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**SPANISH COST/PRICE ASSESSMENT REPORT**

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# ***PART I. Price setting and payment schemes in Spanish Health Care System***

## **0. Introduction**

As Waters and Hussey (2004) have pointed out, there are different factors that affect the determination of the prices that purchasers pay for health services: the method of payment, the information available (costs, volumes, outcomes) and the methods of costing, and finally the characteristics of purchasers and providers. The third factor is extremely important since it includes institutional features such as regulatory environment, provider autonomy, negotiating power and degree of competition.

One of these institutional aspects, perhaps the most influential, is the degree of separation between purchasing and providing functions, that is, if organization that is responsible for demanding and purchasing services is really apart from that responsible for delivering health care. The fact is that in Spain, publicly financed health services are for the most part also publicly provided. Public provision plays a prominent role and, with a few exemptions, the public bodies that take charge of the purchasing function (autonomous communities regional health services) also manage most of the inpatient and outpatient health care centres.

Most of the health services financed with public funds in Spanish Autonomous Communities (ACs) preserve the system of budget assignment to hospitals and primary care centres that INSALUD (the state public body previously in charge of public health services delivery) had been applied before the devolution of competences to ACs. This system was based in a contractual relationship between the financing body and the health care provider (typically hospitals), the so-called "program-contract". It has to be underlined that this is not properly a method of purchasing services, but a method to assign budgets to hospitals. Since there is not a clear separation between purchaser and provider, financial risk is not transferred to providers. Although the system is said to be prospective, the financing body assumes budgetary deviations through specific grants.

Some other health care services publicly provided are financed by historical budgets or through mixed systems made up of structural and capitation elements (i.e. primary care). In all cases, however, financing body covers additional needs of resources.

A general separation of purchasing and providing functions, in a strict sense, only exists in Catalonia (further we refer to some particular experiences in other regions), where the purchaser is a public body, the Catalan Health Service (Servei Català de la Salut, SCS), and the providers are a collection of public and private institutions, the most important of which is the Catalan Health Institute (Institut Català de la Salut, ICS), a public agency without any sort of hierarchical link with the Health Service. In general, the system of payment in Catalonia is prospective, and unlike program contracts, the purchaser does not assume budget deviations, so the financial risk is transferred to providers.

In the rest of the Spanish health system, pricing and purchasing health services (apart from pharmaceuticals; see section 5 of this Part I) are limited to the contracting-out of certain types of diagnostic or surgical processes and some other health benefits, as well as ancillary services. In these cases, regional health services agree with private providers through contracts that, in general, include retrospective payment systems.

Sections 1 to 5 in this Part I follow the structure of the classification of functional health categories used in the country report on benefit basket. Three additional sections complete this first part of the report: In section 6 we explain some experiences of integrated systems of resources allocation (i.e. capitation payments) that have been recently put into practice in different Spanish regions. Section 7 is devoted to public prices that public health system charge to third party payers in those situations in which the public authority is not obliged to finance the services delivered. Finally, section 8 is a brief summary of answers to the main questions regarding the establishment of prices for health care benefits and the update of those prices.

## **1. Services of curative care**

### **1.1. In-patient curative care**

In this section we refer to the specialised health care in the hospitalisation regime (HC.1.1) including: acute somatic inpatient care, acute intensive inpatient care, transplantation, and acute mental inpatient care. First we will explain the method of payment to hospitals in Catalonia, because of its singularity as a genuinely prospective method. Then we summarize the basic functioning of the program-contracts as a system to assign budgets to public (and, in certain cases, private) hospitals in the rest of the Spanish Autonomous Communities. Finally, we refer to the practice of contracting-out certain surgical procedures on a per case basis by most of the regional health services in Spain, in the context of maximum waiting times commitments. A separate heading in this section outlines the methods of financing in the special area of mental health care.

#### ***Prospective payments: the payment system to hospitals in Catalonia***

Catalonia is the only Spanish autonomous community in which purchasing and providing functions are completely separate. The purchasing authority, the Catalan Health Service (Servei Català de Salut, SCS), pays public and private providers for the services, being the Catalan Health Institute (Institut Català de la Salut, ICS) the main public provider. The most significant progress has been made in the method of financing services provided in hospitals.

The payment system to hospitals in the Public Hospital Network (Xarxa Hospitalària d'Utilització Pública: XHUP) was modified in 1997. Two main features characterize this new scheme: global budget and prospective payment. The hospital care budget is considered as a whole and the purchase contract is the instrument to guarantee the provision of health services. By means of global budget some actions are given priority to the detriment of another.

In general, the new payment system (NPS) recognizes two different blocks: *activity* and *programs*. The *programs block* includes programs that Health Department is especially interested in, as well as teaching and investigation. The

Health Department chooses these programs annually. In the *activity block*, activities carried out by hospitals in four product lines are valued separately. These product lines are:

1. Hospitalisation
2. Outpatient consultations
3. Emergencies
4. Specific techniques, treatments and processes.

In this section we will explain the system regarding hospitalisation, emergencies and some of the specific techniques, treatments and processes. Outpatient consultations, together with another part of specific treatments and processes will be treated further in section 1.3.

#### *Hospitalisation line*

The unit of payment is hospital discharge. Hospital discharge concept comprises all medical acts, diagnostic tests, therapeutic processes and pharmaceuticals. In order to fix the volume, according to detected needs, the SCS contracts a certain number of discharges, including:

- a) Conventional discharge: a set of activities and processes carried out on a patient that has been to hospital for, at least, one stay, as long as this set of activities and processes are not included in another line because of its complexity or singularity.
- b) Ambulatory major surgery: medium or high complexity surgical procedures carried out with anaesthesia that doesn't require conventional hospitalisation but demands a short period of observation and control in hospital.

Care process is influenced by hospital organization and structure, as well as by patient characteristics and pathology. Because of this, the method of hospital payment is a mixed system that considers both factors. Consequently, the discharge price includes two adjustment factors: one associated with case-mix (IRR: *relative resources intensity*) and another derived from hospital structure (IRE: *structure relative index*).

When the NPS was introduced in 1997, 30% of total resources were assigned by case-mix and the other 70% attending structural differences. Today, these percentages are 35% and 65%, respectively. For example, if the system as a whole is going to purchase 1000 hospital discharges and the total resources amount to 1 million euros, the average discharge price will be 1000 euros. The average price that recognizes case-mix (IRR price) is 350 euros, while 650 euros is the average discharge price oriented to recognize hospital structure (IRE price).

The total revenue that a hospital (h) will receive depends on its activity (nº of discharges), its case-mix adjustment factor (IRR) and its structure adjustment factor (IRE), according to the following equation:

$$\text{Discharges}_{(h)} \times (0.35 \times \text{IRR}_{(h)} \times \text{IRR price} + 0.65 \times \text{IRE}_{(h)} \times \text{IRE price})$$

Let's see how each factor operates.

- a) Case-mix.- The diagnostic codification included in "Hospital Discharges Minimum Basic Set of Data" (*Conjunto Mínimo Básico de Datos de Altas Hospitalarias: CMBD-AH*) allows the classification of patients in homogeneous groups regarding diagnostic, severity, prognosis factors or intensiveness in resource use. Every hospital discharge is assigned a DRG (Diagnosis Related Group), and each DRG has a relative weight. The weighted average of different DRGs gives us the average relative weight (ARW) of complexity for a hospital.<sup>1</sup> In a similar way the global ARW is calculated for the entire XHUP, as the weighted average of all discharges in the XHUP,<sup>2</sup> regarding its DRG and its relative weight in resources consumption. Finally, for every hospital (h) the IRR is calculated in the following way:

$$\text{IRR}_{(h)} = \text{ARW}_{(h)} / \text{ARW}_{\text{XHUP}}$$

For example, if ARW for hospital A is 0.955 and global ARW for all hospitals in the XHUP is 1.250, then IRR for hospital A is  $0.955/1.250 = 0.764$ . It is important to highlight that the complexity of a centre is compared to the complexity of all hospitals in the XHUP. Therefore, IRR

<sup>1</sup> Because of the lack of information specifically referred to Catalonia, DRGs relative weights used were those from version 9 of Health Care Financing Administration (USA).

<sup>2</sup> Average relative weights are calculated at the beginning of the exercise based upon data from previous year.

depends not only on what a hospital do, but also on what the other hospitals do. Thus, the optimal strategy for a hospital is to implement mechanisms for operating with costs for DRG that are below prices paid by SCS, instead of merely trying to increase complexity.

In order to obtain the IRR price, firstly complexity-weighted discharges are calculated multiplying hospital discharges by hospital IRR. Then complexity-weighted discharges of every hospital concerted are summed up to obtain total complexity-weighted discharges. Average IRR price is then determined as:

$$\begin{aligned} & \text{IRR price} = \\ & = \text{Global hospitalisation budget} / \text{Total complexity-weighted discharges} \end{aligned}$$

When NPS was introduced in 1997, the global budget was based on historical data of hospitalisation bill. Real costs data were not used due to the lack of complete and liable information. In the following years, prices were updated in different proportions.

It has to be pointed out that, since  $\text{IRR}_{(h)}$  is a relative factor referred to IRR of the XHUP, it would have been obtained the same result by dividing the part of hospitalisation budget oriented to reward complexity among the number of discharges (without weighting).

- b) Hospital structure.- The structure has direct influence on hospital costs, and therefore it has to be taken into account in the payment system. Structures differ because of the geographical localization, influential area of the hospital, resolution ability and, finally, teaching and research complexity.

Methods of payment have usually incorporated this factor in a discrete manner, that is, through hospital level discrete scales. However, the NPS applies a classification based on a continuous scale. The theory is based on a sort of multivariate analysis called *Grade of Membership* (GOM). Shortly, GOM analysis establishes groups of hospitals regarding structural and organizational parameters. These "pure types" of hospitals statistically present similar characteristics. Each hospital compares to these "pure types" and grade of membership to the different groups is calculated. A

hospital may be totally or partially similar to one or more “pure type” hospitals. For example, if a classification is made of five “pure types”, we can find that hospital  $h$  looks like a hospital type 1 in a 50%, like a hospital type 4 in a 30% and like type 5 in a 20%.<sup>3</sup>

In order to obtain the structural parameters used in the analysis, a survey was made among providers. Items in the questionnaire include physical elements (total number of beds, beds by service, number of outpatient consultations) as well as the presence of certain technology or equipment. The original survey included about 20 variables, the most recent includes 60 variables.

Once centres have been placed in the continuous classification of hospitals, this classification must be linked to the purchase of hospital activity. A regression between hospital purchase and hospital levels is used to calculate the discharge price for every process. In this way, XHUP average discharge prices are known, and therefore discharge price for every hospital is also known.

A *structure relative index* (IRE) for each hospital is calculated that shows the relation between discharge price regarding structure and XHUP average discharge price. For example, if XHUP average price is 1500 euros and a hospital average price is 1200 euros, the IRE for this centre would be  $1.200/1.500=0.8$ .

Nevertheless, with the aim of preventing imbalances, at the initial year (1997) the IRE was calculated for each hospital by difference between case-mix revenues and guaranteed revenues for that year (the same that those in the previous year). Thereby current expenditure structure was recognized, including current inefficiencies.

Nowadays the index is revised every 5 years, and applies gradually throughout that period, so the IRE that is effectively applied starts from former IRE and comes closer to new IRE little by little.

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<sup>3</sup> Classification from 1 to 5 (or another) does not imply graduation of any kind, that is, a hospital type 3 is not “more than” a hospital type 1; they are only different.

In order to obtain the IRE price, firstly structure-weighted discharges are calculated multiplying hospital discharges by hospital IRE. Then structure-weighted discharges of every hospital concerted are summed up to obtain total structure-weighted discharges. Average IRE price is then determined:

$$\begin{aligned} & \text{IRE price} = \\ & = \text{Global hospitalisation budget} / \text{Total structure-weighted discharges} \end{aligned}$$

Again, like we pointed out regarding IRR price calculation, data from hospitalisation bill in previous years were used in 1997 to determine IRE price.

Then, provided that IRR price and IRE price for year 2005 are set in 1,761.37 euros and 1,779.89 euros, respectively,<sup>4</sup> the discharge price for a hospital with an IRR of 0.764 and an IRE of 0.854 in year 2005 will be 1.459 euros ( $= 0.35 \times 0.764 \times 1761.37 + 0.65 \times 0.854 \times 1779.89$ ). The payment for that hospital regarding hospitalisation line will result from multiplying this unit price by the number of discharges that have been contracted.

#### *Emergencies line*

In this product line, two different and mutually exclusive methods of payment are used. On the one hand, hospitals are classified according to a discrete scale with four assistance levels, and a unit price for service is determined for every category. These structure-related levels are the following, where basic general isolated hospitals are excluded:

- Level 1: geographical isolated hospitals
- Level 2: basic general hospitals
- Level 3: reference hospitals
- Level 4: high technology hospitals

On the other hand, certain hospitals that are located in isolated and/or scarcely populated areas receive a particular treatment. These centres have common features, like a small activity volume and similar costs. In these cases the unit of

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<sup>4</sup> Health Department Order SLT/194/2005 (DOGC nº 4379 – 06/05/2005).

payment is the service as a whole, independently of the number of emergencies served.

All hospitals in the XHUP, except basic general isolated hospitals receive an emergencies activity budget that results from multiplying total number of emergencies by the appropriate unit price according to the group it belongs to. In 2005, emergency unit prices range from 38.44 euros (level 1) to 96.01 (level 4).

Basic general isolated hospitals receive a block assignment that guarantees the functioning of minimum devices for emergency services. In 2005, this unique payment amounts to 937,836.36 euros.<sup>5</sup>

*Specific techniques, treatments and processes.*

Certain activities are paid for in a *per case* basis. These activities are, in general, of high complexity and include, among others, the following: brachitherapy, radiotherapy, neuroradiology, psychiatric surgery, radio surgery, diagnostic angiography, cardiological treatments and diagnostic processes, high complexity urologic and hepatic treatments and processes, prenatal diagnosis, infertility treatment, etc. In these cases, the availability of cost data is higher than in other areas of hospital activity, so the tariffs (annually passed by the same Health Department Order that sets unit prices for the other product lines) are supposed to reflect costs more accurately.

