

Cost Assessment and Price Setting in the Dutch Healthcare System

**A contribution to Work Package 6 of the EU funded research
project 'HealthBASKET': Approaches for Cost/Price
Assessment in Practice.**

September 2005

Institute for Health Policy and Management

Erasmus MC Rotterdam

J.B. Oostenbrink, Ph. D.

Prof. F.F.H. Rutten, Ph. D.

Preface

This report describes the approaches that are used in practice to determine prices and calculate costs within the Dutch healthcare system. This report has been prepared by the institute for Health Policy and Management of Erasmus MC in Rotterdam as part of Work Package 6 of the EU funded research project 'HealthBASKET (full title: Health Benefits and Service Costs in Europe, contract no. FP6 501588).

Content

Preface.....	1
Content.....	2
Abbreviations	3
1. Introduction	4
2. Cost and price assessment.....	6
2.1 Services of curative care	6
2.1.1. Curative care in hospitals.....	6
2.1.2. Outpatient care	11
2.1.3. Services of curative home care.....	14
2.2. Services of rehabilitative care.....	15
2.3. Services of long-term nursing care.....	16
2.4. Mental health care	19
2.5. Ancillary services to health care	21
2.5.1. Laboratory and diagnostic imaging tests	21
2.5.2. Patient transport.....	22
3. Discussion.....	25
4. References and data sources	28

Abbreviations

AWBZ | Exceptional Medical Expenses Act (Algemene Wet Bijzondere Ziektekosten)

CTG/ZAio | Healthcare Tariff Board/ Healthcare Authority in formation (College
Tarieven Gezondheidszorg/ ZorgAutoriteit in oprichting)

DBC | Diagnosis treatment combination (Diagnose Behandeling Combinatie)

DIS | DBC Information System (DBC Informatie Systeem)

GP | General Practitioner

IZA | Intramural Care Arrangement (Intramuraal ZorgArrangement)

RBU | Rehabilitation Treatment Hour (Revalidatie BehandelUur)

WMO | Social Support Act (Wet Maatschappelijke Ondersteuning)

WBMV | Special Medical Procedures Act (Wet Bijzondere Medische Verrichtingen)

ZFW | Health Insurance Act (Ziekenfondswet)

1. Introduction

The organisation of the Dutch healthcare system is under reform. The distinction between sickness funds and private health insurance will be abolished. As from January 2006, statutory and private (voluntary) health insurance will be integrated into a single and mandatory scheme that provides coverage to the whole population [1]. The Exceptional Medical Expenses Act (AWBZ) will be restricted to long-term intensive care. Domestic care, extramural mental care and intramural mental care during the first year of treatment will be transferred to the Social Support Act (WMO) and the Health Insurance Act (ZFW) [2]. These reforms coincide with substantial changes in the financing, budgeting and reimbursement of healthcare organisations.

During the last decades, budgeting and reimbursement systems were mainly targeted to control healthcare expenditures [3]. Incentives to increase production or to produce more efficiently were mainly absent. Despite large differences in the budgeting and reimbursement of healthcare organisations, some basic principles applied (and in various cases still apply) to nearly all sectors. A common characteristic is the maximisation of a healthcare provider's budget by its so-called 'allowable costs', based on various budget parameters. Examples of these parameters include the healthcare provider's adherent population, the type of facilities present, the number of beds and production parameters such as the number of bed days and outpatients visits. The level of production of a healthcare provider in a particular year is negotiated between the healthcare provider and either the health insurer (ZFW) or a regional administration unit (AWBZ), and the result is an input into the calculation of the hospital budget. In practice, parameters are chosen such that the actual budget equals the allowable costs. During the year, a healthcare provider is reimbursed by billing actually delivered healthcare services to the health insurer (ZFW) or the regional administration unit (AWBZ). Parameters used for reimbursement are not necessarily the same as those used to determine the healthcare provider's budget. Tariffs for reimbursement are fixed and apply to all healthcare providers. At the end of the year, the entire yield of reimbursements may exceed or remain below the a priori determined budget. Both positive and negative differences are compensated for by a 'closing tariff' in the next year in order to make sure that providers/hospitals do not receive more or less than the allowable budget. The use of different parameters for reimbursement and budget calculation obscures the relationship between prices (tariffs) and costs.

Major characteristics of reforming the Dutch healthcare system involve the transition from a supply to a demand driven healthcare system, the introduction of managed competition, and the introduction of a performance based budgeting and reimbursement system. These elements have been incorporated in different ways in the budgeting and reimbursement regulations in the various health care sectors. New regulations involve the introduction of diagnosis treatment combinations (DBC's) for the reimbursement of hospitals' and specialists' care, intramural care arrangements (IZAs) for long-term intramural AWBZ care, and functional budgeting for extramural home care. These developments have changed the price setting and cost assessment in the various health care sectors considerably. We will discuss these developments and the current budget and reimbursement regulations within each sector in the next section. An overview of the cost assessment and price setting in the various sectors is provided in table 2 at the end of section 2.

2. Cost and price assessment

2.1 Services of curative care

2.1.1. Curative care in hospitals

Price assessment | In February 2005, a case-mix system was introduced in the Netherlands for the reimbursement of hospitals' and medical specialists' services [4]. This case-mix system is based on diagnosis treatment combinations (DBC), defined as the whole set of activities and interventions of the hospital and medical specialist resulting from the first consultation and diagnosis of the medical specialist in the hospital. In the DBC case-mix system, a distinction is made between DBCs with fixed prices (list A) and with negotiable prices (list B). Currently, DBCs on list B cover approximately 10% of total hospital expenses and only involve non-acute treatments. For a detailed description of the DBC-system we refer to Work Package 2: 'The health basket in the Netherlands'.

For list A, the Healthcare Tariff Board/ Healthcare Authority in formation (CTG/ZAio) issues fixed tariffs for DBCs that hospitals may charge to health insurers and patients. These tariffs apply to all hospitals and include two separate components: a reimbursement of hospital costs and an honorarium for medical specialists. The hospital cost component is based on information derived from the national DBC registration that was established preceding the introduction of the DBC reimbursement system [5]. This registration contains data of approximately 20 hospitals that were involved in a pilot preceding the introduction of the DBC system. In this registration, the use of hospital services (i.e. hospital days, outpatient visits, surgical interventions, laboratory tests, etc.) for a DBC and the unit cost of each service are recorded. For each DBC, the tariff for the hospital cost component is calculated as the average use of a healthcare service times the median unit cost of a service, summed over all healthcare services. The calculation of the honorarium component is based on time studies. For each DBC, the 'normal time' of specialist involvement has been determined and validated. This norm time is the time in which a specialist is expected to be able to perform his tasks and this is multiplied with a fixed fee per hour of €140 to calculate the honorarium component of list A DBCs [6].

