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Editorial

Doug McWhinnie

Welcome to 2012 and another successful year for the Journal of Ambulatory Surgery!

I joined Beverly Philip on the editorial team after the excellent Copenhagen Congress and obviously have embarked on a steep learning curve as I have taken over as surgical Editor-in-Chief from our good friend and long-serving surgical colleague, Professor Paul Jarrett. Paul, as we all know, was President of the IAAS from 1997–99, but was also Editor of the *Journal of Ambulatory Surgery* from its inception in 1992 until 2011. I believe all of us in the IAAS are indebted to Paul for his guidance and achievements and supporting the Journal for an incredible 19 years!

He was also the first President (Chairman) of the British Association of Day Surgery in 1990, an organisation I joined shortly thereafter. After serving on Council and as Secretary, I followed Paul's footsteps as President of BADS from 2008–10, before seeking higher office in the IAAS! As a young and impressionable surgeon, I embarked on my training in Glasgow and completed it in Oxford in 1993. I currently practice in Milton Keynes where I am Surgical Director and Ambulatory Lead.

In 2012, the *Journal* will continue to be web-based with copy sent to every IAAS Member four times per year. More than ever, the Journal is a means of communication among our world-wide membership. All too often, medical publications focus only on success with negative studies confined to the waste bin. We believe that both negative and positive studies require dissemination and contributions can tell of successes, frustrations and even disappointments. Over the years we have all experienced a mixture of these and we can all learn from the experience of others. It is disheartening to see ambulatory failure when communication has failed to disseminate past experience.

It is clear to us all that many IAAS members are innovators in Day Surgery but are not sharing their experience. Feel free to write to us and tell us what you are doing. We can help and assist you construct papers or short articles or even observations of practice. Innovation need not be absolute. How have you made it happen in your country, with your resources and with your constraints? What about an overview of ambulatory surgery in your part of the world.? What particular problems have you overcome and what makes your ambulatory challenges unique? Let's hear about it loud and clear . . . papers, short reports, letters or comment!

2012 will be a significant year. The credit crunch has left us all – governments, institutions and individuals – seeking new and novel solutions to reduce the cost of healthcare. Accountants can only balance budget deficits in healthcare by reducing the length of stay ,compromising the quality of care or restricting medical innovation. The latter two concepts are abhorrent to us. We can deliver a reduction in length of stay by converting inpatient surgery to 23-hour stay to 12-hour day care and finally to the outpatients department while offering significant healthcare savings but maintaining the quality of patient care. All it requires is resilience and teamwork! Ambulatory surgery is now a pivotal area of most health care economies. The credit crunch is not a disaster but an opportunity for us all in ambulatory surgery.

Doug McWhinnie
Surgical Editor-in-Chief
Journal of Ambulatory Surgery

Day-Case Shoulder Surgery: Anesthetic Challenges

Kathryn E. McGoldrick

Abstract

The purpose of this review article is to summarize our current knowledge concerning the anesthetic management of patients having shoulder surgery in the ambulatory setting. Factors influencing anesthetic selection technique and potential complications associated with interscalene block, the beach chair position, and continuous perineural catheters are underscored. Because many of the potential complications of shoulder surgery can be devastating, a comprehensive understanding of possible pitfalls and prevention strategies is essential.

Keywords: shoulder surgery, day-case surgery, interscalene block, cerebral perfusion.

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Introduction

Shoulder surgery has a notorious reputation for being associated with substantial postoperative pain. Hence, the use of interscalene block (ISB), in conjunction with continuous perineural catheters or other appropriate methods of postoperative analgesia, has enabled certain shoulder procedures – not merely shoulder arthroscopy – to be conducted on an outpatient basis. Many open operations, such as rotator cuff repair, Bankart procedures, and even total shoulder arthroplasty, can be performed as day-case procedures when circumstances are favorable.

In 1884, the gifted surgeon William S. Halsted of Johns Hopkins Medical School performed the first documented case of brachial plexus anesthesia under direct vision when he injected the exposed roots of the brachial plexus in the supraclavicular region with cocaine. It was not until 1911 that Hirschel performed the first percutaneous approach when he injected local anesthetic into the axillary sheath of the brachial plexus. In 1919, Mully developed a percutaneous interscalene approach to the brachial plexus that preceded by several decades the modern interscalene approach of Winnie, who used the level of the sixth cervical transverse process as the reference point for needle insertion. The ISB is ideal for proximal upper extremity procedures, such as shoulder surgery and procedures involving the upper to mid-humerus, but considerably less reliable for procedures involving the elbow, radius, ulna, wrist, and hand. Most patients have easily identifiable landmarks in the interscalene region, and the use of a nerve stimulator and/or ultrasound can facilitate successful execution of the block.

Selection of Anesthetic Technique

Although upper extremity surgical procedures are generally well suited to regional anesthetic techniques, some important caveats are deserving of mention. Some pre-existing neurological deficit may be present, and the operative site may be adjacent to neural structures, as occurs with total shoulder arthroplasty or fractures of the proximal humerus. Hence, damage to the axillary nerve and brachial plexus are not uncommon under these circumstances. Clearly, the decision to perform regional anesthesia in a patient with pre-existing neurologic deficits or who is at risk for perioperative neuropraxia should be made on an individual basis. A thoughtful, comprehensive discussion with the surgeon and patient concerning the risks, benefits, and alternatives is mandatory, and any pre-existing neurologic deficit should be meticulously documented in the medical record.

Surgery to the shoulder may be performed under regional or general anesthesia. With careful patient selection and positioning, ISB alone can provide excellent operating conditions and postoperative analgesia. Nonetheless, general anesthesia or a combination of regional and general anesthesia is frequently selected because of limited access to the patient's airway during surgery and concerns about patient comfort if the operation is expected to be of protracted duration. ISB should be approached with great caution in patients with pre-existing brachial plexopathy owing to the possibility of perioperative exacerbation of the neurologic condition. In addition, the ipsilateral diaphragmatic paresis that accompanies ISB [1] will not be well tolerated in patients with severe preoperative pulmonary compromise.