***Mixed (prospective-retrospective) payments: the program contracts***

The program contract has been considered a first stage in the process of separation of functions between purchasers and providers. Nevertheless, the program contract has not fulfilled the objective of introducing a prospective system of payment, because expenditure budgets have been set according to historical patterns. In practice, the survival of "operating grants" (roughly, the difference between the budget fixed by historical patterns and the budget assigned by contractual parameters) means that the system maintains its retrospective condition.

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<sup>5</sup> Order SLT/194/2005, previously cited.

As it has been pointed out (Cabasés & Martín, 1997; González, 1999; Ventura, 2004), program contracts constitute a legal fiction, since they cannot be cancelled, and it is not possible to demand its fulfilment by a judicial way. Although an outcome account is simulated, effective risks are not transferred to the centres, or to the managers or the staff.

From year 1992, when program-contracts were introduced in the health systems of the 10 autonomous communities still under central control of INSALUD (and also in the rest of the ACs), until year 2003, when health care competences were transferred to all ACs, consecutive changes have been introduced in the model. However, none of these changes have transformed the essence of the contract scheme.

At the beginning, the unit of production, and so the unit of "purchase", in the program-contracts was an *ad hoc* measure of the hospital product that was not exactly the same in the different ACs with competences in health care than in the ACs under INSALUD. In all these measures, however, a stay (a stay in general, or a medical stay) is equal to one, and the rest of the activities are defined in terms of it, with the exception of the so-called "extracted procedures" (more or less equivalent to the specific techniques, treatments and processes previously mentioned in the Catalan model). Table 1 summarizes the differences between some of these measures.

Table 1. Hospital activity measures based on assistance units

Intermediate product		Hospital production measures				
		UBA	UPA	EVA	UCA	UMA
Stay		1		1	1	
	Medical		1	1		
	Surgery		1.5	1		
	Obstetrics		1.2	1.2		
	Paediatric		1.3	1.3		
	Neonatology		1.3	1.3		
	Intensity care		5.8	5.8		
Inpatient surgery				5	2	
Ambulatory surgery	Minor	0.5	0.25	0.25	0.75	1
	Major	0.5	0.25	0.25	0.75	4
Outpatient consultations	First					
	Consecutive	0.25	0.15	0.15	0.2	0.2
Emergencies		0.5	0.3	0.3	0.4	0.5
Dialysis (session)					1.28	
Rehabilitation (session)					0.1	
Day hospital (treatment)				10		

UBA: "Basic Assistance Unit" (Catalonia); UPA: "Weighted Assistance Unit" (INSALUD); EVA: "Andalusia Valuation Scale" (Andalusia); UCA: Assistance Cost Unit (Basque Country); UMA: Average Assistance Unit (Valencia)  
Source: González (1999).

These units of measure have evolved towards what have been termed "second generation" units. These more sophisticated units of measure are obtained by weighting "assistance units" (or discharges) by hospital case-mix weights that are calculated through DRG system. The "hospitalisation production unit" (UPH) in Galicia or the "hospital complexity unit" (UCH) in some of the ACs that were under the INSALUD control until 2003, are examples of these new units of purchase in the program-contracts.

Shortly, a typical program contract between the health service and a hospital (often termed management contract) contains the catalogue of services that the centre is obliged to supply to the patients belonging to the health care area, as well as the volume of activity agreed and the quality objectives. The most important part of the budget (the other corresponds to the "extracted procedures") is calculated through a formula that in most cases looks like the following one:

$$\begin{aligned} \text{N}^\circ \text{ of discharges} \times \text{Case-mix weight} \times \text{Structure-related tariff} &= \\ &= \text{N}^\circ \text{ of "Hospitalisation units"} \times \text{Structure-related tariff} \end{aligned}$$

Where case-mix weight is calculated taking into account the various processes carried out in the hospital (usually with a distinction made between hospitalisation discharges and ambulatory surgery discharges), and, on the other hand, tariff depends on structural features of the centre that are expressed in a discrete scale that distinguishes between general hospitals, basic general hospitals, medium and long stay hospitals, etc. This hospital typology changes from one AC to another.

For example, in the "management contract" of a hospital in the Autonomous Community of Murcia we can find that the number of global hospitalisation discharges agreed is 17000, the average weight associated to the complexity of the hospital activity is 1.67 and the price per weighted discharge (the "hospital complexity unit" tariff) is 1498.59 euros. Therefore, the hospitalisation budget amounts to 42.5 millions euros ( $=17000 \times 1.67 \times 1498.59$ ).

Regarding “extracted procedures”, they are assigned a price *per case*. This unit price is multiplied by the number of cases contracted and therefore other part of the budget is determined.

Apparently, the schedule is similar to previously described payment system in Catalonia. Nevertheless, there is a crucial distinction between one and another: since there is not a clear separation between purchaser and provider, financial risk is not transferred to hospitals. Although the system is said to be prospective, the financing body assumes budgetary deviations through specific grants.

The payment system to hospitals in *Andalusia* is often considered as a step forward in the financing of hospitals (further from “usual” program contracts). In that region, hospitals receive a global budget through the program contract, but the agreement establishes two models of payment: one that rewards casuistry (based on DRGs) and one oriented to remunerate structural costs. The case-mix component represents 75% of budget and the remaining 25% corresponds to the structure component. The latter is calculated through actual average cost per stay concerning those concepts of cost not connected with the pathology (cleaning, security, teaching, administration, maintenance, laundry and catering).

Though, apparently, this mixed system looks quite similar to that of Catalonia, the fact is that the Andalusian Health Service (SAS) directly manage the public hospital network, that is, there is no separation between purchaser and provider. So, the model faces the same difficulties of transferring risks that have been mentioned above. The centres in which the resources resulting from the system of payment are lower than its actual expenditure, will receive a balancing grant.

A slightly different version of this system occurs in certain cases in which the agreement is made between a public purchaser and a private provider (hospital). Two non-lucrative foundations are examples of this: Hospital Jove, in the autonomous community of Asturias and the Jiménez Díaz Foundation in Madrid. The method of payment is similar to the program-contract with public hospitals. The unit of purchase is the weighted assistance unit (UPA), equivalent to a medical stay. The rest of the activity (other stays, consultations, emergency services) are linked to the price of UPA which is fixed annually. The contract establishes a maximum annual level of activity, above which the purchaser only

pays a fraction of the UPA price. It also exists a penalty if average stay exceeds the duration agreed.

### **Retrospective payments: official tariffs for contracting-out services**

Most of the regional health services in Spain turn to health care private providers in order to purchase certain surgical procedures that require hospitalisation. In general, these agreements are made in the context of reducing waiting lists and are oriented to fulfil commitments of maximum waiting times. In these cases, payments are retrospective, and they usually adopt the form of payment *per case*.

The prices paid are established with reference to official tariffs. These maximum prices are set according to the tariffs in other ACs as well as those used by private assurance companies. Nevertheless, there are substantial differences by regions, which will be discussed in Part III.

The tariffs are updated annually taking into account general consumption price indexes and other variables (information from providers, for example). The prices established in the contracts are subject to annual revision clauses and can also exceptionally be revised at the request of one side.

With regard to the link between these tariffs and real costs, it can be said that the more complex the process is, the closer to actual costs it is.

### **Inpatient Mental Health Care**

We separately mention this health care category, because of its own specific characteristics. Hospitalisation care for mental health patients is generally supplied in specific centres, and financed apart from the rest of hospitalisation assistance. In certain cases, the unit of payment is the stay (for example, in Catalonia, where different prices per stay are established for acute inpatient care, sub-acute inpatient care and several processes that require medium or long stay). On the other hand, some ACs agree with private providers on a per process basis (in Aragon there are maximum tariffs for hospitalisation in residential-rehabilitative centres of long stay, as well as for inpatient care in rehabilitative units of medium stay). Finally, the assignment of finance to publicly owned mental health and psychiatric hospitals is less sophisticated than that for acute hospitals and it is usually based on historical administrative budgets.

## 1.2. Day cases of curative care

In all regional health systems, except Catalonia, minor surgery services are financed in the same way as inpatient care, that is, if delivered in public hospitals, they are included in program contracts scheme (often as "extracted procedures") and, if contracted out, retrospective payment per case or fee-for-service is applied.

In Catalonia, minor surgical procedures and specialised health care delivered in "day-hospitals" are included in the product line *specific techniques, treatments and processes* of the payment system for XHUP hospitals in Catalonia. In this product line, case is the unit of payment, and like emergencies line, unit prices paid to hospitals are different according to a structure-related discrete scale. These unit prices are established in the following amounts for 2005:<sup>6</sup>

Table 2. Prices paid to hospitals according to a structure-related discrete scale.

Hospital category	Ambulatory minor surgical procedures (euros)	Day-hospital (euros)
Level 1	99.81	104.13
Level 2	129.83	135.36
Level 3	149.87	156.14
Level 4	179.76	187.37

Source: own elaboration.

With regard to the special area of Haemodialysis, the usual practice is contracting-out, and generally these services are put out to tender. The unit of payment is the session, and the maximum prices paid are established annually through regulations passed by regional health ministries. Obviously, prices differ according to the services contracted: nephrology services (hospital haemodialysis, ambulatory haemodialysis, periodical controls and clinic vigilance), nephrology assistance units and dialysis centres.

The regional regulations that fix maximum tariffs also establish the criteria to update prices of administrative contracts that are in force.

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<sup>6</sup> Health Department Order SLT/194/2005.

### **1.3. Out-patient care**

#### *Basic medical and diagnostic services-curative primary care (HC.1.3.1)*

Primary Care is mainly delivered by public Health Care Centres. In this category it cannot be said to exist a pricing system. Centres receive an administrative budget based on historical patterns that take into account the number of patients that belong to the health area or primary care administration.

Catalonia is, again, an exception to the rule. In Catalonia there are two types of contracts between the purchaser (SCS) and the four types of primary care providers: publicly owned Catalan Health Institute (ICS), horizontally integrated providers (managed by organisations that were previously only managing hospitals), the so-called "mutuas" (very similar to some American HMOs), and professional co-operatives (similar to general practitioners that became fund holders in the UK).

The first type of contract ("program-contract") has to be with ICS primary care providers. The price paid by the SCS to these Primary Health Care Teams (PHCTs) is based on historical costs for the current inputs and a simple cost recovering mechanism for the cost of prescription drugs, which accounts for more than a half of total expenditure (Puig-Junoy and Ortún, 2004).

The other type of contract is associated with the three new types of providers previously mentioned and is based on a retrospective payment system. Contracted PHCTs are accountable for only 5% of the overall budget, on the basis of their fulfilment of a given set of objectives related to qualitative and quantitative results of drug prescription, and also to targets specified in the health plan (i.e. population aged under 14 correctly vaccinated, population aged over 64 vaccinated against influenza, etc.).

#### *Outpatient dental care-dental prophylaxis, care, surgery (HC.1.3.2)*

Half of the ACs have regulated free dental care for children, and these dental care programs have been put in practice through agreements between the regional health services and the dentists' official colleges. The families with children in the

age interval annually receive a voucher that they trade by a visit to a dentist of their choice.

The model of payment is a capitation-retrospective system (a fixed annual payment per child), and includes all interventions that the patient needs through the duration of the program, except orthodontics treatments. Nevertheless, in these infant-young dental care plans, it is usual to distinguish between patients that attend regularly to checkups from those that do not. The difference is showed in the benefits covered by the capitation payment which, nowadays, ranges from 35 to 60 euros, depending on the regions.

As an example, the Government of Aragon<sup>7</sup> has established an annual capitation payment of 50 euros that include the following minimum benefits for all patients:

1. exploration and diagnosis of oral health status
2. education for health (hygiene and diet instructions)
3. sealed of fissures of first and second permanent molars
4. topical fluorine treatment
5. supragingival tartar discharge in permanent teeth
6. extraction of temporary or permanent pieces
7. emergency dental treatments

In the case of children than attend regularly to the dentist, the payment also includes

8. obturation of permanent pieces
9. pulp covering
10. pulpotomy
11. endodony
12. apicoformation
13. reconstruction
14. diagnostic simple radiographies.

These services (8 to 14), however, are assigned a fee-for-service payment (additional to the capitation) in the cases of children than do not assist regularly to dental revisions. The prices range from 14 euros (diagnostic radiography) to 120 euros (molar endodony).

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<sup>7</sup> Order 04/05/2005, passed by the Aragon Department of Health and Consumption.

In the case of the AC of Navarre, the capitation payment differs according to the age of the patient. Thus, in year 2003, the payment was 39.61 euros for children between 6 and 10 years, and 44.00 euros when patient was between 11 and 15 years.

*All other specialised health care (HC.1.3.3)*

Regarding specialist outpatient consultations (HC.1.3.3), we go back to the payment system in Catalonia. Unlike hospitalisation line, payment *per process* is not possible due to the lack of information. The purchasing of this type of service is based on contracting first visits modulated according to the needs of the hospital influential area.

First visit is defined as an act accomplished in outpatient consultations that represents the first contact between the hospital and the patient, who has been referred by another hospital, primary care centres, specialist care centres, etc. Even though it was not the first contact between patient and hospital, the visit is judged as a first visit if accomplishes one of the following conditions:

- There were previous visits to hospital because of the same health trouble but one year, at least, has passed since last visit.
- The patient went to emergency services and it is the first act of follow-up (even if as a result of have been to emergencies the patient was admitted to hospital and this is the first visit after discharge).
- In cases of anaesthetic pre-surgical visit

The ambulatory interventions that are generated by a first visit are considered as successive visits.

The model of payment takes into account two factors: the criteria for activity payment, and the amount of visits that will be taken on. The hospitals are classified according to the same discrete scale than applies to emergencies product line (from level 1 to level 4). The price paid for every visit is different for each assistance level. For example, in 2005 unit prices range from 30.01 euros in level 1 hospitals to 54.04 euros in high technology centres.<sup>8</sup>

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<sup>8</sup> Health Department Order SLT/194/2005.

The following steps have to be made: first, the number of first visits is set according to the needs of the hospital influential area; secondly, a reiteration rate is applied, taken into account the composition of first visits by specialities.

$$\begin{aligned} \text{Total number of visits} &= \\ &= \text{N}^\circ \text{ of first visits} + (\text{reiteration rate} \times \text{n}^\circ \text{ of first visits}) \end{aligned}$$

Then, outpatient consultations activity budget for a given hospital would result from multiplying total number of visits by the appropriate unit price according to its structural features.