In the current situation, reimbursement of list A DBCs only serves as a vehicle to transfer money from health insurers to hospitals and medical specialists. The

allowable budget of a hospital and medical specialist for list A related healthcare services is still based on a limited number of budget parameters [7]. For hospitals, these functional budget parameters include the hospital's adherent population, the type of facilities present, the number of beds and production parameters such as the number of bed days and outpatients visits. The level of production is negotiated with insurers, and the result is an input into the calculation of the hospital budget. If the entire yield of DBC reimbursement exceeds or remains below the allowable budget, differences are compensated by a 'closing tariff' in the next year. It is expected that in the near future, the allowable budget will be rescinded and the hospital's and medical specialists' yield will eventually only depend on DBC reimbursement [5]. In that situation, healthcare spending will be controlled by agreements between health insurers and hospitals (the latter also representing the medical specialists) about the maximum numbers of DBCs to be performed each year.

Healthcare services performed for list B DBCs are not part of the allowable budget. Proceeds of the hospital and medical specialist for list B healthcare services are equal to DBC production times the price of each DBC. The maximum production and the price of each DBC result from negotiations between hospitals and health insurers [8]. Health insurers may employ different DBC prices for different hospitals. Likewise, hospitals may negotiate different prices for the same DBC with different health insurers. Prices may also vary with the size of production and, for instance, parties may agree upon a lower or higher DBC price if production exceeds a predetermined figure. Because the DBC reimbursement system has only recently been introduced (February 2005), experience is still very limited and it is unknown whether these situations will occur in practice. The involved parties determine the frequency and terms of agreements. Current practice suggests that prices and production are determined annually, but that either party may request to re-open negotiations if required by the circumstances. Examples of such circumstances may include long waiting lists, increased public attention for a specific health problem or the introduction of new and expensive medications or medical devices. In the current situation, only the hospital cost component of list B DBCs is freely negotiable. The honorarium component of list B DBCs is still fixed and determined by CTG/ZAio (like for list A DBCs). It is yet unknown whether the fixed honorarium component will be maintained in future or whether it becomes freely negotiable.

In practice, hospitals will also treat patients who are not insured or whose insurance company does not have a contract with the hospital ('non-contracted care'). The

latter situation also applies to foreign patients. Charges for list A DBCs and the honorarium component of list B DBCs for non-contracted care are the same as for contracted care. The hospital cost component of list B DBCs for 'non-contracted care' are determined by the hospital. Hospitals are obliged to publish prices for non-contracted care on the Internet [9].

Prices of DBCs (list A and B) cover the honorarium of medical specialists and all costs of the hospital, including wages, medication, medical materials, housing and equipment and overheads [9]. List B prices also need to cover the costs of capital. About 12.5% of list-B proceeds are assumed to cover the costs of capital and are deducted in the closing tariff [10-12]. Prices of list A DBCs and the honorarium component of list B DBCs are updated annually based on weighted trends (price-indices) of wages and goods [13].

Cost calculation | The introduction of the DBC case-mix system involved the adoption of a uniform product costing model to calculate unit costs of DBCs [14]. The use of this cost-accounting model is obligatory for all hospitals in the Netherlands. With the introduction of this model, parties aimed to realize that unit cost calculations were performed in a similar way in all Dutch hospitals. In the product-costing model, a distinction is made into intermediate and final products. The final products in the model are DBCs. Intermediate products are healthcare services, like inpatient hospital days, outpatient visits, days of day-care, surgical interventions, laboratory tests, etc. The model consists of two parts. The first part involves the calculation of unit costs of intermediate products. In the second part, data about the usage and unit costs of intermediate products are used to calculate the unit costs of DBCs.

The definition of intermediate products is based on a list of healthcare services, issued by CTG/ZAio. This list includes detailed specifications of all kinds of healthcare services and procedures, like laboratory tests and surgical interventions. Hospital departments producing intermediate products are called revenue centres or final cost centres [15]. These include inpatient and outpatient clinics, laboratories, operating rooms, radiology departments, etc. Departments not providing patient care are called nonrevenue or support cost centres. These involve departments for administration, personnel, billing, communications, finance, security etc. Costs of these departments can also be referred to as overheads. In the unit cost model, costs of all support cost centres are assigned to final cost centres using direct allocation [16]. This means that the costs of support cost centres are assigned to the

final cost centres using a weighting methodology, based on various ‘allocation bases’ [15]. Examples of such allocation bases are the area (m²) used to allocate costs of accommodation or the number of full time equivalents used to allocate the costs of the personnel department. In the unit cost model, an allocation base is defined for each support cost centre. Once the costs of support cost centres are assigned to final cost centres, the total costs of each final cost centre can be assigned to the intermediate products. The approach used to distribute costs differs between final cost centres, depending on the type of service they produce. If a cost centre produces one type of service, the costs per service are calculated by dividing total costs per centre by the number of services produced. In case of multiple intermediate products, a weighting statistic is used to assign the costs of the final cost centre to the various services. An example of such a weighting statistic is the average time of surgical interventions to distribute the cost of the final cost centre ‘operating room’ to these interventions.

Once the unit costs of intermediate products have been determined, costs of DBCs can be calculated. To perform these calculations, a detailed registration of the use of intermediate products is required. Of each patient, resource use in terms of intermediate products is registered. Because a patient can have more than one DBC at the same time, the DBC for which a service is performed is also recorded. Average costs of each DBC are calculated as the use of an intermediate product times its unit cost, summed over all intermediate products. The structure of the DBC product costing model is summarised in figure 1.

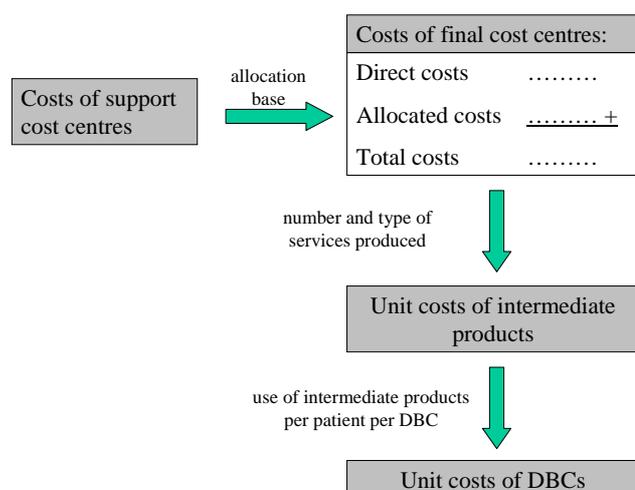


Figure 1: product costing model for the calculation of unit costs of DBCs

Nearly all hospital costs are exhaustively assigned to intermediate products and DBCs. Costs that should not be included are specified in the instructions for the unit cost model [14]. Costs that should not be included are the costs of capital (interest costs), depreciation of hospital buildings and the costs of medical specialists and residents (physicians in specialty training).

All hospitals are obliged to provide information about unit costs of intermediate products, the average use of intermediate products for each DBC, the production of DBCs, and unit costs of DBCs. Data from all hospitals are collected in a national DBC database; the DBC Information System (DIS) [17]. As a result, this database contains valuable information about hospital and specialist care in the Netherlands. For instance, annual production of DBCs at a national level, average health profiles of DBCs, and average unit costs of healthcare services and DBCs can be derived from this database. These data can, for instance, also be specified according to region and type of hospital. This database will be used to inform parties like CTG/ZAio, insurers, hospitals and medical specialists. This information can be used to facilitate price setting of list A DBCs (CTG/ZAio), and to support price negotiations of list B DBCs (insurers, hospitals). The information that will be provided to each party is not yet exactly specified. Data from the DIS are not publicly available.