Interscalene Blockade

A carefully executed ISB is typically safe and highly effective. Auroy, in his comprehensive review of major complications associated with regional anesthesia in France, reported no instances of cardiac arrest, respiratory failure, seizures, or death in a series of 3459 ISBs. [2] Hadzic and colleagues [3] convincingly demonstrated that patients who received ISB for outpatient rotator cuff surgery bypassed the postanesthesia care unit more frequently, reported less pain, ambulated earlier, and were ready for home discharge sooner (123 vs 286 minutes) than a demographically comparable group who received fast-track general anesthesia. In addition, there were no unplanned admissions in the ISB group, but 16% of the patients who received general anesthesia required overnight admission. Not surprisingly, the ISB patients also reported greater satisfaction with their anesthetic care. Yet, for all the advantages of ISB, this technique can be associated with serious complications. These include, but are not limited to, the development of pneumothorax, Horner's syndrome, recurrent laryngeal nerve paralysis, subarachnoid/epidural injection, vertebral artery injection with "locked-in" syndrome, [4] motor nerve root injection, and cervical spinal cord injection. Although the incidence of ipsilateral phrenic nerve block in conjunction with ISB is virtually

100%, the clinical importance of this reality is generally negligible, unless the patient has severe chronic obstructive pulmonary disease, is morbidly obese, or is in an advanced stage of pregnancy.

"Locked-in" syndrome describes a state in which selective supranuclear motor deefferentiation in the brainstem produces paralysis of all four extremities and lower cranial nerves without interfering with consciousness. This reversible form of "locked-in" syndrome is thought to result from an ISB that, instead of being directed medially, dorsally, and caudally, was misdirected too far medially, producing injection into the vertebral artery. The motor paralysis prevents the subjects from communicating with words or with body movement. Vertical eye movements and blinking are the only motions that the patient can perform. The combination of tetraplegia and aphonia may cause the anesthetist to assume that the patient is unconscious when such is not the case. With proper support that includes oxygenation, ventilation, vasopressors, and oral reassurance of the patient, this condition will resolve completely when the block recedes.

Benumof has reported four cases of cervical cord damage when ISB was performed on patients under general anesthesia.[5] All four patients developed total spinal anesthesia, with apnea and dilated pupils, and subsequently sustained extensive permanent loss of bilateral cervical cord function. Magnetic resonance imaging documented syrinx formation in the cervical cord at a level consistent with the clinical presentation. Benumof emphasized that administering general anesthesia before performing ISB is contraindicated. It is critically important that the patient be aware and cooperative in order to ensure ongoing communication between the anesthesiologist and the patient to prevent dangerous misplacement of the needle. The neck is really "tiger territory," containing a number of vital structures that can easily be in harm's way when a needle is advanced. In addition, Benumof underscored the relative proximity of the brachial plexus and cervical spinal cord to the skin, particularly in thin individuals, and recommended that ISB should be performed with needles <1.5 inches in length.[5]

Positioning Issues

Two thirds of arthroscopic and open shoulder procedures in the United States are done in the beach chair position (BCP). Compared with the lateral decubitus alternative, the BCP offers the advantages of lack of brachial plexus strain, superb intra-articular visualization, and ease of conversion to an open approach if needed. There are, however, complications associated with the BCP. The Bejold-Jarisch reflex, for example, may be triggered by venous pooling associated with the sitting position.[6] Severe hypotension and bradycardia can ensue as a result of the venous pooling and heightened cardiac contractile state (induced by the effects of epinephrine in either the ISB solution or the local anesthetic infiltrated by the surgeon, or both). The decreased venous return to the heart stimulates receptors in the left ventricle that produce a cardiovascular depressor reflex, resulting in reflex arterial vasodilation and vagally-mediated bradycardia. Restoration of venous return, replacement of volume deficits, and an appropriate vasopressor usually remedy the hemodynamic effects of this reflex. It has been suggested that the likelihood of the Bejold-Jarish reflex occurring can be diminished by the prophylactic administration of beta blockers,[7] but there is not universal agreement about the efficacy of this approach.

Of grave concern are the cases of catastrophic neurologic outcomes that have been associated with the beach chair position.[8] Although there is academic debate about whether the cerebral circulation functions as a siphon or waterfall,[9] there is increasing consensus that the lower limit of cerebral autoregulation is questionable and may be substantially higher than the traditionally cited cerebral perfusion pressure of 50 mmHg. It is feared that the blood pressure recorded in the arm with the patient in the BCP may seriously overestimate the pressure in cerebral vessels. Hence, it is prudent to apply a mathematical correction for the hydrostatic gradient. The recommended correction is 2 mmHg for every inch of vertical displacement.10 Hence, for a small patient in the semi-recumbent position, the external auditory canal may be approximately 11 inches above the mid-point of a blood pressure cuff on the upper arm. If mean arterial pressure as measured by the cuff is 65 mmHg, the mean arterial pressure at the external auditory canal would be only 43 mmHg.

A recent study using near-infrared spectroscopy explored the incidence of cerebral oxygen desaturation events in the BCP compared with the lateral decubitus position.[11] All patients underwent shoulder arthroscopy and received standardized general anesthesia, with or without an ISB. A strict protocol required that the bispectral index be kept between 40 to 60, the end-tidal carbon dioxide tension between 30 to 34 mmHg, and the mean arterial pressure within 20% of baseline. An episode of cerebral desaturation was defined as cerebral oxygen saturation ≥20% below baseline or ≤55% for >15 seconds. Hemodynamic variables were said to be "similar" in each group. Importantly, however, the authors did not apply a hydrostatic correction for blood pressures recorded in the BCP. Not surprisingly, the cerebral oxygen saturation was lower in the BCP group during the entire intraoperative period. Moreover, there were no episodes of cerebral oxygen desaturation in the lateral decubitus group, whereas an incidence of cerebral desaturation of 80.3% was noted in the BCP patients. There was also a 7-fold higher incidence of nausea and vomiting in patients who experienced cerebral desaturation, raising the possibility that this was a manifestation of reduced cerebral perfusion. Fortunately, no obvious neurologic complications were detected despite substantial reductions in cerebral oxygenation in the BCP group.

Other Complications

Not every complication encountered with shoulder surgery is necessarily related to ISB or to the BCP. Certainly, some complications may have a surgical etiology. Inadvertent extra-articular placement of irrigation fluid, for example, can produce tracheal compression and airway obstruction. Unintentional intravascular placement of irrigation fluid can produce pulmonary edema. Pneumothorax, pneumomediastinum, subcutaneous emphysema, and fatal air embolism have been associated with shoulder procedures. As mentioned, there is a high incidence of neurologic injury related to shoulder surgery per se and the positioning required for operative exposure and manipulation.