The method of allocate resources to outpatient consultations in hospital program-contracts (for the rest of the Spanish ACs) is quite similar to that described for Catalonia, with the well-known difference that financial risks are not transferred to public providers.

Other ambulatory services like logopaedics (HC.1.3.9) are treated further in section 2, together with ambulatory rehabilitation.

#### **1.4. Services of curative home care**

The oxygen therapy services are usually putting out to tender and the prices paid to providers (subject to maximum tariffs) are fixed on a per session basis. There are different maximum prices for home oxygen therapy depending on the method used (liquid oxygen, portable oxygen, etc.), as well as for home mechanic ventilation and monitoring. That is also the case for Catalonia, since oxygen therapy benefits are outside the payment system for hospitals in the XHUP. These services are putting out to tender, and the contracts are usually six years long.

#### **2. Services of rehabilitative care**

In-patient rehabilitative care (HC.2.1) is sometimes linked to services of long-term care, so in the following section we will refer to it. The rest of the services of rehabilitative care are often contracted-out by the regional health services and, like other benefits previously discussed, subject to maximum tariffs. These

maximum prices differ from one AC to other, not only by its amount, but also in the unit of payment used.

With regard to outpatient rehabilitative care (HC.2.3: ambulatory rehabilitation), some ACs have established maximum prices per session and other ACs have regulated tariffs per process, in which case minimum number of sessions per process are usually also fixed. Additionally, some regional regulations set minimum times per session according to the type of treatment. This also applies to special ambulatory rehabilitation services of phoniatrics and speech therapists. Otherwise, prices for rehabilitative home care (HC.2.4) are separately regulated in some ACs, which establish maximum tariffs per service (i.e. per visit), usually distinguishing urban and non-urban spaces.

A special case is ambulatory rehabilitation care for brain paralysis, which in some cases is assigned maximum prices per month of full treatment.

Notwithstanding, as for the rest of services subject to maximum tariffs regulation, the price actually paid to providers is established in the singular contract agreed between the health service and the provider, either as a result of a public tender or as a product of the negotiation process between the parties.

### **3. Services of long-term nursing care**

There are long-term care programs in almost all ACs. In the "Spanish Health Care Benefits Report", long-term care programs of Catalonia ("Vida als anys"), Castilla y Leon, Galicia ("Pasos"), Valencia ("PIASS"), Cantabria and the Basque Country were discussed. Other regional programs that include these types of benefits are the Social Services Plan in Andalusia, the Elder Full Plan in Balearic Islands, the Elder People Care Plans in Aragon, Castilla-La Mancha and Madrid, the Long-term Care (*Socio-sanitario*) Plan in Galicia, and the Gerontologic Plans in Asturias, La Rioja and Navarre.

Regarding inpatient long-term care (HC.3.1), agreements with private providers are usual, and centres are selected by the regional health service according with their geographical localization and resources availability. The unit of payment is the stay (generally on a retrospective basis), and the payment per stay is

different according to the grade of dependence of the patient, the therapeutic complexity and/or the characteristics of the health care centre.

It has to be said that there is a diffuse line between those patients that are no longer acute, but need a large period of inpatient care, and those chronic patients whose care is a responsibility for social services in assisted residences. Hence, some long-term care programs distinguish tariffs for health support module and for social support module.

#### **4. Ancillary services to health care**

In order to purchase ancillary services, regional health services agree with private providers, sometimes putting services out to tender. The system of payment is similar to that previously described regarding certain surgical procedures: retrospective payment per case or fee for service, provided as prices were below maximum tariffs approved by health service. That is the case of diagnostic tests, imaging diagnosis and laboratory services.

Progressively, prospective payments are being introduced, and that is the case of transport services in some ACs. The aim of this strategy is to discourage excess of activity (and of spending) that is associated to the retrospective system of fee-for-service.

For example, in the Basque Country, maximum tariffs for transport services are a mixture of global prospective budget and retrospective fee-for-service payments. In the case of advanced life support level ambulances, there is a fixed daily payment (around 1500 euros in year 2004)<sup>9</sup>, and a fee for service that changes with the distance covered when the patient is moved outside the autonomous community. In the case of basic life support vehicles, the payment is per month and it changes depending on the availability (24 hours, from Monday to Friday, weekend). Finally, the services of non-care health transport are contracted by a fixed payment per month.

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<sup>9</sup> Order 28/07/04 passed by the Health regional Minister of the Basque Country.

## **5. Pharmaceuticals**

### **5.1. Pricing new medicines**

The Interministerial Committee for Pharmaceutical Prices (Comisión Interministerial de Precios de los Medicamentos: CIPM) is responsible for pricing pharmaceuticals. Although this committee is under Health and Consumption Department, some of its members belong to other Departments like Economic and Finance Department and Education and Science Department.

The CIPM fixes maximum ex-factory prices for each pharmaceutical (generics included) delivered nationwide which are financed by Social Security funds or other public funds attached to Health Care (Medicines Act 25/1990).

The Royal Decree (RD) 271/1990 on reorganization of interventions on human use pharmaceuticals prices establishes a series of mechanisms to fix prices of reimbursable new launched pharmaceuticals, as well as to revise prices of those previously marketed.

The basic criterion for pricing pharmaceutical products is to calculate ex-factory price (precio de venta del laboratorio: PVL) through the assessment of costs plus a percentage of profit. This industrial price is fixed by adding the percentage of company profit to the total cost.

Pharmaceutical cost is obtained as "complete cost", including research and technological development. Therefore, unit cost represents all costs of fabrication, including marketing and administrative expenses incurred. In order to calculate the cost, the following variables are taken into account: activity level, evolution of firm costs, evolution of firm sales, new drug sales estimation and the predictable impact on structure costs motivated by the production of the new drug.

Private profit for each pharmaceutical is set in a percentage, determined by a technical report on economic and financial situation of the company. This percentage must be in an interval whose bottom and top are annually established considering economic situations of pharmaceutical industry as a whole and economic policy forecasts. Therapeutic usefulness of new product is also taken into account, together with other criteria to prevent that treatment cost was disproportionate comparing to alternatives. With this aim, the company has to

provide information about similar products in the market, dosages and treatment costs.

These criteria for pricing prevent from unjustified or unnecessary costs, such as excessive payments for brand or technology licenses, advertising and promotion campaigns expenses that are inadequate for product characteristics, as well as those expenses that are unnecessary for the usual development of the company activity.

The procedure is the same for generics, although PVL is usually fixed with a 25% reduction with regard to original speciality.

The General Directorate of Pharmacy and Health Products (Dirección General de Farmacia y Productos Sanitarios), a body under Health and Consumption Department, hands price authorizations over to drug companies. On the other hand, new products prices are published in the official diary (Boletín Oficial del Estado: BOE).

There are no price interventions in OTC products; that is, OTC prices are free. Nevertheless, there are two different categories of OTC products in Spain: those in which advertising is allowed (advertising pharmaceutical products), and those in which advertising is not permitted (non-reimbursable ethic pharmaceuticals). The prices of the latter were liberalized in 1998, and government controlled price revisions during a transitory period, until December 2000.

## **5.2. Price structure of pharmaceuticals**

Wholesaler and retailer margins are established by Government in a general manner or by groups or sectors, taken into account technical, economic and health care criteria (law 25/1990). Margin to wholesalers regarding human use specialities whose PVL was not higher than €89.62 is set in the following percentages over wholesaler selling price (PVA) without taxes (RD 2402/2004).

- a) 2005: 8.6%
- b) 2006: 7.6%

In the case of medicines whose PVL is higher than €89.62, margins are set in the following amounts for every pack:

- a) 2005: €8.43
- b) 2006: €7.37

Retailer margins, that is, professional margins of pharmacies is set in a 27.9% of retail price (precio de venta al público: PVP) without taxes, for pharmaceuticals whose PVL is not higher than €89.62. Margin for medicines with a PVL greater than €89.62 is set in €37.94 for every pack in 2005 and €37.53 in 2006.

On the other side, margins to pharmacies regarding medicines financed by public funds will establish by applying pharmacy monthly bill the following deductions scale:

Table 3. Deductions scale applied to pharmacy monthly bill.

Total sales <sup>(*)</sup> up to euros	Deduction (euros)	Remainder up to euros	Deduction (%)
31.627,66	0	42.628,59	8,00
42.628,59	880,07	57.067,30	9,40
57.067,30	2.237,31	117.572,39	10,90
117.572,39	8.832,37	203.517,12	13,50
203.517,12	20.434,91	288.774,29	14,50
288.774,29	32.797,20	En adelante	15,00

<sup>(\*)</sup> Valued at retail prices including VAT (4%).

Source: own elaboration.

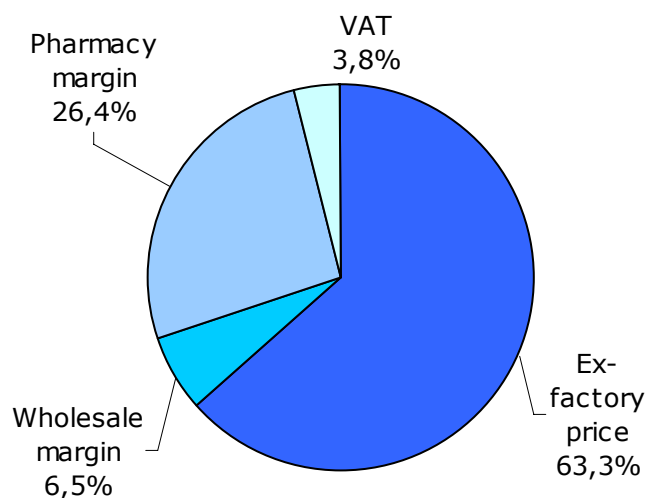
Just before the last changes introduced by the RD 2402/2004, the price structure of pharmaceuticals had been like table 4 and figure 1 show:

Table 4. Medicines price structure (1988-2002)

	1988/92	1993/94	1995/96	1997/98	1999/00	2001/02
Ex-factory price	58.2	59.9	59.3	61.7	62.7	63.3
Wholesale margin	7.9	8.2	8.1	7.6	6.6	6.5
Pharmacy margin	28.2	29.0	28.8	26.8	26.8	26.4
Taxes (VAT)	5.7	2.9	3.8	3.9	3.9	3.8
Retail price including VAT (RP+VAT)	100.0	100.0	100.0	100.0	100.0	100.0
RP+VAT/Ex-factory	1.7183	1.6697	1.6859	1.6207	1.5956	1.5202

Source: Farmaindustria.

Figure 1. Medicines price structure (2002)



Source: Farmaindustria.

With regard to medicines delivered in hospitals, all centres have pharmaceuticals services that are responsible for purchasing, dispensing and controlling medicines. Usually these services buy medicines directly from laboratories and they occasionally turn to wholesalers' mediation. Since hospitals have management autonomy, they can negotiate prices with their providers (there is price competition), as long as prices do not exceed maximum prices authorised by CIPM. In general, hospitals pay lower prices for medicines than those established by CIPM. Frequently, purchasing is put out to tender.

### 5.3. Reimbursement

There is a positive list of reimbursable medicines. General criteria that must be considered are the following:

- Characteristics of the different pathologies (seriousness, duration and later-effects)
- Characteristics of groups of patients
- Therapeutic value
- Restrictions of public expenditure
- Existence of already available medicines

The Royal Decree 1348/2003 that modifies RD 83/1993 establishes therapeutic subgroups reimbursable and non-reimbursable. The latter include those medicines whose indications are symptomatic or for minor syndromes, as well as those neither groups of medicines whose public financing is not justified nor is it considered necessary. The condition of reimbursable applies to medicines delivered by pharmacies as well as those supplied inside hospitals.

There are two categories of pharmaceuticals regarding co-payment:

- In general, medicines have a co-payment of 40% of retail price including VAT.
- Medicines prescribed for chronic illness have a 10% co-payment, with a maximum of 2.64 euros.

These co-payments are not applied to pensioners (retired population and people with permanent disability) or its beneficiaries. Another exemption is that applied to civil servants, which are under the MUFACE scheme. They have a 30% co-payment for all medicines, both employed and pensioners (an exception is also made for chronic patients).<sup>10</sup>

All medicines administered within the hospital are free of charge.

#### **5.4. Pharmaceutical prices updating**

In recent years there have been several general prices reviews for reimbursable medicines. In 1986 there were an across-the-board 3% price cut imposed on the introduction of VAT on medicines. In 1993 it was implemented a price cut of 3% as a result of a voluntary reduction in ex-factory sales prices applied by the industry by way of a contribution to the containment of public health expenditure; nevertheless, maximum authorised ex-factory prices were not affected. In 1999 the Government imposed a 6% average cut in maximum authorised ex-factory prices, annulling the voluntary reduction carried out in 1993; its net impact is estimated on a 3% price cut.

The Royal Decree 2402/2004 develops article 104 of Medicines Act regarding revisions of pharmaceutical prices, and also adopts additional measures to cut down on spending on drugs. This RD establishes that the Government could

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<sup>10</sup> With regard to avoidable copayments (i.e. reference pricing), we refer to pages 20 to 22 of the "Spanish Health Care Benefits Report". See the Annexes of the present report for the last regulation passed on this subject.

revise by trade general pharmaceutical prices by means of a Royal Decree (previously, the Government has to listen to concerned agents and this RD must be informed by State Council). Additionally, the RD 2402/2004 set a reduction in pharmaceutical prices to apply in 2005 (4.2%) and 2006 (2%).

Margins to wholesalers and pharmacists, as well as discounts applicable to pharmacies bill of medicines financed by public funds, are planned to be revised annually, taken into account the evolution of consumption price index (IPC), the growth in gross domestic product and the increase in pharmacies sales (RD 2402/2004).

## **6. Integrated Health Systems (capitation payments).**

The systems of resources allocation from purchaser to health care providers may be classified into two main categories (Ventura, 2004): a) functional systems, in which resources are allocated on the basis of the different functions to be made (primary care, specialised care, etc.), and b) integrated systems, where resources are allocated according to health care needs of the population, on a capitation basis. In this section we will summarize some of the recent experiences in this field that have been put into practice in Spain.

Following Ortún and López-Casasnovas (2002), capitation in finance shows relevant comparative advantages:

- It takes an integral view for the care of the population
- It allows for a certain decentralization of risks to health providers
- It fosters health medical effectiveness and its problem-solving capacities.

