HOSPITAL DATA PROJECT
PHASE 2

FINAL REPORT

Part III

Annex Procedures

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A.III.1 Report Expert Group

2007-06-05

A selected list of hospital procedures

Report from the HDP2 Expert Group on Procedures
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1. Introduction

Hospitals have always been and continue to be large consumers of health services resources. The ability to measure and compare hospital activity, infrastructure and costs is increasingly essential to support health service monitoring, assessment, policy and planning both at national and international level. Within countries, hospital data are widely used to analyse regional performance and to identify areas that may require action. At the European and international level it is evident that the availability of truly comparable hospital data would provide a valuable resource in areas of assessment, planning and policy development.

It is against this background, presented in the Final Report of the Hospital Data Project 1 (HDP1), that the project was launched in order to meet the principal objective of developing comparable and consistent hospital activity data sets for dissemination and analysis. Thus, the preparation of a detailed and practical methodology for the production of comparable hospital activity data became the main objective. As a part of HDP1, an Expert Group was established with the task to develop a shortlist for diagnostic information at patient level. The resulting shortlist was used for the pilot data collection performed by HDP1. After minor amendments the shortlist has later been agreed on and implemented by Eurostat, OECD and WHO as the International Shortlist for Hospital Morbidity Tabulation (ISHMT). From its start as an instrument for hospital data collection within the EU, it has become a truly international list, facilitating harmonised data collection and tabulation.

It was not possible within the scope of HDP1 to conduct a similar thorough exercise with respect to procedures performed on hospital patients. The HDP1 did collect data on 18 selected procedures, however, based on some existing shortlists for surgical procedures. The procedures were defined with codes from one of the common classifications (ICD-9-CM part 3) and the participating countries had to translate their national codes into these groups. The pilot data collection was seen as a way to gain experience for future efforts to arrive at more comparable procedure coding.

In its conclusions the HDP1 recommended that the methodological work should be continued and progressed based on the methodology developed and implemented on a pilot basis. Among possible areas for further development some were given priority. One such area was the development of a common procedure list.

2. The task and the experts

When HDP2 was launched in order to continue the methodological work of HDP1, it was decided that special efforts should be given to further work on a shortlist of procedures suitable for international comparisons. Even if HDP is primarily a European project, it was envisaged that the list might possibly develop into a common list of procedures for the purpose of regular data collection by several organisations at the international level, just as had been the case with the HDP1 shortlist of diagnoses.

The author of this report, who had chaired the Expert Group that proposed the shortlist of diagnoses, was asked to convene a new Expert Group on procedures. The task for the group should be to investigate the feasibility of developing a procedure shortlist suitable for international comparison and, if feasible, to develop such a list for the HDP2. Four other experts agreed to participate in the work. The group consisted of the following persons:

- Björn Smedby, Sweden, Professor emeritus of Health Services Research at Uppsala University; chair
- Pierre Lewalle, Classification and Terminology, World Health Organization, Geneva

- Marion Mendelsohn, France, Head of Classifications and Medical Information Department, ATIH; member of the former Expert Group on diagnoses
- Martti Virtanen, Finland, Head of WHO Collaborating Centre for Classifications in Health Care in the Nordic Countries; also a member of the former Expert Group
- Albrecht Zaiss, Germany, Head of Department of Medical Cost Controlling, University Hospital of Freiburg.

Ben Scharp, The Netherlands, classification specialist at Prismant, also took an active part in the work of the Expert Group. Robert Jakob, Classification and Terminology, WHO, Geneva, partly substituted for Pierre Lewalle and also contributed to the work. The Expert Group has had six meetings since it was established in March 2006.

Several other classification experts and clinical specialists from different fields have been consulted by the Expert Group and have made important contributions to the work. General advice was given by Philippe Oberlin and Marie-Claude Mouquet, France, and Gunnar Schiøler, Denmark. David Bergqvist, professor of vascular surgery at Uppsala University, Sweden, advised on vascular surgery procedures. Significant input to the work has also been received from classification experts outside of Europe, i.e. from Kerry Innes, Australia, and Lori Moskal and Janet Manuel, Canada, who have provided expertise on application of their national procedure classifications. Caroline Goebertus, coding expert at Prismant, The Netherlands, took an active part in mapping of the list to other classifications, and Glen Thorsen, Norway, checked the mapping to the NOMESCO classification NCSP.

The chair of the Expert Group has reported back to the HDP2 Full Group of participating countries in Prague in October 2006 and to the Hospital Data Group of the WHO-FIC Network at its meeting in Tunis in November 2006. At a late stage of the work, a draft list of selected hospital procedures was presented to and discussed at a co-ordination meeting between OECD, Eurostat and WHO-Europe. The discussions at these meetings have also had an impact on the work.

3. Mode of work

The work of the Expert Group will be described more in detail in the following sections of this report. Here only a brief summary of some characteristics of the mode of work will be mentioned.

The HDP2 undertook a questionnaire survey in April 2006 among the participating countries, including the new member states of EU that did not participate in HDP1. The survey was focusing on the National Hospital Activity Data Sets. The Expert Group had an influence on the questions on procedure registration and classification and was able to use information from this survey for its work

The group started out reviewing a number of available shortlists for procedures and constructed from them a comprehensive candidate list that was further discussed in view of some agreed principles for the selection of procedures.

It has also been possible for the Expert Group to analyse pilot data on procedures collected by HDP1. These were made available on a CD-ROM produced with the special software developed by HDP1. To the data from some 15 European countries were added corresponding pilot data from Canada and Australia.

Frequency studies on the candidate procedures were also made on data collected by the Expert Group from The Netherlands, France and Sweden as well as from Australia. These analyses together with continuous discussions on definitions of the candidate procedures with specialists led to revision and reduction of the candidate list to some 40 procedures. A series of mapping

exercises to several procedure classifications led to further revision of the content of the list and the definitions of the procedures.

4. Why a selected list?

Collection and analysis of data on hospital procedures for international comparison differ in many important aspects from the collection and analysis of corresponding diagnostic information. All patients discharged from hospitals have a diagnosis and a main diagnosis is defined according to agreed criteria if there is more than one. Diagnoses are coded according to a single international classification (ICD) and a shortlist of diagnoses can be constructed based on the ICD to include all cases and their main diagnoses. The sum of main diagnoses will correspond to the total number of patients discharged from the hospitals covered by the national data set.

The situation for international statistics on procedures performed on hospital patients is different. All patients are not operated upon or subject to medical interventions that are registered. It is less clear what is a procedure or an intervention that should be counted. For registration of procedures different national classifications are used and these do not comprise the same universe of possible medical and surgical interventions. The number of patients with at least one registered procedure may vary among countries due to characteristics of the classifications and to different rules for the registration of procedures. Minor diagnostic procedures may not be registered at all

There is no consensus on how procedures should be grouped, even if there are some similarities among the existing procedure classifications as to overall structure. In some classifications endoscopic interventions and minor procedures are grouped in certain sections, while they are distributed over organ system based chapters in other classifications.
Therefore, it is not possible to compile statistics in broader groups according to organ systems, corresponding to what can be done when diagnostic data are presented under ICD chapter headings.

For these reasons the Expert Group did not find it meaningful to construct an exhaustive list that sums up all surgical activities at hospital level or to use broad groups based on organ systems. Instead the list ought to be a short list of carefully defined, selected procedures that is able to reflect hospital activity for both inpatients and day patients. Such a list could also be described as a list of indicator or sentinel procedures.

In principle, not only surgery should be included in the list but also other medical interventions. In practice, however, it is not easy to find non-surgical interventions that are as clearly defined as surgical operations. Furthermore, the rules for registration of medical interventions are less uniform. Therefore, existing shortlists mainly contain surgical procedures.

The HDP is mainly concerned with hospital activity. Both care of inpatients and of day patients are included but there is a blurred zone between day care and outpatient care. Outpatient procedures – also those performed at hospitals – are less often registered and available for statistical analysis at the national level. Our considerations have resulted in an emphasis on procedures to inpatients and day care patients. This is the rationale for the proposed list to be called a selected list of hospital procedures.

The difficulties in getting good registration may be a reason for excluding certain procedures from the list. This is the case when it is well known that a certain procedure to a great extent is performed outside of the hospital system and the statistics therefore will not give a complete picture of the extent to which it is performed in the population. On the other hand, if the same procedure constitutes a normal and important part of hospital day care activity it might be important to have

it in the list. Examples of this situation are cataract surgery and colonoscopies, which constitute substantial parts of hospital activities, but at the same time they are often performed outside the hospital system in private clinics or practices. They are both included in the selected list in spite of the data collection problems. The resulting statistics have to be interpreted with care using metadata and estimates of underreporting.

Both acute care procedures and planned, elective interventions should be included in the list to cover different aspects of hospital activity. The elective procedures will dominate the list, however. Both diagnostic and therapeutic procedures should be included. As mentioned above, registration rules for diagnostic procedures may not be as comprehensive as for the therapeutic ones. Therefore, the list will be dominated by therapeutic procedures.

Another principle agreed on was to base the list solely on codes for the procedures as they are described in the procedure classifications, not taking other diagnostic data into account as it is done in the construction of case-mix groups. The Expert Group considered the possibility of using surgical case-mix groups for the list of procedures but found it not feasible. Existing case-mix systems differ between countries and the groups cannot be used for comparison as they are. Theoretically, one could collect person-based data on both diagnoses and procedures and regroup data from different countries by the same standard case-mix grouper. This, however, calls for agreement on such a grouper and detailed mapping of many different procedure classifications. Neither is collection of person-based data feasible for the HDP model, which builds on national reporting of aggregate data.

5. Criteria for selecting procedures

Different criteria may apply for the selection of procedures. The Expert Group has especially considered the following:

- Common *procedures that make a volume* constitute an important reason for inclusion (examples of big volume procedures are cataract surgery, colonoscopy and hip replacement).
- The *potentiality for day surgery* is another reason. It is of interest to study to what extent countries have been able to introduce this type of care.
- *Changing techniques* over time is also a reason for comparisons. Some traditionally surgical procedures have been substituted by other types of therapy and surgical treatment will diminish. In other cases new surgical techniques (e.g. laparoscopic methods) have been introduced and the spread of such new methods is of special interest.
- The economic burden of diseases and their treatment may be another reason for inclusion of very *expensive procedures* (such as organ transplantation).
- *Public health importance* (e.g. cataract surgery for improved vision and colonoscopy as a preventive measure) is another reason.
- It is also desirable to achieve as broad *specialty coverage* as possible, even within a short selected list.
- Finally, it is important to try to retain a certain degree of *continuity* with earlier international lists to facilitate trend analysis.

The Expert Group did not formally rank these criteria by order of importance but tried to combine them intuitively.

6. The concept of principal procedure

Registration of procedures differs among countries, both with respect to how many procedures are reported at the national level and whether or not a principal or primary procedure is assigned.

According to the HDP2 Inventory of National Hospital Activity Data Sets (NHADS), about two thirds of the European countries do assign a primary procedure, if more than one is reported. No international agreement exists, however, on the definition of a principal or primary procedure similar to the WHO definition of main condition (main diagnosis), which is stated in the ICD.

It is obvious from the NHADS inventory that the criteria for the definition of the principal procedure differ among European countries. The following criteria were mentioned as reasons for selecting one of the procedures as principal or primary:

- Amount of resources being used
- Procedure performed for the reason for admission
- Procedure performed for the main condition (main diagnosis) at discharge
- Priority for treatment over diagnostic or exploratory procedures
- Hierarchy as in surgical DRG systems
- Judgment of responsible doctor.

There are reports on difficulties in applying the concept of principal procedure in countries that try to do so, and some countries have given up the idea. Partly because of the introduction of electronic patient records – in which registration of events is done sequentially – there are often mistakes in the reporting of the principal procedure. In many situations the first procedure performed during a hospital stay is a minor diagnostic or exploratory intervention that is followed by a major therapeutic procedure. Examples are dilatation and curettage (D&C) followed by hysterectomy, colonoscopy followed by colectomy, and bronchoscopy followed by pulmonary resection. It is obvious that selecting the first-mentioned procedure – which is commonly the record position for indicating which is the principal one – could be very misleading. This has been one of the reasons to exclude a common procedure such as D&C from the list.

Basing the reporting only on the principal procedure will of course facilitate the statistical analysis, similar to the use of only main condition for the shortlist of diagnoses. The many different definitions of principal procedure may not result in very different choices, however, since several of the criteria will often result in the same selection. Therefore, the Expert Group does not find it necessary to try to change national selection rules where they exist and are applied.

The problem thus lies with the countries that do not use the concept of a principal procedure. We do not think, however, that it is feasible to get these countries to start to do so, given the obvious problems involved in applying such a definition consistently.

7. Counting all reported procedures

The maximum number of procedures recorded for a single patient stay varies greatly at the national level. According to the NHADS inventory all HDP2 countries do register procedures. One country registers only one procedure, several countries record a limited number (such as 3, 10, 12 or 20), one as many as 99 and one country an unlimited number. These differences may to some extent reflect the different granularity of the classifications being used and varying coding rules about the use of several codes simultaneously for a complicated procedure.

HDP1 did collect test data on 18 selected procedures. Due to the lack of an assigned principal procedure in several countries, all procedures registered at national level were used as the base for counting cases with any of the selected 18 procedures. This could result in counting the stay twice, if two different procedures on the selected list were performed during the same hospital stay.

The Expert Group has concluded that HDP2 should use the same principle and base the counting on all reported procedures. It seems logical to count the total number of all procedures on the selected list. The fact that countries report a different maximum of procedures for the same patient will, however, lead to some, but probably minor, comparability problems.

In addition to the recommendation to base the counting of procedures on all procedures reported for a single hospital stay of a patient, it is suggested that parallel counts should be made based only on interventions reported as principal procedures. This could be done in countries where principal procedures are indicated in the individual records. It is suggested that this should be done in the collection of test data that is planned for HDP2 in the fall of 2007. Such parallel counts will provide an opportunity to further assess the differences between the two methods.

8. Classifications being used

According to the NHADS inventory the following procedure classifications were being used in the HDP2 countries in 2006.

- ICPM. This is the original international classification of procedures in medicine published by WHO as a companion to ICD-9 in 1978. It has been updated nationally and is used in four countries, a German language version (OPS) in Germany and a Dutch version used in The Netherlands (ICPM-DE). Cyprus and Hungary also reported the use of ICPM.
- ICD-9-CM part 3. This is the clinical modification of ICD-9 for the United States, which has a procedure classification as an added Part 3. It is updated annually. Different editions of this classification are used by at least six European countries (Belgium, Italy, Poland, Portugal, Spain and Switzerland)
- OPCS-4. This is the fourth edition of the Operation Classification developed in the United Kingdom. It is used in the four countries that constitute the U.K.
- NCSP. This is an English language procedure classification developed by the Nordic Medico-Statistical Committee (NOMESCO) in 1996 and since then updated annually. It is being used in the five Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) in national language versions, which show only slight differences. Estonia is also using a national translation of NCSP.
- CCAM. This is a comprehensive French language procedure classification being developed to replace the earlier CdAM and NGAP, with mandatory use in France since 2005.
- ACHI. This Australian procedure classification was adopted by Ireland where it has been used since 2005.
- Other procedure classifications, mainly national, are used by at least six European countries (Austria, Czech Republic, Latvia, Lithuania, Luxembourg and Slovenia).

The shortlist of procedures developed and used by HDP1 comprised 18 procedures that were defined by their ICD-9-CM codes. Participating countries using other classifications had to translate these codes onto corresponding codes of their own classifications. There was no project initiative to make sure that these mappings were correct. In the Final report of the HDP1 there is a comment on this. The mapping onto ICD-9-CM was done in most countries by people who were not medical experts. This may have resulted in some cases being incorrectly included or excluded in the mapping definitions. This leaves some questions over the accuracy of the HDP1 mappings.

The Expert Group has taken a different approach for HDP2. The definitions of the selected procedures are not based on any specific classification but expressed verbally, using the common English terms and notations for the chosen procedures. During the work on the list the Expert Group members and other experts tentatively coded the procedures on the list according to classifications that they were used to work with. This coding process has resulted in the need to redefine and reformulate some of the terms. Explanatory notes in the form of inclusion and exclusion

notes have been added. Some preliminary selected procedures were taken out of the list because of the coding problems that were discovered during the mapping (see more on this below).

The proposed selected list can thus be presented together with relevant codes from several procedure classifications. It should be emphasized, however, that these codes should be regarded as suggestions that have to be confirmed by national experts in the reporting countries, who are more knowledgeable about the special national coding and registration rules that may exist.

9. Review of existing shortlists

The Expert Group started its work reviewing a number of existing procedure shortlists:

- The HDP1 shortlist of procedures contains 18 selected procedures.
- The Eurostat list comprising 37 groups, some of them chapter-broad groups, others are selected procedures.
- The OECD health data procedure category list had 32 groups, both broad groups and selected procedures. (This list was shortened to 20 groups in 2003.)
- NOMESCO uses two different lists, one comprising 15 major procedures, the other one 16 procedures judged to have potentiality for day care.

We also reviewed a more extensive list of ambulatory procedures published by the International Association for Ambulatory Surgery (IAAS).

As could be expected, there was much overlapping between these lists. Combining them resulted in a list of some 90 different procedures. It was noted that when the same procedure was included in more than one list, it was sometimes defined differently, according to the codes assigned to it.

In a careful review of this combined list we tried to apply the selection criteria mentioned above, excluding the broad groups and considering only specific procedures. This discussion resulted in a tentative candidate list of specific procedures. A few procedures not included in any of the lists were added, such as colectomy and stem cell transplantation. It was noted that areas such as neurosurgery and vascular surgery ought to be further investigated in order to achieve better specialty coverage of the list.

Given the interest in following the dissemination of new techniques, special attention was paid to laparoscopic techniques, mostly not covered by the existing lists. Some of the older procedure classifications did not even have special codes for this technique or available codes were not reported at national level. The solution has been to introduce subgroups under relevant procedures for interventions made with laparoscopic technique. For instance, the group cholecystectomy – that encompasses all such procedures regardless of technique – will have a subgroup called “thereof laparoscopic”. This makes it possible to compare use of this technique among countries that are able to report on laparoscopic procedures, while it is still possible to compare all types of cholecystectomy among all countries. Subgroups for laparoscopic technique are relevant also for groups such as appendectomy, colectomy, hernia repair and hysterectomy.

The definition of the laparoscopic subgroups has been thoroughly discussed. It was decided that laparoscopic operations that have to be converted to open surgery because of problems or complications that cannot be handled laparoscopically should be counted as open surgery, according to what seems to be common practice. Thus, they will sometimes be coded only as open surgery and information on the initial intent to perform a laparoscopic operation will be missing. Laparoscopic assisted colectomy and hysterectomy, however, which are planned to use both laparoscopic and open technique (for removal of the organ) should be counted as laparoscopic procedures.

In the discussion it was also suggested that for total hip replacement a subgroup for secondary operations should be added. The secondary operations constitute a growing volume problem given the amount of primary hip replacements performed over the last decades. The need for a secondary operation may also be seen as a quality indicator.

These deliberations resulted in a candidate list of about 35-38 candidate procedures. The list was presented at the HDP2 Full Group meeting in Prague in October 2006, which resulted in further discussions with some of the interested participants. The candidate list was also presented to the WHO-FIC Network meeting in Tunis in November 2006, where classification specialists from some non-European countries were involved. This resulted in valuable comments about both selection and definitions of the procedures. Experts from Australia and Canada also offered to map the candidate list to their national procedure classifications ACHI and CCI.

Discussions with specialists in some areas such as vascular surgery and orthopedic surgery were also initiated about the definitions of some of the entries on the candidate list and possible inclusion of new procedures.

10. Testing the candidate list with pilot data

As mentioned earlier, HDP1 collected pilot data from the participating countries on hospital use (mainly 1999 data). Through initiative from the WHO-FIC Hospital Data Working Group, corresponding data from Canada and Australia (2002 data) were later provided and added to the European database on a CD-ROM. The final editing of the CD-ROM containing data from 15 European countries and Canada and Australia was ready during 2006 and has been used by the Expert Group for analyses of data on surgical procedures. The fact that most of the data were from 1999, and thus a bit old, did not hamper their use for the type of methodological studies of interest, even if comparisons with the non-European countries were affected to some extent by the three year difference. More important for the comparisons were that data had been collected according to an agreed data collection process and with standardized definitions as far as possible.

For the 18 procedures included, detailed analyses were made on population rates, percentage of procedures as day care, and average length of stay (ALOS) for inpatients. The analyses showed great differences between countries both with respect to population rates for certain surgical procedures and to which extent the procedures had been performed as day surgery. There were also marked differences in length of stay.

Further analyses of the metadata available for each country revealed that many of the differences could be explained by known underreporting, mainly of day care patients. A few countries could not report day patients at all, for others there were registration losses. In some countries differences were due to registration rules about what should and should not be reported. An example of this is that diagnostic colonoscopies need not to be reported at the national level in Finland. Differences in population rates could also be due to the fact that some of the total number of certain procedures had been done outside of the hospital system, e.g., in private hospitals or health centers not covered by registration. This may have been the case for the variation in rates for carpal tunnel release, cataract surgery, myringotomy with insertion of tube and colonoscopy, for instance.

There were also clear differences that probably can be explained by different clinical practice, such as performing tonsillectomy and inguinal hernia repair as day surgery or on inpatients. The same may be true for variation in length of stay for inpatients. However, ALOS may also reflect

differences in the relative amount of day care; high percentage of day care cases leaving mainly complicated cases for inpatient care with a consequently longer ALOS for these.

Long ALOS for relatively simple procedures such as D&C and colonoscopy probably reflect that another major operation was performed during the same hospital stay, such as hysterectomy or colon cancer surgery.

A main conclusion of these analyses is that differences in organisational structures, coding practice and registration rules are as likely to explain statistical differences between countries as real differences in morbidity or clinical practice. This is then an argument for working towards more standardized definitions and registration rules than what was possible to achieve in HDP1.

The Expert Group was also able to secure statistics that showed frequencies in national data bases of the procedures on our own candidate list, which was helpful for the decisions about which procedures should be kept or dropped from the list. Such national data were used from The Netherlands, France and Sweden. From Australia we could also get a count of how many operations were reported as principal procedures compared to those reported as other procedures.

Ideally, the procedures on the list should to a great extent be reported as principle procedures. This turned out to be the case for most of the procedures kept in the final list, judged by the Australian counts. In a few instances this was not the case, such as for coronary artery bypass graft, where less than half of the reported procedures were reported as principal procedure. A closer investigation showed that many of the coronary artery bypass graft operations, which were not reported as principal procedures, had aortic valve replacement as principal procedure, which makes the choice very reasonable. A small group had coronary angiography as principal procedure, which seems to be a mistake, probably reported as principal because it was performed first during the stay.

11. Mapping to national procedure classifications

Mappings of the candidate list to a number of existing procedure classifications was performed at different stages of the work by members of the Expert Group and some other classification experts. Thus, mappings have been done to the original ICPM and for its later revised national versions used in The Netherlands (ICPM-DE) and in Germany (OPS). Mappings to ICD-9-CM were available in some of the existing shortlists but new mappings have also been done through specialists in Canada and at Prismant.

Mappings to the Nordic NCSP and the French CCAM were done by members of the Expert Group and the mapping of the Australian ACHI and the Canadian CCI were done by classification specialists in these countries. No mapping has been performed to OCPS-4.

These mapping exercises have been very useful and demonstrated the need for making the verbal definitions of the groups in the list as clear as possible. Thus, it was found necessary or useful to include inclusion and exclusion notes. In some cases the definition has been changed or the candidate procedure has been omitted due to coding problems discovered through the mappings.

It is not possible, however, to arrive at definitions that can be used with all existing classifications. A few classifications may not be able to match exactly the definitions for some groups in the list. This is a fact that has to be accepted. It is of course important to take such difficulties into consideration in the analysis of the statistics. Therefore, it is important that mapping problems be noted in the metadata that always should be part of the data delivery for international comparisons.

The mappings done are presented in a series of annexes to this report. It should be emphasized, however, that these mappings are to be seen as suggestions.

Procedure classifications are updated with different intervals, many of them annually. The mappings presented in the annexes are mostly to the latest available version of the classifications. Some countries may use an older version, however. This seems to be the case for some European countries using the ICD-9-CM part 3. Therefore, mappings were made also to older versions of ICD-9-CM and ICPM.

Furthermore, for the production of time series data – which was one of the recommendations of HDP1 – it is important to realize that changes may have been introduced in the classification being used during the time period for which data are collected.

Classifications have different granularity and it is sometimes possible to use more than one code for a single procedure. If several codes in the definition for a single procedure are registered for the same patient during the same stay, this case should be counted only once for that procedure.

Thus, there are several reasons why the suggested mappings in the annexes should be checked by national experts who know about version applicability and other national rules and regulations for coding and registration that may affect statistical comparability.

12. Proposal for a selected list of hospital procedures

The final proposal for the selected list is presented here with the chosen terminology and short verbal definitions of the groups. For each procedure, reasons for its inclusion in the list are given, mentioning the most important inclusion criteria applied of those mentioned earlier.

In the absence of a common international procedure classification, there is no natural systematic order for presentation of the list. We have chosen mainly to follow the ordering in ICPM and ICD-9-CM part 3.