In practice, there are still many doubts about the quality of the data collected in the DIS database. Registration of DBCs and, in particular, recording resource use of a patient with multiple DBCs appears to be time-intensive. Medical specialists and hospitals have complained about the time involved with the registration of DBCs and threatened to refuse continuing registration of DBCs if the system will not be simplified. An audit aiming to assess the quality of the unit cost information provided by hospitals concluded that there was large variation in unit costs of intermediate products between hospitals [18]. It was also concluded that the majority of hospitals adequately applied the unit cost model. However, others have doubted the quality of this audit and the selection of hospitals in this audit may not have been unbiased [19]. Whether penalties will be set in the future for hospitals not fulfilling the data requirements of the DBC system, is not known. In principle, insurers may agree upon a lower production and/or price with hospitals not providing adequate information. Whether the DBC system and registration will be simplified to ensure future collaboration of hospitals and medical specialists is not yet clear.

2.1.2. Outpatient care

Outpatient care to medical specialists provided inside or outside the hospital is covered by the DBC system as outlined in the previous section. Other outpatient services include care provided by general practitioners (GPs), dental care and paramedical care.

Price assessment | GP care, dental care and paramedical care are reimbursed to healthcare providers by fixed tariffs as issued by CTG/ZAio [20-22]. These tariffs are fixed and apply to all healthcare providers and patients. Tariffs represent the maximum amount healthcare providers may charge to patients or healthcare insurers. Because in practice all healthcare providers charge the maximum fee, the tariff is equal to the actual price. Tariffs cover the honorarium of the healthcare professional and all practice costs including personnel, medical materials, overheads and costs of capital.

The unit of payment differs between the three sectors. As from January 2006, two fixed basic tariffs for GP care will be used [20]. A tariff of approximately €47.30 for each patient registered to the GP practice and a tariff of about €8.43 for each visit to the GP. Various fixed allowances apply for contacts with duration of more than twenty minutes, visits to patients' homes, visits outside normal working hours, and the presence of a nurse practitioner at the GP practice. Additional tariffs exist for GP practices in deprived areas and GP practices that provide additional services. Only these latter tariffs are not fixed and are negotiated between the GP and health insurer [20].

The unit of payment for dental care is the intervention, i.e. the technical service that is provided, and reimbursement of dental care can be considered as a strict 'fee per service' system [21]. Dentists and orthodontists may only charge interventions that occur on the tariff list of CTG/ZAio. Each intervention has a score (weight), expressing the relative workload of the intervention [23]. For instance, a routine consultation has a score of 3.8, whereas scores for a root canal therapy may vary from 18 to 34 depending on the number of canals. Each year the price per unit is set by CTG/Zaio and the tariff of an intervention is calculated by multiplying this price with the appropriate score. The current (2005) price per point is €4.68 [24].

The unit of payment for paramedical care is a patient contact, i.e. one treatment session. All costs of the paramedical practice must be covered by this tariff per session. For instance, a standard session of occupational therapy is assumed to last approximately 30 minutes and has a tariff (2005) of €23.30 [22]. Special tariffs exist for group therapy, for treatment at home of the patient and for specific target groups (i.e. children) and indications (i.e. oedema). Since February 2005, an exception is made for physiotherapy. In order to stimulate regulated competition within the healthcare sector, prices for physiotherapy are liberalized and are determined by negotiations between healthcare insurers and physiotherapeutic practices [25]. After two years, this 'regulated competition experiment' will be evaluated. If regulated competition in the physiotherapy sector is deemed to be successful, it may be introduced in other healthcare sectors as well. Physiotherapeutic practices may also treat patients whose insurance company does not have a contract with the practice. Physiotherapeutic practices are obliged to publish prices for non-contracted care on the Internet [25]. These prices for non-contracted care also apply to the treatment of foreign patients.

In all three sectors, assumptions about normative income, practice costs and standard workload underlie the calculation of tariffs. For instance, the tariffs for GP care are based on an annual income of €100103, practice costs of €97560, 2350 patients per practice and 8435 consultations per year [20]. In practice, there is a lot of discussion about the value of these parameters between the (para) medical profession, CTG/ZAio and the Ministry of Health. Historically, parameters may have been based on cost studies, but these studies are not regularly updated and macroeconomic arguments are known to play an important role as well. Prices for GP, dental and paramedical services are determined annually and price updates usually include a correction for inflation based on weighted price indices of wages and goods.

Cost calculation | Unit costs of outpatient healthcare services are not systematically reported. Outpatient practices are not obliged to report unit costs of healthcare services and branch organizations do not support uniform cost accounting models. In practice, two different approaches are used to estimate unit costs of outpatient services. The first approach concerns a pure gross-costing method. Based on national information about the annual number of patient contacts and costs per branch, unit costs per patient contact can be estimated. Usually, available information is not sufficient to allow further specification of underlying products or

diagnostic groups and these gross-costing approaches are not used for price setting. They are most often used in economic evaluations where detailed information about the distinction of different types of healthcare services is not always necessary. Examples of gross-costing calculations are found in the Dutch 'Manual for Costing: Methods and Standard Costs for Economic Evaluations in Health Care' [26]. The aim of this manual is to support researchers and users of economic evaluations with the design, performance and assessment of cost calculations in economic evaluations and to improve the quality and comparability of these studies. The manual contains lists with standard costs that can be applied directly by researchers to value resource use. For instance, costs of visits to the GP are based on total expenditures for GP care [27], the number of inhabitants in the Netherlands and the average number of GP contacts per year. The resulting unit cost for 2003 for a visit to the GP as reported in the manual was estimated to be €20.20 [26].

The second approach to unit cost estimation concerns the use of a cost accounting template. An example of such a template is the CTG/ZAio approach used to calculate tariffs as described in the previous section. Cost components included in this template are the annual income of the GP, costs of personnel, medical materials, inventory, etc. A summary of the CTG/ZAio template for the calculation of costs of a GP practice is provided in table 1. Because the values in this template are based on 2004, the values differ slightly from the values presented in the previous section. Branch organizations use comparable templates based on the same parameters. The major aims of these simple models are to support income claims (branch organisations) and to justify tariff calculations (Ministry of Health and CTG/ZAio). The values of the parameters in these templates are a constant source of debate between parties. In general, the 'template approach' allows a better specification of unit costs of healthcare services than the gross-costing approach. Because the time of professional providers is the major cost determinant of most outpatient healthcare services, estimates of the average time per service obtained by incidental time studies are used to allocate costs across various healthcare services. Examples of such time studies are the studies by Hoeksma et al. and van Vliet et al. [28, 29]. These studies were initiated by branch organisations and the Ministry of Health to improve insight in the professional's time needed to perform healthcare services. Approaches used in these studies involved on-site observation of healthcare professionals and time registration performed by healthcare professionals during work exercise. The results of these studies provided insights in the workload of professionals and were used to calculate unit cost of healthcare services [28].

