

Survey on incidence of surgical procedures and percentage of ambulatory surgery in 6 European countries

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Abstract

Aim: To continue the biennial survey of surgical statistics in member countries of the International Association for Ambulatory Surgery (IAAS).

Methods: All member countries of IAAS were asked to submit national statistics on the state of ambulatory surgery in their country in 2011 with respect to a basket of 37 procedures (the IAAS basket). The new definitions of the Organisation for Economic Co-operation and Development OECD were applied ie: assignment to “inpatient”, “daycase” and “outpatient”.

Results: Only 6 countries (Denmark, England, Finland, Germany, Scotland and Sweden) met the criteria of the new OECD definitions for their statistics in 2011. The most interesting results were seen

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when comparing the indicator procedures with a) the incidence of operations/procedures as frequency ratio per 100.000 of population and b) the percentage of ambulatory surgery. The frequency ratio was higher in Germany than in the other countries examined and the percentage of ambulatory surgery lower.

Conclusion: The new definitions and rules of OECD allow a comparison of surgical activities between countries. The most valuable indices in demonstrating differences in health management appeared to be the parameters “frequency ratio” and “percentage of ambulatory surgery”. It is recommended that case-based statistics using OECD definitions should become the international norm.

Introduction

The IAAS has collected data on the progress of ambulatory surgery since 1998 [1]. The primary reason for this action was to monitor progress in ambulatory surgery as percentage of overall surgical procedures in different countries for 20–37 index procedures.

Over the last few years, several questions regarding these data have emerged:

- Is the national data complete and who collects the figures?
- Does the data cover 100 % of the population and what proportion of the population has private insurance or is not insured at all?
- Are data available for privately insured patients, for cosmetic surgery, and for worker's accident insurance as it exists in Germany?
- Are statistics based upon procedures or patients?
- Are both public and private clinics included?

Recently the OECD switched to data based only upon patients discharged from hospitals with respect to the incidence of a procedure per 100.000 population, i.e. the frequency ratio (OECD. StatExtracts [2], in press). In addition new definitions concerning the unit where surgery is performed were used. These new rules and definitions were employed in a report of OECD to the German Government (2013) [3].

Methods

The IAAS survey 2011 was conducted in the same manner as before [1], collecting data for 37 procedures, the so-called basket of ambulatory procedures.

In addition the representatives of 18 member countries were asked to judge completeness of data, internet address of statistical source, whether statistics are covering privately insured people, cosmetic surgery and procedures in relation to industrial accidents.

The terms ambulatory and inpatient surgery were used according to the new definitions of OECD as “inpatient”, “day-surgery” (hospital admitted) and “outpatient” (for other ambulatory surgery) (Fig. 1).

Results

Out of 18 member countries 10 responded and 6 countries could provide statistical data of 2011 based upon cases (Table 1). These were Denmark, England, Finland, Germany, Scotland and Sweden.

All available data on 37 procedures were collected in a “long list” (Table 2). These data showed the following peculiarities:

1. England shows a subcategory called “emergency” which has to be added to the inpatient numbers.
2. Germany could provide data from 2 different insurance systems:
 - a) DRG statistic from hospital inpatient treatment, with hourly cases listed as day cases
 - b) EBM statistics from the Association of Statutory Health Insurance (SHI) Physicians (Kassenärztliche

Fig. 1: OECD Definitions 2012. Questionnaire for surgical statistics.

Surgical procedures (shortlist)

Surgical procedures are medical interventions involving an incision with instruments usually performed in an operating theatre and normally involving anaesthesia and/or respiratory assistance. Surgical procedures can be performed either as inpatient cases, day cases or, in certain instances, as outpatient cases. Procedures performed on an inpatient case and day case should be reported for all the procedures on the shortlist. For two procedures, the number of outpatient cases in hospitals and outside hospitals should also be reported where possible.

Notes:

- The method to count procedures should be based on a count of the number of patients who have received a given procedure or on a count of only one code per procedure category for each patient, in order to avoid double-counting procedures for which more than one code may be used in certain national classification systems. (For example, if a percutaneous coronary intervention with a coronary stenting is recorded as two separate codes, it should be reported as only one patient/procedure. Another example: if a cataract surgery is performed on the two eyes, only one patient/procedure should be counted.)