The incidence of serious nerve injury related to ISB is extremely low. Most injuries directly attributable to needle damage cause self-limiting neuropraxias, which typically resolve in 1 to 3 months.

Finally, it should be mentioned that idiopathic brachial plexitis (also known as brachial plexus neuropathy or acute brachial radiculitis) has been identified following shoulder surgery with ISB.[12] Diverse etiologies include infection, trauma, and pregnancy. An autoimmune –mediated mechanism has been suggested, and it has also been hypothesized that surgery may activate dormant virus in the plexus tissue. The condition is characterized by intense pain, paresthesias, and a mixed motor and sensory defect with asymmetric involvement. The bilateral nature of the condition argues against a block-related etiology. Fortunately, after several months the condition improves and recovery is usually complete by one year.

What Is the Role of Ultrasound?

Regional anesthesia is both an art and a science. Advanced technology in the form of nerve stimulation and ultrasound is helping to make regional anesthesia more of a science compared with the days when the clinician had to rely solely on elicitation of paresthesias to perform peripheral nerve blocks. Many contemporary clinicians use nerve stimulation in combination with ultrasound when performing regional anesthesia. One of the first reports of the use of ultrasound in regional anesthesia was in 1989 by Ting and Sivagnanaratnam. [13] Nerve stimulation allows one to identify which nerve one is approaching (and if it is a nerve), and ultrasound allows one to see the advancing needle approach the targeted nerve. Although some investigators have reported that block placement speed [14,15] and success rates [15] with assorted peripheral nerve blocks assisted by ultrasound are improved in direct comparison with nerve stimulation alone, Liu16 reported a more equivocal picture for ISB. More than 200 adult patients having ambulatory shoulder surgery under ISB were studied and their neurologic outcomes were tracked at one week and again at four to six weeks. The use of ultrasound resulted in fewer needle passes (1 versus 3, $P<0.001$) and better motor block at 5 minutes. However, there was no difference in block performance time, block failures, patient satisfaction, and the incidence/severity of postoperative complications in the ultrasound vs. the nerve stimulation group. Consistently, however, studies are showing that ultrasound reduces the volume of local anesthetic necessary for successful ISB.[17]

Continuous Perineural Catheters

Certain procedures, such as total shoulder arthroplasty, can be extremely painful, and hospitalization may be required for adequate pain control. Interscalene perineural catheters, kept in place for up to 4 days after surgery, and attached to a ropivacaine infusion pump have enabled patients to be discharged sooner and with less pain than patients whose postoperative pain is treated with narcotics. [18] Continuous perineural catheters are not without complications, which can include catheter dislodgment, intravascular injection, and infection.[19] Patients who go home with continuous perineural catheters must be educated about potential risks associated with an insensate extremity, and they must be taught about pump function and understand the signs of local anesthetic toxicity. Further, they must have someone at home who can provide assistance and who can communicate via telephone should problems arise.

Summary

Shoulder surgery can present many challenges for the patient, the surgeon, and the anesthetist. Regional anesthesia has many advantages in this setting, but is not devoid of risk. Proper patient and procedure selection is crucial to the success of regional anesthesia. Contraindications include patient refusal, excessive anxiety, serious mental illness, coagulation abnormalities, infection at the injection site, an uncooperative surgeon, and an unskilled anesthetist. When success is elusive, the clinician should not let ego stand in the way of a prudent decision to abandon one's efforts in favor of general anesthesia.

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Meta-analysis, reviews, Consensus documents, and Guidelines; there are numerous sources aiming at supporting clinicians to provide best practice

Jan Jakobsson

Abstract

Aim: To encourage the spread of evidenced based practice applicable to ambulatory surgery.

Methods: Review of recent guidelines and consensus papers supportive to safe and efficacious ambulatory surgery and anaesthesia.

Results and conclusion: There are today numerous guidelines, recommendations and consensus papers available that are helpful for implementation of evidenced based practice. Guidelines are not absolute but needs to adopted and implemented after review and analysis. They need to be maintained and updated when new information becomes available

Keywords: Guidelines; Day case; Ambulatory surgery.

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There is a growing interest in evidence based medicine, how to provide best practice. The field of medical science is growing and it is hard for the clinical practitioner to keep up with the continuous flow of information. Meta-analysis, consensus document and guidelines are all intended to provide a composite evaluation of available information, present state of the art. The development of such a document is a huge commitment. Still many such documents have been developed, although the process is time and resource consuming. The interest in providing standardised best practice is also increasing in anaesthesia, perioperative medicine.

There are today **guidelines around preoperative assessment**, the European Society of Anaesthesiology (ESA) published in the October 2011 issue of European Journal a 38 page document, *Preoperative evaluation of the adult patient undergoing non-cardiac surgery: guidelines from the European Society of Anaesthesiology* [1]. These are general recommendations and not explicitly devoted to the patient scheduled for ambulatory surgery. Still the document should be seen as a efficient review of evidence based medicine around preoperative assessment.

There is a 9 page **US consensus paper around perioperative blood glucose** management in diabetic patients undergoing ambulatory surgery published in Anesthesia and Analgesia December 2010; *Society for Ambulatory Anesthesia Consensus Statement on Perioperative Blood Glucose Management in Diabetic Patients Undergoing Ambulatory Surgery* [2] .

There are several documents around **preoperative fasting**. The most recent published being the ESA guidelines published in European Journal of Anaesthesiology August 2011; *Perioperative fasting in adults and children: guidelines from the European Society of Anaesthesiology* [3] .

This guideline is much in line with earlier recommendations but allows to add a "sip" of milk in the preop coffee or tea; *The key recommendations are that adults and children should be encouraged to drink clear fluids up to 2 h before elective surgery (including caesarean section) and all but one member of the guidelines group consider that tea or coffee with milk added (up to about one fifth of the total volume) are still clear fluids.*

The implementation of guidelines and evidence based recommendations is not always obvious. A survey in Germany published in July 2010 [4] showed that; *Patients reported mean fasting times of 10+/-5 h for fluids and 15+/-4 h for solid food, It concludes, Despite the apparent understanding of the benefits from reduced pre-operative fasting, full implementation of the guidelines remains poor in German anaesthesiology departments.*

Also in the US guidelines supporting avoidance of standard fasting over night has been published. Already in 1999, the American Society of Anesthesiologists adopted preoperative fasting guidelines to enhance the quality and efficiency of patient care. Although these guidelines are in place, studies suggest that it is not uncommon that providers are still using the blanket statement "NPO after midnight" without regard to patient characteristics, the procedure, or the time of the procedure [5] .