1. Exstirpation, excision and destruction of intracranial lesion
Excludes evacuation of haematoma and operations with skull base approach and stereotactic interventions
Reason: specialty coverage

2. Evacuation of subdural haematoma and intracranial haemorrhage
Includes evacuation of spontaneous intracranial haemorrhage. Excludes evacuation of epidural haematoma
Reason: changing technique, specialty coverage

3. Discectomy
Includes intervertebral discectomy for decompression of spinal cord and nerve roots (rhizolysis) with or without excision of bone (laminectomy). Includes microsurgical technique. Excludes chemonucleolysis and discectomy as part of major reconstructive surgery
Reason: specialty coverage

4. Thyroidectomy
Includes total excision and partial excision of any part of thyroid gland

Reason: changing technique, continuity

5. Cataract surgery
Includes secondary implantation of lens and removal of lens
Reason: common procedure, day surgery potentiality, public health importance, continuity

6. Cochlear implantation
Includes replacement of cochlear implant
Reason: changing technique (emerging technology), expensive procedure, specialty coverage

7. Tonsillectomy
Includes total and partial tonsillectomy with or without adenoidectomy. Excludes adenoidectomy without tonsillectomy
Reason: common procedure, day surgery potentiality

8. Pulmectomy
Includes lobectomy and segmental resection of lung
Reason: specialty coverage

9. Diagnostic bronchoscopy with or without biopsy
Includes bronchoscopy through artificial opening of trachea
Reason: common procedure, day care potentiality, specialty coverage

10. Transluminal coronary angioplasty
Includes percutaneous transluminal interventions (PTCA, PCI), with or without insertion of stent
Reason: common procedure, changing technique, continuity

11. Coronary artery bypass graft
Reason: changing technique, expensive procedure, continuity

12. Carotid endarterectomy
Includes with or without insertion of stent
Reason: changing technique, specialty coverage

13. Infrarenal aortic aneurysm repair
Includes endovascular insertion of stent
Reason: changing technique, specialty coverage

14. Femoropopliteal bypass
Bypass from femoral to popliteal artery above or below knee
Reason: specialty coverage

15. Stem cell transplantation
Applies to recipient only. Includes bone marrow transplantation
Reason: changing technique (emerging technology), expensive procedure (process)

16. Colonoscopy with or without biopsy
Includes colonoscopic interventions such as polypectomy. Includes colonoscopy through artificial stoma. Includes sigmoidoscopy. Excludes proctoscopy and rectoscopy
Reason: common procedure, day surgery potentiality, public health importance, continuity

17. Colectomy

Includes partial and total colectomy, excision of ileocaecal junction and colosigmoidectomy and coloproctectomy. Excludes proctectomy as separate procedure. (This group includes group 17A)
Reason: specialty coverage

Thereof:

17A. Laparoscopic colectomy

Includes combination of laparoscopic and open techniques (laparoscopic assisted). Excludes conversion from laparoscopic to open surgery

Reason: changing technique

18. Appendectomy

Includes incidental and appendectomy "en passant". (This group includes group 18A)
Reason: common procedure, continuity

Thereof:

18A. Laparoscopic appendectomy

Excludes conversion from laparoscopic to open surgery

Reason: changing technique

19. Cholecystectomy

(This group includes group 19A)
Reason: common procedure, continuity

Thereof:

19A. Laparoscopic cholecystectomy

Excludes conversion from laparoscopic to open surgery

Reason: changing technique

20. Repair of inguinal hernia

(This group includes group 20A)
Reason: common procedure, day surgery potentiality, continuity

Thereof:

20A. Laparoscopic repair of inguinal hernia

Excludes conversion from laparoscopic to open surgery

Reason: changing technique

21. Transplantation of kidney

Applies to recipient only. Includes autotransplantation of kidney
Reason: expensive procedure

22. Open prostatectomy

Includes radical and transvesical prostatectomy and excision of adenoma. Excludes transurethral procedures
Reason: continuity

23. Transurethral prostatectomy

Includes transurethral laser resection, electroevaporization and microwave therapy
Reason: common procedure, changing technique, continuity

24. Hysterectomy

Includes partial and total hysterectomy (with or without excision of adnexa) by laparatomy or vaginal or laparoscopic methods. Excludes evisceration (exentration) of pelvis and caesarean hysterectomy. (This group includes group 24A)
Reason: common procedure, specialty coverage, continuity

Thereof:

24A. Laparoscopic hysterectomy

Includes combination of laparoscopic and open techniques (laparoscopic assisted). Excludes conversion from laparoscopic to open surgery

Reason: changing technique

25. Caesarean section

Reason: common procedure, continuity

26. Arthroscopic excision of meniscus of knee

Includes total and partial excision
Reason: common procedure, day surgery potentiality, specialty coverage

27. Hip replacement

Includes total and partial replacement
Reason: common procedure, continuity. (This group includes group 27A)

Thereof:

27A. Secondary hip replacement

Includes revision of arthroplasty of hip

Reason: changing technique (quality measure)

28. Total knee replacement

Excludes partial knee replacement
Reason: common procedure, changing technique, continuity

29. Partial excision of mammary gland

Includes wedge excision and other partial excision with or without lymph node excision. Excludes biopsy and breast reduction surgery.
Reason: day surgery potentiality, changing technique

30. Total mastectomy

Includes radical mastectomy and mastectomy with preservation of skin and nipple (subcutaneous mastectomy).
Reason: specialty coverage, continuity

13. Some characteristics of the list

The proposed final list of selected hospital procedures thus comprises 30 procedures and 6 subgroups of these, altogether 36 groups. All countries may not be able to report on the subgroups due to limitations of the classifications being used or lack of national registration at such a detailed level. Furthermore, a few classifications may not be able to match exactly the definitions for some other groups in the list, as has been mentioned earlier.

About half of the procedures have been included in the list because of ongoing or potential change of techniques (including the five laparoscopic subgroups) or in order to facilitate statistical continuity with existing shortlists, including the HDP1 list. Other common reasons are a wish to

achieve broad coverage of specialties, to cover procedures that make a volume and those with potentiality for day care. The inclusion of main neurosurgical procedures is new in comparison to existing shortlists and several peripheral vascular procedures are also included.

Two of the procedures – stem cell transplantation and cochlear implantation – represent emerging technologies that are very resource demanding. Stem cell transplantation may not be complicated as a procedure as such but the preparation and administration of it makes it an expensive process. For the patient it may be a question of life or death. The indications for performing a cochlear implantation are much more relative. Therefore, one would expect greater differences among countries with respect to the introduction of cochlear implantation, reflecting diverging insurance coverage of the high costs involved and socioeconomic conditions among patients.

Candidate procedures that were excluded from the final list are some for which test data and the mapping exercises have shown difficulties in definitions and consistent registration, as mentioned earlier. Examples are carpal tunnel release, myringotomy with insertion of tube, cardiac catheterisation, operation for varicose veins, cystoscopy, dilatation and curettage of uterus, termination of pregnancy (legal abortion) and female sterilisation. Some diagnostic procedures included in the current Eurostat shortlist such as computerised axial tomography and diagnostic ultrasound were left out for the same reasons.

One area not covered in the final list is emergency care for injuries due to external causes. Injuries such as wounds and fractures constitute a great volume of the hospital workload, but the cases are very heterogeneous. Fracture surgery represents a considerable part of hospital activity but it is hard to define homogeneous groups, feasible for statistics on procedures. The Expert Group considered including reduction of femur fractures in the list. Fracture of femur is included in the diagnostic shortlist, however, and almost all of these fractures will be handled with open or closed surgery. Therefore, such a procedure category does not add much to the information already available from the diagnostic shortlist.

For reasons explained earlier the proposed list is dominated by surgical procedures. Of course, it would be of interest to try to estimate what proportion of all surgical hospital activity is covered by the selected list. There are many problems involved in such a calculation, however. The main difficulty is the absence of a common definition of the universe of surgical interventions that could be used as a denominator. Another is the varying demand on resources that different types of procedures represent. Just counting number of procedures may thus be misleading. Therefore, the Expert Group has not made any serious efforts to arrive at such estimates. The fact that the list comprises so many common procedures may perhaps be taken as an indication of a satisfactory quantitative coverage. Furthermore, conscious efforts were made to get broader specialty coverage than what is found in most other existing procedure lists. Still, the number of procedures included in the list is judged to be manageable for routine international data collection.

14. Recommendations and future use

The Expert Group recommends that the HDP2 should collect national pilot data on hospital procedures from all the participating European countries using the selected list presented here.
We recommend that counts should be based both on all registered procedures and on principal procedure, where possible. Countries that apply a principal procedure concept should use the national definition of which is the principal procedure. The Expert Group does not suggest any changes to the HDP2 definitions of hospital, inpatient, day care or hospital discharge (e.g., the need for combining consecutive stays at different departments or consultant episodes in the U.K. into one hospital stay).

The data collection planned by HDP2 for the fall of 2007 should be seen as a pilot. It should be an important proof of the validity and usefulness of the list and of the possibility to achieve comparable statistics using many different procedure classifications. It is important that persons with good knowledge of national registration and coding practice be involved in planning the national data reporting and providing relevant metadata.

It is also important that the analysis of the pilot data sets will be done by people with expert knowledge on the methodological problems which are the main focus of the pilot and of HDP2. There must be a preparedness and competence to revise the list according to the results of the pilot study.

With its present data collection, HDP2 is aiming at trend analysis for data on diagnoses for the years 1999-2005. Many countries seem to be able to provide trend data on diagnoses. It will be more difficult, however, to collect trend data on procedures due to the many changes that have taken place of procedure classifications. Some countries have changed their classification recently and may not be able to report on earlier years. There are also problems resulting from the continuous updating of the procedure classifications being used. The mappings to different classifications presented in the annexes to this report should facilitate data collection, but they have to be reviewed by national expertise with knowledge about classification changes and other national registration and coding rules.

The Expert Group has been working with a view to the potentiality for international acceptance of the selected list at the end. This was one reason for seeking involvement of non-European countries in the development of the list. At a co-ordination meeting between OECD, Eurostat and WHO-Europe in March 2007, the work of the Expert Group was presented and the draft list was discussed. The three organisations welcomed the progress made to develop a shortlist for procedures for the purpose of regular data collection at the international level. Some of the views from this discussion have been integrated in the final proposal. It was agreed, however, that it is reasonable to wait for the result of the HDP2 pilot data collection, before a decision is taken on a possible broader international use of the selected list.

The need for maintenance of a procedure list is greater than for a list of diagnoses that could be expected to stay more stable. Surgical development is very rapid, which calls for an agreed process for making future changes to the procedure list. There must be a balance, however, between flexibility and statistical stability.

It is important to decide who should be responsible for the necessary maintenance of the list. If the list becomes a common international list in the future, it seems reasonable to place the formal responsibility for making changes to the list with WHO, just as is the case for the shortlist of diagnoses (the ISHMT). Decisions on changes should be made in consultation with the other international organisations using the list.

Even if the selected list is not changed there may be a need for change of mappings due to updating and changes of national classifications. Therefore, responsibility for maintenance must also fall on national authorities.

As mentioned previously, a main conclusion of analyses of the HDP1 pilot data and other similar studies have been that differences in organisational structure, registration rules and coding practice are as likely to explain statistical differences between countries in health services use as real differences in morbidity or clinical practice. A carefully defined and standardized selected list of procedures – as the one proposed here – may become an important instrument for achieving more comparable international statistics. It is important, however, to follow up the experiences of

its use and to establish ways for effective maintenance of the list and future methodological standardization and development.

Annexes

A series of annexes have been prepared with suggested mappings between different procedure classifications and the proposed selected list of hospital procedures. The annexes will mainly be made available electronically.

As an example, the mapping of the common English language version of the NOMESCO Classification of Surgical Procedures (NCSP-E) to the selected list is shown in a separate document.

A.III.2 Metadata Procedures

a. Status

Nr	Country	Procedure data	Metadata Procedures Documents	Classification used
1	Austria	06	1X	Austrian Procedure Classification
2	Belgium	05-06	1X	ICD-9-CM
3	Cyprus	06	1X	ICPM (version 1978)
4	Czech Republic	05	1X	National specific system maintained by General Health Insurance Company
5	Denmark	06	+	
6	Estonia			
7	Finland	05	1X	NCSP
8	France	04-06	1X	CCAM
9	Germany		1X	German OPS Version
10	Greece	04-05	1X	The National Statistic Service has not adapted any national or international classification. Any available procedure data are reported according the ICD-9 classification for diseases.
11	Hungary	06	1X	Hungarian procedure classification coding system is bases on ICPM, widely extended and modified.
12	Ireland	05	1X	1990-2004: ICD-9-CM 2005 - : ICD-10-AM
13	Italy	04	1X	2001-2005: ICD-9-CM version 14 2006- : ICD-9-CM version 19
14	Latvia	Unable to collect data in the format	1X	National classification of manipulations
15	Lithuania	Unable to collect data in the format	1X	National list of surgical operations
16	Luxembourg	05		
17	Netherlands	05, 07	1X	The Dutch ICPM version called CvV (Classification of procedures)
18	Poland	05-06	1X	ICD-9-CM since 2003
19	Portugal	06	1X	ICD-9-CM
20	Slovenia	05-06	1X	ICD-10-AM
21	Spain	05	1X	ICD-9-CM
22	England	06		
23	Scotland			
24	Northern Ireland			
25	Wales			

A.III.2 Metadata Procedures

b. Data format

Hospital Data Project 2

Request for Procedure Data

Request for Procedure Data

The purpose of this document

The purpose of this note is to provide a detailed specification of the requested procedure data file(s) from each participant country. Please refer to the Common Data Set (CDS) Section B part 1, 'Data Transformation Table' for detailed instructions on the definitions applying to each variable, send by mail on April 11th 2007.

All countries should submit a procedure file with counting based on all procedures registered at the national level. Please, note that in this case all occurrences of each procedure on the selected list should be recorded. A single hospital stay may therefore contribute more than one procedure.

Examples of two procedures on the list that may be performed during the same hospital stay are diagnostic bronchoscopy and pulmectomy; colonoscopy and colectomy, transluminal coronary angioplasty and coronary artery bypass graft. In these instances both procedures should be counted separately.

However, when more than one classification code included under the same shortlist group is recorded for the same hospital stay, then only one should be counted. This could be the case when the same procedure (e.g. colonoscopy) is performed several times during the same stay and recorded twice or more in the record.

Countries that apply a principal procedure concept should, in addition, submit a separate procedure file for which counting is based only on the principal procedure. In this file only one procedure can be counted for each hospital stay. Countries should use their national definition for which is the principal procedure.

You are requested to create and return the following file(s):

FILE 1: Procedure Data

For countries that apply a principal procedure concept:

FILE 2: Principal Procedure Data

The necessary information for the requested procedure data are in this note and the available Mappings to national procedure classifications, which were made by the
Expert Group on Procedures.

Available mappings:

- ACHI
- CCAM
- ICD-9-CM
- NCSP
- OPS
- ICPM
- ICPM-DE

The mappings are primarily for countries using these procedure classifications. They may also be used as guidelines for countries who use different classification systems. Attached to this data request is the mapping to ICD-9-CM. Countries using ICD-9-CM have to take into account which version is used and possible national deviations from the U.S. version.

If you want to receive other mappings please send an email with mention of the requested mappings to **hdp2@prismant.nl**

For reasoning behind the list and background information see the full report from the HDP2 Expert Group on Procedures, A selected list of hospital procedures which was distributed to participant countries on June 5th 2007.

Who should you send the file(s) to?

The data file(s) should be sent as e-mail attachments to:

Mark Boll (hdp2@prismant.nl)

Instructions on the appropriate file formats for the data files are given in this document.

The deadline for delivering data is 23th of June 2008

What do you do if you have a question/problem?

E-mail Mark Boll (hdp2@prismant.nl)

Someone will come back to you as soon as possible.

Thanks very much for your co-operation.

General Instructions

The following general instructions apply to **the file(s) :**

- **Data should refer to the latest available year.**
- **Files must be submitted in ASCII comma delimited format (i.e. ASCII CSV file).**
- **The last field in each row must be separated by a carriage return/line feed (i.e. ASCII character 13 followed by ASCII character 10).**
- **Combinations of classification variables (i.e. rows) for which there is no data should be excluded from the files.**
- **Use of commas: Commas can only be used in the files to separate variables and should not be used in any other circumstances (e.g. as a decimal place or a thousand separator).**

Please note that all statistical software in general use (e.g. SAS, SPSS, etc) will offer the option of outputting data in ASCII CSV format.

Specific instructions regarding definition and formatting of variables for each file is given below:

FILE 1, (2): Procedure Data

File Name

The procedure data file(s) should be named using the following rule,
for all Procedures:

proc_countrycode_year.csv

for principal procedures:

prin_proc_countrycode_year.csv

The countrycode for your country will be found in Code Table 1 attached.
The last two digits of the year should be used and should indicate the year to which the data refers.

Example: For Ireland, for 2005 procedure data, the name of the file for all procedures will be:

proc_ie_05.csv

File Format

The procedure data file(s) will contain the 9 variables listed in the table below. The table also indicates the variable type (i.e. integer or character) and size (i.e. number of columns reserved for the variable).

File Format for File 1: Procedure Data

Variable Number	Variable Name	Type	Maximum Size
1	Year	Integer	4
2	Country Code	Character	3
3	Procedure Shortlist Code	Integer	4
4	Gender Code	Integer	1
5	Age Range Code	Integer	2
6	Number of Inpatient Discharges	Integer	9
7	Number of Bed Days	Integer	10
8	Mean Length of Stay	Decimal	5.1
9	Number of Day Case Discharges	Integer	9

The codes to be used for each of the variables 2,3,4 and 5 are given in the attached code tables (i.e. Code Tables 1,2,3 and 4 respectively) and variables are further defined below.

The last four fields (i.e. 6, 7 ,8 and 9) give the number of inpatient discharges, bed days, mean length of stay and day case discharges.

In other words, each combination of procedure, gender and age range code (i.e. classification variables) will provide a row of data for which number of inpatient discharges, bed days, mean length of stay and day case discharges will be reported. Combinations of classification variables for which there is no data should be excluded from the files.

Variable Definitions

Each of the 9 variables is briefly defined below. Please refer to the Common Data Set (CDS) Section B part 1, 'Data Transformation Table' for detailed instructions on the definitions applying to each variable, send by mail on April 11th 2007.

Variable 1: Year

Data should refer to hospital discharges occurring during the year 2005 if possible, or latest available year.

Variable 2: Country Code

National data only are being collected. The country code is used to identify the country submitting the data. Include non-residents in your data. See attached Code Table 1 for list of country codes.

Variable 3: Procedure Shortlist Code

See attached Code Table 2 for list of procedure shortlist codes (which differ slightly from the ones in the final report of the Expert Group). The list gives code numbers and indicates the group corresponding to the shortlist categories.

Variable 4: Gender Code

This variable is used to classify hospital discharges as 'Male' or 'Female.' Exclude cases where gender is unknown if the case cannot be allocated to a male or female category. See attached Code Table 3.

Variable 5: Age Range Code

See attached Code Table 4. Exclude cases where age is unknown.

Variable 6: Number of Inpatient Discharges

The Common Data Set (CDS) definition of an inpatient is given in Section B, 'Data Transformation Table'. The data file will give the numbers of inpatient discharges for each specified group (i.e. each combination of values for the classification variables above).

Variable 7: Number of Bed Days

Inpatients only contribute to bed days. Bed days are calculated by summing the lengths of stay (date of discharge minus date of admission) for all inpatients in the group.

Variable 8: Mean Length of Stay

Average length of stay for all inpatient discharges in each group. This variable should be reported with 1 decimal point (e.g. 5.1 days).

Variable 9: Number of Day Case Discharges

A day case is a patient who is formally admitted with the intention of discharging the patient on the same day, and where the patient is in fact discharged on the same day. The data file will give the numbers of day case discharges for each specified group (i.e. each combination of values for the classification variables above).

Example of Procedure Data File

Below is a small example of how a file containing data should look. Each variable is separated by a comma and variables appear in the following order:

Variable	Variable name
1	Year
2	Country Code
3	Procedure Shortlist Code
4	Gender Code
5	Age Range Code
6	Number of Inpatient Discharges
7	Number of Bed Days
8	Mean Length of Stay
9	Number of Day Case Discharges

Sample file – proc_ie_05.csv:

```
2005,ie,100,1,1,***,***,*.*,*
2005,ie,100,1,2,***,***,*.*,*
.
.
2005,ie,100,1,21,***,***,*.*,*
2005,ie,100,2,1,***,***,*.*,*
2005,ie,100,2,2,***,***,*.*,*
.
.
2005,ie,100,2,21,***,***,*.*,*
2005,ie,200,1,1,***,***,*.*,*
2005,ie,200,1,2,***,***,*.*,*
.
.
2005,ie,200,1,21,***,***,*.*,*
2005,ie,200,2,1,***,***,*.*,*
2005,ie,200,2,2,***,***,*.*,*
.
.
.
.
.
.
2005,ie,3000,2,20,***,***,*.*,*
2005,ie,3000,2,21,***,***,*.*,*
```

CODE TABLES

1 TO 4

Code Table Number	Table Name
1	Country Code
2	Procedure Shortlist Code
3	Gender
4	Age

Code Table 1: Country Codes

Please note that the country codes are the only character variable in the data set.

Country Codes

Country Code	Name of Country
AT	Austria
BE	Belgium
CY	Cyprus
CZ	Czech Republic
DK	Denmark
EE	Estonia
FI	Finland
FR	France
DE	Germany
GR	Greece
HU	Hungary
IE	Ireland
IT	Italy
LV	Latvia
LT	Lithuania
LU	Luxembourg
NL	Netherlands
PL	Poland
PT	Portugal
SL	Slovenia
ES	Spain
ENG	England
SC	Scotland
NI	Northern Ireland
WA	Wales

Code Table 2: Procedure Shortlist Codes

Procedure Shortlist Codes

HDP2 code	Procedure	Specifications
100	Exstirpation, excision and destruction of intracranial lesion	Excludes evacuation of haematoma and operations with skull base approach and stereotactic interventions.
200	Evacuation of subdural haematoma and intracranial haemorrhage	Includes evacuation of spontaneous intracranial haemorrhage. Excludes evacuation of epidural haematoma.
300	Discectomy	Includes intervertebral discectomy for decompression of spinal cord and nerve roots (rhizolysis) with or without excision of bone (laminectomy). Includes microsurgical technique. Excludes chemonucleolysis and discectomy as part of major reconstructive surgery.
400	Thyroidectomy	Includes total excision and partial excision of any part of thyroid gland.
500	Cataract surgery	Includes secondary implantation of lens and removal of lens.
600	Cochlear implantation	Includes replacement of cochlear implant.
700	Tonsillectomy	Includes total and partial tonsillectomy with or without adenoidectomy. Excludes adenoidectomy without tonsillectomy.
800	Pulmectomy	Includes lobectomy and segmental resection of lung.
900	Diagnostic bronchoscopy with or without biopsy	Includes bronchoscopy through artificial opening of trachea.
1000	Transluminal coronary angioplasty	Includes percutaneous transluminal interventions (PTCA, PCI) with or without insertion of stent.
1100	Coronary artery bypass graft	
1200	Carotid endarterectomy	Includes with or without insertion of stent.
1300	Infrarenal aortic aneurysm repair	Includes endovascular insertion of stent.

Procedure Shortlist Codes (continued)

HDP2 code	Procedure	Specifications
1400	Femoropopliteal bypass	Bypass from femoral to popliteal artery above or below knee.
1500	Stem cell transplantation	Applies to recipient only. Includes bone marrow transplantation.
1600	Colonoscopy with or without biopsy	Includes colonoscopic interventions such as polypectomy. Includes colonoscopy through artificial stoma. Includes sigmoidoscopy. Excludes proctoscopy and rectoscopy.
1700	Colectomy	Includes partial and total colectomy, excision of ileocaecal junction and colosigmoidectomy and coloproctectomy. Excludes proctectomy as separate procedure. (This group includes group 1701).
Thereof: 1701	Laparoscopic colectomy	Includes combination of laparoscopic and open techniques (laparoscopic assisted). Excludes conversion from laparoscopic to open surgery.
1800	Appendectomy	Includes incidental and appendectomy "en passant". (This group includes group 1801).
Thereof: 1801	Laparoscopic appendectomy	Excludes conversion from laparoscopic to open surgery.
1900	Cholecystectomy	(This group includes group 1901).
Thereof: 1901	Laparoscopic cholecystectomy	Excludes conversion from laparoscopic to open surgery.
2000	Repair of inguinal hernia	(This group includes group 2001).
Thereof: 2001	Laparoscopic repair of inguinal hernia	Excludes conversion from laparoscopic to open surgery.

Procedure Shortlist Codes (continued)

HDP2 code	Procedure	Specifications
2100	Transplantation of kidney	Applies to recipient only. Includes autotransplantation of kidney.
2200	Open prostatectomy	Includes radical and transvesical prostatectomy and excision of adenoma. Excludes transurethral procedures.
2300	Transurethral prostatectomy	Includes transurethral laser resection, electroevaporization and microwave therapy.
2400	Hysterectomy	Includes partial and total hysterectomy (with or without excision of adnexa) by laparatomy or vaginal or laparoscopic methods. Excludes evisceration (exentration) of pelvis and caesarean hysterectomy. (This group includes group 2401).
Thereof: 2401	Laparoscopic hysterectomy	Includes combination of laparoscopic and open techniques (laparoscopic assisted). Excludes conversion from laparoscopic to open surgery.
2500	Caesarean section	
2600	Arthroscopic excision of meniscus of knee	Includes total and partial excision.
2700	Hip replacement	Includes total and partial replacement. (This group includes group 2701).
Thereof: 2701	Secondary hip replacement	Includes revision of arthroplasty of hip.
2800	Total knee replacement	Excludes partial knee replacement.
2900	Partial excision of mammary gland	Includes wedge excision and other partial excision with or without lymph node excision. Excludes biopsy and breast reduction surgery.
3000	Total mastectomy	Includes radical mastectomy and mastectomy with preservation of skin and nipple (subcutaneous mastectomy).

Code Table 3: Gender Codes

Only codes of 'Male' or 'Female' are permitted. In some countries, 'Unknown' can be recorded. Where there is a process for allocation 'Unknown' to 'Male' or 'Female' please use this.

Gender Codes

1 = Male
2 = Female

Code Table 4: Age Range Codes

Please exclude cases where age is unknown.

Age Range Codes

Age Range Codes		
1	=	" < 1"
2	=	" 1 to 4"
3	=	" 5 to 9"
4	=	"10 to 14"
5	=	"15 to 19"
6	=	"20 to 24"
7	=	"25 to 29"
8	=	"30 to 34"
9	=	"35 to 39"
10	=	"40 to 44"
11	=	"45 to 49"
12	=	"50 to 54"
13	=	"55 to 59"
14	=	"60 to 64"
15	=	"65 to 69"
16	=	"70 to 74"
17	=	"75 to 79"
18	=	"80 to 84"
19	=	"85 to 89"
20	=	"90 to 94"
21	=	"95 and over"

c. Metadata

A.III.2 Metadata Procedures

1. Austria

Name of Country Completing the Table: Austria

Name of respondent: **Dr. Andreas Egger /Mag. Herta Marie Rack – Federal Ministry of Health, Family and Youth……**……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Yes ~~N~~
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure ~~Y~~ No Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures ~~Y~~ No Number recorded
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	Austrian Procedure Classification
e	What classification systems have you used in recent years to record procedures and for what years?	Austrian Procedure Classification since 1997
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Yes ~~N~~ English language version ~~Y~~ No
g	Do you have any national procedure shortlists?	Procedure shortlist ~~Y~~ No

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	numbers 100 and 200 – in the current version of our classification there is no difference between lesion and haemorhage, will be available 2009; same code for arthroscopic excision of meniscus and other small arthroskopic interventions of the knee; coloscopy not counted for hospital stays
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	own mapping
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	no

A.III.2 Metadata Procedures

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	In the current version o our datawarehouse there is no option to set the count on 1 per shortlist code and hospital stay, so especiallly in case of bilateral procedures and PTCA (coded per vessel) some double counting will occour

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting ~~Y~~ ——No
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
n	Is it possible to estimate the size of underreporting?	

