COMPARING THE COST OF ELECTIVE SURGICAL PROCEDURES IN THIRTEEN EUROPEAN COUNTRIES

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Professor Ron Akehurst,
Dean of the School of Health & Related Research

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SECTION 1

THE BACKGROUND TO THE STUDY

INTRODUCTION

National Health Service patients in England and Wales may be offered the option to receive treatment in other countries in the European Union, later this year, if they cannot be treated within the UK without "undue delay"[1]. This policy decision follows a European Court of Justice Decision in July 2001.

The case of the 12th of July 2001 concerned the hospital treatment of a Dutch person, carried out in another member-state Austria[2]. The Court ruled that: 'Article 59 of the EC Treaty (now, after amendment, Article 49 EC) and Article 60 of the EC Treaty (now Article 50 EC) do not preclude legislation of by a Member State; to limit payment of the costs of a citizens treatment provided in a hospital located in another Member States to cases where prior authorisation has been obtained from the insured person's sickness insurance fund or in the case of the UK Primary Care Trust. Also the re-imburesment of such treatment is subject to the following conditions:

1. the treatment must be regarded as "normal in the professional circles concerned", a criterion also applied in determining whether hospital treatment provided within national boundaries is covered

2. the insured person's medical condition must require that treatment. However, the requirement that the treatment must be regarded as "normal" is construed to the effect that authorisation cannot be refused on that ground where it appears that the treatment concerned is sufficiently tried and tested by international medical science

3. authorisation can be refused on the ground of lack of medical necessity only if the same or equally effective treatment can be obtained without undue delay at an establishment having a contractual arrangement with the insured person's sickness insurance fund.

Very simply this means that a citizen has no automatic right to expect that treatment abroad will be paid for by their own health care system unless there has been a prior agreement for this to happen or unless the treatment, if deemed appropriate, would not be available in their own country without undue delay.

Clearly the issue of "undue delay" means that patients on unacceptably long waiting lists for treatment have a case for demanding alternative treatment abroad. The UK Government have viewed this judgement in a very positive light. Rather than seeing it simply as a threat by which people could demand treatment in other European Countries they have seen it as an opportunity for the pro-active resolution of some existing waiting list problems by accessing spare capacity in other EU countries.

Because European Union decisions impact directly or indirectly upon all member states, it is safe to assume that policy moves similar to the UK will be made by most EU countries in the future allowing some freedom of movement for patients who need medical care unavailable (at least in a reasonable time frame) within their own country. Indeed we understand that similar policy moves are already being considered by Southern Ireland and the Netherlands

The thrust of this report is to examine in some detail the practical difficulties involved in the procurement of elective health care from other EU countries. Differences in the methods of classifying health care, counting health care, costing health care, reimbursing health care and in fact delivering health care in different countries across Europe make direct comparisons extremely difficult and the extra contractual referral process complex.

[1] BBC News Sunday, 26 August, 2001, 16:17 GMT 17:17 UK
[2] (Case > C-157/99, B.S.M. Geraets-Smits v Stichting Ziekenfonds VGZ): Http://curia.eu.int/en/cp/cp01/aff/cp0132en.htm

AIM OF THE PROJECT

The aim of this phase of the project is to undertake a comparative analysis of the price of a sample of elective surgical procedures in twelve EU countries, one accession country and Norway to describe the differences in the way the procedures are categorised and reimbursed. The Countries examined were:

- Austria
- Denmark
- France
- Germany
- Italy
- Netherlands
- Poland
- Spain
- Sweden
- England and Wales
- Finland
- Norway
- Portugal

The full results of the analysis are published on the Hospital Healthcare.com web site for European Health Care Managers comment and feedback are invited from the research team to help us continually refine the comparative framework.

OBJECTIVES TO THE PROJECT

The study is pursuing three inter-related but distinctive objectives. These are to:

- compare the different methods that each of the thirteen countries use to classify or group surgical procedures
- to compare the different methods of payment by the reimbursement authorities
- to compare the actual price of elective procedures across the thirteen countries

UNDERLAYING ASSUMPTION

In-order to make a direct comparison of costs / prices of elective surgical procedure costs in each of the countries compared we have had to make some assumptions which are currently being verified.

Firstly we have used the level of payment that the local purchaser, whether that is a Government or a Public Sickness Fund, would expect to pay for the elective procedure. The sources of data for each country are set out in fig 1 below:

Fig 1

COUNTRY	DATA	COMPILED BY	SOURCE (WEB ADDRESS)
Austria	LDF-Pauschalen und Zuordnungskriterien fur MEL-Gruppen	Bundesministerium fur sociale Sicherheit und Generationen Gruppe VII/A	http://www.bmsg.gv.at
Denmark	Takstststem 2002 - Vejledning	Sundhedsministeriet	http://www.sum.dk
Finland	Estimation on basis of data from sample hospitals.	The Association of Finnish Local and Regional Authorities	http://www.norddrg. Kuntaliitto.fi
France	Programme de medicalisation des systemes d'information (PMSI)	Ministere de l'Emploi et de la Solidarite	http://www.le-pmsi.fr
Germany	Fallpauschalen-Sonderentgeltkataloge	Deutchen Krankenhausgesellschaft	http://www.dkgev.de
Italy	Tariffe delle prestazioni di riabilitazione ospedaliera erogate in regime di dgenza Ex d.m. 30.06.1997espresse in euro	Ministero della Salute	http://www.ministerosalute.it
Netherlands	Tariefboek medisch specialisten Tarieflijst instellingen	College Travien Gezondheidszorg CTG	http://www.ctg.nl
Norway	Prisliste DRG 2002	Norwegian Patient Register	Http://www.npr.no
Poland	Communication on contracts for year 2002	Ministerstwo Zdrowia Slaska Regionalna Kasa Chorych	http://www.mz.gov.pl http://www.kasa-chorych.silesia.pl
Portugal	Portaria nº 189/2001 de 9 de Março 2001	Ministerio da Saude	Http://www.min-saude.pt
Spain	Resultados de la gestion analitica en los hospitales del INSALUD GECLIF 2000	Ministerio de Sanidad a Consumo INSALUD	http://www.msc.es/insalud
Sweden	The National Case - costing project	Center for Patient Classification System Socialstyrelsen	http://www.sos.se http"//www.pubcare.uu.se http://www.lf.se/sek/kpp.htm
United Kingdom	National Reference Costs	Department of Health	

It is clear that this cost or level of payment is the average and reflects what a hospital would expect to be paid by a public purchasers in their own country. Phase two of the project will investigate the level of payment that a hospital would require from an external purchaser i.e. another Country for use of excess capacity.

Secondly we have tried to ensure that all income or costs are accounted for. For example hospitals in some Countries charge a single price to the purchaser, which represents the total cost of the clinical episode. Hospitals in other Countries may cover capital costs separately through payments from other sources i.e. local government in such cases we are currently calculating the level by which prices in certain countries would need to be inflated as an estimate of the cost of capital deployed and depreciation of assets. The current calculations does not take into account this figures. The difference will be around 6%).

Some Countries separate out the hospital costs and the fees for Surgeons or Anaesthetists.

Similarly hospitals in some Countries are paid on a per diem basis (usually prospectively negotiated) whereby they receive a payment for the procedure followed by a rate per day during the hospital stay. In these circumstances we have made an estimate of the average length of stay in that speciality in that country. Again this assumption will need verification and potentially some adjustment.

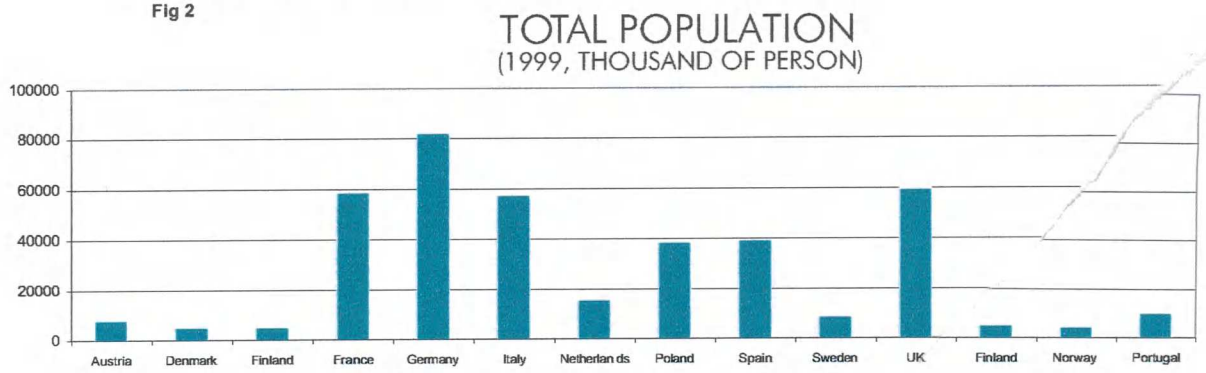
Finally most systems have a mechanism for identifying individual surgical procedures and a grouping system for reimbursement of clusters of procedures with similar levels of resource utilisation. The mechanisms for linking the procedure to the price grouping is clear in most countries. In France and Denmark, however, the mechanism for formal linkage is still not available to us. In this case, for the purpose of the exercise we have estimated which procedures go into which grouping based upon experience from other countries. Although we believe that this is probably quite accurate in the case of elective surgical procedures again further verification is being sought.

MACRO-STATISTICAL COMPARISON

In-order to place the comparison of the elective surgical procedure data into a context the research team felt that it would be useful to look at some of the differences in the ten healthcare systems at a macro-level.

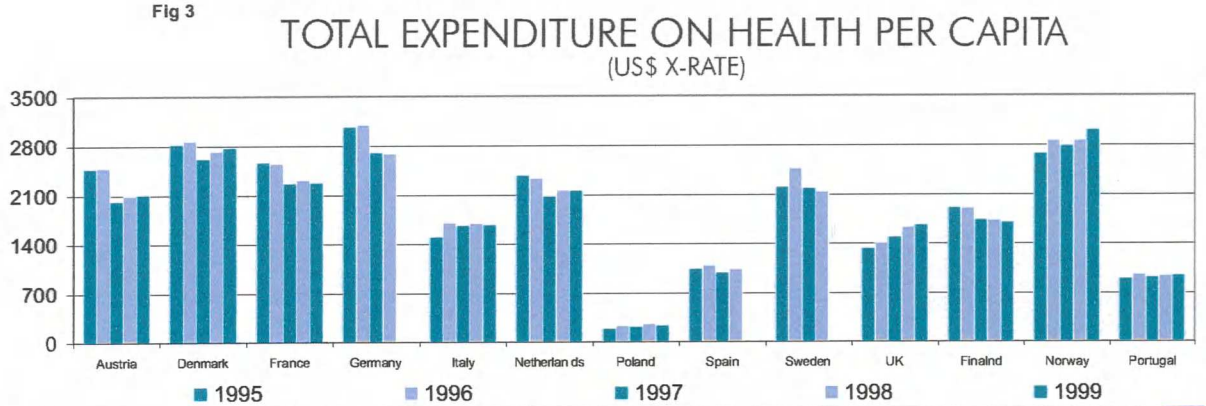
The populations of the Countries vary quite markedly (fig 2)

Fig 2



The UK, France and Germany have populations in excess of 60million, Holland, Austria and Denmark less than 20 million. Fig 3 shows the variation in health care expenditure for health in general per 1 member of the population.

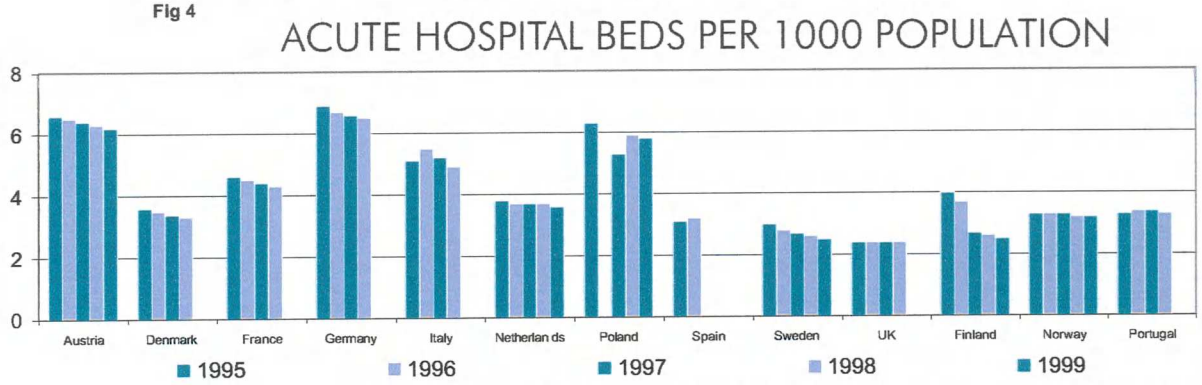
Fig 3



The UK is clearly an outlier in this area reflecting the relatively low level of investment (or greater efficiency) in healthcare as a percentage of GDP. In addition the UK seems to be the only country increasing rather than decreasing levels of health expenditures.

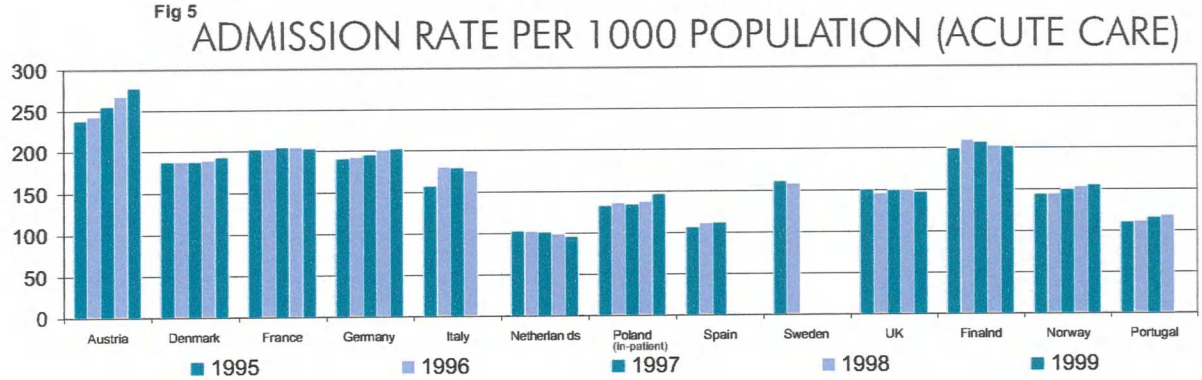
In addition to spending less on Acute Hospital Health Care Provision the UK provides less beds per 1000 population as shown below in Fig 4.

Fig 4



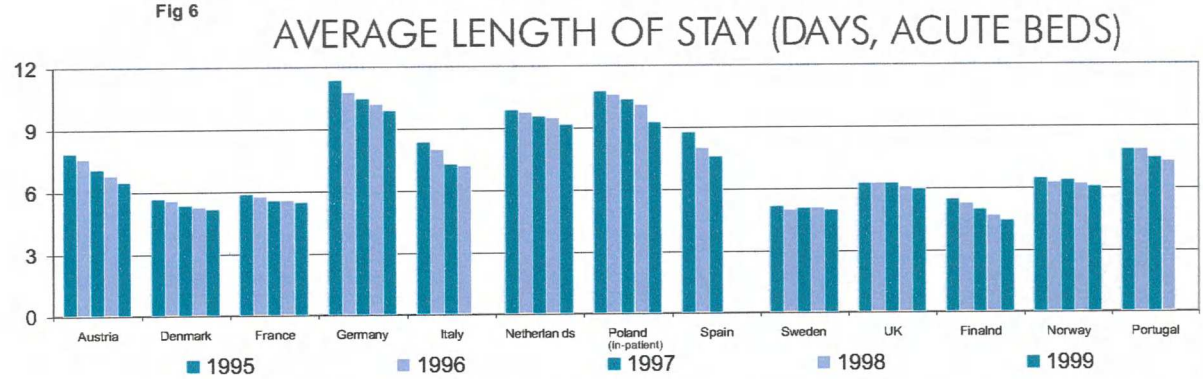
The numbers of beds shown in the UK may be skewed by the fact that a larger number of elderly people, then in other countries, are cared for in private sector Nursing Home provision.

Fig 5



Even though the expenditure in acute hospital care is relatively low in the UK admission rates are on a par with other European Countries (Fig 5). Holland has a relatively low admission rate. The reason for this is not clear at this stage.

Fig 6



As a product of high admission rates and low bed numbers, length of stay is very low in the UK. Similarly high bed numbers and low admission rates probably lead to higher lengths of stay in Holland. The subsequent section explaining the different re-imbursement mechanisms show that some systems, like Germany, have financial incentives for longer length of stay while other systems encourage greater efficiency.

SECTION 2

THE METHODS OF RE-IMBURSEMENT

THE SYSTEM
ENGLAND AND WALES

INTRODUCTION

Funding for the National Health Service is raised primarily through general taxation, although the government has recently hinted at the introduction of a specific direct tax. Other income is derived from direct patient charges, such as prescription charges and ambulance attendance fees for road traffic accidents. These are relatively insignificant and do not apply to hospital Trusts.

Revenue for Hospital and Community Health Services (HCHS) is devolved to commissioning organisations (Health Authorities and Primary Care Trusts) by annual revenue allocations. These are based partly on historic spending levels, partly on a needs basis (using a Resource Allocation Formula which includes weightings for deprivation, poverty etc) and partly through a bidding process for specifically targeted sums of money (e.g. for Booked Admissions).

Commissioning organisations and hospital Trusts negotiate an annual Service and Financial Framework (SaFF) which details how the allocations will be spent and what levels of service the Trusts will provide. The SaFF is used as the basis for Service LevelAgreements (SLAs) between commissioners and Trusts.

Service agreements account for around 90% of Trust income, with most of the balance coming from commissioners in the form of levies :

- Service Increment for Teaching (SIFT) is paid to teaching hospitals (typically large hospitals serving more than one district) to finance undergraduate teaching for medical students.
- Research and development levies are paid to all Trusts engaged in R&D.
- The Post Graduate Medical Education (PGME) levy pays 50% of the salary of non-consultant medical staff, i.e. House Officers, Senior House Officers, Specialist Registrars.

Less than 1% of Trust income comes from private patients and these are normally overseas emergency admissions who are not covered by a reciprocal funding agreement between their own country and the UK.

Capital funding for Trusts is received from three sources :

- Minor block allocation given to the Trust to cover small capital investments.
- Regional capital funding. Trusts wishing to access this funding are required to submit a detailed business case to the local Regional Office of the NHS Executive. Regional Offices will be replaced by Strategic Health Authorities from October 2002.
- Central capital, e.g. the Treasury Capital Modernisation Fund.

All capital expenditure is subject to "capital charges", made up of depreciation and 6% interest on asset value. Capital charges are included in the revenue allocated to commissioners and paid to the Trusts through service agreements.

DETERMINATION OF SPECIALITY PRICES

Every five years, Trusts undertake a recosting exercise to determine the level of cost within each specialty attributable to each commissioner. Costs are attributed to Healthcare Resource Groups (HRGs), which are groups of similar procedures. In accordance with normal accounting practice, costs are allocated in various ways :

- Direct operating costs, such as consultant and anaesthetist pay costs, are allocated according to the length of theatre time required for an operation.

- Other pay costs, e.g. nursing, will be based on average length of stay.
- Direct non-pay costs such as drugs, intensive care, catheter lab costs etc are allocated on a usage basis.
- Indirect costs like pathology are charged according to the number of tests requested and so on.
- Overheads are charged on any appropriate basis, e.g. finance department costs are charged according to specialty turnover, rates are charged on floor area.

This gives a "fully absorbed" specialty cost for each HRG. The appropriate amount of any levy is then subtracted to give the patient treatment cost. This is allocated to commissioners according to the number of Finished Consultant Episodes (FCEs) carried out within each HRG, giving a casemix-adjusted average specialty cost for each commissioner. This is done separately for daycases, elective inpatients and emergencies. A similar process is followed for outpatient costs. Because of the retrospective nature of the recosting, the total cost attributed to commissioners will generally be 3 or 4% lower than total commissioner income. A global multiplier is applied to correct this.

In the period between recosting exercises, Trusts contract incrementally. Each commissioner will negotiate different changes to activity levels, funding, cost improvement programmes and so on. This means that average specialty costs will move away from the casemix-adjusted figure.

PUBLICATION OF REFERENCE COSTS

As part of the performance management process, the government has begun collecting and publishing reference costs. These were initially for a limited number of procedures, but are now published for all HRGs and all admission types daycases, elective inpatients, emergencies, outpatient first attendances and outpatient follow-ups. These are based on fully absorbed specialty costs, with three key differences :

- Costs of intensive care (ITU) and high dependency care (HDU) are treated separately and publish as procedures in their own right.
- Certain high cost procedures, such as chemotherapy are also treated separately.
- "Patient day truncation" is applied. The National Casemix Office collects activity and length of stay data for each HRG and identifies a "trim point" within which 95% of lengths of stay lie. The cost of any "excess bed days" beyond the trim point are then excluded from the HRG reference cost and reported separately.

For inpatient admissions, the data are presented in the form of a table, where each HRG is listed and figures given for number of FCEs, average cost across all Trusts, minimum cost, maximum cost and minimum/maximum within which 50% of Trusts lie.

PRACTICAL CONSIDERATIONS

Reference costs do not represent the full cost charged to commissioners, but subject to the addition of ITU/HDU costs and an assessment of excess bed days, they can be used to make a comparison between different public sector hospitals. In terms of comparison with private sector or non-UK hospitals, the reference costs are complete in that they include therapy services (e.g. OT, physio), capital charges, consumables including 28 days take-home medication and all employed and consultant staff pay costs. The principal exclusions, other than those noted, which apply to elective surgery are social care, which is not currently provided by the NHS, and diagnostic procedures, which are detailed separately within the reference costs.

The actual price a Trust would charge for using any spare capacity would depend on a number of factors, such as whether out of hours working would be necessary, the likely impact on contracted workload, an assessment of clinical risk and so on. This means that in practice any agreement for additional activity would be subject to separate negotiation with the commissioner concerned.

SUMMARY

The cost of inpatient care in UK public sector hospitals is accounted for on a fully absorbed basis. The published reference cost excludes certain aspects of care, such as ITU and excess bed days, which are dealt with separately. The actual price charged to commissioners includes average levels of ITU and excess bed days, but excludes costs met through central levies. The actual price charged for additional work would depend on a separate assessment of the cost of the proposed activity.

THE SYSTEM
GERMANY

INTRODUCTION

The German hospital sector has experienced considerable changes in the last decade from a position pre-1993 when they received fixed budgets covering all costs to the gradual introduction of a prospective case based payment system which shifts some of the financial risk from the payer (sickness fund) to the provider (hospital). Healthcare managers in most EU countries will recognize this drive towards greater efficiency and cost containment.

The 1972 Hospital Financing Act introduced a dual financing system aimed at covering all of the costs of the hospital. This system was very favorable for hospitals in Germany.

The dual financing principle meant that Capital investment costs were covered by the Regional Government (*Länder).* The revenue or running costs were covered by the sickness funds and income from private patients.

The revenue or running costs include all personnel costs (hospital physicians are salaried employees of the hospitals). The heads of medical departments usually had the right to charge private patients for medical services on top of the hospital charges.

Capital Costs - In order to be eligible for *investment costs*, hospitals have to be listed in the Regional Government (Lander's) hospital plan. These plans often detailed the range of specialties required in each hospital and even the number of beds in each specialty.

The development of hospital bed capacity and the money invested in hospitals, varies widely between the different Regional Governments or *Länders* . Between 1991 and 1998, Berlin, which had the highest number of beds per capita, reduced its bed numbers by more than one third. Similarly Brandenburg and Saxony have reduced their capacities from well above the average to well below. On the other hand, modest reductions in bed capacity in Bavaria and Rhineland-Palatinate have moved them from well below average to an average number of beds per capita.

Preventive and Rehabilitation institutions are not normally listed in the Regional hospital plans. As a result they receive little or no reimbursement of capital investment costs by the state government. Instead they have to rely solely on reimbursement through negotiated contracts with the sickness funds.

Revenue or *running costs* - the full cost cover principle meant that whatever the hospitals spent had to be reimbursed. The actual remuneration was done through per diem charges which were retrospectively calculated by the state for each hospital. However within each hospital, all per diems were equal. The original Hospital Financing Act remained the main legal basis for the German hospital sector until 1992.

In 1993 significant moves were made to increase hospital efficiency and contain costs. To facilitate this, the full-cost cover principle was abolished, i.e. the hospitals were allowed to make both profits and deficits, and *fixed budgets* were calculated for each hospital.

The growth rates of the hospital budgets were regulated by estimates published in advance by the Federal Ministry of Health (and retrospectively adjusted for the actual growth rate). In addition, however, the law allowed several exceptions for higher growth rates which led to expenditure increases well above intended growth rates. Also *nursing time standards* were introduced which led to an argument that new nurses would have to be employed as a result of this innovation, a further budget exception was allowed in this case.

Hospitals were allowed to offer *ambulatory surgery* and ambulatory care of inpatients for a few days before and after their inpatient treatment. The incentives for these services were initially weak, however, since remuneration was included in the fixed budgets.

Prospective case-fees and procedure-fees were introduced from 1996 for a limited segment of inpatient care. Fixed budgets were continued as an interim measure until this new prospective payment system took effect.

The purpose of the new system was to encourage hospitals to examine their operating practices and improve efficiency. If they were able to carry out procedures for less than the average cost they made a profit. If not they made a loss. Financial risk passed in-part from the Sickness Fund to the Hospital

Case-fees (FP) These are meant to cover all costs during the patient's hospital stay. They are based on a combination of a certain diagnosis (4-digit ICD-10, partly separated into elective and emergency) and a specific intervention (i.e. open appendectomy attracts a case-fee different from that for laparoscopic appendectomy).

Procedure-fees are reimbursed along with a (slightly reduced) per diem charge reflecting the length of time that the patient is in hospital. Procedure-fees are based on the intervention only therefore more than one procedure-fee may be remunerated per case.

Each of the procedures payable through case fees (currently more than 70) and the procedures payable through procedure fees (currently almost 150) is allocated a number of points reflecting resource usage or cost.

The number of points allocated to each type of case or procedure was originally set through an ordinance by the Federal Ministry of Health. The value of a point in monetary terms, however, is negotiated at Regional Government or *Lander* level. This means that the price of a Cholecystectomy may vary from region to region.

The original calculation of the number of points allocated to each case or procedure assumed a point value of DM 1 (approximately US $0.55). The number of points were calculated by taking the real costs of a relatively small sample of patients with the diagnoses/interventions in question and assuming a 15% reduction in average length of stay. This was still estimated to be two to five times higher than those for comparable DRGs in the USA.

In spite of this longer (calculated) length of stay, case fees are only about 4050% as high as comparable DRG reimbursements in the USA (This is due to differences in production costs i.e. salary levels, equipment costs etc.) In addition, German case-fee definitions include a specified maximum length of stay which will be covered; if the actual length of stay exceeds this maximum (which happens in around 3% of all cases), extra days are reimbursed separately.

The proportion of cases reimbursed through prospective case fees in Germany is currently less than a quarter, with wide variations both between hospitals and specialties. It is estimated that 12% of hospitals currently receive no prospective payments while in the remaining hospitals this form of payment accounts for 25% of both cases and reimbursement volume.

While no case-fees currently exist for medical, pediatric or psychiatric patients, more than 50% of cases in gynecology and obstetrics and about 60% of ophthalmologic cases are reimbursed in this way. Both the number of different case-fees and procedure-fees offered and the volume provided are subject to budget negotiations at a hospital level.

The Second Statutory Health Insurance Restructuring Act transferred the responsibility for maintaining and further extending the benefits catalogue by joint negotiations between the sickness funds and the hospital associations from 1999. Accordingly, early in 1998 the federal hospital organization founded a so-called coordinating committee to work with the federal associations of sickness funds and the private health insurers' organization.

All other cases are currently reimbursed by a two-tier system of per diem charges: a flat hospital-wide rate covering non-medical costs and a department specific charge covering medical costs including nursing, pharmaceuticals, procedures, etc.

Case-fees, procedure-fees and per diem charges are all part of the budget for each particular hospital. These German-style budgets are not budgets in the sense that the hospital will get an amount of money independent of actual activity. Instead, the budgets are targets established during the negotiations between the sickness funds and the hospital. The target budget establishes service numbers (for cases to be reimbursed by case and procedure fees as well as for cases reimbursed by per diem payments) as well as the rate per diems.

If the hospital reaches exactly 100% of its target activity, then no financial adjustment is made since the sum of all case and procedure fees plus the per diems equals the target budget.

If actual activity is less than the target, i.e. if the hospital has been reimbursed for more patients than it has treated, then it has to pay back income at a marginal cost rate. These rates differ depending on the specialties, which have under performed. For example 50% of case fees for transplantations, 75% of other case- and procedure-fees and 8590% of per diems. Similarly when a hospital over performs its additional reimbursed at rates are at marginal rates of 50%, 25% and 1015% respectively.

For the purpose of this exercise we have analysed elective surgical procedures re-imbursed on a Case Fee basis or (FP). We have used a price drawn from a national dataset, although we acknowledge that this will vary from region to region.

Because the capital costs of public hospitals are met separately from the revenue payment from the sickness fund. The local or regional government are normally the owners of the hospital and generally pay for buildings, equipment, maintenance and replacement. In this sense we have estimated that the price paid to the Sickness Fund is in effect subsidised by around 6%, although this amount was not added to the sum, on this phase of analysis.

In addition to the main streams of income German hospitals can charge patients co-payments. It would appear that these charges are relatively low so they have been excluded from the calculation at this stage.

THE SYSTEM
NETHERLANDS

INTRODUCTION

The role of the government in the field of licensing healthcare in the Netherlands has been a matter of debate for several years.

Major factors in the discussions are the role of the government in the planning of health care facilities, the option to regulate supply and demand through negotiations and agreements between health care insurers and providers, as well as the decentralization of and responsibility for highly specialised care.

In the 1960s and the 1970s, the expansion of health technology along with demographic changes in the population initiated a prolific building of new hospitals and health care institutions along with a steady increase in the overall cost of the health care system.

At the same time, however there was an underlying inequity in the distribution of the hospital facilities across the Country. In certain regions there was an apparent abundance of health care facilities, in other regions there was a shortage of certain type of facilities.

Article 22 of the Dutch Constitution[3] sets out the legal justification for specific governmental intervention to regulate the availability of health facilities to ensure an equitable distribution and comprehensive service provision in all areas.