There are several Cochrane systematic reviews around analgesics and the Bandolier homepage [6] provide a composite around the **management of acute pain**.

The group around Professor Henrik Kehlet has initiated the home page procedure specific pain management where the evidence around pain management for typical procedures is systematically reviewed. On the basis of a critical analysis of available studies procedure specific pain management strategies [7] are provided.

There are also explicit guidelines for the **management of postoperative nausea and vomiting** provided by SAMBA published in 2007; *Society for Ambulatory Anesthesia Guidelines for the Management of Postoperative Nausea and Vomiting* [8].

The guidelines, **guidance paper around anti-platelet agents and anti coagulants** are a couple of years old and one may argue

if it is entirely up to date [9]. It suggests that low dose aspirin should be discontinued for up to seven days prior to surgery; *Aspirin works by irreversibly inhibiting platelet cyclooxygenase. The circulating platelet pool is replaced every 7 to 10 days, so aspirin therapy should be discontinued 7 to 10 days before surgery*. A more recent review published in Anesthesia & Analgesia 2011 [10] suggest a more liberal approach suggesting avoiding stopping the administration of anti-platelet drugs; *Management of patients who are receiving antiplatelet drugs during the perioperative period requires an understanding of the underlying pathology and rationale for their administration, pharmacology and pharmacokinetics, and drug interactions. Furthermore, the risk and benefit assessment of discontinuing or continuing these drugs should be made bearing in mind the proposed surgery and its inherent risk for bleeding complications as well as decisions relating to appropriate use of general or some form of regional anesthesia. In general, the safest approach to prevent thrombosis seems to be continuation of these drugs throughout the perioperative period except where concerns about perioperative bleeding outweigh those associated with the development of thrombotic occlusion*.

The Society for Ambulatory Anaesthesia SAMBA has an active and informative webpage [11]. SAMBA also provide a link to the SAMBA clinical outcome register SCOR [12]. There are also comprehensive standard operating procedure guidelines issued by national societies such as the Australian and New Zeeland college of anaesthetists. These national guidelines may not only provide scientific advice but sets the national standard to which facilities and practices are audited against [13,14]. Also the British Association for Day Surgery provide a series of useful papers on their website [15]. A most useful simple PONV calculator is available on line .

Guidelines are however not absolute but needs to be put into perspective. They need to be seen as support but needs also to be handled and implemented on the basis of analysis. There has recently been an opposition against the guideline produced by the European Society for Anaesthesiology around propofol sedation by non-anaesthesiologists [17,18]. These guideline was based on evidence, expert opinion and was produced to high methodological standards [19]. The diverse positions among ESA members reflect the different medical practices, reimbursement policies and political leanings within individual countries. In an accompanying editorial Werner et al state; "However, whatever your view, one fact is clear. It is however of importance to acknowledge that guideline, as the name implies, offers guidance and is not composed of fast and hard rules. Within its text appears the following note: [the guideline is] 'not designed to be rigid and cannot replace clinical judgment; furthermore, the implementation may be subject to domestic regulations or local policy and should only be used with the agreement of the relevant domestic regulatory authority or local policy maker'". Thus, although we can expect that this guideline will improve patient safety in countries where non-anaesthesiologists administer sedation and analgesia, countries with anaesthesiologist-based sedation systems are not obliged to surrender their current high level of care and adopt the administration of propofol by non-anaesthesiologists [20].

The continuously expanding body of information is hard to follow. It should also be acknowledged that the information today is available in numerous presentations. There are numerous websites and alerts providing news on a regular basis. It is also easy to set up a dedicated personal search from for instance PubMed. The International Association for Ambulatory Surgery is one webpage [21] trying to provide updated links to different best practice recommendations and other guidelines for the management of patients undergoing ambulatory surgery.

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Fasting Policy: What's New?

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What should we all know about preoperative fasting?

Routinely fasting patients before elective surgery allows their stomachs to empty naturally, thereby reducing the risk of aspiration of gastric contents. However, while the removal of solids is linear and takes about six hours to complete, fluids empty exponentially and far faster [1]. Since the landmark work of Roger Maltby [2], there is abundant evidence that fluids can safely be drunk up to two hours before elective surgery without increasing the aspiration risk [1, 3–5].

Whereas the focus has previously been on minimal safe intervals, we now realise that prolonged fasting is an inappropriate way to prepare for the stress of surgery. It is therefore important to encourage patients to keep drinking until two hours before surgery in order to reduce discomfort and improve their wellbeing. This is especially important in ambulatory surgery, where a high quality recovery is paramount.

Latest European guidelines

For this reason, the European Society of Anaesthesiologists recently produced guidelines on perioperative fasting in adults and children [6]. While broadly similar to early guidelines, these include some evidence published since previous guidelines were produced, but more importantly they increase the emphasis on avoiding excessive fasting. Furthermore, these new European guidelines offer pragmatic advice on a couple of controversial topics, such as the addition of milk to hot drinks and the management of patients who continue chewing gum. The key message of the new guidelines is that "adults and children should be encouraged to drink clear fluids up to two hours before elective surgery" [6]. This recommendation applies to healthy patients, as well as to those with obesity, gastro-oesophageal reflux, diabetes and pregnant women not in labour, although there is far less evidence which is specific to the latter groups [7].

The milk controversy

Large amounts of milk curdle in the stomach, acting like a solid, but smaller quantities still behave like other liquids. Because of the limited evidence available [8] and the practical difficulty in assessing the actual volume which has been consumed, milk is usually prohibited by most fasting guidelines. However, in some societies, many patients would rather go thirsty than omit milk from their morning cup of tea or coffee. This clearly goes against the philosophy of trying to reduce fasting intervals. The guidelines group, with one exception, considered that hot drinks with added milk (up to one fifth of the total volume) should still be treated as clear fluids and can therefore be encouraged up to two hours before surgery. However, drinks made largely or predominantly from milk should be treated as solids.