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting ~~Y~~ No, but there is no easy way to seperate daypatients from hospital outpatients
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

2. Belgium

Name of Country Completing the Table: Belgium

(please type in the name of your country in the space provided above)

Name of respondent: ……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information **Yes** N
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Y **No** Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures **Yes** N Number recorded unlimited
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	ICD-9-CM
e	What classification systems have you used in recent years to record procedures and for what years?	ICD-9-CM 1999-2006
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines **Yes** N English language version Y **No**
g	Do you have any national procedure shortlists?	Procedure shortlist Y **No**

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	No
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	Mapping of ICD-9 to the selected list 2007-07-22 They were helpful and we don't have problems in interpreting
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	We are able to identify some cases through the combination of separate codes but we think we don't have all data. However, these combinations of codes are not allowed in our coding rules. Therefore, the real rate of laparoscopic procedures may be underestimated.

A.III.2 Metadata Procedures

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	No, we don't have problems in avoiding double counting.

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y N Because ICD-9-CM coding rules prevent the mentioning of a laparoscopic approach.
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	Laparoscopic colectomy, laparocopic hysterocomy, laparoscopic repair of inguinal hernia, arthroscopic excision of meniscus of knee.
n	Is it possible to estimate the size of underreporting?	No. For instance the inter-hospital variations in laparoscopic cholecystectomy rate, which we thoroughly analysed, are very important, suggesting divergent practices/attitudes regarding laparoscopic procedures.

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y **NO**
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

3. Cyprus

Name of Country Completing the Table: CYPRUS

Name of respondent: **Anna Demetriou**……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Y✓ N
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Y✓ N All the procedures performed are recorded; however only the principal procedure (defined as the most serious) is being coded. Therefore, information is available only regarding the principal procedure
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Y✓ N Number recorded: All the procedures are recorded but only one is being coded.
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	ICPM (version 1978)
e	What classification systems have you used in recent years to record procedures and for what years?	From 1978 we are using the ICPM (version 1978) classification system
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Y N✓ English language version Y N
g	Do you have any national procedure shortlists?	Procedure shortlist Y N✓

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	No
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	ICPM, but in some cases it does not have sufficient details.
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	There is no specific code for a laparoscopic procedure, for example a laparoscopic colecystectomy is assigned code '511' the same as a normal colecystectomy. A possible method to distinguish between the two kinds of operations is the number of hospital days. However, this method is not very reliable since not all the cases operated by a laparoscopic procedure are discharged in 2-3 days.

A.III.2 Metadata Procedures

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	There is no such problem since the case is inverse: more than one procedures are assigned the same code.

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y✓ N Generally speaking, in Cyprus there is a serious problem of underreporting as there isn't any regulation forcing private doctors to record all the procedures. Therefore, the operations reported refer only to the public sector. Moreover, it has been identified that the number of procedures reported in the in-patients discharges is not representative of the actual numbers. Only surgical operations for which patients are admitted and then discharged from hospitals are covered (including day-cases). Operatons for which no admission is needed are excluded.
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
n	Is it possible to estimate the size of underreporting?	It is estimated that in 2006 only 42,0% of total surgical operations performed on in-patients at the public sector were reported.

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y N✓
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

4. Czech Republic

Name of Country Completing the Table: Czech Republic

(please type in the name of your country in the space provided above)

Name of respondent: **Jakub Hrkal**

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure InformationY
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedureY Definition? The principal (most important) surgical procedure performed during the hospitalization (i.e. stay in one hospital department) in relation to main surgical diagnosis.
c	Do you record information on additional procedures? If yes, how many do you record?	Additional proceduresY (but data is only partially available) Number recorded All procedures performed
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	national specific system maintained by General Health Insurance Company
e	What classification systems have you used in recent years to record procedures and for what years?	Full set of data from NHADS is available since 1994, data before 1994 is incomplete and very limited (selected departments, selected years).
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelinesY English language versionN
g	Do you have any national procedure shortlists?	Procedure shortlistN

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	Yes **Stem cell transplantations**: no cases identified in National Registry of Hospitalized Patients (**NRHP**), these transplantations are not treated as operations (so that they can not be used for reporting on principal procedure);

A.III.2 Metadata Procedures

		Transluminal coronary angioplasty: only a few cases identified in NRHP as there might be problem with reporting of these procedures; **Coronary artery bypass graft**: only a few cases identified in NRHP as the procedures are not recorded properly and they are also partly included under general heart operations; **Exstirpation, excision and destruction of intracranial lesion, Evacuation of subdural haematoma and intracranial haemorrhage, Femoropopliteal bypass, Carotid endarterectomy**: the mapping is not perfect and it covers broader range of procedures; For **Repair of inguinal hernia** and **Arthroscopic excision of meniscus of knee** the number of procedures had to be specified more precisely using operation diagnosis to identify more exact location of operation.
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	Own mapping
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	General code for **laparoscopic procedures** is often used as identification of primary procedure. So that estimation of most of the laparoscopic procedures had to be done based on known operation diagnosis.

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	There are no problems with double counting as only primary procedure is recorded. As the data reflects stay in one hospital department there might be possible double counting in case if one procedure is recorded several times in different hospital departments during one hospital stay. A number of reoperations is available but this data was not used as recommended in guidelines.

A.III.2 Metadata Procedures

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	National Registry of Hospitalized Patients (NRHP) data that were replaced by data from specialized health registers to avoid underestimation: **Stem cell transplantations, Transplantation of kidney and Caesarean section**; From data delivered from NRHP: **Procedures that are supposed to be provided on day care basis (esp. Cataract surgery)**: there is no clear identification of and reporting on day care in the Czech Republic and the data on these procedures are underestimated; From data not delivered (but available in NRHP): **Diagnostic bronchoscopy with or without biopsy and Colonoscopy with or without biopsy** (not usually performed and recorded as primary procedure and day care potentiality), **Transluminal coronary angioplasty** and **Coronary artery bypass graft** (problems with mapping and reporting).
n	Is it possible to estimate the size of underreporting?	For Stem cell transplantations, Transplantation of kidney and Caesarean section specialized health registers were used; For some other procedures data from public health insurance companies could be used for evaluation. But this data is only partially accessible and available at present.

A.III.2 Metadata Procedures

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	Exstirpation, excision and destruction of intracranial lesion, Evacuation of subdural haematoma and intracranial haemorrhage, Femoropopliteal bypass, Carotid endarterectomy Laparoscopic procedures
q	Is it possible to estimate the size of overreporting?	No

5. Denmark

Please give the five biggest problems you encountered with the construction of the procedure data file, or if your country is unable to send in the procedure data, the reasons why you are unable	
Country:	Denmark
1	As stated in the metadata for the diagnosisdata: It is not known whether the intent was to discharge the patient on the same day, therefore the number of day-care patients include all inpatients not staying overnight. Day-care patient does not exist as a seperate category in the registry.

6. Finland

Name of Country Completing the Table: Finland

Name of respondent: ……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information **YY** N
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure **YY** N Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures **YY** N Number recorded
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	NCSP
e	What classification systems have you used in recent years to record procedures and for what years?	NCSP FROM 1997
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines **YY** N English language version Y **NN**
g	Do you have any national procedure shortlists?	Procedure shortlist **YY** N

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	NO
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	OLD VERSION FROM 1983; NEW FROM 1997
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	SPESIFIC CODE FROM 1997

A.III.2 Metadata Procedures

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	NO

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y N
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
n	Is it possible to estimate the size of underreporting?	

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y **NN**
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	-
q	Is it possible to estimate the size of overreporting?	-

7. France

Name of Country Completing the Table: FRANCE

Name of respondent: …**Philippe OBERLIN**……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information **Y**
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure **N** Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Number recorded **We record a maximum of 99 procedures**
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	**CCAM**
e	What classification systems have you used in recent years to record procedures and for what years?	**Until 2001, we used CdAM (the former French classification) alone** **From 2002 to 2005 we used both CdAM and CCAM** **Since 2006 we used only CCAM**
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines**Y** English language version**N**
g	Do you have any national procedure shortlists?	Procedure shortlist**N**

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	**N**
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	**No problems**
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparo-	**We have specific codes for the usual laparoscopic procedures (ie those of the short list)** **If another procedure is done by laparoscopy we can use specific CCAM code**

	scopic colectomy)	

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	**No problems**

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting **Y** **Because some of them are performed in non-registered outpatients**
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	**Diagnostic bronchoscopy with or without biopsy** **Colonoscopy with or without biopsy**
n	Is it possible to estimate the size of underreporting?	**N**

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting **N**
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

8. Germany

Name of Country Completing the Table: Germany

Name of respondent: **Federal Statistical Office, Division VIIII A - Health**

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information: Yes
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure:No Definition? --
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures:Yes Number recorded: 100 are possible
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	*German OPS Version 2007* „Operationen- und Prozedurenschlüssel Internationale Klassifikation der Prozeduren in der Medizin (OPS)“
e	What classification systems have you used in recent years to record procedures and for what years?	*German OPS Version 2006* *German OPS Version 2005*
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines:Yes English language version:No
g	Do you have any national procedure shortlists?	Procedure shortlist: No

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	No
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	The German OPS is a very fine grained procedure classification. Therefore it was easy to map this fine grained OPS codes to the “coarse” procedures of the shortlist.
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	The German OPS provides specific codes for all laparoscopic procedures of the shortlist.

A.III.2 Metadata Procedures

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	After testing the shortlist we will have more information concerning this aspect.

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting YN After testing the shortlist we will have more information concerning this aspect.
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
n	Is it possible to estimate the size of underreporting?	

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting YN After testing the shortlist we will have more information concerning this aspect.
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

9. Greece

Name of Country Completing the Table: GREECE

(please type in the name of your country in the space provided above)

Name of respondents: **Prof. Aris Sisouras, Prof. L Liaropoulos, Olga Siskou, Daphne Kaitelidou, Konstantina Konstantopoulou.**

	Information on Procedures	
a	Do you collect information on procedures / health interventions performed during the hospital episode?	Procedure Information Y N
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Y N Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Y N Number recorded
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	The National Statistical Service (which is the source of the data) has not adapted any national or international classification Any available procedure data are reported according the ICD-9 classification for diseases. For example we know the exact number for Breast Cancer procedures that were performed, but we are not able to know the kind of operation (e.g total or partial mastectomy). For data send we had make estimations about the kind of procedures used except for some cases (e.g cataract, ...) for which we believe that the data were accurate.
e	What classification systems have you used in recent years to record procedures and for what years?	See 9d
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Y (according the ICD-9 classification) N English language version Y N
g	Do you have any national procedure shortlists?	Procedure shortlist Y N

A.III.2 Metadata Procedures

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	
9j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	NO

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y N Yes, as many day-cases (e.g cataract, colonoscopy) are reported as inpatient cases for reimbursement purposes. However, we know that the majority of these procedures are performed actually as day-cases.
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
n	Is it possible to estimate the size of underreporting?	NO

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y N As a consequence of the day-cases under-reporting, there is in-patient over reporting.
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	NO

10. Hungary

Name of Country Completing the Table: Hungary

(please type in the name of your country in the space provided above)

Name of respondent: **National Institute for Strategic Health Research (ESKI)**

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Y N Yes
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Y N Yes Definition? Primary procedures are defined for each departmental case by the reporting hospital. There is exactly one primary procedure for each surgical department case.
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Y N Yes Number recorded Number is unlimited
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	Hungarian procedure classification coding system is based on ICPM, widely extended and modified
e	What classification systems have you used in recent years to record procedures and for what years?	It is the same system since 1993, of course often updated
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines N English language version N
g	Do you have any national procedure shortlists?	Procedure shortlistN

A.III.2 Metadata Procedures

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	In certain cases the mach was not possible without looking at the disease codes. (E.g. because anatomical localisation is sometimes missing from our classification.)
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	Mapping system was developed by our institute. Minor interpretation problems raised, that were solved by approximations, aiming at minimisation of distortions
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	We did not follow this way of thinking, since there is no evidence that such combinations mean a laparoscopic intervention. It could also mean a diagnostic laparoscopy *followed by* a surgical intervention.

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	No. This is a simple database –managing problem that could be easily solved by distinct counting of records.

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y N Underreporting is a general problem, but not specific to certain procedures.
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	-
n	Is it possible to estimate the size of underreporting?	No

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y N This is again not specific to certain prucedures, just coslty procedures are more prone for overreporting than cheap ones
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	-
q	Is it possible to estimate the size of overreporting?	-

11. Ireland

Name of Country Completing the Table: Ireland

(please type in the name of your country in the space provided above)

Name of respondent: **Patrick Lynch / *Gráinne Cosgrove***

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Y N *Yes*
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedureYN Definition? *Yes. The primary procedure is defined as "the procedure that is performed for definitive treatment (rather than one performed for diagnostic or exploratory purposes).* *If two or more procedures appear to meet this definition, the one most related to the principal diagnosis is designated as the principal procedure."*
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Y N Number recorded *Yes, since 2005 it is possible to record up to 19 additional procedures. Between 2002 and 2004, up to 9 additional procedures could be recorded. Prior to 2002, only 3 additional procedures could be recorded.*
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	*ICD-10-AM*
e	What classification systems have you used in recent years to record procedures and for what years?	*1990 – 2004: ICD-9-CM* *2005 - : ICD-10-AM*
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Y N *Yes. Ireland has guidelines for coders included in the HIPE Instruction Manual. Ireland has adopted the Australian Coding Standards for coding both diagnoses and procedures. Also, Ireland now has Irish Cod-*

A.III.2 Metadata Procedures

		ing Standards which include procedure guidelines. English language version Y N *Yes*
g	Do you have any national procedure shortlists?	Procedure shortlist Y N *Yes. An ICD-9-CM procedure shortlist has been in operation for many years, and contains 50 categories (including the 16 ICD-9-CM Procedure Chapters).*

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	*Yes. We supplied data for 2004 based on ICD-9-CM and data for 2005 based on ICD-10-AM using the mappings supplied. The results show significant variations between the 2004 and 2005 data for some categories; in particular Exstirpation, excision & destruction of intracranial lesion, Discectomy and Infrarenal aortic aneurysm repair. It may be the case that the ICD-9-CM and ICD-10-AM codes supplied for these categories do not match exactly.* *Also, where an exact mapping is not possible, as in the case of femoropopliteal bypass, it would be preferred that countries using a classification that does not provide the appropriate codes should be advised not to report any data for that category, rather than including under or over-reported data.* *Using the example of Femoropopliteal bypass ICD-9-CM 39.29 (part of):* *The ICD-9-CM code specified refers to 'Other (Peripheral) Vascular Shunt or Bypass' and is not a specific code for femoropopliteal bypass.* *It also includes axillary-brachial, axillary-femoral, brachial, femoral-femoral, femoropperoneal, femorotibial and vascular (not otherwise specified) bypasses.* *Countries using ICD-9-CM will therefore be over-reporting the number of femoropopliteal bypasses which will make the comparison of data between countries using different classi-*

A.III.2 Metadata Procedures

		fication systems extremely difficult if not impossible. *In addition, for countries such as Ireland that have changed from ICD-9-CM to ICD-10-AM it will result in an inconsistent and misleading time series.*
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	*ICD-9-CM mapping for 2004 data.* *ICD-10-AM mapping for 2005 data.* *The ICD-10-AM mapping identified 39572-00 as the code for Laparoscopic Appendectomy. This code is incorrect; we used the correct code 30572-00.*
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	*We have compared the categories using combination codes for data coded using ICD-9-CM against ICD-10-AM coded data and found that using combination codes provides unreliable data. There is a limit on the number of procedures coded for each hospital discharge, and so in some instances the laparoscopy part of the procedure would not be coded. Also, it is possible that a laparoscopy could be performed separately. Using the combination codes does not necessarily mean that the procedure was performed laparoscopically.*

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	*No*

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y N *Yes* *HIPE data includes discharges from all publicly funded acute hospitals, but does not include discharges from private hospitals.*
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	*Possibly all procedures.*
n	Is it possible to estimate the size of underreporting?	*Is it estimated that approximately 10% of activity occurs in private hospitals, However is likely to vary among different procedures.*

A.III.2 Metadata Procedures

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y N *No*
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

12. Italy

Name of Country Completing the Table: Italy

(please type in the name of your country in the space provided above)

Name of respondent: **Carla Ceccolini**……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Y✓ N
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Y✓ N Definition? During the same hospital episode can be performed surgical and/or diagnostic procedures. Surgical procedures should be recorded before the diagnostic ones. In case of more surgical procedures, the primary procedure must be the one more correlated with the primary diagnosis and requiring more hospital care. The priority arrangement for surgical procedures should be: 1) open surgery 2) endoscopic and laparoscopic techniques 3) surgical diagnostic or therapeutic procedures, e.g. polyp excision during a diagnostic colonoscopy 4) Procedures with or without biopsy
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Y✓ N Number recorded Up to five additional procedures can be recorded.
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	The current classification system is ICD-9-CM version 19°
e	What classification systems have you used in recent years to record procedures and for what years?	ICD-9-CM version 14° has been used to record hospital data discharges related to the years 2001-2005
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Y✓ N

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		English language version Y N✓
g	Do you have any national procedure shortlists?	Procedure shortlist Y N✓

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	There were not procedures so hard to match the definition.
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	For identifying laparoscopic procedures it was used a combination of codes: “54.21” for laparoscopy in combination with other codes.

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	There were no particular problem to avoid counting more time the same procedure recorded for the same hospital episode.

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y N The Italian hospital discharge data is referred to daypatients and inpatiens discharged from public and private hospitals. Outpatient surgery is not included.
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
n	Is it possible to estimate the size of underreporting?	

A.III.2 Metadata Procedures

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y N The Italian hospital discharge data is referred to daypatients and inpatiens discharged from public and private hospitals. Outpatient surgery is not included.
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

13. Latvia

Name of Country Completing the Table: LATVIA

(please type in the name of your country in the space provided above)

Name of respondent: **Cheslavs Margevichs, Health Compulsory Insurance State Agency (HCISA) of Latvia**

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	**Yes. There is a patient card that contains information about his hospital episode and procedures history during medical attention**
b	Do you record a primary procedure and if yes, how do you define it?	**Yes. There are definitions of primary procedures that are approved in specific agency (VSMTA) and calculated by other agency (VOAVA). Primary procedures are recorded and calculated value and are named 'manipulations'**
c	Do you record information on additional procedures? If yes, how many do you record?	**Yes. There are additional procedures called 'extra payment' and these manipulations have indication in calculation systems for payment**
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	**National classification of manipulations**
e	What classification systems have you used in recent years to record procedures and for what years?	**We have classification system that is approved by Ministry of health and is one of the appending forms of Regulations issued by the Cabinet (Nr.1046)**
f	Do you have any national guidelines for coding procedures data in your country?	**Not approved**
g	Do you have any national procedure shortlists?	**No**

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	**No**
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	**No mapping was used in this case**

A.III.2 Metadata Procedures

j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	**No, there was no such case**

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	**No double counting.**

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	**No**
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
n	Is it possible to estimate the size of underreporting?	

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	**No**
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

14. Lithuania

Name of Country Completing the Table: LITHUANIA

(please type in the name of your country in the space provided above)

Name of respondent: ……**Rita Gaidelyte**……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information [Y] N Surgical operations only
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Y [N] Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures [Y] N Number recorded: all surgical operations
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	National list of surgical operations (mostly groups of operations)
e	What classification systems have you used in recent years to record procedures and for what years?	National list of surgical operations (mostly groups of operations)
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Y [N] English language version Y [N]
g	Do you have any national procedure shortlists?	Procedure shortlist Y [N]

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	Lithuania will no present the data on procedures as it is impossible to match national list of operations to HDP2 Procedure Shortlist due to insufficient quality of national list.
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	-
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combi-	no

	nation of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	Yes, one operation could have few codes

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting [Y] N Underreporting is mostly because of outpatient surgery. Outpatient surgery is not covered by Compulsory Health Insurance Fund database (excluding cataract surgery which has special code). Undereporting from private care if they are working without contract with CHIF.
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	Outpatient surgery – usually minor operations, private care – mostly plastic and minor surgery.
n	Is it possible to estimate the size of underreporting?	For inpatient and daypatient underreporting is minor as those cases are almost fully covered by Compulsory Health Insurance Fund database and the private sector is not so big.

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y [N]
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

15. Netherlands

Name of Country Completing the Table: Netherlands

(please type in the name of your country in the space provided above)

Name of respondent: **Mark Boll and Willem Hoogen Stoevenbeld (Prismant)**

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Yes
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Yes Definition? When the patient is released from the hospital the specialist decides which procedure was the most important procedure carried out during the hospital stay. This procedure is called the primary procedure.
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Yes Number recorded *There is no limit to the additional procedures recorded.*
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	*We use the Dutch ICPM version called CvV (Classificatie van Verrichting/ Classification of Procedures)*
e	What classification systems have you used in recent years to record procedures and for what years?	*Dutch ICPM (CvV) is used since 1990*
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelinesYes *The Dutch hospital registration (LMR)* English language versionNo
g	Do you have any national procedure shortlists?	Procedure shortlistNo

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	No
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	*Mapping to ICPM and CvV* *They were very helpful and there were no problems interpreting the mappings.*

A.III.2 Metadata Procedures

j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	*Since 2005 the classification is expanded with codes for laparascopic/endoscopic procedures.* *It is not possible to identify laparascopic procedures before 2005.*

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	No

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Yes *There is no specific underreporting, but in 2006 and 2007 only about 70% of the procedure data was send in by the hospitals.*
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	*No specific (see above)*
n	Is it possible to estimate the size of underreporting?	*In 2005 about 85% of the procedure data was send in by hospitals.* *In 2006/2007 only about 70% of the procedure data was send in by the hospitals.*

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting *Probably for daycases.* *It is not quantifiable. The definition used for daycare is not very strict. The difference between daycare and outpatient is also not clearly specified. So it does happen that outpatients are registered as daycare.*
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	*No specific (see above)*
q	Is it possible to estimate the size of overreporting?	No

16. Poland

Name of Country Completing the Table: POLAND

(please type in the name of your country in the space provided above)

Name of respondent: **Bogdan Wojtyniak**……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Y Yes ~~N~~
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure ~~Y~~ N No Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Y ~~N~~ Number recorded 7 at each department a patient was treated
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	ICD-9-CM
e	What classification systems have you used in recent years to record procedures and for what years?	only ICD-9-CM since 2003
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines ~~Y~~ N English language version ~~Y~~ N
g	Do you have any national procedure shortlists?	Procedure shortlist ~~Y~~ N

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	No
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	ICD-9 CM
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	

A.III.2 Metadata Procedures

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	No

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y ~~N~~ see attached table;
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	cataract surgery, difficult to say about other
n	Is it possible to estimate the size of underreporting?	see attached table

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting ~~Y~~ N
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

A.III.2 Metadata Procedures

Underreporting

Number of procedures with 3 digits only(xx.x) while 4 digits were necessary for the category(xx.xx)

Procedure	2006	2005
200	270	318
300	446	130
600	92	114
900	4623	5354
1000	3192	2698
1200	590	539
1300	499	533
1400	1348	1666
1600	9215	8711
1800	21839	25073
1900	8500	10002

17. Portugal

Name of Country Completing the Table: Portugal

(please type in the name of your country in the space provided above)

Name of respondent: **José Giria**……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure InformationyesN
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Y No Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Y N Number recorded
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	ICD-9-CM
e	What classification systems have you used in recent years to record procedures and for what years?	ICD-9-CM – from 1993 until now
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Y No English language version Y No
g	Do you have any national procedure shortlists?	Procedure shortlist Y No

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	No
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	No
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparo-	The problems with the ICD 9 CM

	scopic colectomy)	

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	We have problems in this area because we have 20 positions for all kinds of procedures OR and others.

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Yes N
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	cataract surgery and colonoscopy, because we have not registration for private care
n	Is it possible to estimate the size of underreporting?	No

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y No
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	
q	Is it possible to estimate the size of overreporting?	

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18. Slovenia

Name of Country Completing the Table: SLOVENIA

(please type in the name of your country in the space provided above)

Name of respondent: **Barbara Morovič, Nevenka Kelšin**……..

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Y N YES
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure Y N Definition? NO Before DRG system implementation we have recorded primary procedure
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures YN YES Number recorded 20 (all together with the primary) Before DRG system implementation we have recorded one additional procedure
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	ICD-10 AM
e	What classification systems have you used in recent years to record procedures and for what years?	SKO (Slovene Classification of operations) since april 2004 ICD-10 AM
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Y N NO English language version Y N
g	Do you have any national procedure shortlists?	Procedure shortlist Y N NO

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	NO
i	Which mappings have been used? Were they helpful? Problems	ICD-10 AM Mapping of ACHI (2006) to the selected list

	in interpreting the mappings?	(2007-07-06) by Innes and Smedby
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	NA

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	NO

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y N NOT KNOWN or NA
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	NA
n	Is it possible to estimate the size of underreporting?	NA

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting Y N NOT KNOWN or NA
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	NA
q	Is it possible to estimate the size of overreporting?	NA

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19. Spain

Name of Country Completing the Table: SPAIN

Name of respondent: **Maria Angeles Gogorcena**

	Information on Procedures	
a	Do you collect information on procedures/health interventions performed during the hospital episode?	Procedure Information Y
b	Do you record a primary procedure and if yes, how do you define it?	Primary procedure N Definition?
c	Do you record information on additional procedures? If yes, how many do you record?	Additional procedures Y Number recorded Up to 20
d	What classification system to you currently use to record procedures? (e.g. ICPM, ICD-9-CM, ICD-10-AM, NCSP, CCAM, OPCS-4)	ICD9CM
e	What classification systems have you used in recent years to record procedures and for what years?	The same for the total time series
f	Do you have any national guidelines for coding procedures data in your country?	Procedure guidelines Y English language version N
g	Do you have any national procedure shortlists?	Procedure shortlist N

	Definition questions	
h	Are there certain procedures for which it was hard to match the definitions?	N
i	Which mappings have been used? Were they helpful? Problems in interpreting the mappings?	ICD9CM – no problem at all
j	If there is no specific code for a laparoscopic procedure, could cases be identified through combination of separate codes? (e.g. laparoscopy + colectomy = laparoscopic colectomy)	Yes but not in all cases

A.III.2 Metadata Procedures

	Counting	
k	Are there problems in avoiding double counting? (If more than one registered code refers to the same procedure this procedure should only be counted once; furthermore, in the case of bilateral procedures only one procedure should be counted)	No as they are searched at the validation process

	Underreporting	
l	Are there specific procedures for which there is a known underreporting? (e.g. because of registration difficulties regarding daypatients, non-registered outpatient surgery, private care etc)	Underreporting Y - Day cases (not totally implemented yet) - Private hospitals not included (the same for diagnosis data) - Diagnosis procedures not needing operating room are recorded as outpatients (data not included)
m	Which are these procedures? (cataract surgery?, colonoscopy? other?)	- colonoscopy - bronchoscopy - artroscopy (few cases)
n	Is it possible to estimate the size of underreporting?	Not for the moment – in two years we will be collecting statistical data about these diagnosis procedures

	Overreporting	
o	Are there specific procedures for which there is a known overrreporting? (e.g. because of difficulties separating daypatients from hospital outpatients)	Overreporting N
p	Which are these procedures? (cataract surgery?, colonoscopy? other?)	--
q	Is it possible to estimate the size of overreporting?	--

d. Validation

Guidelines validation procedures

The following paragraph descibes the controls that can be used as guidlines when validating the procedure data for impossible or not plausible records. These records are still in the current procedure data. This has to be taken account while presenting the data for other purposes.