The legal instrument which allows the Government to discharge this responsibility is the Hospital Provisions Act. This act regulates the supply and allocation of health care institutions. It was introduced in 1971 and complemented existing legislation which regulated payments for health care (Health Care Tariffs Act) and the health care entitlements of the insured, (Exceptional Medical Expenses Act and the Sickness Funds Act).

The original objective of the Hospital Provisions Act was to control the inflationary growth of the hospital sector at the time. Subsequent legislation, however, has moved away from the central planning concept and has de-regulated many aspects of healthcare provision with the exception of highly specialised care (Article 18) of the Exceptional Medical Services Act (*Wet op bijzondere medische verrichtingen*, WBMV).

This legislation continued central planning model for exceptional medical services, including highly specialised procedures. Moreover, the scope of this Law (WBMV) has been extended to exceptional medical services outside the hospital, including private clinics and independent treatment centres.

In order to achieve its objectives, the Hospital Provision Act introduced a licensing system. Legally all hospitals require a licence describing their bed capacity and their specialist functions. In practice the historic status quo was continued. About 10 years later the number of full-time jobs of specialists of each specialty was added to the licence. There is a mixed economy of Public and Private Hospitals. Private hospitals normally operate as Foundations since the law states that hospitals have to be run on a not for profit basis. Public Hospitals are normally municipalities owned by the local government.

It is forbidden, therefore to construct or utilise a hospital facility or to perform a medical service unless the Minister of Health has given a licence (article 6 para 1). This regulation is interpreted widely and applies to, *inter alia*, extension, refurbishing, and replacement. For example to start the function of cardiology in a hospital which does not have this function in its licence, the hospital has to apply to the Minister for an amendment to the licence.

[3] Article 22 of the Constitution, para. 1: "The government takes measures to promote public health". This impies a concrete task for the government. Social basic law has been further developed public health legislation to the extent that it entitles the population to good, functionally available, geographically and financially accessible health care.

Prior to ministerial approval, the Minister of Health consults with both the provincial authorities and the National Board for Hospital Facilities (*College bouw ziekenhuisvoorzieningen, CBZ)* to ascertain the need for the application

Once a hospital facility receives a licence it can apply for permission to charge fees to the consumers. The payment system for each category of hospital facility is established and the tariffs are fixed. Charging more than is allowed is considered as an economical offence.

The net consequences of this legislation is that the provision of care is more equally distributed throughout the country. Hospital bed capacity has steadily decreased during the last 30 years from approximately 4.5 beds per 1000 population to nearer 3 beds per 1000 population. Similarly the total number of hospitals has decreased by around 50 percent. Very few hospitals have officially been closed. Most "closures" have happened through mergers with one new hospital replacing two or three old ones.

In summary, the Hospital ProvisionAct has been relatively successful in achieved the objectives of the Dutch government of containing costs, a better geographical accessibility by a better distribution of hospital facilities within the country and by creating the right facilities. Norms and regulations have been created and during the years adjusted if necessary. Stakeholders in health care have had sufficient influence on the decision making process. The present legislation gives the Government the possibilities to pull the strings of the corset which is build up around the almost completely privatised health care providers. During the years the strings have sometimes been pulled too tight with too much regulation and too detailed.

Moreover, Article 18 was quite effective. It has prevented oversupply and stimulate effective use of technologies concerned. It also includes an effective sanction mechanism. Hospitals that ignore the regulation are subject to financial and administrative sanctions and will not be reimbursed by health insurance funds. However, the procedure is rather complex and takes quite some time. Moreover, the controlled technologies only cover a minority of the available technologies in the health care sector. For these reasons, and others, a new law was introduced providing a more flexible and effective method to regulate tertiary care.

PAYMENT OF HOSPITALS - CURRENT POSITION

Determining the cost of a procedure in the Netherlands is quite complicated, compared to the other Countries in the analysis. The calculation would include the following elements.

The *College Tarieven Gezondheidszorg* CTG is a special institution in the Netherlands which is responsible for creating (negotiating etc.) a list of tariffs setting out the maximum fee that can be charged by both an Institution and by individual specialists for carrying out a single procedure (the hospital and the physician are paid separately). The tariffs are applied to around 3000 institutions and 40000 independent medical specialists. The same institution approves the annual budget for each hospital

There are several important points to understand the whole procedure:

The Specialists fees

- Medical specialists both Surgeons and Anaesthetists are not usually employees of the hospital. They are generally independent practitioners or members of an independent group practice. Where they are employed by the hospital their costs are billed separately.

- The maximum fee which can be claimed by a specialist for each procedure or treatment is determined and published by the CTG. This is what they call **TARIEFBOEK MEDISCH SPECIALISTEN.** This book contains a comprehensive list of procedures along with the codes and the maximum fee which can be claimed.

The Hospitals fees

- Separate from the specialists costs are the hospitals infrastructure costs i.e. buildings, equipments, supplies, nursing and support staff etc. The tariff structure for these reimbursements are set out in a separate book by the CTG called the **TARIEFLIJST INSTELLINGEN**. This book contains around 1600 procedures. Each procedure has a code and price or tariff, which can be claimed. This tariff is supposed to represent the average cost of the procedure nationally. Several procedures have double code (for example A and C). The rate of reimbursement is the same for every hospital in the country.

Additional Charges

- In addition to the specialist and the hospital fees a weighting is available for procedures which are carried out at night or at weekends. This allows an uplift of 50% for procedures carried out at night during the week and through the day at weekend. An uplift of 100% is available for procedures carried out through the night during weekends. Because we presume that elective procedures would be scheduled for week days we have ignored this uplift for the purpose of our calculation.

- Finally there is a table published in the last issue of the tariefboek medisch specialisten which describes a percentage (sometimes positive or sometimes negative) which should be added or subtracted from the fees in the book. There are two variations of this percentage relating to procedures carried out either inside or outside of a hospital. This can have a big influence on the real fee (for example the alergology has a 114,6% extra in 2002 !!!). We currently do not fully understand how this component works, in particular when a positive percentage would apply and when a negative percentage would apply. On this basis we have left it out of the analysis but would welcome feedback from Dutch readers of the report on how we may include it in future.

In addition to the category of costs outlined above there is a further re-imbursement. This is the so called **VERPLEEGTARIEF**. This is a fee for each day the patient spends in hospital. This fee is calculated at a hospital level not constructed centrally by CTG . As a result it may vary in different hospitals depending upon the cost of, personnel or the efficiency of the hospital in terms of beds occupancy, throughput etc. It is normally strongly related to the hospitals budget. The CTG describe it in their website as an instrument for "closing" or "filling" the gap between the hospitals income and its costs. So if the hospital has a high costs which are only partially covered by it income through the tarieflist instellingen reimbursement, the deficit can be is divided by the number of patient days and charged as a additional per diem payment.

Because there is not one tariff of the per diem payment of hospitals, it was a subject of estimation and according to expert opinion the cost per day may vary from 250 to 500-600 euro per day.

The sum of money depends on length of stay, which is not known at this phase, too. Therefore another assumption was undertaken and it was formulated as follows; the length of stay in particular cases of treatment (particular procedure performed), reflects the average national routine as regards length of stay. Knowing the average length of stay in the cases (grouped according to DRG) in Denmark, and ALOS in Denmark and Holland inn all cases, it was calculated an index that helps to calculate (assumed) length of stay in particular cases in Dutch hospitals.

Finally it was shown that this was a big part of the costs of hospital care, prevailing all the above mentioned elements of costs in most of the cases. Appropriateness of the calculations should however be confirmed.

It is very likely that this complex system which generates significant transaction costs will be reformed in the near future. Like Germany the Netherlands appear to be moving towards a DRG system although the timescale is currently unknown.

THE SYSTEM

DENMARK

INTRODUCTION

Resource allocation decisions in Denmark are taken at several levels. The most significant resource allocation mechanism is the national budget negotiation which takes place annually between the Ministry of Health, the Ministry of Finance and the county and municipal councils. The Association of County Councils and the National Association of LocalAuthorities represent the latter bodies.

At this annual negotiation the following allocations are agreed:

- the recommended maximum level for county and municipal taxes;
- the level of state subsidies to the counties and municipalities, in the form of general grants, which depends on the size of county and municipal tax revenues;
- the level of redistribution or financial equalization between counties and municipalities in order to compensate for variations in the tax base of different areas;
- the size of extraordinary grants earmarked for specific areas needing additional resources.

Although the counties and municipalities are responsible for providing the majority of health services in Denmark, they must do so within the targets for health care expenditure agreed at this annual negotiation. Since most county and municipal spending on health care is financed through taxes on income (81%) and real estate (6%), the central government's strongest instrument of economic control over the counties and municipalities is the possibility of limiting or extending their tax revenue.

The counties and municipalities are not legally bound by this annual negotiation, but in practice there are few examples of significant tax increases beyond the agreed level and the central government can, in principle, sanction county and municipality behavior by withholding the grants that account for 13% of county and municipal health care financing.

In recent decades the predominant method for allocating resources to hospitals has been through prospective global budgets fixed by counties in negotiation with hospital administrators. These budgets were based on past performance and modified at the margin to account for new activities, changes in tasks and areas of specific need.

Global budgets for hospitals have been very effective tools for cost containment, although critics claim that the global budget system is inflexible and does not reward more efficient departments.

The county council decides large capital investments after discussion with hospital administrators, sometimes in collaboration with other counties. Smaller investments are decided by locally by hospital administrators. In 1993 some counties introduced contracts with hospitals. These contracts supplement the global budgets and are intended to raise awareness of the relationship between costs and activity and to create incentives to increase activity although they are not intended to introduce competition between hospitals.

These limited contracts vary from hospital to hospital but may include the following elements :

- achievement of general objectives for the county and additional general objectives for the individual hospital;
- specific objectives with respect to the quantity and quality of production, size of the global budget and underlying conditions;
- general and specific conditions;

- an appendix specifying departmental activity and setting priorities if the number of acute cases changes during the financial year.

Although these contracts are 'soft' in the sense that they are not legally binding and do not include specific sanctions if targets are not reached, persistent failure to fulfill a contract may be sanctioned by salary cuts or changes in managers' employment conditions. A recent trend has been to delegate management and financial responsibility to lower levels, for example from hospital to department level, with a view to increasing cost awareness. Department level budgets are fixed through annual negotiations between counties, hospital administrators and departments. Individual hospitals may make contracts with each department.

Counties are also reimbursed by other counties, either for the provision of specialist services or because patients have exercised their freedom to choose a neighboring hospital for their treatment. While this reimbursement is sometimes passed on to the hospitals involved, more often it is kept by the counties and treated as part of their general income. For this reason hospitals do not have any major incentives to attract patients from other counties.

PAYMENT OF HOSPITALS - CURRENT POSITION

About 60% of Danish doctors work as salaried employees in hospitals. A further 10% are involved in non-clinical work such as administration, teaching and research. Approximately 23% of doctors work as general practitioners.

Practicing specialists must be licensed by the county and are remunerated by the NHSS of a fee for service basis. Since almost 98% of the population do not pay specialists at the point of use, almost all of a specialist's income is derived from the NHSS. Very few doctors are employed in the private for-profit sector, either in clinics or small hospitals or in the pharmaceutical industry.

Paying providers a fee for services rendered is intended to promote productivity, but there is little evidence concerning the efficiency of this payment mechanism. In fact it has proved very difficult to control the expenditure of the NHSS, which has increased more rapidly than hospital expenditure. Health care professionals employed by municipalities (nursing home staff, home nurses, health visitors and municipal dentists) are paid a fixed salary.

Changes in the financing and budgeting of hospitals

The system of politically controlled global budgeting combined with cost containment efforts at the county level has proved to be effective in controlling expenditure on hospital services. However, the system provides limited economic incentives to increase efficiency at the point of delivery and limited incentives to increase activity if demand rises, contributing to problems with waiting lists for some treatment types. A number of different initiatives have been introduced to counter the negative aspects of the global budgeting system, both at state and county level.

Activity-based financing has been discussed at the annual negotiation between the central government, counties and municipalities. In 1997 funds were allocated to counties to allow them to experiment with activity-based financing. As part of the budget agreement for 1999 it was decided to introduce full diagnostic-related group (DRG) payments for patients treated at hospitals outside their home county (under the 'free choice' scheme introduced in 1993), a change that is expected to increase incentives to treat patients from other counties. This change may also lead to greater competition between hospitals, since in many cases DRG rates are higher than the deliberately low rates that were initially applied to the 'free choice' scheme.

As in Germany and the Netherlands the latest central government strategy paper for the hospital sector (*Regeringens oplæg til strategi for sygehuspolitikken 2000-2002*) includes a global financing system based on an adaptation of the DRG system and negotiated activity targets for each hospital.

Under this system each hospital will receive an up-front budget frame corresponding to 90% of the DRG rates related to the case mix in the negotiated activity target, with the remaining 10% allocated according to actual activity.

Hospitals that perform more treatments than their negotiated 'target' will thus receive extra funds, thereby combining the advantages of global budgeting with activity-based financing.

Formally introduced in January 2000, implementation of the new scheme has varied between counties. The central government already has plans to encourage experiments in which more than 10% of a hospital's income is activity-based.

THE SYSTEM
AUSTRIA

INTODUCTION

Flows of funds in the Austrian health system are very difficult to quantify, given the regulatory environment (indirect administration by the federal government) and the fiscal equalization system operated by the federal government and the Länder.

Public health funding is raised primarily through contributions and taxes (about 70%). Private revenue sources finance about 30% of expenditure. In recent years, cost-sharing and patient co-payments have become increasingly important sources of financing.

According to Austria's national accounts, 15.71 billion Euro (ATS 216.2 billion) were spent on health in 1998. Because of the large number of players in the Austrian health system, an exact definition of the sources of finance is neither possible on the supply side nor on the demand side.

Within the public sector, social insurance is the major purchaser, funding about 70% of public expenditure on health; the Länder and local authorities contribute about 20%, and the federal government 0.5%. The 1998 federal budget allocated Euro 821.2 million (ATS 11.3 billion) for health care. The federal government's budget thus represented about 5.2% of public expenditure on health. The federal government seeks to use these funds to control activities in the hospitals sector and, thus, the health care system in general.

About half of public expenditure on health in Austria goes to the hospital sector. In setting budgets for hospitals, the federal government and the social insurance funds, which together fund about half of hospital expenditure, have to deal with the Länder, local authorities and private hospital owners. Under the distribution of powers laid down in the federal constitution, the federal government's authority is limited to the regulatory functions

The federal government and the states conduct periodic negotiations on intergovernmental transfers. The aggregate budget for the hospitals, which is financed by the health insurance funds, the Länder, the local authorities and the federal government, is negotiated every time the agreement between the federal government and the states is updated (Art. 15a B-VG, agreement on the reform of health services and hospital financing).

The last such agreement was concluded in 1997 for a period of four years. This 1997 agreement, the key clauses of which provided the basis for a reform of hospital financing, effectively created the framework conditions for establishing global budget control over the largest segment of health services and integrating all bodies allocating funds to the health system. The Federal Hospitals Act (B-KAG) calls on the states to provide hospital services. Under the 1948 Fiscal Administration Acts, the states are obliged to pay for the cost of establishing and maintaining adequate hospitals. In addition, the B-KAG provides that the states, as well as local authorities and hospital owners, shall contribute funds towards the hospitals' recurrent costs (section 34 B-KAG). Health insurance funds spend about one third of the contributions collected on public hospital services for insured persons and their dependants. In 1998, this expenditure item amounted to some Euro 2.69 billion (ATS 37 billion), and in 1999 Euro 2.81 billion.

PAYMENT OF HOSPITALS

Since 1997, slightly less than three quarters of the services provided by hospitals have been paid for under prospective arrangements. Some 30% are billed retrospectively, based on daily rates. Daily rates are charged, for example, for psychiatric patients in day-care facilities.

The amounts shown are the minimum funds managed by the Länder funds. These monies are allocated to the Länder funds in accordance with defined quotas and various instalments. The Länder may allocate additional resources to these funds under their respective state regulations.

Combined with additional lump-sum contributions made by the federal government, a total of Euro 465.5 milion (ATS 6.407 bilion) or 12.8% of total hospital funding came from the federal budget. 3.5% of the annual budget went to the structural fund.

After deduction of a number of flat-rate amounts, including ATS 30 million for basic services and planning activities, the remaining balance was distributed to the Länder funds in accordance with defined quotas. In the year 2000, social health insurance contributed some Euro 2.9 billion (ATS 40 billion) to public hospital funding. This was equivalent to about four fifths of the funds revenues.

Due to index-linking, the amount rose from ATS 37 billion in 1997 to ATS 40 billion in 2000. This amount comprises compensation for the cost of patients' hospital stays and all services provided by the hospitals' outpatient departments. This budget is set prospectively and rises with increases in the contributions collected17 (income-oriented spending policy). In 1998, 30% of social health insurance revenues were spent on hospital services.

The minimum level of financing to be allocated to the Länder funds in 2000 was Euro 3.64 billion (ATS 50 billion). Additional expenditure on teaching hospitals comprises of resources allocated by the federal government for construction and expansion projects to those public hospitals that also serve the medical faculties of Vienna, Graz and Innsbruck as teaching hospitals. The sum total is therefore ATS 55 billion, or 2% of the 1998 gross domestic product. This financing scheme covers about half of all hospitals, which provide some 70% of beds and employ 85% of hospital personnel (fund hospitals). This amount represents about 50% of fund hospitals' expenditure. The Länder, the local governments and/or the hospital owners contribute the other half.

There is a large variety of financing systems in Austria due to the autonomy allowed under state laws and regulations. Less than half of the funds required for hospital financing across Austria are allocated through Länder funds. In five Länder resources provided by owners are pooled in the Länder funds and hospitals are financed exclusively from these. Nonetheless, any deficits are still funded by the respective owner. In two Länder, the hospital owner's share of funding is separate from the Länder funds. In the two remaining states, part of the owner's funds are paid into the Länder funds and the balance is allocated externally. In all Länder investment expenditure and operating expenses are handled separately, as a matter of principle.

Funding for privately owned hospitals that are operated for profit is subject to separate social insurance regulations. In 1997, these hospitals were allocated a budget of Euro 65.41 million (ATS 900 million). This amount was also budgeted prospectively. Overall, expenditure for Austrian hospitals account for slightly less than 50% of total health spending.

Performance-oriented hospital financing system (LKF)

Under the performance-oriented hospital financing system (LKF) a modified diagnosis related groups system payments are based on flat per-case fees, which allows billing on the basis of actual services rendered by the fund hospitals. The current system of billing for inpatient services comprises two different areas of finance: the LKF core system and the LKF fund control system.

Within the LKF core system, a nationwide uniform number of points is allocated to performance-oriented diagnosis-related groups, with special rules applying to hospital stays below and above certain thresholds, stays in intensive care units, acute neurological follow-up care, geriatric care and intermediate psychiatric care. The number of standard points per case is determined on the basis of hospital stays and costs calculated for some 500 000 patients in 20 reference hospitals. The LKF core system has been developed continuously and updated since 1997 on the basis of practical experience and revised at annual intervals.

The definition of the LKF core system is adopted in the autumn of each year by the Structural Commission. Revisions take effect in January of the subsequent year.

The LKF fund control system can be modified to meet each state's needs and permits the recognition of specific supply side factors.

The individual performance-oriented diagnosis-related groups have been defined using a tree algorithm incorporating medical, economic and statistical criteria.

At level 1, the sample of patients from the reference hospitals were divided according to services provided and according to the principal diagnosis. The categorization by services was determined on the basis of those surgical interventions listed in the catalogue of services and a small number of other non-surgical treatments. At level 2, the homogeneity of services provided and the relationship between services, i.e. the principal diagnoses, were taken into account as well as the homogeneity of costs within statistically significant groups. Overall, 867 performance-

oriented diagnosis-related groups (LDF) were identified. The LDF points per diagnostic group (LDF flat rate) represent the median of the costs calculated for all patients in an LDF. Each LDF flat rate consists of an activity-related component and a daily charge component.

For intensive care units, separate surcharges per day have been calculated. The activity related component is based on the costs determined in the reference hospitals and allocated to patients for specific medical service items. Costs that could not be allocated to specific services, with the exception of the costs of intensive care units, are combined into the daily charge component, which depends on the length of the hospital stay.

For each LDF, an upper and a lower limit were defined for hospital stays. For the medical service item (MEL) groups, these limits were determined using patients within an 80% interval of all patients; for principal diagnosis groups (HDG), using patients within a 60% interval. For patients whose stay was shorter than the lower threshold of the average length of stay of their respective diagnostic group, a reduced rate was calculated based on the actual length of their hospital stay. For patients whose length of stay exceeded the limit, additional points were added for each additional day on a declining scale. In the course of recent revisions, some re-weighting was carried out in the core system by reducing the daily component and adjusting the length-of-stay intervals. Because of the continuous adjustment of this scoring procedure, services provided before 1999 are not always comparable in some sectors. The biggest problem areas are intensive care and, specifically, the definition of care levels in intensive care. However, services were expected to be fully comparable in the 1999/2000 period. The federal government is interested in enforcing certain standards. Its principal focus in this regard is on the harmonization of charging for services as well as on the continued application of flat per-case fees. Hospitals are obliged to introduce ICD-10 diagnostic codes and an international classification code for medical procedures.

Other activities pursued by the Structural Commission include proposals for the updating of cost type/cost centre accounting in the fund hospitals and the review of available options for developing the system further to include cost unit accounting. To ensure full transparency and unified control of the provision of hospital services, the application of the performance-oriented flat-rate compensation system for outpatient care settings will be necessary in the future.

Documentation and data quality

Since 1989, all hospitals have been required to record inpatients' diagnoses in accordance with ICD-9. Since 1997, they are obliged to record and report medical service items. From January 2000, hospitals have been able to record diagnoses according to the ICD-9 BMAGS 1998 system and measure services using the latest updated version of the BMAGS 2000 catalogue of services.

Since 1997, the Federal Act on Public Health Documentation has served as the regulatory basis for documenting diagnoses and services.

To ensure uniform documentation standards across Austria, guidelines are issued in the form of manuals. Under the Länder's relevant regulations, the fund hospitals have to submit to the state or the state's fund monthly reports on diagnoses and services provided as a basis for performance-oriented billing. Reports on diagnoses and services provided contain administrative, medical and LKF data. The provision of an organization and data processing manual and medical plausibility tests have been established as measures of data quality assurance.

THE SYSTEM
FRANCE

INTODUCTION

The French system belongs tois one of the most expensive in the world and consumed a growing proportion of national income up until the mid-1990s. Upward pressure wias exerted on spending by the use of expensive technology as well as by the freedom of choice enshrined in the French system that allows patients to consume as much health care as they want, and for health care professionals to prescribe freely. This freedom of action, in a context of partial budget constraints, has led to a a currentn allocation of resources that is probably not optimal.

Efforts to slow the growth of health spending have been intensified since the early 1990s. In particular, a comprehensive programme has been under way since 1996 to bring spending under tighter control. Up to now these measures have had a real but limited impact on the overall rise in spending. Initiatives to modify incentives and the behaviour of providers have either been insufficient or slow in their implementation.

MAIN FEATURES

The French health care system can be characterised as a mixed system combining elements of private and public care, as well as publicly funded and private health insurance elements. Slightly less than half of care is provided by public hospitals and private inpatient clinics, the remainder by private service providers (ambulatory doctors, auxiliary medical staff, drugs). Almost 80 per cent of total health spending is publicly funded, about 10 per cent is paid for by mutual insurers (mutuelles) and private insurers, and the remainder is paid for directly by patients.

Doctors are paid directly by patients. Even though it is growing slowly, the direct payment to doctors by the health insurance funds (the so-called *"tiers payant"* system) concerns only a small fraction of health professionals. Patients generally receive a partial reimbursement of their expenditure by the health insurance funds, which leave a co-payment to be paid out of their pocket (*ticket modérateur*).

Supplementary insurance has expanded greatly over the past decades and now covers over 80 per cent of the population3. Supplementary insurance schemes generally refund the full *ticket modérateur* of the basic scheme, thus cancellingcanceling out its moderating effect on consumption. In addition, subsidiary mechanisms enable the public schemes to increase their cover to 100 per cent for some categories of patients and diseases (long-term disabling illness, invalidity pensioners, those with universal medical insurance). The combination of these arrangements means that, for most of the population, health care expenditure is largely refunded.

Underneath these broad characteristics, the organisation of the system is relatively complex. The State has an important role in managing the system.

Three-quarters of beds are in public hospitals, which account for two-thirds of hospital spending, and public hospital staff have the status of civil servants.

UNIVERSAL HEALTH INSURANCE

The main features of universal health insurance (CMU) are:

- The *ticket modérateur* does not have to be paid by the patient, so that medical goods and care are completely free up to the limits set by the government. Certain types of expenditure (optical and dental care) are capped.
- Patients do not have to pay fees up front; this is the so-called third-party billing (*"tiers payant"*) system, whereby the health insurance funds pay the health professionals and institutions directly.
- One-stop processing of benefits: in contrast with the previous system, under which beneficiaries and entitlements were determined by several offices, the CNAMTS offices now do it alone; entitlement is immediate once it has been determined.

- Automatic entitlement: the government decided that coverage cannot be refused because information is missing. Nearly 3 million people who used to receive free medical assistance from the local authorities (*départements*) or those who receive the guaranteed minimum income (RMI) are automatically entitled to CMU without having to apply for it.

- Free choice of the supplementary cover provider (health insurance fund, *mutuelle*, private insurer). The CNAMTS is still the institution of last resort.

- In the case of an people affiliatiedon with a mutuelle or a private insurer, theyse receive a subsidy of FF 1500 per year per affiliated person, to meet the costs of supplementary cover. The income ceiling is degressive: e.g FF 3 500 per month per person, FF 5 250 for two people, FF 6 300 for three people, FF 7 350 for four people, and FF 1 400 for each additional person after that.

VARIOUS METHODS OF FINANCING HOSPITALS

Public hospitals are funded out of global budget, appropriations which are set annually by the authorities and allocated every month by the health insurance funds. Modest payments by patients top up these budget appropriations. Up to now, the appropriations have been set on the basis of the historic operating costs of hospitals, with a modest allowance made for their actual level of activity, the average case-mix, and specific costs of treating certain diseases or expensive drugs. It is still very difficult to relate these budgets to actual medical activity, as the tools for doing so can only be introduced gradually. There is little incentive to reward performance in a public hospital, and the professional assessment of doctors is done mainly on the basis of their research activity.

Private clinics operate on a fee-for-service basis, but the fee schedules are out-of-date. The price structure is an administered one and allows certain private providers to continue to earn high profits in areas where progress has been made in recent years, such as cardiaco surgery, digestive endoscopy, and ophthalmology. Admittedly, this meant that fee increases haved to be kept within the limits of those caps, but this new macroeconomic pressure only tends to encouraged clinics to specialise in the most lucrative care in order to offset the tighter control over volume.

Whereas previously private clinics could develop their activity whenever costs were below controlled prices, it is now in their interest to specialise in areas where the relative margins are the highest. The diversity of incentives has resulted in institutions specialising in particular types of care. Public hospitals have a virtual monopoly ofn emergency treatment and high-level research, and of psychiatric care due to their institutional prerogatives; also, in practice it is they who deal with elderly or socially-disadvantaged patients. The public sector also handles the bulk of major operations as well as life threatening conditions. Private clinics are often smaller and handle the bulk of minor surgery, for which their market share can be as high as 80 per cent, especially in the area of digestive diseases, endoscopies and eye surgery.

The idea of paying for health care on the basis of diagnosis-related groups (DRG) has started to gain ground in France from 80-tiesover the past decade.

The fact ofR eimbursing hospital stays on a DRG basis is tantamount to financing public hospitals on the basis of their actual activity, allowing for the structure of the services they provide, rather than on the basis of historic levels of expenditure.

The 1996 plan introduced, on a general basis, tools for measuring the performance and productivity of each hospital by comparing their relative costs by diagnosis-related groups (DRGs). The information system fixes the value of the point of a composite indicator of activity (ISA) on the basis of data in the *Programme de médicalisation des systèmes d'information* (PMSI). The value is calculated in francs for each hospital and each region, and is a key element in decisions regarding budget allocations. The value of the scale used to compile the composite index is calculated from a cost analysis of a sample of hospitals (thirty hospitals throughout the country). The law on the financing of the social security for 2000 extended their role to private clinics from 2000.

For the calculation in this work we have focused on public hospitals financial schemes which variesy in many points ways from the private hospitals arrangements, ones, even those which serve are reimbursed through by public funds.

The data which we have used were the only available at this moment and comprises:

- Classification scheme which is introduced in the year 2002 together with GHM (DRG equivalent) valid for a year 2002.
- Values in ISA points (synthetic measure attached to every GHM group) coming from a year 2001
- Values of single ISA point in regions derived from dividing budgets and volume of "production" of health services from a year 1999 (last available publicly).

THE SYSTEM
SWEDEN

INTRODUCTION

Sweden's total health care budget is determined by tax revenues and patient fees for physician visits, nursing visits, bed-days etc., along with the consumption, volume and mix of drugs, which generate revenues in terms of patient fees and reimbursements from the National Social Insurance Board.

The county councils' total health care budget is determined by generated income tax revenues, state grants, patient fees and reimbursements from other sources for treatment of patients from outside the county council. Part of the county councils' income also comes from income tax paid by the county's citizens. The county councils then allocate their monetary resources to hospitals, health centres, private specialists and dentists.

As the financial and political responsibility for health care is decentralized to the county councils, it is difficult to precisely connect the financing sources with different activities within the county councils. This is because most county council activities are financed through county tax revenues and the county councils are responsible for other activities as well, e.g. education and cultural activities and care of people with learning difficulties.

The county councils finance their activities mainly through county taxes and general state grants, 48% and 13% of total income, respectively. These resources are not earmarked for special activities. Two point four per cent (2.4%) of total county council income consists of patient fees for inpatient and outpatient health services.

The resource allocation formula that determines grants to county councils from the government for health care (state grants) is based on an assessment of need. The approach is based on the assumption that the different needs for health care by the various groups in the population are matched by their varying uses of health services. The allocation formula considers differences in average health care costs per individual in the general population divided by sex, age, civil status, occupation, income, housing and groups with a high consumption of health care resources.

The county councils make most resource allocation decisions regarding health services within the county. Designated state grants are almost negligible. Traditionally, however, central government and the county councils have extensively collaborated on planning and resource allocation regarding highly specialized regional (tertiary) health services and certain investments in high technology.