The chewing gum controversy

Studies have shown that chewing gum until just before induction of anaesthesia does not cause a clinically significant increase in gastric volume [9, 10], and surgery should not be delayed for this reason. Common sense suggests the same applies to a patient found to be sucking on a single boiled sweet [6]. Taking such a pragmatic approach avoids unnecessary delays which inevitably increases anxiety and which may therefore cause greater harm to the patient.

Additional recommendations

The guidelines advise against the routine use of antacids, metoclopramide or H2 receptor antagonists before elective surgery, as there is no convincing evidence of their clinical benefit. In addition, these guidelines offer advice on oral carbohydrate loading, which is becoming popular as part of enhanced recovery protocols in short stay surgery. Commercial carbohydrate preparations rapidly leave the stomach like other clear liquids and are therefore safe up to two hours before surgery. However, despite a positive metabolic effect [7] there remains relatively little evidence of a clear clinical benefit, in terms of faster recovery, from their use. Finally the guidelines conclude by stating that "adults and children should be allowed to resume drinking as soon as they wish after elective surgery. However, fluid intake should not be insisted upon before allowing discharge from a day or ambulatory surgery facility" [6].

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Day Surgery Activities 2009

International Survey on Ambulatory Surgery conducted 2011

Claus Toftgaard

Abstract

Every second year a questionnaire is sent to the member countries of the International Association for Ambulatory Surgery (IAAS). The questionnaire asks for the number of ambulatory procedures in relation to inpatient procedures for a basket of 37 index procedures as well as for the total number of surgical procedures. The procedures are specified by their common names as well as by international coding systems. In addition to the procedure specific data the member organisations are asked to give information on the national health system and the source for the data.

The data from 2009 are compared to the former survey from 2009 with data from 2007 and data validity is discussed.

Keywords: Ambulatory Surgery, Surgical activity, basket of procedures, number of surgical procedures, percentage of day surgery.

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Introduction

Naturally IAAS has focus upon the activity in ambulatory surgery and the development in the member countries. Therefore it is mandatory to conduct surveys in order to follow the activity in the member countries.

The focus on transmitting surgery – and other medical activity – from inpatient to ambulatory setting is both economic and quality based. Therefore politicians as well as health managers and clinical professionals have an interest in following the development and get inspiration from other countries.

In IAAS we try to elucidate the health systems in the member countries in order to learn which incentives are in use and are useful for the transmission from inpatient to ambulatory.

IAAS surveys have been conducted since 1994 [1,2,3] beginning with 20 procedures and during the last ten years 37 procedures.

Method

A questionnaire regarding the national surgical data were sent in spring 2011 to contact persons in each member country (Fig. 1). The questions consisted of general information about the data – data source and coding system – and national data on surgical activity, total number of procedures, emergency and planned procedures and day surgery procedures. In the general part was also asked for information regarding organisation, reimbursement and opinion on the development in each country.

The specific part includes a basket of 37 surgical procedures (Fig. 2). The procedures are defined by the common used names by surgeons, by ICD9CM codes, and by NCSP codes (used by the Scandinavian countries). For each procedure was asked for number of inpatient cases and for number of ambulatory cases.

In each member country it is up to the contact person to find the national data and secure the best possible validity.

The basket of procedures were chosen about ten years ago according to two criteria: Either procedures that are common to be undertaken as day cases or procedures that are at the cutting edge to show the most recent development of the technical possibilities. This is now the third survey with these 37 procedures.

The procedures are within the different surgical specialties: Eye, ENT, Gynaecology, Orthopaedic surgery, General surgery, Plastic surgery, Urology, and Vascular surgery (Fig. 2).

Results

13 countries and one region answered the survey. The actual percentage of day surgery cases for each procedure is shown for the contributing countries in Tables 1–5 with the results from the preceding questionnaire from 2009 in brackets. Where there are figures that are extraordinary surprising they are marked with an asterix. No effort has been done to clarify these figures in this survey.

In Table 1 are gathered eye and ENT surgery, in Table 2 gynaecology, in Table 3 orthopaedic surgery, in Table 4 general surgery, and in Table 5 urology, plastic, and vascular surgery.

In addition to those member states representatives who have answered the actual questions the results from US Medicare and Hong Kong from the recent questionnaire from 2009 are shown. Unfortunately these members have not given any feed back to the actual survey.

The national data for ambulatory surgery as percentage of all surgery, of planned surgery, and of the basket is seen in Table 6.

Here it can be seen that the German member has given a few general data even if he could not get the procedure specific data. From Australia they did not succeed in getting any data, even if they gave the general data in the 2009 survey.

In Table 7 are gathered the specific additional information from each country together with the names of the contributors.

The more personal remarks from the contributors were:

Denmark: A growing private sector is not reflected in the data. They have at least as high a percentage of day surgery.

England: There have been several key initiatives over the years to improve the figures; financial necessity is now driving the change.

France: Barriers are surgeons, economics, facility design, information, and education.

Germany: Reimbursement problems.

Hungary: Problems are: Lack of appropriate physical structures, grey market, and lack of economic funds.

Netherlands: An important issue is safety and inspection of facilities. Research shows decreasing mortality and morbidity.

Norway: High percentage due to financial incentives.

Portugal: Government policy and strategic proposals from National Committee for Development of Day Surgery has improved the day surgery activity.

Scotland: Same as for England.

Spain: We need to develop more free standing units.

Sweden: Problems with data from private facilities.

Discussion

Data collection from many countries is very difficult. It is dependent on dedicated professionals having interest in the field more than on a systematic follow up from the national or regional authorities. Therefore the data must be considered "the best possible" in many countries not having a national database covering all health activities. Such a national database has been implemented in Denmark since 1977 and covering all hospital based activity since mid ninety-nine's and is very valuable for statistical purpose [4]. The other Nordic countries have a similar structure.

The most valid result in this survey is the development within a country, where data collected from the same source for consecutive years give a reliable picture of the development.