There are two types of combinations that can be controlled:

1. *Gender control* to check if for the following impossible procedure shortlist code, gender code combinations are included in the file. See the table below for the combinations that are impossible.

Procedures	Sex	Procedure description
2200	2	Open prostatectomy
2300	2	Transurethral prostatectomy
2400	1	Hysterectomy
2401	1	Laparoscopic hysterectomy
2500	1	Caesarean section

2. *Age control* to checks for not plausible procedure shortlist code, age range code (agegroup) combinations are included in the file. The reason for this control is that for some procedures you would expect that the patient has passed a specific age. For instants a mastectomy is only done by adults (older than 18), a caesarean section is only done by females older than 10. See the table below for the combination that are found not plausible.

Procedures	Age	Procedure description
1200	<15	Carotid endarterectomy
1300	<15	Infrarenal aortic aneurysm repair
2200	<15	Open prostatectomy
2300	<15	Transurethral prostatectomy
2400	<15	Hysterectomy
2401	<15	Laparoscopic hysterectomy
2500	<10	Caesarean section
2800	<15	Total knee replacement
2900	<15	Partial excision of mammary gland
3000	<15	Total mastectomy

HDP2 uses age ranges/groups. To take this into account the lowest plausible combination is the age range containing the minimum expected age. For example if the patient has to be older that 18 the lowest plausible age range is 5 (age 15 to 19). The not plausible records are the records with the age group 1, 2, 3 or 4.

A.III.2 Metadata Procedures

e. Problems

What are the problems countries face. How can we anticipate on the problems

Poland:	Use mapping NP
Belgium	Code procedures problematic in ICD9, unable to give subgroups laparoscopic.
Luxembourg	What do countries do who don't use an existing mapping system. Smedby: use existing mapping
Greece	Lot of problems No National or International mapping. There is no report on daycases. No comparability with shortlist
Germany	Waiting for a decision to be made. Data 2005 & 2006 will come if possible.
Portugal	Many problems. No registration of private sector (colonoscopy). No comparability with shortlist, DRG system. No laparoscopic data
Latvia	national classifications, not comparable with shortlist
Denmark	number of day cases is a problem
Netherlands	Mapping is Ok. Data will be not complete, or have to be adjusted
Finland	No big problems 1 part of procedures are in normal care (colonoscopy)
UK	Mapping, correct code/classifications are going to be updated There is an issue, more activities in outpatients, for some dominant procedures (e.g. cataract)
France	No particular problems. How to count the colonies. Are they part of the EU? Eurostat can give advise
Lithuania	There are problems. National list of operations. No rules how to code, not comparable with shortlist. There may be 2 or 3 procedures. No data on procedures will be presented for the project.
Spain	doesn't know the completeness of procedures. There are problems with day cases. The figures are quiet complete, but how to handle e.g. kidney transplant in day case?
Czech Republic	There are 2 systems: One system on ICD10 (no problem). The other is the health insurance system. Problem: there is no age, no sex
Italy	there are 2 files, one with all procedures, and one with the principal procedures. Problem that some procedures don't have a single code, tried to combine to codes to get the correct figured. Have to see the comparison to other countries to see if correct.
Ireland	Working on ICD9 to ICD10. No problems
WHO	Quality of data is very important. Quality is the key to success.

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Please give the five biggest problems you encountered with the construction of the procedure data file, or if your country is unable to send in the procedure data, the reasons why you are unable.	
Country:	CYPRUS
1	No data from private sector.
2	No codification of diagnoses or procedures in the hospital. This is done remotely by CYSTAT for Statistical purposes only.
3	Procedure coding is done only for surgical operations.
4	Problems with accuracy of surgical operations recoding in electronic systems (done by nurses) not the physicians
5	Surgical operations codes are based on an outdated classification system (ICPM of WHO, 1978)

Please give the five biggest problems you encountered with the construction of the procedure data file, or if your country is unable to send in the procedure data, the reasons why you are unable.	
Country:	Denmark
1	As stated in the metadata for the diagnosisdata: It is not known whether the intent was to discharge the patient on the same day, therefore the number of day-care patients include all inpatients not staying overnight. Day-care patient does not exist as a seperate category in the registry.

Please give the five biggest problems you encountered with the construction of the procedure data file, or if your country is unable to send in the procedure data, the reasons why you are unable	
Country:	Greece
1	The National Statistical Service (which is the source of the data) has not adapted any national or international classification Any availabe procedure data are reported according the ICD-9 classification for diseases. For example we know the exact number for Breast Cancer procedures that were performed, but we are not able to know the kind of operation (e.g total or partial mastectomy). For data send we had make estimations about the kind of procedures used except for some cases (e.g cataract, ...) for which we believe that the data were accurate.
2	No daycases are reported for reimbursement purposes although for many procedures (e.g cataract) we know that the majority of the procedures are daycases.
3	The age ranges available do not match exactly the required form
4	There are no data about length of stay and the number of bed days.

Please give the five biggest problems you encountered with the construction of the procedure data file, or if your country is unable to send in the procedure data, the reasons why you are unable	
Country:	LITHUANIA
1	No classification, just national list of operations, mostly groups of organs
2	No rules how to code
3	Not compatible with HDP2 procedures shortlist, therefore we are unable to sent data on procedures

f. Mapping ICD-9-CM

Annex with mapping of ICD-9-CM to the selected list 2007-07-22 (Ben Scharp, Caroline Goebertus, Janet Manuel & Björn Smedby)

Note: The mapping is primarily to ICD-9-CM (1996), which is the version used in some European countries.
Relevant changes in later versions are shown with codes from ICD-9-CM (2006)

Procedure group heading and specification
ICD-9-CM (1996) code content (detailed codes or three-digit blocks)

No. in list	*code*	*text*
1. Exstirpation, excision and destruction of intracranial lesion		
Excludes evacuation of haematoma and operations with skull base approach and stereotactic interventions		
ICD-9-CM (1996): 01.4, 01.5		
1	01.4	Operations on thalamus and globus pallidus
1	01.5	Other excision or destruction of brain and meninges
2. Evacuation of subdural haematoma and intracranial haemorrhage		
Includes evacuation of spontaneous intracranial haemorrhage. Excludes evacuation of epidural haematoma		
ICD-9-CM (1996): 01.31, 01.39		
2	01.31	Incision of cerebral meninges
2	01.39	Other incision of brain (incl. drainage of cerebral haematoma)
3. Discectomy		
Includes intervertebral discectomy for decompression of spinal cord and nerve roots (rhizolysis) with or without excision of bone (laminectomy). Includes microsurgical technique. Excludes chemonucleolysis and discectomy as part of major reconstructive surgery		
ICD-9-CM (1996): 80.50, 80.51, 80.59		
3	80.50	Excision or destruction of intervertebral disc, unspecified
3	80.51	Excision of intervetrebral disc
3	80.59	Other destruction of intervetrebral disc

4. Thyroidectomy

Includes total excision and partial excision of any part of thyroid gland

ICD-9-CM (1996): 06.2-- 06.6

4	06.2	Unilateral thyroid lobectomy
4	06.3	Other partial thyroidectomy
4	06.4	Complete thyroidectomy
4	06.5	Substernal thyroidectomy
4	06.6	Excision of lingual thyroid

5. Cataract surgery

Includes secondary implantation of lens and removal of lens

ICD-9-CM (1996): 13.1--13.8

5	13.1	Intracapsular extraction of lens
5	13.2	Extracapsular extraction of lens by linear extraction technique
5	13.3	Extracapsular extraction of lens by simple aspiration (and irrigation) technique
5	13.4	Extracapsular extraction of lens by fragmentation and aspiration technique
5	13.5	Other extracapsular extraction of lens
5	13.6	Other cataract extraction
5	13.7	Insertion of prosthetic lens [pseudophakos]
5	13.8	Removal of implanted lens

6. Cochlear implantation

Includes replacement of cochlear implant

ICD-9-CM (1996): 20.96--20.98

6	20.96	Implantation or replacement of cochlear prosthetic device, not otherwise specified
6	20.97	Implantation or replacement of cochlear prosthetic device, single channel
6	20.98	Implantation or replacement of cochlear prosthetic device, multiple channel

7. Tonsillectomy

Includes total and partial tonsillectomy with or without adenoidectomy. Excludes adenoidectomy without tonsillectomy

ICD-9-CM (1996): 28.2--28.4

7	28.2	Tonsillectomy without adenoidectomy
7	28.3	Tonsillectomy with adenoidectomy

7	28.4	Excision of tonsil tag

8. Pulmectomy

Includes lobectomy and segmental resection of lung

ICD-9-CM (1996): 32.3--32.5

8	32.3	Segmental resection of lung
8	32.4	Lobectomy of lung
8	32.5	Complete pneumonectomy

9. Diagnostic bronchoscopy with or without biopsy

Includes bronchoscopy through artificial opening of trachea

ICD-9-CM (1996): 33.21--33.24; 33.27

9	33.21	Bronchoscopy through artificial stoma
9	33.22	Fiber-optic bronchoscopy
9	33.23	Other bronchoscopy
9	33.24	Closed [endoscopic] biopsy of bronchus
9	33.27	Closed endoscopic biopsy of lung

10. Transluminal coronary angioplasty

Includes percutaneous transluminal interventions (PTCA, PCI) with or without insertion of stent

ICD-9-CM (1996): 36.01, 36.02, 36.05

10	36.01	Single vessel percutaneous transluminal coronary angioplasty [PTCA] or coronary atherectomy without mention of thrombolytic agent
10	36.02	Single vessel percutaneous transluminal coronary angioplasty [PTCA] or coronary atherectomy with mention of thrombolytic agent
10	36.05	Multiple vessel percutaneous transluminal coronary angioplasty [PTCA] or coronary atherectomy performed during the same operation, with or without mention of thrombolytic agent

Note: The above codes have been changed in later versions of ICD-9-CM:

ICD-9-CM (2006): 00.66

10	00.66	Percutaneous transluminal coronary angioplasty [PTCA] or coronary atherectomy

11. Coronary artery bypass graft

ICD-9-CM (1996): 36.1

11	36.1	Bypass anastomosis for heart revascularization

A.III.2 Metadata Procedures

12. Carotid endarterectomy

Includes with or without insertion of stent

ICD-9-CM (1996): 38.12

12	38.12	Carotid endarterectomy

13. Infrarenal aortic aneurysm repair

Includes endovascular insertion of stent

ICD-9-CM (1996): 38.34, 38.44 (approximation -- exact mapping not possible))

13	38.34	Resection of vessel with anastomosis (aorta)
13	38.44	Resection of vessel with replacement (aorta)

Note: In later versions of ICD-9-CM there are also codes for endovascular procedures:

ICD-9-CM (2006): 39.71, 39.74

13	39.71	Endovascular implantation of graft in abdominal aorta
13	39.74	Endovascular repair of aneurysm (aorta, abdominal)

14. Femoropopliteal bypass

Bypass from femoral to popliteal artery above or below knee

ICD-9-CM (1996): 39.29 (part of)

Note: No specific code in ICD-9-CM for femoropopliteal bypass, therefore exact mapping not possible

14	39.29	Other (peripheral) vascular shunt or bypass (incl femoropopliteal bypass)

15. Stem cell transplantation

Applies to recipient only. Includes bone marrow transplantation

ICD-9-CM (1996): 41.0

15	41.0	Bone marrow or hematopoietic stem cell transplant

16. Colonoscopy with or without biopsy

Includes colonoscopic interventions such as polypectomy. Includes colonoscopy through artificial stoma. Includes sigmoidoscopy.

Excludes proctoscopy and rectoscopy

ICD-9-CM (1996): 45.22--45.25; 45.42, 45.43

16	45.22	Endoscopy of large intestine through artificial stoma
16	45.23	Colonoscopy
16	45.24	Flexible sigmoidoscopy
16	45.25	Closed [endoscopic] biopsy of large intestine

16	45.42	Endoscopic polypectomy of large intestine
16	45.43	Endoscopic destruction of other lesion or tissue of large intestine

17. Colectomy

Includes partial and total colectomy, excision of ileocaecal junction and colosigmoidectomy and coloproctectomy.

Excludes proctectomy as separate procedure. (This group includes group 17A)

ICD-9-CM (1996): 45.7, 45.8

17	45.7	Partial excision of large intestine
17	45.8	Total intra-abdominal colectomy

Thereof:

17A. Laparoscopic colectomy

Includes combination of laparoscopic and open techniques (laparoscopic assisted).

Excludes conversion from laparoscopic to open surgery

ICD-9-CM (1996): Not possible

17A

Note: No specific code for laparoscopic colectomy in ICD-9-CM.

May be defined by combination of codes for colectomy and laparoscopy (54.21), depending on national coding rules

18. Appendectomy

Includes incidental and appendectomy "en passant". (This group includes group 18A)

ICD-9-CM (1996): 47.0, 47.1

18	47.0	Appendectomy
18	47.1	Incidental appendectomy

Thereof:

18A. Laparoscopic appendectomy

Excludes conversion from laparoscopic to open surgery

ICD-9-CM (1996): 47.01, 47.11 (corrected 2008-11-20)

18A	47.01	Laparoscopic appendectomy
18A	47.11	Laparoscopic incidental appendectomy

19. Cholecystectomy

(This group includes group 19A)

ICD-9-CM (1996): 51.22, 51.23

19	51.22	Cholecystectomy
19	51.23	Laparoscopic cholecystectomy

Thereof:

19A. Laparoscopic cholecystectomy

Excludes conversion from laparoscopic to open surgery

ICD-9-CM (1996): 51.23

	19A	51.23	Laparoscopic cholecystectomy

20. Repair of inguinal hernia

(This group includes group 20A)

ICD-9-CM (1996): 53.0, 53.1

	20	53.0	Unilateral repair of inguinal hernia
	20	53.1	Bilateral repair of inguinal hernia

Thereof:

20A. Laparoscopic repair of inguinal hernia

Excludes conversion from laparoscopic to open surgery

ICD-9-CM (1996): Not possible

	20A

Note: No specific code for laparoscopic repair of inguinal hernia in ICD-9-CM.

May be defined by combination of codes for repair of inguinal hernia and laparoscopy (54.21), depending on national coding rules

21. Transplantation of kidney

Applies to recipient only. Includes autotransplantation of kidney

ICD-9-CM (1996): 55.6

	21	55.6	Transplant of kidney

22. Open prostatectomy

Includes radical and transvesical prostatectomy and excision of adenoma. Excludes transurethral procedures

ICD-9-CM (1996): 60.3--60.6

	22	60.3	Suprapubic prostatectomy
	22	60.4	Retropubic prostatectomy
	22	60.5	Radical prostatectomy
	22	60.6	Other prostatectomy

A.III.2 Metadata Procedures

23. Transurethral prostatectomy

Includes transurethral laser resection, electroevaporization and microwave therapy

ICD-9-CM (1996): 60.2

23	60.2	Transurethral prostatectomy

24. Hysterectomy

Includes partial and total hysterectomy (with or without excision of adnexa) by laparatomy or vaginal or laparoscopic methods.

Excludes evisceration (exentration) of pelvis and caesarean hysterectomy. (This group includes group 24A)

ICD-9-CM (1996): 68.3--68.7; 68.9

24	68.3	Subtotal abdominal hysterectomy
24	68.4	Total abdominal hysterectomy
24	68.5	Vaginal hysterectomy
24	68.6	Radical abdominal hysterectomy
24	68.7	Radical vaginal hysterectomy
24	68.9	Other and unspecified hysterectomy

Thereof:

24A. Laparoscopic hysterectomy

Includes combination of laparoscopic and open techniques (laparoscopic assisted).

Excludes conversion from laparoscopic to open surgery

ICD-9-CM (1996): Not possible

Note: No specific codes in ICD-9-CM (1996) for laparoscopic hysterectomy, but specified in later versions:

ICD-9-CM (2006): 68.31, 68.41, 68.51, 68.61, 68.71

24A	68.31	Laparoscopic supracervical hysterectomy [LSH]
24A	68.41	Laparoscopic total abdominal hysterectomy
24A	68.51	Laparoscopically assisted vaginal hysterectomy (LAVH)
24A	68.61	Laparoscopic radical abdominal hysterectomy
24A	68.71	Laparoscopic radical vaginal hysterectomy [LRVH]

25. Caesarean section

ICD-9-CM (1996): 74.0--74.2; 74.4, 74.99

25	74.0	Classical cesarean section
25	74.1	Low cervical cesarean section
25	74.2	Extraperitoneal cesarean section
25	74.4	Cesarean section of other specified type
25	74.99	Other cesarean section of unspecified type

26. Arthroscopic excision of meniscus of knee

Includes total and partial excision

ICD-9-CM (1996): Not posssible

26	

Note: No specific code in ICD-9-CM for arthroscopic excision of meniscus of knee.
Cases may be identified through combination of code 80.26 for arthroscopy of knee and code 80.6 for excision of semilunar cartilage of knee, depending on national coding rules

27. Hip replacement

Includes total and partial replacement

ICD-9-CM (1996): 81.51--81.53

27	81.51	Total hip replacement
27	81.52	Partial hip replacement
27	81.53	Revision of hip replacement

Thereof:

27A. Secondary hip replacement

Includes revision of arthroplasty of hip

ICD-9-CM (1996): 81.53

27A	81.53	Revision of hip replacement

Note: in later versions of ICD-9-CM specific codes are available for revision of hip replacement with components specified:

ICD-9-CM (2006): 00.70--00.77, 81.53

27A	00.70	Revision of hip replacement, both acetabular and femoral components
27A	00.71	Revision of hip replacement, acetabular component
27A	00.72	Revision of hip replacement, femoral component
27A	00.73	Revision of hip replacement, acetabular liner and/or femoral head only
27A	00.74	Hip replacement bearing surface, metal on polyethylene
27A	00.75	Hip replacement bearing surface, metal-on-metal
27A	00.76	Hip replacement bearing surface, ceramic-on-ceramic
27A	00.77	Hip replacement bearing surface, ceramic-on-polyethylene
27A	81.53	Revision of hip replacement, not otherwise specified

A.III.2 Metadata Procedures

28. Total knee replacement

Excludes partial knee replacement

ICD-9-CM (1996): 81.54

28	81.54	Total knee replacement

29. Partial excision of mammary gland

Includes wedge excision and other partial excision with or without lymph node excision

Excludes biopsy and breast reduction surgery

ICD-9-CM (1996): 85.20--85.23

29	85.20	Excision or destruction of breast tissue, not otherwise specified
29	85.21	Local excision of lesion of breast
29	85.22	Resection of quadrant of breast
29	85.23	Subtotal mastectomy

30. Total mastectomy

Includes radical mastectomy and mastectomy with preservation of skin and nipple (subcutaneous mastectomy)

ICD-9-CM (1996): 85.33--85.36; 85.4

30	85.33	Unilateral subcutaneous mammectomy with synchronous implant
30	85.34	Other unilateral subcutaneous mammectomy
30	85.35	Bilateral subcutaneous mammectomy with synchronous implant
30	85.36	Other bilateral subcutaneous mammectomy
30	85.4	Mastectomy

A.III.2 Metadata Procedures

A.III.4 Analysis procedures

a. Examples Comparative analysis

A.III.4 Analysis procedures

Dia 1

Procedure data of HDP2

Selected results and examples of analyses

Based on HDP2 data delivered until early September 2008

Presented by Björn Smedby at Full Group Meeting
Paris, 18-19 September, 2008

Dia 2

Focus of presentation

- **Focus on differences between countries**
  - in discharge rates (overall, by age and sex)
  - in methods (e.g. open vs. laparoscopic)
  - in use of day care
- **The analyses are based on ”all procedures” registered at the same hospital stay, not on main or principle procedure only**
- **Both inpatients and daypatients are included in the analyses**

Dia 3

Some reasons for country differences

- **Real differences in morbidity**
- **Health services organisation**
- **Payment system incentives**
- **Registration problems (daycare vs outpatients, underreporting of private care)**
- **Procedure classification differences (including mapping problems)**
- **Coding tradition and practice**

A.III.4 Analysis procedures

Dia 4

Additional reason for differences

- Technical problems in connection with reporting, receiving and handling the data
- Some of these are easily detected, some may be unnoticed

Dia 5

Latest year available data set

- **Austria (at) 2006**
- **Belgium (be) 2006**
- **Cyprus (cy) (2006) – not included yet**
- **Czech Rep (cz) 2006**
- **Denmark (dk) 2006**
- **Finland (fi) 2005**
- **France (fr) 2006**
- **Greece (gr) 2004**
- **Hungary (hu) 2006**
- **Ireland (ie) 2005**
- **Italy (it) 2004**
- **Luxembourg (lu) 2005**
- **Netherlands (nl) 2005 (2007) – latest year not used**
- **Poland (pl) 2006**
- **Portugal (pt) 2006**
- **Slovenia (sl) 2005 (2006) – latest year not used**
- **Spain (es) 2005**

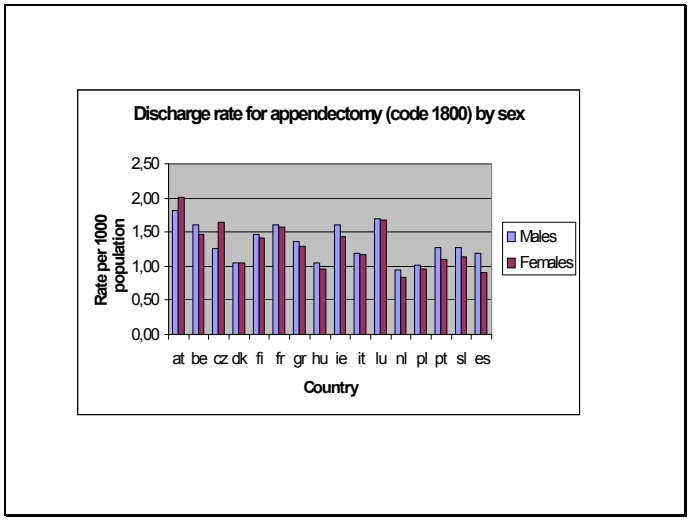
Dia 6

Procedures with great similarities among countries

- Appendectomy
- Cholecystectomy
- Hysterectomy
- Colectomy
- Inguinal hernia repair

A.III.4 Analysis procedures

Dia 7



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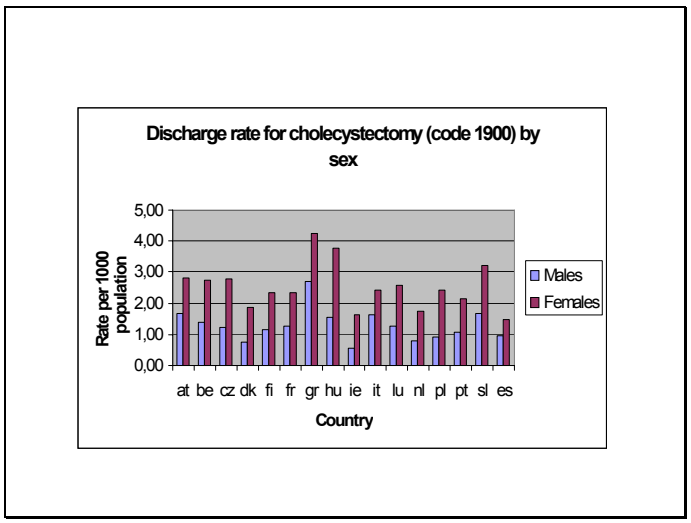

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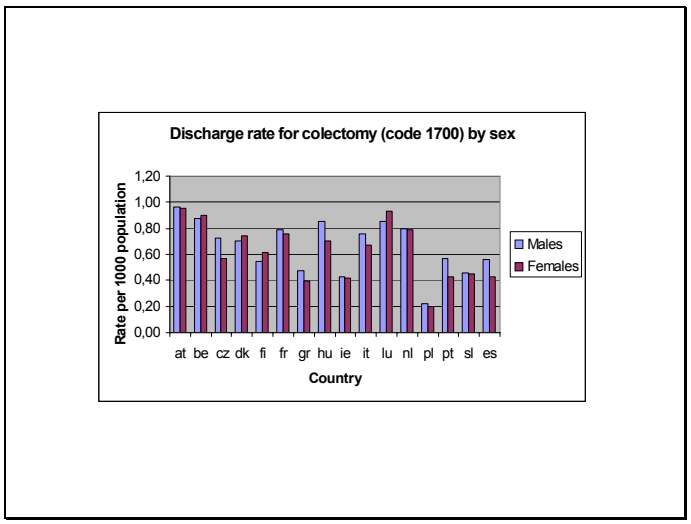
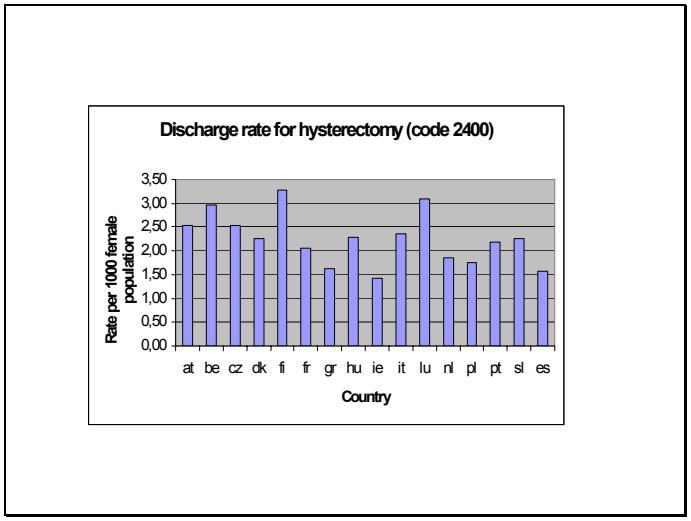