### **6.1. The experimental capitation scheme in Catalonia**

In year 2002, the Catalan Health Service (SCS) started a pilot experience in five health areas of the Health system.<sup>11</sup> The areas selected<sup>12</sup> were highly heterogeneous: from one with a population of 15 thousands people and a unique

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<sup>11</sup> According to the Health Department Order SSS/172/2002, the experience should go on until the end of the year 2003. However, Health Department Order SSS/38/2004 extended the trial for two additional years, until december 2005.

<sup>12</sup> Cerdanya, Altebrat, Baix Empordá, Alt Maresme-Selva Marítima y Osona.

health care provider to another with 150 thousands inhabitants and 8 different providers.

The experience carried out through the signing of a coordination agreement between SCS and health care providers. These agreements have to be annually updated and include the following minimum contents:

- Services to be rendered
- Providers participating
- Population covered
- Correction factor (see 2<sup>nd</sup> bellow)
- Assistance coordination targets
- Payment per inhabitant and its distribution among providers
- Composition of the follow-up committee

On the other hand, these agreements do not replace those previously in force, but are added to them as an additional clause. Furthermore, an annual regularization system is set between payment resulting from previous purchasing system and new capitation payment. That is, in order to prevent financial imbalances, the budget is initially assigned according to historical consumptions, and then, the differences between this criterion and the result of the procedure described bellow are negotiated through the following years.

The procedure for setting the capitation payment is as follows:

- 1st. The average capitation for the entire system is calculated by dividing global health care public budget into reference population. The global budget was the consolidated joint current budget of the SCS and the ICS (Catalan Health Institute) minus a series of items that were excluded: central services, teaching and research, tertiary hospitals and isolated hospitals.
- 2nd. An adjustment factor is introduced to reflect differences in health care needs. This factor only considers age and sex variables,<sup>13</sup> and is obtained starting from utilization data coming from CMBD ("Minimum Set of Basic Data") and medicines consumption. Nowadays research is being

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<sup>13</sup> The Health Department Order refers to socio-economic, demographic and geographical dispersion indicators.

made about including other variables like socio-economic features, education levels, immigration from non-OECD countries, etc.

- 3rd. The adjusted capitation payment is multiplied by population to obtain the global budget assigned to the health area. However, services directly financed by SCS are deducted from this amount, as well as expenditures in health care to residents delivered by providers in other areas. Analogously, health care expenses derived from assistance to non-residents are added to the budget.

When there are various providers (all cases except one), once global capitation payment is fixed for an area, partial capitation payments for the different product lines are calculated, and therefore SCS signs singular agreements with every health provider. These agreements, in addition to the corrective mechanisms previously mentioned, also include the eventuality that the SCS and the providers share risks regarding certain health benefits as pharmaceuticals or health transport.

## **6.2. Capitation experiences in Valencia**

The so-called "Alzira model" is one of the first attempts to put capitation into practice in Spain. This experience began in 1999, when *Hospital de La Ribera* started up its activity as the first public hospital managed by a private company in Spain. In year 2003, the administrative concession license was spread to include primary care management together with specialised care in Valencia Health Area 10 for a period of 15 years (2003-2018), renewable up to 20 years. The license was awarded to the same group of companies that had been managed *Hospital de la Ribera* since 1999.<sup>14</sup> The capitation payment is fixed in 379 euros for 2005, and is updated annually. The annual increase of the tariff will be the same of that experienced by the budget of the Regional Health Department (*Conselleria de Sanitat*), with the upper limit of state health expenditure growth, and the lower limit of consumption price index (IPC) rise.

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<sup>14</sup> A temporary union of companies (*unión temporal de empresas*: UTE) constituted by two saving banks (Caja de Ahorros del Mediterráneo: CAM y BANCAJA), two construction companies (Dragados and Lubasa) and an insurance company (ADESLAS) that owns 51%.

Few years later, in 2003, another administrative license was awarded to build and manage a hospital in Torrevieja (Alicante), which has not been yet open.<sup>15</sup> More recently, the government of this autonomous community has licensed the management of primary, specialised and health-social care in another Health Area (area 12, corresponding to Denia).<sup>16</sup> The contract is 15 years length and establishes a capitation payment of 413,11 euros per year. The amount of the payment is higher than in Area 10 because this agreement includes social-health care, what has been termed the “third age” of the Valencian model.

### **6.3. Other experiences: the proposal of capitation financing in Andalusia**

This proposal differs from the pilot experience of Catalonia in various senses:

- The capitation system in Andalusia is proposed for the financing of health care centres (mainly hospitals, but also Primary Care Districts, Health Areas, Hemotherapy centres, etc.).
- The model is extended to the whole region, not only to selected areas like in Catalonia.
- Finally, the Andalusian system is not exactly a method of payment (since there is no separation between purchaser and provider financial, risks are not transferred), but an instrument to assign budgets to public centres (or more precisely, to fix the growth rate of budgets), which tends to promote efficiency in the allocation of public resources.

In the case of hospitals, the model is based on two main variables: the population attached to each hospital and the adjusted prospective basic tariff. These two variables have been derived from the analysis of the available information systems regarding hospitalisation and Major Ambulatory Surgery (from now on MAS) events, assuming that the rests of product lines (consultations and emergencies) can be extrapolated. In this way, population attributed to each hospital as well as its prospective complexity-adjusted tariff is obtained (the latter is the weighted average of hospital discharges and MAS complexity). By

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<sup>15</sup> In this case, the UTE is lead by the insurance company ASISA, and also comprises saving banks CAM and BANCAJA, as well as two constructions companies and two private hospitals.

<sup>16</sup> The insurance company DKV (65%) and saving banks CAM and BANCAJA constitute the UTE.

multiplying the two factors (population and tariff) prospective budget is calculated for each public hospital.

The gap between financial resources consumed and the standard prospective budget determines the efficiency level of the hospital, that is, its relative position. This information is taken into account at the moment of fixing the rate of growth of the hospital budget in the following year. Thus, by means of a lineal formula, the rate of growth of the hospital budget depends on the gap between actual and standard budgets in previous year.

## 7. Public prices for non-reimbursable services

Most health care providers in Spain are publicly owned, and these public providers often render services that have to be financed by a third party. In these cases, public providers charge public prices that are passed by regional government regulations.

It can be said that, in general, public prices charged by health care providers are greater than prices paid by public purchaser to private providers. We can see this in the following table.

Table 5. Differences between maximum prices for contracting-out and Public Prices for two health care services in two Spanish regions (euros).

Catalonia (2005)	Tariff (max. price)	Public Price	$\Delta$ (%)
<i>Minor Ambulatory Surgery</i>			
Group 1	99.81	119.40	19,63
Group 2	129.83	146.45	12,80
Group 3	149.77	174.35	16,41
Group 4	179.76	209.2	16,38
Murcia (2004)			
<i>CAT Scan</i>			
Simple	55.00	88.74	61,35
Simple with contrasting	70.00	88.74	26,77
Double	90.00	128.52	42,80
Double with constrasting	110.00	128.52	16,84
Bonus for anaesthesia	90.15	91.80	1,83

Source: own elaboration.

Differences also exist between public prices charged by providers belonging to different regions for the same process. These differences, however, are generally smaller than those observed in regional maximum tariffs. An example of this is showed in table 6.

Table 6. Public Prices for Pathologic Anatomy's Services and for CAT Scanning in selected Spanish regions (euros)

<i>Pathologic Anatomy</i>	Murcia (2004)	Asturias (2004)
Electron Microscope diagnosis	244.80	240.00
Simple biopsy	48.96	48.00
Pre-operating biopsy	91.80	90.00
Immunoflourescence study	153.00	150.00
Clinical autopsy	919.00	901.00
Cytology	36.72	36.00

<i>CAT Scan</i>	Cantabria (2005)	Castilla-La Mancha (2005)
Simple study with or without contrasting.	99.18	102.27
Double study with or without contrasting.	143.86	148.12
Vascular study	134.39	138.95
Anaesthesia bonus	105.44	105.80

Source: own elaboration.

Public prices are updated through regulations passed by Regional Governments. Most of them try to adjust the evolution of monetary values to expected inflation, but some regional health authorities have followed alternative ways. Thus, in Aragon it was passed that, in absence of new regulations, public prices would be updated according to the growth of prices of those hospital services that are included in the general consumption price index (IPC).

## **8. Summary of answers to key questions**

### ***Are there official prices of tariffs?***

All regions establish maximum tariffs for services contracted-out with private providers. The tariffs are passed through regional health department orders and include maximum amounts that can be paid for all the services and processes that are liable to be subject of contracting-out.

The unit of payment changes depending of the health care category and type of service. Thus, maximum prices adopt the form of payment per case or process, fee-for-service or payment per stay.

Official prices and tariffs are set at the regional level, that is, the regional health department or the regional health service have the responsibility for setting these maximum payments. Nevertheless, prices actually paid to each provider are often negotiated in a bilateral manner. The particular conditions of payment are fixed in every singular contract and may differ between providers, as long as prices do not exceed maximum tariffs. Therefore, it is possible for a purchaser to pay different prices for the same service. That is not the case when prices are negotiated between the purchaser and a providers union or a professional association. For example, in the case of children dental care programs, negotiations usually take place between the public purchaser and the odontologists' official colleges.

Regarding official tariffs, although regional maximum prices are said to be set according to the tariffs in other ACs (as well as taking into account the tariffs used by private assurance companies), we have found substantial differences by regions. Prices paid (or, more precisely, maximum prices allowed) for the same treatment in different ACs noticeably differ. To illustrate this fact we can have a look at the example of oxygen therapy in table 7.

Table 7. Maximum prices for oxygen therapy in some ACs and INSALUD (euros).

	Concentrators	Liquid oxygen
Aragon (2005)	2.47	6.62
Basque Country (2004)	2.36	5.98
Castilla-La Mancha (2004)	3.31	9.17
Catalonia (2005)	2.26	7.00
Murcia (2004)	3.31	8.87
La Rioja (2002)	2.65	6.61
INSALUD (2001)	3.31	8.87

Source: own elaboration.

In this context, it is very likely for a provider to receive quite different prices by the same treatment in two bordering regions. An example of this can be found by looking at maximum prices for radiotherapy in Catalonia and Aragon. The gap between prices set in each autonomous community amounts up to a 10%

Table 8. Maximum prices for radiotherapy services in Catalonia and Aragon for year 2005 (euros).

	Catalonia	Aragon
<i>Complexity I</i>	729.84	753.00
<i>Complexity II</i>	1822.67	2240.00
<i>Complexity II</i>	2722.67	3059.00

Source: own elaboration.

Regarding in-patient curative care (HC.1.1), when the payment method is based on a price per unit of activity or production unit (more or less sophisticatedly determined), these unit prices are also passed by public regulations. Thus, in Catalonia, a Health Department Order establishes unit prices for structure-weighted hospital discharge and for complexity-weighted hospital discharge.<sup>17</sup> As well, in the Basque Country, as in other ACs with a payment system based on program contracts, a regional Health Department Order set maximum unit price for "DRG-weight unit",<sup>18</sup> and also fixes maximum tariffs for "Cost Assistance Unit" (UCA), according to the hospital complexity level.

<sup>17</sup> 1779,89 euros and 1761.37 euros, respectively in year 2005.

<sup>18</sup> 1614.50 euros in year 2004.

There are cases in which payments (prices) vary as a consequence of non-compliances of the contract clauses. Thus, the program-contracts based on the method of payment per weighted stay ("first generation" hospital production units like UPA, UCA, UBA, or "second generation" units) usually include sanctions when activity exceeds the volume planned, as well as if average stay is longer than agreed.

### ***How prices are updated?***

In general, all prices and tariffs are updated yearly. Nevertheless, regional health ministries regulations updating maximum tariffs are passed throughout the year (even at the end of the year in which the prices must be applied). The singular agreements between purchasers and providers include specific revision clauses that, in certain cases, provide for the updating of prices at the request of one side.

Criteria for updating prices are not quite clear. The global impression is that official maximum tariffs are updated without reassessing resource consumption, that is, the process includes only update of monetary values (this judgement arises from the fact that updates often result in uniform percentage increases for all services). More accurate "ad hoc" updates may be the result of bilateral negotiations between purchasers and providers in the context of every singular agreement.

In some cases, updating is associated to prices indexes, but even in those cases the regulation is a bit obscure. For example, Order 292/2001 passed by Navarre Health Department fixed tariffs for children outpatient dental care in year 2001, and established the updates for years 2002 and 2003 on the basis of the expected inflation. Additionally, the regulation set that tariffs for years 2002 and 2003 would be newly updated if actual inflation were greater than expected inflation in a 35%, in which case tariffs would be increased by a half of the difference between expected inflation and actual inflation. Linking update of the price for dental care services to the evolution of general price index is arguable. Otherwise, it is difficult to infer the reason why the deviation from expected inflation that causes the revision is exactly set in a 35%.

Another example: in Catalonia, maximum tariffs for haemodialysis services increased by a 2.9% in 2005, while maximum prices for oxygen therapy rose only a 2%. We can not say that this differential increase was due to different patterns in the evolution of costs. Probably, the decision resulted from a negotiation process between the regional health service and providers representatives.

## ***PART II. Cost assessment in Spanish Health Care Sector***

### **0. Introduction**

It is well-known that prices paid for health care services should be related to actual costs of those services. If prices do not reflect actual costs, services may be either under- or over-utilized. Establishing the true unit cost of health services depends critically on both the accuracy of the cost accounting methodology applied and the availability of information with regard to resource consumption.

The same as the introduction of prospective payment schemes is quite recent in Spain, the implementation of costing systems by Spanish health care institutions is not general. At present, it mainly covers publicly owned hospitals. There exists some evidence on the scope of cost accounting practices in the Spanish National Health System. For example, Monge (2003) reports the results of a survey conducted among public and private Spanish hospitals from October 1999 to March 2000 in order to examine the extent to which those institutions used costing systems. The main result was that 75% out of hospitals followed some cost accounting methodology, whereas the remaining 25% did not use anyone<sup>19</sup>. Therefore, around 200 hospitals in Spain might lack costing system, being 144 of them privately owned.