According to the Health Care Act, central government decides on the grouping of county councils into health care regions. The act also states that county councils should collaborate within these regions with respect to highly specialized health care. The collaboration between county councils regarding specialized hospital care and the existence of some specially designated state grants make it difficult to clearly differentiate the responsibilities for health services resource allocations.

PAYMENT OF HOSPITALS

Resource allocation principles vary within the county councils. Most county councils have decentralized a great deal of the financial responsibility to health care districts through global budgets. Moreover, half of the county councils have introduced some form of purchaser-provider organization. The purchasing organizations negotiate with hospital and other health care providers to establish financial and activity contracts. These contracts are often based on fixed prospective per case payments, complemented with price or volume ceilings and quality components. DRGs are the most common case system used, with respect to short-term somatic care.

Prices are determined through negotiations between purchasers and providers. The extent to which DRGs and other classification systems are used, however, varies among regions and county councils (see: table below).

The first version of NordDRG (1996) had a grouping logic based on HCFA-DRG. NordDRG is a Nordic project involving 5 countries. In the each country there are different versions of NordDRG, but they can all be translated to the common version. In the nation-wide Hospital Discharge Register all cases in Sweden are grouped in NordDRG. The hospitals and County Councils mainly use the DRG-information for management purposes. NordDRG also works as a prospective payment and reimbursement system. Today about 40% of the Swedish inpatient cases use DRG clasification although the use of DRGs is not compulsory in Sweden.

Around 20 hospitals in Sweden have case-costing systems for inpatient care in use (or 25% of the yearly cases in Sweden). The Federation of Swedish County Councils collects case-costing data from the hospitals for a national case-costing database. Approximately 50% of the County Councils have local case-costing projects. In the case costing process all cost are distributed to the individual case on a patient specific basis bring together information about the services used and the characteristics of the patient.

The system contains information about activities such as surgery, laboratory tests, intensive care and nursing care and their cost uniquely calculated for each patient. There is also information on diagnoses, procedures, DRG e t c for each patient. The results are recalculated into average diagnosis groups costs and further into weights for DRG.

	Nord DRG			HCFA			AP		
U = Reimursement tool	U			U			U		
B = Budgeting tool		B			B			B	
A = Assessment tool			A			A			A
Stockholms lans landsting	X	X	X						
Landstinget i Uppsala lan	X								
Landstinget Sormland	X		X						
Landstinget i Ostergotland	X	X	X						
Landstinget i Jonkopings lan	X		X						
Landstinget Kronoberg			X						
Landstinget i Kalmar lan	X		X						
Landstinget Blekinge			X						
Region Skane	X	X	X						
Landstinget Halland	X	X	X						
Vastra Gotalandsregionen	X		X						
Landstinget i Varmland									
Orebro lans landsting	X	X	X						
Landstinget Vastmanland									
Landstinget Dalarna									
Landstinget Gavleborg	X	X	X						
Landstinget Vasternorrland	X								
Jamtlands lans landsting									
Vasterbottens lans landsting							X		X
Norrbottens lans landsting				X		X			
Gotlands kommun			X						

Table: Scope of DRG-like systems usage in regions. (http://www.sos.se/epc explored: 15.05.2002)

Per case reimbursements for outliers, such as complicated cases that grossly exceed the average cost per case, may be complemented by per diem payments. Most cases reimbursed prospectively, in those county councils that have not introduced purchasing organizations, however, per case payments can still exist as payments between hospitals/districts and payments within hospitals among departments.

Health in transition, Sweden 2001, Catharina Hjortsberg, Ola Ghatnekar, ©European Observatory on Health Care Systems 2001
www.sos.se/epc/cpk
www.lf.se/sek/kpp.htm

THE SYSTEM
SPAIN

INTRODUCTION

Regional authorities play an important role in the Spanish healthcare system. Funds are transfered by the central state to the regions; who then allocate funding to local hospitals. Some regions have adopted a mutual health administrationa called INSALUD which allocates funding on behalf of the regional authorities. A separate allocation system is used for the payment of health care personnel. As fiscal autonomy is limited in Spain, the regional resource allocation system constitutes one of the main elements of health care financing, accounting for more than 80% of total public expenditure.

In the financing of hospitals, the seven regions together with the centrally managedINSALUD enjoy significant freedom in determining the particular method of payment that should be in place. Generally speaking, during the 1990s, there has been a general transition from retrospective to prospective funding, pioneered by Catalonia since the late 1980s.

The bulk of regulation concerning the payment of health care professionals, remains in the hands of the central state, while the special regions can modify some fringe benefits in relation to salaries. Both specialists and general practitioners are public employees in Spain, and most of their wages are derived from fixed salary payments.

NATIONAL FUNDS ALLOCATION

The Spanish Parliament approves the state budget and the social security budget on an annual basis. Before1999, this comprised of a national budget, which meant that health care financing was totally reliant on taxation. The resulting resources were then allocated to the special Autonomous Communities with devolved health services and to the INSALUD for those Autonomous Communities (regions) whose health services were centrally managed. The INSALUD budget was earmarked under the various expenditure headings (investment, current expenditure, personnel costs, etc.) and for programmes (primary health care, specialized care, pharmaceuticals, etc.).

The allocation of funds to the different regional health service programmes and expenditure headings in communities which control their own health systems is determined by the Autonomous Communities'(regional) parliaments in their respective budget acts. The Autonomous Communities may add their own financial resources to the state financing, and the same is true for local governments. However, the room for manoeuvre left by central fiscal pressure is considerably reduced and, as a result, the share of total health care expenditure financed through taxes raised by sub-national governments is below 10%. From the early 1990s, however, some management responsibility the raising of taxes has been devolved to Autonomous Communities raising the percentage obtained locally to up to 30%. Two out of the seven of special Autonomous Communities (the Basque Country and Navarra) enjoy full fiscal autonomy, and raise all public taxes in their own territories.

In 1998, an agreement was negotiated among central state authorities and regional governments for the allocation of resources in the period 19982001. For the first time in Spain, an attempt was made to develop an allocation formulae including an estimation of adjusted capitation targets, which, followed the British RAWPsystem of capitation weighted for age, need (mortality, morbidity and socioeconomic factors), cross-boundary flows, research and teaching costs, and relative prices of the inputs in each territory.

However, the representatives of central and regional governments did not reach an agreement on the global scheme, and so the final system only incorporated cross-boundary flows, as well as research and teaching supplements, into the system of regional financing. In addition, ad hoc financial compensation was included for regions losing population, in spite of the formal capitation system in place.

Hospitals in the National Health System are financed through a global budget, set against individual spending headings. Traditionally, hospital expenditure was retrospectively reimbursed on a routine basis, with no prior negotiation between the third-party payer (INSALUD or regional health services) and providers, and no formal evaluation.

Since the early 1990s, some regional health services and INSALUD have changed the way in which hospital budgets are fixed. Now it is generally done through negotiation of a contract programme between the payer and the hospital which sets out the objectives to be achieved by the hospital and the financing attached to these objectives. The shift towards contract-programmes and the negotiation of activity levels and financing has created the need for an agreed set of performance measures to be defined and to allow comparisons between hospitals. These needed to take into account the differences in the services offered by different centres, and the singular nature of each hospital (varying case-mix). This has led to the generation of a new, significantly improved information system for hospitals (Minimum Basic Dataset, *Conjunto Minimo de Datos Basicos* or CMBD).

The CMBD started to be developed in the early 1990s and, by 1999, it covered most Spanish hospitals. This should allow the inclusion of a risk adjustment mechanisms in prospective financing to be refined and, therefore, a more equitable allocation of resources than would be possible if only the number of admissions or the overall length of stay were considered. From 1991, crude, aggregate measures of activity were defined which enabled a comparison to be made among hospitals. The Catalonian experience of purchasing services from private sector hospitals provided the initial model, using units of activity which differentiated among four hospital production levels.

UPA: Weighted health care units

Activity	Weight
Medical stay	1.0
Surgical stay	1.5
Obstetrics stay	1.2
Paediatrics stay	1.3
Neonatologist stay	1.3
Intensive care stay	5.8
Emergencies	0.3
First outpatient contact	0.25
Outpatient revisions	0.15

The first aggregate unit defined for use in financing public hospitals was the UPA (weighted health care unit, see Table 18 for details), adapted from the Catalan system by the Ministry of Health for application in INSALUD hospitals. The UPA was subsequently slightly modified by some Autonomous Communities for the financing of public hospitals in their health services. The UPA and the rest of aggregate units developed are based on converting all hospital activity into multiples or sub-multiples of an activity-based standard (the length of stay), after analysing average costs in each type of hospital service, which mainly depend on hospital technology and equipment.

Particular activities which are especially sophisticated (e.g. transplants), expensive (e.g. dialysis), or which are regarded as priority interventions because of the length of waiting lists (e.g. major outpatient surgery) remain outside the general UPA rate and have their financing calculated separately. The cost of treatments in these categories is added to the financing of overall activity by the UPA formula, to give the total prospective budget for each hospital.

Existing evaluations of the experience of introducing contracts which are increasingly based on prospective financing generated the following picture.

Up until 1997 it was apparent that most hospital contract-programmes had not been adequately linked to activity levels or to quality issues. They did not take into account coordination with primary care or existing health care plans, they were not monitored, and real risk decentralization to professionals and managers had not occurred, incorporating only weak economic incentives for the accomplishment of contractual objectives.

During the second half of the 1990s, the autonomous communities of Andalucia, the Basque Country and Catalonia initiated pilot testing of more sophisticated prospective payment systems based on DRGs or Patient Management Categories. In 1998, a new system of hospital financing

was introduced in Catalonia, which relied on yardstick competition schemes. At the same time, national weights for DRG groups were published, as a result of adaptation the AP-DRG of HealthCare Financing Administration of the USA and a national analysis of hospital costs. For the reasearch study, almost ten years of MBDS (minimal Basic Data Sets) experience were utilised. The weights were recommmended to be used both for regional authorities and INSALUD, where appriopriate.

The basic salary for all public sector physicians is regulated by the state government, although the Autonomous Communities have the capacity to vary some of the components which make up the total salary. Between 1970 and 1986, hospital doctors' salaries were tightly controlled by state authorities. From 1986 to 1991, they experienced a moderate rise in real terms. Since the early 1990s, hospital doctors' salaries are decreasing in real terms. There is considerable variation among Autonomous Communities both in the type and amount of salary complements applied.

The payment system for hospital professionals is very controversial at present and fails to satisfy either the system's payers or the physicians themselves. It is widely believed that it largely fails to reward efficiency. In addition, experience on the use of financial incentives, linked to the meeting of objectives, shows that these have not been very effective. This might be due to the fact that the rewards available for meeting efficiency targets only constitute a very small percentage of the physician's overall salary.

Mechanisms for evaluating health care delivery are still very rudimentary and the measures geared to assessing efficiency have proved difficult to apply.

Análisis y desarrollo de los GDR en el Sistema Nacional de Salud, (Proyeto report) Agustín Rivero Cuadrado (ed.), MINISTERIO DE SANIDAD Y CONSUMO, Madrid, Espana 2002.

Health in Transition, Spain 2000, Ana Rico, Ramon Sabes European Observatory on Health Care Systems, Madrid 2000.

THE SYSTEM

ITALY

FUNDING THE SYSTEM

The guidelines that the Italian central government has used to allocate health resources to the regions have been changed frequently over the past two decades, due to lack of clarity. For example, the 1978 reform of the Italian resource allocation system clearly stated that the Interdepartmental Committee on Economic Planning should allocate resources. The legislation, however, only vaguely described what criteria should be adopted. Indeed, the legislation stated that the criteria should aim at supplying regions with an adequate level of financing both for health care and for reducing inter-regional differences, but it failed to provide the means for doing this.

The lack of clarity regarding the criteria meant that the formulas for allocating health care funds were changed several times from 1978 to 1992. Finally, in 1997, a weighted capitation rate was introduced that took into account demand for health care services and reflected the age structure and health condition of the population.

Formulas used (%) for allocating health care funds to Italy's regions during the years 1980-1997.

Year	Historical spending	Population	Risk- and need-adjust. population	Health care utilization - adjust. pop.	Quota for specific projects	Other criteria	Develop. or equalizat. fund	General expenditure	Total
1980	3.7	8.0	85.6	-	2.7	-	-	-	100.0
1981	-	25.4	71.7	-	2.0	0.9	-	-	100.0
1982	78.8	18.7	-	-	1.0	1.5	-	-	100.0
1983	68.5	26.8	-	-	2.2	2.5	-	-	100.0
1984	69.6	26.4	-	-	1.5	2.5	-	-	100.0
1985	-	5.3	-	85.0	1.4	2.1	0.4	5.8	100.0
1986	-	4.5	-	87.1	1.8	1.6	0.2	4.8	100.0
1987	-	3.4	-	86.8	1.1	3.0	0.4	5.3	100.0
1988	-	3.5	-	86.5	1.5	2.7	0.9	4.9	100.0
1989	-	3.6	-	85.8	1.7	3.3	0.8	4.8	100.0
1990	-	3.6	-	86.0	1.6	3.2	0.7	4.9	100.0
1991	0.4	-	-	97.0	1.5	0.7	0.4	-	100.0
1992	-	96.3	-	-	0.9	0.5	2.3	-	100.0
1993	-	97.8	-	-	-	0.6	1.6	-	100.0
1994	-	98.6	-	-	-	0.6	0.8	-	100.0
1995	-	98.7	-	-	-	0.6	0.7	-	100.0
1996	-	98.0	0.1	1.0	-	0.9	-	-	100.0
1997	-	48.2	17.4	33.1	-	1.3	-	-	100.0

Table: Mapelli

The Ministry of Health is responsible for defining the capitation rate for health care services, which is expected to be published in the National Health Plan. The capitation rate should, theoretically, represent the resources needed to finance the services included in the core benefit package. Accordingly, it should take into account the estimated need and utilization of health care services in the three categories introduced by the National Health Plan for 19982000 (community care, hospital care and public health services in working and living environments). Multiplying the rate by the total population should then equal the National Health Fund.

However, in reality, given the fact that the core benefit package has not yet been defined, the process is actually reversed. The central government determines the resources that should be devoted to health care and divides them by the total population to obtain the capitation rate. Multiplying the capitation rate by the regional population, weighted in terms of need and utilization indicators, determines how much each region should spend for health care.

The National Health Plan for 19982000 set capitation rates as €927 for 1998, €955 for 1999 and €984 for 2000. According to the specifications of the Ministry of Health, health care funding

should be allocated to three different health care categories according to the following percentages:

- public health services in working and living environments (4%)
- community health care (47.5%)
- hospital health care (48.5%).

Regions can then choose how to allocate resources among different programmes. Thus, the percentages fixed by the Ministry of Health can be modified at the regional level in accordance with regional planning targets. In addition, regions may decide how to allocate resources to the local health units. Nevertheless, most regions transfer funds to the local health units based on capitation. Each region sets aside some central funds for special projects and then transfers the remainder to the local health units. In some regions, extraordinary financing comprises many of the resources allocated to local health units. Its main aim is to smooth the transition from the old financing method, based on historical spending, to the new one, based on capitation. In addition, these funds can help local health units cover deficits incurred during the year.

PAYMENT OF HOSPITALS

Hospital care has always represented the largest share of health care expenditure in Italy and has often been a source of major concern to the central government. The organization of most hospitals has remained unchanged throughout the years, but reimbursement mechanisms have been altered in attempts to curb expenditure. Before 1978, all organisations which delivered hospital care were reimbursed by the mutual health fund to which the patient belonged on a bedday rate. Each hospital's board of directors set the rates, taking into account both the direct and indirect costs incurred in providing hospital care.

Bed-day rates were reimbursed without any control over the efficiency or the quality of services. This mechanism created strong incentives to push up treatment prices and increase the number of beds along with the length of hospital stays.

In order to reduce the number of beds and contain expenditure, public and teaching hospitals were moved from a bed-day rate of re-imbursement, which was maintained solely for private clinics and for religious hospitals. Instead they were reimbursed on a fixed budget basis. At the same time, regional authorities were made responsible for reaching agreements with all health care suppliers for hospital care.

The 1978 reform further enhanced this shift in management by placing hospitals under the direct control of local health units. Public hospitals were fully integrated into the administrative structure of local health units and were financed from the budget given to the local health units by the regional authorities.

The 1992 reform envisaged widespread changes in the structure of hospital care delivery. University hospitals and highly specialized or nationally relevant hospitals were given the status of a trust and were therefore formally separated from local health units. This status included considerable financial independence as well as full responsibility for their budget, financing, management and technical functioning.

Public hospitals without trust status remained under the control of the local health units but were granted some economic and financial autonomy and a separate accounting system within that of the local health unit to make auditing and control easier. Private clinics and religious hospitals maintained their previous structure.

Together with the distinction between the two types of hospitals, which aimed at introducing some quasi-market aspects into Italy's health care system, the other important innovation in 1992 was the switch from cost-reimbursement mechanisms (bed-day rates and ex-post payments) in the financing of hospital care to prospective payment systems for both inpatient and outpatient procedures.

From January 1995, hospitals and outpatient specialist providers were to be reimbursed for services rendered according to nationally predetermined rates. Regions are free to redefine the rates according to their own standards but must take the **national rate as the maximum level**. For inpatient care (ordinary and day-hospital treatments), patients are classified according to the diagnosis-related group scheme, whereas for outpatient care, diagnostic services and specialist treatments, reimbursement should be based on fees for services.

The only two forms of treatment for which a bed-day rate should still apply are for rehabilitation and long-term care. These two types of hospital care have a progressive rate reduction scheme to prevent the unnecessary lengthening of hospital stay. A length of stay longer than a set limit (usually 60 days) triggers a 40% reduction in the bed-day rate.

The laws following the 1992 reform also specified that regions were allowed to set up specific financing schemes aimed at supporting the hospital activities that could be financed by the diagnosis-related group scheme. In particular, these include: emergency wards; spinal cord units; burn units; organ transplant centres (transport, donor and receiver support and transplant activity coordination); AIDS centres; home-based care; training activities; and teaching and research activities, all of which receive additional funding from the regional government. The prospective financing mechanism has not been implemented yet in some southern regions.

Finally, the 1999 reform strengthened the principle of a prospective payment system based on diagnosis-related group and redefined the financing schemes for specific activities by stating that all hospitals are to be financed by a predefined overall budget composed of two elements These are payments for inpatient and outpatient care by means of predetermined rates based on diagnosis-related group; and payments based on the average production costs for:

- care for emergencies and accidents and, more generally, care activities with high waiting costs;
- prevention schemes;
- social services;
- transplant activities; and
- management of chronic illnesses.

The 1992 reform drastically changed the organization of hospital physicians by replacing several professional categories with first-level and second-level physicians.

All newly employed physicians start as first-level physicians (*dirigente medico di primo livello*). Physicians at this level have support and supervised duties as defined by the medical officer in charge of the hospital unit. Second-level physicians (*dirigente medico di secondo livello*) usually have duties connected with organizing and managing the hospital unit. Further, they help in choosing the most appropriate therapeutic, diagnostic and preventive treatments for patients. Unlike general practitioners, hospital physicians are paid a salary by the hospital.

Up until 1992, hospitals had a multiple-layer hierarchical structure including such positions as chief medical officers (*primario*) and assistant medical officers (*aiuto primario*).

The payment structure follows the hierarchical structure based on two levels. First-level physicians earn about €41 300 per year, and second-level physicians receive about €62 000, including nights and weekends on call for both types. Up to 1999, all physicians could earn additional income by treating patients privately on a fee-for-service basis. The 1999 reform has radically changed the organization and management of hospital physicians, provoking strong dissent.

Health in transition, Ana Rico and Teresa Cetani, European Observatory on Health Care Systems 2001.

THE SYSTEM
POLAND

INTRODUCTION

The Polish health care system prior to 1999 was organized as a public integrated model. This model represented a system in which the government was both the principle payer and the major provider of services, operating through state-owned health care facilities. Payments to health providers were organised by public funding bodies, which raised finance through compulsory income related contributions via general taxation. Employees were taxed (referred to as ZUS) at a rate of around 49% of their income, for pension, healthcare and unemployment benefits. Due to a lack of appropriate information systems it was not possible to identify what portion of this tax was dedicated solely to healthcare.

Investment in the early 70's, led to a stable but skewed investment in acute hospital provision and excessive medical specialisation at the expense of public health services and primary care provision. During this period many western countries had already began to shift the balance of care from hospital to ambulatory services and were steadily decreasing the number of acute hospital beds. Almost all in-patient beds in Poland, however, were designated as acute beds, which meant that even though there was a oversupply of hospital services in this sector, there was a dearth of some important services, like long-term, or paliative care, for example.

Poland started to address the problems within its health system in the 1980's, It was the solidarity movement in the late 80's and early 90's which tried to bring these issues to the forefront. The process was, however rather slow. Poland was in the processing of redefining the role of the state in all sectors of its economy, including a call for more efficient allocation of resources through quasi-market mechanisms and greater individual freedom through the democratic processes. In 1994 small steps were taken which developed responsibility for the health system to the level of the gmina(local government) and not the voivodship(state government), thus giving the health facilities a little more autonomy.

In 1998 a process of reform was instituted which would lead to the development of a quasi market in healthcare. The purchasing of healthcare would be devolved to public sickness funds and the provision of healthcare would be carried out be independent healthcare units.

The first step was the allocation of targets to health care units to convert from directly managed units run by local government into so-called "autonomous health care units" which, remained a public entity, but were able to operate with limited autonomy (very like a NHS trust in the UK.

The transitional process began slowly. By May 1998 only about 100 out of 1200 units had moved to autonomous status. By the end of 1998, however the process had accelerated with almost all health units making the transition. Subsequent research has demonstrated that in some health units the transition was a paper exercise with very little real change in the way services operated "only the label and legal form were changed".

On January 1st 1999 the newly created universal health insurance institutions took on the role of purchaser of healthcare for the segment of the population enrolled with their organisation. The Universal Health Insurance law instituted in 1997 with amendments in 1998. facilitated the creation of 16 Regional Health Insurance (Sickness Funds) and one Health Insurance Fund for the so called "uniformed workers" and their families.

The statute permitted the Sickness Funds have to sign contracts with autonomous health care institutions only. Each regional Sickness Fund covered a particular voivodships (administrative region) with populations varying between one and six million people.

From the year 2000 the Sickness Funds have been able to extend their activities to other regions. Citizens are free to choose the Sickness Fund they enroll with, irrespective of their place of residence. In practice, however, it would be impractical for a person to register with a Sickness Fund in another Region, unless they lived near to the regional borders.

The Sickness Funds have developed with significant autonomy leading to a situation today where Poland has in practice 17 healthcare systems with different mechanisms for contracting with providers, some of who contract with multiple sickness funds.

The health system is now funded through a earmarked tax or social insurance contribution which equates to 7.75% of an individuals income.

The Health Insurance Act sets out the basic services which Sickness funds are obliged to fund for citizens.. These include:

- A visit to the general practitioner,
- Ambulatory health care (clinic , dispensary, health center) as well as health services conducted at home,
- Hospital care if there is a referral from a Sickness Fund, the patient has a choice of hospitals, however, they can only be hospitals that have signed a contract with the Regional Sickness Funds,
- Diagnostic tests based on referral of a Sickness Fund doctor,
- Specialist visits on the basis of a referral from a Sickness Fund doctor.

REIMBURSEMENT OF HOSPITALS

As a result of a decree from the Ministry of Health dated 22nd December 1998 Polish hospitals were divided into three differing reference levels, depending on the type and scope of services provided. The first reference level is made up of local hospitals, the second reference level includes the provincial hospitals which provide more specialized care, and the third reference level which is made up of regional and national level University Hospitals; this includes teaching hospitals.

The main purpose for categorizing hospitals in this fashion is to ensure that each facility is appropriately equipped in order to provide good quality and appropriate health services to the patients. Because the cost of healthcare provided in these different levels of specialism vary it is important to determine appropriate proportions of hospital beds within each facility which provide services at each level.

In law the patient has the right to choose which hospital they are treated in within the banding appropriate for their medical condition. If the patient chooses to receive care in a University hospital which could be appropriately delivered in a local hospital they may be required to pay the difference in price.

As a result of the reform the University Hospitals (third level) fall under the auspices of the Ministry of Health, specialized hospitals (second level of reference) fall under self governing provinces, primary hospitals (first level of reference) fall under county governments. This, as one can imagine leads to a degree of fragmentation within the system and an increased transaction cost for the Sickness Fund.

There is no universal payment method, adopted by Sickness Funds, although some Sickness Funds are cooperating more closely, to develop mutual schemes. Most existing methods of payment are based on purchasing specific medical services on a cost and volume basis with defined limits. The services are increasingly being purchased as packages of care which can include medical examinations or medical advice or medical procedures or in some cases hospitalization on a specific ward..

On this basis units may be paid for a visit in a certain clinic or discharge from a certain ward. There are around 60-70 types of "clinics and around 40-50 types of wards. In the first year Sickness Funds had around 100 different price categories. By the year 2000 the Funds were contracting for around 300-400 items within Clinics and more than 100 in hospitals.

Some of the financing mechanisms adopted by the Sickness Funds were not effective. It became evident that agreeing to fees per hospitalization and defining upper limits for the number of admissions at particular wards encouraged the hospitals to admit patients and use the defined upper limits in full. Despite the fact that the reform was hoping to decrease hospital admissions which were already high prior to 1999, the number of hospital admissions increased nearly by 30% during the first year (according to Sickness Funds statistics).

FINLAND THE SYSTEM

Health care system in Finland can be characterized as a national health system, with a core role for local governments. The national government presents its annual budget proposal to parliament, every year, and they make the final decision on how much resource will be allocated to the health care sector as a state subsidy.

At the level of the local community, the Health Committee of each municipality prepares a budget for health care. The Municipal Council approves the total municipal budget and, within this budget, the resources are allocated for health. The Council of each hospital district determines the budget for hospital care (within its district area).

Up to 1993 state subsidies were allocated retrospectively, according to actual costs and adjusted according to the wealth of the municipality. The richer a municipality the smaller the subsidy, and vice versa. In 1993, the state subsidy system was reformed. The reform was intended to achieve, *inter alia*, cost-containment and to improve efficiency within municipal health services. Under the new system, all state subsidies are calculated according to demographic and other need criteria. The subsidy is automatically paid in advance to the municipality and it is not earmarked. The criteria for determining the amount of state subsidies on health care have been changed over the years. The present criteria include the number of inhabitants, the age structure and morbidity. There are additional criteria for remote areas and archipelago municipalities.

The financing of hospitals changed at the same time as the state subsidy system in 1993. Before 1993, hospitals received about half of their revenue from the state via the Provincial State Offices. The other half came from the municipalities. This former system did not encourage hospital productivity. Hospital revenues were fairly consistent from year to year and without active control costs.

When the state subsidy system changed, the risks and incentives facing municipalities also changed. With prospectively fixed state subsidies, the risk of overspending is borne by the municipalities as are the benefits of any savings. Since 1993 hospitals have received their revenue from the municipalities according to the quantity of services received by their inhabitants.

Hospitals are paid in several ways, and determine prices for their services without national guidelines. Much effort has been made within hospitals to define services and to calculate a price for each service. Services are defined and prices calculated in very different ways: there is not even uniformity within a single hospital district. Service package prices for inpatient care are used in some districts. A service package includes certain services (i.e. the diagnosis and/or treatment of an illness, for example, childbirth or cholecystectomy) for a specified length of stay. Similarly there are variations in how hospitals invoice municipalities. Legislation defines the maximum payments that can be charged from patients, but it does not regulate payments of hospitals. Municipalities negotiate annually on the provision and prices of services with their hospital district. They in fact come to an agreement rather than a formal contract with the hospital district. The agreements may be revised during the year according to the actual amount and type of services provided by hospitals. Municipalities pay bills directly to the hospital's account. Invoicing and pricing by hospitals are in a continuous process of change.

At present, it is extremely difficult to compare services and prices between different hospitals and hospital districts because, as has been said, they are defined in different ways and the prices can be changed during the course of the year. There is little evidence that hospitals purposely prolong lengths of stay because of the invoicing system. Hospitals want to appear efficient and are motivated to discharge patients as quickly as possible in order to increase productivity. On the other hand, they are not reluctant to admit patients for a new episode of treatment.

Hospitals and hospital districts have become increasingly interested in using diagnostic related groups (NordDRGs) as the basis for billing municipalities. We understand that three hospital

districts were using DRGs in 2000, and an additional two or three districts introduced them in 2001. An even greater number of hospital districts are using NordDRGs as a tool for planning.

In order to undertake a national assessment of the costs of producing hospital health services, the Association of Finnish Local and Regional Authorities will collect cost data from a significant number of hospitals in a year 2003[4]. At present, the association uses some tracer prices for comparison purpose. There is also a limited number of diagnostic groups taken from hospitals which are invoicing their payer on DRG basis.

For the purpose of this study, an assessment was done of following parameters: average and median "cost" of DRG point in case of each of the procedures, minimal and maximal value of this point, standard and mean deviation. For estimation of costs of particular diagnosis groups there was mean value and standard deviation taken.

	Costs of DRG points in sample hospitals	
	Based on median	Based on average
Median	1 780	1 799
Mean	1 745	1 792
Standard Deviation	258	249
Mean Deviation	179	180
Minimum	1 033	1 105
Maximum	2 378	2 317

Estimation were done with use of following formulas:

Mean cost of purchasing a NordDRG group = the group point weight * mean (based on average)

Maximal cost of purchasing a NordDRG group = the group point weight * [mean (based on average) + 2 SD]

Minimal cost of purchasing a NordDRG group = the group point weight * [mean (based on average) - 2 SD]

The results of such estimation were compared with data regarding costs of treatment of those groups in sample hospitals and significant similarities were found. On this basis we concluded that this estimation might be useful for the study. Further analysis will be possible after year 2003, when the Association of Finnish Local and Regional Authorities has prepared its wide costs assessment, referred to above.

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[4] Personal communication to Eero Linnakko, Senior Adviser, TheAssociation of Finnish Local and Regional Authorities, PL 200, FIN-00101 Helsinki, Finland

THE SYSTEM
NORWAY

The size of the overall health care budget in Norway is the result of decisions made at state, county and local levels. Thus, in principle, this budget may vary from year to year depending, among other variables, on the priorities set at the different administrative levels. In practice, however, both county and municipal budgets are very stable.