A.III.4 Analysis procedures

Dia 10



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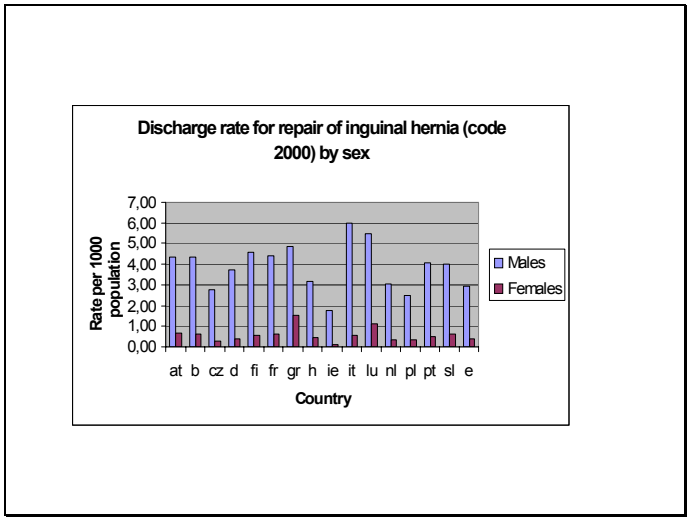


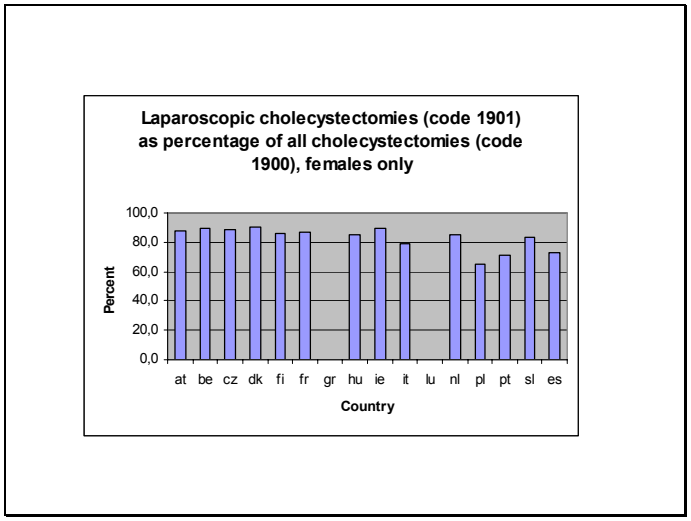
Dia 12

Procedures with great similarities among countries

- These are common procedures, mainly performed on inpatients
- They differ, however, in surgical approach

A.III.4 Analysis procedures

Dia 13



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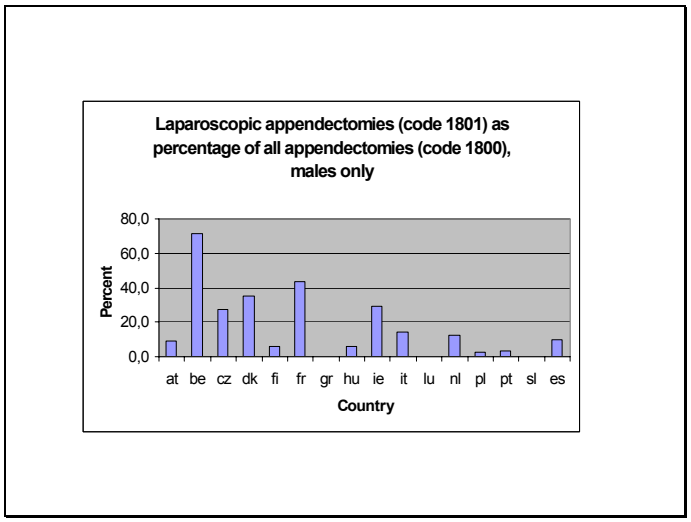

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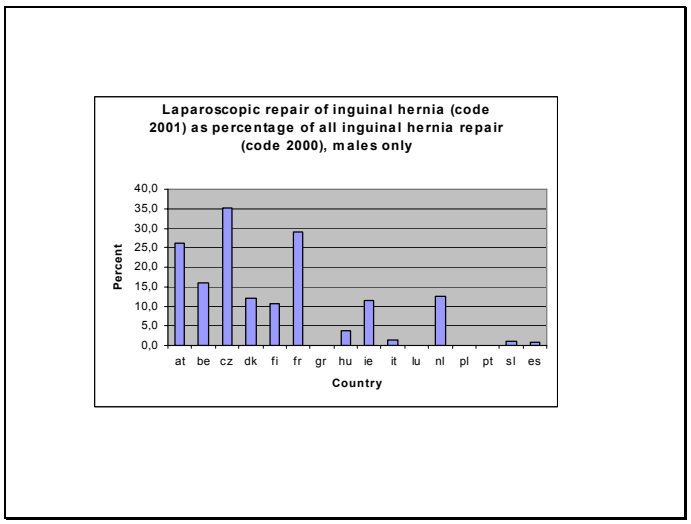
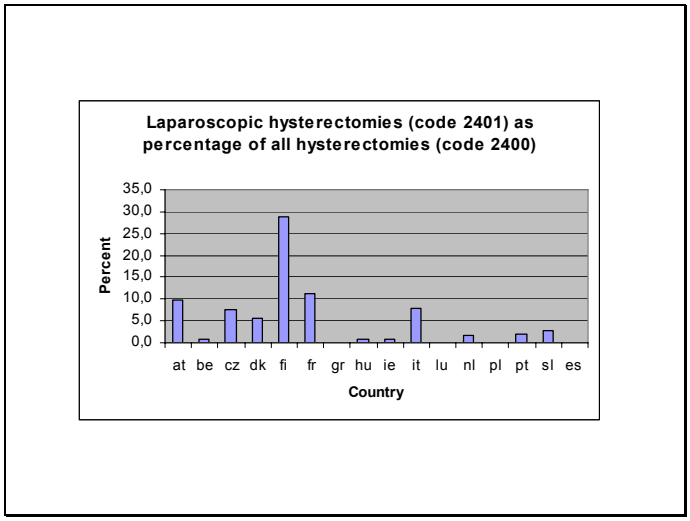


A.III.4 Analysis procedures

Dia 16

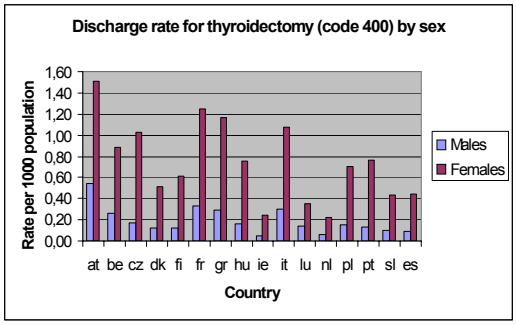


Dia 17

Procedures reflecting differences in treatment practice and tradition

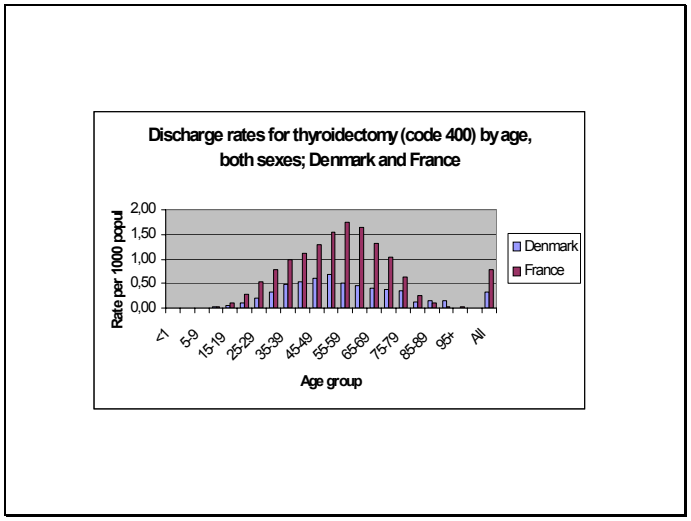
- Thyroidectomy
- Tonsillectomy
- Coronary artery bypass graft
- Carotid endarterectomy
- Prostatectomy (open vs transurethral)
- Mastectomy (partial vs total)

Dia 18



A.III.4 Analysis procedures

Dia 19



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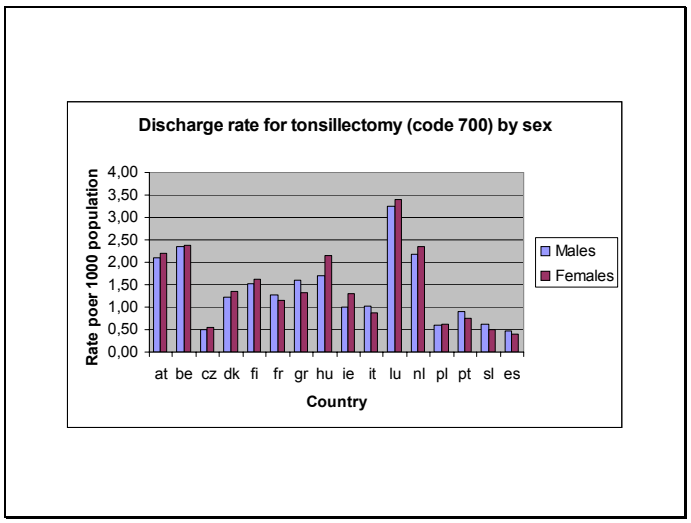

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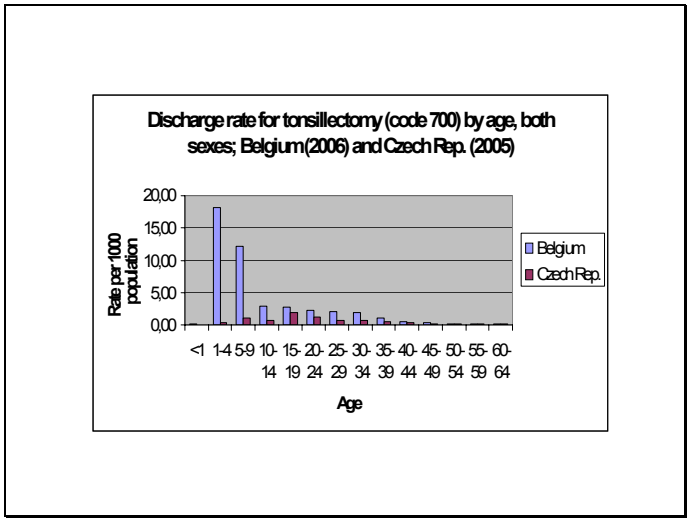
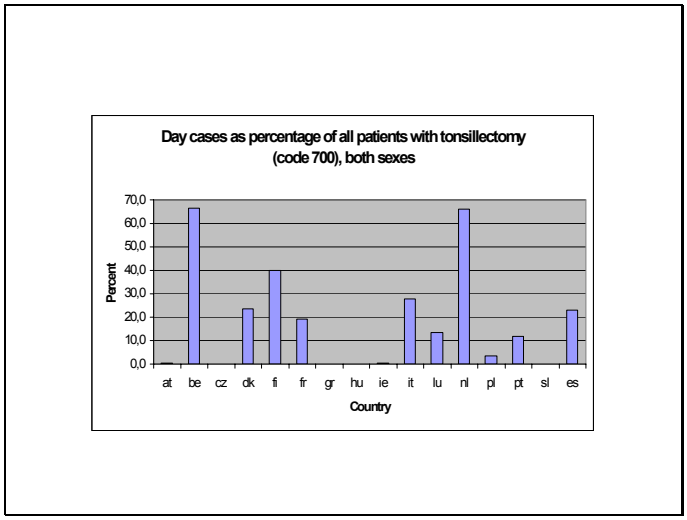


A.III.4 Analysis procedures

Dia 22



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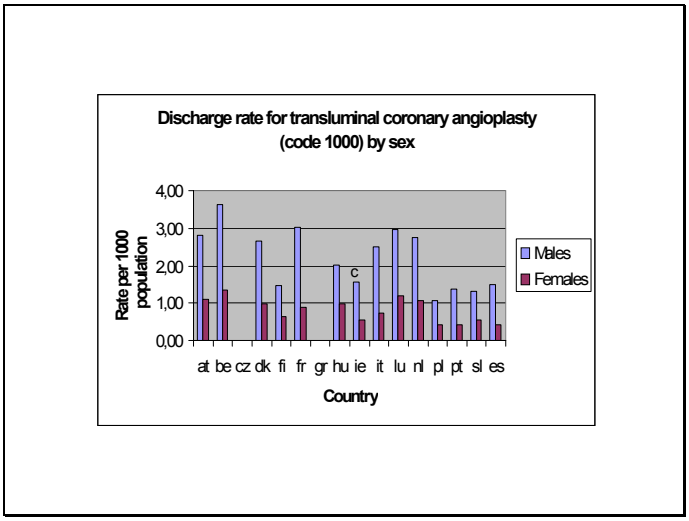

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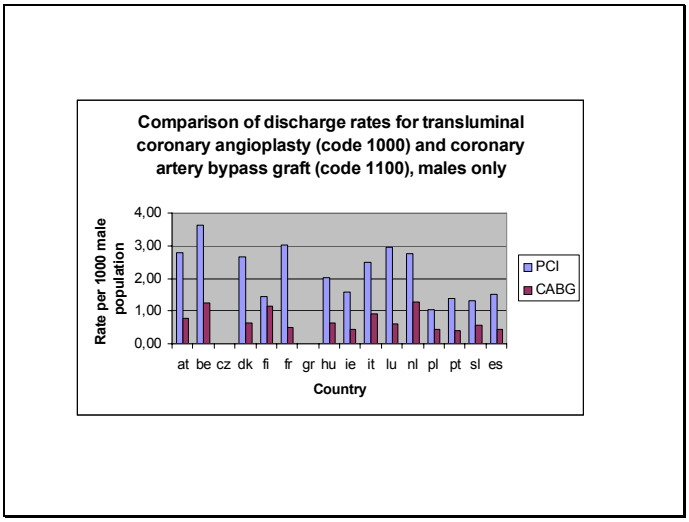
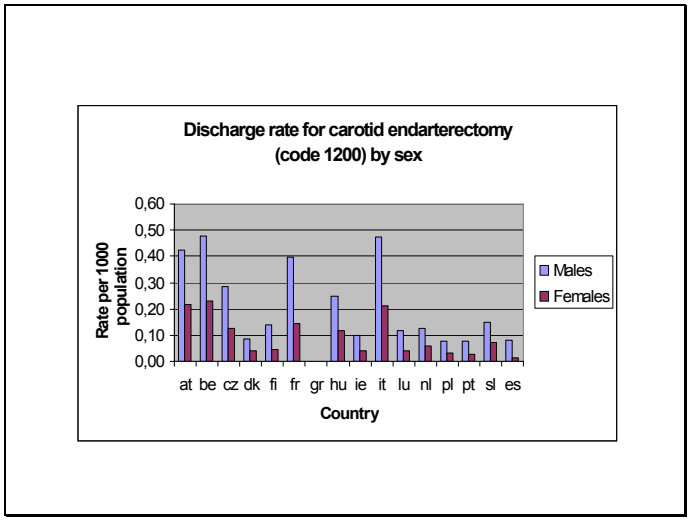


A.III.4 Analysis procedures

Dia 25



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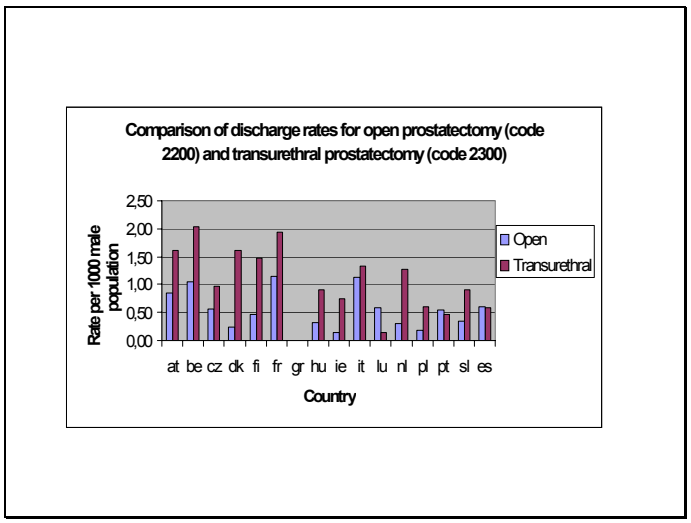

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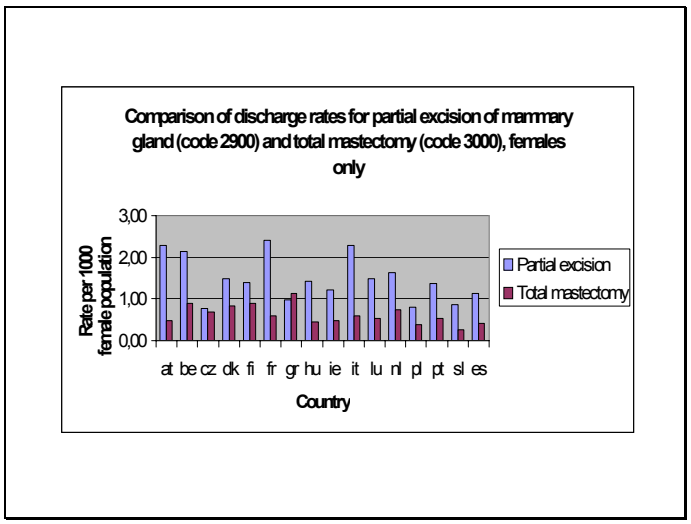


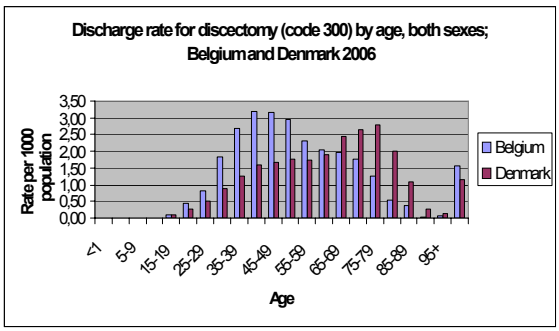
A.III.4 Analysis procedures

Dia 28

Importance of age structure

- Discectomy
- Cochlear implantation
- Cholecystectomy
- Inguinal hernia repair
- Prostatectomy
- Arthroscopic excision of meniscus of knee
- Hip replacement

Dia 29



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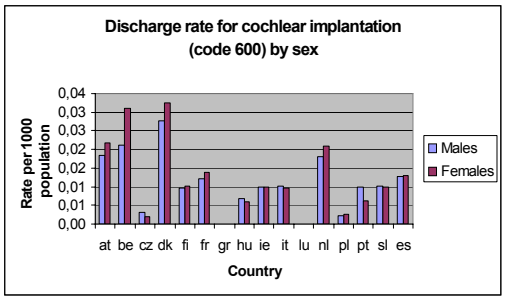
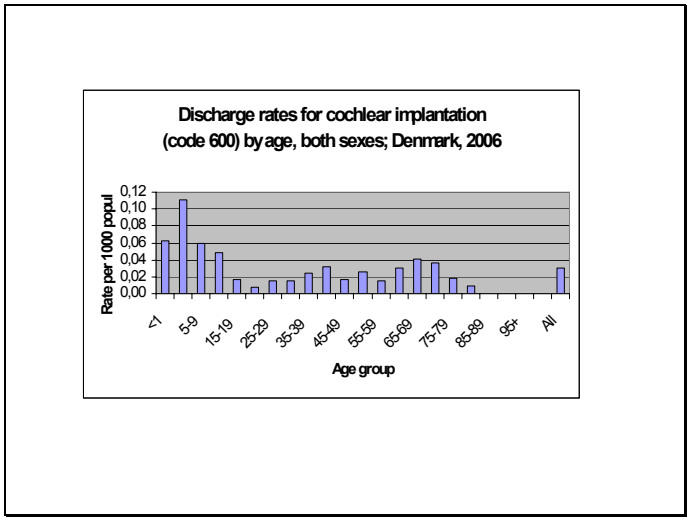


A.III.4 Analysis procedures

Dia 31



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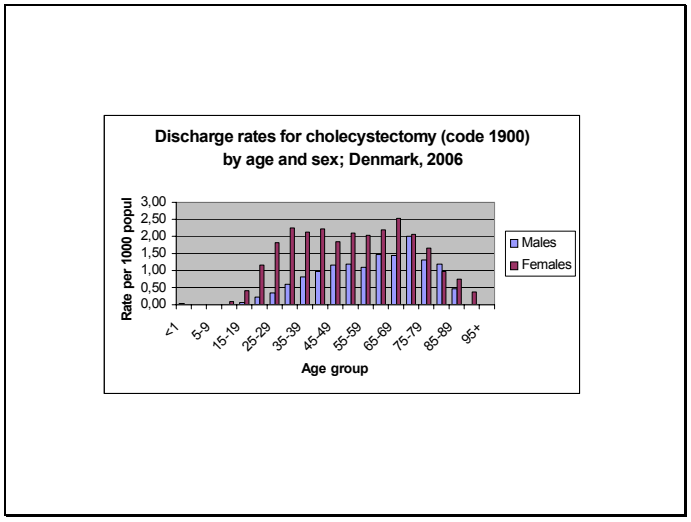

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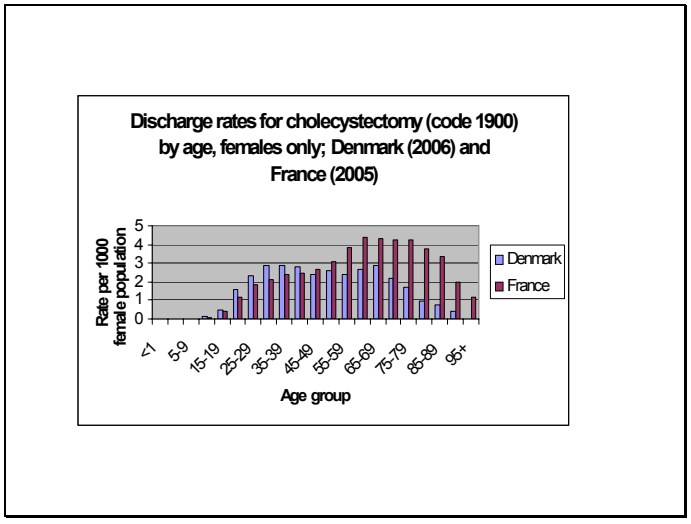
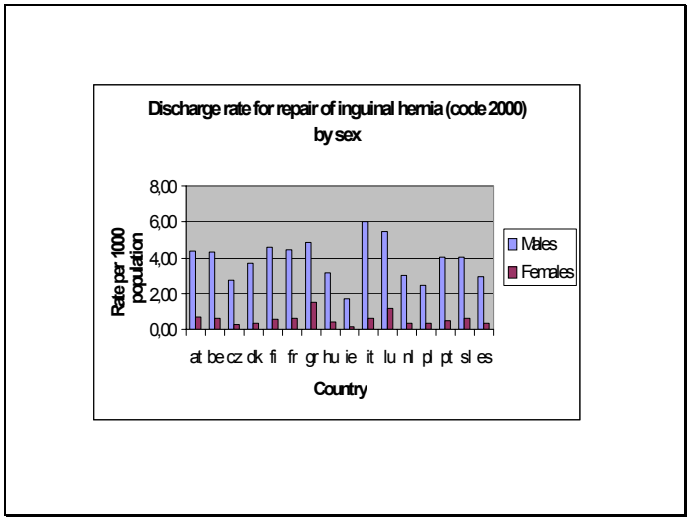


A.III.4 Analysis procedures

Dia 34



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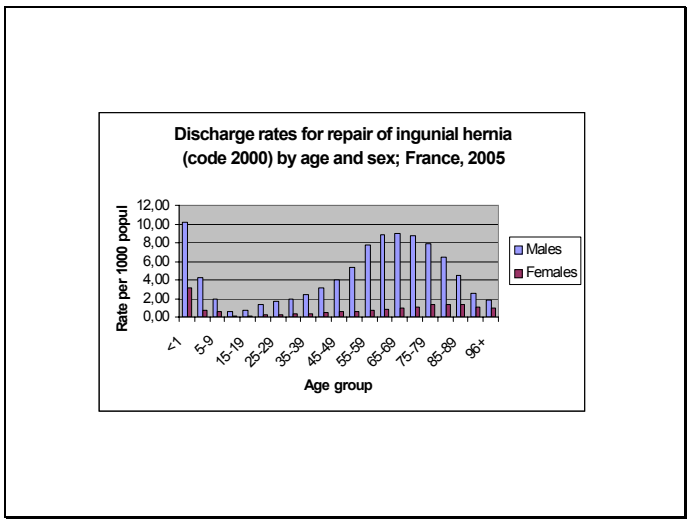

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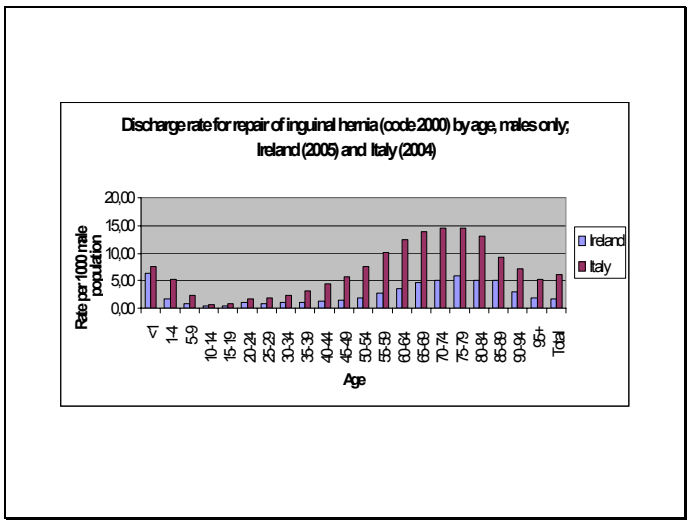
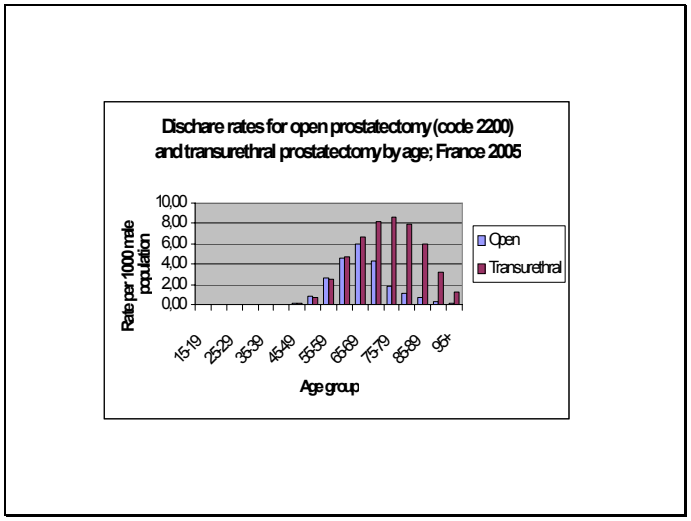