- The mapping with ICD-9-CM codes is available for information at the following link:

http://stats.oecd.org/HEALTH_QUESTIONNAIRE/Surgical_procedures/JQNMHC_MAPPING_ICD-9-CM.pdf

a) **Inpatient cases:** See definition of **inpatient cases**.

b) **Day cases:** See definition of **day cases**.

c) **Outpatient cases (collected only for cataract surgery and tonsillectomy):**

Procedures on patients who are not formally admitted in hospital or in any other health care facility. Included are procedures performed in outpatient departments in hospitals or in emergency departments and procedures performed outside hospitals (ambulatory sector). Excluded are inpatient cases and day cases.

Inpatient cases

An **inpatient discharge** is the release of a patient who was formally admitted into a hospital for treatment and/or care and who stayed for a minimum of one night.

Inclusion

- Emergency cases and urgent admissions when they resulted in an overnight stay and formal admission
- Patients admitted as day-care patients but who have been retained overnight due to complication

Exclusion

- Day cases
- Outpatient cases (including emergency department visits)"

Day cases

A day-care discharge is the release of a patient who was formally admitted in a hospital for receiving planned medical and paramedical services, and who was discharged on the same day.

Inclusion

- Non-admitted patients who were subsequently admitted for day-care

Exclusion

- Inpatient cases
- Outpatient cases (including emergency department visits)
- Patients admitted as day-care patients but who have been retained overnight due to complication

Bundesvereinigung) responsible for the ambulatory health sector.

- c) For Germany no data was available for: privately insured outpatient cases (about 10 % of the population), for patients treated in hospitals for ambulatory procedures according to § 115 b SGBV (KG 2 statistics), for cosmetic surgery and for patients treated in specialized hospitals for work accidents which are insured in the Statutory Accident Insurance (see Country Report Germany 2013 [4]).

To simplify the survey this "long list" was shortened. Only the most frequent procedures were collected; these were 16 procedures with a frequency of more than 97.000 procedures per year in one country (Germany). In addition the percentage of ambulatory surgery (% AS) and the incidence (frequency ratio) were extracted, and the lowest rate of ambulatory surgery and the highest incidence per 100.000 population were marked yellow and red (Table 3).

The results show, that with the exception of one procedure (Dupuytren's contracture) Germany always has the lowest rates of ambulatory surgery within these 6 countries. With few exceptions

Table 1 Statistics available from six European countries.
All representatives of 18 members countries were asked to participate.

	Hospital inpatient cases	Hospital day cases	Outpatient cases	Statistics – procedure-based	Statistics – case-based
England	+	+	–	–	+
Finland	+	+	–	–	+
Germany	+	+	+	–	+
Scotland	+	+	–	–	+
Sweden	+	+	+?	–	+
Denmark	+	+	+		+
Belgium (year 2012)	no numbers	no numbers		+?	+?
Spain	+	+		+	–
Australia	+	no numbers	?	+	?
India	no numbers	no numbers			

Table 2 Comparison of selected surgical procedures based upon cases according to OECD rules.¹

	England	Finland	Germany	Scotland	Sweden	Denmark
Population in million (m)	53.01	5.43	82.03	5.25	9.51	5.60
Cataract						
Inpatient	5.494	365	² 131.255	1.396	1.587	471
special inpatient	³ 668		⁴ 24.010			
Total inpatient	6162	365	155.265	1.396	1.587	471
Day cases	330.873	42.492	⁵ 5.797	33.308	76.750	44.284
Outpatient			601.912			
Total AS ⁶	330.873	42.492	607.709	33.308	76.750	44284
Total	337.035	42.857	762.974	34.704	78.337	44.755
% AS ⁷	98 %	99 %	80 %	96 %	98 %	99 %
Incidence FR ⁸	636	789	930	661	824	813
Squint						
Inpatient	627	91	4.765	49	181	248
Special inpatient	11		140			
Total inpatient	638	91	4.905	49	181	248
Day cases	10.471	768	45	359	1.850	1.704
Outpatient			288			
Total AS	10.471	768	333	359	1.850	1.704
Total	11.109	859	5.238	408	2.031	1.952
% AS	94 %	89 %	6 %	88 %	91 %	87 %
Incidence FR	21	16	6	8	21	3

¹ Thanks to Statistisches Bundesamt/Federal Statistical Office, Germany, for providing OECD rules

² DRG statistics of hospitals (Germany)

³ emergencies (England)

⁴ EBM statistics for „Belegkrankenhäuser“ (Germany)