Since 1999, 18 out of the 19 counties has chosen to implement a combination of per case payment and global budgeting at the hospital level. The *per case* payment is based on the NordDRG system, mutual (with slight differences) system for the Nordic Countries. This system has been in use since July 1997. The system of per case funding was originally a payment from the state to the counties. The counties, which traditionally have financed their hospitals by global budgets, are free to change to a per case payment system for their hospitals or to continue with global budgeting. Group-specific costs have been calculated based on national data, and these costs form the basis for the price system. In 1999, only 50% of the DRG costs were reimbursed. By 2002 it was anticipated that this would increase to 55%.

Previously hospitals were financed on a historical basis. Because the lack of incentives in this system caused lower productivity then was expected, it was agreed that the block grant system had achieved the aim of improving control of the territorial distribution of health care expenditure but further reform was needed to encourage hospitals to improve performance.

The aim of the reform was to allow hospitals to admit more patients and base 20% of the hospitals revenues on the number of patients discharged according to a DRG formula. As part of a centrally designed pilot project, in 1991 two counties switched to a partly case-based financing system for a period of three years. This system was not, however, universally adopted at the county level. Six years later, however, the pressure to reduce waiting lists led to the general introduction by the central state of the activity-based financing system in the allocation of hospital resources to counties. This change, introduced on 1 July 1997, was mainly motivated by a belief that efficiency would improve. The reform was expected to strengthen the incentives for counties to stimulate hospital activity, which in turn was expected to contribute to shorter hospital waiting lists and to raise hospitals' productivity. Indeed, the immediate effect of the reform is likely to be a noticeable increase in the number of hospital inpatient treatments.

Other important objectives of the reform were to give counties budgetary guidelines, thus providing incentives to carefully evaluate the costs and benefits of each intervention. The new policy also involved stronger central control of hospitals' acquisition of advanced medical equipment.

In 1997, a proportion of the grants (70%) continued to be paid by central authorities to counties on a modified needs-based assessment formula. The other part (30%) was paid on the basis of the previous year's inpatient activity, using national standard DRG costs. In 1998, these proportions changed to 55% and 45%, and in 1999, to 50%50%. Although not required by law, most of the counties transfer the funds according to the same rules to hospitals. By 1998, only two counties retained global budgeting, by 1999 only one, and from the year 2000, all counties had adopted the activity-based financing of their hospitals.

Values for case-mix groups are determined by the Ministry of Health in the form of **Prisliste DRG.** In one year a Prisliste was determine to have a value of a point equal to 29 428 crowns (while a year earlier it was 29 130). The Prisliste contains prices calculated for 55% of the total value of each group, assuming that the rest is allocated by municipalities on historical basis.

For a purpose of this study, values for each diagnostic group in 100% were calculated, by multiplying point weight by value of the point (above mentioned 29 428 crowns). It is assumed that this way of calculation reflects the best the level of costs for particular procedures and diagnosis groups in Norway.

THE SYSTEM

PORTUGAL

A nationwide network of hospitals and health centres was established in 1979 under the National Health Service (Servicio Nacional de Saude SNS). The SNS is financed from tax revenues and provides free access to primary health care and hospital care. Drugs and medications on an approved list are free or subject to co-payments. However, in some situations there is also rationing of supply and a private sector is developing to meet the remaining demand (Berthod-Wurmser 1994).

83% of all hospital beds are in the public sector. Hospitals are run by management boards and have administrative and financial autonomy. Technically, they have to follow guidelines laid down by the General Directorate of Health, part of the Ministry of Health *(HOPE 1993)*.

Central hospitals are located in the Lisbon, Oporto and Coimbra areas and there is a district hospital, at least, in the main town of every district. Secondary care should only be available upon referral by a GP. The hospital network includes some specialized psychiatric, oncology, maternity and rehabilitation hospitals.

Hospital budgets in Portugal are drawn up and allocated by the Ministry of Health even though funds are distributed through the Regional Health Authorities. Public hospitals receive a global budget that is mainly based on historical data. They used to operate with open-ended budgets, and overruns were generally automatically covered by supplementary allocations. The system had very weak incentives then, to encourage cost-containment or efficient practices.

Traditionally, the global budget was based on the previous years' allocation, adjusted for inflation but in recent years, a part of this global budget (10% in 1997 and 20% in 1998) was based on diagnosis-related groups (DRGs).

For the purpose of purchasing health care services, regional agencies in each regional health administration were developed. The first regional agency was established in 1997. Today there are agencies in each of the five regions. The aim of the agencies was to change the hospital payment system from a retrospective to a prospective budget and to introduce an element related to production costs, i.e. a budget based on predicted costs rather than an historical budget. In 1999 the first year of budget negotiations based on contracts and prospective budgets to involve all hospitals and RHAs.

It was proposed that, in its first year of operation, 3% of hospital budgets would have been allocated through contracts with the remainder being allocated on an historical basis. It was hoped that this proportion would increase year on year. Contracts were negotiated with both public and private institutions though, in the first instance, with NHS hospitals. A ministerial decree (the most recent one numbered 189/2001 de 9 de Março 2001) sets out a range of limits on the prices within which the regional health authorities should operate during negotiation. The tariff table predicts a variety of values and modifies the basic price per case by the length of stay for particular patient and by adding a certain (digressive) amount of money if the patient stays longer then average. The basic tariffs for average length of stay may differ, according to this regulation, by five folds (author: *to be verified*). The figures cited in this study, and placed in the final charts are the upper level figures.

As well as direct transfers from government, public hospitals also generate their own revenue from payments received from patients for special services (individual rooms, for example), payments received from beneficiaries of the health subsystems or private insurance, and flat rate charges.

Private insurance schemes, which cover up to 25% of population vary in the method of reimbursement. On the whole, this is on a fee-per-item basis, reimbursed retrospectively either to the individual patient or to the hospital who will bill the insurance company for the full costs of

care. Tariffs for reimbursement between subsystems and hospitals belonging to National Health System are set by the Ministry of Health and regularly updated.

Hospitals in a changing Europe / edited by Martin McKee and Judith Healy. World Health Organization 2002, ISBN 0-335-20929-7 (hb)

Orderion Emissor: Ministério da Saúde, Diploma: Portaria n.º 759/96, Data: Terça-feira, 24 de Dezembro de 1996, Número: 297/96 SÉRIE I-B

Base de Conhecimentos na Internet em Sistemas de Informação em Medicina (InterSIM) (after personal communication with Mr. Fernando Lopes, Servico de Bioestatistica e Informatica Medica, Faculdade de Medicina da Universidade do Porto25.Nov.2002)

M. Bentes, M.L. Gonçalves, S. Tranquada, J. Urbano, A utilização dos GDHs como instrumento de financiamento hospitalar Gestão Hospitalar, 1996, pg. 33-42

Portaria n.º 189/2001, de 9 de Março, Ministerio de Saude

SECTION 3

THE RESULTS

THE CLASSIFICATION SYSTEM

The diverse nature of the classification systems have made direct comparisons of procedures across the thirteen countries complex.

The thirteen example countries use six different procedures classifications. Each of the coding schemes is differs in terminology and the approach it takes to describe medical (or rather surgical) activity. Procedures generally are not a subject to direct pricing in the countries compared (with the exception of Holland), but rather their aggregates (groupings of procedures with similar levels of resource utilisation). The procedures classifications and their aggregates are summarised in the table below:

	UK	GERMANY	NETHERLANDS	AUSTRIA	FRANCE	DENMARK	SWEDEN	ITALY	SPAIN	POLAND	FINLAND	NORWAY	PORTUGAL
Name of procedure classification	OPCS	OPS-301 v. 2.1	Tarrifboek	MEL	CCAM	NOMESCO	NOMESCO	ICD-9-CM	CIE-9-MIC (ICD-9-CM)	ICD-9-CM	NOMESCO	NOMESCO	CIE-9-MIC (ICD-9-CM)
Approx. no of proceudres	6900	8000	3000	600	?	8000	8000	6500	6500	7000	8000	8000	6500
Aggregates	HRG	SE/FP	none	MEL groups	GHM	DkDRG	NordDRG	DRG	GDR (DRG)		NordDRG	NordDRG	GDH (HCFA DRG v. 16.0)
No of aggregates	547	70	none	341 surgical (522 medical)	520 inpatient (100 outpatient)	560	490	490	650	no national agregates	490	490	490
Dosease classification	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10	ICD-10

The differences in procedure classifications can be summarised as follows:

- different level of clinical detail - the range of difference can be expressed by number of categories in each particular classification system (the lowest number in Austria (600) and the highest (more than 8000) in France),

- use of different surgical techniques (technology) i.e. how the procedure is performed - this ranges from NOMESCO classification where the technique is generally ignored to Austrian MEL procedure catalogue where the technique seems to be the prevalent issue in describing a il aim of performing particular procedure.

Further differences appear when one compares aggregates of procedures. The aggregates are in use in thirteen out of the thirteen countries, that we compared. Some of the systems are conceptually based on DRGs developed in the USA in seventies, although only one (DkDRG) openly refers to its "older brother". The French PMSI, Austrian MEL and English HRG were developed domestically in those countries, and have evolved significantly from the original DRG concept.

The total number of surgical diagnostic groups in the countries which use them are surprisingly similar to each other, estimated at 300 to 400, out of 500 - 800 of all groups.

When one gets down to the detail however, the similarities are less obvious. It is characteristic that in the PMSI, HRG and DkDRG systems, the focus is on the status of the patient rather than the technique or type of treatment. In these systems the patients are often grouped according to their primary condition (treatment) and secondly according to their co-morbidities and/or age. In contrast the Austrian MEL and German FP (and SE) catalogue the techniques used in the procedure rather than the condition of the patient, in this instance the level of procedures, rather than the severity of the illness is the prevailing measure of case mix. In this latter system similar patients, in terms of disease and age, may appear in different FP groups, because a different techniques of procedure was used to treat the illness.

Finally the exercise was divided into following steps:

- matching the procedures (and their codes) across the six procedure classification schemes,
- matching diagnostic groups, where they exist,
- identification of point values attributed to each diagnostic group, where appropriate,
- calculation of the monetary value attributed to each diagnostic group,
- conversion of the monetary value into euros, where appropriate.

Initially, the comparative analysis was conducted on about 350 procedures, selected from the OPCS catalogue. In selecting the procedures we took account of the following criteria:

- the procedure should be categorised in a group termed "elective" (ELIP). This was understood to be surgical procedure which could be planned and performed at a later date,
- the procedure should be frequently used and involve a universally accepted techniques,
- the procedure should have an equivalent in most of the ten countries procedure classification schemes.

In general all of the elective procedures, in the compared systems, were matched to the UK OPCS list of procedures. This meant that similarities were found primarily between OPSC procedure and its equivalents in the other coding schemes. We found that OPCS procedures matched each of the other countries procedures better than any of the other countries matched each other. This is the result of an "accumulation" of mistakes, when the procedures are named in different languages some of which allow greater specificity than others.

From the 350 procedures originally identified across all thirteen Countries, we have selected 89 procedures for the main report, from a range of speciality areas, which are in relatively common use, and which exist in several (but not always in all) compared Country classifications and systems. We also concentrated on the types of procedures which could potentially be subject of international transactions. Some of the procedures, like heart transplantation, which are less likely to be purchased abroad, were taken to provide a more complete picture of the range of surgical procedures.

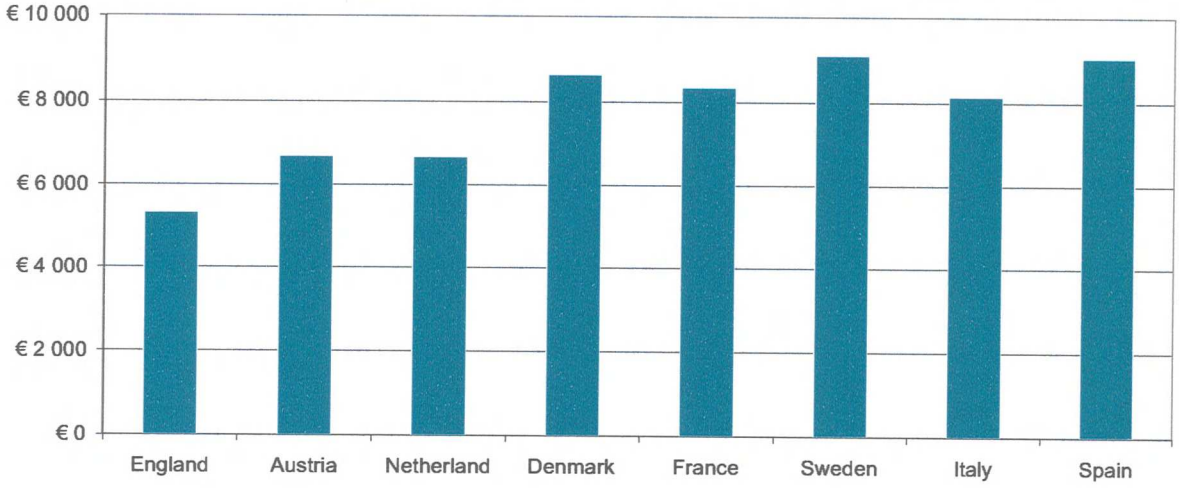
The following graphs show a sample of the results of the analysis. Because of the different classification systems not every country is represented in every procedure. Similarly some countries have up to four prices for an individual procedure depending upon the surgical technique. Others show two or three prices depending upon the severity of the patients condition or the presence of co-morbidities.

Overall the matching of procedures was as follows:

	UK	GERMANY	NETHERLANDS	AUSTRIA	FRANCE	DENMARK	SWEDEN	ITALY	SPAIN	POLAND
No of matched procedures	89	58	87	86	87	84	89	68	75	29
Average price of procedures	€ 5,329	€ 26,934	€ 6,672	€ 6,663	€ 8,623	€ 8,326	€ 9,102	€ 8,127	€ 9,053	€ 7.380
No of prices identified	101	58	149	86	119	129	160	105	107	33

* The high average price shown for Germany and Poland is a reflection of the fact that we could only match 58 OPCS procedures to the FP system in Germany and 29 procedures in Poland. This is because of the staged introduction of the new systems in each country. The procedures we have been able to match tend to be higher priced procedures which, when compared with similar procedures in other countries tend to be mid range. We have therefore omitted Germany and Poland from the graph below.

AVERAGE PRICE FOR SELECTED ELECTIVE PROCEDURE



Surprisingly the UK tends to have on average the lowest costs for surgical procedures despite the fact that production costs i.e. staff salaries will probably be in the higher banding. It is far from clear if this represents increased efficiency within the UK hospital system or if it is the product of the high demand being met by a limited capacity.

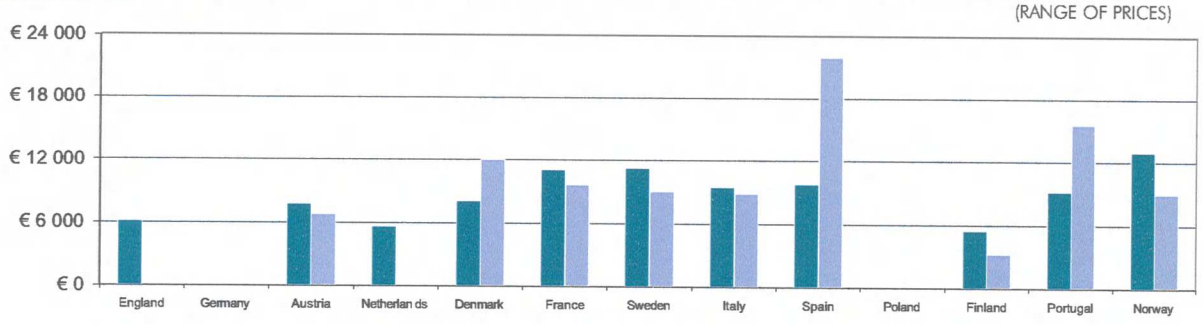
The graphs show the average price of the procedure based upon national tariff data. Where more then one bar appears this indicates that the procedure is represented by more than one procedure code.

THE RESULTS

NEUROSURGERY

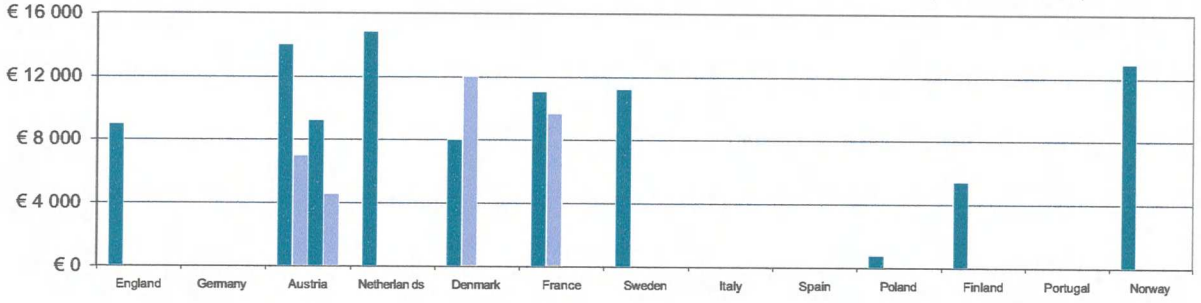
EXCISION OF LESION OF TISSUE OF FRONTAL LOBE OF BRAIN

(RANGE OF PRICES)



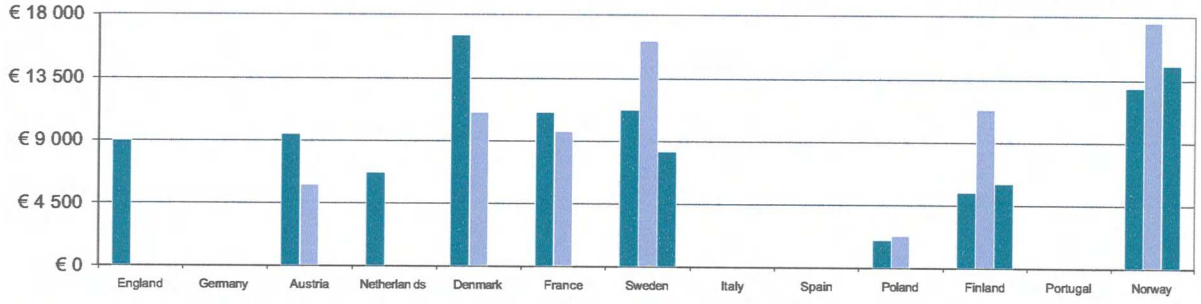
IMPLANTATION OF NEUROSTIMULATOR INTO BRAIN

(RANGE OF PRICES)



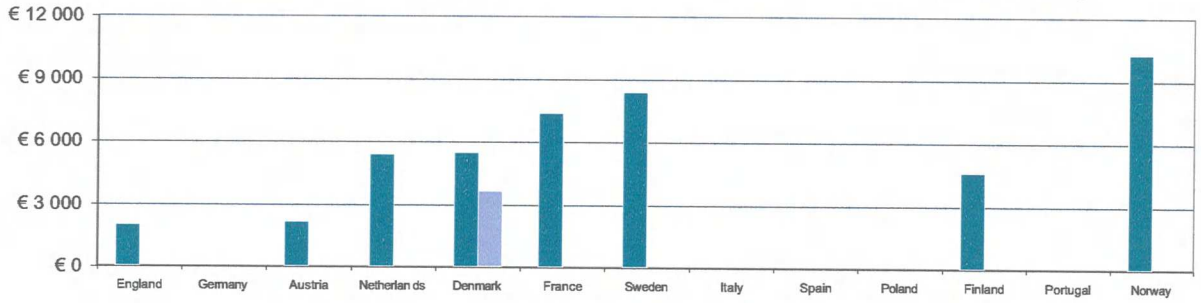
OBLITERATION OF ANEURYSM OF CEREBRAL ARTERY NEC

(RANGE OF PRICES)



PERCUTANEOUS CHORDOTOMY OF SPINAL CORD

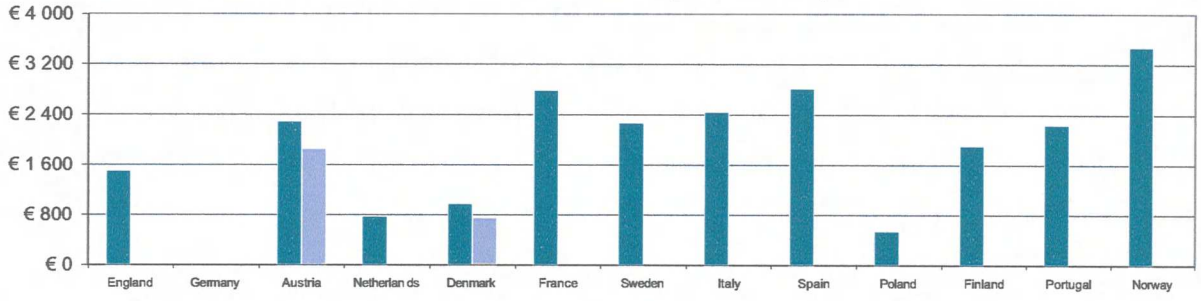
(RANGE OF PRICES)



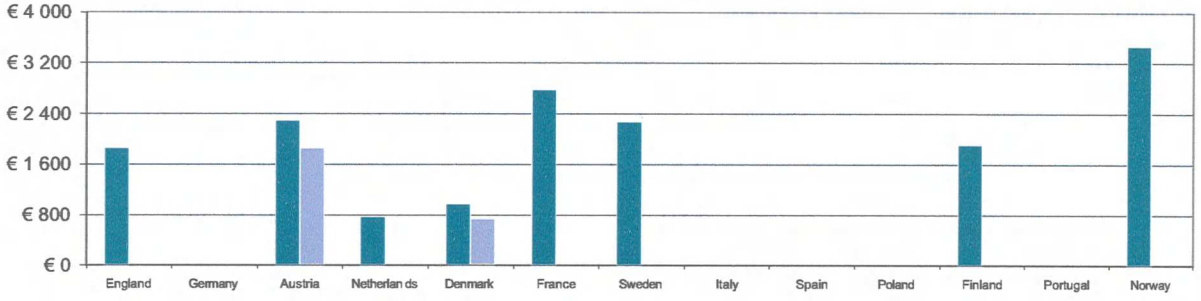
THE RESULTS

EYE SURGERY

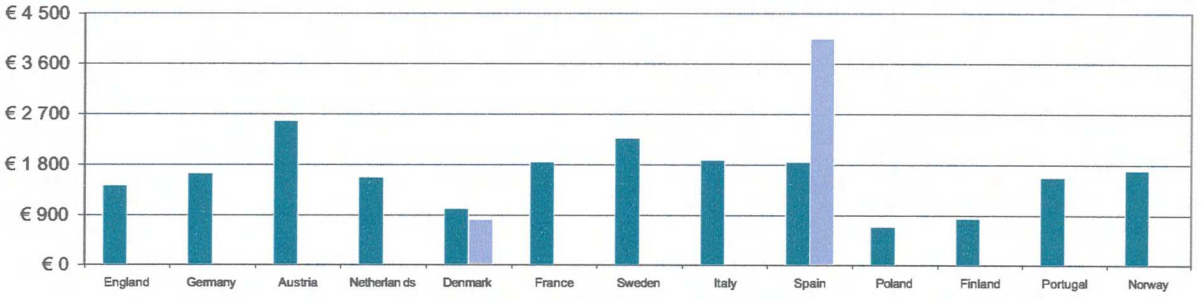
TRABECULECTOMY
(RANGE OF PRICES)



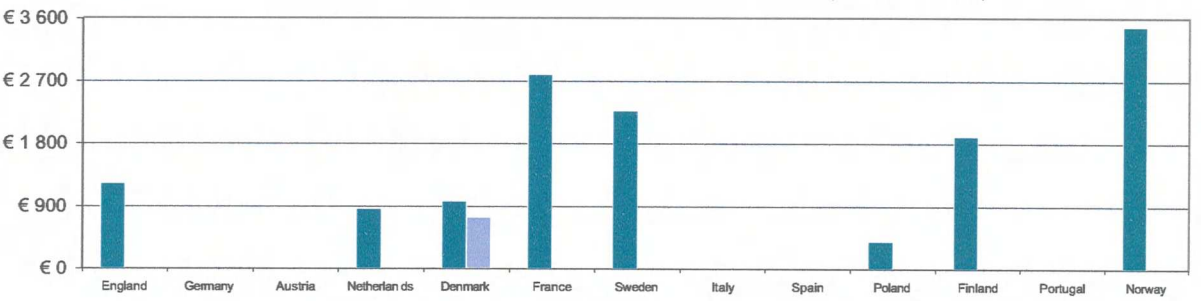
GONIOTOMY
(RANGE OF PRICES)



PHAKOEMULSIFICATION CATARACT EXTRACTION WITH LENS IMPLANTS
(RANGE OF PRICES)

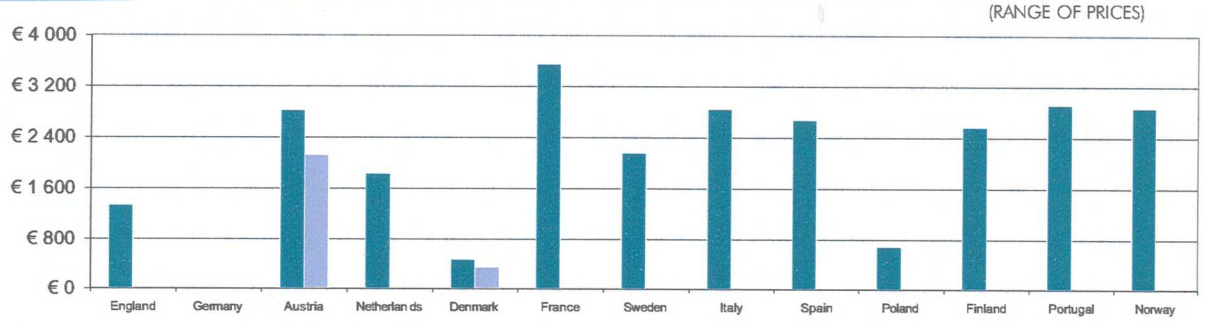


EXCISION OF LESION OF CORNEA NEC
(RANGE OF PRICES)



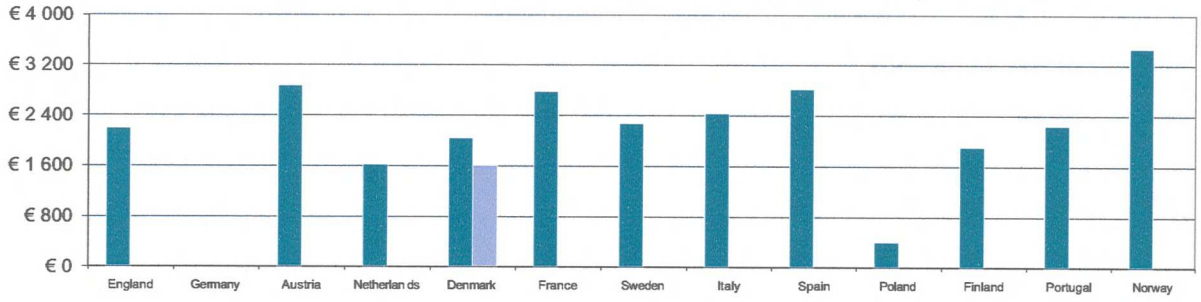
PHOTOCOAGULATION OF RETINA FOR DETACHMENT OS

(RANGE OF PRICES)



LAMELLAR GRAFT TO CORNEA

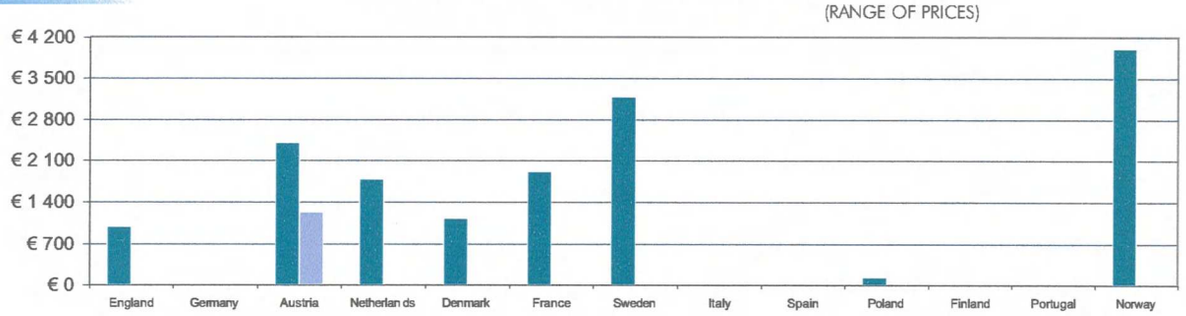
(RANGE OF PRICES)



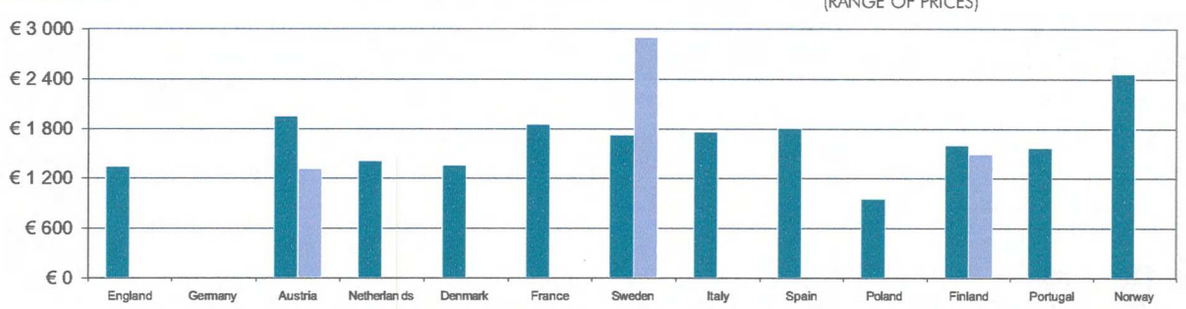
THE RESULTS

EAR, NOSE AND THROAT

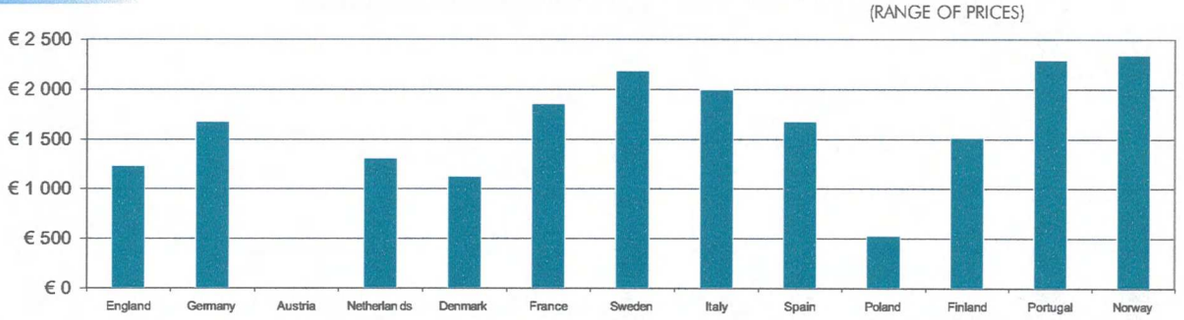
EXCISION OF LESION OF EXTERNAL EAR
(RANGE OF PRICES)



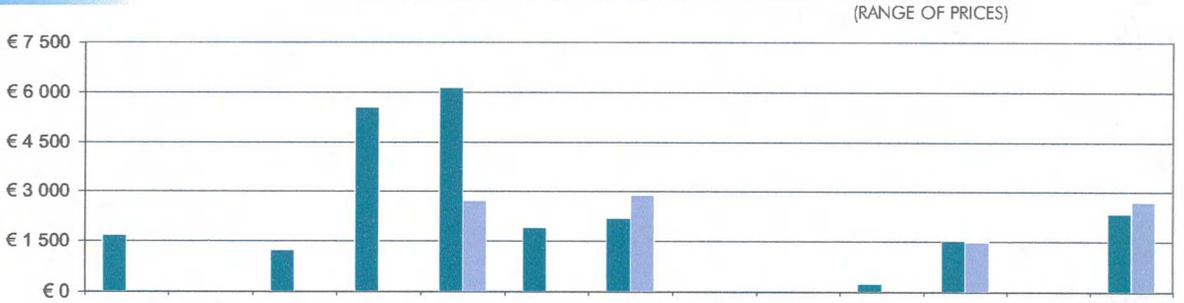
OPERATIONS ON SEPTUM OF NOSE OS
(RANGE OF PRICES)



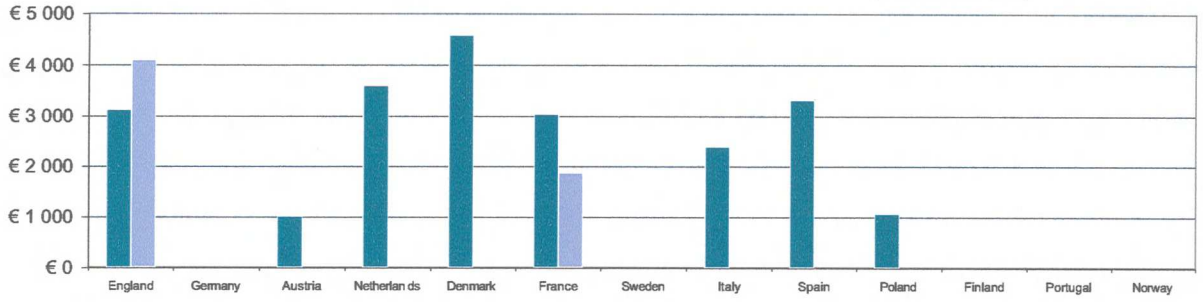
SUBMUSOUS EXCISION OF SEPTUM OF NOSE
(RANGE OF PRICES)



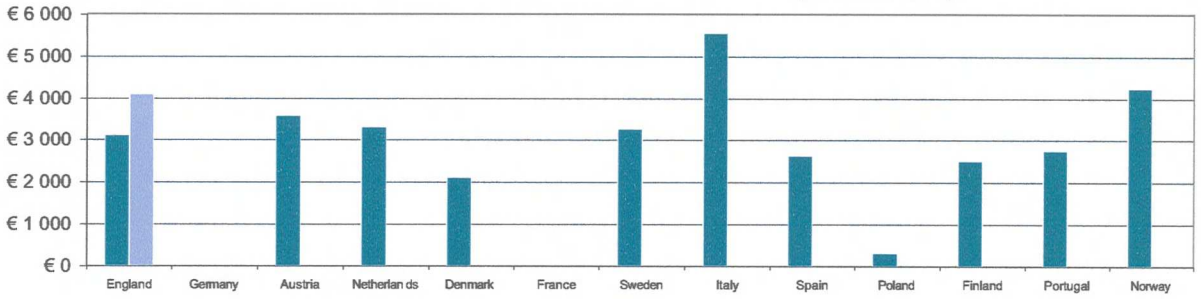
PLASTIC OPERATIONS ON EXTERNAL EAR OS
(RANGE OF PRICES)



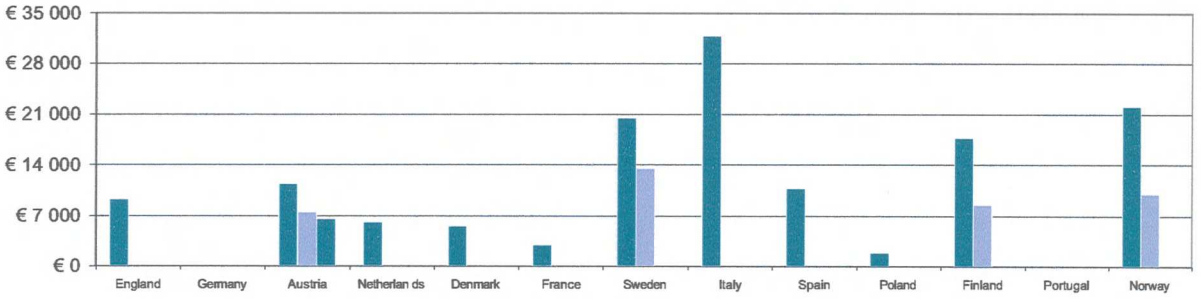
CORRECTION OF DEFORMITY OF PALATE OS
(RANGE OF PRICES)



EXCISION OF PAROTID GLAND NEC
(RANGE OF PRICES)



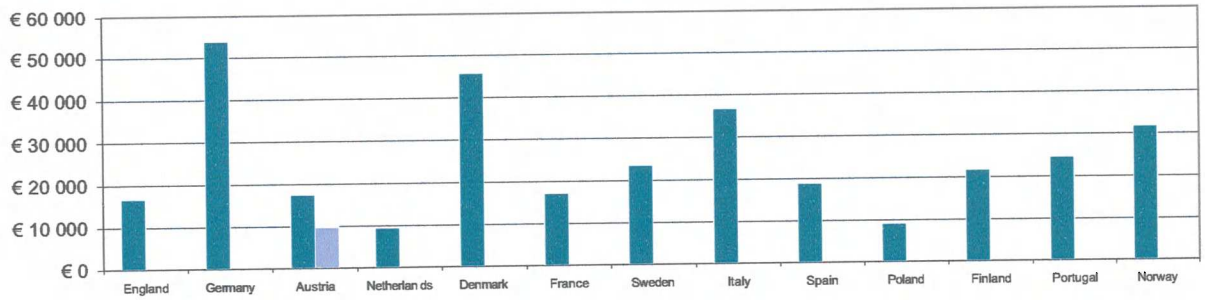
TOTAL LARYNGECTOMY
(RANGE OF PRICES)



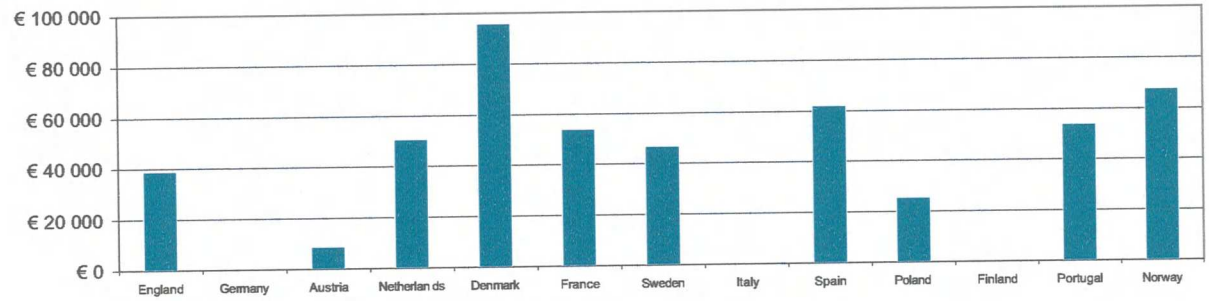
THE RESULTS

ORGAN TRANSPLANTS

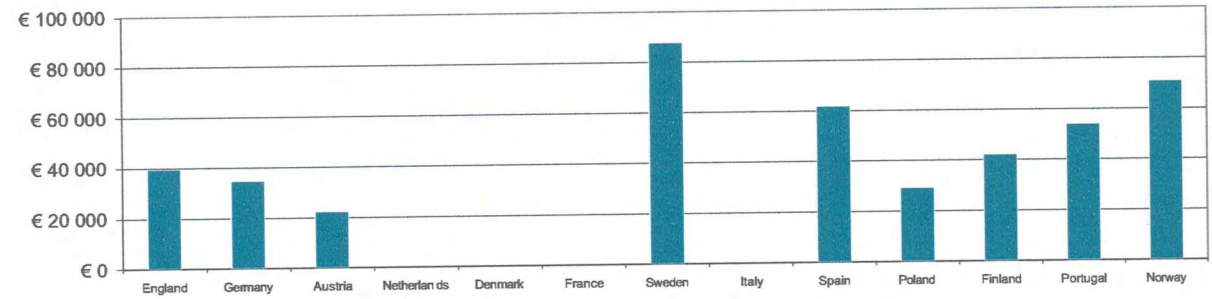
ALLOTRANSPLANTATION OF KIDNEY FROM LIVE DONOR
(RANGE OF PRICES)



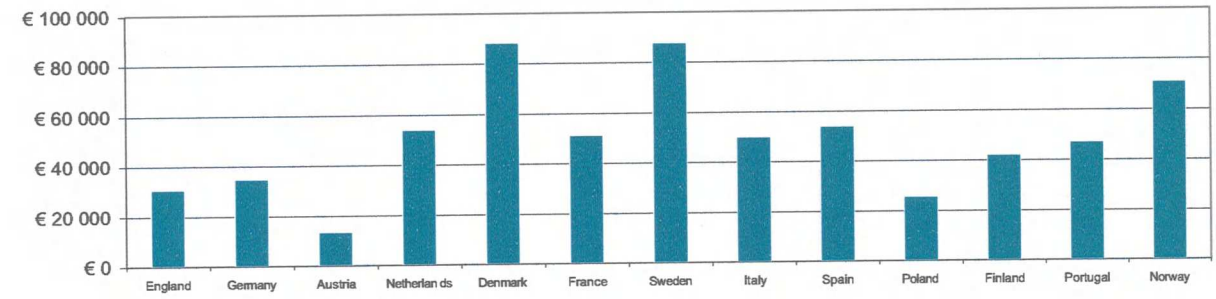
TRANSPLANTATION OF LUNG OS
(RANGE OF PRICES)



ALLOTRANSPLANTATION OF HEART AND LUNG
(RANGE OF PRICES)

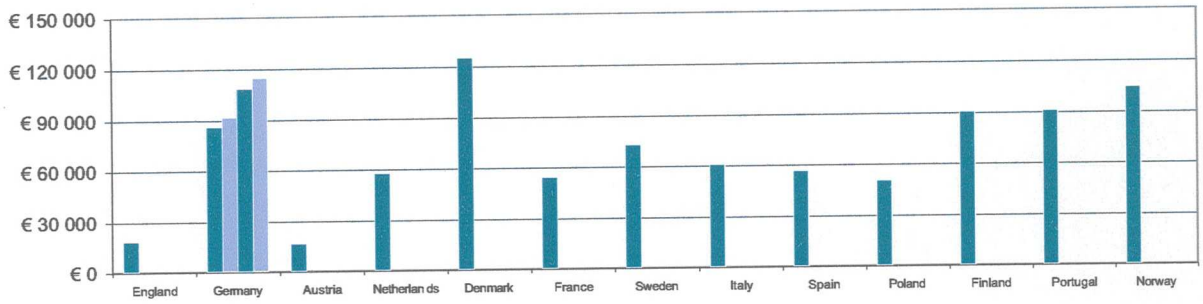


ALLOTRANSPLANTATION OF HEART NEC
(RANGE OF PRICES)



TRANSPANTATION OF LIVER OS

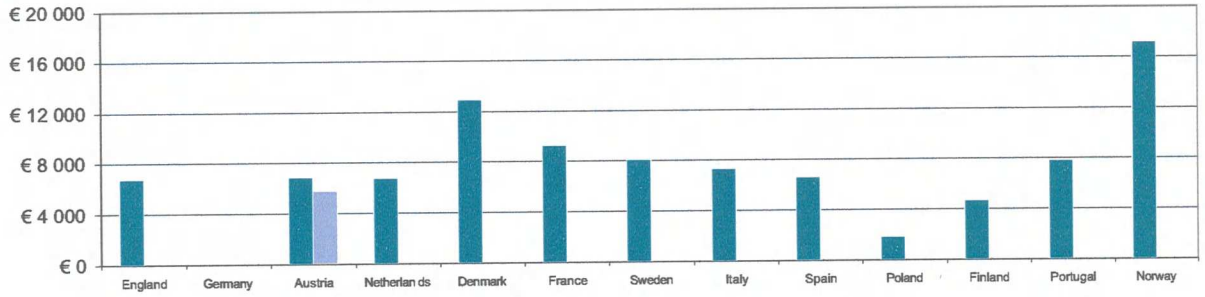
(RANGE OF PRICES)



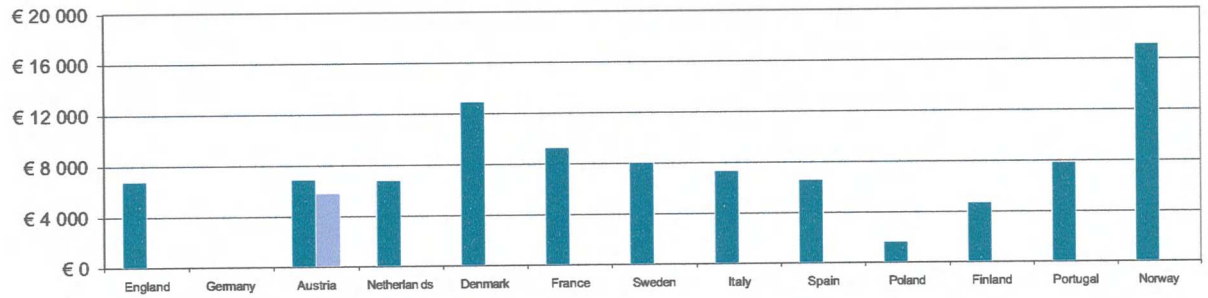
THE RESULTS

THORACIC SURGERY

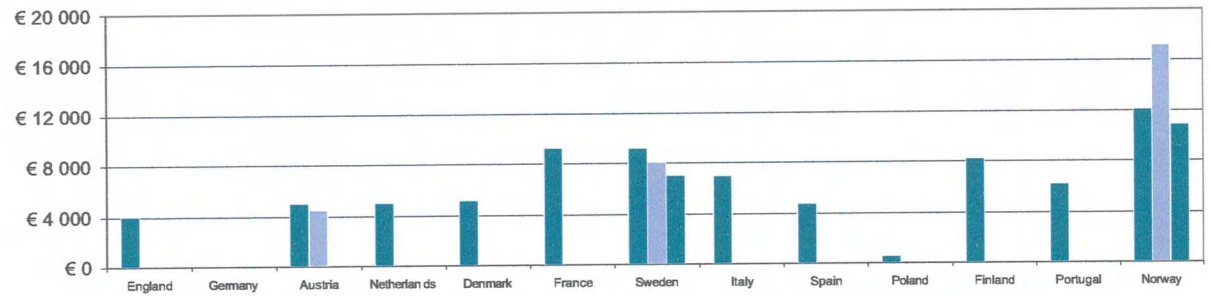
TOTAL PNEUMONECTOMY
(RANGE OF PRICES)



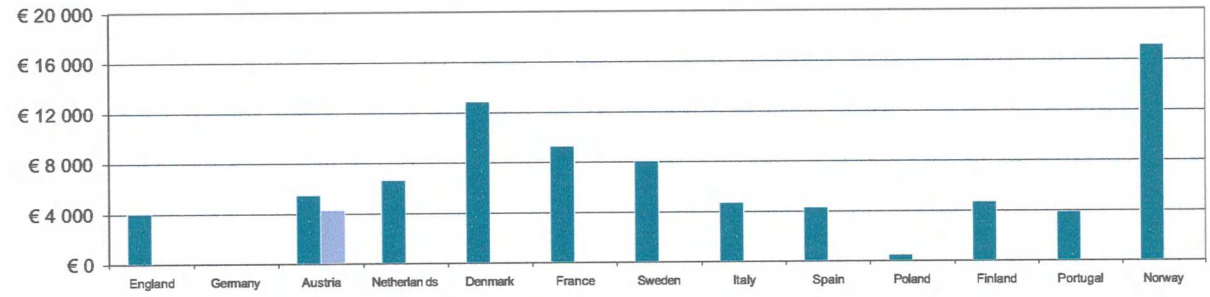
LOBECTOMY OF LUNG
(RANGE OF PRICES)



OPEN OPERATIONS ON MEDIASTINUM OS
(RANGE OF PRICES)



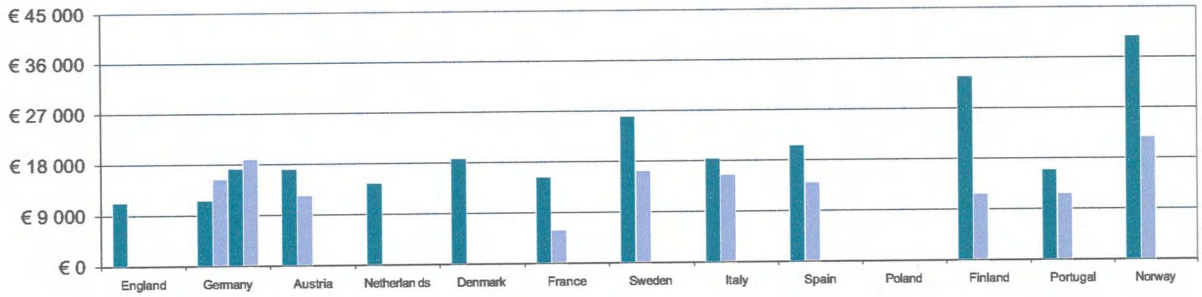
REPAIR OF CONGENITAL DIAPHRAGMATIC HERNIA
(RANGE OF PRICES)



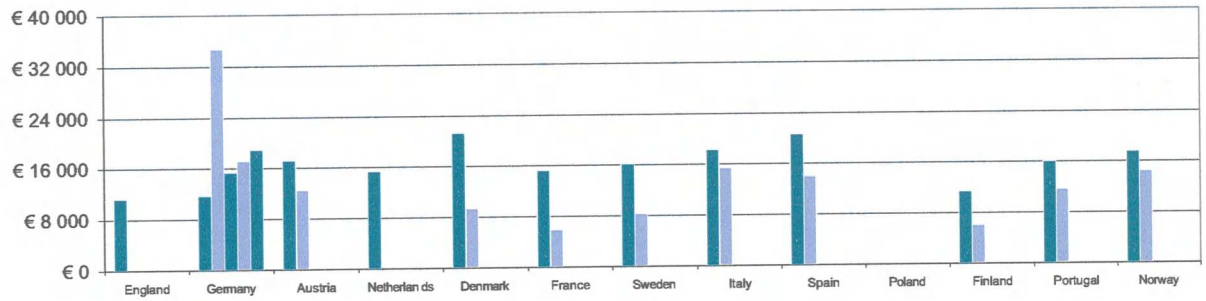
THE RESULTS

CARDIAC SURGERY

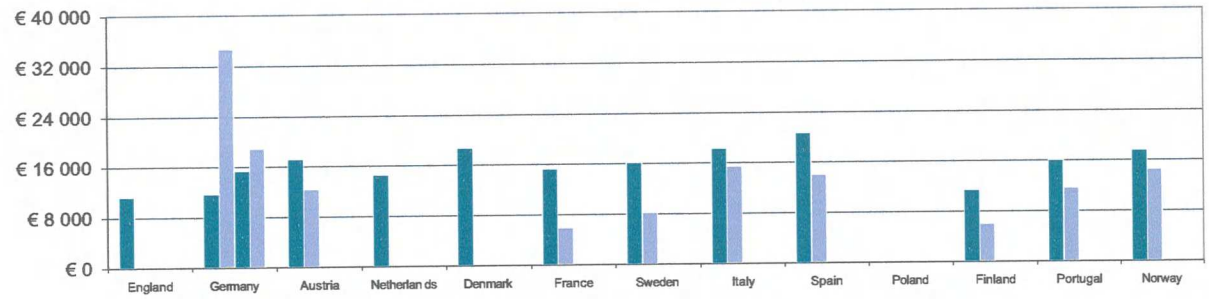
MITRAL VALVULOPLASTY NEC
(RANGE OF PRICES)



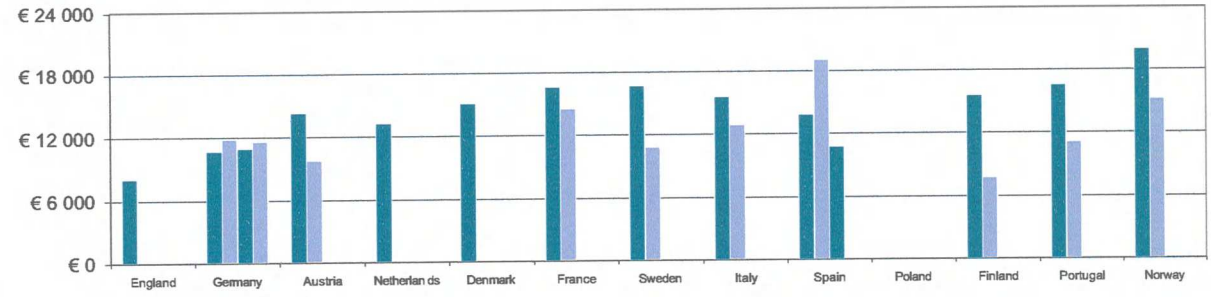
AORTIC VALVULOPLASTY NEC
(RANGE OF PRICES)



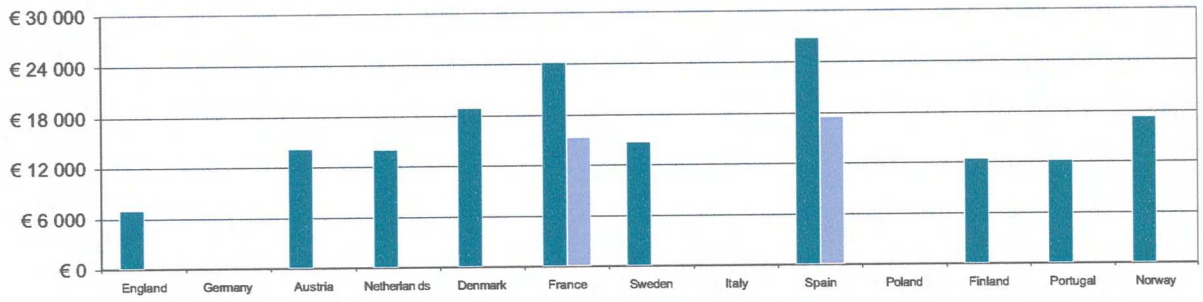
TRICUSPID VALVULOPLASTY NEC
(RANGE OF PRICES)



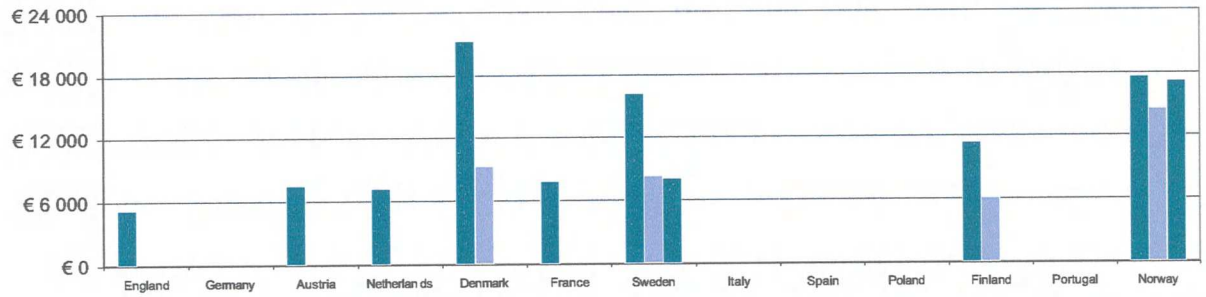
AUTOGRAFT REPLACEMENT OF ONE CORONARY ARTERY NEC
(RANGE OF PRICES)



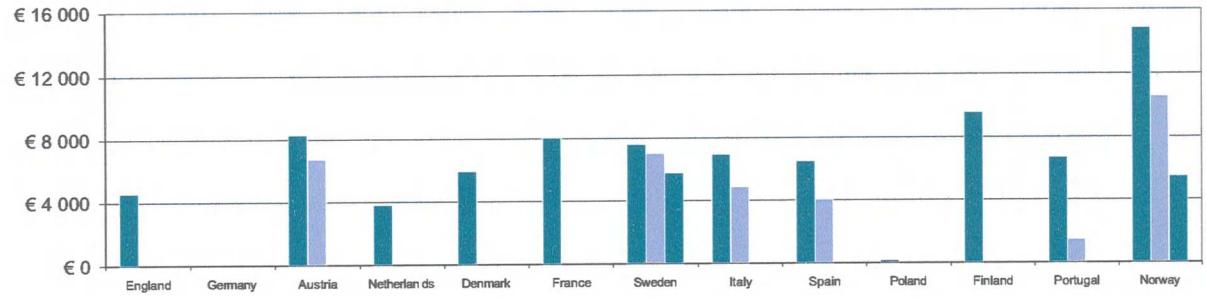
CORRECTION OF TETRALOGY OF FALLOT OS
(RANGE OF PRICES)



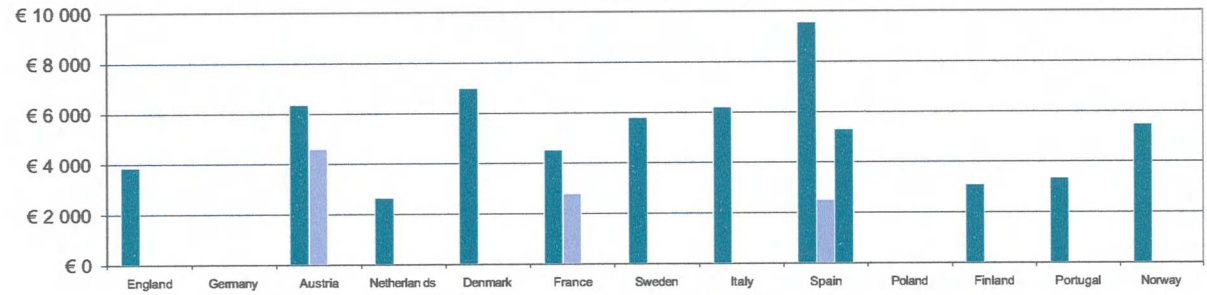
FREEING OF ADHESIONS OF PERICARDIUM
(RANGE OF PRICES)



IMPLANTATION OF INTRAVENOUS CARDIAC PACEMAKER SYSTEM
(RANGE OF PRICES)



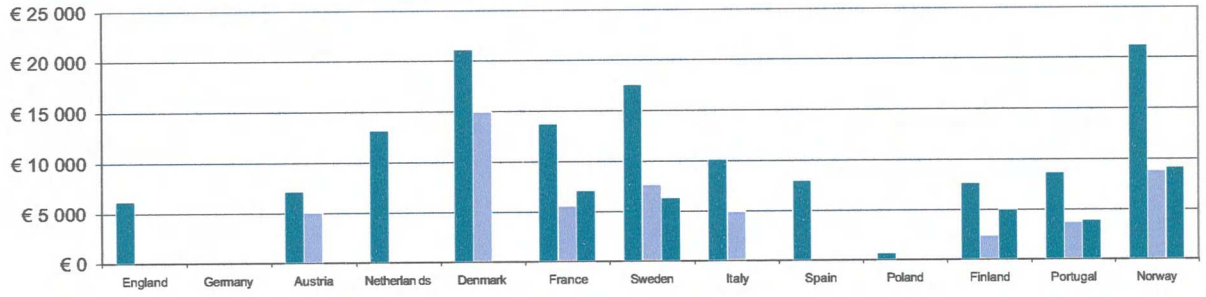
PERCUT TRANSLUM BALLON ANGIOPLASTY BYPASS GRAFT CORON ART
(RANGE OF PRICES)



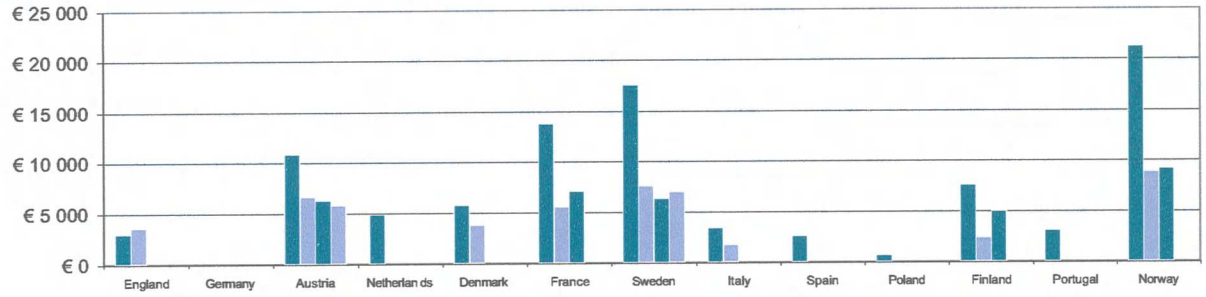
THE RESULTS

ABDOMINAL SURGERY

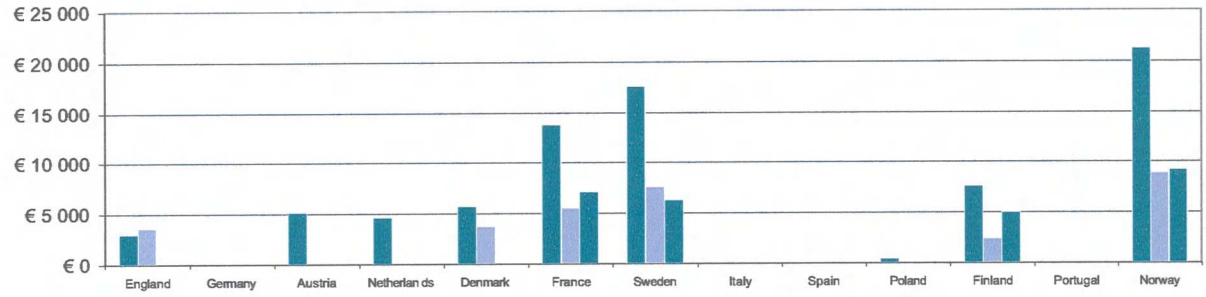
PARTIAL EXCISION OF STOMACH OS
(RANGE OF PRICES)



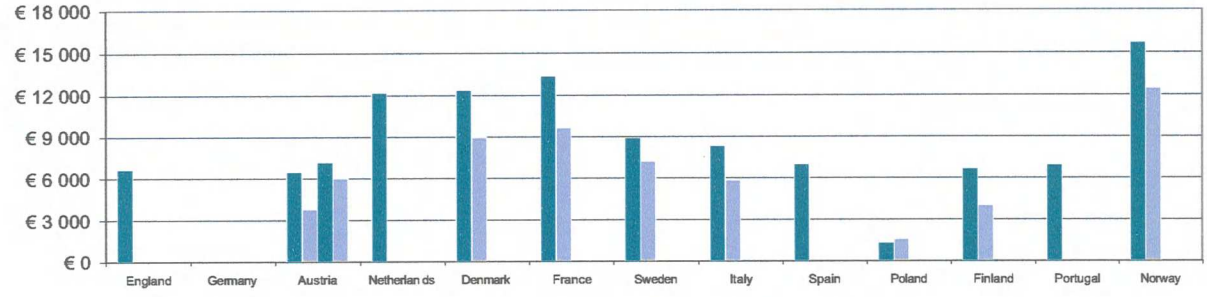
EXCISION OF LESION OF DUODEUM
(RANGE OF PRICES)



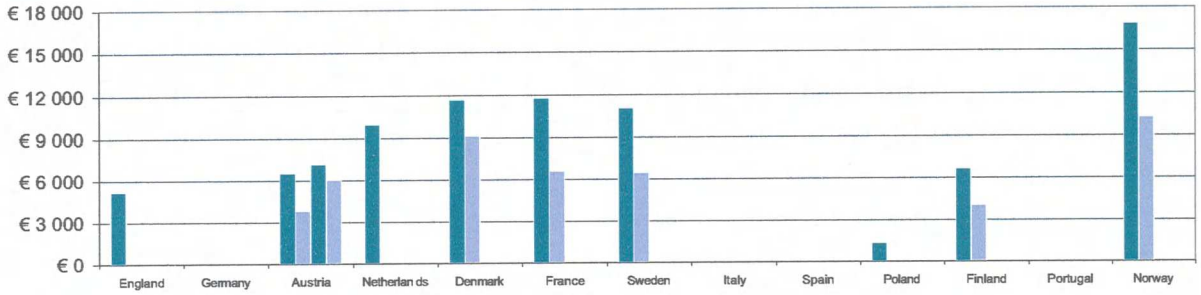
PYLOROMYOTOMY
(RANGE OF PRICES)



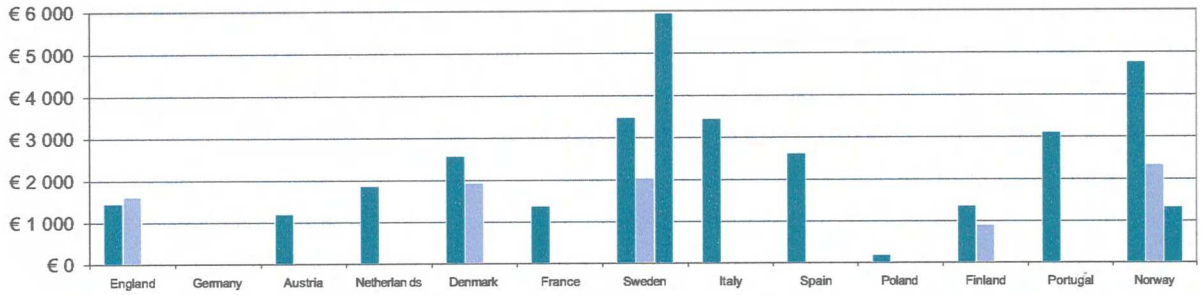
EXCISION OF RECTUM OS
(RANGE OF PRICES)



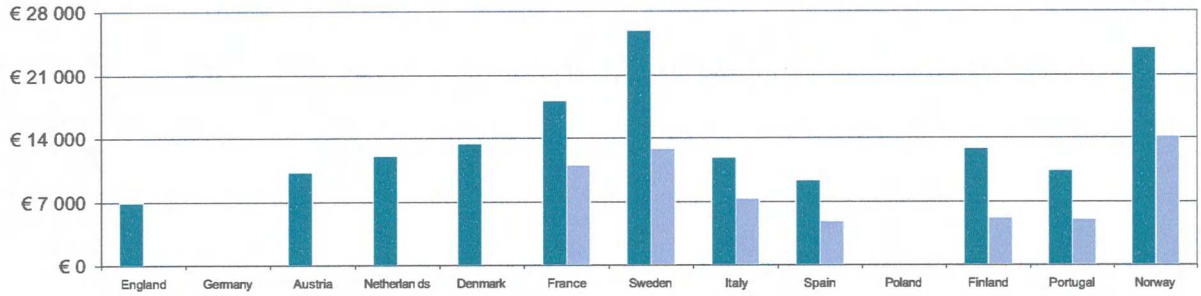
TOTAL EXCISION OF COLON OS
(RANGE OF PRICES)



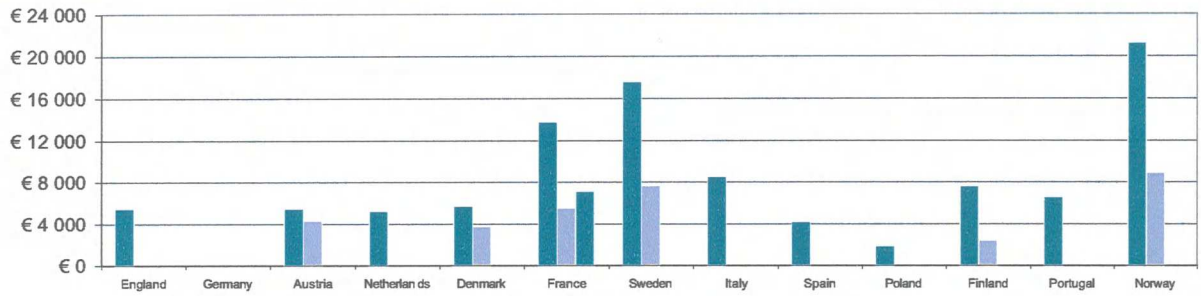
EXCISION OF ANAL FISSURE
(RANGE OF PRICES)



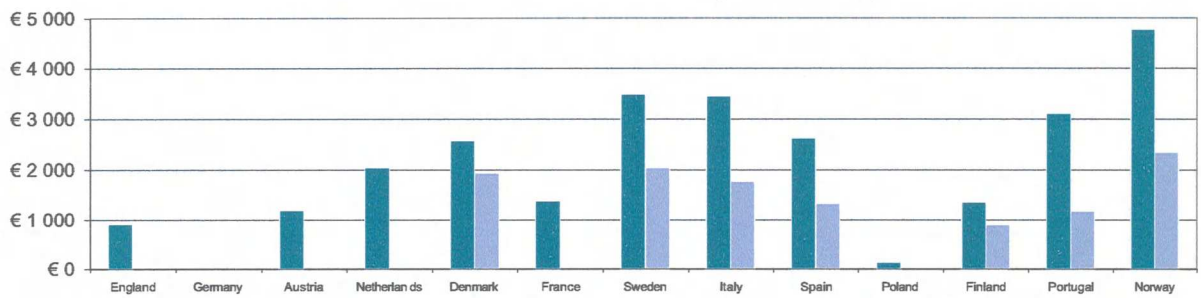
LEFT PANCREATECTOMY AND DRAINAGE OF PANCREATIC DUCT
(RANGE OF PRICES)



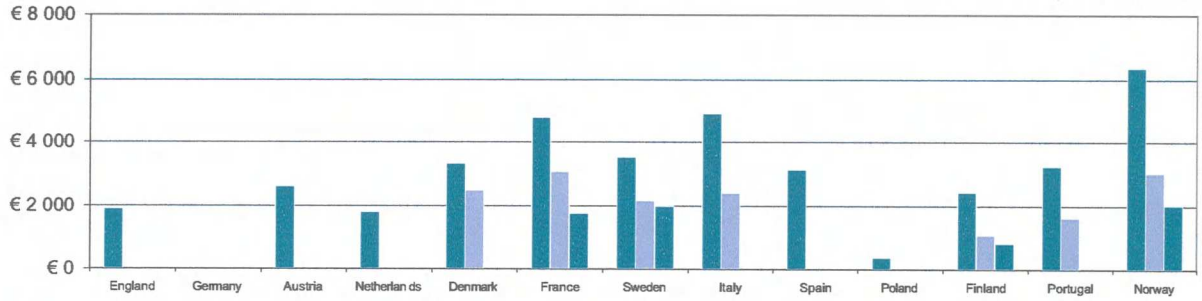
LOCAL LIGATION OF VARICES OF OESOPHAGUS
(RANGE OF PRICES)



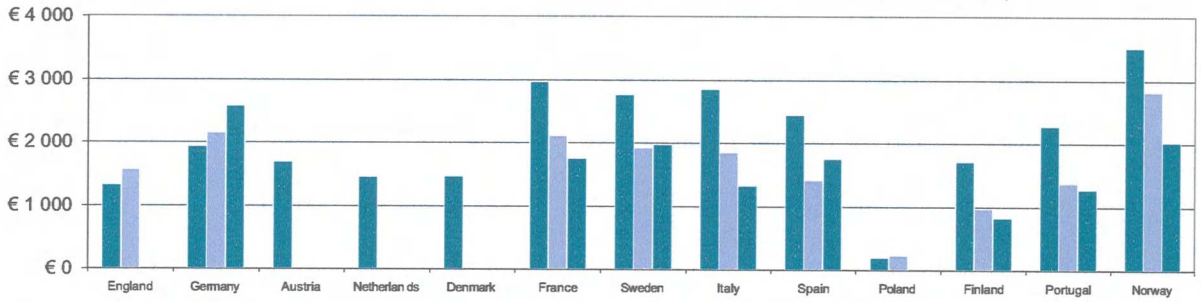
HAEMORRHOIDECTOMY
(RANGE OF PRICES)



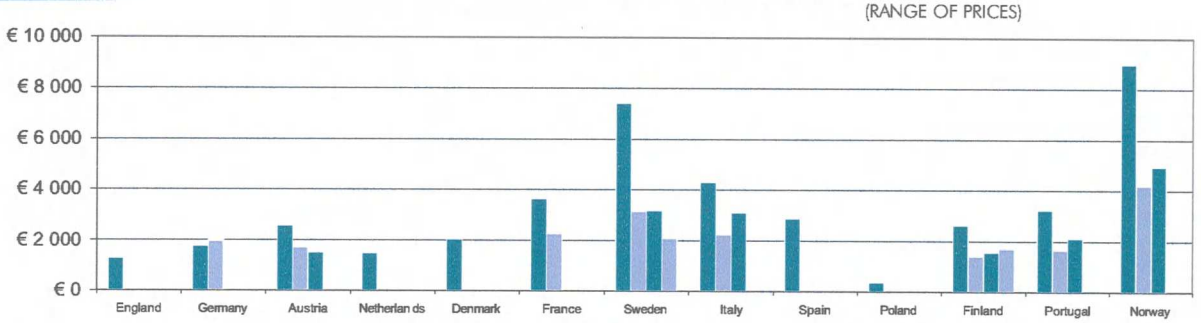
PRIMARY REPAIR INCISIONAL HERNIA USE INSERT PROSTH MATERIAL
(RANGE OF PRICES)



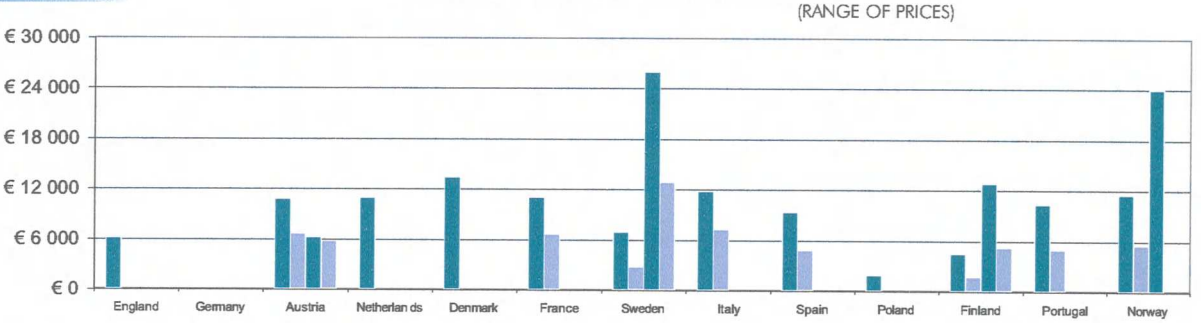
PRIMARY REPAIR OF INGUINAL HERNIA OS
(RANGE OF PRICES)



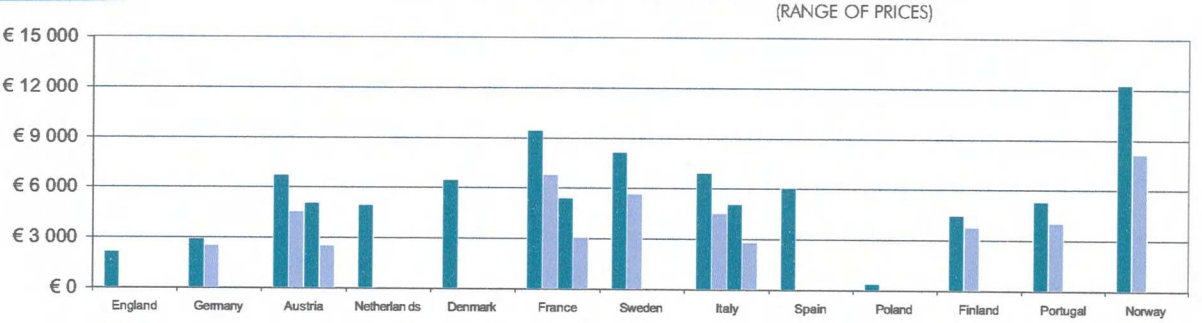
PLANNED DELAYED APPENDICECTOMY NEC
(RANGE OF PRICES)



RESECTION OF SEGMENT OF LIVER
(RANGE OF PRICES)



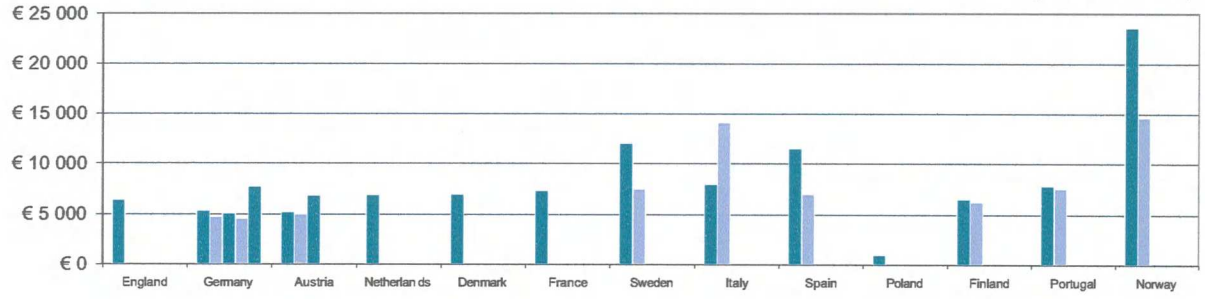
TOTAL CHOLECYSTECTOMY NEC
(RANGE OF PRICES)



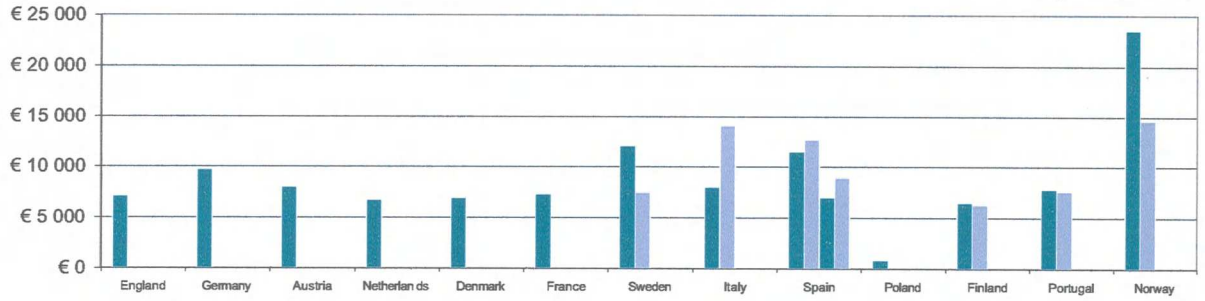
THE RESULTS

ORTHOPAEDIC SURGERY

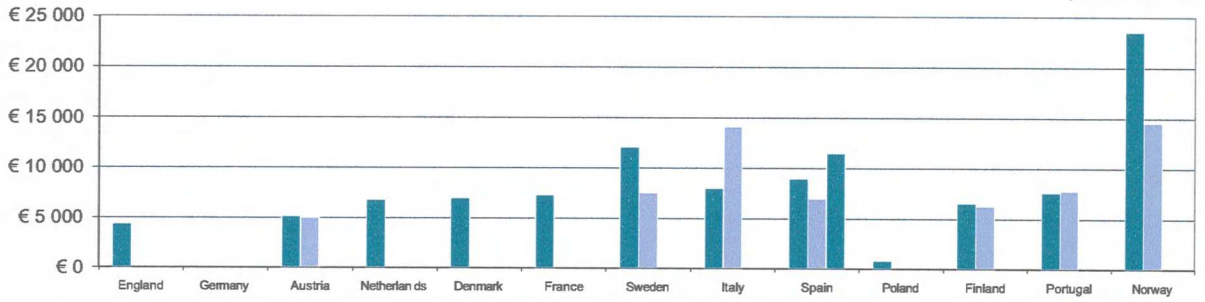
TOTAL PROSTHETIC REPLACEMENT OF HIP JOINT USING CEMENT OS
(RANGE OF PRICES)



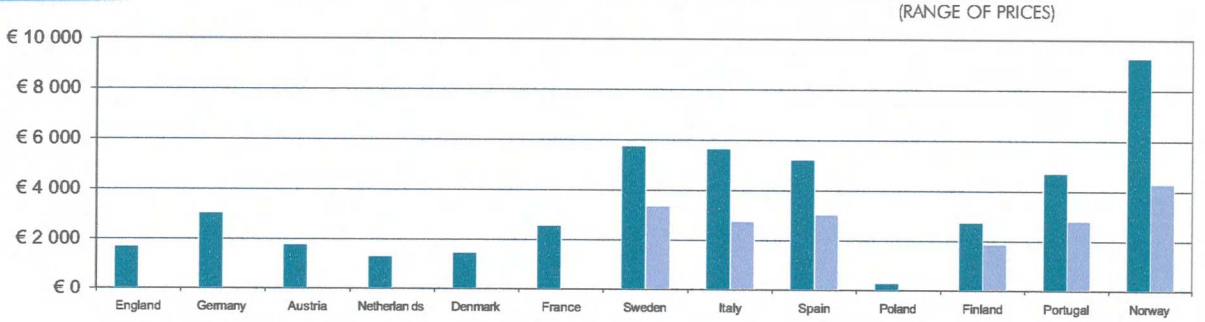
PRIMARY TOTAL PROSTH REPLACEMENT OF KNEE JOINT USING CEMENT
(RANGE OF PRICES)



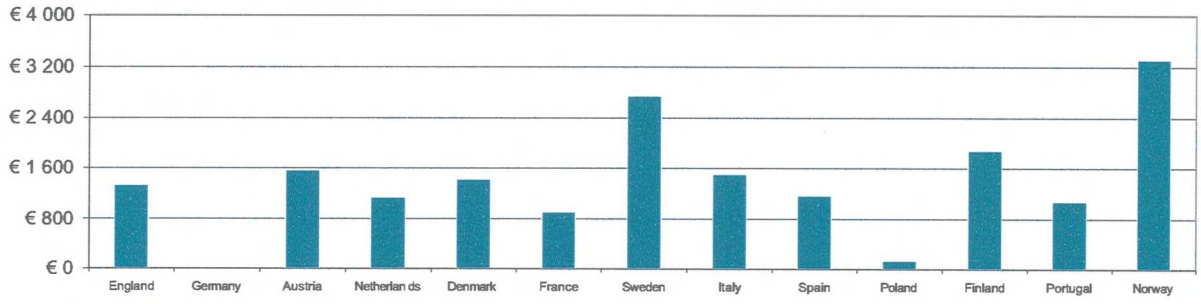
PRIMARY PROSTHETIC REPLACEMENT HEAD OF HUMERUS USING CEMENT
(RANGE OF PRICES)



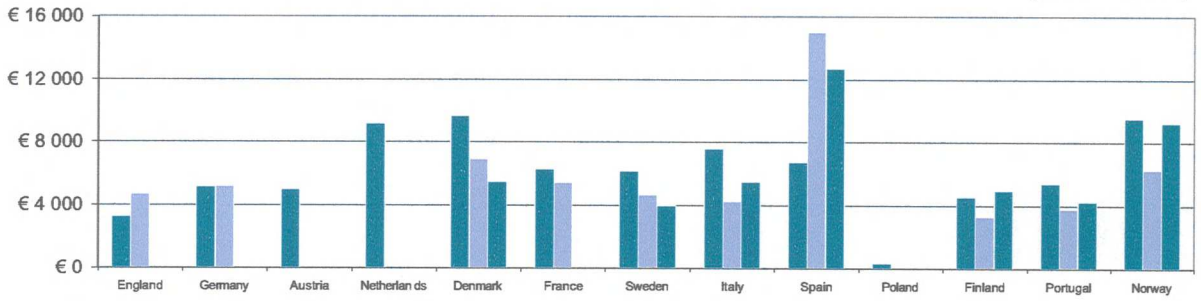
SOFT TISSUE CORRECTION OF HALLUX VALGUS
(RANGE OF PRICES)



CARPAL TUNNEL RELEASE
(RANGE OF PRICES)



PRIM OPEN REDUCT FRACTURE NECK FEM & OPEN FIX USE PIN/PLATE
(RANGE OF PRICES)

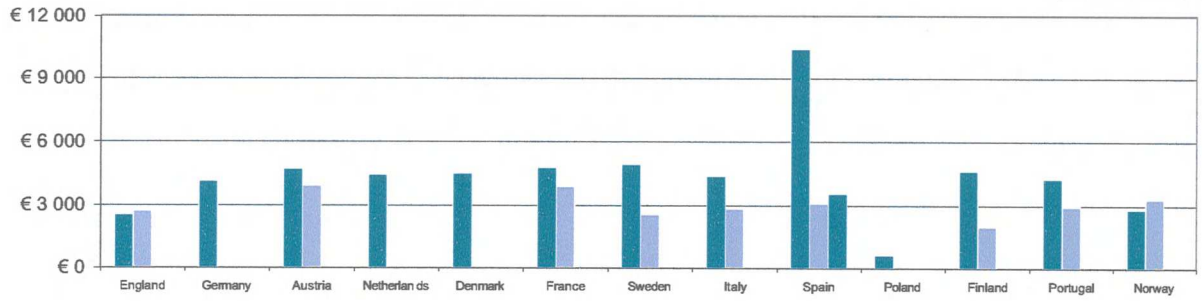


THE RESULTS

BREAST SURGERY

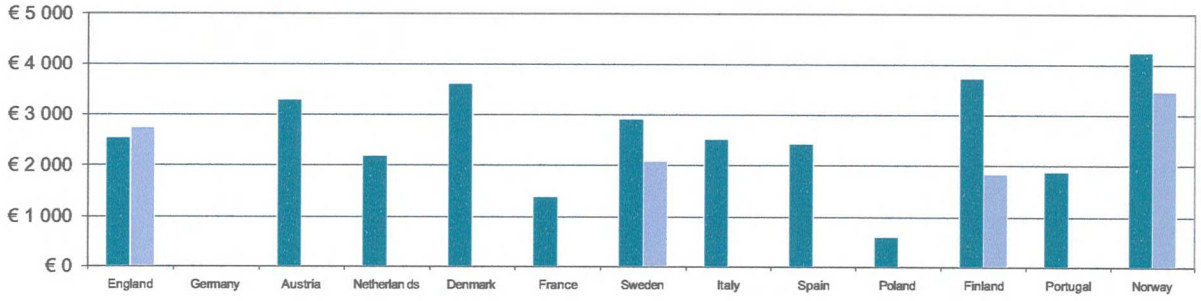
TOTAL MASTECTOMY AND EXCISION OF BOTH PECTORAL MUSCLES NEC

(RANGE OF PRICES)



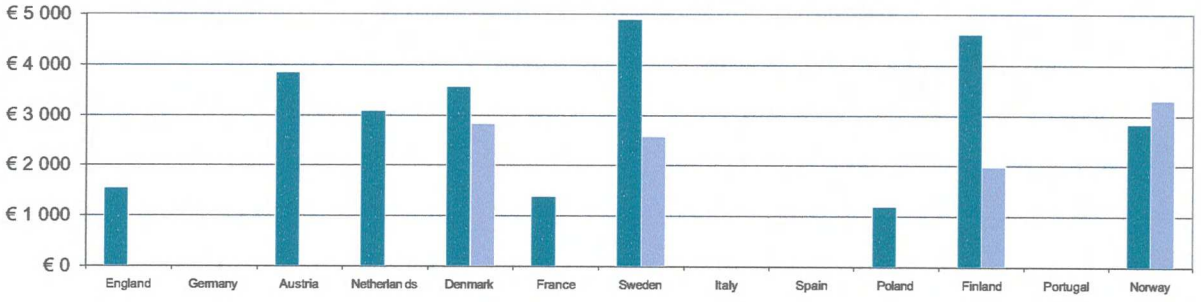
REDUCTION MAMMOPLASTY

(RANGE OF PRICES)



PROSTHESIS FOR BREAST OS

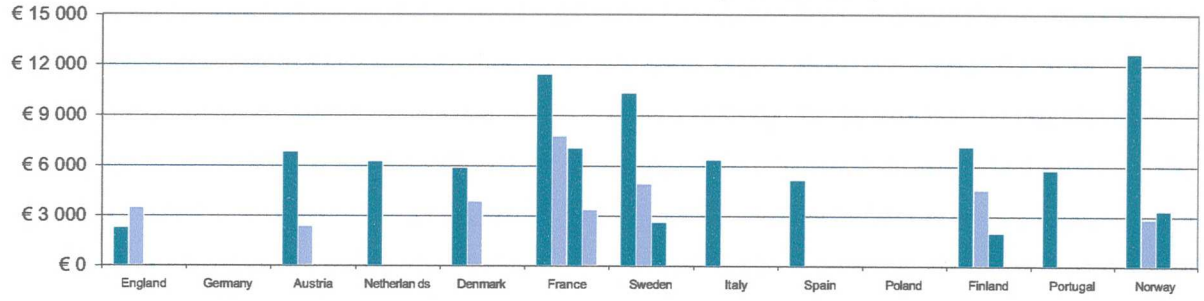
(RANGE OF PRICES)



THE RESULTS

SKIN TRANSPLANTS

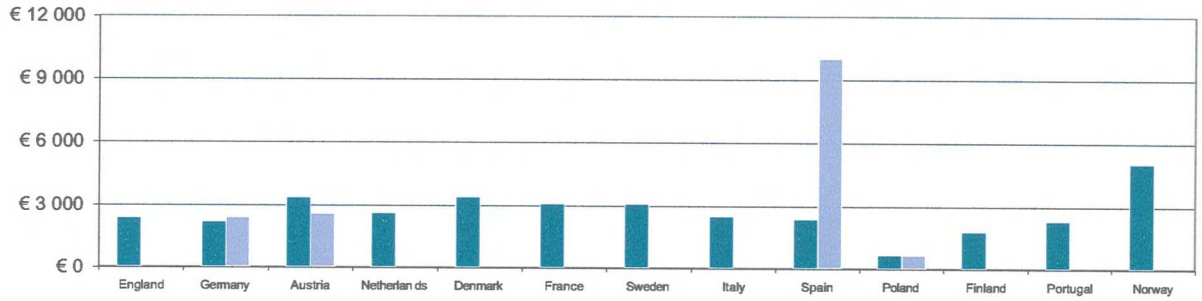
ALLOGRAFT OF SKIN NEC
(RANGE OF PRICES)



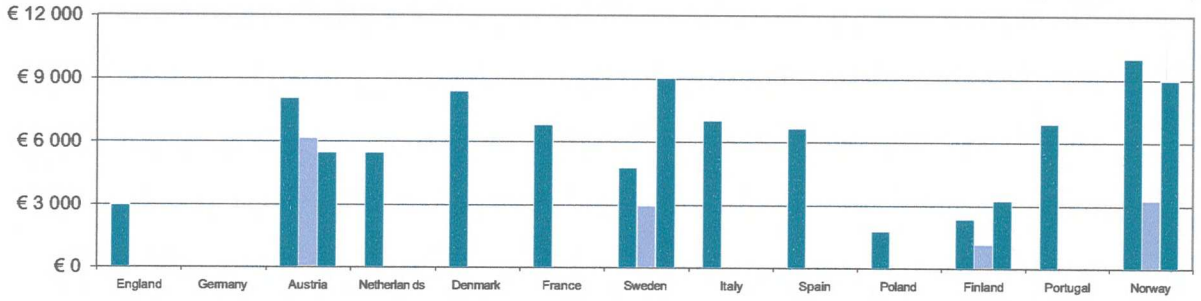
THE RESULTS

ENDOCRINE ORGANS

LOBECTOMY OF THYROID GLAND NEC
(RANGE OF PRICES)



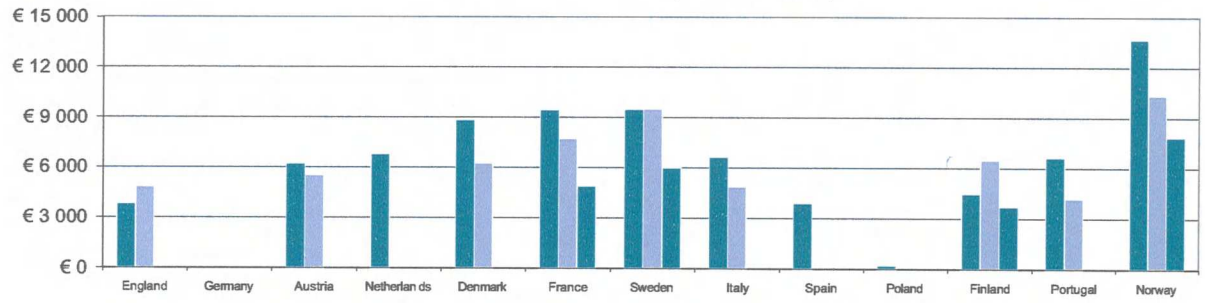
BILATERAL ADRENALECTOMY AND TRANSPOSITION OF ADRENAL TISSUE
(RANGE OF PRICES)



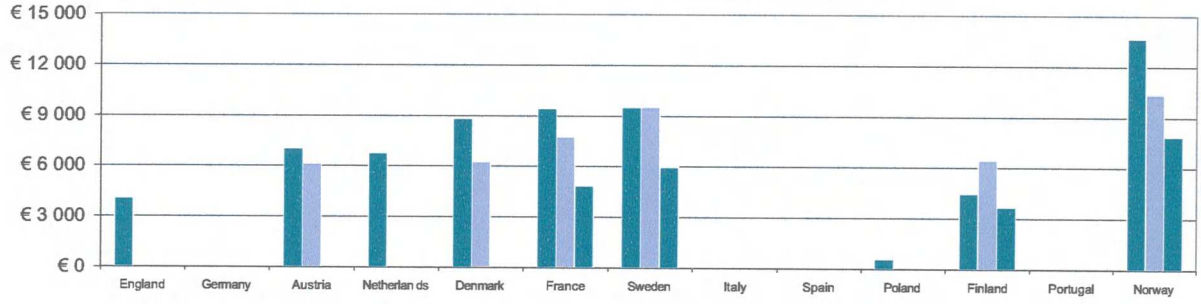
THE RESULTS

GENITO-URINARY SURGERY

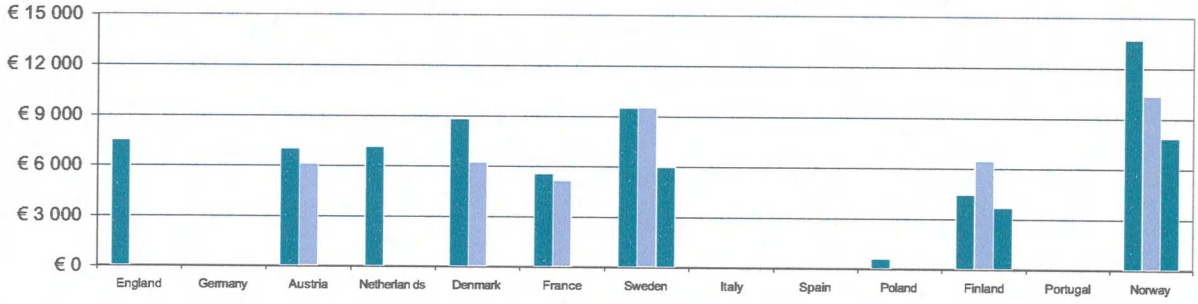
OPEN PYELOPLASTY
(RANGE OF PRICES)



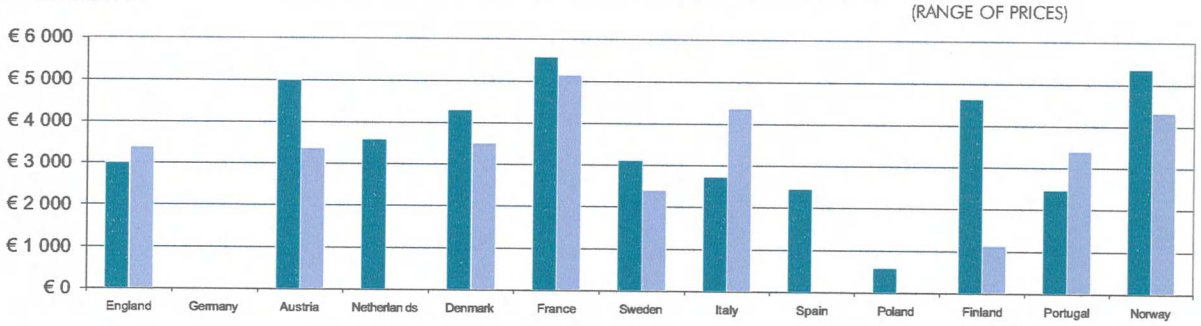
REPLANTATION OF URETER
(RANGE OF PRICES)



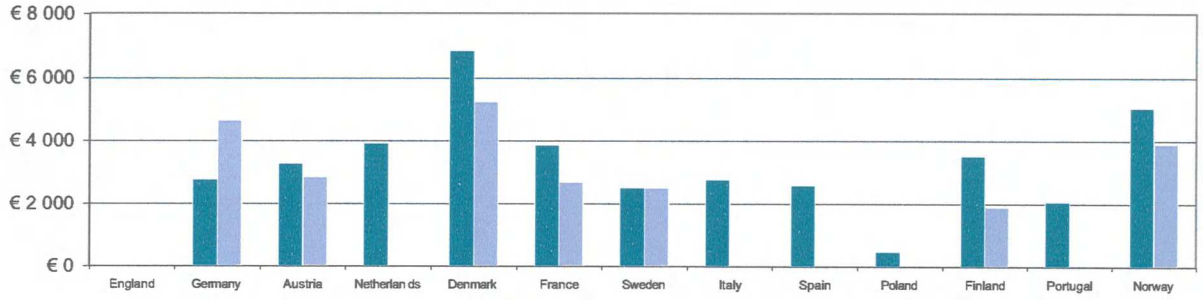
CUTANEOUS URETEROSTOMY NEC
(RANGE OF PRICES)



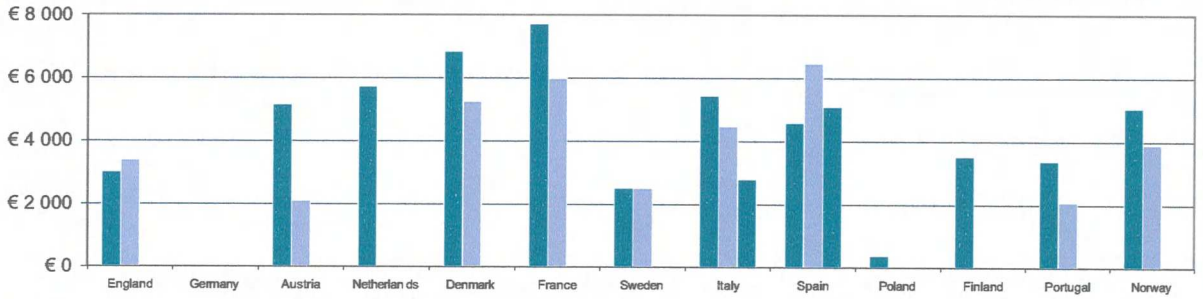
RETROPUBIC SUSPENSION OF NECK OF BLADDER
(RANGE OF PRICES)



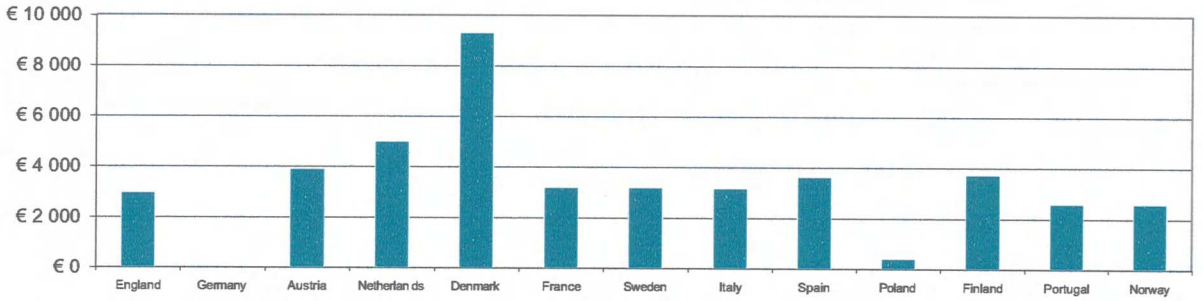
ENDOSCOPIC RESECTION OF PROSTATE NEC
(RANGE OF PRICES)



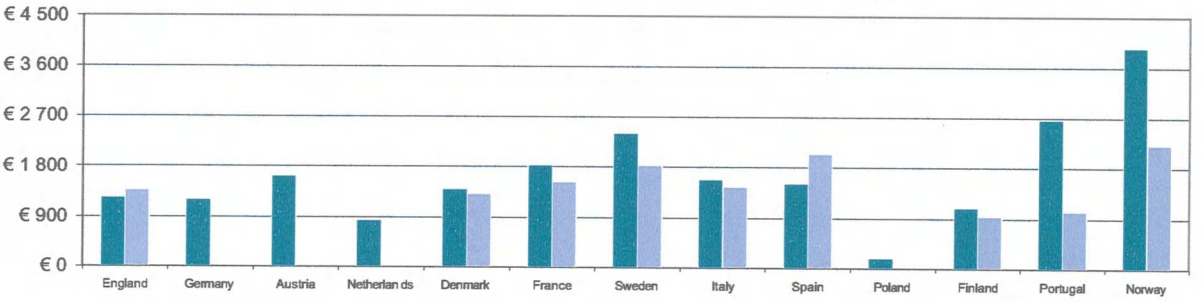
TOTAL EXCISION OF PROSTATE AND CAPSULE OF PROSTATE
(RANGE OF PRICES)



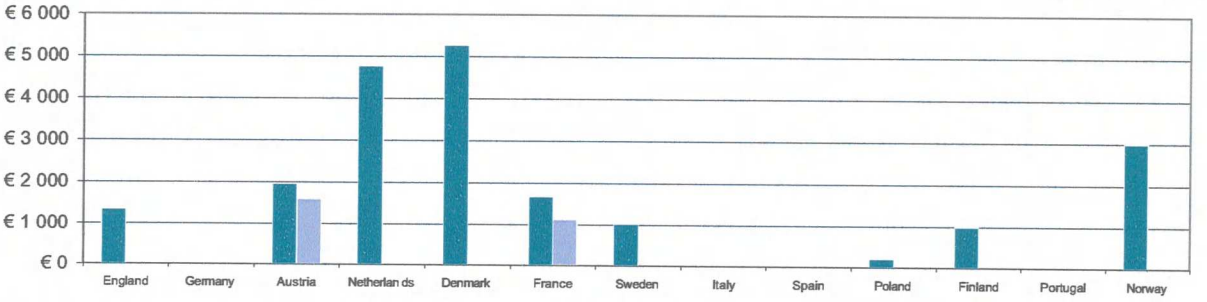
REPAIR OF HYPOSPADIAS
(RANGE OF PRICES)



LIGATION OF VARICOCELE
(RANGE OF PRICES)



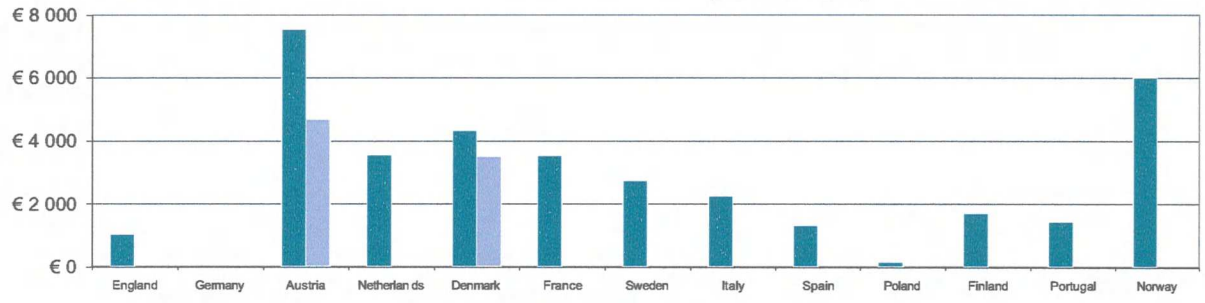
EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY OF CALCULUS OF KIDNEY
(RANGE OF PRICES)



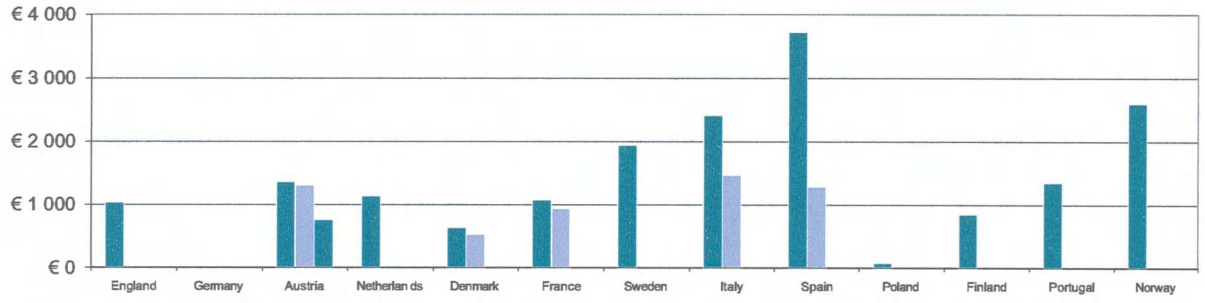
THE RESULTS

GYNAECOLOGY

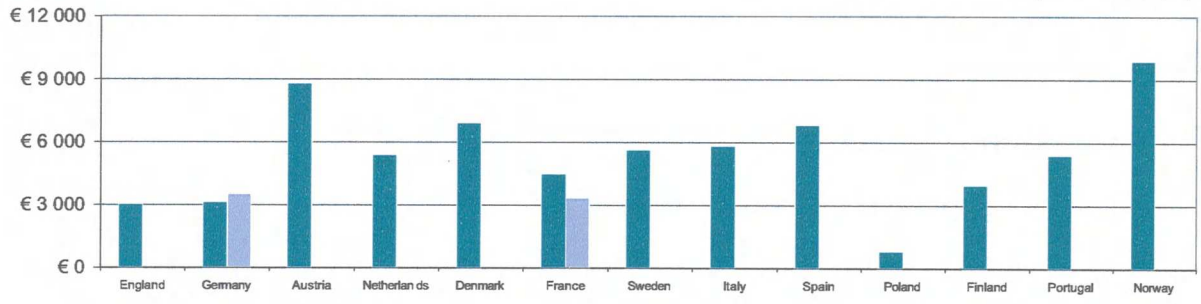
FEMALE PERINEOPLASTY
(RANGE OF PRICES)



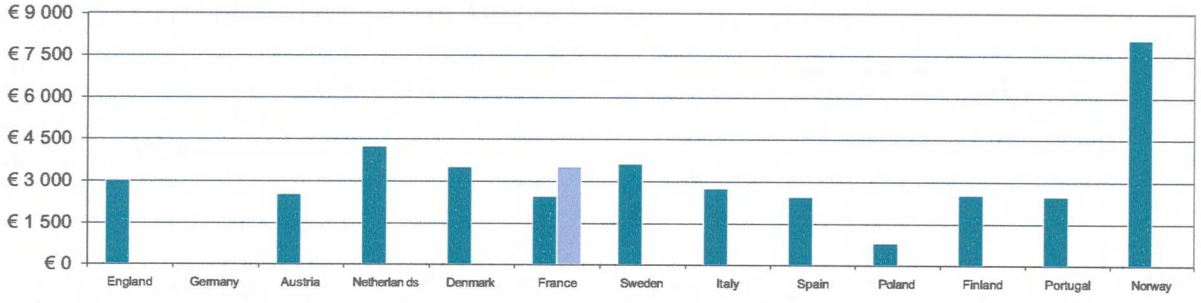
DESTRUCTION OF LESION OF CERVIX UTERI OS
(RANGE OF PRICES)



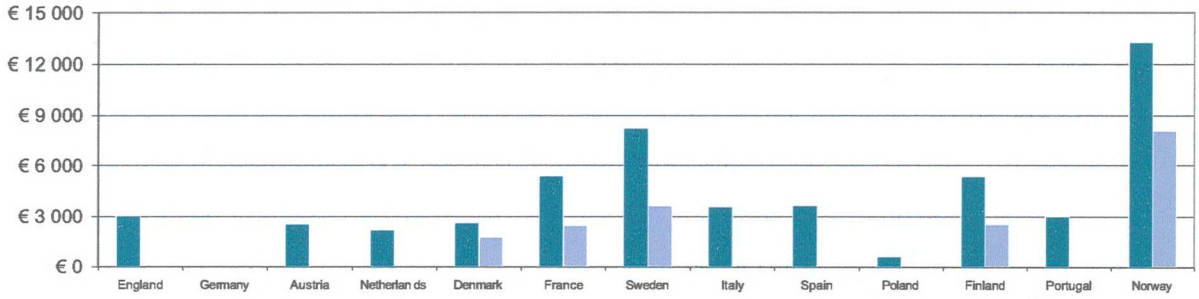
ABDOMINAL HYSTERECTOMY AND EXCISION PERIUTERINE TISSUE NEC
(RANGE OF PRICES)



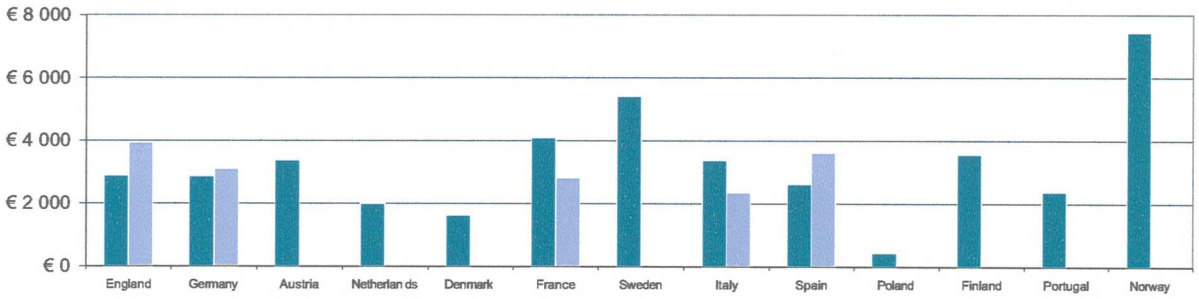
RECONSTRUCTION OF FALLOPIAN TUBE
(RANGE OF PRICES)



EXCISION OF LESION OF OVARY
(RANGE OF PRICES)



ELECTIVE CAESAREAN DELIVERY OS
(RANGE OF PRICES)

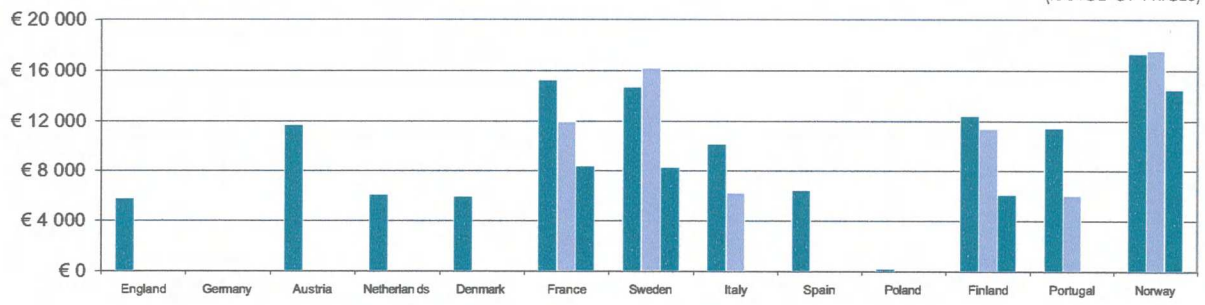


THE RESULTS

CARDIO-VASCULAR SURGERY

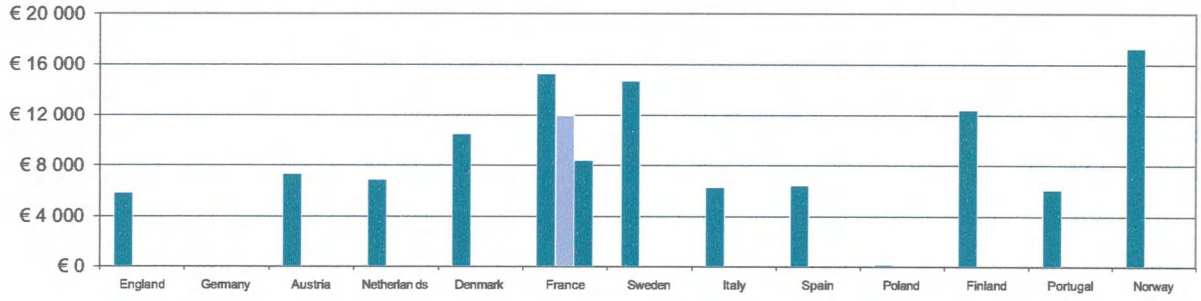
(OTHER) REPLACEMENT OF ANEURYSMAL SEGMENT OF AORTA OS

(RANGE OF PRICES)



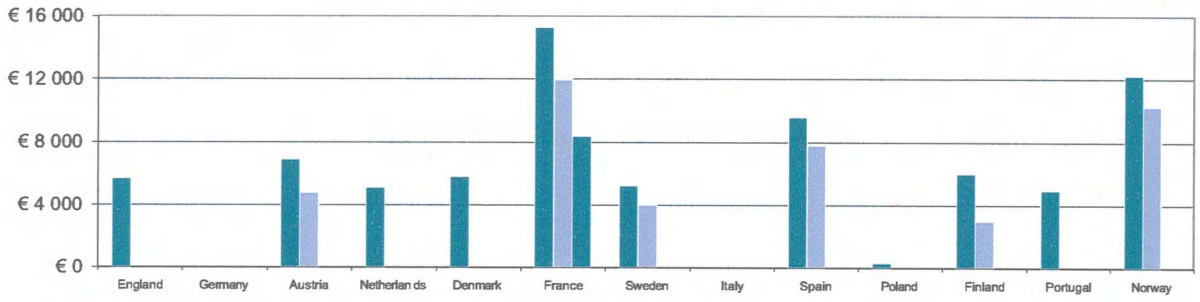
OPERATIONS ON ANEURYSM OF ILIAC ARTERY NEC

(RANGE OF PRICES)



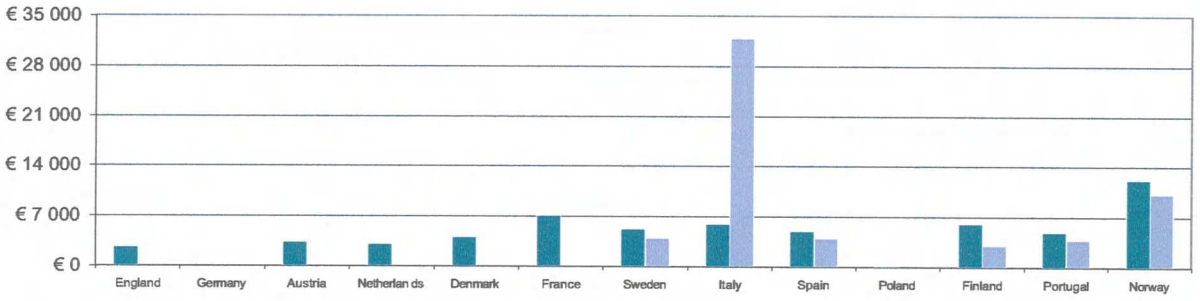
BYPASS FEMORAL ARTERY BY ANAST FEMORAL / FEMORAL ARTERY NEC

(RANGE OF PRICES)

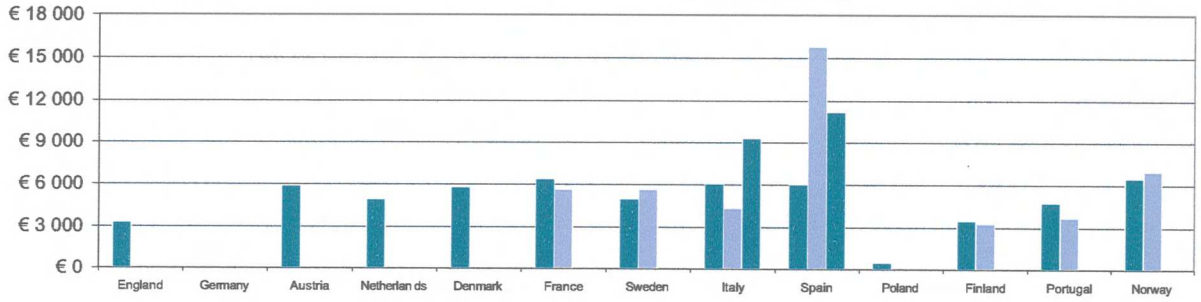


OPEN THROMBECTOMY OF VEIN OF UPPER LIMB

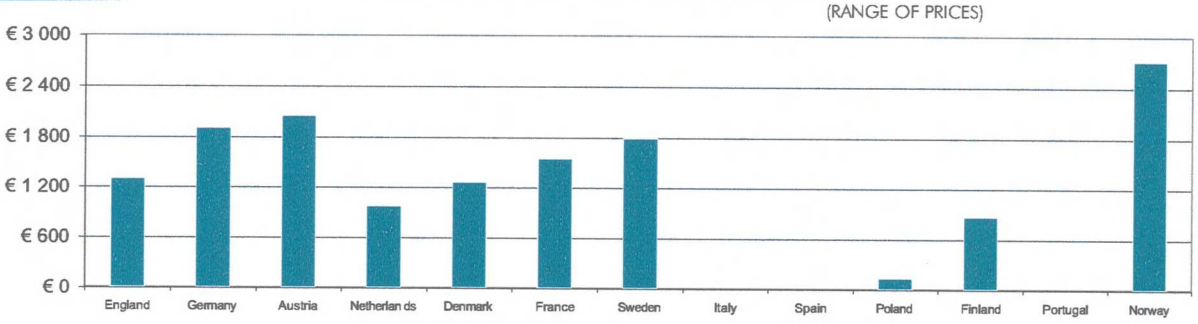
(RANGE OF PRICES)



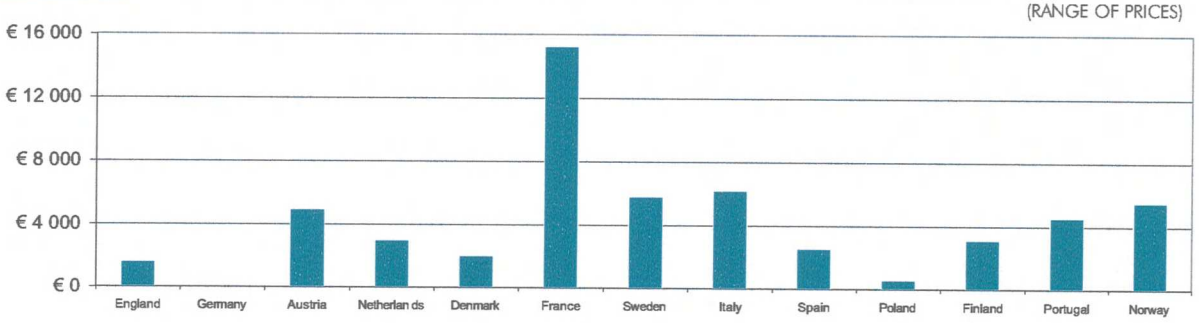
TOTAL SPLENECTOMY
(RANGE OF PRICES)



LIGATION OF LONG SAPHENOUS VEIN
(RANGE OF PRICES)



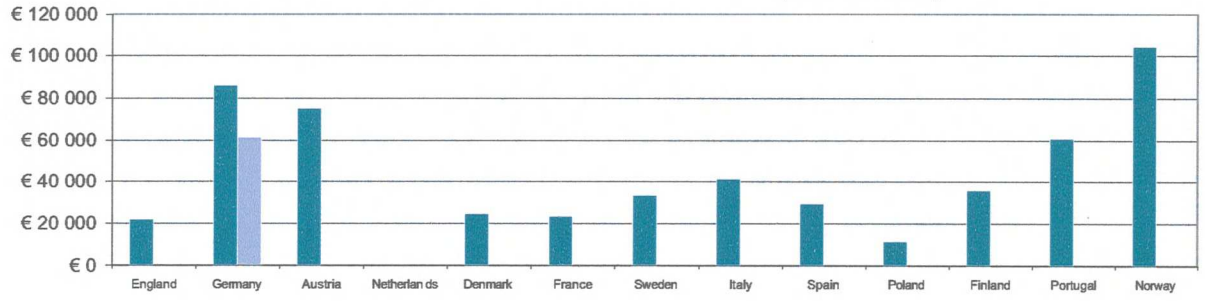
PERCUTANEOUS TRANSLUMINAL BALLOON ANGIOPLASTY OF AORTA
(RANGE OF PRICES)



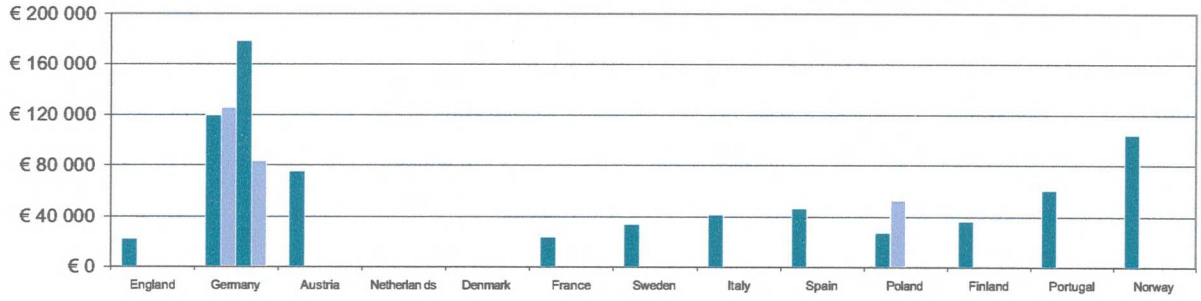
THE RESULTS

BONE MARROW TRANSPLANTS

AUTOGRAFT OF BONE MARROW
(RANGE OF PRICES)



ALLOGRAFT OF BONE MARROW NEC
(RANGE OF PRICES)



€ THE RESULTS

	UK	AUSTRIA	NETHERLANDS	DENMARK	FRANCE
Neurosurgery					
Excision of lesion of tissue of frontal lobe of brain	6 140	7 751	5 617	12 054	11 058
		6 772		8 035	9 676
Implantation of neurostimulator into brain	8 985	4 565	14 832	12 054	9 676
		6 995		8 035	11 058
		9 235			
		14 026			
Obliteration of aneurysm of cerebral artery nec	8 985	5 848	6 698	16 556	11 058
		9 445		11 037	9 676
Percutaneous chordotomy of spinal cord	1 989	2 155	5 375	5 495	7 372
				3 663	
Eye Surgery					
Trabeculectomy	1 498	1 854	768	975	2 787
		2 291		744	
Goniotomy	1 855	1 854	768	975	2 787
		2 291		744	
Phakoemulsification cataract extraction with lens implant	1 430	2 585	1 572	813	1 850
				1 008	
Excision of lesion of cornea nec	1 231		860	975	2 787
				744	
Photocoagulation of retina for detachment OS	1 337	2 131	1 836	350	3 550
		2 833		471	
Lamellar graft of cornea	2186	2 870	1 622	1 612	2 787
				2 039	
Ear, Nose & Throat					
Excision of lesion of external ear	986	2 403	1 791	1 124	1 916
		1 229			
Operations on septum of nose OS	1 343	1 948	1 414	1 360	1 854
		1 318			
Submucous excision of septum of nose	1 234		1 310	1 124	1 854
Plastic operations on external ear OS	1 677	1 229	5 550	6 136	1 916
				2 733	
Polypectomy of internal nose	1 234	1 512	1 097	781	1 916
				174	
Bilateral dissection tonsillectomy	1 131	887	1 016	1 075	955
		692			1 246
Tympanoplasty using graft	1 850	2 633	2 409	1 124	1 916
Stapedectomy	1 850	2 395	2 033	1 124	1 916
Total reconstruction of nose	1 972	1 770	1 951	1 360	1 916
Correction of deformity of palate OS	3 117	1 014	3 604	4 585	3 032
	4 108				1 871
Excision of parotid gland nec	3 117	3 581	3 313	2 110	
	4 108				
Total laryngectomy	9 315	11 401	6 090	5 484	2 939
		7 460			
		6 515			
Organ Transplants					
Allotransplantation of kidney from live donor	16 706	17 413	9 410	45 666	17 151
		9 656			
Transplantation of lung OS	39 014	8 637	50 654	95 741	53 929
Allotransplantation of heart and lung	39 536	22 253			
Allotransplantation of heart nec	30 681	13 248	54 038	88 385	51 240
Transplantation of liver OS	18 787	16 821	57 691	125 632	54 342
Thoracic Surgery					
Total pneumonectomy	6 753	6 858	6 756	12 912	9 255
		5 811			
Lobectomy of lung	6 753	6 858	6 756	12 912	9 255
		5 811			
Open operations on mediastinum OS	4 028	5 015	5 015	5 158	9 255
		4 511			
Repair of congenital diaphragmatic hernia	4 028	5 435	6 649	12 912	9 255
		4 285			
Cardiac Surgery					
Mitral valvuloplasty nec	11 288	12 461	14 472	18 663	15 254
		17 156			5 893

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€ THE RESULTS

	GERMANY	SPAIN	SWEDEN	ITALY	POLAND
Neurosurgery					
Excision of lesion of tissue of frontal lobe of brain		9 781	11 227	9 456	
		22 006	9 020	8 860	
Implantation of neurostimulator into brain			11 227		796
Obliteration of aneurysm of cerebral artery nec			11 227		1 989
			16 183		2 314
			8 275		
Percutaneous chordotomy of spinal cord			8 401		
Eye Surgery					
Trabeculectomy		2 822	2 271	2 443	531
Goniotomy			2 271		
Phakoemulsification cataract extraction with lens implant	1 638	1 847	2 271	1 876	690
		4 053			
Excision of lesion of cornea nec			2 271		398
Photocoagulation of retina for detachment OS		2 675	2 159	2 843	690
Lamellar graft of cornea		2 822	2 271	2 443	398
Ear, Nose & Throat					
Excision of lesion of external ear			3 185		133
Operations on septum of nose OS		1 805	1 724	1 760	955
			2 905		
Submucous excision of septum of nose	1 679	1 675	2 186	1 998	531
Plastic operations on external ear OS			2 186		239
			2 905		
Polypectomy of internal nose			2 677		133
			3 927		
Bilateral dissection tonsillectomy		1 430	3 925	1 482	172
		5 915	1 842	1 402	
		1 376	1 341	675	
		1 158	1 357		
Tympanoplasty using graft		1 675	2 186	1 998	225
Stapedectomy		1 675	2 186	1 998	
Total reconstruction of nose		1 805	1 724	1 760	1 061
		2 473	2 905	2 135	
Correction of deformity of palate OS		3 307		2 382	1 061
Excision of parotid gland nec		2 623	3 259	5 545	305
Total laryngectomy		10 748	20 510	31 886	1 910
			13 533		
Organ Transplants					
Allotransplantation of kidney from live donor	53 951	18 775	23 592	36 643	9 019
Transplantation of lung OS		61 865	46 640		25 464
Allotransplantation of heart and lung	34 729	61 865	87 787		29 178
Allotransplantation of heart nec	34 729	53 869	87 787	49 967	25 464
Transplantation of liver OS	86 016	56 638	72 951	60 942	50 535
	92 079				
	108 807				
	114 870				
Thoracic Surgery					
Total pneumonectomy		6 582	8 064	7 334	1 857
Lobectomy of lung		6 582	8 064	7 334	1 671
Open operations on mediastinum OS		4 734	9 189	6 945	584
			8 064		
			7 014		
Repair of congenital diaphragmatic hernia		4 297	8 064	4 693	531
Cardiac Surgery					
Mitral valvuloplasty nec	11 647	20 670	25 993	18 327	
	15 339	14 009	16 255	15 494	
	17 230				
	18 928				

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€THE RESULTS

			FINLAND	PORTUGAL	NORWAY
Neurosurgery					
Excision of lesion of tissue of frontal lobe of brain			5 443	9 158	12 935
			3 251	15 554	8 974
Implantation of neurostimulator into brain			5 443		12 935
Obliteration of aneurysm of cerebral artery nec			5 443		12 935
			11 362		17 584
			6 059		14 512
Percutaneous chordotomy of spinal cord			4 601		10 267
Eye Surgery					
Trabeculectomy			1 904	2 244	3 476
Goniotomy			1 904		3 476
Phakoemulsification cataract extraction with lens implant			841	1 571	1 698
Excision of lesion of cornea nec			1 904		3 476
Photocoagulation of retina for detachment OS			2 561	2 917	2 870
Lamellar graft of cornea			1 904	2 244	3 476
Ear, Nose & Throat					
Excision of lesion of external ear					4 002
Operations on septum of nose OS			1 605	1 571	2 466
			1 492		
Submucous excision of septum of nose			1 513	2 295	2 345
Plastic operations on external ear OS			1 513		2 345
			1 492		2 708
Polypectomy of internal nose			804		2 223
					2 830
Bilateral dissection tonsillectomy			1 098	1 690	1 900
			621	1 206	1 617
			872	1 032	1 940
			593	808	1 738
Tympanoplasty using graft			1 513	2 295	2 345
Stapedectomy			1 513	2 295	2 345
Total reconstruction of nose			1 094	1 571	2 466
			1 492	2 334	2 708
Correction of deformity of palate OS					
Excision of parotid gland nec			2 500	2 743	4 244
Total laryngectomy			17 686		22 111
			8 536		10 106
Organ Transplants					
Allotransplantation of kidney from live donor			21 662	24 685	31 692
Transplantation of lung OS				53 859	67 507
Allotransplantation of heart and lung			42 071	53 859	70 943
Allotransplantation of heart nec			42 071	47 126	70 943
Transplantation of liver OS			90 705	91 111	104 777
Thoracic Surgery					
Total pneumonectomy			4 673	7 827	17 180
Lobectomy of lung			4 673	7 827	17 180
Open operations on mediastinum OS			8 253	6 210	12 087
					17 180
					10 874
Repair of congenital diaphragmatic hernia			4 673	3 879	17 180
Cardiac Surgery					
Mitral valvuloplasty nec			32 797	15 986	39 898
			11 683	11 713	21 748

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€ THE RESULTS

	UK	AUSTRIA	NETHERLANDS	DENMARK	FRANCE
CardiacSurgery					
Aortic valvuloplasty nec	11 288	17 156	15 369	21 276	15 254
		12 461		9 283	5 893
Tricuspid valvuloplasty nec	11 288	17 156	14 472	18 663	15 254
		12 461			5 893
Autograft replacement of one coronary artery nec	8 078	9 766	13 249	15 086	14 525
		14 308			16 625
Correction of tetralogy of fallot OS	6 998	14 145	13 982	18 895	24 243
					15 254
Freeing of adhesions of pericardium	5 271	7 522	7 163	21 276	7 748
				9 283	
Implantation of intravenous cardiac pacemaker system	4 595	6 732	3 812	5 910	8 049
		8 263			
Percut translum balloon angioplasty bypass graft coron art	3 861	6 345	2 653	6 992	4 523
		4 600			2 793
Abdominal Surgery					
Partial excision of stomach OS	6 210	7 177	13 163	21 122	5 536
		5 025		14 979	7 108
					13 779
Excision of lesion and duodenum	2 996	10 844	4 870	5 737	13 779
		6 654		3 788	5 536
		6 262			7 108
		5 838			
Pyloromyotomy	2 996	5 135	4 639	5 737	13 779
	3 637			3 788	5 536
					7 108
Excision of rectum OS	6 680	3 801	12 165	8 970	9 643
		6 030		12 362	13 339
		6 486			
		7 191			
Total excision of colon OS	5 188	6 486	9 923	11 701	11 772
		3 801		9 149	6 609
		7 191			
		6 031			
Excision of anal fissure	1 447	1 189	1 864	2 577	1 382
	1 610			1 933	
Left pancreatectomy and drainage of pancreatic duct	6 900	10 261	12 031	13 415	18 144
					11 035
Local ligation of varices of oesophagus	5 423	4 285	5 212	3 788	13 779
		5 435		5 737	5 536
					7 108
Haemorrhoidectomy	916	1 189	2 039	1 933	1 382
				2 577	
Primary repair incisional hernia use insert prosth material	1 888	2 597	1 792	3 312	4 771
				2 483	3 065
					1 745
Primary repair of inguinal hernia OS	1 319	1 685	1 454	1 461	1 745
	1 566				2 118
					2 964
Planned delayed appendicectomy nec	1 278	2 564	1 478	2 026	3 622
		1 708			2 246
		1 488			
Resection of segment of liver	6 152	10 844	10 932	13 415	11 035
		6 654			6 663
		6 262			
		5 838			
Total cholecystectomy	2 143	2 571	4 929	6 476	3 090
		4 568			5 408
		5 050			6 825
		6 725			9 439
Orthopaedic Surgery					
Total prosthetic replacement of hip joint using cement OS	6 355	4 979	6 862	6 943	7 283
		5 119			
		6 806			
Primary total prosth replacement of knee joint using cement	7 156	7 994	6 776	6 943	7 283

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€ THE RESULTS

	GERMANY	SPAIN	SWEDEN	ITALY	POLAND
CardiacSurgery					
Aortic valvuloplasty nec	11 647	20 670	16 183	18 327	
	34 729	14 009	8 275	15 494	
	15 339				
	17 230				
	18 928				
Tricuspid valvuloplasty nec	11 647	20 670	16 183	18 327	
	34 729	14 009	8 275	15 494	
	15 339				
	18 928				
Autograft replacement of one coronary artery nec	10 694	13 760	16 665	15 600	
	11 839	19 067	10 858	12 911	
	10 942	10 753			
	11 650				
Correction of tetralogy of fallot OS		26 828	14 679		
		17 560			
Freeing of adhesions of pericardium			16 183		
			8 275		
			8 064		
Implantation of intravenous cardiac pacemaker system		6 483	7 594	6 942	186
		4 056	7 034	4 872	
			5 781		
Percut translum balloon angioplasty bypass graft coron art		9 560	5 781	6 197	
		2 510			
		5 305			
Abdominal Surgery					
Partial excision of stomach OS		8 004	17 615	10 163	663
			7 634	4 892	
			6 292		
Excision of lesion and duodenum		2 624	17 615	3 454	663
			7 634	1 769	
			6 292		
			7 025		
Pyloromyotomy			17 615		398
			7 634		
			6 292		
Excision of rectum OS		6 990	8 932	8 355	1 326
			7 230	5 836	1 592
Total excision of colon OS			11 033		1 326
			6 475		
Excision of anal fissure		2 624	3 479	3 454	187
			2 038		
			5 944		
Left pancreatectomy and drainage of pancreatic duct		9 363	25 946	11 812	
		4 842	12 817	7 304	
Local ligation of varices of oesophagus		4 155	17 615	8 524	1857
			7 634		
Haemorrhoidectomy		2 624	3 479	3 454	138
		1 328	2 038	1 769	
Primary repair incisional hernia use insert prosth material		3 142	3 514	4 900	371
			2 157	2 391	
			1 972		
Primary repair of inguinal hernia OS	1 925	2 456	2 769	2 858	194
	2 156	1 415	1 919	1 851	238
	2 578	1 746	1 972	1 325	
Planned delayed appendicectomy nec	1 758	2 882	7 381	4 307	358
	1 961		3 134	2 240	
			3 170	3 112	
			2 084		
Resection of segment of liver		9 363	6 882	11 812	1857
		4 842	2 791	7 304	
			25 946		
			12 817		
Total cholecystectomy	2 934	6 077	8 152	6 938	385
	2 556		5 679	4 529	
				5 059	
				2 811	
Orthopaedic Surgery					
Total prosthetic replacement of hip joint using cement OS	5 298	11 464	12 030	7 980	981
	4 724	6 974	7 522	14 126	
	5 072				
	4 498				
	7 714				

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€ THE RESULTS

			FINLAND	PORTUGAL	NORWAY
CardiacSurgery					
Aortic valvuloplasty nec			11 362	15 986	17 584
			6 059	11 713	14 512
Tricuspid valvuloplasty nec			11 362	15 986	17 584
			6 059	11 713	14 512
Autograft replacement of one coronary artery nec			15 564	16 550	19 969
			7 778	11 081	15 240
Correction of tetralogy of fallot OS			12 397	12 180	17 301
Freeing of adhesions of pericardium			11 362		17 584
			6 059		14 512
					17 180
Implantation of intravenous cardiac pacemaker system			9 517	6 692	14 835
				1 504	10 550
					5 498
Percut translum balloon angioplasty bypass graft coron art			3 102	3 374	5 498
Abdominal Surgery					
Partial excision of stomach OS			7 621	8 660	21 263
			2 416	3 750	8 893
			4 986	3 879	9 216
Excision of lesion and duodenum			7 621	3 105	21 263
			2 416		8 893
			4 986		9 216
Pyloromyotomy			7 621		21 263
			2 416		8 893
			4 986		9 216
Excision of rectum OS			6 650	6 932	15 684
			4 012		12 450
Total excision of colon OS			6 650		16 856
			4 012		10 267
Excision of anal fissure			1 362	3 105	4 770
			899		2 345
					1 334
Left pancreatectomy and drainage of pancreatic duct			12 773	10 364	23 971
			5 203	5 020	14 189
Local ligation of varices of oesophagus			7 621	6 547	21 263
			2 416		8 893
Haemorrhoidectomy			1 362	3 105	4 770
			899	1 181	2 345
Primary repair incisional hernia use insert prosth material			2 412	3 227	6 346
			1 085	1 632	3 032
			824		2 021
Primary repair of inguinal hernia OS			1 707	2 281	3 517
			970	1 373	2 830
			824	1 273	2 021
Planned delayed appendicectomy nec			2 629	3 224	8 974
			1 392	1 659	4 204
			1 542	2 098	4 932
			1 700		
Resection of segment of liver			4 470	10 364	11 521
			1 701	5 020	5 578
			12 773		23 971
			5 203		
Total cholecystectomy			4 440	5 313	12 289
			3 793	4 026	8 165
Orthopaedic Surgery					
Total prosthetic replacement of hip joint using cement OS			6 492	7 809	23 567
			6 260	7 601	14 633

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€THE RESULTS

	UK	AUSTRIA	NETHERLANDS	DENMARK	FRANCE
Orthopaedic Surgery					
Primary prosthetic replacement head of humerus using cement	4 370	5 119	6 757	6 943	7 283
		4 979			
Soft tissue correction of hallux valgus	1 695	1 774	1 299	1 465	2 535
Carpal tunnel release	1 332	1 565	1 138	1 419	905
Prim open reduct farcture neck fem & open fix use pin/plate	3 262	4 979	9 167	9 650	5 425
	4 694			6 925	6 277
				5 469	
Breast Surgery					
Total mastectomy and excision of both pectoral muscles nec	2 541	4 701	4 442	4 499	3 878
	2 738	3 923			4 767
Reduction mammoplasty	2 541	3 291	2 188	3 612	1 390
	2 738				
Prosthesis for breast OS	1 545	3 851	3 084	3 567	1 390
				2 833	
Skin Transplants					
Allograft of skin nec	2 277	6 837	6 244	5 889	11 450
	3 467	2 360		3 847	7 776
					3 370
					7 038
Endocrine Organs					
Lobectomy of thyroid gland nec	2 383	2 570	2 633	3 369	3 063
		3 328			
Bilateral adrenalectomy and transposition of adrenal tissue	2 967	8 063	5 463	8 406	6 815
		6 174			
		5 469			
Genito-urinary					
Open pyeloplasty	3 803	6 199	6 766	8 823	9 422
	4 836	5 526		6 246	7 733
					4 858
Replantation of ureter OS	4 085	6 993	6 751	8 823	9 422
		6 139		6 246	7 733
					4 858
Cutaneous ureterostomy nec	7 490	6 993	7 120	8 823	5 580
		6 139		6 246	5 159
Retropubic suspension of neck of bladder	3 006	4 996	3 586	4 309	5 580
	3 390	3 362		3 509	5 159
Endoscopic resection of prostate nec		3 279	3 922	6 834	3 863
		2 846		5 257	2 692
Total excision of prostate and capsule of prostate	3 006	5 150	5 715	5 257	5 986
	3 390	2 095		6 834	7 712
Repair of hypospadias	2 945	3 905	5 005	9 307	3 166
Ligation of varicocele	1 234	1 634	838	1 403	1 528
	1 371			1 322	1 830
Extracorporeal shock wave lithotripsy of calculus of kidney	1 333	1 949	4 756	5 257	1 661
		1 583			1 112
Gynaecology					
Female perineoplasty	1 035	7 532	3 553	4 309	3 531
		4 684		3 509	
Destruction of lesion of cervix uteri OS	1 035	760	1 132	642	938
		1 314		535	1 075
		1 362			
Abdominal hysterectomy and excision periuterine tissue nec	3 033	8 808	5 381	6 905	3 358
					4 486
Reconstruction of fallopian tube	3 033	2 534	4 239	3 509	2 450
					3 531
Excision of lesion of ovary	3 033	2 534	2 179	2 576	5 359
				1 767	2 450
Elective caesarean delivery OS	2 870	3 362	1 978	1 601	4 074
	3 922				2 820
Cardio-vascular Surgery					
(Other replacement of aneurysmalsegment of aorta OS	5 809	11 650	6 078	5 910	15 254
					11 941
					8 366
Operations on aneurysm of iliac artery nec	5 809	7 334	6 892	10 469	15 254
					11 941
					8 366
Bypass femoral artery by anast femoral/feamoral artery nec	5 685	6 888	5 100	5 792	15 254
		4 766			11 941
					8 366

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€ THE RESULTS

	GERMANY	SPAIN	SWEDEN	ITALY	POLAND
Orthopaedic Surgery					
Primary total prosth replacement of knee joint using cement	9 706	6 974	12 030	7 980	836
		11 464	7 522	14 126	
		8 950			
		12 704			
Primary prosthetic replacement head of humerus using cement		8 950	12 030	7 980	796
		6 974	7 522	14 126	
		11 464			
Soft tissue correction of hallux valgus	3 025	5 211	5 760	5 650	292
		3 035	3 371	2 768	
Carpal tunnel release		1 175	2 742	1 503	133
Prim open reduct farcture neck fem & open fix use pin/plate	5 150	6 739	6 162	7 582	365
	5 186	15 002	4 654	4 265	
		12 704	3 959	5 477	
Breast Surgery					
Total mastectomy and excision of both pectoral muscles nec	4 125	10 406	4 907	4 391	637
		3 088	2 574	2 839	
		3 551			
Reduction mammoplasty		2 427	2 914	2 518	597
			2 081		
Prosthesis for breast OS			4 907		1 194
			2 574		
Skin Transplants					
Allograft of skin nec		5 137	10 359	6 390	
			4 907		
			2 574		
Endocrine Organs					
Lobectomy of thyroid gland nec	2 178	2 382	3 079	2 496	663
	2 400	9 984			663
Bilateral adrenalectomy and transposition of adrenal tissue		6 649	4 771	7 019	1 777
			2 964		
			9 020		
Genito-urinary					
Open pyeloplasty		3 879	9 463	6 608	222
			9 526	4 856	
			5 953		
Replantation of ureter OS			9 463		597
			9 526		
			5 953		
Cutaneous ureterostomy nec			9 463		597
			9 526		
			5 953		
Retropubic suspension of neck of bladder		2 454	3 120	2 741	590
			2 414	4 381	
Endoscopic resection of prostate nec	2 777	2 600	2 506	2 776	477
	4 666		2 500		
Total excision of prostate and capsule of prostate		4 569	2 506	5 444	358
		6 463	2 500	4 482	
		5 084		2 776	
Repair of hypospadias		3 611	3 185	3 158	424
Ligation of varicocele	1 205	1 516	2 402	1 587	194
		2 049	1 838	1 456	
Extracorporeal shock wave lithotripsy of calculus of kidney			1 008		204
Gynaecology					
Female perineoplasty		1 322	2 746	2 243	154
Destruction of lesion of cervix uteri OS		3 716	1 934	2 403	80
		1 284		1 470	
Abdominal hysterectomy and excision periuterine tissue nec	3 124	6 807	5 646	5 824	796
	3 539				
Reconstruction of fallopian tube		2 454	3 636	2 741	822
Excision of lesion of ovary		3 636	8 215	3 551	637
			3 636		
Elective caesarean delivery OS	2 849	2 606	5 388	3 372	451
	3 109	3 612		2 360	
Cardio-vascular Surgery					
(Other replacement of aneurysmalsegment of aorta OS		6 428	14 679	10 193	186
			16 183	6 249	
			8 275		
Operations on aneurysm of iliac artery nec		6 428	14 679	6 249	186
Bypass femoral artery by anast femoral/feamoral artery nec		9 560	5 251		318
		7 801	4 006		

next page >

€ THE RESULTS

			FINLAND	PORTUGAL	NORWAY
Orthopaedic Surgery					
Primary total prosth replacement of knee joint using cement			6 492	7 809	23 567
			6 260	7 601	14 633
Primary prosthetic replacement head of humerus using cement			6 492	7 601	23 567
			6 260	7 809	14 633
Soft tissue correction of hallux valgus			2 719	4 700	9 297
			1 881	2 795	4 285
Carpal tunnel release			1 879	1 078	3 315
Prim open reduct farcture neck fem & open fix use pin/plate			4 546	5 386	9 540
			3 322	3 810	6 266
			4 943	4 257	9 257
Breast Surgery					
Total mastectomy and excision of both pectoral muscles nec			4 606	4 236	2 830
			1 986	2 949	3 315
Reduction mammoplasty			3 731	1 885	4 244
			1 841		3 476
Prosthesis for breast OS			4 606		2 830
			1 986		3 315
Skin Transplants					
Allograft of skin nec			7 177	5 748	12 693
			4 606		2 830
			1 986		3 315
Endocrine Organs					
Lobectomy of thyroid gland nec			1 799	2 302	5 012
Bilateral adrenalectomy and transposition of adrenal tissue			2 359	6 891	10 025
			1 171		3 274
			3 251		8 974
Genito-urinary					
Open pyeloplasty			4 442	6 638	13 663
			6 464	4 166	10 348
			3 681		7 842
Replantation of ureter OS			4 442		13 663
			6 464		10 348
			3 681		7 842
Cutaneous ureterostomy nec			4 442		13 663
			6 464		10 348
			3 681		7 842
Retropubic suspension of neck of bladder			4 640	2 469	5 376
			1 150	3 410	4 325
Endoscopic resection of prostate nec			3 528	2 066	5 053
			1 895		3 921
Total excision of prostate and capsule of prostate			3 528	3 366	5 053
				2 066	3 921
Repair of hypospadias			3 720	2 571	2 587
Ligation of varicocele			1 087	2 672	3 961
			938	1 032	2 223
Extracorporeal shock wave lithotripsy of calculus of kidney			978		2 991
Gynaecology					
Female perineoplasty			1 691	1 436	5 983
Destruction of lesion of cervix uteri OS			847	1 346	2 587
Abdominal hysterectomy and excision periuterine tissue nec			3 951	5 386	9 904
Reconstruction of fallopian tube			2 509	2 469	8 085
Excision of lesion of ovary			5 359	2 982	13 259
			2 509		8 085
Elective caesarean delivery OS			3 548	2 367	7 438
Cardio-vascular Surgery					
(Other replacement of aneurysmalsegment of aorta OS			12 397	11 434	17 301
			11 362	6 039	17 584
			6 059		14 512
Operations on aneurysm of iliac artery nec			12 397	6 039	17 301
			6 025	4 937	12 208
Bypass femoral artery by anast femoral/feamoral artery nec			2 989	next page >	10 267

€ THE RESULTS

	UK	AUSTRIA	NETHERLANDS	DENMARK	FRANCE
Cardio-vascular Surgery					
Open thrombectomy of vein of upper limb	2 662	3 380	3 068	4 142	7 090
Total splenectomy	3 250	5 838	4 897	5 802	6 370
					5 633
Ligation of long saphenous vein	1 302	2 053	974	1 264	1 549
Percutaneous transluminal balloon angioplasty of aorta	1 594	4 907	2 969	1 998	15 254
Bone Marrow Transplants					
Autograft of bone marrow	21 886	75 147		24 635	23 449
Autograft of bone marrow nec	21 886	75 147			23 449

€ THE RESULTS

	GERMANY	SPAIN	SWEDEN	ITALY	POLAND
Cardio-vascular Surgery					
Open thrombectomy of vein of upper limb		4 950	5 251	5 911	133
		3 950	4 006	31 886	
Total splenectomy		5 986	4 953	6 060	451
		11 139	5 623	9 300	
		15 759		4 328	
Ligation of long saphenous vein	1 910		1 791		138
Percutaneous transluminal balloon angioplasty of aorta		2 510	5 781	6 197	557
Bone Marrow Transplants					
Autograft of bone marrow	61 542	29 327	33 585	41 317	11 406
	86 133				
Autograft of bone marrow nec	178 577	46 104	33 585	41 317	27 321
	119 778				53 050
	125 273				
	83 519				

€ THE RESULTS

			FINLAND	PORTUGAL	NORWAY
Cardio-vascular Surgery					
Open thrombectomy of vein of upper limb			6 025	4 937	12 208
			2 989	3 815	10 267
Total splenectomy			3 437	4 706	6 468
			3 247	3 669	6 953
Ligation of long saphenous vein			871		2 708
Percutaneous transluminal balloon angioplasty of aorta			3 102	4 488	5 498
Bone Marrow Transplants					
Autograft of bone marrow			35 847	60 824	104 453
Autograft of bone marrow nec			35 847	60 824	104 453

SECTION 4

CONCLUSION

CONCLUSION

Comparing the cost of elective procedures across countries is fraught with difficulties. Different methods of classifying, costing and reimbursing providers for elective surgical procedures make direct comparison tentative at this point. Further issues such as accounting for capital investment adds a further layer of complexity.

Nevertheless this study can be seen as a first attempt at the development of a rigorous methodology for comparative work in this field. It is hoped, as a result of this article, that hospital managers across Europe will put themselves forward to help us understand more clearly the complexities in their system and volunteer to provide data directly on the price they would charge a foreign purchaser such as the UK Government via Primary Care Trusts to undertake each of the 89 common elective procedures outlined in appendix 1. Any comments on the article or offers to provide data should be sent to m.whitfield@sheffield.ac.uk.

Viewing the data as a whole a number of conclusions can be drawn.

In Germany and Austria the cost of Bone Marrow Transplants appears to be around twice as expensive as the other countries, with England, and France well below the average in all Bone Marrow Transplant related procedures.

Cardio-Vascular Surgery in Denmark and Sweden appear to be the most expensive with England and Poland showing the lowest overall costs.

Austria and Spain tend to be the most expensive overall for Gynaecological surgery.

Denmark, Sweden and France show a fluctuation between higher cost and lower cost in Genito-Urinary Surgery depending upon the procedure. The other countries are more consistent. This may reflect different case mix classification systems.

All countries are fairly consistent in surgery related to endocrine organs and breast surgery with the UK on the lower side and Spain higher in some procedures.

In orthopaedic surgery there appears to be two bands of fairly consistent cost. Sweden Italy and Spain seem to be in the higher cost band and the rest in the lower cost band.

In abdominal surgery Sweden seems to have consistently high costs in this area, relative to the other countries. France is quite high in some procedures and low in others.

England has low costs in cardio-thoracic surgery relative to the other Countries. Denmark and France tend to be in the higher cost brackets.

Our long term aim is to show as accurately as possible the variation in the cost of elective procedures and then identify the outliers for further investigation. Low cost, does not always lead to good value. In the same way that short length of stay is not automatically better than long length of stay. If there is to be a European market in elective surgery, however, we need to be able to compare cost as well as clinical outcome and ultimately value for money.

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