However, driven by the need to control healthcare spending, CTG/Zaio did not incorporate the results of these studies for price setting without adaptation and discussions between branch organisations and CTG/Zaio about unit costs and appropriate prices for healthcare services will remain to continue.

Table 1: example of the CTG/Zaio cost template of GP care

	Costs (€ 2004)
Income GP	92955
Personnel	31539
Replacement during illness	2726
Accommodation	21581
Inventory	3344
Armamentarium	2183
Medical materials	2559
Billing	3528
General expenses	7742
Other costs	5071
Transport	2600
Automation	8082
Telecommunication	4189
Interest	3589
Total annual costs per practice	191688
Total annual number of patient contacts	8435
Price per contact	22.73

2.1.3. Services of curative home care

Price assessment | Curative home care exists of various healthcare services that are very different in nature. Many of these services can be labelled as ‘shifted care’. Shifted care refers to curative care, traditionally restricted to the hospital that is now provided at other institutions and at patients’ homes. Examples of shifted care are haemodialysis and chronic intermittent ventilation. Entitlement to these services is regulated in the Health Insurance Act (ZFW). Until recently, haemodialysis and chronic intermittent ventilation at home could only be provided by hospitals licensed to provide these services. Since May 2002, this no longer is the case for dialysis and

other hospitals may also provide this service [30]. Until February 2005, CTG/ZAio issued tariffs for chronic intermittent ventilation and haemodialysis [31]. These tariffs concerned maximum prices hospitals were allowed to charge to health insurers. Units of reimbursement for ventilation involved preparation and ventilation. A distinction was made into ventilation with 1 or with 2 devices. Units of reimbursement for haemodialysis concerned the number of dialyses, with allowances for nurse assistance and the use of erythropoetine. Since February 2005, haemodialysis and chronic intermittent ventilations are incorporated in the DBC reimbursement system as list A DBCs [32]. DBCs are available for haemodialysis at home, chronic ventilation at home during the first year and during subsequent years.

Cost calculation | Prices of DBCs are based on the average tariffs for haemodialysis and ventilation that were used until February 2005 [32]. Because services of haemodialysis and chronic intermittent ventilation are only provided by a selected number of hospitals, costs of these services were not incorporated in the DIS at introduction of the DBC reimbursement system. Hence, prices are based on historical data and no recent unit cost calculations exist to support these prices.

2.2. Services of rehabilitative care

Price assessment | Services of rehabilitative care are provided in general and university hospitals and in specialized rehabilitation centres. Rehabilitative care provided in hospitals is covered by the DBC case-mix reimbursement system as described in section 2.1.1. Specialized rehabilitation centres were involved in the entire DBC preparation path, but introduction of DBC based reimbursement system was postponed. Currently, January 2007 is the most likely date for introduction of a case-mix reimbursement system for the 24 specialized revalidation centres in the Netherlands [33].

In the current situation, inpatient and outpatient care provided by rehabilitative centres is funded by means of inpatient days and 'rehabilitation treatment hours' (RBUs) [31]. Fixed prices of RBUs are issued by CTG/ZAio and apply to all rehabilitation centres. Tariffs of inpatient days are used as a closing tariff to match a hospital's proceeds with its annual allowable budget. Differences in the tariff per inpatient day may be due to (historical) costs of buildings, depreciation and capital. Annual production is determined by negotiations between health insurers and centres. Total costs of a centre are maximized to the 'allowable' costs. Prices of

RBUs are based on historical data and updated annually to correct for inflation. The RBU price for 2005 is €105 [31].

Cost calculation | Unit costs of rehabilitative care are not publicly available. Various rehabilitation centres participated in the development of the DBC cost-accounting model as described in section 2.1.1 [14], but unit costs of services have not been published. Total costs and production of rehabilitation centres are usually published in annual reports. Calculation of unit costs of inpatient days and RBUs is not feasible with this data without making further assumptions. However, because of the lack of better information, unit cost calculations have been based on these data by making arbitrary assumptions about the allocation of costs over inpatient days and RBUs [26, 34]. Unit cost estimates of RBUs and inpatient days for 2003 were estimated to be €83 and €336 respectively [26].

2.3. Services of long-term nursing care

Price assessment | Services of long-term nursing care are mainly covered by the Exceptional Medical Expenses Act (AWBZ). Traditionally, the long-term nursing care sector has been divided in home care and intramural care. A limited number of acknowledged home care organizations were exclusively authorized to provide home care services within a particular region and intramural organisations were not allowed to provide care outside their institution. This picture has changed drastically during the last 15 years. With new legislation, the Ministry of Health aimed to stimulate regulated competition between healthcare providers. Since then, new entrants obtained acknowledgement to provide regular home care and homes for the elderly and nursing homes started to provide care outside traditional intramural settings. Independent regional indication bodies now establish the entitlement to care and patients may choose between various healthcare providers for the delivery of home care. Patients indicated for long-term nursing care also have the opportunity to receive a personal budget with which they purchase care, rather than receiving care in kind from one healthcare provider.

The introduction of regulated competition coincided with the development of a system of 'functional budgeting' to reimburse long-term nursing care. Separate reimbursement systems are developed for extramural and intramural care. Functional budgeting implies that a healthcare provider is reimbursed according to the functions provided [35]. Irrespective of the health care provider and the environment in which

care is provided, patients are entitled to one or more of the following 'functions' or services: domestic help, personal care, nursing, supportive guidance, activating guidance, treatment and accommodation [36].

Since January 2004, extramural care is reimbursed by basic tariffs for extramurally provided domestic help, personal care, nursing, supportive guidance, activating guidance and treatment. The unit of reimbursement is an hour of care provided. Prices are issued by CTG/ZAio and approved by the Minister of Health [36]. The basic tariffs are fixed and apply to all healthcare providers. Regional administration units serve as intermediates and receive an annual budget for long-term nursing care for a specific region. These regional administration units contract healthcare organizations for the delivery of care [37]. Annual production of an institution is negotiated between the regional administration unit and the healthcare provider. In principle, parties agree on the basic tariff for each service as set by CTG/ZAio. However, additional tariffs apply for target groups requiring more intensive care and for other functions (e.g. availability). The healthcare provider's budget is constrained by the amount of contracted care. In case of lower production, the healthcare provider's budget decreases accordingly. Prices of extramural care cover all costs of the healthcare provider, including wages, materials, housing and equipment and overheads. The costs of capital also need to be covered by the price per product. However, until now, healthcare organizations received separate funding to cover the costs of capital and large differences in capital costs still exist between providers. For that reason, healthcare providers' budgets are still compensated for higher or lower allowable capital costs. It is expected that this compensation mechanism will be rescinded in future years [8].

A functional budgeting system for the intramural care sector is still under development [35]. Because of a lack of insight in the functions actually provided to patients and the high costs of registering and collecting these data [38], reimbursement of intramural care will not be based on a tariff per hour of functional care. Instead, reimbursement of intramural care is likely to be based on 'intramural care arrangements' (IZAs) [35]. An IZA involves the description of a client profile and the functions of care that are required [35]. Prices will be based on average care profiles for an IZA, rather than the actual care provided to patients. IZAs will be reimbursed on a monthly or annual basis. As the IZA reimbursement system is still under development, details of the system have not yet been determined. Introduction of an IZA based reimbursement is scheduled for January 2007. Major obstacles

include the complexity of the system, the high number of IZAs (currently 49) and the administrative burden for healthcare institutions [39]. In the current situation, the intramural budgets of nursing homes and homes for the elderly are based on tariffs related to the number of beds and the number of inpatient days [40]. In addition, various allowances apply for special diagnostic groups and patients requiring additional care. Tariffs are distinguished into personnel and material costs. Production is maximized to the officially allowed number of beds per organization. Proceeds exceeding the maximum allowable budget of an organisation can only be obtained by providing extramural care.

To determine tariffs for long-term nursing care, CTG-ZAio uses cost calculation templates [3]. Normative elements within this template include the required education of personnel, workable hours, costs of materials, overheads etc. The structure of the template and the parameter values are partly based on historical data and complemented with information derived from ad-hoc research [41, 42]. For instance, the Ministry of Health initiated a research project with the aim to allocate costs over functional healthcare services and to propose tariffs for these services [42]. Once, the tariffs have been determined, parameter values of the unit cost templates are updated annually based on price indices of wages and goods. However, incidental adjustments due to political and macro economic arguments also affect the annual adjustment of prices for inpatient and outpatient care.

Instead of obtaining care in kind, patients required for care also have the opportunity to receive a personal budget to purchase care [2]. Patients indicated for extramural care choose personal budgets more often than patients indicated for intramural care. With their budgets, patients purchase care at private and/or regular healthcare organizations. Healthcare providers are obliged to publish prices of (functional) healthcare services at the Internet (see [43]). These prices also apply to care for foreign patients and care without indication.

Cost calculation | Unit costs of long-term nursing care are not systematically reported. As outlined in the previous section, healthcare organizations are obliged to publish prices of healthcare services at the Internet, but the relationship between prices and unit costs is not specified. In fact, the extent to which prices charged to patients with personal budgets are based on unit cost calculations is likely to differ largely between healthcare providers. Gross-costing approaches based on national cost and production data may provide estimates of a cost per hour or a cost per

inpatient day. The value of such data is limited because the calculation of unit costs of functional healthcare services is not feasible with these data.

Unit costs of extramural and intramural long-term nursing care are only available from ad-hoc studies. The study by Wilders et al. was performed in order to obtain insight in unit cost of functional healthcare services [42]. Based on research in 40 healthcare organizations and review of published reports [44], the authors constructed a product costing model to calculate unit costs of functional healthcare services. In this model, indirect costs are assigned to healthcare services by direct allocation. The report resulted in unit cost estimates of functional healthcare services for various types of healthcare organizations (i.e. traditional home-care organizations, nursing homes, etc). Tariffs of functional healthcare services were partly based on this investigation [45].

2.4. Mental health care

Traditionally, mental healthcare was provided by psychiatric hospitals, psychiatric departments of general and university hospitals, institutions for ambulatory mental healthcare, and institutions for protected living. Institutions did not provide care outside their own sector. This picture has changed considerably in recent years. Demand increased rapidly and even severe patients were more frequently treated in outpatient settings. The distinction between the various institutions became less apparent and many institutions merged in order to cover the entire spectrum of intramural and extramural mental care.

For a long time, reform of the reimbursement system for mental healthcare did not keep pace with these developments. Different reimbursement and budgeting regimens applied to the various types of institutions, even after institutions had already merged at a large scale. Substitution of intramural care was often discouraged because of negative financial incentives. Budgets were maximised by allowable costs and reimbursement was based on the number of beds, the number of inpatient days and the number of face-to-face contacts [3, 46]. Recently, several changes to the reimbursement of mental healthcare organisations have been implemented and more changes are expected for the near future. Changes to the reimbursement of mental healthcare institutions can be summarised in three developments [47]: functional budgeting [36, 38, 48] introduction of the DBC reimbursement system [49], and intramural care arrangements [35, 42]. Details of

these three developments in other sectors have been described in detail in previous sections.

Since January 2004, reimbursement of long-term ambulant mental healthcare is integrated with the reimbursement of long-term nursing care. Patients are indicated for domestic help, personal care, nursing, supportive guidance, activating guidance and treatment and these parameters are also used for reimbursement of healthcare institutions. A basic tariff applies for each function. These are the same tariffs as used for long-term nursing care. Because it has been shown that the costs of mental care for the same functions are likely to be higher than for long-term nursing care, additional allowances apply for target groups requiring more intensive care.

The Health Insurance Act (ZFW) covers the first year of intramural mental health care. Currently, a DBC-based reimbursement system is developed for intramural mental care covered by the ZFW. Important elements in the current development process relate to the definition of DBCs, the adoption of a uniform model for the calculation of unit costs of DBCs and the assessment of the workload of psychiatrists and other healthcare professionals. Introduction of this case-mix reimbursement system is considered for January 2007. At introduction, DBCs are most likely classified as list A DBCs.

Intramural mental care after the first year of treatment and care provided in institutions for protected living, are covered by the AWBZ. As described in section 2.3, intramural AWBZ care is likely to be reimbursed on the basis of IZAs. This regimen will also apply to the mental health care sector. As a consequence, intramural mental health care institutions may be confronted with the introduction of two new reimbursement systems. DBCs for the first year of treatment and IZAs for the treatment in subsequent years. This may have considerable consequences for the registration of patient care in these organisations.

Cost calculation | Until recently, mental health registries contained data about the numbers of patients, inpatient days and face-to-face contacts. More detailed information about production, functional healthcare services and the type of care provided were scarce. Tariffs were based on historical budgets and the allowable number of beds in each institution, with annual adjustment of prices to correct for inflation. Due to the development of new budgeting systems for the mental health care sector, this situation has changed considerably. Many institutions are involved in

the development process and started to register data about patients and the type of care provided [35, 46]. Targeted research has provided information about the definition and classification of care products [49], and the workload of healthcare professionals [28]. The collection of unit cost information is part of the development process for DBCs and IZAs. Unit costs of extramural care have been determined in the research by Wilders et al. [42]. This latter investigation was performed with the specific aim of obtaining insight in unit costs of (mental) health care services and has played an important role in determining prices of functional health care services.

2.5. Ancillary services to health care

2.5.1. Laboratory and diagnostic imaging tests

Price assessment | Laboratory tests and diagnostic imaging tests are most often provided by laboratories and imaging departments within hospitals and by so-called 'general practitioner laboratories'. Laboratory and imaging services performed as part of inpatient or outpatient specialist treatment are covered by the DBC reimbursement system as described in section 2.1.1. Laboratory tests prescribed by the general practitioner are usually performed in GP laboratories. Reimbursement is based on the tests performed by the laboratory. Tests are categorized into approximately 20 cost homogenous groups, and one tariff applies for each group. An additional tariff applies for the take up of patient material (i.e. blood, urine, etc.) Maximum prices are issued by CTG/ZAio and apply to all laboratories [31]. Until the introduction of the DBC reimbursement system, these prices were the same as those used to reimburse laboratory services performed within the hospital. Tariffs represent the maximum amount laboratories may charge to patients or healthcare insurers. Because in practice all laboratories charge the maximum fee, the tariff is equal to the actual price. In principle, prices are assumed to cover all costs of the laboratory. However, a closing tariff is used to match the proceeds of the laboratory with its allowable budget. The closing tariff may differ largely between laboratories.

Cost calculation | Unit costs of laboratory tests are not systematically reported. Individual laboratories may calculate unit costs at a regular basis, but these data are not publicly available. The current classification of laboratory tests was introduced approximately 10 years ago. At introduction, estimates of unit costs of each class of service were based on unit cost research. Since then, prices are updated annually to correct for inflation. Prices include a personnel and material component and inflation

correction is based on weighted price indices of wages and goods. New laboratory services are assessed in terms of employee time, materials and equipment required to perform the service and classified in the group that is most comparable with regard to these criteria.

2.5.2. Patient transport

Price assessment | Under certain conditions, patients may be entitled to transportation by ambulance, taxi or private car. Patients' co-payments for transportation by taxi or private car are €82 per year. Taxi costs exceeding this amount are reimbursed against actual costs. Use of private car is reimbursed to a patient at €0.22 per kilometre.

CTG/ZAio issues maximum prices of ambulance transportation [31]. The major units of reimbursement are the number of patient transportations and the distance travelled. The price per patient transportation is distinguished into 'urgent' and 'ordered' transportations. The price per ordered transportation and kilometre are fixed and apply to all ambulance transport providers. The price per urgent transportation varies and is used as a closing tariff to match actual reimbursements of an ambulance transport provider with its allowable budget. Prices are assumed to cover all costs of the transport provider, including personnel costs, availability costs, car maintenance and depreciation, overheads and costs of capital. Special regulation exists for ambulance transportation abroad [50]. Ambulance transport providers in border regions obtain additional funding for the transport of patients abroad. This tariff may differ between transport providers and varies from €600 to €975 per hour.

Cost calculation | Prices of ambulance transportation are a continuing source of discussion between parties. Various investigations have been performed to assess the quality, efficiency and costs of ambulance transportation [51, 52]. These investigations have led to adjustments in the macro budget of ambulance transportation and the financing of ambulance transport providers. These investigations did not provide information about the distinction in costs for availability, urgent and ordered transportation. Hence, unit cost estimates of the various types of ambulance transportation are not available, and the tariffs for ordered and urgent transportation are not based on actual costs [53].

Table 2: Cost assessment and price setting of functional categories

Healthcare services ↓	Cost assessment				Price setting			
	Used?	Units of resource usage	Source of resource usage	Source of monetary value	Unit of price/ payment	Level of price setting/negotiation	Variability of prices depending on...	Updating
Curative care in hospitals								
* List A DBCs	yes	DBC's and intermediate healthcare services	real data	real data;	DBC's	national	fixed prices	annually based on cost assessment
* List B DBCs	yes	idem	idem	idem	DBC's	individual healthcare providers	free, negotiable prices	negotiable
Outpatient curative care								
* GP care	incidental	patients and patient contacts	real data	estimations of normative income	patients, patient contacts	national and individual/local	fixed basic tariff; local/ individual allowances	inflation correction and incidental adjustments
* dental care	incidental	technical services/ interventions	estimations	estimations	inter-ventions	national	fixed	inflation correction and incidental adjustments
* paramedical care	incidental	patient contacts	real data	estimations of normative income	patient contacts	national	fixed	inflation correction and incidental adjustments
* physiotherapy	incidental	patient contacts	real data	estimations of normative income	patient contacts	individual/ local	free, negotiable prices	negotiated
Curative home care	no				DBC's	national	fixed prices	annually based on cost assessment

Healthcare services ↓	Cost assessment				Price setting			
	Used?	Units of resource usage	Source of resource usage	Source of monetary value	Unit of price/ payment	Level of price setting/negotiation	Variability of prices depending on...	Updating
Rehabilitative care	no				bed days, RBUs	national and individual closing tariff	fixed	inflation correction and incidental adjustments
Long-term nursing care * intramural	incidental	intramural care arrangements	real data	real data	beds, inpatient days	national and individual closing tariff	fixed	inflation correction and incidental adjustments
* extramural	incidental	functional health care services	real data	real data	functional healthcare services	national and individual/ local allowances	local deliberation	inflation correction and incidental adjustments
Mental health care * intramural	incidental	intramural care arrangements	real data	real data	number of beds and bed days	national and individual closing tariff	fixed	inflation correction and incidental adjustments
* extramural	incidental	functional health care services	real data	real data	functional healthcare services	national and individual/ local allowances	local deliberation	inflation correction and incidental adjustments
Ancillary services * Lab./ imaging tests	incidental	individual tests	estimation	estimation	single tests	national and individual closing tariff	fixed	inflation correction and incidental adjustments
* Patient transport	no				transportations	national and individual closing tariff	fixed	inflation correction and incidental adjustments

3. Discussion

Until recently, the budgeting and reimbursement of health care organisations in the Netherlands was mainly targeted to control healthcare expenditures. Tariffs were issued by CTG/ZAio and approved by the Minister of Health. In most sectors, CTG/ZAio uses some kind of cost template to determine tariffs. These templates contain normative parameters regarding, for instance, the required education of personnel, workable hours, costs of (medical) materials and equipment, and overheads. Parameter values are updated annually to correct for inflation. In sectors where the actual yield of a healthcare provider is equal to the number of services times the corresponding fee (e.g. GP care, paramedical care), there will be a strong relationship between unit costs and prices. In these sectors, healthcare providers have a strong incentive to limit costs to the tariff set by CTG/ZAio or reduce them even further. On the other hand, parameter values of the CTG/ZAio templates are a constant source of debate between parties. In case of a perceived low tariff, branch organisations will steadily increase pressure on CTG/ZAio to adjust parameter values. Instruments used by branch organisations in the past to increase pressure, included the initiation of 'independent' workload investigations or even organizing strikes. In most sectors, however, the health care provider's budget is still restricted by the allowable costs and different parameters are used for budgeting and reimbursement. The relationship between prices and unit costs is largely absent in these 'older' systems.

Currently, the healthcare system is under reform and new regulations aim to support managed competition between healthcare providers and performance-based reimbursement. Major revisions include the introduction of DBCs for the reimbursement of hospitals' and specialists' care, IZAs for long-term intramural AWBZ care, and functional budgeting for extramural home care. These transitions are supported by the development of uniform accounting models for product costing [14] and incidental investigations to obtain insight in the most desirable tariff structure [42]. Although, budgeting and reimbursement differ across the various sectors, some common developments can be distinguished. These involve:

- a shift from direct budgeting of healthcare providers to regional budgeting of health insurers or regional administration units;
- the use of similar tariffs for budgeting and reimbursement;

- the adoption of all-inclusive tariffs to cover the full (average) costs of healthcare services; and
- the introduction of free or negotiable prices (in some sectors)

These developments have created increased cost awareness in the health care sector and many providers have introduced, either voluntarily or obligatory, some sort of product costing methodology. It seems likely that these developments will enhance the congruence of prices and costs. Tariffs of list A DBCs are directly based on the median unit costs, as registered in the DIS. The product costing study by Wilders et al. provided important inputs for determining tariffs of extramural home care services [42]. Unit cost calculations may also provide important inputs in those sectors where prices are liberated, like for instance the physiotherapy market and parts of the intramural cure sector (list B DBCs). However, in sectors with liberal price setting, unit costs may not serve as the only basis for price setting. Important elements within these markets are the competition between health insurers and the competition between healthcare providers. Outcomes of price negotiations will be highly dependent upon the market power of each of the parties involved. The willingness of insured to switch between health insurers and the willingness of patients to move to those healthcare providers that are contracted by their health insurer will be important factors that determine market power. There is evidence that switching between health insurers is still rather limited [1]. For this and other reasons, various parties fear the assumed market power of health insurers [25]. As from February 2005, prices for physiotherapy are liberated. In spite of physiotherapists' complaints [25], abuse of market power by health insurers has not been detected. In contrast, average prices of physiotherapy services increased since the introduction of liberated prices [54]. This was the case, despite considerable excess capacity on the Dutch physiotherapy market.

The DBC system has only recently been introduced and many aspects of the new regulations still need to be evaluated. Important elements relate to the safeguarding of quality of care within a system based on managed competition and whether up-to-standard care can be incorporated within the DBC definition. The definition of DBCs provides the opportunity to explicitly consider the necessity and efficiency of hospital and specialist care. Currently, a procedure for the submission of new DBCs is under development [55]. Effectiveness, cost-effectiveness and budget-impact are likely to play a role in the decision whether or not to authorise a new DBC. Until the introduction of DBCs, explicit consideration of these elements for coverage and

reimbursement has been restricted to extramurally prescribed medications and healthcare services provided under the Special Medical Procedures Act (WBMV; for instance organ transplantation) [7].

Disadvantages of the DBC reimbursement system are its complexity and high transition costs. Where case-mix reimbursement systems in other countries are usually based on 500 to 700 DRGs, the Dutch case-mix system contains about 29000 DBCs, classified into approximately 600 cost homogeneous groups [56]. In contrast with most DRG-systems, patients can have more than one DBC at the same time, and all resource use performed for a particular DBC needs to be registered. Maintenance, registration and validation of DBCs are complex and the associated costs are deemed to be high. For the same reasons, the introduction of the IZA-based system for the reimbursement of intramural AWBZ care was postponed [39]. Another disadvantage of the DBC reimbursement system is the high transaction cost of negotiations between individual healthcare providers and insurers. Protests against DBCs from healthcare providers and medical specialists are many and the final word in the debate whether or not to simplify the current DBC reimbursement system has still to come.

4. References and data sources

1. Schut FT, Hassink WH. Managed competition and consumer price sensitivity in social health insurance. *J Health Econ* 2002;21(6):1009-29.
2. Ministerie van Volksgezondheid Welzijn en Sport. Website of the Ministry of Health; <http://www.minvws.nl>.
3. van de Pol F. De bekostiging van de GGZ, 10 jaar dynamiek. In: Handboek financiële bedrijfsvoering van de zorg. 1e druk. Maarssen: Elsevier Gezondheidszorg; 2004.
4. Ministerie van Volksgezondheid Welzijn en Sport. Brief van de Minister van VWS aan de Tweede Kamer inzake transparante en integrale tarieven in de gezondheidszorg. Den Haag: Ministerie van VWS; maart 2005. <http://www.ctg-zaio.nl>.
5. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Invoering DBC-systematiek 1-1-2005. Verantwoordingsdocument tariefberekening segment A en B inzake Invoering DBC-systematiek. Utrecht; 2004. <http://www.ctg-zaio.nl>.
6. Folpmers M, de Bruijn J. Honorering in de Zorg. Overgang naar de nieuwe landelijke DBC-systematiek. *MCA Tijdschrift voor Organisaties in Control* 2004;6:18-25.
7. den Exter A, Hermans H, Dosljak M, Busse R. Health Care Systems in Transition. Netherlands. Copenhagen: WHO Regional Office for Europe on behalf of European Observatory on Health Systems and Policies; 2004. <http://www.euro.who.int/observatory>.
8. Ministerie van Volksgezondheid Welzijn en Sport. Transparante en integrale tarieven in de gezondheidszorg. Bijlage bij brief van de Minister van VWS aan de Tweede Kamer d.d. 08-03-2005. Den Haag: Ministerie van VWS; 8 maart 2005. <http://www.ctg-zaio.nl>.
9. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief CTG/ZAio aan besturen en medisch staven in ziekenhuizen en behandelcentra en aan zorgverzekeraars betreffende beleidsregels DBC-invoering (kenmerk: KKON/escs/I/04/39c. Utrecht; 13 juli 2004. <http://www.ctg-zaio.nl>.
10. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Beleidsregel CI-858: dekking kapitaallasten segment vrije prijzen. Utrecht; 2005. <http://www.ctg-zaio.nl>.
11. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Beleidsregel I-658: Declaratiebepalingen en overige tarieven medisch specialistische zorg door of vanwege de zorginstelling. Utrecht; 2004. <http://www.ctg-zaio.nl>.
12. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief CTG/ZAio aan besturen en medisch staven in ziekenhuizen en behandelcentra en aan zorgverzekeraars betreffende wijzigingen in DBC-tarieven en DBC-beleidsregels (kenmerk: DSWs/KKON/I/04/66c. Utrecht; 22 december 2004. <http://www.ctg-zaio.nl>.
13. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Beleidsregel I-722: Beleidsregel trendmatige aanpassing en afronding DBC-bedragen en overige bedragen. Utrecht; 2005. <http://www.ctg-zaio.nl>.
14. Zuurbier JJ. Model Kostprijzen. Versie 17. Utrecht: DBCzorg; December 2004. <http://www.dbconderhoud.nl/>.
15. Finkler SA, Ward DM. Cost Accounting for Health Care Organizations. 2e druk. Gaithersburg, Maryland: Aspen Publishers, Inc.; 1999.
16. Horngren CT. Cost accounting. 5e druk. Englewood Cliffs: Prentice-Hall; 1982.
17. DBC-onderhoud. Website of the organisation of DBC maintenance; <http://www.dbconderhoud.nl/>.

18. KPMG. Tweede audit productstructuur en kostprijzen. Amstelveen: KPMG; september 2004.
19. Prismant. Personal communication. Utrecht; september 2005.
20. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief van CTG/ZAio aan Ministerie van VWS betreffende beleidsregelwijziging huisartsenhulp: uitvoering aanwijzing nieuw bekostigingssysteem huisartsen. Kenmerk MVEK/mmor/A/05/074. Utrecht; 9 mei 2005. <http://www.ctg-zaio.nl>.
21. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Tariefbeschikking 5300-1900-05-1. Maximumtarieven voor tandheelkundige hulp door tandartsen ten behoeve van ziekenfondsverzekerden en niet-ziekenfondsverzekerden. Utrecht; december 2004. <http://www.ctg-zaio.nl>.
22. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Tariefbeschikking 5900-1900-05-1. Tarieven voor oefentherapeuten volgens de methoden Cesar en Mensendieck ten behoeve van ziekenfondsverzekerden en niet-ziekenfondsverzekerden. Utrecht; december 2004. <http://www.ctg-zaio.nl>.
23. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Beleidsregel V-5300-4.2.5.-21. Beleidsregels tandartsen (Lijst van tandheelkundige verrichtingen). Utrecht; november 2004. <http://www.ctg-zaio.nl>.
24. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief van CTG/ZAio betreffende de maximumtarieven voor tandheelkundige hulp door tandartsen ten behoeve van ziekenfondsverzekerden en niet-ziekenfondsverzekerden met ingang van 1 januari 2005. Kenmerk: SORE/escs/V/04/704c. Utrecht; december 2004. <http://www.ctg-zaio.nl>.
25. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Visiedocument fysiotherapie. Vrijgevestigde fysiotherapie, analyse en aanbevelingen voor concurrentie. Utrecht; juli 2005. <http://www.ctg-zaio.nl>.
26. Oostenbrink JB, Bouwmans CAM, Koopmanschap MA, Rutten FFH. Handleiding voor kostenonderzoek; methoden en standaard kostprijzen voor economische evaluaties in de gezondheidszorg. Diemen: College voor zorgverzekeringen; Geactualiseerde versie 2004. <http://www.cvz.nl>.
27. Somai D, Hutten JBF. Brancherapport Cure '98-'01. 's Gravenhage: Nivel, Ministerie van Volksgezondheid Welzijn en Sport; 2002. www.minvws.nl/rapporten/staf/brancherapport_volksgezondheid_cure.asp.
28. Hoeksma BH, Bastings ICL, de Lange HBI, de Meij R. Tijdbesteding in RIAGG's en psychiatrische poliklinieken. Enschede: Hoeksma, Homans & Menting organisatieadviseurs; juni 1995.
29. van Vliet NMH, Vierke H, Hoeksma BH. Tijdsbestedingsonderzoek fysiotherapeuten GGZ. Enschede: Hoeksma, Homans & Menting Organisatieadviseurs bv.; maart 2001.
30. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief van CTG/ZAio aan ziekenhuizen en dialysecentra betreffende de uittreding van dialyse uit de WBMV. Kenmerk SW/th/I/02/45c. Utrecht; 9 mei 2005. <http://www.ctg-zaio.nl>.
31. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Tarieflijst instellingen 2005. Utrecht: CTG/ZAio; 2005. <http://www.ctg-zaio.nl>.
32. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting, Vereniging Academische Ziekenhuizen, DBCzorg. Rapportage WBMV-zorg; DBC's en productgroepen. Utrecht; september 2004. <http://www.ctg-zaio.nl>.
33. Revalidatiezorg LSP. Productdefiniëring Revalidatiezorg. Utrecht: Landelijke Stuurgroep Productdefiniëring Revalidatiezorg; mei 1995.
34. Spaan JM. Verpleeghuiszorg in cijfers 1990-1994e druk. Utrecht: Nederlandse Vereniging voor Verpleeghuiszorg; 1996.
35. Functiegerichte bekostiging intramurale AWBZ. Website with information about the introduction of functional budgeting for long-term care; <http://www.functiegerichtebekostiging.nl/>.

36. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Beleidsregel II-734/III-933. Beleidsregel extramurale zorg. Utrecht; januari 2005. <http://www.ctg-zaio.nl>.
37. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief CTG/ZAio aan AWBZ instellingen en zorgkantoren inzake de nieuwe Beleidsregel contracteerruimte 2005. Utrecht; december 2005. <http://www.ctg-zaio.nl>.
38. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Voortgangsrapportage functiegerichte bekostiging. A05-33-a3. Utrecht; juni 2005. <http://www.ctg-zaio.nl>.
39. Ministerie van Volksgezondheid Welzijn en Sport. Brief van de Staatssecretaris van VWS inzake de vereenvoudiging van de functiegerichte bekostiging intramuraal. Den Haag; Ministerie van VWS; Juni 2005. <http://www.minvws.nl/>.
40. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Beleidsregel II-709. Beleidsregel intramurale zorg. Utrecht; december 2004. <http://www.ctg-zaio.nl>.
41. College Tarieven Gezondheidszorg. Naar een verzorgd budgetmodel. Nieuwe beleidsregels voor de budgettering van verzorgingshuizen. Utrecht; 1999. <http://www.ctg-zaio.nl>.
42. Wilders YM, Voetelink DW. Functiegerichte kostprijzen AWBZ. Amsterdam: KPMG; Juli 2004.
43. Regionale Patiënten Consumenten Platforms (RPCP's). Website form the RPCP to inform patients about healthcare in the Netherlands; <http://www.kiesmetzorg.nl>.
44. PriceWaterhouseCoopers, Beerenschot bv. Benchmarkonderzoek Thuiszorg biedt aanknopingspunten voor instellingen en overheid. Utrecht; maart 1999.
45. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief CTG/ZAio aan AWBZ instellingen inzake de nieuwe beleidsregels extramurale zorg 2004. Utrecht; Oktober 2003. <http://www.ctg-zaio.nl>.
46. GGZbeleid. Website of GGZbeleid with information about development in the mental health care sector; <http://www.ggzbeleid.nl>.
47. Helpdesk functiegerichte bekostiging. Personal communication. Enschede; augustus 2005.
48. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief van CTG/ZAio inzake wijzigingen in de beleidsregels extramurale zorg 2005. Kenmerk: RLAD/ihot/A/04/11c. Utrecht; november 2004. <http://www.ctg-zaio.nl>.
49. Cap Gemini Ernst & Young Adviesgroep Gezondheidszorg, Zorg Consult Nederland bv. Diagnose Behandeling Combinatie in de GGZ. Voorstel plan van aanpak: 'van prelude to voldragen partituur'. Utrecht; maart 2002.
50. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Brief CTG/ZAio aan ambulancediensten inzake het bandbreedtetarief voor de inzet van Nederlandse ambulances in het buitenland met ingang van 1 februari 2005. Utrecht; februari 2005. <http://www.ctg-zaio.nl>.
51. van der Veen A, Zwakhals S, Hazelzet-Crans B, van Manen J. Niet zonder zorg; een onderzoek naar de doelmatigheid en kwaliteit van ambulancezorg. Bilthoven: RIVM; 2001.
52. Kommer GJ, van der Veen AA, Botter WF, Tan I. Ambulances binnen bereik. Analyse van de spreiding en beschikbaarheid van de ambulancezorg in Nederland. Bilthoven: RIVM; 2003.
53. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting. Personal communication. Utrecht; augustus 2005.
54. Institute for Health Policy and Management. Personal communication. Rotterdam; August 2005.
55. College Tarieven Gezondheidszorg/Zorgautoriteit in oprichting, College voor Zorgverzekeringen. DBC loket publiek onderhoud; <http://www.dbcloket.nl/>.
56. Steinbusch P, Oostenbrink JB, Zuurbier JJ, Schaepkens FFJM. The DBC- or DRG-creep: the vulnerability of the US, Australian and Dutch casemix system to upcoding. Submitted 2005.