⁵ hourly cases of DRG statistics of hospitals. Day cases of KG 2 statistics (§ 115b SGB V) not available

⁶ AS = ambulatory surgery: day cases + outpatient cases (specialized doctor's offices, Day Surgery Centers)

⁷ Percentage of ambulatory surgery (AS) to total cases

⁸ Incidence = frequency ratio (FR): cases per 100.000 population

Table 3 Comparison of selected surgical procedures based upon cases according to OECD rules.¹

Most frequent procedures (>97.000 cases per year)

Marked **yellow**: lowest rate of ambulatory surgery (AS)

Marked **red**: Highest incidence per 100.000 population

	England	Finland	Germany	Scotland	Sweden	Denmark
Population in million (m)	53.01	5.43	82.03	5.25	9.51	5.57
Cataract: % AS ²	98 %	99 %	80 %	96 %	98 %	99 %
Incidence FR ³	636	789	930	661	824	813
Tonsillectomy: % AS	38 %	70 %	4 %	29 %	41 %	37 %
Incidence FR	86	168	201	32	81	88
Rhinoplasty: % AS	31 %	65 %	25 %	32 %	62 %	68%
Incidence FR	3	42	312	2	40	46
Surgical removal tooth% AS	95 %	90 %	65 %	97 %	95 %	95%
Incidence FR	207	39	137	95	58	43
Dilatation + curettage of uterus: % AS	88 %	69 %	53 %	91 %	75 %	95%
Incidence FR	100	45	148	115	190	161
Knee arthroscopy: % AS	83 %	83 %	24 %		86 %	95 %
Incidence FR	18	42	476		62	41
Arthroscopic meniscus % AS	84 %	94 %	51 %		96 %	97%
Incidence FR	196	223	364		140	173
Removal bone implants % AS	64 %	74 %	34 %	74 %	75 %	90 %
Incidence FR	65	90	270	54	206	259
Carpal tunnel release						95%

¹ Thanks to Statistisches Bundesamt destatis for providing OECD rules

² Percentage of ambulatory surgery AS to total cases

³ Incidence = frequency ratio FR: cases per 100.000 population

Germany also has the highest frequency ratio of procedures.

Discussion

Between 2005 and 2013 Germany had no data for outpatient procedures because of a change of the accounting settlement system (EBM) in 2004. As an example cataract operations in 2010 were listed 153.832 in OECD statistics [2]. One year later in 2011 (the present study) there are 155.265 cataract procedures as inpatient procedures plus 607.912 as day cases and outpatient cases. This demonstrates that until 2010 statistics were distorted because the whole ambulatory sector (“outpatient”) of more than 600.000 cataract procedures was neglected.

Ambulatory surgeons in Germany have tried again and again to influence the National Association of SHI-Accredited Physicians (KBV) to provide data on operations and procedures, without success. It was only after the IAAS officially asked the German Health Ministry to provide information that the data was received regarding the 37 basket operations. these data, IAAS received data on 37 procedures.

This study shows that two parameters seem to be invaluable in comparing health care systems:

1. Incidence of operations/procedures as frequency ratio per 100.000 of population and
2. percentage of ambulatory surgery (% AS) of indicator procedures.

It could be shown that in Germany most procedures are performed more often per 100.000 population than in the 5 countries compared. This coincides with the recent report of OECD on hospital management in Germany (OECD [3]). The reason for this has to be examined by national experts; the German Minister of Health Bahr has already initiated correspondent inquiries.

Secondly, the comparatively low rate of ambulatory surgery in Germany is the result of economics: In Germany for the same procedure the fee in the ambulatory sector paid for by the EBM insurance system is only 25 % of what is paid for in the inpatient DRG system (Vescia 2008 [5], Lemos 2012 [6]). For hospitals this means that the hospital administration gets four times as much if the patient offers some medical reason to be operated as inpatient and thus releases a full DRG.

The strict division of the ambulatory and inpatient sector in Germany is a peculiarity of the system which nowadays lacks justification.

In contrast to the situation in Germany the countries of England,

Finland, Scotland, Sweden and Denmark seem to be rather uniform in the rate of ambulatory surgery and in the incidence per 100.000 population. The few anomalies require investigation and explanation by national experts. They may be partly explicable by improper coding and may not represent a systemic difference. With increased use of the new OECD rules, fewer anomalies should occur.

It should be the task of national governments to collect statistical data from the various health care organisations independently of insurance status and location of surgical treatment.

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