saturday hours per patient day

$$\begin{aligned} &= \frac{(7,6h * 3) + (5,6h * 2)}{30 * occupancy\ rate} \\ &= \frac{34h}{30 * occupancy\ rate} \end{aligned}$$



Night hours per patient day

$$= \frac{(2h * 2) + (8,5h * 1) + (1,5 * 1)}{30 * \text{occupancy rate}}$$

$$= \frac{14h}{30 * \text{occupancy rate}}$$

Appendix 17.2.3. Sundays (same tariff for day and night)

Hours per patient day

$$= \frac{(7,6h * 3) + (5,6h * 2) + (2h * 2) + (8,5h * 1) + (1,5h * 1)}{30 * \text{occupancy rate}}$$

$$= \frac{48h}{30 * \text{occupancy rate}}$$

Appendix 17.3. Intensive care units^{jj}

Appendix 17.3.1. Week days

Nb of nurses	Shift	Hours/nurse	
7	AM: 7h to 15h30	7.6	regular hours
5	PM: 14h to 22h	4.6	regular hours
		1	evening hour
		2	night hours
4	Night: 21h30 to 7h30	8.5	night hours
		1.5	night hours*

* hours from 6 am to 7.30 PM, for the night shift, are considered as night hours since 10 July 2010.

Regular hours per patient day

$$= \frac{7,6h * 7 + 4,6h * 5}{14 * \text{occupancy rate}}$$

$$= \frac{76,2h}{13 * \text{occupancy rate}}$$

Evening hours per patient day

$$= \frac{1h * 5}{13 * \text{occupancy rate}}$$

Night hours per patient day

$$= \frac{2h * 5 + 10h * 4}{13 * \text{occupancy rate}}$$

$$= \frac{50h}{13 * \text{occupancy rate}}$$

jj Unit of 13 beds.



Appendix 17.3.2. Saturdays

Remark: for intensive care units, the occupancy rate of week-ends is similar to the week occupancy rate.

Nb of nurses	Shift	Hours/nurse	
6	AM: 7h to 15h30	7.6	"Saturdays" hours
5	PM: 14h to 22h	5.6	"Saturdays" hours
		2	night hours
4	Night: 21h30 to 7h30	8.5	night hours
		1.5	night hours*

* hours from 6 am to 7.30 pm , for the night shift, are considered as night hours since 10 July 2010.

Saturdays hours per patient day

$$\begin{aligned} &= \frac{(7,6h * 6) + (5,6 * 5)}{13 * occupancy\ rate} \\ &= \frac{73,6h}{13 * occupancy\ rate} \end{aligned}$$

Night hours per patient day

$$\begin{aligned} &= \frac{(2h * 5) + (8,5 * 4) + (1,5 * 4)}{13 * occupancy\ rate} \\ &= \frac{50h}{13 * occupancy\ rate} \end{aligned}$$

Appendix 17.3.3. Sundays(same tariff for day and night)

Sundays hours per patient day

$$\begin{aligned} &= \frac{(7,6h * 6) + (5,6 * 5) + (2h * 5) + (8,5h * 4) + (1,5h * 4)}{13 * occupancy\ rate} \\ &= \frac{123,6h}{13 * occupancy\ rate} \end{aligned}$$



APPENDIX 18. PHYSICIAN INCOME

Appendix 18.1. Average annual gross physician income and GHIMD per FTE, including and excluding supplements, and average deduction rates in Belgium

For confidentiality and accuracy reasons, details over specialties with less than 5 FTE per region were not included in this table.

Specialty	BELGIUM					FLANDERS					WALLONIA				
	Average annual gross income, includ. suppl. /FTE (€)	Average annual gross income, exclud. suppl. /FTE (€)	Average annual GHIMD, includ. suppl. /FTE (€)	Average annual GHIMD, exclud. suppl. /FTE (€)	Average deduction rate on gross income, exclud. suppl.	Average annual gross income, includ. suppl. /FTE (€)	Average annual gross income, exclud. suppl. /FTE (€)	Average annual GHIMD, includ. suppl. /FTE (€)	Average annual GHIMD, exclud. suppl. /FTE (€)	Average deduction rate on gross income, exclud. suppl.	Average annual gross income, includ. suppl. /FTE (€)	Average annual gross income, exclud. suppl. /FTE (€)	Average annual GHIMD, includ. suppl. /FTE (€)	Average annual GHIMD, exclud. suppl. /FTE (€)	Average deduction rate on gross income, exclud. suppl.
Cardiology	471 354	426 045	249 220	216 669	49%	629 805	556 311	338 356	287 481	48%	302 715	285 614	172 663	159 325	44%
Gastro enterology	382 778	354 285	235 389	211 171	40%	457 664	424 360	311 335	281 835	34%	309 649	283 978	181 318	161 265	43%
Pneumology	281 602	269 561	179 326	169 449	37%	299 796	291 978	195 715	189 777	35%	237 543	223 840	159 189	148 007	34%
Neurology	258 439	250 314	157 536	151 096	40%	312 520	302 141	196 639	189 316	37%	218 791	213 292	143 508	138 516	35%
Psychiatry	238 108	229 797	174 879	167 781	27%	294 614	282 156	226 954	215 693	24%	211 813	204 210	155 341	149 229	27%
Paediatrics	238 132	201 276	179 461	148 158	26%	256 744	220 598	204 612	172 611	22%	228 522	194 542	166 799	141 006	28%
Geriatrics	246 129	227 170	187 606	170 921	25%	269 032	245 439	224 074	202 952	17%	185 629	174 154	161 540	152 232	13%
Oncology	205 196	197 825	179 100	172 886	13%	224 626	214 542	201 681	192 509	10%	185 533	180 909	156 249	153 030	15%
Anaesthesia	347 526	269 356	279 551	212 546	21%	368 703	312 644	307 768	256 975	18%	304 855	206 864	236 073	157 620	24%
General surgery	327 936	256 250	235 835	175 038	32%	368 147	308 495	281 338	227 448	26%	262 812	189 050	195 984	137 666	27%
Neuro surgery	387 434	307 876	315 796	246 534	20%	425 979	329 252	356 307	268 616	18%	327 823	274 306	258 760	219 145	20%
Plastic surgery	287 656	212 544	231 078	165 514	22%	316 450	245 431	264 125	199 471	19%	261 473	174 655	204 582	132 539	24%
Gynaecology	273 772	213 417	199 432	147 833	31%	303 915	239 149	229 698	171 127	28%	233 801	161 184	173 612	115 573	28%



Specialty	BELGIUM					FLANDERS					WALLONIA				
	Average annual gross income, includ. suppl. /FTE (€)	Average annual gross income, exclud. suppl. /FTE (€)	Average annual GHIMD, includ. suppl. /FTE (€)	Average annual GHIMD, exclud. suppl. /FTE (€)	Average deduction rate on gross income, exclud. suppl.	Average annual gross income, includ. suppl. /FTE (€)	Average annual gross income, exclud. suppl. /FTE (€)	Average annual GHIMD, includ. suppl. /FTE (€)	Average annual GHIMD, exclud. suppl. /FTE (€)	Average deduction rate on gross income, exclud. suppl.	Average annual gross income, includ. suppl. /FTE (€)	Average annual gross income, exclud. suppl. /FTE (€)	Average annual GHIMD, includ. suppl. /FTE (€)	Average annual GHIMD, exclud. suppl. /FTE (€)	Average deduction rate on gross income, exclud. suppl.
- Obstetrics															
Ophthalmology	359 658	332 993	271 857	246 900	26%	384 793	368 211	311 175	296 232	20%	386 242	343 198	271 389	229 844	33%
ORL	296 792	269 044	220 804	196 632	27%	320 298	295 191	259 831	236 972	20%	257 071	223 886	171 665	144 431	35%
Urology	296 767	242 564	221 658	174 319	28%	298 506	276 278	218 431	198 488	28%	208 531	163 845	181 870	146 991	10%
Orthopaedics	358 633	281 558	262 638	195 082	31%	388 671	340 246	313 595	270 113	21%	316 561	219 981	225 329	142 146	35%
Stomatology	399 407	353 542	289 839	250 095	29%	432 504	404 943	324 615	299 610	26%	315 440	238 395	238 552	175 167	27%
Clinical biology	1 914 541	1 888 057	355 103	345 730	82%	1 662 261	1 650 461	431 457	429 097	74%	2 243 825	2 220 359	264 106	249 848	89%
Pathological anatomy	576 501	527 707	253 040	220 698	58%	594 998	540 855	302 463	266 633	51%	492 852	452 027	188 350	164 618	64%
Radiology	913 014	846 298	338 378	298 465	65%	1 012 073	966 638	461 478	425 587	56%	816 562	787 659	221 068	206 111	74%
Nuclear medicine	742 354	714 229	236 891	219 481	69%	836 709	816 764	323 485	311 080	62%	688 401	669 872	203 231	191 735	71%
Emergency medicine	247 016	246 093	189 881	189 045	23%	286 070	284 619	226 972	225 659	21%	178 775	178 775	125 069	125 069	30%
Intensive care	336 312	331 203	254 174	249 701	25%	425 758	419 862	346 054	340 828	19%	284 297	283 444	208 711	208 149	27%
Nephrology dialysis	1 041 425	1 030 032	425 505	415 600	60%	1 142 185	1 141 480	636 284	635 689	44%	877 933	873 268	227 900	224 656	74%



Appendix 18.2. Physician net income by specialty in France

In countries such as U.K, Denmark or Germany, most medical specialists are salaried. Salaries are usually based on the qualification of physicians, the level of the position, or seniority, but does not vary according to the specialty. In countries with an predominant private sector, statistics about physician net income are hardly ever publicly available, except for France.

The French health care system is characterized by two different modes of remuneration of the physicians, i.e. a mix of fees-for-service and wages:

- In the private sector, physicians (self-employed) are paid on a fee-for-service basis.
- In the public hospital sector, the physicians are remunerated according to a fixed salary scale, independent of their specialty.

This situation is a source of tension between the two systems and in 2008, the French Minister of Health has commissioned a study on the incomes of hospital physicians. The objective of this mission was to formulate new proposals with regard to the remuneration system of the physicians working in hospital setting.²⁰

This French study has pointed out that that a large part of the physicians has a mixed activity: one out of three self-employed physicians is also salaried, and the net income is a combination of fees-for-service and wages.

The following table shows the net income of physicians with a mixed activity, by specialty. This net income represents the income declared to the fiscal administration, after deduction of professional costs and personal social security contributions. Patients' surcharges are included. There is no distinction made between those parts of the income generated by ambulatory activities and those by hospital-based activities. This income concept is not the same than the GHIMD measured in our study for Belgium. The figures presented are not comparable. Nevertheless, they illustrate a variability of income according to specialties which is comparable to the variability observed in Belgium.

Yearly net income of physicians with a mixed activity, by specialty, in €, year 2005

Specialty	Total number of physicians	% with mixed activities	% of fixed wage in global income	Average yearly net income before taxes
Radiology	4 263	43.4	48.5	167 687
Surgery	4 868	46.9	48.1	154 997
Anaesthesia	2 579	17.0	42.8	147 054
Ophthalmology	4 135	30.3	22.1	124 359
Stomatology	951	34.2	26.7	122 279
Cardiology	3 699	52.1	33.6	121 309
Gastro-enterology	1 867	51.0	32.4	101 180
Others	3 335	49.5	40.1	100 710
Oto-rhino-laryngology	2 070	55.5	32.1	95 816
Gynaecology	4 825	40.1	39.4	94 639
Pneumology	1 033	58.1	36.7	90 371
Paediatrics	2 496	47.7	30.1	79 110
Psychiatry	5 788	48.2	40.5	79 102
Rheumatology	1 708	39.3	30.2	78 393
Dermatology	2 962	25.6	24.9	72 842
General Practitioner	56 498	19.1	24.3	70 850
Specialties	46 579	42.4	37.4	111 765
All physicians	103 077	29.7	32.8	89 339

Source: IGAS, Rapport n° RM 2008-147 P, page 25-27.



The study has been updated by the DRESS^{kk} for self-employed physicians (remunerated only on a fee-for-service basis) (see following table). Based on fiscal statistics, professional costs were estimated in 2007 (last figures available) at 46% of the gross income for the anaesthetists to 56% for the radiologists.

**Gross income, supplements and net income for the year 2010 (in €)
for self-employed physicians, by specialty**

Speciality	Yearly gross income (€ 2010)	% supplements in gross income	Yearly net income (provisory figures € 2010)
Radiology	508 111	4.0	217 910
Anaesthesia	301 303	16.7	190 200
Ophthalmology	282 638	25.3	145 870
Stomatology	261 492	45.6	116 110
Surgery	253 204	31.9	132 490
Cardiology	227 541	4.0	120 830
Gastro-enterology	206 368	11.6	108 630
Oto-rhino-laryngology	189 811	20.8	95 270
Gynaecology	182 543	29.5	88 100
Pneumology	176 572	4.0	89 820
Rheumatology	161 529	16.4	81 220
Dermatology	138 085	19.9	64 270
Paediatrics	134 531	16.7	70 890
GP	131 277	4.3	71 320
Psychiatry	113 624	16.6	63 030
All physicians	179 393	11.7	94 110

kk DRESS: Direction de la recherche, des études, de l'évaluation et des statistiques.



APPENDIX 19. COST ACCOUNTS RELATED TO OVERHEAD

Costs considered as overhead costs, by account type

Type of overhead cost	Cost accounts	
General	602 Achats fournitures diverses	602 Inkopen van diverse leveringen
	6020 Fournitures spécifiques au culte	6020 Specifieke leveringen voor eredienst
	6021 Fournitures spécifiques à la morgue	6021 Specifieke leveringen voor mortuarium
	6022 Fournitures spécifiques pour la rééducation fonctionnelle	6022 Specifieke leveringen voor revalidatie
	6029 Divers	6029 Diversen
Maintenance	6092 Variations de stock: achat fournitures diverses	6092 Voorraadwijzingen: inkopen van diversen leveringen
	603 Achats de produits et de petit matériel d'entretien	603 Inkopen van produkten en klein materieel voor onderhoud
	6030 Produits et petit matériel d'entretien, nettoyage et toilette	6030 Produkten en klein materieel voor onderhoud, reiniging en toiletartikelen
	6031 Petit matériel	6031 Zonder bestemming
	6039 Divers	6039 Diversen
Heating	6093 Variations de stock: achats de produits et de petit matériel d'entretien	6093 Voorraadwijzingen: inkoop van produkten en klein materieel voor onderhoud
	604 Achats de combustibles, calories, énergie et eau	604 Inkopen van brandstoffen, calorieën, energie en water
	6040 Chauffage	6040 Verwarming
	6041 Autres destinations	6041 Andere bestemming
	6094 Variations de stock: achats de combustibles, calories, énergie et eau	6094 Voorraadwijzingen: inkopen van brandstoffen, calorieën, energie en water
Administration	605 Achats de fournitures de bureau et informatiques	605 Inkopen van bureelbenodigdheden en materieel voor informatieverwerking
	6095 Variations de stock: achats de fournitures de bureau et informatiques	6095 Voorraadwijzingen: inkopen van bureelbenodigdheden en materieel voor informatieverwerking



Type of overhead cost	Cost accounts	
Laundry	606 Achats de lingerie, literie, buanderie 6060 Linge et literie 6061 Sans affectation 6062 Vêtements de travail 6064 Petit matériel de buanderie 6069 Divers !!! 6063 Disposable =direct costs 6096 Variations de stock: achats de lingerie, literie, buanderie (excepté 60963: disposable)	606 Inkopen van linnen, beddengoed, was 6060 Linnen en beddengoed 6061 Zonder bestemming 6062 Werkkledij 6064 Klein wasmaterieel 6069 Diversen !!! 6063 Disposable= direct costs 6096 Voorraadwijzingen: inkopen van linnen, beddengoed, was (exclusief 60963: disposable)
Catering	607 Achats de denrées et fournitures de cuisine 6097 Variations de stock: achats de denrées et fournitures de cuisine	607 Inkopen van voeding en leveringen voor keuken 6097 Voorraadwijzingen: inkopen van voeding en leveringen voor keuken
Depreciation	610 Loyers, charges locatives et redevances emphytéotiques 6102 Terrains et constructions 6104 Matériel d'équipement non médical et mobilier !!! 6103 Matériel d'équipement médical: direct costs	610 Huur, huurlasten en schulden voor erfpacht 6102 Terreinen en gebouwen 6104 Materieel voor niet-medische uitrusting en meubilair !!! 6103 Materieel voor medische uitrusting: direct costs
General	611 Services extérieurs	611 Externe diensten
Maintenance	6112 Services généraux extérieurs	6112 Algemene externe diensten
Administration	6113 Services extérieurs d'entretien et de nettoyage	6113 Externe onderhouds- en reinigingsdiensten
Laundry	6115 Services extérieurs en matière administrative	6115 Externe administratieve diensten
Catering	6116 Services extérieurs de buanderie-lingerie	6116 Externe diensten voor wasserij - linnen
General	6117 Services extérieurs d'alimentation	6117 Externe diensten voor voeding
	6118 Services extérieurs d'internat	6118 Externe diensten voor internaat
General	612 Frais généraux	612 Algemene onkosten
	6120 Frais de transports par tiers	6120 Transportkosten door derden
	6121 Assurances non relatives au personnel	6121 Niet-personeelsgebonden verzekeringen



Type of overhead cost	Cost accounts	
	6129 Frais généraux divers	6129 Diverse algemene onkosten
Maintenance	613 Entretien et réparations	613 Onderhoud en herstellingen
	6130 Entretien et réparations des terrains et abords	6130 Onderhoud en herstellingen van terreinen en omgeving
	6131 Entretien et réparations des immeubles	6131 Onderhoud en herstellingen van onroerende goederen
	6132 Entretien et réparations des immeubles par destination	6132 Onderhoud en herstellingen van onroerende goederen bij bestemming
	6133 Ascenseurs	6133 Liften
	6134 Chaufferie	6134 Verwarmingsinstallatie
	6136 Entretien et réparations de mobilier	6136 Onderhoud en herstellingen van meubilair
	6137 Entretien et réparations de matériel	6137 Onderhoud en herstellingen van materieel
	6138 Entretien et réparations de matériel roulant	6138 Onderhoud en herstellingen van rollend materieel
	6139 Entretien et réparations de matériel et mobilier informatiques	6139 Onderhoud en herstellingen van materieel voor informatieverwerking
	!!!6135 Entretien et réparations d'équipement médical: direct costs	!!!6135 Onderhoud en herstellingen van medische uitrusting: direct costs
Administration	615 Administration	615 Administratie
	6150 Bureau et administration	6150 Kantoor en administratie
	6151 Relations publiques	6151 Notoriëteitsuitgaven
Administration	616 Honoraires non médicaux	616 Niet-medische honoraria
	6160 Avocats	6160 Advocaat
	6161 Réviseurs d'entreprises	6161 Revisor
	6162 Autres	6162 Andere
	617 Personnel intérimaire et personnes mises à disposition de l'hôpital	617 Uitzendkrachten en personen ter beschikking gesteld van het ziekenhuis
Maintenance, catering, laundry or general	6171 Personnel salarié	6171 Loontrekkend personeel



Type of overhead cost	Cost accounts	
Administration	6172 Personnel administratif	6172 Administratief personeel
Management, administration or infection control	6173 Personnel soignant*	6173 Verplegend personeel*
Management, catering, administration or rehabilitation	6174 Personnel paramedical*	6174 Paramedisch personeel*
	6175 Autre personnel*	6175 Ander personeel*
	*only if registered on temporary cost centers	*only if registered on temporary cost centers
Administration	618 Rémunérations, primes pour assurances extralégales, pensions de retraite et de survie des administrateurs, gérants, associés actifs et dirigeants de l'entreprise, qui ne sont pas attribués en vertu d'un contrat de travail.	618 Bezoldigingen, premies voor buitenwettelijke verzekeringen, ouderdoms- en overlevingspensioenen van bestuurders, zaakvoerders, werkende vennoten en bedrijfsleiders, die niet worden toegekend uit hoofde van een arbeidsovereenkomst
	620 Rémunérations et avantages sociaux directs	620 Bezoldigingen en rechtstreekse sociale voordelen
Maintenance, catering, laundry or general	6201 Personnel salarié	6201 Loontrekkend personeel
Administration	6202 Personnel administratif	6202 Administratief personeel
Management, administration or infection control	6203 Personnel soignant*	6203 Verplegend personeel*
Management, catering, administration or rehabilitation	6204 Personnel paramedical*	6204 Paramedisch personeel*
	6205 Autre personnel*	6205 Ander personeel*
	*only if registered on temporary cost centers	*only if registered on temporary cost centers
	621 Cotisations patronales d'assurances sociales	621 Werkgeversbijdrage voor sociale verzekeringen
Maintenance, catering, laundry or general	6211 Personnel salarié	6211 Loontrekkend personeel



Type of overhead cost	Cost accounts	
Administration	6212 Personnel administratif	6212 Administratief personeel
Management, administration or infection control	6213 Personnel soignant*	6213 Verplegend personeel*
Management, catering, administration or rehabilitation	6214 Personnel paramedical*	6214 Paramedisch personeel*
	6215 Autre personnel*	6215 Ander personeel*
	*only if registered on temporary cost centers	*only if registered on temporary cost centers
	622 Primes patronales pour assurances extralégales	622 Werkgeverspremies voor bovenwettelijke verzekeringen
Maintenance, catering, laundry or general	6221 Personnel salarié	6221 Loontrekkend personeel
Administration	6222 Personnel administratif	6222 Administratief personeel
Management, administration or infection control	6223 Personnel soignant*	6223 Verplegend personeel*
Management, catering, administration or rehabilitation	6224 Personnel paramedical*	6224 Paramedisch personeel*
	6225 Autre personnel*	6225 Ander personeel*
	*only if registered on temporary cost centers	*only if registered on temporary cost centers
	623 Autres frais de personnel	623 Andere kosten voor personeel
Maintenance, catering, laundry or general	6231 Personnel salarié	6231 Loontrekkend personeel
Administration	6232 Personnel administratif	6232 Administratief personeel
Management, administration or infection control	6233 Personnel soignant*	6233 Verplegend personeel*



Type of overhead cost	Cost accounts	
Management, catering, administration or rehabilitation	6234 Personnel paramedical*	6234 Paramedisch personeel*
	6235 Autre personnel*	6235 Ander personeel*
	*only if registered on temporary cost centers	*only if registered on temporary cost centers
Maintenance, catering, laundry or general	625 Provisions salariales	625 Loonvoorzieningen
	62501 and 62511 Personnel salarié	62501 and 62511 Loontrekkend personeel
	62502 and 62512 Personnel administratif	62502 and 62512 Administratief personeel
Administration	62503 and 62513 Personnel soignant*	62503 and 62513 Verplegend personeel*
Management, catering, administration or rehabilitation	62504 and 62514 Personnel paramedical*	62504 and 62514 Paramedisch personeel*
	62505 and 62515 Autre personnel*	62505 and 62515 Ander personeel*
	*only if registered on temporary cost centers	*only if registered on temporary cost centers
Depreciation	630 Dotations aux amortissements et réductions de valeur sur immobilisations	630 Afschrijvingen en waardeverminderingen op vaste activa - toevoeging
	6300 Sur frais d'établissement	6300 Op oprichtingskosten
	6301 Sur immobilisations incorporelles	6301 Op immateriële vaste active
	6302 Sur constructions	6302 Op gebouwen
	6304 Sur matériel d'équipement non médical et mobilier	6304 Op materieel voor niet-medische uitrusting en meubilair
	6305 Sur immobilisations détenues en location financement et droits similaires*	6305 Op vaste activa in huur, financiering en soortgelijke echten*
	* 63051 "Matériel d'équipement" medical excepted	* "63051 Materieel voor medische uitrusting" excepted
	!!!6303 Sur matériel d'équipement médical= direct costs	!!! 6303 Op materieel voor medische uitrusting= direct costs



Type of overhead cost	Cost accounts	
General	631 Réductions de valeur sur stocks	631 Waardeverminderingen op voorraden
Financial costs	633 Réductions de valeur sur créances à plus d'un an	633 Waardeverminderingen op vorderingen op meer dan één jaar
Financial costs	634 Réductions de valeur sur créances à un an au plus	634 Waardeverminderingen op vorderingen op ten hoogste één jaar
	635 Provisions pour pensions et obligations similaires	635 Voorzieningen voor pensioenen en soortgelijke verplichtingen
	636 Provisions pour grosses réparations et gros entretiens	636 Voorzieningen voor grote herstellingswerken en grote onderhoudswerken
General	637 Provisions pour autres risques et charges	637 Voorzieningen voor andere risico's en kosten inbegrepen loonvoorzieningen
Financial costs	650 Charges des emprunts d'investissement	650 Lasten van investeringsleningen*
Financial costs	651 Réductions de valeur sur actifs circulants	651 Waardevermindering op circulerende activa
Financial costs	652 Moins-values sur réalisation d'actifs circulants	652 Minderwaarden op de realisatie van vlottende activa
Financial costs	654 Différences de change	654 Koersverschillen
Financial costs	655 Ecart de conversion de devises	655 Verschillen in conversie van deviezen
Financial costs	656 Charges des crédits à court terme	656 Kosten voor kredieten op korte termijn



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