When analyzing the data it seems that the most general conclusions are:

- Almost all countries still have an increase in the share of ambulatory surgery of the basket
- The share of total and planned operations depends on the organisation within the country
- There are even significant differences within a country
- Countries that had a low volume of ambulatory surgery (e.g. Portugal) have seen a remarkable increase – a result of the comparison between countries?
- The increase is mainly seen among the common procedures and not at "the cutting edge"
- There is still a large potential in many countries
- The organisation: Public/private has an important impact on the share of ambulatory surgery
- The reimbursement systems are referred to as important for the move from stationary to ambulatory surgery

Based on the experience with now almost 15 years of surveys conducted in setup of IAAS through contact persons in the member countries, I do believe that the process needs a revitalisation. I think that the following aspects should be taken into consideration:

- There is a need for a revision of the basket so that it better reflects the situation in the member countries.
- There is a mandatory need for definition and data collection within the countries – an EU or OECD task? Uniform data definitions are necessary – e.g. definitions used by IAAS
- There is a need for more systemized collection of data from the countries – in cooperation with EU or OECD?
- There are needs for national strategies for ambulatory surgery progress

There is no doubt that the present data collection from interested professionals within the member countries has been very valuable. In the period where this has been performed there has been substantially increase in the activity and of the awareness – also among politicians and other decision makers. Now there is a need to institutionalize the survey in a "super national" setup – e.g. EU or OECD.

Conclusion

It is of importance to follow the development of day surgery activity in the member countries of the IAAS and even in other countries. The short stay surgery is often a high quality of patient care and the utilisation of the sparse resources for health service indicates that the most cost/effective set of treating the patients should be chosen.

This survey shows that there is still room for improvement in many countries but also that a lot has happened since the latest survey two years ago.

The survey is an important tool for decision makers but it now needs to be professionalized in a setup in for instance EU or OECD.

This needs a decision in the high political level in Europe or worldwide.

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Figure 1 Questionnaire

IAAS Survey on Ambulatory Surgery in the World 2011

Name of contributor:

Country or region:

Contact address:

Data source:

Completeness of data:

Total number of surgical procedures in your country/region:

Total number of planned surgical procedures in your country/region:

Total number of emergency surgical procedures in your country/region:

Total number of day surgery procedures in your country/region:

How is the day surgery organised in your country/region:

How is the day surgery reimbursed in your country/region:

Your coding System:

In your opinion, what is the reason why your country/region is doing well / not doing very well in comparison with other countries?:

Figure 2 Datasheet

Name of Procedure	ICD9CM Coding	NCSP Coding	Number of ambulatory cases	Number of inpatient cases
Cataract	13.1 – 13.7	CJB – CJE		
Squint	15.0 – 15.9	CEB – CEW		
Myringotomy with tube insertion	20.01	DCA 20		
Tonsillectomy	28.2 – 28.3	EMB 10 – 20		
Rhinoplasty	21.8	DJ, DL		
Broncho-Mediastinoscopy	33.22 – 33.24, 34.22	UGC, GEA		
Surgical removal of tooth	23.1	EBA 10		
Endoscopic female sterilisation	66.2	LGA		
Legal abortion	69.51, 69.01	LCH00, LCH03		
Dilatation and curettage of uterus	69.02, 69.09	LDA00, LDA10, LCA10, LCA13, MBA00,MBA03		
Hysterectomy (LAVH)	68.51	LCD11		
Repair of cysto- and rectocele	70.5	LEF		
Knee arthroscopy	80.26	NGA11		
Arthroscopic meniscus	80.6	NGD01, NGD11		
Removal of bone implants	78.6	NBU,NCU,NDU,NFU, NGU, NHU		
Repair of deform. on foot	77.51 – 77.59	NH		
Carpal tunnel release	04.43	NDM09,NDM19		
Baker cyst	83.39	NGM39		
Dupuytrens contracture	82.12	NDF02, NDF12		
Cruciate ligament repair	81.43, 81.45	NGE35, NGE36, NGE45,NGE46		
Disc operations	80.5	ABC		
Local excision of breast	85.21, 85.12	HAB00,HAB10 HAB40,HAB99		
Mastectomy	85.4	HAC		
Laparoscopic cholecystectomy	51.23	JKA21		
Laparoscopic antireflux	44.64 – 44.66	JBC01		
Haemorrhoidectomy	49.43 – 49.46	JHB		
Inguinal hernia repair	53.0 – 53.1	JAB		
Circumcision	64.0	KGH10, KGH80		
Orchidectomy + -pexi	62.3 – 62.5	KFH00, KFH10, KFC		
Male sterilisation	63.7	KFD43, KFD46		
TURP	60.2	KED22		
Colonoscopy w/wo biopsy	45.23, 45.25	UJF32, UJF35		
Removal of colon polyps	45.42	JFA15, JFA17		
Varicose veins	38.5	PHB10 – PHB14, PHD10 – PHD15		
Bilat: breast reduction	85.32	HAD30, HAD35		
Abdominoplasty	86.83	QBJ30		
Pilonoidal cyst	86.21	QBE10		

Table 1 Percentage of day surgery procedures ENT, Eye and Jaw surgery 2009 with 2007 data in brackets.

	Myringotomy	Tonsillectomy	Rhinoplasty	Broncho-Mediastinoscopy	Cataract surgery	Squint Correction	Tooth Removal
Belgium	98 (95)	85 (89)	26 (20)	63 (44)	95 (91)	94 (90)	99 (97)
Denmark	75 (78)	37,5 (39)	62 (59)	79 (73)	99 (98)	84 (69)	95 (93)
England	87 (86)	30 (23)	28 (21)	21 (?)	97 (95)	92 (91)	95 (92)
Finland	98 (98)	66 (59)	62 (56)	16 (0)	99 (98)	91 (87)	91 (89)
France	96 (96)	79 (19)	13 (11)	22 (25)	93 (62)	33 (22)	84 (71)
Hong Kong	n.a. (n.a.)	n.a. (3)	n.a. (n.a.)	n.a. (n.a.)	n.a. (73)	n.a. (n.a.)	n.a. (n.a.)
Hungary	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)	29 (n.a.)	n.a. (n.a.)	n.a. (n.a.)
Italy	n.a. (n.a.)	37 (n.a.)	28 (n.a.)	19 (n.a.)	88 (84)	40 (n.a.)	78 (n.a.)
Veneto reg	92 (91)	84 (74)	40 (4,3)	73 (16)	99 (98)	83 (74)	99 (n.a.)
Netherlands	0,1 * (98)	32 (66)	33 (27)	80 (68)	99 (97)	97 (96)	92 (91)
Norway	99 (85)	94 (37)	88 (61)	3 (8,5)	96 (97)	94 (57)	73 (31)
Portugal	54 (36)	33 (19)	13 (8)	n.a. (n.a.)	91 (63)	53 (49)	68 (54)
Scotland	96 (76)	23 (10)	30 (19)	n.a. (62)	95 (91)	90 (84)	97 (91)
Spain	61	35	54	11	96	59	80
Sweden	93 (93)	1* (26)	55 (38)	60 (54)	99 (98)	86 (89)	95 (96)
USA	n.a. (98)	n.a. (90)	n.a. (95)	n.a. (36)	n.a. (99)	n.a. (84)	n.a. (n.a.)

Table 2 Percentage of day surgery procedures for gynaecology 2009 with 2007 data in brackets.

	Endoscopic Female Sterilisation	Legal abortion	Dilatation + curettage	LAVH	Cysto/rectocele
Belgium	74 (71)	------	86 (83)*	0,2 (0,2)	5 (3,5)
Denmark	91 (91)	98 (98)	94 (93)	1,6 (1,5)	46 (21)
England	85 (82)	63 (28)	85 (83)	0 (0,23)	0 (?)
Finland	86 (85)	90 (92)	66 (66)	1 (1,6)	8 (5,1)
France	57 (36)	87 (80)	63 (56)	0 (0,1)	7 (4,6)
Hongkong	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)
Hungary	n.a. (n.a.)	66 (n.a)	65 (n.a.)	n.a. (na.)	n.a. (n.a)
Italy	46 (n.a.)	92 (70)	49 (n.a.)	3 (n.a.)	2 (n.a.)
Veneto reg.	76 (69)	97 (95)	62 (62)	0 (0,26)	8 (70)
Netherlands	94 (92)	86* (85)	70 (69)	0 (0,05)	1 (0,55)
Norway	87 (15)	96 (95)	94 (57)	74* (0,87)	91 (5,29)
Portugal	43 (26)	62 (46)	34 (31)	2 (0)	12 (0,56)
Scotland	n.a. (83)	n.a. (78)	85 (75)	0,5 (0,08)	1,6 (1,94)
Spain	71	37	25	0,2	1,5
Sweden	78 (80)	91 (79)	68 (69)	0 (0)	16 (12)
USA	n.a. (92)	n.a. (14)	n.a. (86)	n.a. (27)	n.a. (32)

Table 3 Percentage of day surgery procedures for orthopaedics 2009 with 2007 data in brackets.

	Knee Arthroscopy	Arthroscopic Meniscectomy	Removal of bone Implants	Carpal tunnel release	Baker cyst excision	Dupuytren contracture correction	Cruciate ligament repair	Disc surgery
Belgium	63 (63)	90 (88)	82 (78)	99 (94)	41 (40)	81 (77)	13 (15)	3 (2,3)
Denmark	95 (93)	96 (93)	89 (87)	93 (89)	93 (82)	90 (93)	87 (77)	1,8 (2,4)
England	80 (?)	81 (68)	59 (55)	95 (91)	n.a. (?)	72 (62)	15 (10)	2 (1,24)
Finland	83 (82)	92 (90)	71 (68)	91 (90)	79 (77)	84 (80)	69 (65)	5 (3,9)
France	57 (43)	74 (55)	56 (53)	89 (87)	45 (41)	63 (63)	0,3 (0,2)	0,1 (0,1)
Hong Kong	n.a. (6)	n.a. (5)	n.a. (n.a.)	n.a. (72)	n.a. (6)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)
Hungary	37 (n.a.)	n.a. (n.a.)	16 (n.a.)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)	n.a. (0)
Italy	51 (74)	58 (n.a.)	53 (55)	86 (90)	70 (n.a.)	76 (n.a.)	10 (n.a.)	14 (n.a.)
Veneto reg.	78 (73)	89 (73)	61 (78)	99 (98)	83 (83)	95 (98)	33 (n.a.)	14 (9,5)
Netherlands	92 (94)	93 (94)	69 (69)	94 (97)	71 (67)	90 (86)	5 (5,82)	4 (2,13)
Norway	89 (73)	75 (86)	94 (49)	92 (88)	78 (78)	91 (39)	79 (32)	81* (3,34)
Portugal	18 (6,33)	19 (3,1)	37 (15)	75 (58)	59 (49)	41 (28)	7 (0,57)	7 (6,13)
Scotland	84* (68)	* (72)	70 (49)	97 (89)	n.a. (n.a.)	71 (42)	36 (59)	1,3 (0,48)
Spain	49	46	43	90	67	59	9	2
Sweden	87 (87)	97 (94)	67 (71)	89 (89)	91 (88)	63 (68)	n.a. (n.a.)	3 (1)
USA	n.a. (95)	n.a. (98)	n.a. (75)	n.a. (98)	n.a. (61)	n.a. (99)	n.a. (90)	n.a. (8)

Table 4 Percentage of day surgery procedures for general surgery 2009 with 2007 data in brackets.

	Local Breast excision	Mastectomy	Lap. Chol.	Antireflux surgery	Haemorrhoidectomy	Inguinal Hernia repair	Colonoscopy	Colon Polyps removal	Pilonoidal Cyst excision	Gastric banding
Belgium	73 (62)	0,5 (2,3)	3 (1,9)	0,6 (0,17)	44 (36)	32 (32)	73 (73)	81 (77)	45 (40)	n.a. (2,4)
Denmark	42 (38)	12 (9)	58 (43)	15 (11)	91 (91)	81 (79)	96 (95)	97 (97)	92 (91)	3,6 (0,8)
England	42 (52)	3 (2,7)	20 (14,5)	4 (4,6)	56 (45)	59 (57)	92 (88)	93 (?)	58 (31)	n.a. (5,1)
Finland	33 (29)	4 (2,5)	28 (25)	7 (8,3)	50 (47)	60 (58)	n.a. (?)	n.a. (?)	66 (71)	n.a. (0)
France	25 (15)	7 (5,5)	1,1 (0,4)	0,2 (0,2)	8,5 (6,2)	20 (12)	78 (76)	81 (79)	19 (13)	n.a. (0,7)
Hong Kong	n.a. (54)	n.a. (0,01)	n.a.(0.05)	n.a. (0)	n.a. (27)	n.a. (55)	n.a. (68)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)
Hungary	n.a.(n.a.)	n.a.(n.a.)	n.a. (n.a.)	n.a. (n.a.)	28 (n.a.)	21 (n.a.)	n.a. (0)	n.a. (0)	n.a. (n.a.)	n.a. (n.a.)
Italy	70 (n.a.)	96*(n.a.)	5 (1,36)	1,5 (n.a.)	46 (n.a.)	62 (58)	n.a. (n.a.)	62 (n.a.)	64 (n.a.)	n.a. (n.a.)
Veneto reg.	90 (82)	0,1 (15)	0,6(0,69)	0 (0)	86 (62)	86 (80)	97 (19)	97 (67)	93 (90)	n.a. (n.a.)
Netherlands	41 (39)	49*(1,79)	6 (4,4)	2,5 (0)	78 (69)	67 (63)	91 (90)	86 (81)	91 (14)	n.a.(0,14)
Norway	94 (43)	81* (15)	88 (20)	93* (4,35)	89 (62)	92 (64)	9* (n.a.)	8* (2,45)	96 (78)	n.a. (0)
Portugal	39 (39)	8 (1,82)	15 (1,11)	5 (0,26)	37 (19)	38 (10)	n.a. (n.a.)	Na. (n.a.)	59 (46)	n.a. (0)
Scotland	18 (73)	3,8 (2,34)	13 (2,95)	4,9 (0)	49 (68)	61 (34)	n.a. (87)	n.a. (90)	59 (17)	n.a. (n.a.)
Spain	39	1	5	0,1	37	43	47	53	73	n.a.
Sweden	45 (42)	8 (8)	17 (16)	9 (3)	93 (90)	73 (71)	87 (84)	88 (88)	96 (94)	n.a. (0)
USA	n.a. (98)	n.a. (69)	n.a. (53)	n.a. (35)	n.a. (82)	n.a. (86)	n.a. (88)	n.a. (78)	n.a. (91)	n.a. (19)

Table 5 Percentage of day surgery procedures for Urology, Plastic Surgery and Vascular Surgery 2009 with 2007 data in brackets.

	Circumci-son	Testis surgery	TURP	Breast reduction	Abdomino-plasty	Varicose veins surgery
Belgium	96 (92)	56 (49)	0,6 (0,63)	1,5 (0,84)	5 (4,4)	81 (79)
Denmark	94 (95)	77 (69)	7,4 (2,5)	6,7 (5,3)	5,1 (6,3)	98 (95)
England	83 (80)	79 (72)	1 (2,4)	n.a. (n.a.)	n.a. (n.a.)	82 (68)
Finland	85 (81)	48 (43)	2 (2)	11 (11)	10 (13)	78 (74)
France	98 (88)	39 (35)	0,1 (0,1)	0,5 (0,6)	2,6 (3,9)	54 (27)
Hong Kong	n.a. (79)	n.a. (23)	n.a. (0,001)	n.a. (n.a.)	n.a. (n.a.)	n.a. (30)
Hungary	n.a. (0)	n.a. (0)	72 (0)	n.a. (0)	n.a. (n.a.)	23 (n.a.)
Italy	73 (n.a.)	35 (n.a.)	10 (n.a.)	4 (n.a.)	20 (n.a.)	77 (94)
Veneto reg.	82 (68)	49 (50)	0,2 (3,5)	0 (22)	19 (16)	93 (88)
Netherlands	95 (94)	64 (63)	0,6 (0,89)	0,6 (0,29)	n.a. (7,28)	89 (88)
Norway	98 (84)	94 (11)	89*1(,66)	26 (68)	28 (47)	93 (85)
Portugal	75 (59)	52 (30)	14 (0)	8 (1,57)	16 (21)	40 (15)
Scotland	88 (75)	85 (48)	2,4 (1)	n.a. (0)	n.a. (2,55)	67 (49)
Spain	85	28	1,5	4	13	54
Sweden	91 (90)	52 (49)	37* (1,57)	9 (4,47)	3 (8,07)	89 (88)
USA	n.a. (91)	n.a. (70)	n.a. (33)	n.a. (88)	n.a. (36)	n.a. (94)

Table 6 Day surgery as percentage of all surgery, planned surgery, and of the procedures in the basket compared to the data in the survey from 2009.

	% of all surgery	% of elective surgery	% of basket
Australia	N.a.	N.a.	N.a. was 74
Belgium	N.a. (was 43 %)	N.a.	78% was 31
Denmark	74%	89%	86% was 79
England	52%	62%	77% was62
Finland	N.a.	63%	65% was 62
France	36%	N.a	45% was 45
Germany	43,5%	N.a.	N.a. was 60
Hungary	15,5%	22%	N.a .
Italy	32%	64%	60% was 41
Veneto Region	40 %	96 %	87 % was 69
Netherlands	53%	N.a.	68% was 70
Norway	50%	64%	88% was 68
Portugal	35%	43%	55% was 18
Scotland	37%	68%	74% was 62
Spain	33%	87%	63% was 54
Sweden	69%	80%	73% was 66
USA	N.a.	N.a.	N.a. was 85

Table 7 Specific details from the questionnaire and names of the contributors.

Contributor	Completeness of data	Coding system	Data source
Belgium Paul Vercruysse	Almost 100%	Health insurance codes	National health insurance
Denmark Claus Toftgaard	100% public	NCSP	National patient register
England Ian Jackson	Reliable	N.a.	Hospital episode statistics
Finland Kristiina Mattila Antti Haavisto	Reliable	NCSP	National Institute for Health
France Corinne Vons	N.a.	PMSI	French Health Ministry
Germany Jost Brökelmann	N.a.	OPS	BAO
Hungary Muhammed Gamal	N.a.	N.a.	Healthcare insurance company
Italy Ugo Baccaglini	N.a.	ICD9CM	Ministry of Health
Veneto Region Ugo Baccaglini	N.a	ICD9CM	Azienda Ospedaliere di Padova
Netherlands Jan Eshuis	77/97 public hospitals	ICD9CM.	Landelijke Registratie Medische Ziekehuis statistiek
Norway Directorate of health	100%	NCSP	National patient register
Portugal Paulo Lemos	N.a.	ICD9CM	APCA national survey
Scotland Sebastian Gough	99%	OPCS 4,5	Scottish morbidity records
Spain Fernando Docobo-Durantez	N.a.	N.a.	Ministry of health
Sweden Metha Brattwall	Reliable	NCSP	National patient register

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