Until 1992 all those public hospitals under INSALUD authority were reimbursed for the costs incurred in providing health care services on the basis on historical expenditure. Hence, nothing similar to cost calculations existed. However, since 1993 various management changes have been driven in order to improve cost assessment and output measurement in Spanish health care sector. Firstly, the consolidation of the so-called "Hospital Discharges Minimum Set of Basic Data" (CMBD-AH), a set of standardized data on patients that are discharged from hospital, allowed the introduction of Diagnosis Related Groups (DRGs) as an instrument to measure the hospital case-mix and, further, for potentially deriving unit costs. Next, costing systems were formally introduced in hospitals under INSALUD authority by means of the SIGNO program. This program set an accounting methodology in such a way that, as a first phase (SIGNO 1), hospitals will be able to calculate average cost per service (i.e. department) and, in a

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<sup>19</sup> Sample size was of 115 hospitals (out of 798 hospitals). Extrapolation is subject to  $\pm 8\%$  error.

second phase (SIGNO 2), costs per clinical episode (i.e. term used to denote contact between patients and clinical services) will be calculated. Unfortunately, the only true improvement of the SIGNO 2 program over SIGNO 1 was a better definition of the costs centres accumulating full costs. Hence, each department was divided into smaller units characterized by the provision of "homogeneous" services called Homogeneous Functional Groups (Grupos Funcionales Homogéneos, GFH). In 1997 the SIGNO program was replaced by the GECLIF, one with the purpose of determining cost per patient and cost per process-DRG. Lastly, in a similar way to the project promoted by INSALUD, five of the Autonomous Communities with competences on health care developed their own systems. This process was initiated by Valencia (1992), followed by Andalusia (1993), Catalonia (1994), Galicia (1994), and the Basque Country (1998).

Therefore, to the best of our knowledge, there are seven costing systems that are being used by public hospitals in Spain:

- Analytical Management (SIGNO) of INSALUD
- Clinical & Financial Management Model (GECLIF) of INSALUD.<sup>20</sup>
- Economic Information System for Sanitary Management (SIE) of the Valencian Health Service.<sup>21</sup>
- Control System of Hospital Management (COANh) of the Andalusian Health Service.<sup>22</sup>
- Analytical Accounting Model (ICS) of the Catalan Health Service.<sup>23</sup>
- Economic & Financial Management Model (ALBABIDE) of the Basque Health Service<sup>24</sup>
- Cost Allocation Model per patient/process of the Galician Health Service.<sup>25</sup>

The structure of this Part II is as follows. In section 1 we present an overview of prominent features of the abovementioned cost assessment systems. Specificities of each program are explained with an emphasis on differences around cost constituents, structure of cost centres, and way costs are allocated from intermediate or auxiliary cost centres to final cost centres. No specific mention will be done for the Cost Allocation Model of the Galician Health Service, since it

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<sup>20</sup> INSALUD (2001<sup>a</sup>).

<sup>21</sup> Order, 8th June, of Conselleria de Sanitat y Consum. For a complete guide see Generalitat Valenciana (1995)

<sup>22</sup> For a complete guide see Junta de Andalucía (1995).

<sup>23</sup> ICS (1994).

<sup>24</sup> For a complete guide see Eusko Jauralitzza (1994).

<sup>25</sup> For a complete guide see Xunta de Galicia (1994).

applies the same cost accounting system as the SIGNO program does. Section 2 describes how unit costs are currently calculated for each of the OECD functional health categories. Differences amongst programs on the way costs are allocated to care products, patients, and clinical processes will be underlined. In section 2 specific points of Galician programs will be mentioned when it is convenient. Section 3 shows a brief reference to the implementation of *activity-based costing* (ABC) in Spanish hospitals. Finally, answers to key questions regarding cost-assessment closes this Part II.

## **1. Cost accounting systems used by public hospitals**

All existing programs use a *full costing* approach in order to allocate costs to intermediate (e.g. tests) and final products of health care (e.g. discharges). This allocation process is usually performed by steps, first accumulating costs in responsibility centres (i.e. cost centres) and next imputing full costs to final products. The way costs are allocated to products requires three stages, namely:

1. *Cost classification*: costs are classified by economic categories (e.g. salaries, supplies...) covering two broad groups, namely: staff or labor costs, and running costs.
2. *Cost accumulation* (or primary cost allocation): direct- (e.g. drugs) and indirect costs (e.g. rents) are attributed to responsibility units or cost centres (e.g. coronary care unit). In general, direct costs are allocated on the grounds of direct resource consumption (e.g. number of radiodiagnostic tests), whereas indirect costs are allocated in proportion to the volume of activity units (e.g. rents are allocated in proportion to squared meters of each center).
3. *Cost allocation* (or secondary cost allocation): costs accumulated in centres that provide services to other centres but not directly to patients (intermediate or non-revenue producing centres) are imputed to those centres that provide services that can be traced to a specific patient (final or revenue producing centres). For example, costs of laboratory tests are allocated to the different centres on behalf of which tests were performed. However, the way in which costs are allocated to final centres is not uniform. For example, while SIGNO allocates costs in a *step-down* fashion,

ALBABIDE allocates costs to final cost centres *directly*. Differences among programs will be explained later on.

The costing system we have just described, shared by all the programs, allows the following cost calculations:

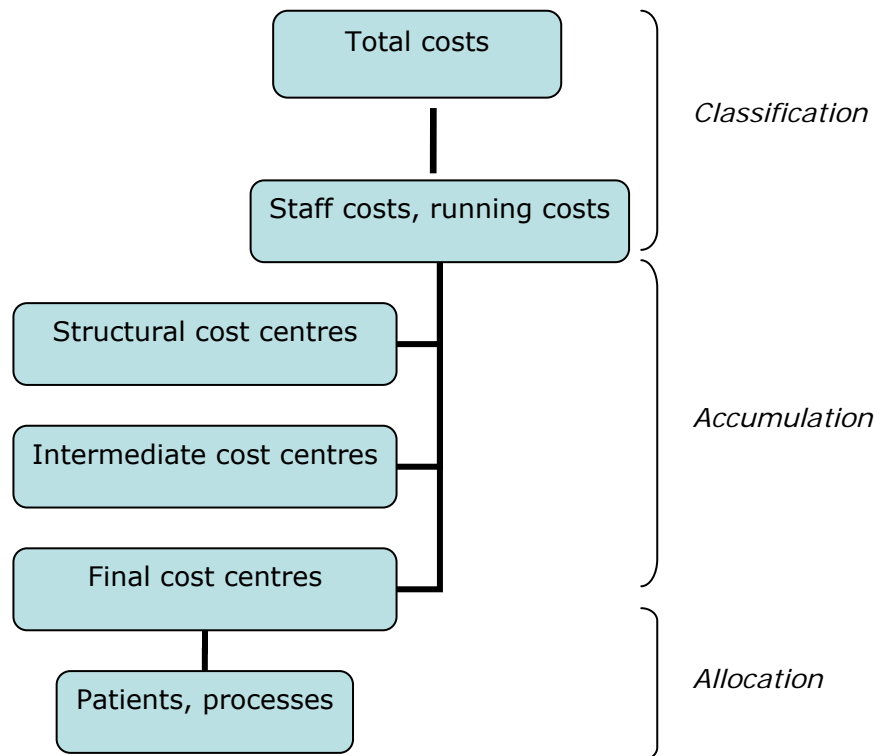
- a) *Cost per service* (i.e. a collection of cost centres that provide homogeneous products) and *cost per cost center*.
- b) *Cost per intermediate product* and *cost per final product*, both calculated by using a *top-down* methodology.
- c) *Cost per DRG*, by using ad hoc DRG-weights or, alternatively, imported from other settings.
- d) *Cost per patient* and *process*, by using patient-level utilization data (*micro-costing*).

However, even though all existing programs are compatible with *bottom-up* or *micro-costing* approaches, the fact is that available information is not rich enough in order to ensure that inter-patient variability is preserved. According to a report<sup>26</sup> published in 2001 by the INSALUD, barely 40% out of hospitals in which the GECLIF model was completely introduced (20 in 51) were able to calculate cost per process using patient-level data. Therefore, micro-costing is still a relatively scarce practice in Spain.

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<sup>26</sup> INSALUD (2001<sup>b</sup>).

Figure 2. Full costing approach



Source: own elaboration.

### Cost components accounted for cost calculations

Table 9 shows the different ways in which costs are decomposed by each program. Prior to describe each item in detail, some conclusions can be set from inspection of the table:

- It is noticeable that COAN and SIGNO are the programs consisting of more cost components.
- Staff costs are the only category that can be found in all the programs.
- Amortization is assigned the same entity as the remaining type of costs; with the only exception of the SIE program.
- None program includes capital costs.

Table 9 Cost components by program

COAN	SCS	SIE	SIGNO	GECLIF	ALDABIDE
Staff	Staff	Staff	Staff	Staff	Staff
Supplies	Supplies	Supplies	Supplies	Goods and	Supplies
Pharmaceuticals	Repairs	Contracting	Maintenance	services	Contracting
Contracting	Amortization	Services	Food	Amortization	Amortization
Maintenance			Working capital		Others
Services			Pharmaceuticals		
Amortization			Inventory		
			difference		
			Amortization		

Source: Monge (2003).

- *Staff costs*

As it can be observed, cost of personnel is an item included in each program. This category includes base salary, inclusive of pay-related social insurance, and, in general, whatever retribution (e.g. overtime) to staff. In the COAN system staff costs are allocated to cost centres according to real hours devoted to each activity by doctors and nurses. SCS, SIE, and SIGNO use activity rate (e.g. percentage of global dedication) as a cost driver. ALBABIDE allocates labor costs to the service to which personnel belong to. Lastly, GECLIF uses both real hours of dedication and activity rate as allocation criteria by depending on the qualification (A-level worker or B-level worker) of the staff member.

- *Supplies*

In COAN and SCS programs this category deals with running costs like fuel, water, food, and all kind of consumables like, for example, blood products. Furthermore, in case of the SCS program, contracts (e.g. rents) are included within this item. For the SIE program, supplies are intended to be both medical and non-medical consumables, as well as pharmaceuticals. A similar approach is followed by ALBABIDE, comprising pharmaceuticals, non-durable equipment, provisions, etc. The SIGNO program exclude pharmaceuticals and food from supplies, being these referred to non-durable goods, communications, energy, etc.

Overall, all the programs distribute supplies costs among different cost centres according to their consumption.

- *Pharmaceuticals*

For both COAN and SIGNO programs, allocation of medicines and drugs is based on cost per single dose.

- *Repairs*

SCS includes in this category reparation services provided by firms. Cost allocation is performed according to activity reports given by firms.

- *Contracting and maintenance*

The COAN program includes under this item overhead costs like housekeeping, laundry, hotel, etc. These costs are allocated to structural centre costs. With respect to maintenance costs, it is distinguished between general costs and specific costs. The former cost is allocated to a specific responsibility unit called maintenance center, whereas the latter one is allocated to the specific cost centre that has demanded services.

- *Goods and Services*

Only GECLIF includes these terms, which stand for running costs. Specifically, it ranges over the following components:

- Consumables (prostheses, pharmaceuticals...)
- Contracting
- Energy
- Communications
- Taxes and insurance costs
- Researching grants
- Travel allowances
- Workshops
- Other costs

Allocation of previous costs is based on volume of resources consumed by each cost center.

- *Amortization*

All the programs, except for the SIE, include this category, although some differences are held:

- COAN and GECLIF use a constant quotas system as a result from dividing the value of equipment by its useful life. Table 10 shows the number of years that should be taken into account according to the GECLIF program in order to reflect depreciation.

Table 10. Years of amortization  
(GECLIF program)

Fixed asset	Years
Medical equipments	7
Tools	7
Furniture	10
Computers	5
Others	10

Source: INSALUD (2001b).

- SIGNO follows the rule of working hours attributable to each fixed asset.
- SCS does not set any specific rule.
- ALBABIDE applies the same amount reflected in financial accounting.

- *Services*

SIE and COAN include in this category the following items: prostheses, transportation costs, and other health care activities like movement to another hospital in order to be performed complementary tests. Costs corresponding to these complementary tests are imputed to hospital of origin. For the remaining activities, allocation is directly performed to cost centres that demand the services.

- *Other costs*

ALBABIDE includes in this group costs concerning financial costs, allowances, banking services, taxes refund, and operating losses. These costs are allocated to centre costs specifically coined for this purpose (structural, financial results, and allowances).

**Costs centres and primary cost allocation**

As noted in section 1, second step of the full costing approach requires that costs are allocated to responsibility units or cost centres, characterized by the provision of homogeneous services. Table 11 shows that, although those centres receive different denominations, the structure is quite similar for all programs.

Table 11. Organization of centre costs

Program	Denomination			Cost centres
COAN	Responsibility centres			Cost centres Benefit centres
SCS	Activity centres			Structural Intermediate Final
SIE	Activity centres			Structural Intermediate Final Non-allocated
SIGNO	Homogenous (HFG)	Functional	Groups	Structural Intermediate Final
GECLIF	Homogenous (HFG)	Functional	Groups	Structural Intermediate Final
ALDABIDE	Services			Structural Intermediate Final

Source: Monge (2003).

- *Cost and benefit centres (COAN program)*

According to COAN, cost centres are those ones that give support to other centres. For example, laundry, housekeeping, administration, admission, etc. On the contrary, benefit centers are those that provide direct services to patients. Examples of benefit centers are cardiology, rehabilitation, emergencies, etc.

Both cost and benefit centers are object of further disintegration. In this way, cost centres are grouped into basic centres and central centres, whilst benefit centres are classified as either clinical centres or external centres. Basic centres are those characterized by providing non-care services to the whole hospital structure (e.g. housekeeping, administration, admission, laundry, cleaning, etc.). Central centres provide diagnostic tests and treatments (e.g. pharmaceuticals, clinical tests, genetic, radiodiagnostic) to benefit centres. Regarding benefits centres, clinical ones match specialized care like cardiology, rehabilitation, emergency, intensive care, etc., and external centres involve primary care institutions depending on the hospital.

- *Structural, intermediate, and final centres*

Although structural centres do not provide direct services, they hold hospital structure, involving maintenance, admission, hotel, etc. Intermediate centres provide services to final centres, transferring costs to them. Some examples of this type of cost centres are clinical tests, hematology, medical biochemistry, etc. Final centres provide direct services to patients. They are responsible of clinical episodes occurred at the hospital. Examples of final centres are radiotherapy, ambulatory surgery, hospitalization, etc.

Table 12. Cost centres (SIE program)

Structural	Primary
	Secondary
Intermediate	Treatment
	Diagnostic
	Logistic
Final	Ambulatory and emergency
	Hospitalization
	Non-allocated

Source: own elaboration.

According to the SCS program, structural centres are integrated by primary and secondary centres, and final centres contain auxiliary centres and main centres. Primary centres (e.g. maintenance) do not contact with patients, whereas secondary centres provide services to patients but not health care (e.g. admission, hotel, etc.). Auxiliary centres provide services to main centres, which

are coincidental with the different medical specialties. Examples of auxiliary centres are radiotherapy, ambulatory major surgery, intensive care, etc.

The SIE program (see table 12) divides not only structural and final centres into smaller centres, but also intermediate centres. Hence, this program establishes the most detailed list of cost centres.

- *Non-allocated centres*

These types of centres are exclusive of the SIE program. They are called in this way because of their costs cannot be allocated to another center. For example, research services, medical social workers, etc.

**Secondary cost allocation**

As a result of primary cost allocation, each cost centre accumulates staff and running costs. Next, through further allocation, accumulated costs are imputed from intermediate and structural centres to final centres.

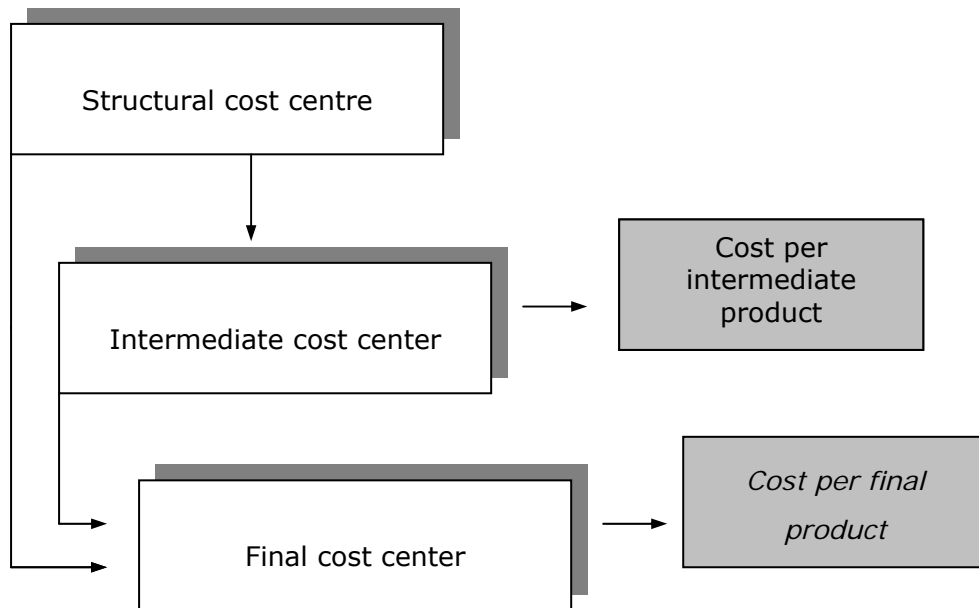
Methods of secondary cost allocation differ throughout programs. Shortly, we can identify three different procedures:

- a) SCS and SIGNO systems allocate costs by using a *step-down* procedure.
- b) Both COAN and GECLIF programs use the method of *reciprocal imputations*.
- c) SIE and ALBABIDE programs apply a *mixed* rule.

- *SCS and SIGNO programs*

Figure 3 depicts how SCS and SIGNO programs allocate costs by steps. A limitation of this procedure is that once costs from a structural or an intermediate centre have been imputed to other one, the former centre cannot receive costs from more centres.

Figure 3. Step-down cost allocation



Source: Adapted from INSALUD (2001).

The step-down procedure used by the two programs works as follows. First, cost centres that provide support to the entire structure, only yielding overhead costs (e.g. administration, laundry...), are allocated to both intermediate and final cost centres. Next, costs from intermediate cost centres are allocated to final cost centres, in such a way that the summation of costs attributed to final cost centres represents the whole cost of hospital.

Although both SCS and SIGNO programs use the same step-down methodology, they use different cost drivers in order to allocate costs. The SCS program uses as allocation base three alternative units of measurement: *ideal*, *possible*, and *minimum*. The last one should be used only in case not be available none of the remaining units. Table 13 shows various examples suggested in the SCS program concerning units for imputing costs between cost centres.

Table 13. Cost drivers of the SCS program

Activity	Ideal	Possible	Minimum
Maintenance	Hours of work of personnel	Reports of	Squared meters
Hospital admission	Admissions	Admissions	Admissions
Laboratory	URVs	Requests	UBAs

Source: Amat (2002).

Table 13 reveals that there are instances in which costs are allocated in proportion to some metric (e.g. Relative Value Unit, URV) designed to reflect the relative amount of resources used to yield intermediate products (e.g. laboratory tests), instead of unadjusted measurement units (e.g. admissions).

In a turn, the SIGNO program establishes allocation coefficients in order to impute costs between different cost centres. For example, maintenance costs are allocated in proportion to the frequency of breakdowns occurring in each cost center.

- *COAN and GECLIF programs*

In contrast to step-down procedures, COAN and GECLIF programs use the more sophisticated method of *reciprocal imputations*, which allows a cost centre whose costs have already been imputed to others for receiving costs from another centres. Thanks to this algebraic method consultations between final cost centres (e.g. allergology is asked to make a diagnostic for a patient of neumology) can be correctly imputed. In contrast, this type of activity cannot be captured by traditional step-down costing.

Both COAN and GECLIF programs allocate costs on the grounds of requested and provided activity. For example, GECLIF allows two criteria for imputing costs caused by radio-diagnostic:

- o Number of radiological determinations.
  - o Number or radiological determinations weighted by URVs according the type of tests performed.
- *SIE and ALBABIDE programs*

The SIE program combines step-down allocation and direct allocation. That is to say, costs accumulated in structural centres are allocated by steps to intermediate and final centres, but costs accumulated in intermediate centres are directly imputed to final centres on an activity basis. Table 14 displays an example of how different criteria are used to allocate costs according to the SIE program.

Table 14. Imputation rules (SIE program)

<i>Secondary structural centres</i>		<i>Allocation to intermediate centres</i>
Administration:		
Direction		Staff costs
Personnel attendance		Staff costs
.		.
Hotel:		
Cooking		Menus/Stays
Laundry		UMAs
.		.
<i>Primary structural centres</i>		<i>Allocation to intermediate centres</i>
Oxygentherapy		Squared meters/UMAs
.		.
<i>Logistic intermediate centres</i>		<i>Allocation to final centres</i>
Hospitalization		Stays
Out-patient consultations		Visits/surgery interventions

Source: Amat (2002).

The ALBABIDE program sets four different imputation levels. Level 1 is the optimum rule for allocating costs. In absence of such a level, one of the remaining levels must be used.

In a first stage, costs like labor costs and rents are directly allocated to services. The remaining costs require prior allocation to intermediate services. For example<sup>27</sup>, allocation from a laboratory service would be as follows:

Laboratory:                   Level 1: Costs are allocated as a function of real consumption of final services.

  Level 2: Costs are allocated through URV to final services on the grounds of specific sampling.

  Level 3: Costs are allocated through URV to final services on the grounds of non-specific sampling.

  Level 4: Costs are allocated as a consequence of number of tests requested by final centres.

## **2. Costing methods by functional categories**

### **2.1 Services of curative care**

#### **In-patient curative care**

There are different ways hospital production can be classified, depending on the type of responsibility centre providing services and the type of activity established in programme contracts or payment agreements. It is nevertheless true that such a production is commonly referred in the following terms:

- *Intermediate production*: that type of production performed by intermediate cost centres at the request of the centre responsible of caring the patient. Intermediate production covers:
  - *Logistic production*: menus, clothes, ...
  - *Diagnostic and treatment production*: radiological exploration, laboratory test, surgical intervention, ...

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<sup>27</sup> Adapted from Amat (2002).

- *Final production*: that type of production performed by final cost centres, leading to a discharge. Roughly, there exist five product lines:
  - Hospitalisation.
  - Ambulatory activity.
  - Extracted procedures activity.
  - Teaching activity.
  - Research activity.

#### *Cost per service and cost per cost center*

As a result of steps followed for allocating costs, each hospitalization cost centre accumulates its full cost, which is decomposed into *operational costs* (i.e. direct and indirect costs allocated to cost centres in the primary cost allocation), *imputed costs* (i.e. those costs imputed from an intermediate cost centre to a final cost center), and *structural costs* (i.e. those costs imputed from a structural cost center). Cost per hospitalization for a cost centre is simply calculated as the aggregation of the three types of costs, and cost per hospitalization service is the summation of all costs attached to the different cost centres involved in the service.

#### *Cost per product*

In general, cost per product is calculated as a ratio between the total cost of the centre cost and its production. In case of in-patient curative care, as well as ambulatory surgery, it is a common feature to all programs the use of some standardized unit of activity (e.g. Hospital Complexity Unit) in order to measure output in homogeneous terms. Hence, average cost per standardized unit of activity is calculated in the following way:

$$\text{Cost per UCH}_{(i)} = \text{Total cost}_{(i)} / \text{Total number UCHs}_{(i)}$$

where  $\text{UCHs}_{(i)}$  denotes the number of UCHs attributed to the specific cost centre  $i$ .

For example, if the number of patients discharged with cardiac events in a coronary care centre is 45 and the complexity weight to adjust each discharge is 1.2, then the equivalent number of UCHs is  $45 \times 1.2 = 54$ . This figure would be the denominator of the ratio. If total costs attributed to the coronary care centre are 75,000 Euro then the unit cost will be equal to 1,389 Euro.

The following table shows the different measures used by each program.

Table 15. Equivalent measurement units

Program	Measurement unit
COAN	EVA, UPA
SCS	UBA
SIE	URV, UMA
SIGNO	URV, UPA
GECLIF	URV, UCH
ALBABIDE	DRG
Galician Cost Allocation Model	UPA

EVA: Andalusia Valuation Scale; UPA: Weighted Assistance Unit;

UBA: Basic Assistance Unit; URV: Value Relative Units;

UMA: Average Assistance Unit; Hospital Complexity Unit;

DRG: Diagnostic Related Groups.

Source: own elaboration.

#### *Cost per process (top-down approach)*

For the estimation of the average cost per DRG relative weights for DRGs must be used (henceforth, DRG-weight). In this respect, until 1999 DRG-weights used in Spanish health care sector were those estimated by the US Health Care Financing Administration (HCFA). The HCFA's DRG-weights have been used to weight discharges and to reimburse services provided in hospitals. However, in 1999 the Ministry of Health (MoH) published a set of DRG-weights estimated from a sample of 18 Spanish hospitals<sup>28</sup>. The report published by the MoH shows that, in average, US DRG-weights are 40% higher than Spanish DRG-weights. Other studies<sup>29</sup> have found a narrow correlation between the structure of US DRG-

<sup>28</sup> Ministry of Health (1999).

<sup>29</sup> Cots (2001)

weights and the structure of DRG-weights estimated for Catalanian hospitals, although big differences arise for some specific DRGs.

Irrespective of what relative weights are used, cost per DRG attached to a final cost centre is calculated as follows:

$$\text{Cost per DRG}_{(i, j)} = (\text{Hospitalization costs}_{(i)} \times \text{DRG-weight}_{(j)}) / (\text{Discharges}_{(i)} \times \text{average weight}_{(i)})$$

where subscript  $i$  denotes the cost center, subscript  $j$  stands for a specific DRG, and the average weight of centre  $i$  is calculated in the following way:

$$\frac{\sum_{k=1}^n \text{Discharges}_{(i, k)} \times \text{DRG-weight}_{(i, k)}}{\sum_{k=1}^n \text{Discharges}_{(i, k)}}$$

where  $k = 1, \dots, n$  denotes the set of DRGs attached to the cost center.

An example will illustrate how cost per DRG is calculated in practice. Table 16 shows the hypothetical DRGs attached to a psychiatry cost center.

Table 16. Case-mix of a hypothetical cost center

DRG	DRG-weight	Discharges
430	1.5274	342
428	0.6880	110
751	0.5733	66
TOTAL	---	518

Source: own elaboration.

The average weight of the centre follows from inserting data relative to DRG-weights and discharges for each DRG in the previous equation. This calculation is  $(1.5274 \times 342 + 0.688 \times 110 + 0.5733 \times 66) / 518$ , yielding an average weight of 1.2276. Then, if hospitalization costs are, say, 100,000 Euro, it is easy to see that, for example, cost per DRG 430 ("Psychosis") will be  $(100,000 \times 1.274) / (518 \times 1.2276) = 240$  Euro.

Cost per DRG at hospital-level is immediately obtained by averaging costs per DRG at cost center-level. In other words, the average cost per DRG can be calculated as follows:

$$\text{Average cost per DRG}_{(j)} = (\text{Total costs} \times \text{DRG-weight}_{(j)}) / \text{Total discharges}$$

For example, imagine a hospital devoted to treat mental conditions only, in such a way that another centre to that we used for illustrating cost per DRG calculation is added. Suppose that hospitalization costs of this centre are 50,000 Euro, and that 100 patients have been discharged. Then, average cost per DRG 430 is equal to  $(150,000 \times 1.5274) / 618 = 371$  Euro.

The Allocation Cost Model designed by the Galician Health Service calculates cost per process in a different way. First, the so-called Patient Management Categories (PMC) system is used in order to classify patients according to diagnostic and consequent resource consumption. Next, a Relative Intensity Score (RIS) is allocated to each PMC. Then, total number of PIRs yielded by a hospitalization service is computed by multiplying the number of cases by the average PIR. Cost per PIR follows from dividing cost of service by number of PIRs. Finally, cost per PMC is obtained by multiplying cost per PIR by the score allocated to that PMC.

#### *Cost per patient and process (on a patient-level basis)*

Most of programs used by Spanish public hospitals allow for computing unit costs on a patient-level basis. However, as noted in section 1, for the majority of hospitals patient-level data are not available.

The way cost per patient is calculated is based on the accumulation of costs per intermediate product attributable to each patient (see figure 4). In this way, cost per process is the result of dividing the summation of all costs attributable to patients classified in a specific DRG and the total number of patients classified in the same DRG.

Different criteria are set to allocate resource consumption to each clinical episode of the same patient. For example, cost allocation attributable to personnel performing a surgical intervention is obtained as follows:

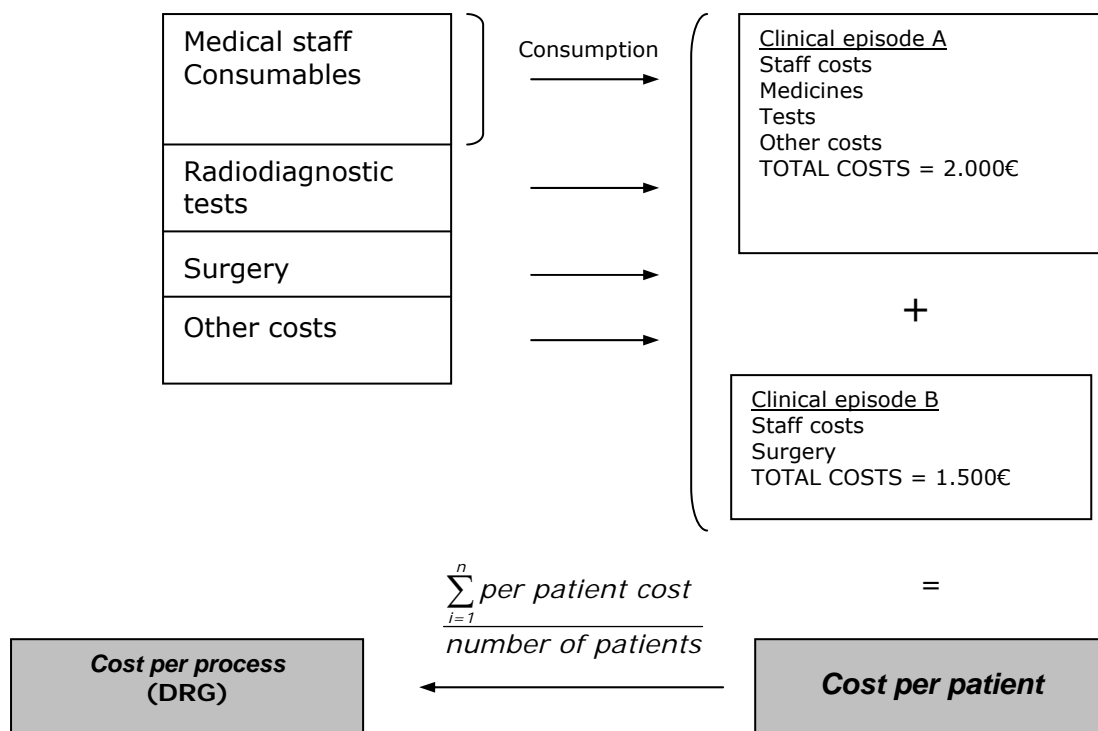
Cost per surgeon = Duration of surgery x Average cost per hour  
x Number of surgeons

Cost per anesthetist = Duration of anaesthesia x Average cost per hour  
x Number of anaesthetists

where average cost per hour =  $\frac{\text{Total cost doctors}}{\text{Hours}}$ .

In a turn, intermediate products are directly allocated on the basis of the number of tests, interventions, menus, etc. that the final centre cost has demanded on behalf of the patient. Finally, overhead costs and so on are imputed to each patient in proportion to the days in ward.

Figure 4. Cost per patient – process using patient-level data



Source: Adapted from INSALUD (2001c).

### Day cases of curative care

All programs apply the same measures (e.g. UCH, UPA, UBA) used for calculating cost per discharge in hospitalization services to ambulatory surgery costs. However, other specialized health care delivered in "day-hospitals" is commonly adjusted by using different units. This is due to that services are regarded as intermediate cost centres, being convenient to use some measures like Value Relative Units (URVs) that reflect the relative amount of resources needed to yield a treatment. For example, SIE, SIGNO, and GECLIF use URVs to make comparable very different health care products. This distinction is also applied to hospitalization at home (HC.1.4.) as well as some specific services like physiotherapy (HC.1.3.9.), and, in general, to any intermediate production.

Shortly, unit costs attached to abovementioned services are commonly calculated as follows:

$$\text{Cost per intermediate product}_{(i, j)} = \text{Total cost}_{(i)} \times \text{URV}_{(j)} / \text{URVs}_{(j, \dots, n)}$$

where  $\text{Total cost}_{(i)}$  denotes overall costs attributed to cost centre  $i$ ,  $\text{URV}_{(j)}$  denotes the number of URVs attached to intermediate product  $j$ , and  $\text{URVs}_{(j, \dots, n)}$  represents the total number of URVs corresponding to all types of intermediate products ( $j, \dots, n$ ) provided by cost centre  $i$ .

For example, if costs of an allergist service are 347,840 Euro, total number of URVs generated in that cost centre are 675,484, and URVs of a test for an adverse effect of a medicine are 20, it follows from the previous equation that cost per test is equal to  $(347,840 \times 20) / 675,484 = 10,3$  Euro.

### Out-patient care

Cost per outpatient consultation is commonly obtained by virtue of a weighting rule. For example, ALBABIDE sets first visits weight twice the one of successive visits, whereas GECLIF multiplies subsequent visits by coefficient 0.6. Hence, first visits unit cost will be calculated as follows:

$$\text{Cost per first visit}_{(i)} = \text{Total cost}_{(i)} / (\text{First visits}_{(i)} + 0.6 \times \text{Successive visits}_{(i)})$$

Where subscript  $i$  denotes the specific cost centre as usual.

Accordingly, unit costs for the remaining visits are calculated in the following way:

$$\text{Cost per successive visit}_{(i)} = 0.6 \times \text{Cost per first visit}_{(i)}$$

Finally, if information is available, it is possible to calculate cost per process for each type of consultation service. For example, the GECLIF program computes cost per process as follows:

$$\text{Cost per process}_{(i, j)} = \text{Cost per first visit}_{(i, j)} + [(\text{Cost per successive visit}_{(i, j)} \times (\text{Successive visits}_{(i, j)} / \text{First visits}_{(i, j)})]$$

where subscript  $i$  denotes the cost center, and subscript  $j$  denotes a specific process.

For example, if cost per first visit in a nutrition service amounts 10,064 Euro, cost per successive visits amounts 6,038 Euro, and the number of first and successive visits are of 43,770 and 81,901 respectively, then cost per process in that nutrition service is equal to 21,363 Euro.

## **2.2. Other health care categories (HC.2 – HC.4)**

In regards to rehabilitative services (HC.2), in-patient rehabilitation (HC.2.1.) requires using Hospital Complexity Units (UCHs) or similar complexity measures, therefore, unit costs are calculated the same as it was done for inpatient curative care. For ambulatory rehabilitation (HC.2.3.) visits are taken as measurement unit, applying weighting rules we explained previously. In consequence, cost calculations are analogous to those described in section 2.3.

Costs of in-patient long-term care (HC.3.1) are commonly calculated by dividing total costs of nursing services by the number of stays.

Costs of intermediate products including laboratory tests (HC.4.1.), diagnostic imaging (HC.4.2.), patient transportation (HC.4.3.), and other miscellaneous services (HC.4.9.), are all of them calculated according to equation explained in section 2.2.

### **3. Activity-Based Costing (ABC) experiences**

Traditional costing systems typically allocate indirect costs to products based on relative production figures. For example, we have seen that overhead costs like those caused by admissions are allocated to all centres providing health services based on, say, number of users that have been served. In general, the problem with this procedure is that it may attribute too high a cost to high-volume products and too low a cost to low-volume ones. In contrast, ABC assigns indirect costs based on the main activities within the hospital. Human and financial resources within a department or section are traced to activities, which are in turn traced to products and services. A key feature of ABC is that cost allocation is based on actual consumption of the services provided, measured by personnel time.

The scope of ABC practices in the Spanish health care sector seems to be restricted to two instances:

- a) A management guide<sup>30</sup> published by INSALUD in 2001 describes a tentative experience with four public hospitals, for which a *pseudo* ABC method was used.
- b) An ABC model is used in the Alcorcón hospital since 2000.

The methodology suggested by INSALUD adapts pure ABC systems in the sense that imputations to activities are only performed for those cost components more heavily weighted over the total cost of a specific clinical process, that is, personnel costs and supplies costs. On the contrary, indirect costs placed on the different cost centres will be allocated to the different products required by the process by means of allocation rules like those we have already examined.

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<sup>30</sup> INSALUD (2001<sup>c</sup>).

For example, suppose that part of total costs of a pathological anatomy service is due to activities related to a biopsy required for DRG 167 ("Appendectomy"). Then the pseudo ABC method establishes that personnel costs of activities required to perform the biopsy (e.g. macroscopy, microscopy and diagnostic, etc.) are measured in terms of minutes spent in yielding that product. Specifically, cost per minute<sup>31</sup> is multiplied by minutes required to perform the biopsy.

Table 17. Allocation of staff costs according to ABC

	Raw salary a year	Cost per minute	Minutes required per biopsy	Staff costs per biopsy
Specialists	54., 15	86	5	429
Other doctors	21,640	34	20	680
Nurses	19,144	30	0.5	15
Administrative officers	21,640	34	0	0
COST:				1,124

Source: INSALUD (2001c).

It has to be noted that the procedure used by the GECLIF program in order to calculate cost per process based on patient-level utilization data resembles this adaptation of the ABC method, although such as the own program recognizes<sup>32</sup> "with the difference that allocation to patient of resources generated by diagnostic treatments and therapies is performed through products and not through the different activities yielding such that products".

The Alcorcón foundation hospital was founded by INSALUD in 1996. It is, at the best of our knowledge, the only hospital in Spain with a successful ABC system (Eriksen and Urrutia, 2005). The ABC system that is implemented at Alcorcón hospital was initially designed to cover four clinical processes, namely: hernia, childbirth delivery, orthopedic surgery, and cataracts. Afterwards it was enlarged to ranges more processes.

<sup>31</sup> Cost per minute = (annual raw salary / hours a year) / 60.

<sup>32</sup> INSALUD (2001a), p. 112.

The Alcorcón's system enables hospital to calculate costs for three cost objects: activities, DRGs, and patients. Information on consumptions comes from cost documents like the following one:

*Table 18. DRG cost document (Alcorcón hospital)*

Clinical process:	Protocol No:	DRG code:	
Intervention name:	Intervention code:		
Location within hospital:	Day:		
Cost centre in which intervention is performed:			
Resources:	Type	Volume	Day
	Human		
	Technology		
	Consumables		

Source: Eriksen and Urrutia (2005).

In principle, the availability of an ABC system has contributed to Alcorcón hospital has been ranked as one of the top Spanish general hospitals by the IASIST association, Spanish affiliate of Solucient International, firm responsible of the Top 100 Hospitals in the US.

#### 4. Summary of answers to key questions

##### *How are costs of services established in Spain?*

It seems that the scope of cost assessment systems in Spanish health care sector is relatively limited. Costing systems are mainly implemented by publicly owned hospitals, so that, in principle, proportion of private hospitals lacking cost assessment systems would be lower than that for public hospitals.

Nevertheless, some exceptions to the typical pattern seem to exist. For example, this is the case of privately owned hospitals belonging to USP group. Such hospitals have an own cost accounting method able to assign direct costs to patients. Furthermore, there are regions in which implantation of cost accounting systems is very similar between public and private health care institutions. For example, a survey<sup>33</sup> conducted in Catalonia in 2000 found that 74.2% of hospitals that fulfilled the questionnaire declared that cost accounting systems were used, and although percentage is higher for public hospitals than for private ones, both are relatively closed each other (78.6% and 70.6% respectively).

Most of regional health services lack of an *ad hoc* costing system, using those (the so-called SIGNO and GECLIF programs) promoted by INSALUD before health care responsibility was transferred to all Autonomous Communities in 2002. Exceptions are Valencia, Andalusia, Catalonia, Galicia, and the Basque Country. These ACs have coined their own systems, although foundations of some of these regional systems are clearly based on the SIGNO program.

Cost calculations are mostly based on a full costing approach as opposite to other systems like direct costing or activity based costing. However, differences arise on the methodology used to allocate indirect costs to cost centers (step-down vs. reciprocal imputations) and also with regard to the approach used to measure resource consumption (top-down vs micro costing).

Indeed, as table 19 shows, not in all regions patient-level utilization data are available. Moreover, the extent to which micro-costing is used within each region is quite variable. For example, while 50% of hospitals in Madrid in which costing analysis was introduced by INSALUD calculate costs on an individual-data basis, only 10% do in Castilla La Mancha.

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<sup>33</sup> Amat (2002).

Table 19. Scope of micro-costing procedures in public hospitals

Autonomous Community	Micro-costing
Andalusia	A
Aragon	A
Asturias	A
Balearic Islands	A
Canary Islands	N,a,
Cantabria	A
Castilla La Mancha	A
Castilla León	A
Catalonia	A
Valencia	A
Extremadura	N,a,
Galicia	N,a,
Madrid	A
Murcia	A
Navarre	A
Basque Country	A
La Rioja	N,a,
Ceuta	A
Melilla	N,a,

A denotes that micro-costing is actually used by at least one hospital within the AC.

N,a, stands for Non available.

Source: own elaboration.

Costing models used by Spanish public hospitals commonly apply some metric (e.g. Relative Value Unit, URV) in order to weight amount of resources used to yield intermediate products like laboratory tests, radio-diagnosis, etc. Similarly, other units are used in order to take into account complexity of health care production like the so-called Hospital Complexity Units. However, there are still hospitals that do not use these kinds of measures and, in a similar way, there are some activities like out-patient consultations that are not weighted accordingly.

Source of data on resource consumption of public hospitals comes from catalogues of products validated by health authority; first INSALUD and, next, since competences were completely transferred, each regional health institute. Such catalogues describe volume and unit of measurement of non-durable goods required to perform each test or diagnostic. For example, typical catalogues are those referred to Pathological Anatomy, Pharmaceuticals, Clinical Physiology, Radio-diagnosis, ...

Unit of measurements are commonly referred as single items like, for example, units of sponges, units of blades, rolls of sticking plaster, and so on. Moreover, unit cost per consumable is also reflected in the same catalogue, valuing each consumable at market prices.

In the case of private hospitals, management of purchases is more flexible, negotiating prices directly with different providers. In a similar way to the public instance, those private hospitals endowed of cost accounting systems often also value supplies at purchasing prices.

In sum, costs in Spanish health care sector are typically calculated by disaggregating total expenditure to cost centres, and then to patients and DRGs. Cost allocation from cost centres to patients and processes is not currently based on patient-level utilization data, but cost per process is often calculated by using DRG-weights.

## ***PART III. Analysis of Cost/Price assessment in Spanish Health Care System***

### **1. Overall assessment of payment methods in the Spanish National Health System**

Following Waters and Hussey (2004), pricing health services must ensure that:

- a) providers are fairly reimbursed
- b) prices reflect the costs of services and promote system sustainability
- c) the pricing system supports the practice of an appropriate medicine and so rewards care that leads to good health outcomes.

In Spain, one could hardly say that these targets are fulfilled by the methods of pricing services and paying to providers. The more advanced system of payment is that implemented in Catalonia, since this is the only Spanish AC in which there is a general separation between the financing body and the providers. Thus, it is the only region in which purchasing in a strict sense and therefore pricing have become common practices in almost all levels of the public health care system.

The remaining ACs have developed methods of payment (very similar between regions, although different according to the type of health care service) that are applied when health care benefits are contracted-out. These are, with few exemptions, retrospective payments. Otherwise, regional health authorities use systems to allocate budgets to public providers that, progressively, have incorporated efficiency-promoting mechanisms. However, none of these methods for assigning budgets imply that financial risks are completely transferred to providers.

The payment system to hospitals in Catalonia can be viewed as a mixed system, prospective and retrospective at the same time. In this system, payments to hospitals reward what they are (the structure component, that include the retrospective dimension) and also what they do (the case-mix component). Nevertheless, the Catalan system is far to be an ideal system. As well as unit prices do not (necessary) reflect unit costs, as is discussed further, the Catalan system suffers from a series of additional shortcomings. Its main weakness perhaps is the enormous power that the system attributes to the Catalan Health

Service (SCS), which is the only client of most of the providers. On the other hand, the principle of the separation of purchasing and providing functions often stands formally, but not in practice, since SCS is co-owner of some health care provider centres (mainly hospitals constituted as public companies).

Regarding prospective capitation experiences in Spain, it is perhaps enough early to extract definitive conclusions. It must be said that purchasers consider that the success critically depends on the quality of information systems. Notwithstanding, this seems to be the right track. As Fernández-Díaz et al (2002) have pointed out, in the future, payment *per case* or historical budgets for hospitals, and capitation or historical payments in primary care, will be replaced with population-based global financing of services networks. The instrument will not be a blind capitation (better or worse adjusted by risk), but a set of integrated care plans specifically designed for groups of patients with homogeneous needs.

## **2. Summary of answers to key questions**

### ***Are there a clear conceptual separation between costs and prices in practice?***

There is a general agreement in academic literature on the process of setting prices for health services should be narrowly related to unit costs. However, a claim from Spanish private providers is that official prices are arbitrary payments not reflecting production costs. Hence, in general, prices are intended to be as a concept quite different from costs.

Paradoxically, public providers charge public prices that are greater than prices paid by public purchaser to private providers. Whether such public prices are related to costs is a question open to further research.

### ***Do unit prices reflect unit costs? What role do volumes play for this relation?***

Inside public health sector (that is, between public purchasers and public providers) there are no prices, in a strict sense. Notwithstanding, if the term "price" is used in a broad sense (as a synonymous of payment or budget), the impression is that the methods of payment between public agents generally ignore unit costs. The exception could be the assignment of budgets to hospitals

based in the program contracts, but in these agreements, unit prices (i.e. price per assistance unit or another hospital production unit) are calculated from historical costs data. In addition, as it has been mentioned, program contracts are a legal fiction, thus the budget that finally manage the centre is usually far from initially planned.

In the Catalan system of payment, product line budgets were set in 1997 according to actual payments in the previous period. That is, costs were not taken into account, because of the lack of liable and sufficient information. Obviously, costs are likely to differ from historical payments and this fact would be a sort of birthmark of the payment system. Financing authorities argue that, except in the case of high technology processes, the providers do not know the real costs of their services, thus it is not possible to say if prices are far from or close to costs. Otherwise, some research has been made by the providers<sup>34</sup> that show discrepancies between the structure of payment by product line and the distribution of costs by activity line. Although from this finding it may not be inferred that hospitals financing is or is not enough to cover the costs, the conclusion makes evident a possible shortcoming of the model.

On the other hand, prices paid by public purchasers to private providers in the context of contracting-out agreements do not reflect, in general, unit costs. The official tariffs that act as a reference-point to the negotiation of contracts are based on historical patterns and do not surge from costing estimations at all. The public financing body acts as a monopsony and the prices agreed usually depend on factors that have nothing to do with unit costs, but are related to institutional aspects of the market, such as the providers negotiating power or the degree of competition between them.

***Do discrepancies between costs and prices have implications on access o or delivery of appropriate care?***

In the context of contracted-out services, discrepancies between real costs and prices paid by public purchasers to private providers may, in fact, have implications on aces and/or delivery of appropriate care. When, for example, the price paid for a surgical procedure is insufficient to cover standard costs, private

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<sup>34</sup> Sánchez et al. (2000).

hospital may try to compensate this fact minimizing the costs incurred. There are different ways to do that.

- Using materials of lower quality
- Enlarging waiting times. That is, differing the intervention until there is a number of program procedures such as fixed costs (e.g. surgical room) are minimized.
- Programming interventions on weekends.
- Reducing times of post-surgical stay.
- Using generics in pharmaceutical treatments more intensively than usual.

***Do prices (or cost-estimations) differ when these are done for the “internal market” or for the cross-border one?***

Regarding this issue, we must refer to the regulation of the Spanish Health Care Cohesion Fund (Fondo de Cohesión Sanitaria: FCH),<sup>35</sup> a compensation system established by the Government to balance the cost effects of patient flows between ACs and from abroad. Regional Health Services of the ACs are compensated by FCH for the health care given to patients coming from other regions (with express authorization by AC of origin and in coordination with AC of destination), in cases of services unavailability or resources shortage in the region where the patient resides in. Additionally, ACs are compensated for the health care delivered to citizens from other countries that are entitled to receive those health care benefits by virtue of UE regulations or bilateral agreements on Social Security subject.

Regarding compensation for patients coming from other Spanish regions, the method is based in the calculation of a net balance of the compensable costs. These costs are determined with reference to a cost per DRG schedule that is established and updated by the Health and Consumption Ministry. Otherwise, when services have been supplied to foreigners, the compensation is calculated according to the net balance of actual costs. This balance is determined, at the national level, by the difference between the amount collected by way of health care given to foreign patients and the amount paid for benefits supplied to Spanish patients abroad, according to the international regulation that is

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<sup>35</sup> Royal Decree 1247/2002 (03/12/2002), which regulates the management of the Health Care Cohesion Fund.

applicable. The distribution of this net balance between ACs is proportional to the expenditures made in every region.

Otherwise, public prices charged to third party payers are the same, irrespective of the nationality of the person or institution that is obliged to pay.

***What are the most important barriers to cost assessment in Spain?***

Probably, the most important obstacle to get that cost assessment is a routine in the whole NHS is due to the separation between costs and prices verified in practice. As we know, prices and costs are two dimensions inextricably joined. However, as this report describes, the process of setting prices for health services is far away from reflecting cost information. The paradox is that, although there are costing systems promoted by health authority enabling public hospitals to calculate true unit costs, payments to hospitals are based on public tariffs, which are not aimed to reward unit costs, but they are set out of habit. Indeed, in many cases tariffs remain fixed in some value established in the past, not being updated systematically. Hence, although the availability of cost information is not still general in Spanish health care institutions (e.g. 25% of hospitals might lack of some type of costing system), the true is that incentives from the provider's perspective to develop such systems are scarce.

Any way, it is obvious that both methods and information available are susceptible of being improved in Spain. In this respect, two plausible directions of improvement could be undertaken:

- The project initiated by INSALUD for estimating relative weights for DRGs on the base on cost data from Spanish hospitals could be followed up. In fact, the document in which are described new DRG-weights suggests the convenience of extending the sample of hospitals involved in the project.
- Activity-Based Costing could be used as a norm towards which all hospitals should aspirate.

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## Annex

### Statutory Provisions for Maximum Tariffs and Public Prices.

<b>Maximum prices tariffs for contracted services</b>	
Andalusia	Order 18/3/2005, which regulates the application of maximum waiting times guarantees for health care procedures, first specialised health care consultations and diagnoses processes.
Aragon	Order 29/10/2004, passed by the Health and Consumption Regional Department, which regulates contracting-out of health care services (Complemented by Orders 02/02/2005 and 04/05/2005).
Asturias	Agreement 6/10/2003 of Government Council, which updates economic conditions for contracted-out health services. Agreement 16/12/2004 of Government Council, which updates economic conditions for contracted-out health services.
Balearic Islands	Decision 26130 of Balearic Department of Health and Consumption, which establishes prices and tariffs, and updates economic conditions for contracted-out health services.
Castilla y León	Agreement 26/12/2002 of the Regional Government, which updates economic conditions for contracted-out health and transport services.
Castilla-La Mancha	Decision 4/02/2004, of the Regional Health Service, which establishes economic conditions for contracted-out health services.
Catalonia	Decree 179/1997 of the Regional Government that establishes methods of payment for the purchase of health care services. Order 192/2005, passed by the Catalan Department of Health that establishes payment units in 2005 for social and health services included in "Vida Als Anys" program. Order 194/2005 passed by the Catalan Department of Health that establishes prices and other values mentioned in Decree 179/1997. (Orders 195 to 202 in year 2005 set maximum prices for different health care and ancillary services: dialysis, oxygen-therapy, nuclear medicine, rehabilitation, mental health, etc.).
La Rioja	Decision of the Regional Health Service that updates economic

	conditions for contracted-out health services.
Madrid	Order 1068/2003, passed by the Madrid Department of Health, which updates economic conditions for contracted-out health services.
Murcia	Decision 15425, of the Murcia Department of Health, which updates economic conditions for contracted-out health services.
Basque Country	Order 28/7/2004, of the Basque Department of Health, which establishes maximum tariffs for health services.
Valencia	Order 7/8/2001, of the Valencia Department of Health, which updates economic conditions for purchased health services. Order 7/2/2005, of the Valencia Department of Health, which establishes economic conditions for oxygen therapy services. Decree 25/2005, of the Regional Government Council, which regulate the statute of the Regional Health Service.
INSALUD	Decision 28/3/2001, of the National Health Service, which updates economic conditions in 2001 for health services delivered by contracted suppliers in National Health Service's territory.
<b>Public prices schedules</b>	
Andalusia	Order 19/12/2003, of Andalusian Department of Health, which updates public prices for health services delivered by the Regional Health Service.
Aragon	Legislative Decree 2/2004, of the Regional Government, which passes rules for Statutory Aragon's Health Service. Decision 2/04/2004, of the Regional Health Service, which updates public prices of health services.
Asturias	Agreement 16/9/2004, of the Regional Government, which establishes public prices for health services.
Balearic Islands	Decision 8996, 11/05/2004, of the Regional Health Service, which establishes public prices for health services in 2004. Decision 8298, 05/05/2005, of the Regional Health Service, which establishes public prices for health services in 2005.
Canary Islands	Decision 15/04/2003, of the Regional Health Service, which updates public prices for health services in 2003. Circular 15/12/2004, of the Regional Health Service, which establishes public prices of health services in Canary Islands University Hospital and Tenerife Mental Hospital in 2004.
Cantabria	Decree 13/2004, 12/02/2004, of the Regional Health Service,

	<p>which establishes public prices of health services.</p> <p>Order 23/2005, 25/05/2005, which establishes public prices of health services.</p>
Castilla y León	Order 17/01/2000 passed by the Regional Economy and Finance Ministry, which establishes tariffs and public prices.
Castilla-La Mancha	<p>Decision 28/01/2004 of the Regional Health Service that establishes public prices for health services in 2004.</p> <p>Decision 24/01/2005 of the Regional Health Service that establishes public prices for health services in 2005.</p>
Catalonia	Decision 405/2005, 07/02/2005, which updates public prices for health services in 2005.
Galicia	Decree 159/2005, 02/06/2005, which establishes public prices for health services in 2005.
Madrid	Order 234/2005, 25/02/2005, passed by the Regional Health and Consumption Ministry, which establishes public prices of health services in 2005.
Murcia	<p>Order 3/3/2004 passed by the Regional Finance Department, which establishes public prices for health services in 2004.</p> <p>Order 9744 passed by the Regional Finance Department, which corrects public prices for health services in 2004.</p>
Basque Country	Order 24/07/2004 of the Regional Health Ministry, which establishes public prices in Basque Country in 2004.
INSALUD	Decision 26/12/2001 of National Health Service, which updates public prices for health services in 2001 in National Health Service's territory.

*Main statutory provisions for Pharmaceutical pricing and reimbursement*

- Royal Decree 271/1990, on reorganization of pharmaceuticals price intervention (article 5-section 1 abolished by Royal Decree 2402/2004).
- Order 17/12/1990 passed by the Health and Consumption Ministry, which develops RD 271/1990.
- Royal Decree 164/1997, which establishes wholesalers margins (article 1 modified by Royal Decree-Law 2402/2004).

- Royal Decree 165/1997, which establishes retailer margins. (Royal Decree-Law and RD 1238/2003 modify article 1 and add a Unique Additional Regulation; modified by RD 2402/2004).
- Order 09/03/1999 passed by the Health and Consumption Ministry, which revises non-reimbursable pharmaceutical prices.
- Royal Decree-Law 6/1999, of urgent measures of liberalization and rise of competition.
- Royal Decree 1035/1999, on reference price system.
- Royal Decree-Law 12/1999, of urgent measures to restrain pharmaceutical expenses in NHS.
- Royal Decree-Law 5/2000, of urgent measures to restrain pharmaceutical public expenditure and to rationalize medicines use (modifies RD 164/1997 and 165/1997)
- Order 13/07/2000, which establishes homogeneous sets of pharmaceutical benefits and approves reference prices. (Subsequent regulations establish new homogeneous sets and reference prices: Order SCO/27/12/2001; Order SCO/2958/2003; Order SCO/3524/2003; Order SCO/1344/2004).
- Royal Decree 1328/2003, which modifies retailer margins.
- Royal Decree 2402/2004, which develops article 104 of Law 25/1990 (Medicines Act) for revisions of pharmaceutical prices and adopts additional measures to restrain pharmaceutical expenditure (modified by Decision 15/02/2005).
- Resolution 15/02/2005 passed by General Directorate of Pharmacy and Health Products, which modifies Annex to RD 2402/2004.

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