A.III.4 Analysis procedures

Dia 37



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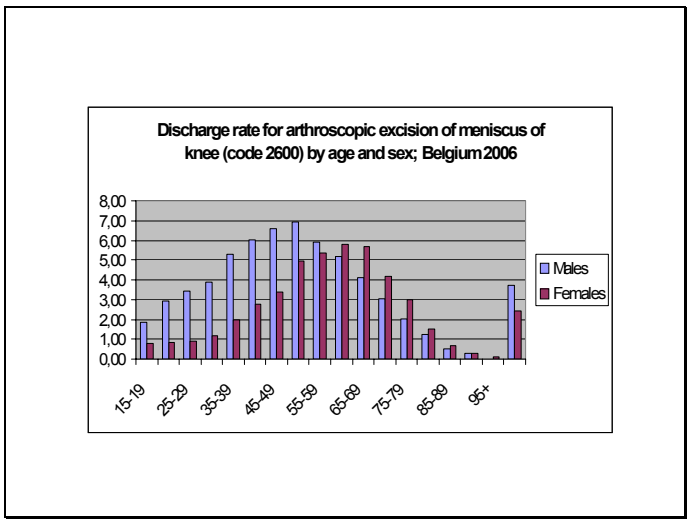

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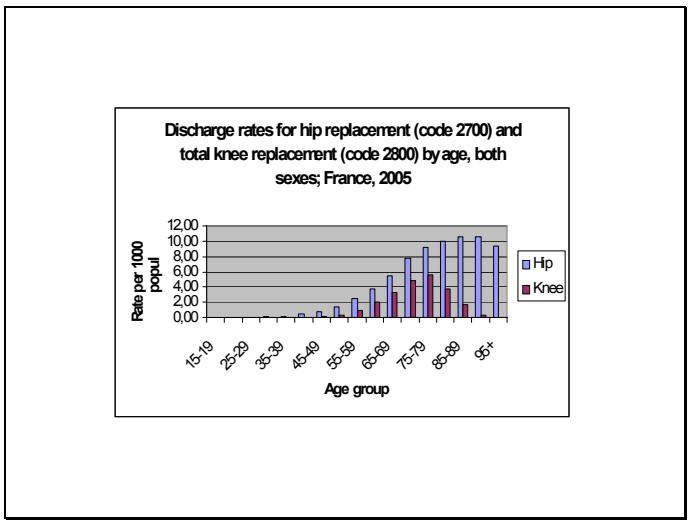
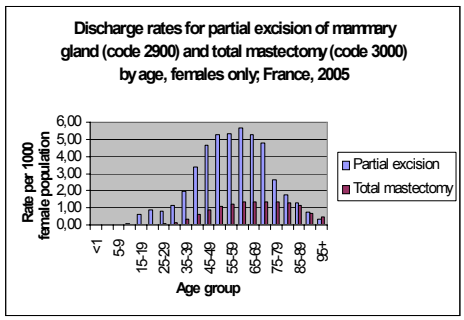


A.III.4 Analysis procedures

Dia 40

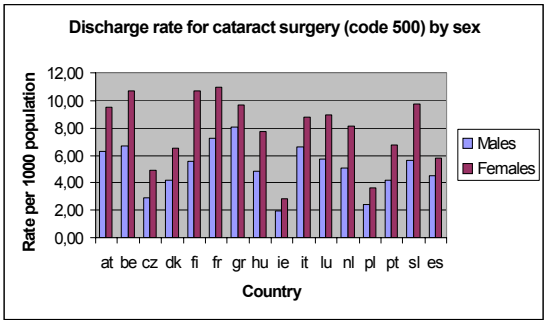


Dia 41

Registration or definition problems

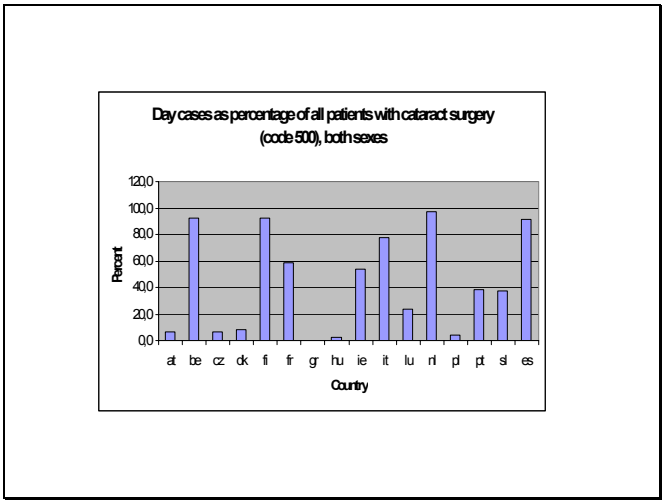
- Cataract surgery
- Diagnostic bronchoscopy with or without biopsy
- Colonoscopy with or without biopsy
- Infrarenal aortic aneurysm repair
- Femoropopliteal bypass

Dia 42



A.III.4 Analysis procedures

Dia 43



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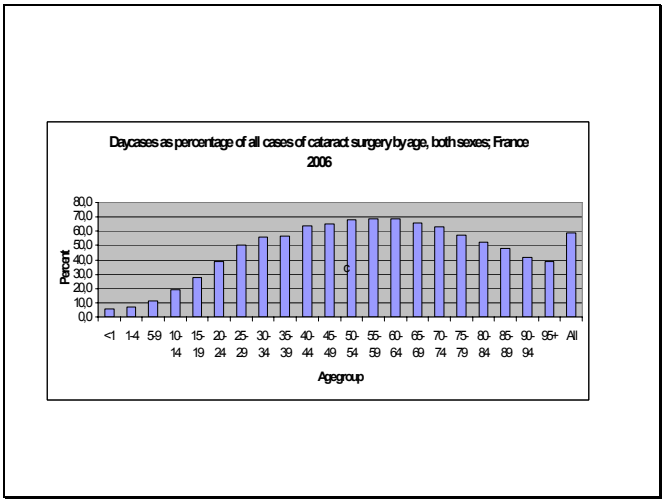

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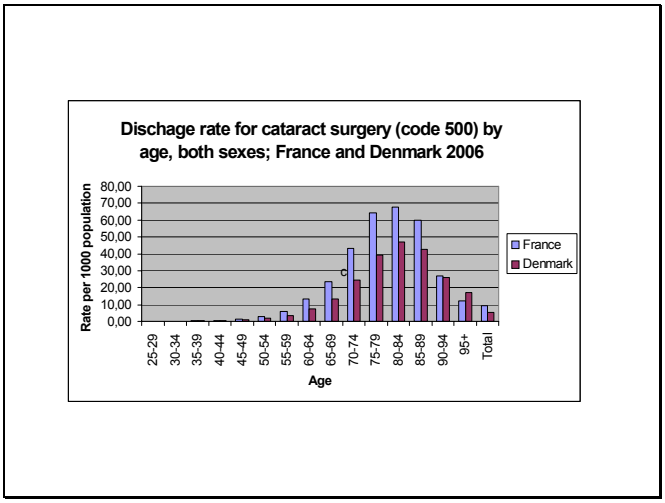
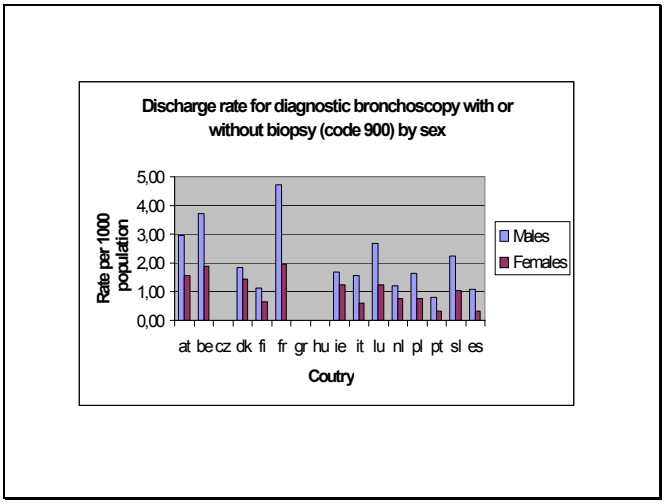
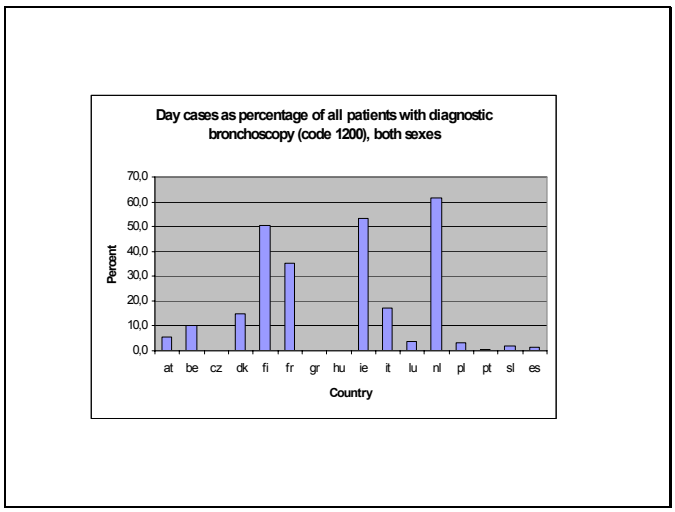


A.III.4 Analysis procedures

Dia 46



Dia 47



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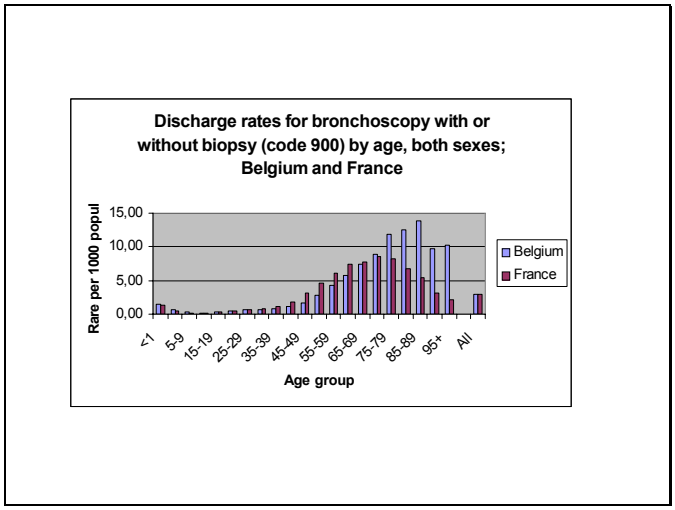

A.III.4 Analysis procedures

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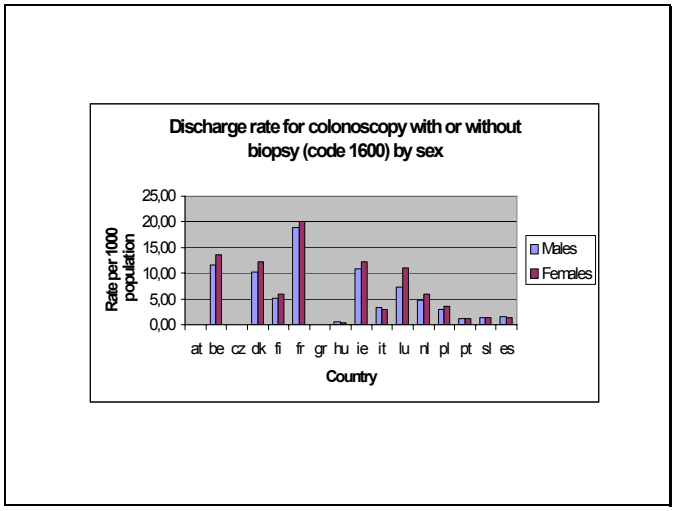

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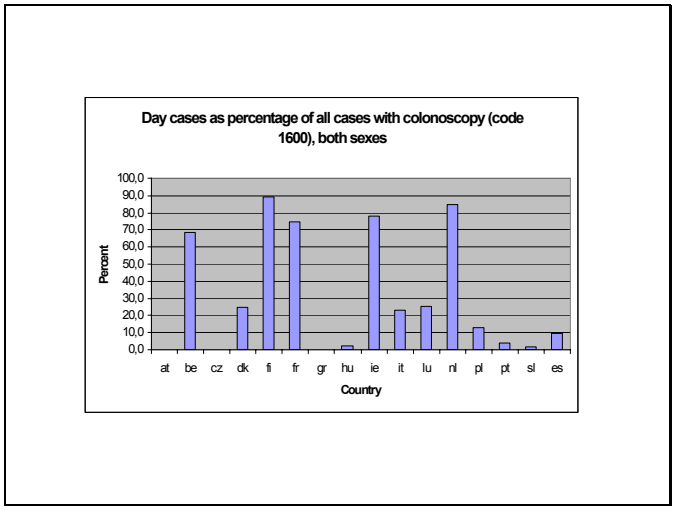

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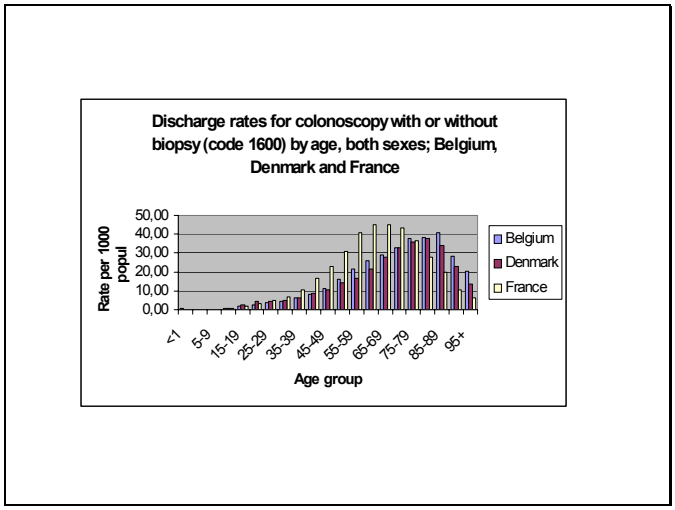
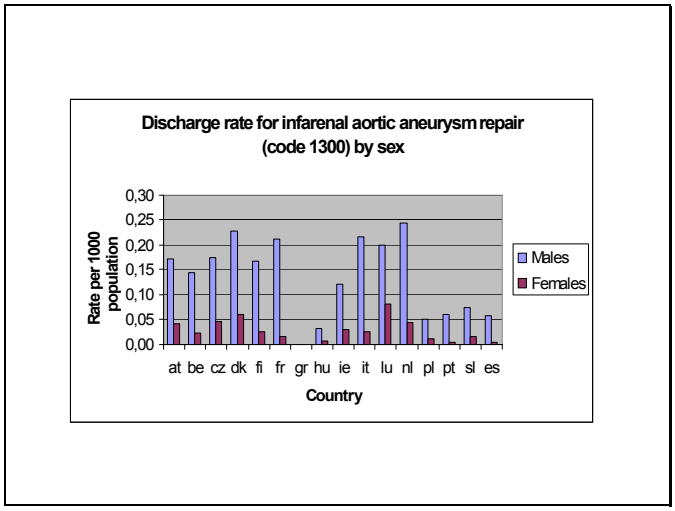


A.III.4 Analysis procedures

Dia 52



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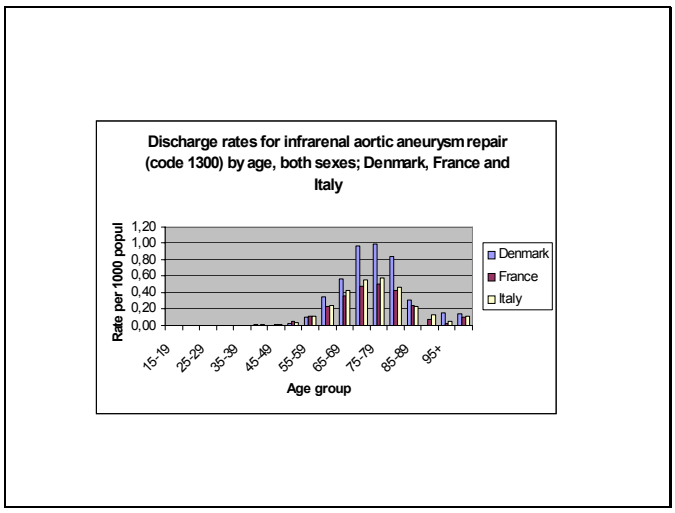

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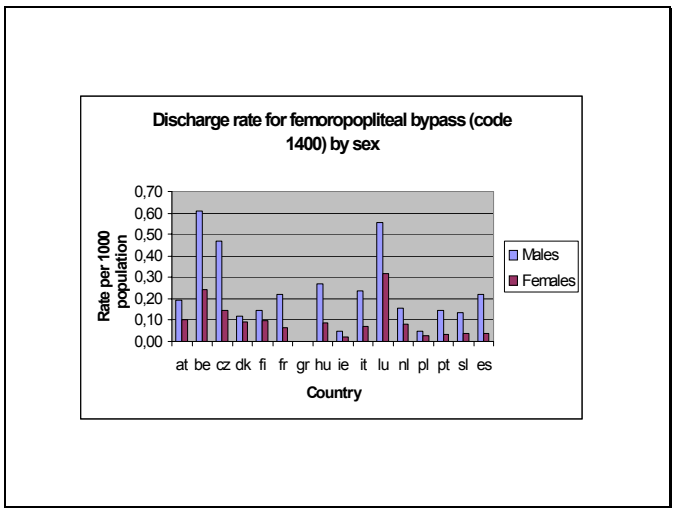


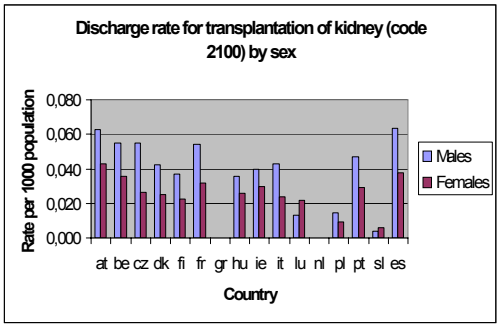
A.III.4 Analysis procedures

Dia 55

Gender issues

- Most of the sex differences we have seen are due to epidemiological (biological) sex differences such as higher female population rates for thyroidectomy, cholecystectomy, mastectomy and higher male rates for pulmectomy, CABG(?), inguinal hernia repair.
- But are there gender differences, i.e. sex differences that cannot be understood as biological differences?
- What about kidney transplantation and laparoscopic procedures?

Dia 56



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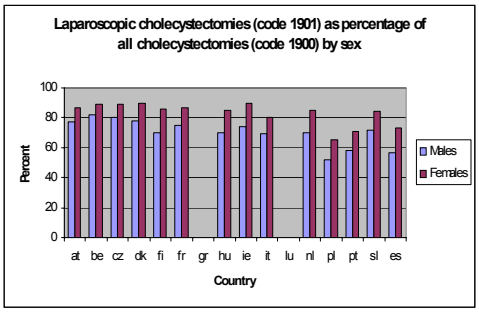
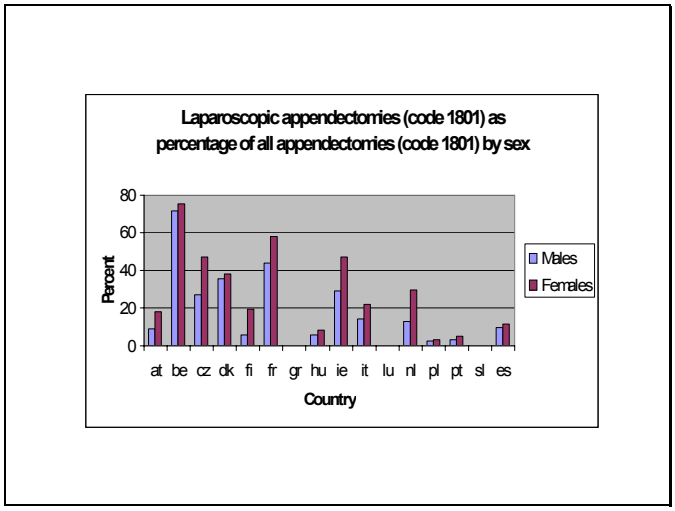


A.III.4 Analysis procedures

Dia 58



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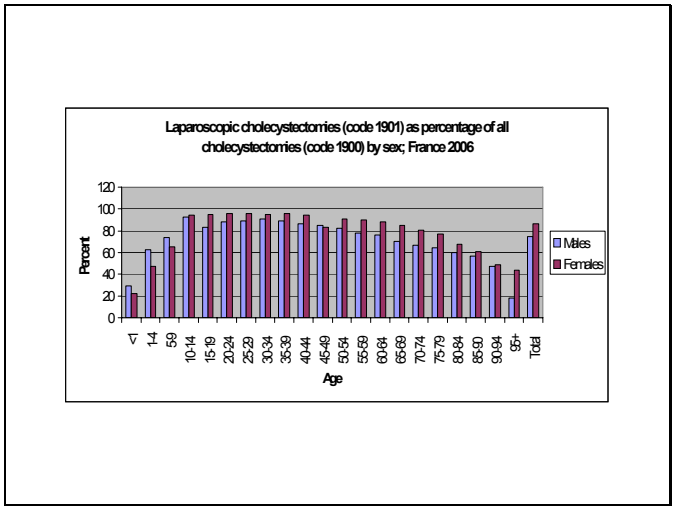

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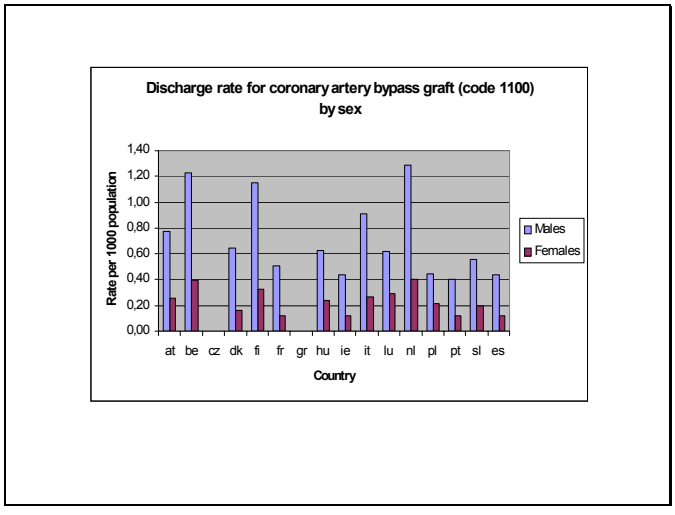


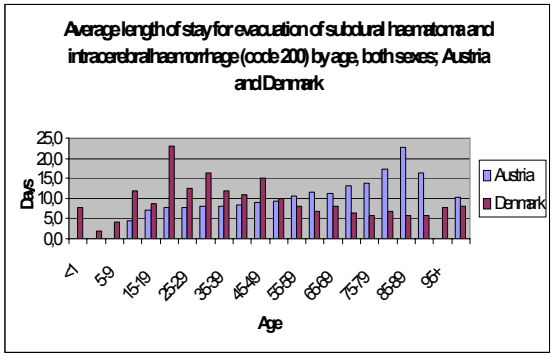
A.III.4 Analysis procedures

Dia 61

Age breakdown inportant for length of stay comparisons

- Evacuation of subdural haematoma
- Thyroidectomy
- Coronary artery bypass
- Cholecystectomy
- Hip replacement

Dia 62



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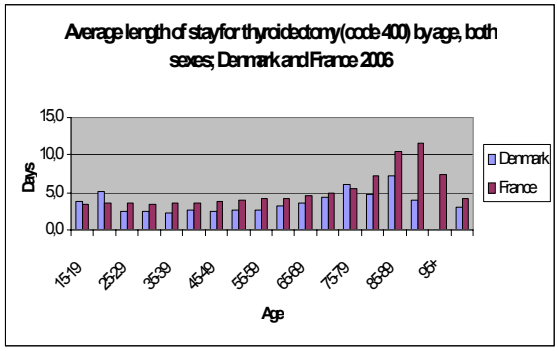
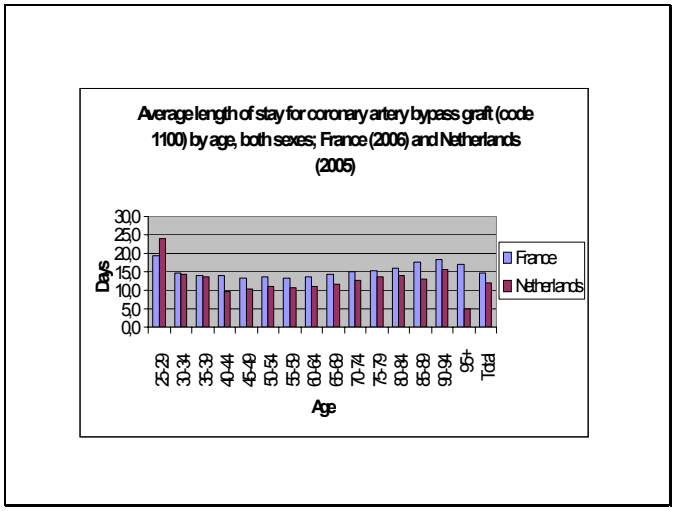


A.III.4 Analysis procedures

Dia 64



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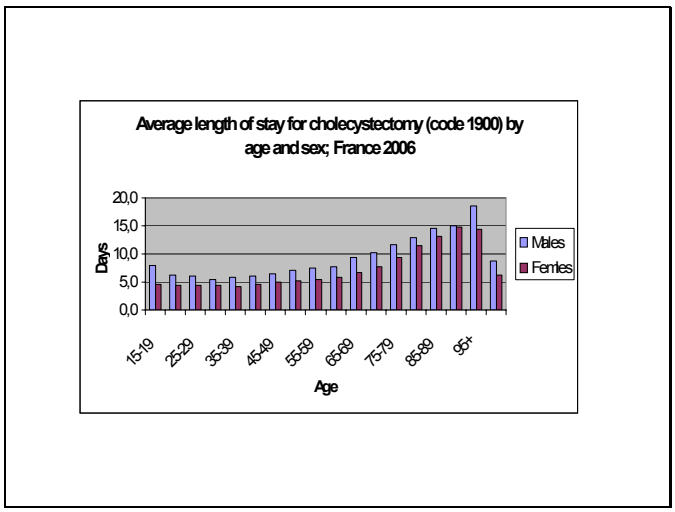

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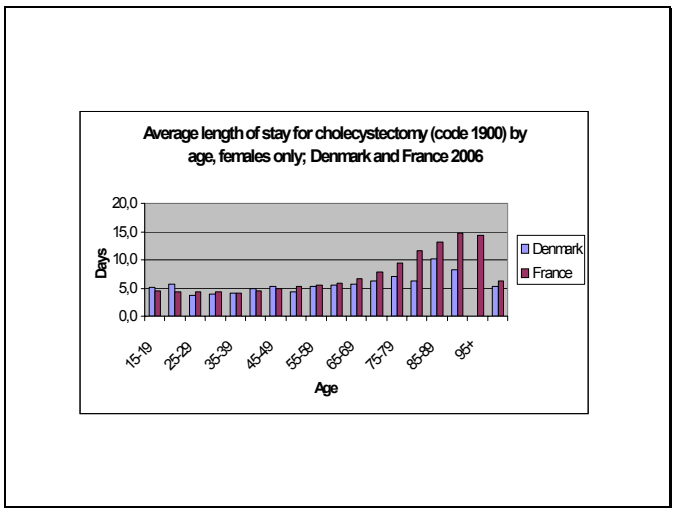
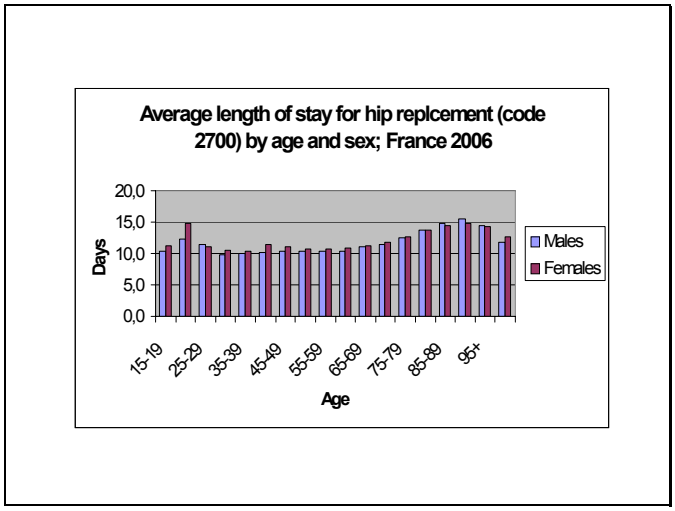


A.III.4 Analysis procedures

Dia 67



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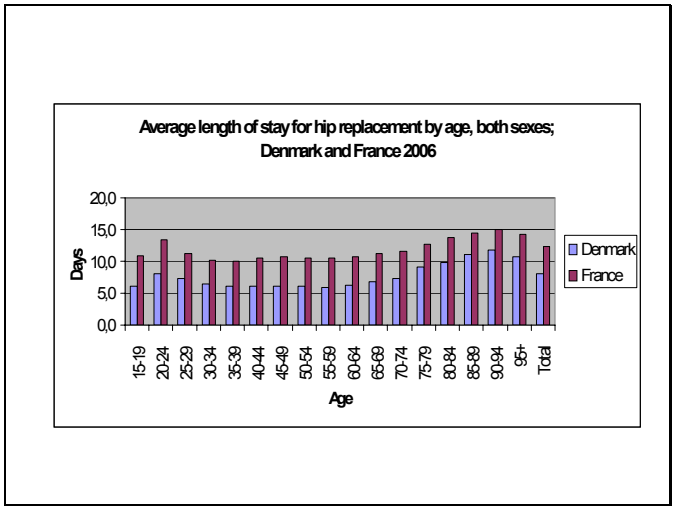


A.III.4 Analysis procedures

b. Analysis per country

Background

Questions and comments to the results of the HDP2 data on procedures

The following questions and remarks are based on the analysis of data on procedures that was presented at the HDP2 Full Group Meeting in Paris 2008-09-18--19. It was based on the data available in early September 2008 when seventeen countries had provided data, some of them only partially.

The comments are ordered according to the Power Point presentation at the Paris meeting. The PP-slides will be distributed to the participants together with this document. The basic data are also available on the CD-ROM (beta version 1.06) distributed at the Paris meeting.

The idea is to stimulate countries to reflect about the differences revealed by the study. Some of these may be due to methodological problems that should be noted and result in additions to the meta data on procedures. If possible, they should also lead to changes in future data collection on procedures. Other differences may reflect differences in the organisation of health services and in clinical policy. Comments on any such differences would be useful for the final report of the project.

In the comments below names of the countries primarily concerned have been highlighted in **bold** types for easy reference. Procedures concerned are highlighted in *Italics*.

A.III.4 Analysis procedures

1. Belgium

1. **Belgium and Denmark** are the two countries with the highest discharge rate for *discectomy* but the age distribution of the patients obviously differ. Are there known differences in the clinical indications for discectomy?

3 Discectomy (80.50/80.51/80.59)

Are there known differences in the clinical indications for discectomy?
Indication:

- *Discus hernia with neurological complications. Using the ICD-9-CM coding rules, makes it difficult to study the prevalence of neurologic disorders in patients undergoing discectomy. For example, when using the code 722.0: cervical/cervico-dorsal disorder without myelopathy, it is forbidden to code an accompanying neurological disorder like brachiitis or sciatica. Likewise, when coding 722.71: cervico/cervical discus disorder with myelopathy, the simultaneous coding of peripheral neurological disorders is not allowed.*
- *Cauda equina (medial hernia in the lumbar region with neurological symptoms) is considered an urgency for surgery*
- *Discus degeneration*

Lumbar discectomies are the most common.
The cervical region is the second most common location of discectomy.

6,10%of the patients undergoing a discectomy are non-residents

2. The proportion of cataract day patients differs among countries, showing very high percentage for **Belgium, Finland, Italy and Spain**. Do the very low percentages in some other countries mainly reflect registration problems or real differences in how cataract surgery is handled?

5 Cataract surgery (13.1/13.2/13.3/13.4/13.5/13.6/13.7/13.8)

Belgium has not only high proportion of cataract day patients but a considerable amount of cataract interventions are performed in an ambulatory setting and escape our registration.
The financing system encourages hospitals to treat cataract in a one-day setting. When a patient is hospitalized during 3 days for the treatment of a primary cataract, the hospital is paid as if it was a one-day case.
The intervention is considered as low risk, not necessitating a classical hospital stay unless there is a diagnosis of a secondary cataract.
When a cataract procedure is performed on an in-hospital patient one may assume it concerns a procedure carried out for a secondary cataract or performed during a hospitalization for other causes

3. Cochlear implantation is an emerging technology with low discharge rates in all countries, highest in **Belgium and Denmark**. Age-specific rates for **Denmark** show that this procedure is mainly performed in the youngest age groups, but cases are also found in the high age groups. It is of special interest to follow the future trend for this procedure and its age related pattern.

6 Cochlear implantation (20.96/20.97/20.98)

In Belgium new-borns are screened (Algo testing) for a hearing deficit. Also In Belgium there exists a tradition of cochlear implantation: one of the pilot teams that developed the technique of

cochlear implantation was a Belgian one and Belgium was one of the first European countries where a group of ORLs was specialized in that technique.

4,67% of the patients in classical hospitalizations is non-residents.

4. The *tonsillectomy* rate is highest in **Luxembourg, Netherlands and Belgium** and lowest in **Czech Rep., Poland, Slovenia and Spain.** In **Belgium** *tonsillectomies* are very common in the age group 1-4 years compared to **Czech Rep.** with a very different age-specific pattern. Comments?
About two-thirds of the *tonsillectomies* are performed as *day surgery* in **Belgium** and **Netherlands**. This proportion is much lower in all other countries. Could different perceptions of the risks for postoperative complications explain this?

7 Tonsillectomy (28.2/28.3/28.4)

Most tonsillectomies are performed for the reason of sleep apnea. A not- organized yet reimbursed "wild" screening of children at risk for cot death or SIDS (sudden infant death syndrome) may lead to a high detection-rate of sleep apnea in that young age group.

Since the intervention is considered as low risk for post interventional complications, the financing system encourages day surgery in the same way as for cataract surgery.

5. There are high rates for *diagnostic bronchoscopy* in **Belgium and France** in relation to other countries. Are there known differences in clinical policy? Do registration problems explain low rates?
High proportion of *bronchoscopy* as day care in **Finland, France, Ireland and Netherlands** but low proportions in other countries. Any comments?

Belgium and **France** have the same overall rate for *bronchoscopy* but the age-specific rates differ, showing higher rates for the very old Belgians. Comments?

9 Diagnostic bronchoscopy with or without biopsy (33.21/33.22/33.22/33.23/33.24/33.27)

For the age group between 20 – 44 years we note a lower population rate for bronchoscopy in Belgium than in France.
From the age of 80 years and older we see a higher population rate in Belgium than in France.
Belgium doesn't have a policy that discourages invasive diagnostics and procedures in the elderly.

Non-residents: 1,23% in classical hospitalization and 1,01% in day care setting.

6. Transluminal coronary angioplasty is done more often on males than females in all countries with high discharge rates in **Austria, Belgium, France, Luxembourg and Netherlands.** The very low rates in some other countries may be due to registration and coding problems.

10 Transluminal coronary angioplasty (36.01/36.02/36.05)

The higher rates in males may partially be explained by the anatomical fact that in females the blood vessel's diameter is smaller than in men.
In Belgium we have an high percentage of non-residents: 2.45 % in classical hospitalization and 18.88% in day care

A.III.4 Analysis procedures

7. Discharge rates for *CABG* are higher in **Belgium, Finland and Netherlands** and **Italy** than in other countries. This is not explained by lower rates for transluminal coronary angioplasty for which **Belgium** and **Netherlands** have among the highest rates as well. Only for **Finland** there seems to be a possible explanation in CABG being performed instead of transluminal coronary angioplasty. Are there other explanations?

The higher **Belgian** rates for *CABG* are reflected in all age groups when compared to **France** and **Italy (**no slide showing this**)**.

11 CABG (36.1)

In Belgium the proportion of non-residents, amounting to 3.86 % in classical hospitalization (1,41% higher than that of PTCA), constitutes only a partial explanation for the lack of trade-off between PTCA and CABG.
The age-distribution does not suggest (Table 1) a phenomenon of a CABG carried out at on older age after a PTCA performed at a younger age and a secondary narrowing of coronary vessels.

Table 1: Age-distribution of PTCA and CABG in Belgium, during 2006.

Age group	#PTCA	PTCA poprate	#CABG	CABG poprate
<1	5	0,04	0	
1-4	3	0,01	0	
5-9	0	0	0	
10-14	0	0	0	
15-19	5	0,01	2	
20-24	2	0	0	
25-29	14	0,02	4	0,01
30-34	53	0,08	5	0,01
35-39	212	0,28	25	0,03
40-44	708	0,87	103	0,13
45-49	1449	1,84	236	0,3
50-54	2359	3,27	496	0,69
55-59	3096	4,59	781	1,16
60-64	3297	6,21	1066	2,01
65-69	3624	7,55	1336	2,78
70-74	4259	9,28	1787	3,89
75-79	3777	9,54	1656	4,18
80-84	2244	7,8	824	2,87
85-89	705	5,67	169	1,36
90-94	86	1,72	12	0,24
≥ 95	3	0,23	0	

8. Highest rates for *carotid endarterectomy* are found for **Austria, Belgium, France** and **Italy**. Can definition and registration problems explain the difference to other, low rate countries? (Endovasal procedures were not to be included.) Are differences in clinical policy for the use of this somewhat controversial procedure a more probable explanation for the great country differences?

12 Carotid endarterectomy (38.12)

"Belgian overuse" is, as often, a plausible explanation but under-use in other countries may also occur.

A.III.4 Analysis procedures

The proportion of non-residents (0,85 % in classical hospitalization) cannot explain the high rate.

9. There are some difficulties in defining *infrarenal aortic aneurysm repair* consistently, so part of country differences may be due to this. There are high rates for **Denmark, France, Italy** and **Netherlands**. However, indication for operation is said to vary among vascular surgeons.
High rates in **Denmark** may be due to start of population screening of males for aortic aneurysm. This may be reflected in the fact that Danish patients are operated at a lower age.

13 Infrarenal aortic aneurysm repair (38.44/39.71/39.74)

Using the ICD-9-CM classification we were not able to define infrarenal aortic aneurysm repair nadequately

10. There are differences in discharge rates for *femoropopliteal bypass* for which definition and coding problems have also been reported. High rates are found for **Belgium, Czech Rep. and Luxembourg.** Definition problems in these or other countries?

14 Femoropopliteal bypass (39.29)

Belgium uses the ICD-9-CM classification for coding diagnoses and procedures. In the ICD-9-CM there isn't a specific code for femeropopliteal bypass, which makes an exact mapping impossible. The code 39.29 stands for other (peripheral) vascular shunt or bypass and therefore lacks specificity for femeropopliteal bypass.

0,9% of these procedures are performed on non-residents.

11. There are well known problems with underreporting of *colonoscopies* which may be done on an outpatient basis and as day care. Does this explain the big differences among countries, e.g. **France** versus **Finland, Italy and Spain**?

In **Belgium, Finland, France, Ireland and Netherlands** *colonoscopies* are done as day care to a great extent (and with less underreporting?)

In **France** *colonoscopies* are performed more frequently in younger age groups than in **Belgium** and **Denmark**.

16 Colonoscopy with or without biopsy (45.7/45.8)

In Belgium colonoscopy is considered a one-day procedure. Moreover, a lot of these procedures are performed in an ambulatory setting and thus escape from our registration. Colonoscopy is probably more often performed in an ambulatory setting for younger patients.
Since 10 years physicians try to sensitize the population to have at least 1 colonoscopy once/10years for patients older than 50 years or to have a screening every 5 years when there is a family history of colorectal carcinoma.

12. **Belgium** and **France** have the highest proportions of *laparoscopic appendectomies* (half or more).

18A Laparoscopic appendectomy (46.01/47.01)

Patients and surgeons prefer the laparoscopic technique due to the quick mobilization and the quicker return to daily activity.

A.III.4 Analysis procedures

Hospital reimbursement may play a role as well since iIn Belgium the hospital will be reimbursed 3 hospitalization days for both open and laparoscopic appendectomy. Thus when the patient can leave the hospital after 2 days or after 4 days the hospital is financed for 3 days. So physicians will prefer the method with the quickest mobilization and discharge.

Patients who underwent a laparoscopic appendectomy will have to pay about €200 for the laparoscopic material and disposables. This amount exceeds the actual cost of the intervention and corresponds to the proportion at charge of the patient that is not reimbursed by the national health care. When the patient has a hospitalization insurance, the insurance will pay the €200.

13. As could be expected open *prostatectomy* is performed at younger age *and transurethral* in higher age groups as shown here for **France**.

22 Open prostatectomy (60.3/60.4/60.5/60.6)

The ICD-9-CM mapping doesn't allow differentiating procedures performed according to the diagnosis of BPH (Benign Prostatic Hypertrophy) or carcinoma.
The prevalence of carcinoma is influenced by the population's age structure and racial composition.
Belgium also has a history of sensitizing the population for early check ups for prostate cancer. As a result, more cases of prostate cancer may be detected at an early stage when it is still operable. During these check ups attention is also paid to detection of BPH, because late treatment of innocent BPH can maintain the irritative symptoms, even after treatment.
We expect more transurethral prostatectomies at a younger age for the treatment of BPH. An open surgical procedure for BPH is indicated for larger adenoma, what we expect at a higher age.
Also surgical treatment of curable prostate carcinoma requires an open procedure. The incidence of prostate carcinoma grows with higher age. Optimalisation of techniques has moved the age limit for performing a radical prostatectomy to a higher age.

14. The highest discharge rates for *transurethral prostatectomy* are found for **Austria, Belgium, Denmark and France**. *Transurethral prostatectomy* is more common than *open prostatectomy* in all countries except for **Portugal and Spain;** also a less pronounced difference in **Italy.** Could there be an underreporting of transurethral procedures in these countries?

23 Transurethral prostatectomy (60.2)

Transurethral prostatectomy is usually performed for BPH.
Since medical treatment (finasteride, dutaseride) is not reimbursed, patients will decide quicker (at a younger age) to have a surgical treatment.

On over coding of transurethral prostatectomy is possible. Incision or resection of bladder neck or resection of median lobe should be coded as 60.61: local excision of prostate. This code gives a less interesting financing an will often be coded as 60.2

15. High rate for *total knee replacement* in **Belgium** and very low rate in **Poland** (no slide showing this) Problems with definition?
As could be expected *total knee replacement* are made at younger age than *hip replacement* as shown here for **France**.

28 Total knee replacement (81.54)

A.III.4 Analysis procedures

The ICD-9-CM code 81.54: Total Knee Replacement covers a heterogenous group of procedures, including uni-, bi-, tricompartemental procedures.

2% of the procedures are performed on non-residents

16. Rates for *partial excision of mammary gland* are highest in **Austria, Belgium**, **France** and **Italy**. A great proportion of these are done *as day care* in **Ireland**. Astonishingly low proportion done as day care in **France**. (No slide showing this.)

29 Partial excision of mammary gland (85.20/85.21/85.22/85.23)

Includes wedge excision and other partial excision with or without lymph node excision, excludes biopsy and breast reduction surgery. When a suspect lesion on mammography is difficult to palpate as a lump or the suspected area on X-ray is bigger than the palpable mass, this area will be marked by the radiologist with a harpoon, followed immediately by a wedge excision in the OR.

Before 2000 we already had a screening program, where women between 50 and 69yrs of age, were invited for check up for breast carcinoma, which is fully reimbursed.

0,6% of the procedures are performed on non-residents.

2. Czech Republic

1. There are differences in *surgical approach*, however, for these common operations with relatively similar population rates. *Laparoscopic cholecystectomies* are done at about the same ratio in all countries (70-90%), while there are marked differences with respect to the other procedures. **Belgium** and **France** have the highest proportions of *laparoscopic appendectomies* (half or more). There are also great differences for *inguinal hernia repair* with high proportions of laparoscopic approach in **Czech Rep., France and Austria**. **Finland** has a remarkably high proportion of laparoscopic *hysterectomies.* Many of the reported low proportions of laparoscopic approach are due to difficulties in identifying this approach in the classification being used. Are there other explanations?

The number of laparoscopic procedures is only estimate for the Czech Republic. It is a combination of data on operation diagnosis K40 (ICD-10) with laparoscopic procedures. It seems that the share of laparoscopic procedures as shown by estimation does not reflect the reality but no explanation is available at the moment.

2. The *tonsillectomy* rate is highest in **Luxembourg, Netherlands and Belgium** and lowest in **Czech Rep., Poland, Slovenia and Spain.** In **Belgium** *tonsillectomies* are very common in the age group 1-4 years compared to **Czech Rep.** with a very different age-specific pattern. Comments?
About two-thirds of the *tonsillectomies* are performed as *day surgery* in **Belgium** and **Netherlands**. This proportion is much lower in all other countries. Could different perceptions of the risks for postoperative complications explain this?

Day cases are underreported as not usually registered in hospitalization data in the Czech Republic.

3. There are differences in discharge rates for *femoropopliteal bypass* for which definition and coding problems have also been reported. High rates are found for **Belgium, Czech Rep. and Luxembourg.** Definition problems in these or other countries?

Mapping is not perfect for the Czech Republic – the data covers also aneurysm of peripheral arteries and resection of A-V malformation.

3. Greece

1. *Thyroidectomy* is much more frequent among women than men in all countries. There are high population rates in **Austria, France, Greece and Italy. Ireland** and **Netherlands** have the lowest rates.

An explanation from Greece might be that : due to expected and observed increasing rates of thyroid cancer after the Tsernobil accident, surgeons and endocrinologists in Greece, now days, more frequently recommend "invasive" therapies for facing thyroid problems.

2. Except for **Greece** *partial excision* is much more common than *total mastectomy,* with the greatest difference between the two procedure rates in **Austria, France and Italy.**

Explanation from Greece: We face problems to distinguish partial excisions from total mastectomies, as we don't use yet the ICD-CM.

4. Hungary

1. *Cholecystectomy and appendectomy* show similar population rates in all countries. There are only slightly higher rates for appendectomy in **Austria** and for cholecystectomy in **Greece** and **Hungary.**

Consecring Hungary only the relative high frequency of cholecystecomy is mentioned in the document. We checked the figures and confirm, that these are the numbers what we have. I could not undertake to explain the figure, not beeing expert on the field. If someone would say, that our dietary habit is partly responsible for this, I would not doubt however.

5. Ireland

Procedure Shortlist:

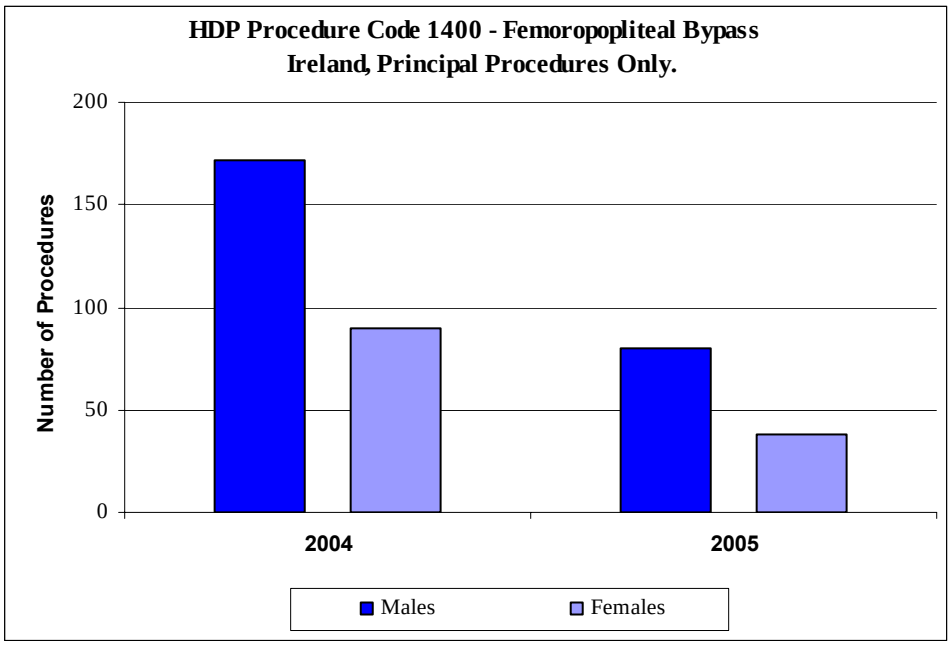
We provided data for 2004 and 2005 on procedures, at principal procedure and all procedures level. Data for 2004 were coded using ICD-9-CM and data for 2005 were coded using ICD-10-AM. By providing two years of data, this allowed both us and the project group to compare the procedure shortlist across classifications.

We found that where an exact mapping is not possible, such as femoropopliteal bypass, discectomy, infrarenal aortic aneurysm repair, we would prefer that countries using a classification system that does not provide the appropriate codes would be advised *not* to report any data for that category, rather than including under or over-reported data. For example:

Femoropopliteal bypass ICD-9-CM 39.29 (part of):
The ICD-9-CM code specified refers to 'Other (Peripheral) Vascular Shunt or Bypass' and is not a specific code for femoropopliteal bypass. It also includes axillary-brachial, axillary-femoral, brachial, femoral-femoral, femoroperoneal, femorotibial and vascular (not otherwise specified) bypasses.

This means that countries using ICD-9-CM will be over-reporting the number of femoropopliteal bypasses which will make comparison of data between countries using different classification systems impossible.

In addition, for countries such as Ireland that have changed from ICD-9-CM to ICD-10-AM it will result in an inconsistent and misleading time series.



The shortlist includes 'optional' procedures including five laparoscopic subgroups. It is suggested that data for these categories could be reported using combination codes. We have compared these categories using combination codes for data coded using ICD-9-CM against ICD-10-AM coded data and found that using combination codes provides unreliable data. There is a limit on the number of procedures coded for each hospital discharge, and so in some instances the laparoscopy part of the procedure would not be coded. Also, it is possible that a laparoscopy

could be performed separately. Using the combination codes does not necessarily mean that the procedure was performed laparoscopically.

In summary, we believe emphasis should be on compiling a shortlist that can be accurately reported among all classifications which will allow comparisons among countries, and will, as far as possible, provide a consistent time series for all countries including those that have changed classification systems.

Also, we would be very much in favour of a more extensive list covering a wider range of procedures. Currently the shortlist only includes less than 10% of all recorded procedures when applied to Irish data in 2005.

Procedure Analysis:

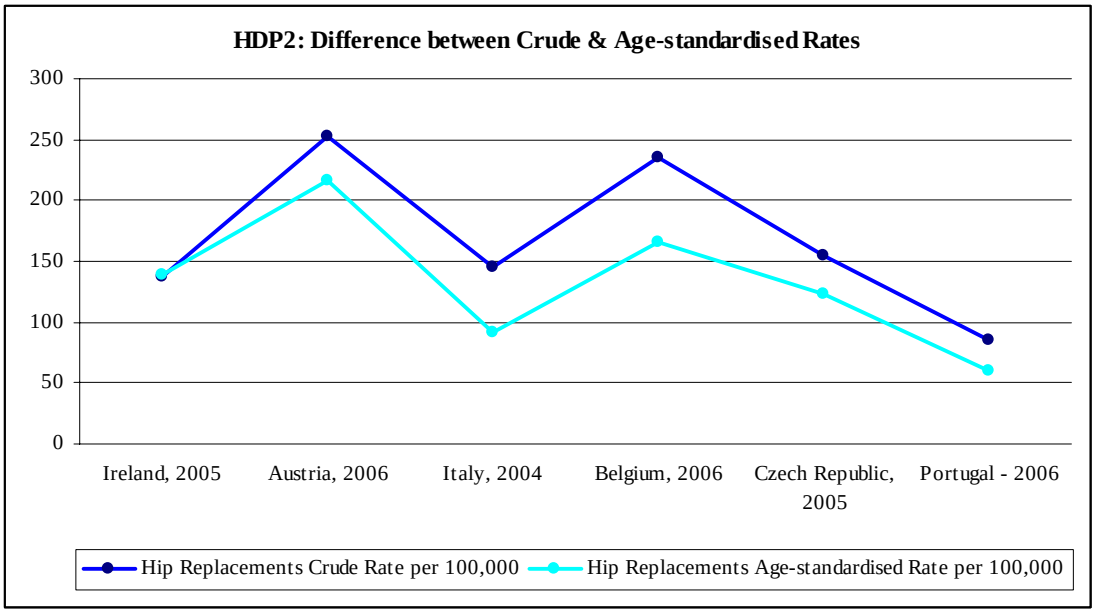
We believe that in order to accurately compare procedures rates among countries, the data must be age-standardised. Countries with an older population will obviously have higher rates for certain procedures, such as cataract surgery and hip replacements.

The table and graph below show crude and age-standardised rates for hip replacements for selected countries. This analysis highlights the effect different population structures can have on population rates. The population of Ireland is actually quite close to the European Standard Population, and so there is only a slight difference between the crude and age-standardised rate per 100,000 for hip replacements. However all of the other countries shown have a higher proportion of older people in their population compared to the European Standard Population, and so the age-standardised rates are significantly lower than the crude rate per 100,000 population.

Hip Replacements

	Crude Rate per 1000 Population	Crude Rate per 100,000	Age-standardised Rate per 100,000
Ireland, 2005	1.38	138	139.0
Austria, 2006	2.52	252	215.7
Italy, 2004	1.46	146	92.2
Belgium, 2006	2.36	236	166.1
Czech Republic, 2005	1.54	154	123.8
Portugal - 2006	0.85	85	60.01

A.III.4 Analysis procedures



c. Analysis per topic

1. Procedures with great similarities among countries in population rates

1.1 Topic: Appendectomy

Appendectomy: Shortlist code 1800

Question:

Cholecystectomy and appendectomy show similar population rates in all countries. There are only slightly higher rates for appendectomy in **Austria** and for cholecystectomy in **Greece** and **Hungary.**

Answers:

1.2 Topic: Cholecystectomy

Cholecystectomy: Shortlist code 1900

Question:

Cholecystectomy and appendectomy show similar population rates in all countries. There are only slightly higher rates for appendectomy in **Austria** and for cholecystectomy in **Greece** and **Hungary.**

Answers:

Hungary

Consecring Hungary only the relative high frequency of cholecystecomy is mentioned in the document. We checked the figures and confirm, that these are the numbers what we have. I could not undertake to explain the figure, not beeing expert on the field. If someone would say, that our dietary habit is partly responsible for this, I would not doubt however.

1.3 Topic: Colectomy

Colectomy: Shortlist code 1700

Question:

For *colectomy* there are remarkably low rates in **Poland** and for *hysterectomy* low population rates in **Ireland** and **Spain** (only half of the rates for **Finland** and **Luxemburg**).

Answers:

1.4 Topic: Hysterectomy

Hysterectomy: Shortlist code 2400

Question:

For *colectomy* there are remarkably low rates in **Poland** and for *hysterectomy* low population rates in **Ireland** and **Spain** (only half of the rates for **Finland** and **Luxemburg**).

Answers:

1.5 Topic: Repair of inguinal hernia

Repair of inguinal hernia: Shortlist code 2000

Question:

For *repair of inguinal hernia* there are comparably low rates for **Ireland** and **Spain**. Any explanations?

Answers:

1.6 Topic: Laparoscopic

Laparoscopic: Shortlist code 1701, 1801, 1901, 2001, 2401 and 2701

Question:

There are differences in *surgical approach*, however, for these common operations with relatively similar population rates. *Laparoscopic cholecystectomies* are done at about the same ratio in all countries (70-90%), while there are marked differences with respect to the other procedures. **Belgium** and **France** have the highest proportions of *laparoscopic appendectomies* (half or more). There are also great differences for *inguinal hernia repair* with high proportions of laparoscopic approach in **Czech Rep., France and Austria**. **Finland** has a remarkably high proportion of laparoscopic *hysterectomies.* Many of the reported low proportions of laparoscopic approach are due to difficulties in identifying this approach in the classification being used. Are there other explanations?

Answers:

Belgium

18A Laparoscopic appendectomy (46.01/47.01)

Patients and surgeons prefer the laparoscopic technique due to the quick mobilization and the quicker return to daily activity.
Hospital reimbursement may play a role as well since iIn Belgium the hospital will be reimbursed 3 hospitalization days for both open and laparoscopic appendectomy. Thus when the patient can leave the hospital after 2 days or after 4 days the hospital is financed for 3 days. So physicians will prefer the method with the quickest mobilization and discharge.

Patients who underwent a laparoscopic appendectomy will have to pay about €200 for the laparoscopic material and disposables. This amount exceeds the actual cost of the intervention and corresponds to the proportion at charge of the patient that is not reimbursed by the national health care. When the patient has a hospitalization insurance, the insurance will pay the €200.

Czech Republic

The number of laparoscopic procedures is only estimate for the Czech Republic. It is a combination of data on operation diagnosis K40 (ICD-10) with laparoscopic procedures. It seems that the share of laparoscopic procedures as shown by estimation does not reflect the reality but no explanation is available at the moment.

2. Procedures reflecting differences in treatment practice and tradition

2.1 Topic: Thyroidectomy

Thyroidectomy: Shortlist code 400

Question:

Thyroidectomy is much more frequent among women than men in all countries. There are high population rates in **Austria, France, Greece and Italy. Ireland** and **Netherlands** have the lowest rates. Could an explanation be that radioiodine and drug therapy are more common in treating thyrotoxicosis in **Ireland** and **Netherlands** than in the high rate countries?
There are also some differences in age specific population rates for a low rate country (**Denmark**) and a high rate country (**France**). Does this reflect another treatment policy?

Answer:

Greece

An explanation from Greece might be that : due to expected and observed increasing rates of thyroid cancer after the Tsernobil accident, surgeons and endocrinologists in Greece, now days, more frequently recommend "invasive" therapies for facing thyroid problems.

2.2 Topic: Tonsillectomy

Tonsillectomy: Shortlist code 700

Question:

The *tonsillectomy* rate is highest in **Luxembourg, Netherlands and Belgium** and lowest in **Czech Rep., Poland, Slovenia and Spain.** In **Belgium** *tonsillectomies* are very common in the age group 1-4 years compared to **Czech Rep.** with a very different age-specific pattern. Comments?
About two-thirds of the *tonsillectomies* are performed as *day surgery* in **Belgium** and **Netherlands**. This proportion is much lower in all other countries. Could different perceptions of the risks for postoperative complications explain this?

Answer:

Belgium

7 Tonsillectomy (28.2/28.3/28.4)

Most tonsillectomies are performed for the reason of sleep apnea. A not- organized yet reimbursed "wild" screening of children at risk for cot death or SIDS (sudden infant death syndrome) may lead to a high detection-rate of sleep apnea in that young age group.

Since the intervention is considered as low risk for post interventional complications, the financing system encourages day surgery in the same way as for cataract surgery.

Czech Republic

Day cases are underreported as not usually registered in hospitalization data in the Czech Republic.

2.3 Topic: Transluminal coronary angioplasty

Transluminal coronary angioplasty: Shortlist code 1000

Question:

Transluminal coronary angioplasty is done more often on males than females in all countries with high discharge rates in **Austria, Belgium, France, Luxembourg and Netherlands.** The very low rates in some other countries may be due to registration and coding problems.

Answer:

Belgium

10 Transluminal coronary angioplasty (36.01/36.02/36.05)

The higher rates in males may partially be explained by the anatomical fact that in females the blood vessel's diameter is smaller than in men.
In Belgium we have an high percentage of non-residents: 2.45 % in classical hospitalization and 18.88% in day care

2.4 Topic: Coronary artery bypass graft (CABG)

Coronary artery bypass graft: Shortlist code 1100

Question:

Discharge rates for *CABG* are higher in **Belgium, Finland and Netherlands** and **Italy** than in other countries. This is not explained by lower rates for transluminal coronary angioplasty for which **Belgium** and **Netherlands** have among the highest rates as well. Only for **Finland** there seems to be a possible explanation in CABG being performed instead of transluminal coronary angioplasty. Are there other explanations?

The higher **Belgian** rates for *CABG* are reflected in all age groups when compared to **France** and **Italy (**no slide showing this**)**.

Answer:

Belgium

11 CABG (36.1)

In Belgium the proportion of non-residents, amounting to 3.86 % in classical hospitalization (1,41% higher than that of PTCA), constitutes only a partial explanation for the lack of trade-off between PTCA and CABG.
The age-distribution does not suggest (Table 1) a phenomenon of a CABG carried out at on older age after a PTCA performed at a younger age and a secondary narrowing of coronary vessels.

Table 1: Age-distribution of PTCA and CABG in Belgium, during 2006.

Age group	#PTCA	PTCA poprate	#CABG	CABG poprate
<1	5	0,04	0	
1-4	3	0,01	0	
5-9	0	0	0	
10-14	0	0	0	
15-19	5	0,01	2	
20-24	2	0	0	
25-29	14	0,02	4	0,01
30-34	53	0,08	5	0,01
35-39	212	0,28	25	0,03
40-44	708	0,87	103	0,13
45-49	1449	1,84	236	0,3
50-54	2359	3,27	496	0,69
55-59	3096	4,59	781	1,16
60-64	3297	6,21	1066	2,01
65-69	3624	7,55	1336	2,78
70-74	4259	9,28	1787	3,89
75-79	3777	9,54	1656	4,18
80-84	2244	7,8	824	2,87
85-89	705	5,67	169	1,36
90-94	86	1,72	12	0,24
≥ 95	3	0,23	0	

2.5 Topic: Carotid endarterectomy

Carotid endarterectomy: Shortlist code 1200

Question:

Highest rates for *carotid endarterectomy* are found for **Austria, Belgium, France** and **Italy**. Can definition and registration problems explain the difference to other, low rate countries? (Endovasal procedures were not to be included.) Are differences in clinical policy for the use of this somewhat controversial procedure a more probable explanation for the great country differences?

Answer:

Belgium

12 Carotid endarterectomy (38.12)

"Belgian overuse" is, as often, a plausible explanation but under-use in other countries may also occur.
The proportion of non-residents (0,85 % in classical hospitalization) cannot explain the high rate.

2.6 Topic: Transurethral prostatectomy

Transurethral prostatectomy: Shortlist code 2300

Question:

The highest discharge rates for *transurethral prostatectomy* are found for **Austria, Belgium, Denmark and France**. *Transurethral prostatectomy* is more common than *open prostatectomy* in all countries except for **Portugal and Spain;** also a less pronounced difference in **Italy.** Could there be an underreporting of transurethral procedures in these countries?

Answer:

Belgium

23 Transurethral prostatectomy (60.2)

Transurethral prostatectomy is usually performed for BPH.
Since medical treatment (finasteride, dutaseride) is not reimbursed, patients will decide quicker (at a younger age) to have a surgical treatment.

On over coding of transurethral prostatectomy is possible. Incision or resection of bladder neck or resection of median lobe should be coded as 60.61: local excision of prostate. This code gives a less interesting financing an will often be coded as 60.2

2.7 Topic: Partial excision of mammary gland and Total mastectomy

Partial excision of mammary gland : Shortlist code 2900
Total mastectomy : Shortlist code 3000

Question:

Rates for *partial excision of mammary gland* are highest in **Austria, Belgium**, **France** and **Italy**. A great proportion of these are done *as day care* in **Ireland**. Astonishingly low proportion done as day care in **France**. (No slide showing this.)
Except for **Greece** *partial excision* is much more common than *total mastectomy,* with the greatest difference between the two procedure rates in **Austria, France and Italy.**

Answer:

Belgium

29 Partial excision of mammary gland (85.20/85.21/85.22/85.23)

Includes wedge excision and other partial excision with or without lymph node excision, excludes biopsy and breast reduction surgery. When a suspect lesion on mammography is difficult to palpate as a lump or the suspected area on X-ray is bigger than the palpable mass, this area will be marked by the radiologist with a harpoon, followed immediately by a wedge excision in the OR.

Before 2000 we already had a screening program, where women between 50 and 69yrs of age, were invited for check up for breast carcinoma, which is fully reimbursed.

0,6% of the procedures are performed on non-residents.

Greece

Explanation from Greece: We face problems to distinguish partial excisions from total mastectomies, as we don't use yet the ICD-CM.

3. Importance of age structure

3.1 Topic: Discectomy

Total Discectomy: Shortlist code 3000

Question:

Belgium has highest rate for *discectomy* and **Ireland**, **Spain** and **Poland** have relatively low rates (no slide showing this). Have there been problems in defining the procedure?
Belgium and Denmark are the two countries with the highest discharge rate for *discectomy* but the age distribution of the patients obviously differ. Are there known differences in the clinical indications for discectomy?

Answer:

Belgium

3 Discectomy (80.50/80.51/80.59)

Are there known differences in the clinical indications for discectomy?
Indication:

- *Discus hernia with neurological complications. Using the ICD-9-CM coding rules, makes it difficult to study the prevalence of neurologic disorders in patients undergoing discectomy. For example, when using the code 722.0: cervical/cervico-dorsal disorder without myelopathy, it is forbidden to code an accompanying neurological disorder like brachiitis or sciatica. Likewise, when coding 722.71: cervico/cervical discus disorder with myelopathy, the simultaneous coding of peripheral neurological disorders is not allowed.*
- *Cauda equina (medial hernia in the lumbar region with neurological symptoms) is considered an urgency for surgery*
- *Discus degeneration*

Lumbar discectomies are the most common.
The cervical region is the second most common location of discectomy.

6,10%of the patients undergoing a discectomy are non-residents

3.2 Topic: Cochlear Implantation

Cochlear Implantation: Shortlist code 600

Question:

Cochlear implantation is an emerging technology with low discharge rates in all countries, highest in **Belgium and Denmark**. Age-specific rates for **Denmark** show that this procedure is mainly performed in the youngest age groups, but cases are also found in the high age groups. It is of special interest to follow the future trend for this procedure and its age related pattern.

Answer:

Belgium

6 Cochlear implantation (20.96/20.97/20.98)

In Belgium new-borns are screened (Algo testing) for a hearing deficit. Also In Belgium there exists a tradition of cochlear implantation: one of the pilot teams that developed the technique of cochlear implantation was a Belgian one and Belgium was one of the first European countries where a group of ORLs was specialized in that technique.

4,67% of the patients in classical hospitalizations is non-residents.

3.3 Topic: Cholecystectomy

Cholecystectomy: Shortlist code 1900

Question:

There is a marked differences between the age specific *cholecystectomy* rates in **Denmark**; females operated at much younger age than males. (This may not be the case in other countries.) Differences between **Denmark** and **France** are found in age-specific female rates for *cholecystectomy*; females being operated at higher age in **France**. Comments?

Answer:

3.4 Topic: Repair of inguinal hernia

Repair of inguinal hernia: Shortlist code 2000

Question:

Given the great difference in discharge rates for *repair of inguinal hernia* between **Ireland** and **Italy,** it is of interest to compare the age-specific rates as well. Can the overall difference be explained by different age composition (with younger population in Ireland)? There is no such explanation, however, since the same relationship between the two countries is found for all age groups.

Answer:

3.5 Topic: Prostatectomy

Prostatectomy: Shortlist code 2200 and 2300

Question:

As could be expected open *prostatectomy* is performed at younger age *and transurethral* in higher age groups as shown here for **France**.

Answer:

Belgium

22 Open prostatectomy (60.3/60.4/60.5/60.6)

The ICD-9-CM mapping doesn't allow differentiating procedures performed according to the diagnosis of BPH (Benign Prostatic Hypertrophy) or carcinoma.
The prevalence of carcinoma is influenced by the population's age structure and racial composition.
Belgium also has a history of sensitizing the population for early check ups for prostate cancer. As a result, more cases of prostate cancer may be detected at an early stage when it is still operable. During these check ups attention is also paid to detection of BPH, because late treatment of innocent BPH can maintain the irritative symptoms, even after treatment.
We expect more transurethral prostatectomies at a younger age for the treatment of BPH. An open surgical procedure for BPH is indicated for larger adenoma, what we expect at a higher age.
Also surgical treatment of curable prostate carcinoma requires an open procedure. The incidence of prostate carcinoma grows with higher age. Optimalisation of techniques has moved the age limit for performing a radical prostatectomy to a higher age.

3.6 Topic: Arthroscopic excision of meniscus of knee

Arthroscopic excision of meniscus of knee: Shortlist code 2600

Question:

There were problems with registration and coding of *arthroscopic excision of meniscus of knee.* It is a procedure with differences in age-specific discharge rates between males and females, reflecting sports injuries among younger males and arthrosis among older women, as shown here for **Belgium**.

Answer:

3.7 Topic: Hip replacement

Hip replacement: Shortlist code 2700

Question:

Low rate in **Poland** for *hip replacement* (no slide showing this). Comments?

Answer:

3.8 Topic: Total knee Replacement

Total knee replacement: Shortlist code 2800

Question:

High rate for *total knee replacement* in **Belgium** and very low rate in **Poland** (no slide showing this) Problems with definition?
As could be expected *total knee replacement* are made at younger age than *hip replacement* as shown here for **France**.

Answer:

Belgium

28 Total knee replacement (81.54)

The ICD-9-CM code 81.54: Total Knee Replacement covers a heterogenous group of procedures, including uni-, bi-, tricompartemental procedures.

2% of the procedures are performed on non-residents

3.9 Topic: Excision of mammary gland and total mastectomy

Excision of mammary gland: Shortlist code 2900
Total mastectomy: Shortlist code 3000

Question:

Also for *partial excision of mammary gland* and *total mastectomy* age-specific discharge rates differ as shown here for **France**.

Answer:

4. Procedures with registration or definition problems

4.1 Topic: Cataract surgery

Cataract surgery: Shortlist code 500

Question:

Discharge rates are very high in almost all countries for *cataract surgery*. However, there are well known problems with registration of these procedures. To what extent are the low rates for *cataract surgery* in **Ireland** and **Poland** due to underreporting due to outpatient surgery or private care?

The proportion of cataract day patients differs among countries, showing very high percentage for **Belgium, Finland, Italy and Spain**. Do the very low percentages in some other countries mainly reflect registration problems or real differences in how cataract surgery is handled?

The proportion of *cataract surgery* performed as day care differs by age as shown here for **France** with lower percentages in younger and older age groups. There are differences in age-specific discharge rates for **Denmark and France** with relatively more cataracts operated on in higher age groups in Denmark. How can this be understood?

Answer:

Belgium

5 Cataract surgery (13.1/13.2/13.3/13.4/13.5/13.6/13.7/13.8)

Belgium has not only high proportion of cataract day patients but a considerable amount of cataract interventions are performed in an ambulatory setting and escape our registration.
The financing system encourages hospitals to treat cataract in a one-day setting. When a patient is hospitalized during 3 days for the treatment of a primary cataract, the hospital is paid as if it was a one-day case.
The intervention is considered as low risk, not necessitating a classical hospital stay unless there is a diagnosis of a secondary cataract.
When a cataract procedure is performed on an in-hospital patient one may assume it concerns a procedure carried out for a secondary cataract or performed during a hospitalization for other causes

4.2 Topic: Diagnostic Bronchoscopy

Diagnostic Bronchoscopy: Shortlist code 900

Question:

There are high rates for *diagnostic bronchoscopy* in **Belgium and France** in relation to other countries. Are there known differences in clinical policy? Do registration problems explain low rates?
High proportion of *bronchoscopy* as day care in **Finland, France, Ireland and Netherlands** but low proportions in other countries. Any comments?

Belgium and **France** have the same overall rate for *bronchoscopy* but the age-specific rates differ, showing higher rates for the very old Belgians. Comments?

Answer:

Belgium

9 Diagnostic bronchoscopy with or without biopsy (33.21/33.22/33.22/33.23/33.24/33.27)

For the age group between 20 – 44 years we note a lower population rate for bronchoscopy in Belgium than in France.
From the age of 80 years and older we see a higher population rate in Belgium than in France.
Belgium doesn't have a policy that discourages invasive diagnostics and procedures in the elderly.

Non-residents: 1,23% in classical hospitalization and 1,01% in day care setting.

4.3 Topic: Colonoscopies

Colonoscopies: Shortlist code 1600

Question:

There are well known problems with underreporting of *colonoscopies* which may be done on an outpatient basis and as day care. Does this explain the big differences among countries, e.g. **France** versus **Finland, Italy and Spain**?

In **Belgium, Finland, France, Ireland and Netherlands** *colonoscopies* are done as day care to a great extent (and with less underreporting?)

In **France** *colonoscopies* are performed more frequently in younger age groups than in **Belgium** and **Denmark**.

Answer:

Belgium

16 Colonoscopy with or without biopsy (45.7/45.8)

In Belgium colonoscopy is considered a one-day procedure. Moreover, a lot of these procedures are performed in an ambulatory setting and thus escape from our registration. Colonoscopy is probably more often performed in an ambulatory setting for younger patients.
Since 10 years physicians try to sensitize the population to have at least 1 colonoscopy once/10years for patients older than 50 years or to have a screening every 5 years when there is a family history of colorectal carcinoma.

4.4 Topic: Infrarenal aortic aneurysm repair

Infrarenal aorticaneurysm repair: Shortlist code 1300

Question:

There are some difficulties in defining *infrarenal aortic aneurysm repair* consistently, so part of country differences may be due to this. There are high rates for **Denmark, France, Italy** and **Netherlands**. However, indication for operation is said to vary among vascular surgeons.
High rates in **Denmark** may be due to start of population screening of males for aortic aneurysm. This may be reflected in the fact that Danish patients are operated at a lower age.

Answer:

Belgium

13 Infrarenal aortic aneurysm repair (38.44/39.71/39.74)

Using the ICD-9-CM classification we were not able to define infrarenal aortic aneurysm repair nadequately

4.5 Topic: Femoropopliteal bypass

Femoropopliteal bypass: Shortlist code 1400

Question:

There are differences in discharge rates for *femoropopliteal bypass* for which definition and coding problems have also been reported. High rates are found for **Belgium, Czech Rep. and Luxembourg.** Definition problems in these or other countries?

Answer:

Belgium

14 Femoropopliteal bypass (39.29)

Belgium uses the ICD-9-CM classification for coding diagnoses and procedures. In the ICD-9-CM there isn't a specific code for femeropopliteal bypass, which makes an exact mapping impossible. The code 39.29 stands for other (peripheral) vascular shunt or bypass and therefore lacks specificity for femeropopliteal bypass.

0,9% of these procedures are performed on non-residents.

Czech Republic

Mapping is not perfect for the Czech Republic – the data covers also aneurysm of peripheral arteries and resection of A-V malformation.

5. Gender issues

5.1 Topic: Biological differences

Question:

Most of the sex differences we have seen are due to epidemiological (biological) sex differences such as higher female population rates for thyroidectomy, cholecystectomy, mastectomy and higher male rates for pulmectomy, CABG (?), inguinal hernia repair.
But are there gender differences, i.e. sex differences that cannot be understood as biological differences?

Answer:

5.2 Topic: Kidney transplantation

Kidney transplantation: Shortlist code 2100

Question:

In all countries except Luxembourg and Slovenia (both with small populations) there are higher discharge rates for males than for females for *kidney transplantation*. We don't have valid information of the prevalence on chronic renal failure (end-stage renal disease) at hand for the two sexes, however.

Answer:

5.3 Topic: Appendectomies

Appendectomies: Shortlist code 1800

Question:

Both for *cholecystectomies and appendectomies* there are consistent sex differences with higher proportions of laparoscopic operations among females than males. Could this be interpreted as a gender based selection of operation methods? There are age-specific sex differences in operation method, but no greater sex differences in younger age groups as would be expected if cosmetic reason was an important factor.

Answer:

5.4 Topic: Cholecystectomies

Cholecystectomies: Shortlist code 1900

Question:

Both for *cholecystectomies and appendectomies* there are consistent sex differences with higher proportions of laparoscopic operations among females than males. Could this be interpreted as a gender based selection of operation methods? There are age-specific sex differences in operation method, but no greater sex differences in younger age groups as would be expected if cosmetic reason was an important factor.

Answer:

5.5 Topic: Transluminal coronary angioplasty

Transluminal coronary angioplasty: Shortlist code 1000

Question:

The great sex differences in discharge rates for *transluminal coronary angioplasty* is mainly reflecting well known morbidity differences between males and females. In several countries there are studies, however, indicating that the health services are less active in handling coronary heart disease among women than among men.

Answer:

6. Age breakdown important for length of stay comparisons

Length of stay is related to age and comparisons of average length of stay have to take the age structure of populations and patients into account.

6.1 Topic: Subdural haematoma and intracerebral haemorrhage

Subdural haematoma and intracerebral haemorrhage: Shortlist code 200

Question:

Overall average length of stay for evacuation of *subdural haematoma end intracerebral haemorrhage* differs not so much between **Austria and Denmark** but when analyzed by age clear difference is shown with longer stays mainly among elderly Austrian inpatients.

Answer:

6.2 Topic: Thyroidectomy

Thyroidectomy: Shortlist code 400

Question:

Average length of stay for *thyroidectom*y is longer in **France** than in **Denmark** for all age groups but the differences are greatest in the oldest age groups.

Answer:

6.3 Topic: Coronary artery bypass graft (CABG)

Coronary artery bypass graft: Shortlist code 1100

Question:

For *coronary artery bypass graft* average length of stay is longer in all age groups in **France** compared to **Netherlands**.

Answer:

6.4 Topic: Cholecystectomies

Cholecystectomies: Shortlist code 1900

Question:

There are differences in length of stay between males and females. An example is the longer stays for males than females after *cholecystectomy*. In **France** this is found in all age groups.
The difference in average length of stay for female cholecystectomy patients are mainly found in the oldest age groups, where **French** women stay longer than **Danish**.

Answer:

6.5 Topic: Hip Replacement

Hip Replacement: Shortlist code 2700

Question:

Average length of stay for *hip replacement* increases with age and there are no great differences between males and females as shown here for **France**. The longer stay in **France** than in **Denmark** is a consistent finding in all age groups.

Answer: