

**HAS**

HAUTE AUTORITÉ DE SANTÉ

**ANAP**

*appui santé & médico-social*

*“ Together for the development of **day surgery** ”*



***Day surgery:  
an overview***

**April 2012**

Update october 2012

English version november 2013

**Haute Autorité de Santé**

2, avenue du Stade de France – 93218 Saint-Denis La Plaine Cedex

Tél. : +33 (0)1 55 93 70 00 – Fax : +33 (0)1 55 93 74 00

**Agence Nationale d'appui à la performance  
des établissements de santé et médico-sociaux**

23 avenue d'Italie – 75013 Paris

Tél. : +33 (0)1 57 27 12 00 – Fax : +33 (0)1 57 27 12 12

# Foreword

## **Day surgery as seen by ANAP (National agency for healthcare organisations' performance) and HAS (National Authority for Health)**

Eight out of every ten surgical operations could be done as day cases. This innovative management method means that patients are hospitalised for the absolute minimum amount of time and can go home on the day of their procedure. To date, in France, less than four in ten operations are done on this basis, while in other developed countries the rate is higher: around eight in ten in the United States and the United Kingdom, and seven in ten in Norway and Sweden. This is a significant difference: more than 2 million operations in France that are currently carried out under inpatient admission conditions, with nights spent in hospital, could be done as day surgery.

France may well have a national healthcare system and the quality of which is the envy of many countries, but it has one of the lowest rates of day surgery of any OECD country. There has been a consensus for some time about the need to put patients at the heart of the healthcare system and to promote day surgery as a way of achieving this; nevertheless, this innovative management method is still underdeveloped in France. Day surgery improves care quality by creating a situation in which everything is arranged around patients and their interests: paramedics, nurses, surgeons, anaesthetists and administrative staff have to work together to create a care pathway that involves no wasted time and has no discontinuity. Continuity of care remains essential, just as it is for inpatient admissions.

Physicians, anaesthetists and surgeons have made and continue to make progress in risk management. They have reduced recovery time and have restored patients' autonomy sooner, by providing better prevention and treatment of pain, bleeding, nausea and urinary problems, which before used to keep patients in hospital for several days.

Day surgery is most useful for routine and common surgical procedures, such as surgery for cataracts, hernia, varicose veins and hand conditions. A large number of medical teams in other countries, and some in France, have extended the use of day surgery to include increasingly complex interventions (surgery on the shoulder, thyroid, gallbladder, for gastro-oesophageal reflux and obesity) and increasingly complex patients. This can explain the large numbers of procedures that are carried out as day cases in other countries. Some hospitals have even chosen to eliminate wards with dedicated beds, and have opted to perform all cases as day surgery.

The question therefore arises: is overnight accommodation necessary or appropriate? Consideration must be given not only to the appropriateness of care, but also to the appropriateness of an overnight stay; this can be based on a risk/benefit assessment. The distinction between delivery of care and the need for overnight accommodation should encourage hospitals to think of themselves more as technical facilities, and the cost of such facilities means it is essential to consider how well the system performs.

The fact that France is behind in the development of day surgery is a further incentive to consider what is holding back progress. The issue is not limited to medical and professional practice. Co-ordination between various departments in a facility is crucial to a process in which uncertainties, wasted time and delays are to be avoided, and in which improved reliability is key.

It is this interaction between the medical and organisational aspects of care that has caused the lack of comprehension, hesitancy and difficulties that have been experienced in the development of day surgery. For this reason, HAS and ANAP have sought to combine their expert knowledge in order to discuss these two aspects of care, and in order to understand day surgery as an organisational model involving specific medical conditions and with specific economic implications.

Nevertheless, this approach is being adopted in a healthcare system in which overnight stays have always formed a crucial part and have often been prioritised over medical progress and therapeutic efficacy. This fact is important, both because of the existing medical and administrative infrastructure and regional structures (beds and wards) and because it will affect analysis by length of stay and consequently the setting of prices.

For hospitals, a shift to day surgery is effectively a cultural revolution. The development of day surgery is an indication of how extramural hospitals and clinics will develop in future: 48,000 surgical beds will gradually need to be converted.

Day surgery will improve facilities' performance levels, and will allow for organisational and financial room for manoeuvre, while ensuring that patients are at the centre of the new system.

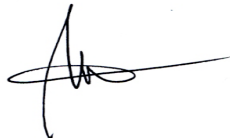
With the deficit in the national health insurance system, it is essential that patients with chronic conditions, who are increasing in number each year, be managed - nearly 12 million people in France have a chronic condition such as diabetes, cancer or cardiovascular disease. We also need to fund progress and research (e.g. robot-guided or minimally invasive surgery, endovascular surgery, telemedicine, biotherapies etc.) and to improve care quality still further. It is therefore essential to create room for manoeuvre, and the development of day surgery will enable this.

It would also be useful to promote improvement of practice and changes in organisation, and indeed in culture, and these will not necessarily occur on the same schedule. This work will involve healthcare professionals, and also healthcare managers and those responsible for care provision regionally.

The Haute Autorité de Santé and the National Agency for Performance Support (ANAP), with the help of learned societies and institutional partners, will provide tools to guide surgeons through this revolution: an overview, some quality criteria for preoperative clinical evaluation and discharge management, some indicators for measuring care quality and the efficiency of care organisation, and some tools for managing the risks involved in care.

This document, which is an overview about day surgery, is the first deliverable of this joint HAS ANAP programme.

In late 2012, HAS and ANAP will produce professional and organisational guidelines based on the analysis that is currently being carried out by these two institutions. Their joint wish is to work with those involved in the healthcare system to help France to overcome the health challenges it faces.



Jean-Luc HAROUSSEAU  
President of the College



HAUTE AUTORITÉ DE SANTÉ



Philippe RITTER  
Chairman of the Board of Directors



appui santé & médico-social

# SOMMAIRE

<b>INTRODUCTION</b>	<b>8</b>
<b>1. DEFINITIONS</b>	<b>11</b>
1.2 French definition	12
1.2.1 Consensus conference	12
1.2.2 French regulatory definition	12
<b>2. REGULATION OF OPERATION</b>	
2.1 DS: a mission for hospitals	14
2.2 DS: An activity that is subject to authorisation	14
2.3 Safety and quality criteria that apply to all french hospitals	14
2.4 Description of technical conditions of operation	
2.4.1 Specific organisation	15
2.4.2 Premises and equipment	15
2.4.3 Operating zone	15
2.4.4 Staff	16
2.4.5 Obligation to provide continuity of care	16
2.4.6 Internal regulation	16
2.5 Medicolegal aspects	16
<b>3. DAY SURGERY GROWTH</b>	
3.1 International comparison	
3.1.1 United States	18
3.1.2 Situation in European countries	19
3.1.3 Analysis of explanatory factors	20
3.2 French data	
3.2.1 Situation in 1995	20
3.2.2 Evaluation of potential for development in the early 2000s	22
3.2.3 Changes observed between 2000 and 2010	24
<b>4. DAY SURGERY FRAMEWORK</b>	
4.1 Premises and equipment	
4.1.1 Types of facility	32
4.1.2 Architectural models	32
4.1.3 Operating suites	33
4.1.4 Types of throughput	33
4.2 DSU team	34

## 5. BEST CLINICAL PRACTICES AND ORGANISATION

5.1	Clinical pathway.....	35
5.2	Selection of DS patients	
5.2.1	Patient selection: a key to success.....	35
5.2.2	Medical and surgical selection criteria .....	35
5.2.3	Psychosocial and environmental selection criteria.....	36
5.3	Choice of anaesthesia type and surgical procedure.....	36
5.4	Anticipation of possible complications .....	37
5.4.1	Management of postoperative pain.....	37
5.4.2	Prevention of postoperative nausea and vomiting.....	37
5.4.3	Prevention of thromboembolism.....	37
5.5	Organisation	
5.5.1	Patient information and pre-anaesthesia consultation.....	37
5.5.2	Contact in the days prior to the procedure and on the following day .....	38
5.5.3	Scheduling, checking patient records and admission .....	38
5.5.4	Continuity of care.....	38
5.5.5	Quality .....	39

## 6. PLANNING AND DESIGNING OF A DSU..... 40

6.1	Planning phase .....	40
6.2	Design phase .....	40

## 7. RISKS AND BENEFITS OF DAY SURGERY ..... 41

7.1	Medical risks.....	41
7.1.1	Major mortality and morbidity.....	41
7.1.2	Healthcare-associated infection .....	44
7.1.3	Postoperative symptoms .....	45
7.1.4	Driving a vehicle after a day surgery procedure.....	52
7.1.5	Specific paediatric management for day surgery .....	52
7.1.6	Specific features of elderly management for day surgery.....	54
7.2	Clinical quality indicators .....	55
7.2.1	Unplanned return to the operating room.....	55
7.2.2	Postoperative stay prolonged, with no unplanned overnight admission .....	55
7.2.3	Unplanned overnight admission.....	56
7.2.4	Unplanned return to hospital and/or readmission .....	58
7.3	Social and environmental criteria .....	59
7.3.1	Patient satisfaction.....	59
7.3.2	Functional recovery.....	66
7.3.3	Satisfaction of healthcare professionals in hospitals .....	67
7.3.4	Primary care.....	67
7.4	Evaluation of risks and benefits of day surgery in comparison with inpatient admission for two surgical procedures .....	67
7.4.1	Focus 1: Day care versus in-patient surgery for age-related cataract.....	67
7.4.2	Focus 2: Day-case versus overnight stay for laparoscopic cholecystectomy .....	68

.....

<b>8. ECONOMIC BENEFIT .....</b>	<b>70</b>
8.1 Data from the international literature.....	70
8.2 Study of costs to French health insurance bodies .....	71
8.3 Cost for patients.....	72
<b>9. CURRENT INCENTIVES IN FRANCE .....</b>	<b>76</b>
9.1 Initial wave of incentives (1999-2003).....	76
9.2 Second wave of incentives (2004-2011) .....	76
9.2.1 Pricing incentives .....	76
9.2.2 Other incentives .....	83
9.3 Impact of incentives on hospitals.....	84
<b>CONCLUSION .....</b>	<b>88</b>
<b>IMPLICATIONS FOR FURTHER RESEARCH .....</b>	<b>90</b>
<b>ASSESSMENT METHOD .....</b>	<b>91</b>
<b>LIST OF TABLES AND FIGURES.....</b>	<b>92</b>
<b>APPENDIX. PROFESSIONAL AND ORGANISATIONAL GUIDELINES.....</b>	<b>93</b>
<b>AUTHORS .....</b>	<b>97</b>
<b>REFERENCES .....</b>	<b>98</b>
<b>ANNEXE 1. LITERATURE SEARCH STRATEGY .....</b>	<b>108</b>
<b>WEBSITES.....</b>	<b>116</b>

# INTRODUCTION



Day surgery was first used more than a century ago in Scotland (1) and has since seen considerable development in the United States. In the 1960s, two official programmes were established in hospitals in California and Washington (2). This alternative to full hospital admission subsequently saw rapid development, with the opening of several centres throughout the country. Day surgery also developed in Canada and in several European countries, including the United Kingdom, which was the European pioneer in this area in the 1970s and in which day surgery grew rapidly from 1980 (2).

## Aims and challenges

Ministry of health has used as a starting point the fact that France is behind other parts of the world in terms of rates of day surgery. With this in mind, it has commissioned HAS to produce reference materials to guide the work that needs to be done in hospitals and with health professionals in order to increase the proportion of all operations that are done as day cases. In parallel, ANAP included day surgery as part of its programme for 2010, which was published in December 2009.

In addition, the development of day surgery is one of the ten top-priority areas of risk management for regional health agencies (RHAs) for the years 2010-2012<sup>1</sup>.

The HAS-ANAP day surgery partnership is a high-priority interdisciplinary project for both institutions. This collaboration will bring together and make the most of these institutions' respective skills and will enable close support for healthcare professionals, healthcare managers and regulators (RHAs) as day surgery is developed in France. This overview is the first deliverable of the HAS-ANAP joint programme.

## Origin and history of this request

This request was initially presented as an examination of the usefulness of various types of procedure and hospital admission by the Ministry of health in its plan for HAS' work for 2010.

The Ministry of health then suggested that this be divided into a day surgery theme and a usefulness of procedures theme; according to the Ministry of health, these would

both fall into the category of an analysis of medically unjustified procedures.

In parallel with this, three meetings jointly organised by HAS and ANAP, in partnership with AFCA (December 2009, October and November 2010) aimed to raise awareness among various institutional partners of the need to increase levels of day surgery.

The needs analysis was re-worded in late 2010 by HAS and ANAP jointly, for the purposes of the 2011 work plan, and it contained a proposal that the two institutions work together with the aim of delivering a number of tools and organisational and professional good practice guidelines under this joint designation.

The HAS-ANAP joint project aims to support three groups of people: healthcare professionals, healthcare organisation managers and regulators (regional health agencies). There are also plans to create specific information and assistance for patients and users.

## Joint project between HAS and ANAP

The HAS-ANAP day surgery partnership is a high-priority interdisciplinary project for both institutions, and is part of the continuing and increasingly strong collaboration between HAS and ANAP, which was established in 2009. The core missions of these institutions complement each other: the main task of HAS is to produce analyses and in-depth summaries of the literature in order to present the evidence, to produce professional guidelines, indicators and certification standards; the main task of ANAP is to analyse on-site processes, support healthcare organisations, and to produce tools and guidelines. The purpose is therefore to maximise the potential and value of the two organisations via joint or partnership work.

The two institutions have set out a programme of collective action and joint governance in order to co-ordinate and structure the creation of tools that are appropriate to the needs of professionals, hospitals and regional health agencies. This work consists of:

- a steering committee (COFIL), which is made up of representatives of the HAS Board and ANAP's Scientific Leadership Committee, and representatives from the management boards, which will provide strategic guidance;

---

1. DGOS/R3 instruction no. 2010-457 for directors general of regional health agencies, dated 27 December 2010.



- an operational committee (COMOP), which consists of career managers and representatives from services, in order to ensure that strategic guidance is implemented consistently and that the deliverables are produced.

### **HAS-ANAP joint programme**

Six work streams have been identified, each of which gives rise to a sequence of complementary projects, over a multiyear project period (2012-2015). A guidance note in which these work streams are presented has been published jointly with this report. These are presented below:

#### **Work package 1: Overview**

An examination of current knowledge in the field of day surgery, using French and international published data, is an essential first step. There is a large amount of documentation about how day surgery facilities work.

The purpose of this synthesis is to make the data available to the various parties involved, particularly healthcare professionals, as an educational tool or knowledge base, which will also act as a source of information on which all the joint HAS-ANAP work will be based.

#### **Work package 2: Selection/eligibility criteria for day surgery**

Patient selection is based on medical and psychosocial criteria. This is an essential step when deciding whether to use this type of management. The purpose of this project is to re evaluate the criteria that were updated in 2009 by the French Society for Anaesthesia and Intensive Care (SFAR) in the light of current practice and with a view to risk management.

This approach, which is disconnected from the procedure itself, enables a distinction to be made between the need for care and the need for accommodation.

#### **Work package 3: Organisational aspects: implementation models and tools**

Day surgery is a patient-centred way of organising surgery, which is based on co ordination of local and hospital

professionals, management of throughput and harmonisation of practice.

Several projects will examine the organisational aspects of day surgery, and these will involve various approaches:

- analytical:
  - analysis of corporate risk on the basis of tried and tested methods, using a sample of five hospitals;
  - benchmarking of fifteen facilities that are pioneering day surgery;
- support:
  - operational support for twenty hospitals that have come forward as wanting to develop their rates of day surgery;
  - targeted support for three or four pilot regional health agencies in which there are low rates of day surgery;
- production:
  - the aim of this project is to make available items (e.g. tools, guides, guidelines, etc.) which will lead to general organisational models, templates of clinical pathways and appropriate checklists.

#### **Work package 4: Economic assessment, tools and guidelines**

A series of projects is planned. All stakeholders have stated that they need a tool that will help to identify the conditions under which day surgery can break even, using a retrospective approach to income/production costs.

Two complementary approaches will be developed:

- a cost accounting approach, which will result in a dynamic and reproducible software model that will identify the conditions under which day surgery can break even, using analysis of the impact of the use of day surgery as a substitute for inpatient admission. This tool has been developed using a sample of five hospitals with a variety of legal statuses, and will be used in another ANAP project entitled Support for 20 hospitals so that any necessary adjustments can be made. This tool will then be deployed in regional health agencies (ARS) and/or organisations that volunteer to use it;
- analysis using the micro-costing technique, carried out using observation of patients' clinical pathways.

.....

This will enable cost per stay to be calculated, as well as how this figure varies as a function of casemix and production volumes. This method will be reproducible and will result in the production of a second, complementary tool. It will then be deployed in hospitals that volunteer to use it.

The international literature concerning pricing models in other countries will also be reviewed, and the impact of these models will be studied. The purpose will be to put forward guidelines for pricing adjustment, to be given to the ministry of health.

### **Work package 5: Indicators, monitoring and assessment**

The work that HAS has already carried out, and the indicators that ANAP has already developed, will be used to develop a common and circumscribed set of indicators for each target client.

### **Work package 6: Certification/accreditation**

Over the next four to five years, changes to certification reference standards are being planned, with the aim of providing team certification and thereby beginning a commitment to excellence (by developing programmes to identify trained teams). Updating the certification guide will therefore provide consistent support for the projects carried out beforehand.

These six work streams will be incorporated into a consistent overall approach that will address all questions related to day surgery in the form of a knowledge base (work stream 1). The revision of the patient selection and eligibility criteria for day surgery (work stream 2) and the results of studies exploring the organisational aspects (work stream 3) will help in the creation of clinical pathways and of monitoring and assessment indicators (work stream 5). Economic guidelines (work stream 4) will be supported by a set of solid indicators that will show the extent to which incentive measures have been deployed, and the results that have been obtained. Finally, the various prospects for the future (at an organisational level, a regional health agency level and at the national regulation level) should be analysed together, in order to ensure that guidelines are consistent and that they can be incorporated into certification standards (work stream 6).

### **Purpose of this report**

The purpose of this report is to provide a knowledge base (work stream 1) in the form of a review of the currently available published data. Creation of this day surgery knowledge base involves the following steps:

- definitions of day surgery;
- regulation of operation;
- review of day surgery growth;
- description of the DS framework;
- best clinical practices and organisation;
- planning and designing of a day surgery unit;
- assessment of risks and benefits;
- economic benefit;
- current incentives in France.

# 1. DEFINITIONS

The international terminology recognised by IAAS is “day surgery”, and the synonyms “ambulatory surgery”, “same-day surgery” and “day-only surgery” are also recognised.

The concept of “day” here is understood to mean working day, and is similar to “no overnight stay” (see Table 1) (3, 4).

Day surgery is therefore clearly different from types of surgery known as:

- “extended recovery”, also known as “23 hours”, “overnight stay” or “single night”.
- “short stay”, i.e. surgery involving an admission of between 24 and 72 hours.

The international definition of day surgery was adopted by the IAAS Executive Committee in 2003 (3) and was later confirmed in the Policy Brief published by the WHO, the Pan American Health Organization and the European Observatory on Health Systems and Policies in 2007 (5):

*“A surgical day case is a patient who is admitted for an operation on a planned non-resident basis and who nonetheless requires facilities for recovery. The whole procedure should not require an overnight stay in a hospital bed”.*

Beyond this strict definition, day surgery is an organisational concept: “Organisation is central to the concept, and the patient is central to the organisational structure” (3,6)<sup>2</sup>.

Day surgery can also be defined as a type of outpatient management, in other words management that is done by means other than inpatient admission. Data concerning outpatient management must nevertheless be interpreted with care, because the term can refer to day surgery, but also to outpatient consultations, interventional radiology, dialysis or home hospital care.

This term is used in contrast to the term “inpatient”, which is management in a public, non-profit or private hospital with at least one night of hospital admission.

**Table 1. Definitions of terms in day surgery (3)**

English terminology	Synonym/definition
Ambulatory	Day, same day, day only.
Extended recovery	23 h, overnight stay, single night.
Short stay	-
Ambulatory Surgery Center (Facility)	A centre (facility) designed for the optimum management of an ambulatory surgery/ procedure patient.
Ambulatory Surgery / Procedure	An operation/procedure, excluding an office/surgery or outpatient operation/ procedure, where the patient is discharged on the same working day

Source : International Association for Ambulatory Surgery. Ambulatory (day) surgery. Suggested international terminology and definitions. London: IAAS; 2003.

2. Day surgery should not be confused with surgery performed in an unit not differentiated from the rest of the surgical admissions department. (7).

## 1.2 French definition

### 1.2.1 Consensus conference

The terminology used in this field in France was approved at a consensus conference held in March 1993: *“Day surgery (“chirurgie ambulatoire”) is defined as the group of surgical procedures [...] that are planned and carried out under technical conditions that require the safety of an operating room, using a variety of types of anaesthetic and followed by postoperative monitoring that enables the patient to be discharged on the day of the procedure, without increased risk.”* (8)<sup>3</sup>.

### 1.2.2 French regulatory definition

**Decree no. 92-1101 and no. 92-1102 dated 2 October 1992** provided the regulatory framework for facilities providing anaesthesia or day surgery, by defining such facilities as providing alternatives to inpatient admission<sup>4</sup>. This 1992 decree, which was partially repealed by the decree of 6 May 2005 concerning hospitals and equipment, was incorporated into the French public health code (PHC). The definition of day surgery as a mode of care that is an alternative to hospital admission, and its status as a replacement, was maintained.

Healthcare facilities are authorised to carry out surgical activity in the form of day surgery. Because of this, day surgery must meet technical criteria as defined in articles D. 6124-301 to 305 of the PHC concerning healthcare facilities that provide an alternative to hospital admission.

**Article D. 6124-301 of the PHC** states that facilities that carry out day anaesthesia or surgery provide, over a working day of less than or equal to twelve hours, services that do not include overnight accommodation, for the benefit of patients whose state of health is compatible with such management methods<sup>5</sup>.

It also states that services that are provided are equivalent in nature, complexity and the required level of

medical monitoring to services that are usually provided in the context of inpatient admission.

This definition suggests that:

- day surgery necessarily involves admission, as the patient is admitted, stays in a hospital and goes to the operating theatre, in contrast to the type of care experienced at an outpatient appointment;
- while internationally day surgery means that the patient is discharged on the day of their procedure, in France there is a greater time constraint, as the facility is open for a maximum of 12 hours;
- day surgery is not a new technique; the surgical procedure is the same as that used in inpatient admission, but it is carried out under particular organisational circumstances.

**Article R. 6121-4 of the PHC** describes day surgery as a full substitute (for inpatient admission) and as a “qualified” (i.e. not a minor surgery) procedure:

- it is a substitute, in that alternatives to inpatient admission aim to avoid full time hospital admission or to reduce the duration of such an admission. Services that are delivered in this way are distinct from those delivered at outpatient appointments or home visits;
- it is qualified (not a minor surgery), in that in facilities that carry out day surgery or anaesthesia, medical or surgical procedures that require anaesthesia or use of an operating theatre are carried out, under conditions that enable the patient to go home on the same day – these services are equivalent in nature, complexity and required monitoring to those provided under inpatient admission.

Instruction for directors general of regional health agencies dated 27 December 2010 (**Instruction DGOS/R3 no. 2010-457**) takes up this idea of surgery that is “qualified and a full substitute” for surgery as part of inpatient admission, and states that this is a change in paradigm:

- no longer see procedures that could potentially be done as day surgery as items on lists that are

3. Day surgery is therefore by definition planned surgery involving a selected patient, as opposed to emergency treatment. According to “ABC of Day Surgery” (“abécédaire de la chirurgie ambulatoire”), some emergency situations can be managed as day cases by some specialised teams, as long as this does not affect patient selection or the organisation of the surgery schedule. This subject requires careful consideration and will not be covered in this overview.

4. Decree no. 92-1101 dated 2 October 1992 concerning care facilities that provide alternatives to inpatient admission gave precise definitions of these facilities and introduced the basic organisational and architectural concepts. The resources that these facilities require, in terms of premises, equipment and staff, were also introduced.

5. Day surgery is markedly different from home hospital care, which in the legislative texts also considered to be an alternative to conventional admission. These organisations, the types of patients and conditions they deal with have little in common.

---

inflexible, frequently subject to argument and that constantly lag behind professional practice;

- instead, this type of management should be extended to all eligible patients and to all areas of surgery, with day surgery becoming the norm.

Confirmation of the fact that day surgery is a “qualified” type of management is also provided by **circular DGOS/RH4 no. 2011-201 dated 6 June 2011** concerning high-

priority multi-year training activities and objectives, and **circular DGOS/RH5 no. 2011-74 dated 24 February 2011** concerning a methodological guide to creation of a regional care organisation plan.

## 2. REGULATION OF OPERATION

### 2.1 DS: a mission for hospitals

The hospitals law no. 91-748 dated 31 July 1991 included day surgery among the missions and obligations of hospitals, stating that hospitals, whether public, profit-making and non-profit making, have as their aim to provide, with or without overnight accommodation, short-term treatment for the acute phase of serious conditions in medicine, obstetrics, dentistry and psychiatry.

In practice, hospitals are defined on a functional basis, by mission and not by legal status. The missions of hospitals are defined in the public health code (PHC).

#### Article L. 6111-1 of the PHC states that:

*Public, profit and non-profit hospitals, under the conditions stated in the PHC, provide diagnosis, monitoring and treatment for people with diseases and injuries and for pregnant women;*

*The article goes on to state that such facilities deliver care as part of a admission, as day cases or at home, where “home” may be the place of residence or a residential establishment as defined in the Social Action and Family Code;*

*and that hospitals play a part in implementing public health policy and vigilance procedures that are designed to protect health.*

Day surgery and anaesthesia facilities are departments of a hospital. If these are outside hospitals (freestanding centres), they are considered administratively to be hospitals in their own right, because they carry out authorised care activity. Various judicial decisions have stated that the fact that a facility carries out one of the activities mentioned in article L. 6111-1 of the Public Health Code qualifies this facility as a hospital (the Pau administrative court in 1996, the Poitiers administrative court in 1997, the Nice administrative court in 1999 and the Lyon administrative court on 19 November 2002, no. 99LY0367).

### 2.2 DS: An activity that is subject to authorisation

Hospitals are subject to an authorisation procedure. According to the provisions of **Article L. 6122-1 of the PHC**, plans to create any hospital or to create, convert

and bring together healthcare activity, including alternatives to inpatient and installation of large equipment, are subject to authorisation by the regional health agency.

**Article R. 6122-25 of the PHC** states in addition that surgical activity is subject to authorisation as laid down in article L. 6122-1, including when it is carried out under alternatives to inpatient admission. The parties receiving such authorisation can be, according to **article L. 6122 3 of the PHC**:

1. *One or more doctors, who may be working in partnership, for professional practice or to combine the resources required for such practice;*
2. *A hospital;*
3. *A legal entity whose purpose is, particularly in terms of running a hospital, care activity or complex medical equipment as mentioned in article L. 6122-1 or carrying out activities appropriate for a medical biology laboratories.*

Authorisation is given before the start of planned works, installation of large equipment, and care activity or care facilities offering an alternative to inpatient admission. This provides full authorisation to start work, as long as a compliance visit is undertaken and passed, and, unless the contrary is stated, provides authorisation to undertake care that can be reimbursed to people covered by health insurance, under article L.162-21 of the social security code.

A compliance visit must be undertaken and passed within six months following the start of care activity or care facilities offering an alternative to inpatient admission, or after large medical equipment is put into service. Continued compliance is verified following any change in the conditions under which this authorisation is carried out.

### 2.3 Safety and quality criteria that apply to all french hospitals

If a care facility is granted the label “healthcare organisation” (“établissement de santé” in French), this entails certain obligations and constraints, which are defined in the regulations.

**Article L. 6111-2 of the PHC** states that hospitals create and implement a policy for continuous improvement of quality and safety of care, and a risk management policy that aims to prevent and treat adverse events that are



linked to their activity. As such, they have an organised approach to prevention of adverse events, healthcare-associated infection and iatrogenic illness, and they create drug and sterile medical devices policies and put in place systems that ensure proper sterilisation of medical devices.

## 2.4 Description of technical conditions of operation

### 2.4.1 Specific organisation

**Article D. 6124-301 of the PHC** states that in organisational terms, these facilities must be easy for users to identify, and must be organised in a specific way. They are organised as one or more individual care units, and have their own premises and material and human resources, and patients who are bedbound or who walk with a prosthesis support or with an escort can access these facilities and move around within them.

Finally, means of access to these facilities must be organised to limit the need for patients to move around between the various technical areas.

### 2.4.2 Premises and equipment

**Article D. 6124-302 of the PHC** states that these facilities should be equipped in order to ensure that the following can be provided on one site, depending on the type, volume and scheduling of services:

- reception and accommodation for patients and those who accompany them, if appropriate;
- organisation, preparation and optimal implementation of healthcare protocols;
- the monitoring and rest that each patient needs;
- decontamination, storage and maintenance of the equipment required for patient care and transport.

During the 12-hour opening period, the premises allocated to each care centre in the facility cannot be used for any other activity.

The architecture and functional layout of each care centre and facility must provide all patients with the necessary cleanliness and aseptic conditions, and must respect

their privacy and dignity, and in particular should include specific locations that are adapted for the purpose.

The resources required for immediate management of any medical complications, particularly premises, equipment and drugs for dealing with such complications, must be available for immediate use.

### 2.4.3 Operating zone

**Article D. 6124-302 of the PHC and the order dated 7 January 1993** define the technical conditions for operation and the features of operating suites used for day surgery:


According to **article D. 6124-302 of the PHC**, facilities carrying out day anaesthesia or surgery shall use an operating suite that meets the criteria laid down by order of the Minister for Health. Facilities and centres that constitute such facilities shall have the equipment and layout required for preparation of the patient, including consultation with an anaesthetist. They also have a recovery room and other resources that are necessary to prepare patients for discharge.

**The order dated 7 January 1993** sets out the features of operating theatres in which day anaesthesia or surgery are carried out. This order defines the concept of an operating zone. Such a zone must enable management of the patient at various stages of the procedure, in particular preparation, the procedure itself and post-procedure monitoring, and must have the necessary resources to manage the risks that patients experience:

The operating suite includes a protected operating zone. This zone has the technical capacity to provide specific and appropriate organisation of work and cleanliness, to reduce as far as possible the risk to patients, the operating team, third parties and to the environment, and has the resources necessary to address the consequences of these risks. Such risks will be associated with anaesthesia, infection and the physical equipment that is used. All operating suites and protected operating zones must be physically separate and labelled.

The operating suite must provide the following functions;

1. Medical preparation of the patient immediately prior to the procedure carried out by the operating team;

- 
2. The procedures themselves;
  3. Immediate postoperative monitoring;
  4. Monitoring from when the patient wakes from anaesthesia until vital functions are finally restored;
  5. Preparation of the team to perform surgical procedures, in compliance with current hygiene rules;
  6. Preparation and distribution of products, drugs and equipment for the above functions, and storage such that these can be made available immediately. The function in point 2. above must be provided in the protected operating zone. All or part of the functions mentioned in 1., 3. and 4. above may be provided outside the protected operating zone. The functions mentioned in 5. and 6. above must be provided outside the protected operating zone.

#### 2.4.4 Staff

**Articles D. 6124-303 and D. 6124-308 of the PHC** state the number and level of qualification of staff:

During opening hours as mentioned in **article D. 6124-301**, the following minimum staffing is required in the facility:

1. A qualified doctor;
2. A nurse or, in follow-up and rehabilitation care, a physiotherapist, regardless of the authorised capacity of the facility, and at a minimum one nurse or one physiotherapist (as applicable) for every five patients present;
3. In addition to the staff mentioned in 1. and 2., an anaesthetist and resuscitation specialist if the facility carries out day anaesthesia or surgery, and two additional nurses while the operating suite is in use.

The number and level of qualification of medical staff, medical auxiliaries and rehabilitation specialists [...] are assessed by the director general of the regional health agency [...], depending on the nature and volume of activity carried out, the frequency with which services are delivered, and their technical characteristics.

#### 2.4.5 Obligation to provide continuity of care

According to **article D. 6124-304 of the PHC**, a facility carrying out day anaesthesia or surgery is obliged

to ensure continuity of care outside its normal opening hours. It states that if the facility cannot provide continuity of care itself, it must come to an agreement with another hospital that has resuscitation facilities and that can receive patients requiring the type of care practised by that facility at any time.

Each patient shall receive a discharge summary before leaving the facility. This summary is signed by a doctor from the facility, and mentions the identity of the medical staff who performed the procedure, and contains guidance about the plan for postoperative monitoring or monitoring of anaesthesia, and the details of the hospital that provides ongoing continuity of care.

#### 2.4.6 Internal regulation

**Article D. 6124-305 of the PHC** requires that each day surgery facility has its own internal regulations, which must state:

- the general principles that underpin its medical work;
- qualifications of the coordinating doctor;
- general organisation of staff shifts and cover;
- procedures for continuity of care;
- procedures for creation and communication of medical records.

### 2.5 Medicolegal aspects

Since the law of 4 March 2002, the principle of civil medical liability has been based on **articles L. 1142 and subsequent articles of the PHC**.

The specific medico-legal liability in day surgery is primarily connected the information that is provided to, received by and understood by patients and/or their legal representatives, and the liability of the organisation, which begins when the facility is first authorised. Nevertheless, the ABC of day surgery states that to date in France, under the available legislation, there have been no case that have involved a doctor's and/or an organisation's liability in connection specifically with a day surgery procedure (9).

**Article D. 6124-101 of the PHC** states that an anaesthetist shall be responsible for the actions of paramedical staff, and that this specialist shall intervene immediately.





This doctor:

1. makes the decision as to whether to transfer the patient to general admissions, and how this transfer shall be done;
2. authorises, with the agreement of the doctor who carried out the procedure, the patient's discharge from the facility, if the procedure was carried out in a facility that provides an alternative to hospital admission and that carries out day anaesthesia or surgery.

Authorisation of discharge is therefore a medical decision, which is attested by the signature of one of the

doctors from the facility. Regardless of who signs the document, the professional liability of each practitioner is not affected. It is the responsibility of the anaesthetist to provide the patient with all items necessary for continuing post-anaesthesia management, after discharge from the day unit (7).

Anaesthetist have the same responsibilities in management of day surgery patients as they do for patients who are admitted in overnight stay (7).

## 3. DAY SURGERY GROWTH

Day surgery has been developing rapidly in the United States since the early 1970s (2). There are two primary motivators for this change: freeing up hospital beds, which was an important consideration in the United States in the late 1960s, and reduction of hospital costs since the early 1980s (10).

During the same period, the use of day surgery was extended to Canada and in several European countries, including the UK, which has been the pioneer of this type of surgery in Europe (2). Developments in these countries occurred for a variety of reasons: a surplus or lack of availability of care, increasing demand in connection with an ageing population, economic constraints, changes in professional practices or the increasingly litigious nature of medicine (11).

As each country has its own history, significant differences can be seen in the relative proportions of each type of surgery (see 3.1).

### 3.1 International comparison

International statistics are difficult to compile, because of differences in the terminology used and in the ways in which healthcare systems are organised. The American situation is often used as a reference point when comparing different countries.

American statistics include data on “outpatient procedures”, which cover all procedures not carried out as part of an inpatient admission and includes those procedures that are considered in France to be external medical consultations (i.e. could be done by a physician in the community) or sessions (dialysis, chemotherapy etc) and procedures that fall into the category of day surgery. There are no consistent and comprehensive statistics about day surgery. The available American

data are presented first (3.1.1), followed by comparative analyses done by IAAS for European countries (3.1.2); in a third section, attention is paid to the factors that can explain the variation that is seen (3.1.3).

#### 3.1.1 United States

##### Day surgery/total surgery

According to the national survey of day surgery done in 2006<sup>6</sup> (12), which presents information drawn from American National Health Care Surveys, which are designed to be representative of healthcare organisation activity<sup>7</sup>, 53.3 million surgical and non-surgical procedures were recorded in 2006, during 34.7 million visits. The majority of procedures took place in a hospital setting (57.2%, or 19.9 million, compared with 42.8% or 14.9 million procedures in a freestanding centre<sup>8</sup>). Between 1996 and 2006, the growth rate of procedures in freestanding centres was 300%, while the numbers of procedures carried out in hospitals remained relatively stable.

These 34.7 million visits represented 61.6% of the total hospital stays in surgery, with or without surgical procedures. These data do not include surgical procedures carried out in doctors’ offices.

The American Hospital Association (AHA) reported that in 2010 day surgery made up 63.5% of all surgical procedures carried out in local hospitals only<sup>9</sup> in 2010<sup>10</sup> (13).

For the 37 procedures selected by IAAS, the rate of day surgery in the US was higher: 83.5% in 2004 (see Table 2).

##### Where day surgery is carried out ?

In the United States, some day surgery procedures are carried out in physicians’ offices. This work is not included in the statistics presented above. It is difficult to

6. The National Survey of Ambulatory Surgery is the only national survey that reports day surgery activity carried out in hospitals and in freestanding centres (Ambulatory Surgery Centres). The survey was carried out in 1994 and 1996, and then did not take place until 2006. Data are collected by Centers for Disease Control and Prevention (CDC) and its division, the National Center for Health Statistics (NCHS). In this survey, the term “ambulatory surgery” refers to surgical and non-surgical procedures carried out in a hospital or freestanding centre, or in other specialist facilities such as endoscopy units or cardiac catheterisation units.

7. Information is taken from American national databases (National Health Care Surveys), which are designed to be representative of hospitals’ activity. One hundred and forty-two (142) facilities and 295 ASCs responded, which is a response rate of around 75% of the organisations that are involved in surgery. Data that was collected did not include most gynaecology activity or any dental activity. The denominator was the number of discharges with or without surgical procedure.

8. In the United States, an independent centre (Ambulatory Surgery Center) is dedicated to day surgery. It can be part of a hospital (Hospital Surgery Center) or outside a hospital (a freestanding ASC).

9. This includes all non-federal, short-stay hospitals, whether general or specialist.

10. According to the Trendwatch Chartbook 2012 (supplementary data tables, utilization and volume), 17.36 million surgical procedures were carried out as day surgery, compared with just 9.95 million procedures done on conventional admission, with a median length of stay of 5.4 days. [www.aha.org/research/reports/tw/chartbook/index.shtml](http://www.aha.org/research/reports/tw/chartbook/index.shtml).

obtain data about this type of procedure. Overall, 47% of day surgery procedures were carried out in hospitals, compared with 37% in ASCs and 16% in physicians' offices (14). Since 1981, the proportion of day surgery procedures carried out in hospitals has continued to fall, with a concomitant increase in the proportion done in physicians' offices and particularly in independent centres (Ambulatory Surgery Centers or ASCs) (see Figure 1).

### 3.1.2 Situation in European countries

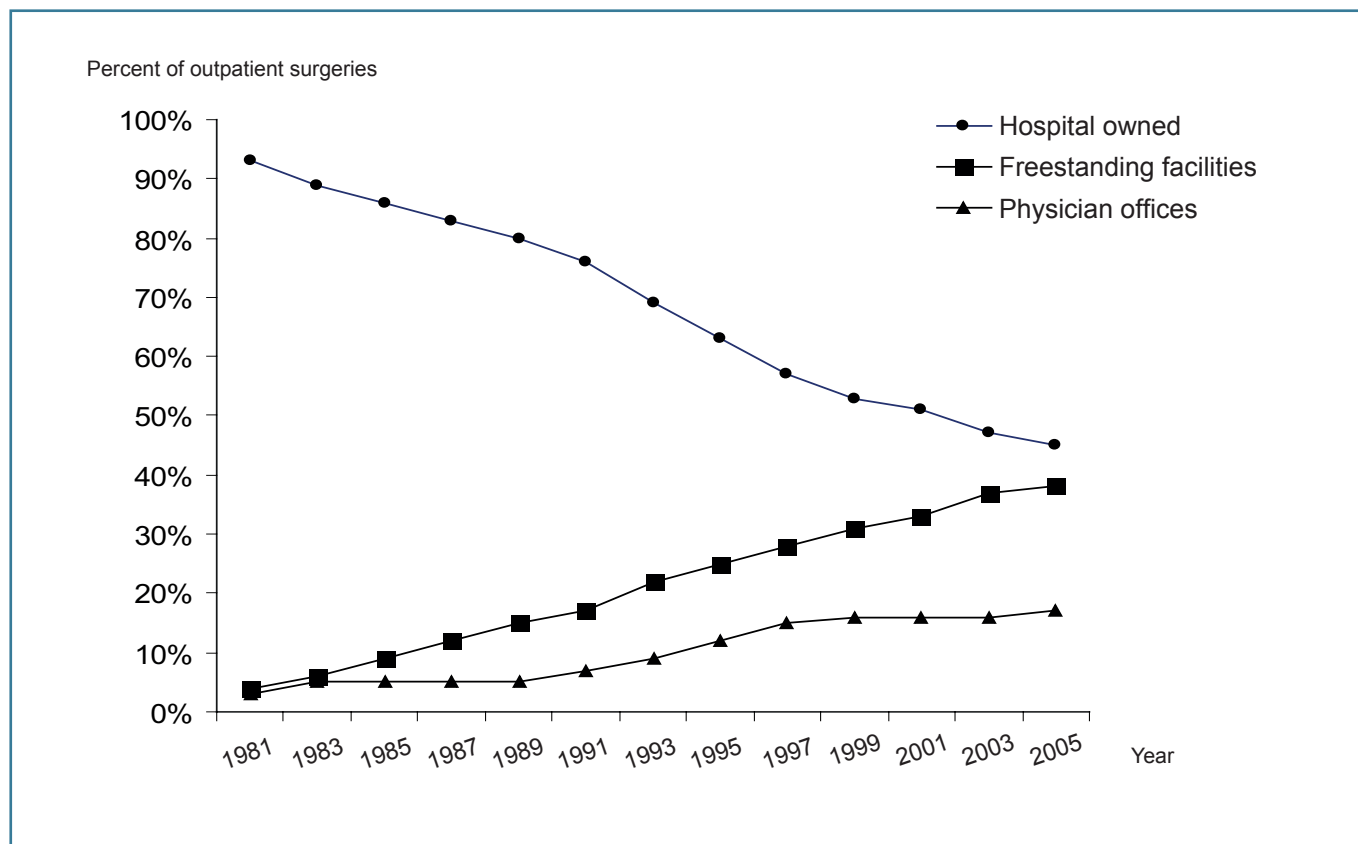
In the absence of reliable comparative data on healthcare systems, and because definitions vary, the International Association for Ambulatory Surgery (IAAS) carried out four surveys on rates of day surgery in 29 OECD countries.

The first took place in 1995–1996 (6) and involved 18 procedures + 2 (hysterectomy and laparoscopic cholecystectomy), based on the International Classification of Diseases version 9 and on the information systems used in each country<sup>11</sup>. This survey was repeated in 1996–1997 (16). In 2004, the study was extended (17) to a reference range of 37 surgical procedures<sup>12</sup> (classified using ICD9), which were carried out as inpatient admissions as well as in day surgery. The 2009 survey was also based on this list of procedures (18).

The rate of day surgery was calculated using three different ratios:

- number of surgical procedures from a list of procedures carried out as day cases/total number of surgical procedures for this list of procedures;

Figure 1. Percent of Outpatient Surgeries by Facility Type, 1981 – 2005.



Source: Verispan, Diagnostic Imaging Center Profiling Solution, 2004 in American Hospital Association, Trendwatch Chartbook 2008 (15) \*2005 values are estimated based upon current trends.

11. Primarily Diagnosis Related Groups, which are equivalent to the French "Groupes homogènes de malades" (Homogeneous Patient Groups).

12. Not all countries provided information for all procedures.

- number of surgical procedures carried out as day cases/total number of surgical procedures;
- number of non-urgent surgical procedures carried out as day cases/number of non-urgent surgical procedures (planned surgery).

The results for the United States and European countries are presented in Table 2.

For these procedures, there was wide variation between countries, with the United States ahead at 94.2% of procedures carried out as day cases in 1996 (of a list of just 18 procedures) and 83.5% in 2004 (of an extended list of 37 procedures).

The countries with the highest levels of day surgery in comparison with inpatient admission were Denmark, the Netherlands, Sweden and Norway. In these countries, the proportion of the reference procedures carried out as day surgery was greater than 65%.

In France, 30.4% of reference procedures were carried out as day cases in 1996, and this figure was 44.9% in 2004 and just 36% of all surgical procedures were performed as day cases in 2009. These levels are lower than those seen in most European countries.

These data must be interpreted with great care, given the wide variation in the methods used to collect them, particularly the databases and definitions used, and the difficulties involved in comparing different medical procedures. There is also wide variation in practice within countries, between different hospitals and different regions.

### 3.1.3 Analysis of explanatory factors

The causes of variation between countries were analysed by Kroneman et al (19), using a qualitative questionnaire-based survey carried out in 1996-1997 involving 25 experts from 12 countries<sup>13</sup>. This study confirmed that day surgery developed at different times in different countries. It was already highly developed before 1980 in Austria, Denmark, Italy, Norway, Switzerland and the

United Kingdom. In Belgium and the Netherlands it saw strong growth between 1980 and 1985. In Finland and Sweden it grew between 1985 and 1990 and in France and Germany development took place after 1990.

A set of hypotheses was developed using the opinions of experts as to the factors that encouraged or held back the development of day surgery, and these are summarised in Table 3.

The analysis showed that it was difficult to create a list of the overarching factors that influence the development of day surgery. Factors that promote the development of day surgery may be a lack or severe reduction in the number of inpatient beds, and of the number of home nurses. In addition, an unexpected result was that countries that have a high proportion of employed doctors in comparison with independent doctors have the highest rates of day surgery. This study, which relied on expert opinion, requires further work if definitive conclusions are to be drawn.

Levels of development of day surgery were also the result of a perception of excessive waiting times for elective surgery, and of a strong willingness to reduce these times in some OECD countries (Denmark, Spain, the United Kingdom, Australia, New Zealand) (20). The IAAS (17) also mention the weight of tradition and of schools of thought among healthcare professionals.

## 3.2 French data

### 3.2.1 Situation in 1995

Until 1993, the Ministry of Health's statistics, studies and information systems department provided no separate information on day surgery, as it was contained within the broader category of day hospital admission (10).

An initial assessment, carried out by CREDES (Centre of research and study in health economics) for the years 1994-1995, observed that day surgery only represented 20% of all procedures across all sectors. There were

13. Austria, Denmark, Italy, Norway, Switzerland, the United Kingdom, Belgium, the Netherlands, France, Germany, Finland, Sweden.

Table 2. Rates of day surgery in IAAS surveys for a list of procedures and as a % of total surgical activity or of planned surgery in Europe and the United States.

	IAAS Survey 1994-95 18 procedures (6)	IAAS Survey 1996-97 18 procedures (16)	IAAS Survey 2004 37 procedures (17)	IAAS Survey 2009 37 procedures (18)	IAAS Survey 2004 % day surgery/ total surgery (17)	IAAS Survey 2009 % day surgery/ total surgery (18)	IAAS Survey 2004 % day surgery/ total planned surgery (17)	IAAS Survey 2009 % day surgery/ total planned surgery (18)
United States	93,2	94,2-	83,5	-	-	-	-	-
Germany	-	-	60,7	-	37	43,5	-	-
Belgium	39,2	44,9	79,3	78	30	-	43	-
Denmark	41,3	78,5	69	86	55,3	74	61	89
Spain	-	33 (Andalousie)	54	63	28-44	33	-	87
Finland	32	56,4	62,4	65	35	-	43	63
France	-	30,4	44,9	45	-	36	-	-
Ireland	38	40,1	-	-	-	-	-	-
Italy	-	21,9 (Veneto)	41	60	29	32	-	64
Luxembourg	19,3	-	-	-	-	-	-	-
Norway	-	-	68	88	48	50	60	64
Netherlands	58,2	66,7	69,8	68	49,6	53	58	-
Portugal	10,4	9,9	18,5	55	10,7	35	14,6	43
United Kingdom	46,2	60	62,5	77	-	52	-	62
Sweden			66,7	73	50	69	-	80

Source: De Lathouwer 1998 (6), De Lathouwer 2000 (16), IAAS, 2006 (17).  
Source: IAAS, 2006 (17).

around 1000 organisations with 6,800 places spread across the country, i.e. one place for every ten inpatient beds. In total, 79% of day surgery procedures were carried out in the profit-making private sector, compared with just 13% in the public sector and 8% in the non-profit private sector (21). In addition, there was wide variation between regions in France, with the South and Île-de-France regions appearing to have the highest levels (10).

### 3.2.2 Evaluation of potential for development in the early 2000s

Two studies looked at the potential for developing day surgery: the study by CREDES done in 1999 (22-24), and the study carried out in 2001 by the three main health insurance funds (11, 25).

#### Study by CREDES

CREDES<sup>14</sup> (22, 24) measured the potential for development of day surgery in 1999, using 17 key procedures identified using the french GHSs database (equivalent of DRGs) database, using a method developed by the Quebec Hospital Association (AHQ), based on the "OPTIMAH" programmes (Optimisation of information for monitoring of hospital activity). This method, when applied to day surgery, consisted of assessing, using procedures carried out during inpatient admission, the percentage of patients who could have been treated as day cases. These were patients who had no contraindications to this type of management (i.e. they had no comorbidities and stayed in hospital for less than two days).

The potential rate of day surgery as compared with inpatient surgery varied depending on the type of procedure: from 14% for hernia repair in adults, to 99% for insertion of a tympanostomy tube (see Figure 2) (22-24). Insertion of tympanostomy tube, phimosis repair, decompression of the median nerve in the carpal tunnel, tonsillectomy or adenoidectomy, strabismus surgery and cataract surgery

were calculated to have potentially very high day surgery rates, of between 90% and 100%. There was a very significant discrepancy between potential development and actual practice for many procedures (strabismus surgery 14%, with potential rates of 92-96%, cataract surgery 27% with potential rates of 77-91%, testicular surgery 32% with potential rates of 81-84%, knee arthroscopy 24% with potential rates of 72-75%, varicose vein surgery 15% with potential rates of 65-68%, nasal surgery 9% with potential rates of 52-55%, breast surgery 9% with potential rates of 41-43%).

#### Study of the three mains insurance funds

In 1999, AFCA (French association for ambulatory surgery) and CNAMTS (National Fund of health insurance for employees) put forward the idea of key procedures, and identified 18 procedures, which were grouped using two approaches: a quantitative approach (using the list put forward by IAAS of the most commonly performed procedures in France) and a qualitative approach (using procedures with different levels of complexity and taking place in different environments, for which it seemed useful to determine whether the potential for development was similar to that of inpatient procedures).

The objective of the study conducted by the three mains insurance funds (11, 5) was to estimate the potential use of day surgery as a substitute for inpatient admission in the 18 key procedures<sup>15</sup>, using a sample of hospital stays during June 2001 involving patients who were affiliated to one of the three main health insurance regimes. The reference population consisted of 34,015 hospital stays in 1,280 hospitals that carried out surgery in 2001, from all regions with the exception of Guyana. The 1990 SFAR/AFCA guidelines, which were revised in 1994, concerning anaesthesia for day surgery patients, acted as a basis for definitions of eligibility criteria and absolute contraindications to day surgery management (lower<sup>16</sup> and upper<sup>17</sup> eligibility rates were determined). The results are presented in Figure 3.

14. This study followed on from two publications about treatment for inguinal and crural hernia (23) and cataracts (24). It was followed by the survey of organisations and patients that was carried out by the three major health insurance providers as part of the 2001-2002 National Inter-regime Programme (PNIR) for risk management.

15. Knee arthroscopy (diagnostic or therapeutic), dental extractions, cataract surgery, varicose vein surgery, adenoidectomy and/or tonsillectomy, strabismus surgery, ENT surgery (nasal), breast surgery, anus surgery apart from tumour destruction, destruction of anal tumours, phimosis in children aged under 15, surgery for Dupuytren's contracture, decompression of median nerve for carpal tunnel, testicular surgery in children aged under 15, gynaecological laparoscopic procedures, open unilateral hernia repair in adults aged over 14, laparoscopic hernia repair and hernias in children aged under 15.

16. A stay was defined as being eligible for day surgery if all eligibility criteria were met.

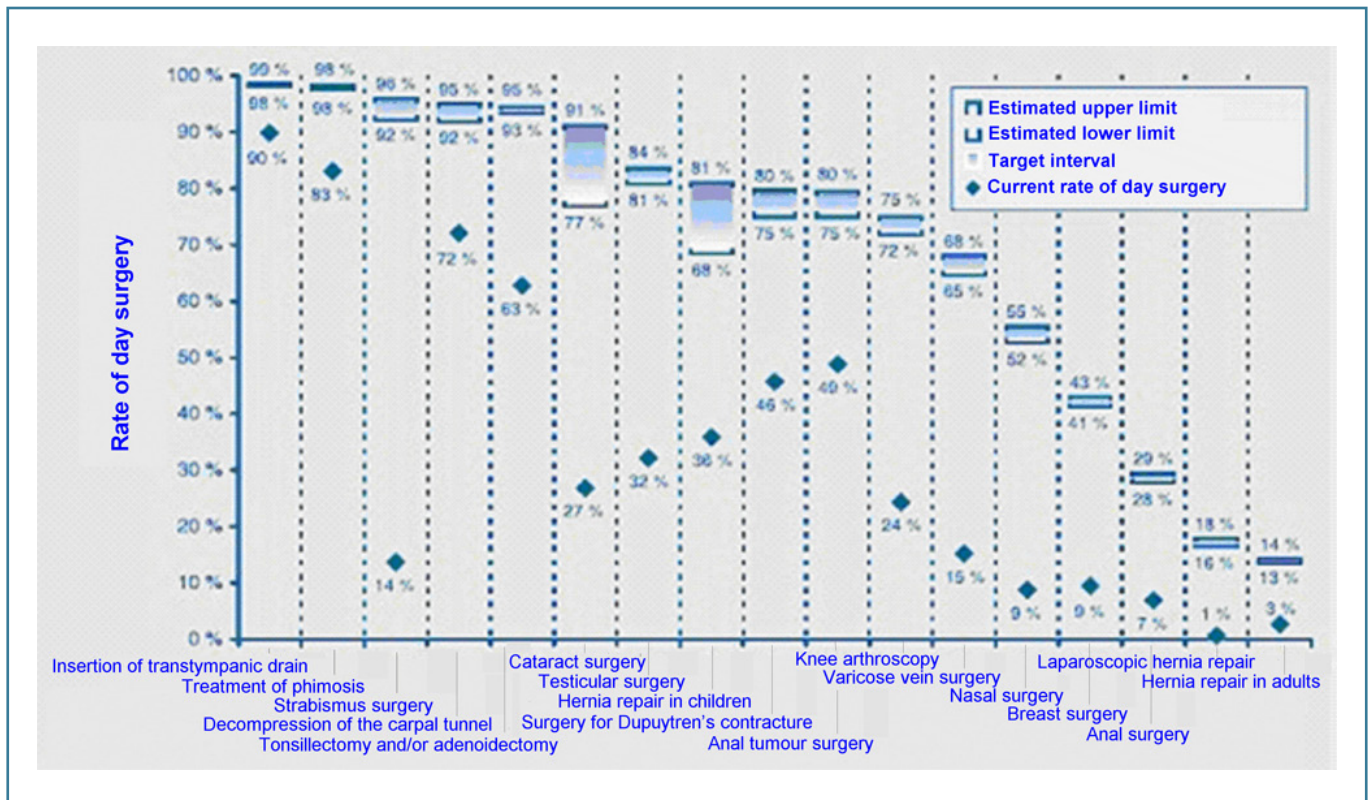
17. 100 - Rate of absolute contraindication of day surgery.

Table 3. Analysis of factors that affect the development of day surgery, according to experts (19).

Factors	Countries in which experts give this as a cause	Hypotheses to test	Outcome
<b>Factors that encourage development</b>			
Limited number of beds for conventional admission (A <sup>o</sup> ).	Netherlands and Denmark	<p>H1: In countries with a high number of beds per 1000 inhabitants, day surgery is less well developed.</p> <p>H2: countries that have greatly reduced the number of hospital beds have turned to day surgery to fill the gap.</p>	<p>H1: Validated by Spearman test <math>r = 0.78</math>, <math>P = 0.01</math>.</p> <p>H2: Validated by Spearman test <math>r = 0.83</math>, <math>P = 0.03</math>.</p>
Strong involvement of primary care sector in post-admission management.	United Kingdom, Denmark	<p>H3: In countries with a strong secondary care (i.e. hospital) sector, day surgery is less well developed than in countries with a strong primary care sector (measured using the number of general practitioners per 1000 inhabitants and the generalist/specialist ratio, the number of home nurses).</p> <p>H4: In countries that do not have hospital outpatient services, day surgery levels are lower than in countries that do have such services.</p>	<p>H3: Not validated, whether using number of general practitioners (Spearman test <math>r = 0.40</math>, <math>P = 0.25</math>) or generalist/specialist ratio (Spearman test <math>r = 0.18</math>, <math>P = 0.63</math>).</p> <p>H3: Validated using number of home nurses, Spearman test <math>r = 0.72</math>, <math>P = 0.02</math>.</p> <p>H4: Not validated; only Denmark and Germany had no hospital outpatients system, but their levels of day surgery are very different.</p>
<b>Factors that hold back development</b>			
Lack of financial incentive, and/or financial disincentive.	7 countries of 12	<p>H5: In countries in which hospitals are funded by global budget, day surgery levels are higher than in those in which hospitals are funded on a per diem basis.</p> <p>H6: In countries in which doctors are paid per procedure, day surgery levels are higher than in those in which doctors are employed.</p> <p>H7: In countries in which day surgery is funded on a cost basis, day surgery levels are higher.</p>	<p>Not validated, no correlation found.</p> <p>Not validated. Countries in which doctors are employed have the highest levels of day surgery.</p> <p>Not validated.</p>
Number of conventional hospital beds is too high.	Austria	See A	Validated (see A)
Involvement of friends/family required in post-admission management.	Austria	Not tested	Not tested



Figure 2. Rates of day surgery and estimation of potential increase.



Source: CREDES, using GHSs database from 1999 (22).

Upper rates varied greatly, from 64.8% for strabismus surgery to 95.7% for adenoidectomy and/or tonsillectomy.

The analysis identified four groups:

- **Group 1:** procedures for which the mean weighted rates of day surgery was between the lower and upper mean weighted eligibility rates: phimosis in the under-15s, decompression of median nerve in the carpal tunnel, surgery for Dupuytren's contracture, testicular surgery in the under-15s and destruction of anal tumours;
- **Group 2:** procedures for which the observed mean weighted rate of day surgery was close to the mean weighted lower eligibility rate (less than or equal to minus 10%): adenoidectomy/tonsillectomy, hernia repair in the under-15s, cataract surgery and strabismus surgery;
- **Group 3:** procedures for which the observed mean weighted rate of day surgery was 10-30% lower than the mean weighted lower eligibility rate: dental extractions, knee arthroscopy and varicose vein surgery;

- **Group 4:** procedures for which the observed mean weighted rate of day surgery was much lower (30% or more) than the mean weighted lower eligibility rate: nasal surgery in ENT, breast surgery, anal surgery apart from tumour destruction, laparoscopic procedures in gynaecology, unilateral open hernia repair in adults and laparoscopic hernia repair.

### 3.2.3 Changes observed between 2000 and 2010

Changes in surgical activity over the period 2000-2010 can be evaluated using data from the annual statistics about hospitals activity (SAE) or using the french GHSs database (26-28) and statistics on procedures that are subject to prior agreement (MSAP) (29) by health insurance funds.

Firstly, it is important to note that there are differences between the SAE data and the French GHSs database (which were used by ATIH and by the department of statistics of the Ministry of health) in terms of criteria used to classify hospital stay by type of hospital admission



and type of specialty<sup>18</sup> (30). Likewise, the list of “GHS diagnostic categories” is broader in scope than the list of procedures that are subject to prior approval by the health insurance funds, which is based on CCAM procedure coding.

## Overall data

### Annual statistics for hospitals

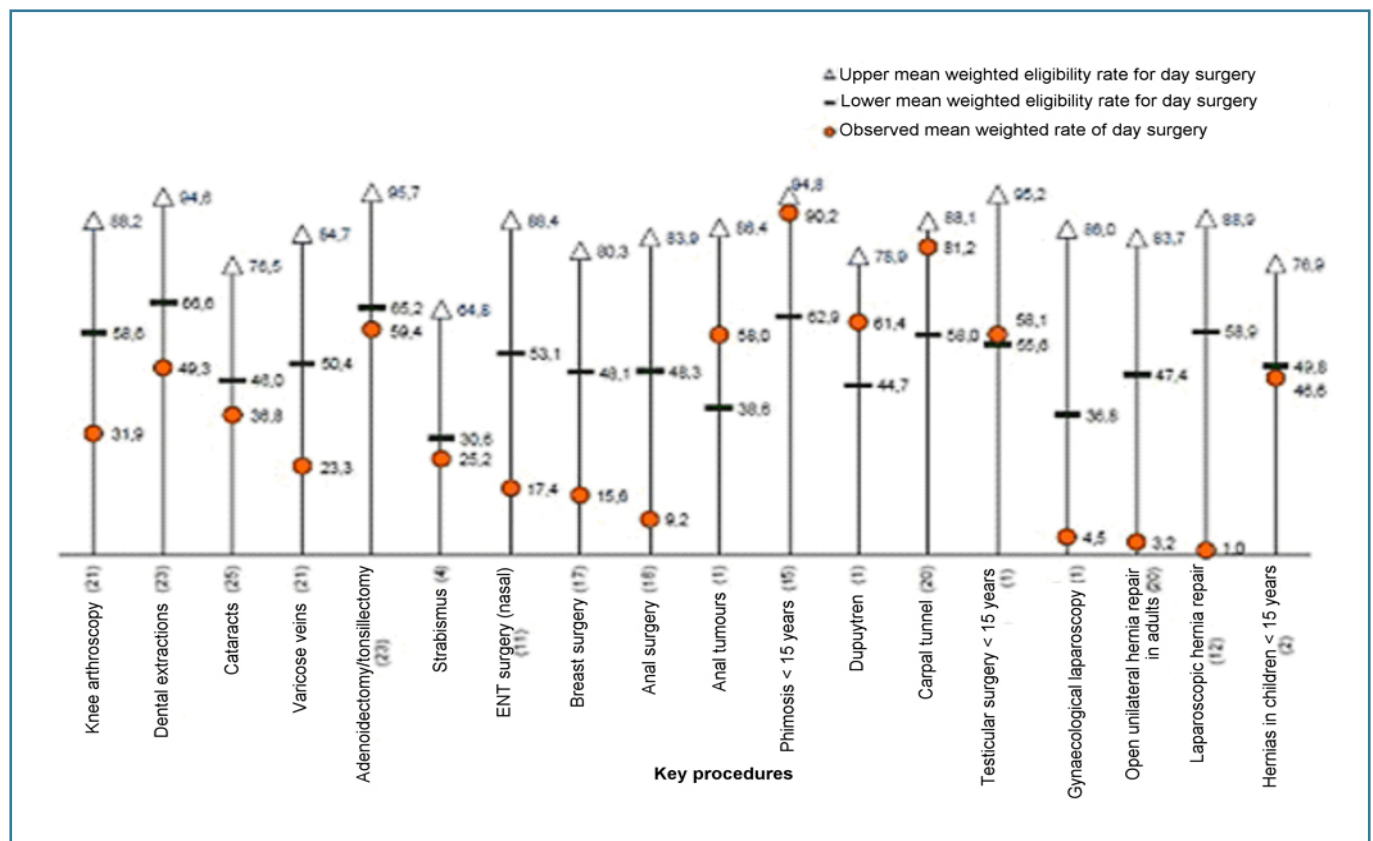
The revision of the annual statistics about hospitals activity (SAE) in 2000<sup>19</sup>, which was carried out by the department of statistics of the Ministry of health (DREES), provided a better description of the activity of public and

private healthcare facilities (e.g. numbers and length of stay in inpatient admissions, partial hospital admissions, sessions) and of the production factors (beds, places, equipment, staff).

Between 2000 and 2009, the number of day surgery places (partial admission) increased greatly, from 7,641 to 12,395 (see Table 4), which is a growth of 62.2%, while the number of inpatient beds fell from 101,756 to 84,601, a fall of -16.8%.

Table 5 presents the change in day surgery rates between 2004 and 2010, in comparison with surgery done on inpatient admission. Day surgery as a propor-

**Figure 3. Graphical representation of observed mean weighted rates of day surgery and lower and upper mean weighted eligibility rates for day surgery in key procedures (proportions expressed as percentages), for all regions (in brackets: number of regions in which this procedure was studied).**



Source : CNAMTS – Enquête PNIR «Chirurgie Ambulatoire» - Volet Potentiel de Substitution – juin 2001.

18. In the SAE statistics, it is the resources that are used that define "conventional admission", i.e. the patient is received in a ward that accommodates patients for a period of time that is generally greater than one day (and therefore occupies a bed, even if the stay lasts less than one day), and "partial admission", i.e. the patient uses a place that is authorised for day admission, overnight admission or day surgery/anaesthesia. In the french GHSs statistics, the admission type is defined by the observed length of stay: a length of stay of less than two days classifies the admission as CM 24 (sessions and stays of less than two days) regardless of the primary diagnosis and the facility in which the patient is managed. A duration of more than two days corresponded automatically to a non-CM 24 stay.

19. This was a comprehensive and compulsory administrative survey involving public and private hospitals in France (mainland and overseas départements), including facilities that only offer one type of admission and those that are authorised to provide only one type of care.

tion of total surgery days rose from 10.7% in 2004 to 15.5% in 2010, and from 37% to 46%<sup>20</sup> as a proportion of total admissions. The development of day surgery accelerated (see Table 5) from 2004<sup>21</sup> (+7.5% in 2004-2005 and +11.1% in 2005-2006), and then appeared to recede between 2006 and 2007 (-5.3%) which is primarily linked to changes in coding<sup>22</sup> (30). The upward trend continued in 2008 and 2009 (+8%). Over the whole period 2004-2010, therefore, the number of admissions to day surgery increased by 29.3%.

**Table 4. Number of surgical beds (inpatient admission) and places (day surgery) between 2000 and 2009.**

Year	Number of beds	Number of places
2000	101 756	7 641
2001	99 091	8 007
2002	97 236	8 443
2003	95 000	8 782
2004	93 561	9 228
2005	91 822	9 609
2006	90 061	10 013
2007	88 202	10 600
2008	86 105	11 552
2009	84 601	12 395

Source: search using Eco-santé software – SAE-DREES

Conversely, the number of days and admissions for inpatient beds followed the opposite trend, with an overall fall of -11% over the period in terms of numbers of admissions, and a fall of 15% in number of admission days.

## French GHSs database

For all surgical activity, the assessment for the period 2007-2010 done by ATIH (26, 27) showed that rates<sup>23</sup> of day surgery rose from 25.2 per 1000 inhabitants in 2007 to 30.2 per 1000 inhabitants in 2010 (an increase of 19.8%), while the rate of surgery rose from 78 per 1000 inhabitants to 79.9 over the same period (+2.4%).

CNAMTS, via the national day surgery observatory, had tracked the development of day surgery in France using GHSs database (french equivalent of american GHSs) since the study of health insurance in 1999. In 1999, 1,195,823 admissions to day surgery (CM 24) were counted, out of a total of 4,662,004 GHS surgical admissions, which is a day surgery rate of just 25.6% (31).

In the ATIH data (26, 27), the proportion of surgical admissions done as day cases rose from 32.7% in 2007 to 37.8% in 2010. Changes in admission classification (formerly CM 24<sup>24</sup>) make it difficult to compare rates observed by CNAMTS in 1999 with the 2010 ATIH data.

For the 18 diagnostic GHS categories that are subject to single pricing (see 9.2 “Second wave of incentives” 2004-2011)), the rate of day surgery rose from 60.4% in 2007 to 74.6% in 2010 for stays of severity level 1<sup>25</sup>, which is an increase of 14.2 percentage points.

DREES (28) made the same observation for the period 2004-2009, re-using the ATIH data for 19 procedure categories for the period 2004 2009. Using these data, the rate of day surgery rose from 45.9% in 2004 to 62.9% in 2009, for the selected procedures. The rate of increase was more marked in 2004-2005 and 2008-2009, which saw growth rates of over 8%.

20. The data available on the site are administrative data, and are therefore data as the hospitals provided them. Failure to respond was therefore not processed for data that were put online.

21. The order of 4 September 2003 removed the principle of creation of additional places for day surgery in proportion of closure of conventional beds, given that SROS for surgery were being set up in the regions.

22. This is as a result of the circular concerning "actes frontières" (cutting-edge procedures) and the order concerning the safety of the hospital environment, which states that procedures that are carried out in the operating suite and that require patient monitoring, but which are carried out without anaesthesia, are recorded as outpatient appointments (this is the case for endoscopy without anaesthesia).

23. Number of patient stays per year as a proportion of the total population.

24. Major category (CM 24) was initially restricted to sessions. It was extended to sessions and stays of less than 24 hours (period 1992-2003, corresponding to versions 1-7 of the GHS classification), and then to sessions and stays of less than two days (for the period 2004-2005). In 2009 the CM 24 category was abolished, and true day surgery groups were created in the relevant GHS diagnostic categories (date of admission = date of discharge), coded with the letter J.

25. Starting from version 11 of the classification of hospital stays, admissions are classified into four increasing levels of severity (from 1 to 4). Classification depends on Associated Major Complications (CMA), and in some cases on age, discharge type and minimum length of stay for this admission. Eighteen GHS diagnostic categories are subject to single pricing for surgery as conventional admission with severity level 1, and for day surgery.

Table 5. Activity and changes in day surgery and conventional admission between 2004 and 2010.

	Admissions to day surgery or anaesthesia (TA 23)	Conventional admission (TA03)		% Day surgery / total days	% Day surgery / total admissions
		Days carried out	Total admissions		
2004	2 810 134	23 335 312	4 782 501	10,7%	37%
2005	3 022 175	21 580 530	4 553 564	12,3%	40%
2006	3 358 092	21 477 643	4 582 539	13,5%	42%
2007	3 180 887	20 882 588	4 441 790	13,2%	42%
2008	3 289 926	20 620 476	4 347 751	13,8%	43%
<b>2009</b>	<b>3 541 119</b>	<b>20 326 921</b>	<b>4 347 426</b>	<b>14,8%</b>	<b>45%</b>
2010	3 633 915	19 811 395	4 261 973	15,5%	46%
<b>Variations</b>					
2004-05	7,5%	-7,5%	-4,8%		
2005-06	11,1%	-0,5%	0,6%		
2006-07	-5,3%	-2,8%	-3,1%		
2007-08	3,4%	-1,3%	-2,1%		
2008-09	8%	-1%	0%		
2009-10	3%	-3%	-2%		

Source: SAE statistics, direct interrogation of database compiled by HAS.



## Procedures subject to prior agreement

For procedures that are subject to prior agreement, the health insurance fund (see 9. “Current incentives in France”) saw an increase of 15 percentage points (from 59% to 74%) between 2006 and 2009. The procedures that are most commonly carried out as day surgery saw the greatest increases; cataract surgery increased by 19 points, dental extractions by 17 points, varicose vein surgery by 30 points. Conversely, some procedures still had rates of day surgery of below 30% (16% for laparoscopic procedures in gynaecology, 18% for inguinal hernia repair, 26% for anus surgery and 27% for breast tumour surgery) (see Table 6).

## Regional distribution

The study of the health insurance system in 1999 showed (32) major disparities between regions. The Île-de-France, PACA and Rhône-Alpes regions were responsible for 36% of surgical procedures carried out as inpatient admissions and 42% of surgical procedures carried out as day cases.

In 2010, analysis by ATIH showed (26) that these regional disparities still existed, for surgery in general and for day surgery in particular (see Figure 4 and Figure 5).

Standardised rates of day surgery appear to be highly variable across regions, and are similar to those of surgery in general. The regions with the highest rates are Provence-Alpes-Côte-d’Azur and Languedoc-Roussillon, as well as Nord Pas de-Calais, followed by Aquitaine, Île de France and the regions of the north-east, while central regions and the north-west have low rates.

Observed rates (standardised for age) nevertheless need to be refined. For example, KCE (33) identified local variations in the use of surgery in Belgium, which were possibly linked to a demand effect (morbidity effect) and a supply effect (density of doctors, specialties and training).

## Disparities between sectors

For 1999, CNAMTS (32) observed wide differences that were dependent on the status of organisations and regions. CNAMTS noted an imbalance between the hospital types (profit-making and non-profit making) in terms of day surgery activity.

The private profit-making hospitals carried out 55% of all operations that were carried out as inpatient admissions, but 87% of all day surgery operations.

Eleven years later, the difference between these types of organisation persists (according to ATIH data) with rates of day surgery in 2009 of 44.1% in profit-making private hospitals and 25% in public and non-profit-making private hospitals (this figure was 19.6% for university hospitals).

For 19 diagnostic categories with single pricing levels, rates of day surgery in 2009 were 63.1% for public and non-profit-making private hospitals, compared with 75.4% for profit-making private hospitals. The gap between the two sectors, however, is now just 12.3 percentage points, while it was 19 points in 2007.

National Health Insurance fund (29) observed that the rate of day surgery for 17 key procedures rose from 54% in 2006 to 69% in 2009 in the public sector, and from 62% to 77% in private clinics.

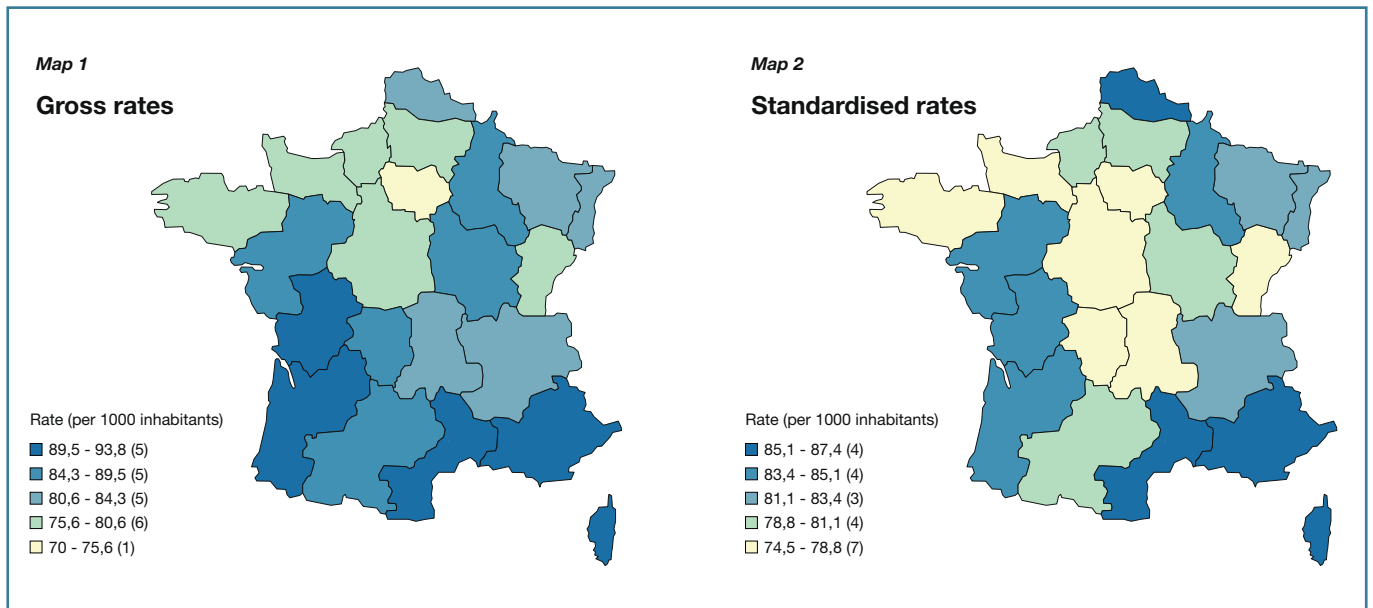
Although the public sector has caught up, with a greater increase in day surgery rates between 2004 and 2009, which continued in 2010 (see Table 7) (an 8% increase in J-coded procedures in public and non-profit-making private hospitals, compared with a 6% increase in profit-making private hospitals), the profit-making private sector is still ahead of the public sector (34).

Table 6. Day surgery in 2009, for procedures subject to prior approval by health insurance.

Procedures	No. of conventional admissions	No. of day admissions	Rate of day surgery
Adenoidectomy	2 413	87 188	97%
Removal of synovial cyst	1 344	17 252	93%
Surgery for conjunctivitis (pterygion surgery)	1 037	10 822	91%
Carpal tunnel surgery and other nerve release procedures	22 623	146 896	87%
Surgery to repair ligaments and tendons (hand)	3 016	18 325	86%
Dental extractions	40 235	234 570	85%
Surgery involving uterus, vulva, vagina, and fertility treatment	55 396	259 927	82%
Surgery on lens of the eye	139 607	500 744	78%
Knee arthroscopy, not ligament reconstruction	39 321	100 907	72%
Surgery for Dupuytren's contracture	6 041	13 118	68%
Varicose vein surgery	54 841	68 605	56%
Scrotal surgery	17 268	13 732	44%
Strabismus surgery	5 173	2 945	36%
Anus surgery	12 900	4 535	26%
Surgery for inguinal hernias	95 228	21 137	18%
Laparoscopic procedures in gynaecology	10 803	2 109	16%

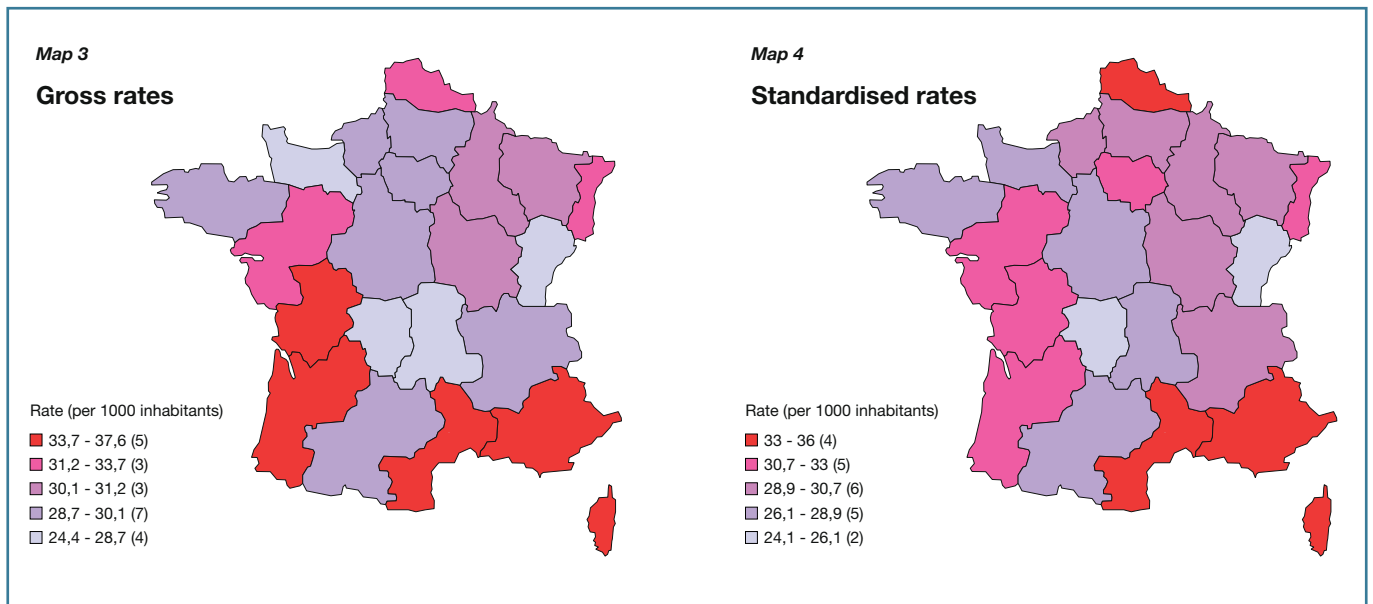
Source: GHSS DATABASE 2009.

Figure 4. Rates of surgery in 2010 (per 1000 inhabitants) (gross rates and rates standardised by age) (26).



Source: ATIH - Current situation concerning changes in day surgery activity, 2010.

Figure 5. Rates of day surgery in 2010 (per 1000 inhabitants) (gross rates and rates standardised by age). Mainland France (26).



Source: ATIH - Current situation concerning changes in day surgery activity, 2010.

Table 7. Number of stays of severity level 1 and code J, and changes between 2009 and 2010 in the 19 single-pricing GHS diagnostic categories, as a proportion of total.

2010	Public and non-profit-making private hospitals		Profit-making private hospitals	
	No. of stays in thousands	Change/2009	No. of stays in thousands	Change/2009
Level J (day surgery)	387,41	+ 8,7 %	1 115,92	+ 6,00 %
Level 1 (conventional admission)	173,82	- 8,7 %	272,01	- 14,3 %
Level J or 1	561,23	+ 2,7 %	1 427,93	+ 1,4 %
Total stays	15 553,79	+ 1,7 %	6 942,81	+ 0,5 %
% level 1 or J/total	3,7 %		20,7 %	

CA: Day surgery.

Source: 2011 report to parliament about T2A, using ATIH data (34).

# 4. DAY SURGERY FRAMEWORK

## 4.1 Premises and equipment

### 4.1.1 Types of facility

Four models for organising day surgery are commonly described (5, 7, 9, 17, 35).

#### ■ Hospital integrated facilities

Integrated facilities have reception and admission facilities that are dedicated to day surgery, but are located in an inpatient ward. The operating theatres are common to inpatient and day admissions (5, 7, 9, 17, 35).

Integrated centres are the oldest model, and almost all French facilities have used this model over the last 20 years. The advantage of such facilities is that it is easy to introduce them into an existing organisation. Their drawback is that they can often hold back the development of day surgery, as this situation is one in which conventional types of management (as an inpatient) still prevail (7, 9).

#### ■ Self contained unit on hospital site

Self contained unit on hospital site have dedicated reception and admissions facilities, with an operating theatre that is dedicated to day surgery, situated in a conventional theatre wing (5, 7, 9, 17, 35).

#### ■ “Satellite” facilities

“Satellite” facilities have exclusive use of all the material and human resources they need to carry out day surgery. The operating suite is dedicated to day surgery and is situated outside the operating theatres for inpatient admission, while still on the site of a hospital with inpatient admission facilities (5, 7, 9, 17, 35).

#### ■ Free-standing self contained unit

Free-standing self contained unit have exclusive use of all material and human resources they need to carry out day surgery, and are entirely detached from inpatient admission facilities (5, 7, 9, 17, 35). A free-standing centre is therefore not on the site of a hospital with inpatient admission facilities. These do not currently exist in France, apart from situations in which hospitals have eliminated their inpatient admission facilities, while maintaining their legal status (7, 9). (Physician’s office-based

unit, which are not allowed in France, are small, self contained operation annexes to surgeons consulting rooms).

### 4.1.2 Architectural models

There are no particular models for day surgery facilities, in the architectural sense of the word (7, 9, 17). The obligations of such facilities are to guarantee that all patients are treated under the necessary conditions of hygiene and asepsis, and that patients’ privacy and dignity is respected, and to provide immediate management of any complications. The architecture of the facility represents the organisational choices that have been made, which are particularly prominent in day surgery units (DSUs) (36, 37). How these day surgery facilities are arranged is governed by the patient’s care pathway, as the patient is at the centre of how day surgery is organised (9).

The various spaces that are needed in a DSU are (17, 35, 38-40):

- entry and exit areas (for patients, staff and equipment);
- admission rooms;
- admission and discharge office;
- waiting room;
- consultation rooms;
- preoperative treatment rooms;
- changing rooms for patients and staff;
- operating theatre(s);
- recovery room and postoperative treatment room;
- space for sterilising instruments;
- space for storing equipment;
- toilets for patients and families and toilets for staff;
- in some cases, a meeting or conference room and a staff break room;
- if necessary, paediatric pre- and postoperative rooms.

Each DSU must have a sterilisation system, hygiene protocols and a waste management system (35). An emergency evacuation system must also be in place (40).

It is important to separate DSU patient throughput from inpatient admission patient throughput, and to identify those staff who are dedicated to the DSU (5).



### 4.1.3 Operating suites

A facility offering day surgery or anaesthesia must have an operating suite as defined in the legislation. A DSU operating suite is subject to the same standards as those used for inpatient admission (38, 40-42).

An operating suite is defined as a set of several rooms and annexes within a single building, which is dedicated to invasive procedures regardless of the detail and purpose of these procedures, with suitable equipment and access to all the medical and paramedical skills that are required to ensure patient safety (43, 44).

Operating suites are organised in order to include everything that is necessary for a surgical procedure.

The following separate parts can be identified in an operating suite:

- changing room: entry and exit area to the protected zone for staff and visitors;
- transfer area: room in which the patient is transferred from bed or stretcher to a stretcher or trolley;
- induction room: a room near the operating room, designed to prepare the patient for the procedure and to prepare the anaesthesia;
- surgical preparation area: an area for surgical hand-washing and surgical hand disinfection using friction;
- the operating room itself;
- post-anaesthetic care unit (PACU): a recovery room required by legislation, designed for monitoring of patients after surgery;
- storage rooms in which to keep sterile and clean materials and pharmaceutical products.

A facility that provides day surgery or anaesthesia must also contain all equipment and materials for administering and monitoring anaesthesia, in accordance with decree no. 94-1050 dated 5 December 1994. This decree makes the following requirements as to what the facility must provide all patients:

- continuous clinical monitoring [...];
- continuous monitoring of heart rate and electrocardiogram trace;
- monitoring of blood pressure, either non invasively or, if the patient's condition requires it, invasively.

Appropriate conditions must also be provided for receiving medical fluids, for vacuum aspiration and administration of anaesthetic gases and vapours, as well as the evacuation of anaesthetic gases that cannot be reused (French ISO quality standards 7396 2).

For all patients, it must be possible to carry out tracheal intubation, artificial ventilation and continuous monitoring of:

- flow rate of oxygen that is being administered and oxygen content of inhaled gases;
- blood oxygen saturation;
- ventilatory pressures and flow rates, and gas concentrations.

### 4.1.4 Types of throughput

The unit's opening hours provide DSU managers with a rigid framework in which to operate; as everything happens in the same place, this ensures that schedules are adhered to (36).

One of the keys to success is scheduling of procedures, which enables optimal use of the available operating time (7, 37).

Scheduling must enable flexibility in day admissions, as the length of time required for postoperative monitoring prior to discharge will vary.

Several different functions can be performed by the same space, and different spaces can be used to perform the same function, as a day surgery unit must manage throughput of patients, information, staff and materials (7). Optimisation of throughput (e.g. of equipment, patients, paramedics, surgeons, anaesthetists) means that the facility will be managed better, to improve the quality of care that is delivered to patients (9). Throughputs in day surgery must be flexible, consistent and controlled. The patient's pathway must be simple and flexible. Such pathways will result if a logistical approach is adopted, from admission to discharge (7). This takes into account constraints at both ends of the process, and adjusts to existing constraints. The various stages are as follows: arrival, reception, registration, preparation, pre-anaesthesia transfer, procedure in the operating theatre, exit from operating theatre, a stay in the recovery room (PACU in all cases in France), rehabilitation,

assessment of discharge, handover to supporting adult, follow-up at home (7).

There are two basic types of throughput: single-direction (racetrack) and crossing (non-racetrack) (17):

- in a racetrack model, there is a uni-directional flow path. Patients never pass through the same place twice: admission, preoperative area, operating theatre, postoperative recovery and discharge. The advantage of this model is that pre- and postoperative patients do not meet, and there are no points of tension where patient pathways cross. The disadvantage is that two distinct areas are needed for pre- and postoperative care, and this requires more space and more nurses for the same number of patients;
- in the non-racetrack model, the patient will visit the same rooms twice, particularly the pre- and postoperative care room, which is a single location. The advantage is that just one space can be used for both pre and postoperative patients. There can also be one space for both admission and discharge. The drawback is that there will be points at which patients' pathways cross. In such cases, wide corridors are needed so that two trolleys can pass each other comfortably (17).

The "fast track" principle aims to optimise patients' flow, by limiting the stay to the minimum possible length of time. This principle requires assessment in advance of the patient procedure organisation combination, in order that the right resources can be deployed. However, in France, it should be noted that article D. 6124-98 of the PHC sets out requirements as to resources to be used in postoperative monitoring (9): It states that monitoring after the patient is transferred should be done in a PACU.

## 4.2 DSU team

In France, there must be a constant presence of a medical team while the DSU is open, consisting of a qualified doctor, an anaesthetist, one nurse per five patients present, and two additional nurses while the operating suite is being used (**article D. 6124 303 of the PHC**) (9).

The required number and level of qualification of medical staff, medical auxiliaries, rehabilitation staff and the number of care assistants working in day surgery facilities and centres are assessed by the director general of the regional health agency, and will depend on the type and volume of work done, how often services are delivered, the technical requirements of these services, and the risk levels of patients (article D. 6124-303 of the PHC).

A co-ordinator must be identified in each DSU (9, 39, 41, 42, 45). In France, the job of co-ordinating doctor is defined in the regulations (article D. 6124-308 of the PHC). This doctor must implement the rules that govern the operation of the centre, and must be assured that all people involved are applying these rules (9).

He/she is responsible for (35):

- organisation of meeting with the staff of the DSU;
- ensuring that procedures are carried out and applied;
- organising the DSU and adjusting resource levels to demand;
- quality control in the centre.

In other countries, day surgery facilities are not necessarily co-ordinated by doctors, but can be co-ordinated by nurses, administrators or organisation specialists (9).

Members of a DSU need to be able to work as a team in addition to their medical and technical skills (40, 45). The responsibilities arising from day surgery are the same as those of inpatient admission.

# 5. BEST CLINICAL PRACTICES AND ORGANISATION

---

## 5.1 Clinical pathway

The procedure is the same, whether carried out as day surgery or as part of an inpatient admission. The difference between day surgery and inpatient admission is the fact that the former is organised around the patient (39). The clinical pathway is the central element of how a DSU is organised, and it is defined as a set of clearly defined steps that take the patient from the intention or need to operate to the procedure itself (7).

A clinical pathway is a way of improving care quality by improving multi-disciplinary management of patients. Consideration of the clinical pathway means that planning, implementation, measurement and adjustment are possible (46).

A clinical pathway is created using detailed description and analysis of the whole management process (7) using data from the literature and from observation of actual practices (5, 47). The various phases, steps, actions, resources and dedicated staff that are needed, as well as the interfaces with other facilities (e.g. organisation of consultations before procedures, continuity with primary care, etc.) need to be identified (7, 40, 45, 47). The clinical pathway must be known to all professionals who play a part in a patient's management (7, 47).

The purpose of describing a clinical pathway is:

- to gain knowledge and control of the management process (7);
- to associate clear guidelines with every action that is carried out (5, 47);
- to plan and organise patient management with consensus from team members (46);
- to co-ordinate the various people involved in a DSU (in which the patient is particularly affected by the preparation for the procedure and by postoperative monitoring) (7, 40, 46, 47);
- to simplify the management process for professionals and to clarify the information that is given to patients (46);
- to optimise the use of human and material resources (46);
- to improve the effectiveness of care (46);
- to improve quality (40, 45-47).

In the context of day surgery, the four main phases of the clinical pathway are preoperative assessment, the procedure itself, discharge authorisation and follow-up (48). During these phases, patient selection, anticipation, improved co-ordination between those involved and appropriate information for those involved are essential.

## 5.2 Selection of DS patients

Day surgery can now be considered as the first resort (5, 7, 17, 38, 39, 41, 42, 48, 49). If inpatient surgery is being considered it is important to question whether any strategies could be employed to enable the patient to be treated as a day case. (41).

### 5.2.1 Patient selection: a key to success

Patients who are eligible for day surgery and those who require inpatient admission are distinguished on a case by case basis, according to the risk/benefit ratio for each patient, the extent to which the patient's management is predictable, and the type of organisation that is available (5, 7, 9).

Patient selection is a key to success and can enable avoidance of postoperative complications and of delays and cancellations, while increasing patient satisfaction levels (38, 40, 41, 50, 51). Eligibility criteria can vary, depending on the surgeon, the patient and the facility (38), and can be set out in a formalised procedure (35, 39, 49). The final decision as to whether a patient is eligible for day surgery is the responsibility of the surgeon and/or anaesthetist involved (3). The common thread of these guidelines is that the risk/benefit ratio for individual patients, for individual procedures and for individual organisations is based partly on medical and surgical criteria and partly on psychosocial and environmental criteria.

### 5.2.2 Medical and surgical selection criteria

It must be possible to carry out the procedure safely. A case-by-case assessment should be done, considering the particular combination of patient, procedure and organisation at a given time. Length of operation, postoperative monitoring period and the time it takes to achieve early rehabilitation must nevertheless be taken into account, keeping in mind how long the centre is

open each day. Finally, predictions should be made as to postoperative progress (5, 7, 38, 41). Patients with stable ASA (American Society of Anesthesiologists)<sup>26</sup> status I, II or III are eligible for day surgery (7, 35, 52). Some patients with ASA status IV may also be eligible (17, 38, 40).

Obesity and age are not in themselves exclusion criteria (5, 17, 35, 41):

Some North American teams are now agreeing to accept patients with a body mass index of greater than or equal to 50 kg/m<sup>2</sup> (7) as day surgery patients.

In France, the SFAR considers that infants who were born at term and who are aged over 3 months at the time of the procedure are eligible. For the CNCE and ADARPEF, this figure is 6 months. Depending on the experience of the team and the nature of the procedure, some patients aged under 3 months (according to the SFAR) and aged under 6 months (according to the CNCE and ADARPEF) can be eligible, with prior agreement by the anaesthetist/surgeon (7, 53). For infants who were born prematurely, a post-conception age of less than 60 weeks is an exclusion criterion. Depending on the experience of the team and the nature of the procedure, some patients with a postconception age of more than 60 weeks and less than one year can be eligible, with prior agreement by the anaesthetist/surgeon (7, 53)

Day surgery can also be suitable for patients for whom a disruption to the usual routine could be harmful, if specific requirements are taken into account (for example children or the elderly) (7).

### 5.2.3 Psychosocial and environmental selection criteria

Patients must consent to surgery as well as to day case management (35, 38, 40, 41, 48).

It must be possible for the patient to be accompanied home by a responsible adult, and if necessary, for at least one night after discharge (5, 7, 9, 35, 38, 40-42, 54).

The escort must be able to understand the postoperative care procedures and must accept the responsibility

of monitoring the patient (5, 17). He/she must be physically and mentally capable of making decisions as to the patient's well-being, if necessary (38).

As the patient and his/her escort must understand the procedures used to manage the patient (35, 38, 39, 41), the following categories of patient must be accompanied:

- minors (by their parents or a legal representative);
- patients with impaired judgement (by a third party or a legal representative);
- and patients who do not speak the same language (by an interpreter) (7, 35).

Patients with psychiatric disorders that prevent them from co-operating with the medical team cannot be eligible for day surgery (35).

Length of journey and distance between postoperative residence and the hospital are not exclusion criteria. It is preferable for patient comfort that the distance not be too long. Agreements can be taken in order to manage some complications with an other hospital.

Patients must not drive after procedures, and it is recommended that they be accompanied for the return at home (5, 7, 35, 38, 40-42).

Accessibility of the home and the equipment available, as well as telephone access, are also factors that may be considered (5, 7, 35, 38-40, 54).

## 5.3 Choice of anaesthesia type and surgical procedure

No specific strategy is recommended, and all anaesthetic agents can be used (7, 9). It is nevertheless beneficial to choose agents that act rapidly, are short-acting and have reduced side effects, depending on the requirements of the patient and of the procedure.

Anaesthesia and resuscitation specialists must be reachable in the event of unforeseen problems linked to anaesthesia immediately after the procedure and after discharge (7).

26. ASA Physical Status Classification System: 1: A normal healthy patient; 2: A patient with mild systemic disease; 3: A patient with severe systemic disease; 4: A patient with severe systemic disease that is a constant threat to life; 5: A moribund patient who is not expected to survive without the operation; 6: A declared brain-dead patient whose organs are being removed for donor purposes.

The choice of anaesthesia is the responsibility of the anaesthetist, taking into account specific requirements of the procedure, of the patient and the patient's experience, as well as the features of the DSU (38).

The surgical procedure is the same for day surgery as it is for inpatient surgical admission. After the procedure, the patient goes to the postoperative monitoring room, and then the post-anaesthesia care unit (38). Some countries have allowed "fast-tracking", which bypasses the post-anaesthesia care unit, for some procedures in the context of anaesthesia monitoring (9). The guidelines state that information should not be given to the patient during recovery from anaesthesia (7, 42).

## 5.4 Anticipation of possible complications

Anticipation of all stages in the clinical pathway is of crucial importance in day surgery (48). Complications during surgery can affect management by prolonging length of stay, delaying discharge, increasing the risk of unplanned admission and reducing patient satisfaction. The DSU team must therefore anticipate such problems in order to limit them as far as possible.

### 5.4.1 Management of postoperative pain

Assessment of factors that can predict postoperative pain and tolerance to prescribed analgesics at home is done during a specialist preoperative consultation (7). Procedures for administering oral analgesics are explained to the patient at that time, and prescriptions for analgesics can be given, along with the dosing schedule and the conditions under which stronger analgesics can be used if necessary (7, 39, 55).

### 5.4.2 Prevention of postoperative nausea and vomiting

According to SFAR, there is no specific strategy for prevention of postoperative nausea and vomiting (PONV) in a day surgery setting. PONV prevention, in day surgery just as in conventional surgery, is based on an algorithm that includes risk factors in the specific context of the facility and the procedures it performs. In order to reduce the risk of PONV, a strategy that reduces the underlying risk for all patients must be put in place: prevention of dehydration linked to preoperative fasting; the use of

anaesthesia techniques that cause the least problems with vomiting, particularly locoregional anaesthesia, and effective management of postoperative pain using a multimodal approach which enables a reduction in the use of morphine analgesia.

A multimodal antiemetic strategy is recommended for day surgery patients who are identified as having a high risk of postoperative nausea and vomiting.

The guidelines go on to say that treatment of postoperative nausea and vomiting after discharge should be based on prescription of antiemetics that are licensed for use in prophylaxis, and that different classes and pharmaceutical forms should be used if the first treatment choice fails (7).

### 5.4.3 Prevention of thromboembolism

The overall incidence of venous thromboembolism seems to be low after day surgery. The SFAR guidelines state that a combination of the individual patient's risk and the risk associated with surgery should be taken into account. There is no routine drug prevention of venous thromboembolism.

It is recommended that drug treatment last no less than five days and that it be adjusted on a case by case basis. If the overall risk is low or moderate, mechanical prophylaxis with compression stockings is effective (7).

## 5.5 Organisation

### 5.5.1 Patient information and pre-anaesthesia consultation

The patient is a major participant in his/her own day surgery management (9). Patient information must be given at an early stage and must be repeated at every stage of management (7, 42). It can be supplemented with written or audiovisual material (5, 7, 38, 40-42, 50, 56).

Pre-anaesthesia consultation is a regulatory requirement in France, and is an important step at which patient information can be given (7). This consultation is led by an anaesthetist who works in the day surgery facility (7), and preferably by the anaesthetist who will administer anaesthesia (52). The information that needs to be given involves (7, 35, 57):



- fasting;
- management of the patient's medications;
- the requirements of the various anaesthetic techniques;
- discharge conditions and the need to be accompanied by someone when returning home;
- advice about the possible adverse effects of anaesthesia;
- postoperative analgesia methods;
- possible action if unplanned events occur;
- how to obtain additional information before and after the procedure.

Patients must be offered the opportunity to ask any questions that will help them to understand the procedure (5, 7). Informing patients helps to prepare them psychologically for surgery, to tell them about pre- and postoperative procedures, to minimise risks in the postoperative period, to increase patient satisfaction and reduce anxiety, obtain informed consent, and to avoid cancellations, delays and readmissions (5, 7, 35, 38, 40-42, 48, 50).

Discharge procedures should be explained to patients, and to escorts, and should be codified in the day surgery centre's operational charter (7, 40, 41, 52, 58).

Signature by the patient of an informed consent form, which is a summary document, involves the patient in the process, but does not confer legal liability upon the patient (7). It is also desirable to ensure that the information that is given is fully traceable (7).

### 5.5.2 Contact in the days prior to the procedure and on the following day

The phone call on the previous day (or several days before the procedure) and the phone call on the day after can also be ways of organising communication between the team and the patient (40, 48, 57).

Establishing contact with the patient in the days prior to admission means that advice can be repeated (particularly fasting rules and the need for an escort) along with the conditions under which admission will occur. Such contact can also confirm the admission and limit cancellations and delays (due to non-attendance and/or the patient not being in an appropriate condition to undergo surgery) (7, 35).

The call on the day after surgery means that postoperative advice can be repeated, can ensure that this advice is being followed (monitoring postoperative pain, tolerance of food, ability to walk, any anxiety). It also enables the team to check that the patient is not suffering from any adverse events that would require readmission (7, 38, 39, 41, 49, 50, 59).

### 5.5.3 Scheduling, checking patient records and admission

After the decision to carry out day surgery is made, a specific date and time must be given to the patient (60). Patient scheduling is a key to successful day surgery (48). It means that patients do not all arrive at once, and prevents bottlenecks. In order to avoid delays, it is possible to have the first two patients arrive at the same time, in case one patient does not attend or is late, in order to prevent problems with operating theatre time (7). Scheduling must also minimise waiting times (50). An appropriate computer system can be a useful tool in scheduling (40).

Checking of patient records limits needless cancellations and delays to the operating schedule, thus improving the efficiency of the DSU (61). If some items are missing from the patient record when he/she is admitted to the DSU, this can lead to the procedure being cancelled.

### 5.5.4 Continuity of care

#### Co-ordination between people involved

Co-ordination between professionals involved in patient care also helps to ensure that the patient journey runs smoothly. The coordinator is responsible for implementing the rules that govern the centre, and for ensuring that all people involved apply these rules (9, 41, 42). There must also be co-ordination with primary care, in the interests of continuity of care.

The team in the DSU can therefore set up in advance procedures for joint working with primary care, for when patients are discharged home and for follow-up after discharge, taking into account the predicted availability of operating theatres, and the patient's medical, surgical, psychosocial and environmental history (7, 48). If the patient's discharge is anticipated, prepared for before admission to the facility, and is part of efforts to improve

care quality, then discharge will be done under optimal conditions, in comparison with inpatient admission. Day surgery does not create demand for specific postoperative care at home (9). If postoperative care appears necessary and is predicted by the patient selection procedure, then day surgery management will be ruled out from the start, as the patient will need the environment provided by inpatient admission (9).

### Discharge procedures

All patients must receive a standard operation summary and a discharge note before they leave, and these must be signed by one of the doctors and contain advice about postoperative monitoring, the contact details of the hospital that is providing continuity of care, and a number that can be called in an emergency (9, 38, 39, 42, 50). There are multiple ways of giving contact details, from the mobile numbers of the surgeon or anaesthetist, the number for the doctor on call, the switchboard number or a nurse hotline that can trace and redirect the call, while providing advice about treatment or practical matters. Whatever the procedures that are put in place, the system should be organised such that patient records are immediately accessible (9).

It is the responsibility of the surgeon and/or anaesthetist to authorise discharge (38).

In France, article 8 of the order of 7 January 1993 concerning aspects of surgical care in facilities that carry out day anaesthesia or surgery, as mentioned in article D 712-31 of the PHC, requires a document setting out how the surgical department is organised, and which defines and states clearly the procedures and details for admission, transfer and discharge of staff and patients.

There must be clear and traceable provision for an anaesthetist to see all patients before they are discharged (9). If a patient is not fit to be discharged, he/she will be admitted with an overnight stay (39).

### Continuity of care

Continuity of care is necessary, and is defined in the current guidelines (39, 42, 57, 58). In France, it is a legal obligation (article D. 6124-304 of the PHC). In addition, if the facility cannot guarantee continuity of care itself, it is

obliged to reach an agreement with another healthcare facility (9).

### 5.5.5 Quality

Establishment of a quality procedure in day surgery units (including definition of indicators for analysis and management, and creation of dashboards) can identify the critical points in the clinical pathway, and can help to implement an improvement plan (5, 7, 35, 38, 40).

These indicators can be clinical indicators, patient and team satisfaction indicators and/or organisational indicators (e.g. cancellation rates, rates of return to theatre, rates of transfer to inpatient admission, rates of readmission, patient satisfaction, etc.) (5, 40).

Accreditation is a dynamic and periodic assessment by an external and independent organisation, looking at quality standards (assessment of the facility, assessment of processes, and assessment by results, particularly in terms of safety (5, 38, 62). The nature of accreditation depends on the healthcare system. In some countries, accreditation must be obtained in order for the DSU to be funded (5)<sup>27</sup>.

27. In the United States, 85% of DCSs are certified to accept Medicare, and 43 states require DCSs to be accredited (35).

# 6. PLANNING AND DESIGNING OF A DSU

A day surgery centre must meet two basic criteria: it must offer services with high standards of quality and safety that are at least equal to those seen in inpatient admissions, and it must be efficient both in terms of patient satisfaction and financially (17).

## 6.1 Planning phase

The objective of the planning phase is to demonstrate that the capability exists to meet clearly identified population needs (9).

When a DSU is created, the following points need to be considered:

- First, thought needs to be given to the type of facility that is necessary (an integrated facility, a self contained unit on hospital site, a “Satellite” facility, or a free-standing self contained unit) (17).
- The extent to which the DSU should be multidisciplinary needs to be considered: a multidisciplinary activity in the DSU can serve a larger number of patients, while a specialised DSU has the advantage of being able to concentrate expert knowledge and expensive equipment in one place (17).
- An analysis must be carried out to identify the number of potential patients, the number of potential procedures per year, the case mix<sup>28</sup> (types of procedures), any other DSU that might be a competitor, and a demographic study (17, 35). Evaluation of the relevant regulations may also be necessary. These factors will ensure that the DSU is viable, and will determine its size and the number of operating theatres that are needed. It will also ensure that the DSU is contained within a population that is sufficiently large to guarantee its continuing viability (17, 35). Patient turnover (i.e. ratio of number of patients per day to number of available places) has an impact on the assessment of the number of patients treated per place per year (9). The NHS suggests that the optimal usage level for an operating theatre is 85% (48, 49).
- Equipment and staff requirements can also be evaluated in the initial planning stage (35, 45).
- Finally, using the above information, a projection of events over the coming five years (e.g. potential number of patients, market share, case mix, planned

spending on infrastructure, equipment, staff, maintenance, budget, impact of the DSU on hospitals) can be created (9, 17, 35, 40). The more attention is paid to epidemiological studies into population variations and into attractiveness and drain, the easier it will be to recover the acquisition and running costs of the facility and the more likely it will be that minimum activity thresholds will be met (9).

## 6.2 Design phase

The advice is that the project lead team should include at a minimum one surgeon, one anaesthetist and one nurse manager who will work in the centre (17), and that this team visits as many different types of DSU as they can before they design their own centre. A pre-project phase can be launched before the architect is brought on board. The pre-project phase can be used to set out the requirements of the DSU and of the care team.

The general design of the major areas, and description of patient throughput are important items that should be included in the request (17). The number and size of operating theatres, and the type and size of other rooms, can then be determined (17, 40). One of the keys to success is a design that is as flexible as possible (40).

If a new DSU is constructed from scratch, some points need to be considered before starting the interior design. The site must be large enough to hold the DSU, allowing room for possible extension, with easy access and sufficient parking (17, 40). The ideal model is a DSU that is all on one level (17). Likewise, the decision can be made as to whether a modular operating theatre system will be chosen. If the DSU is not to be built from scratch but is to be incorporated into a building with several stories, it is important to plan a suitable system of lifts and hoists and appropriate lighting for the operating theatres (17).

28. Case mix is a term used to describe the range of cases that are managed and the levels of severity of the associated admissions. It expresses management mix in terms of type (CMD, GHS, surgical, “interventional” or medical) and in terms of volume (numbers per GHS).



# 7. RISKS AND BENEFITS OF DAY SURGERY

The challenge in day surgery is to offer management that provides the same surgical procedure - and thus the same level of therapeutic efficacy - at least as safely and with better quality than under inpatient admission, and in a limited period of time.

Safety and quality in surgery and anaesthesia are traditionally measured using assessment of perioperative mortality and morbidity rates. These criteria can easily be applied to day surgery.

However, some authors do state that:

- these are approximate indicators, which do not necessarily reflect the quality of care, but rather reflect the overall state of health of the population that undergo day surgery (63, 64);
- if such events are rare, they are difficult to quantify, and the rare occurrence of severe complications means that it is difficult to perform statistically significant studies (65, 66);
- these criteria adopt a medical perspective. It is now also necessary to consider the patient's perspective when analysing the benefits of day surgery (63).

As a result, assessment of the risks and benefits of day surgery should be based on evaluation of rates of mortality, morbidity and the postoperative complications that are most commonly described in the literature, and on indicators that assess the safety and quality of treatment, some of which are clinical quality indicators defined by the International Association for Ambulatory Surgery, and others, such as delayed discharge, are indicators that are commonly found in the literature. It should be noted that such an assessment primarily involves patients who are selected for day surgery, and not the type of procedures that are eligible.

A review of the published data will also examine patient satisfaction, return to normal activity, use of the health-care system and healthcare professionals' point of view.

Conversely, organisational indicators such as waiting time between decision to operate and scheduling of the procedure, and cancellation before admission, will not be assessed in this analysis, as they are not relevant to the procedure itself (instead, they are linked to failure to carry out the procedure).

In France, most day surgery is carried out in integrated facilities. Assessment of operating theatre safety is therefore highly complex, and will not be attempted in this review.

Finally, it will be necessary to compare indicators gathered for day surgery with those for inpatient admission. However, the sparse nature of comparative data will limit the scope of this analysis.

## 7.1 Medical risks

### 7.1.1 Major mortality and morbidity

Nine observational studies, published between 1980 and 2012, were selected to assess major mortality and morbidity in day surgery. All these studies assessed these risks for a variety of surgical procedures. The number of procedures analysed was between 6,000 and 2,316,249. Time to data collection or to patient follow-up was between 72 hours and 60 days (see Table 8).

- five studies identified serious adverse events from large databases, registries or information and monitoring systems; three were prospective (67-69), and two retrospective (70, 71);
- four studies were prospective cohort studies (72-75).

None of these studies compared the incidence of these events with the incidence found on inpatient admission. Just one study compared the incidence of these events with reported incidence in the general population (73).

For eight studies, the type of facility was specified, but descriptions were incomplete.

### Mortality data

These studies showed that mortality was a rare event. Just four studies identified deaths:

- the observational study by Warner et al from 1993, which prospectively followed 38,598 patients who had undergone 45,090 day surgery procedures over a period of 30 days, identified four deaths. Two patients with no history of coronary disease and with ASA grade 2 status died on the seventh postoperative day, after myocardial infarction that occurred

during the procedure for one patient and on the fourth day for the other. Two patients died in a car accident within 48 hours of the procedure. It was not stated to what extent these complications were attributable to the procedures (73);

- the retrospective Danish study by Engbaek et al analysed 13,907 procedures (excluding abortion) using national patient records. This study showed a higher mortality rate: ten patients died during the 60 days following their procedure, and although no deaths were definitively or like related to the surgical procedure, three were possibly related (71);
- the study carried out in Florida by Vila et al showed that the risk of mortality varied depending on the type of facility in which the procedure was carried out. 9.2 deaths per 100,000 procedures were observed in offices (this type of practice is not authorised in France), while the rate was 0.78 in ambulatory surgery centres (70);
- the study by Majholm et al in Denmark analysed 57,709 procedures in eight centres over a period of three years, using national patient records. This study identified deaths and their causes using the Danish register of causes of death. Twenty-four deaths occurred in the 30 days following the patients' procedures, but only five of these were likely/possibly in relationship to day surgery and none of which could have been avoided had they been inpatients rather than day cases. (69).

### Major comorbidity data

The definition of major comorbidity varies between studies. It was defined as an untoward response or abnormal condition with the potential for serious harm resulting from the treatment and care associated with ambulatory surgery during the two weeks following the operation, in two articles (72, 74). Warner et al used the criteria developed in Hosking et al (73). Majholm et al defined major morbidity as the occurrence of the following conditions: stroke, myocardial infarction, pulmonary embolism, deep-vein thrombosis, lung stasis, sepsis, pneumonia or peptic ulcer (69).

These four studies showed that severe morbidity was rare:

- Warner et al identified one case of major morbidity in 31 patients (1 in 1,455 procedures).

The complications were as follows:

- myocardial infarction in 14 patients (1 in 3,220 procedures);
- central nervous system deficit in 7 patients (1 in 6,441 procedures);
- pulmonary embolism in 5 patients (1 in 9,018 procedures);
- respiratory failure in 5 patients (1 in 6,441 procedures);

Adjusted for age and sex, the incidence of myocardial infarction and pulmonary embolism was lower than that expected for the general population (73).

- Natof et al and Osborne et al identified 106 and 103 patients respectively who developed a major comorbidity (0.79% and 1.7% respectively) (72, 74).
- Majholm et al identified the following complications (69):
  - pulmonary oedema with respiratory failure in 1 patient;
  - peptic ulcer in 1 patient;
  - suspicious of septic arthritis in 5 patients;
  - deep vein thrombosis and pulmonary embolism in 12 patients.

"Major comorbidity" was not defined in the other articles.

Shnaider et al considered, in a literature review that assessed various endpoints for day surgery, that:

- the approximate incidence of cardiovascular events intraoperatively was 2.0%. Blood pressure abnormalities and rhythm disorders were the most frequent events, occurring mostly in patients with preexisting cardiovascular disease and the elderly;
- the approximate incidence of respiratory events was 0.1%, and these included laryngospasm, bronchospasm with or without oxygen desaturation, apnoea, aspiration, pneumothorax and pulmonary oedema. Time elapsed before occurrence of these events is not stated;
- events linked to intubation related events during general anaesthesia, such as intubation difficult, oesophageal intubation or dental damage occur with an incidence of between 0.2 and 0.5% (63).

This study does not, however, report the incidence of such events in a inpatient admission setting.

Table 8. Description of observational studies involving large numbers of patients that report rates of major mortality and morbidity following day surgery.

Authors	Date	Collection	Numbers	Day surgery facility	Duration of follow up	Mortality rate	Major morbidity rate
Natof et al. (72)	1980	Prospective Cohort	13 433	Free-standing	2 weeks	(0 patients)	0.79% (106 patients) with causes: <ul style="list-style-type: none"> <li>• haemorrhage: 74 patients</li> <li>• infection: 10 patients</li> <li>• other: 22 patients</li> </ul>
Duncan et al. (67)	1992	Prospective Monitoring system	6 914	Free-standing	72 hours	(0 patients)	0.4% rate of transfer to intensive care (3 patients)
Warner et al. (73)	1993	Prospective Cohort	38 598	Unclear	30 days	1: 11,273 (4 patients)	0.07% (31 patients)
Osborne et al. (74)	1993	Prospective Cohort	6 000	Free-standing	72 hours	(0 patients)	1.7% (103 patients) with causes: <ul style="list-style-type: none"> <li>• surgical: 57 patients</li> <li>• anaesthetic: 34 patients</li> <li>• medical: 12 patients</li> </ul>
Mezeiret et al. (68)	1999	Prospective Administrative database	17 638	Free-standing	30 days	(0 patients)	Readmission rate: 1.1%, of which just 0.15% was associated with surgery (25 patients) or had a medical cause (1 patient)
Vila et al. (70)	2003	Retrospective Monitoring system	Offices: 141 404 Indépendante: 2 316 249	Offices and Free-standing	Unclear	Offices: 9.2: 100,000 Free-standing: 0.78: 100,000	Offices: 0.07% Free-standing: 0.0053%
Engbaek et al. (71)	2006	Retrospective Register	13 907	Free-standing	60 days	(10 patients)	0.82% (117 patients)
Mattila et al. (75)	2009	Prospective Cohort	7 915 84 % en chirurgie ambulatoire 16 % en <i>short stay</i>	Day surgery and short stay	28 days	(0 patients)	2 pulmonary embolisms
Majholm et al. (69)	2012	Retrospective Register	57 709	Free-standing (8 centres)	30 days	Related to day surgery: <ul style="list-style-type: none"> <li>• definitively: 0</li> <li>• patientlikely: 3 patients</li> <li>• possibly: 2 patients</li> </ul>	Causes of readmission: <ul style="list-style-type: none"> <li>• haemorrhage/haematoma: 0.5%</li> <li>• infection: 0.44%</li> <li>• thromboembolic event: 0.03%</li> </ul>

## Risk of thromboembolism

None of the studies that met the selection criteria carried out a specific analysis of the risk of thromboembolism in day surgery.

Clinical data were nonetheless available in five of the observational studies that were selected for evaluation of the risk of major comorbidity:

- in the prospective cohort study carried out by Warner et al in 1993, pulmonary embolism was diagnosed in five patients within the 30 days following the 45,090 procedures (73);
- in the 1999 study by Mezei et al one case of pulmonary embolism was diagnosed within the 30 days following the 17, 638 procedures (68);
- in the 2006 study by Engbaek et al a retrospective analysis of complications using national patient records for 16,048 patients showed six venous thromboembolic events (0.4%), including two pulmonary embolism, during the 60 days following the procedures. Procedures following which these events occurred were hernia repair, knee arthroscopy, laparoscopic sterilization, subcutaneous tumour and excision of exostosis. Factors that favoured such events were not analysed (71);
- the 2009 study carried out by Mattila et al identified two pulmonary embolism within 28 days following 7,915 procedures carried out as day surgery or as short stay procedures (75);
- the study by Majholm et al identified two cases of superficial thrombophlebitis, nine cases of deep venous thrombosis and three cases of pulmonary embolism (0.03% of all thromboembolic events) (69).

The risk therefore appears to be extremely low, less than that seen in general surgery, as the current estimated risk of symptomatic thromboembolic events in the three months following surgery is close to 1% (average risk for all procedures) (76). Engbaek et al stress, however, that the incidence found in their study was higher than that found in the general population suggesting that surgery and hospitalization did have an impact on the development of venous thromboembolism. (71).

SFAR considers that the overall incidence of venous thromboembolism seems to be low overall (7).

As with any surgical procedure, SFAR recommends that an evaluation of venous thromboembolism prevention be done, considering the patient's individual risk and the risk attached to surgery (see Medical aspects - anticipation of possible complications).

## 7.1.2 Healthcare-associated infection

One of the frequently cited benefits of day surgery is a reduction in the number of healthcare associated infections. Surgical site infection (SSI) is a major cause of such infection (77).

Four comparative prospective observational studies were selected to assess the reduction in the risk of healthcare-associated infection following day surgery. Three were carried out in France, as part of the Nord region programme for monitoring and prevention of surgical site infection in surgical wards (INCISO (78-80), and the other was done in German as part of the assessment of the German surgical site infection monitoring system (the AMBU-KISS system) (81).

- The INCISO network identified SSIs for all types of procedure, whether done as day cases or as inpatient admissions, up to day 30 following the procedure. After patients are discharged from the unit, a copy of the questionnaire is kept in the patient record, and is filled in when the patient comes back for a consultation or is readmitted<sup>29</sup>. Bivariate analysis in these three studies revealed that day surgery was a protective factor against SSI (relative risk 0.16-0.20; upper limit of 95% confidence interval less than 1) (see Table 9). The 2009 analysis did not use day surgery as one of the final variables in the multivariate model of risk factors for SSI. These findings may be biased by differences in patient follow-up for the different management types. In the years studied, between 35% and 45% of patients were not seen again in the 30 days following the procedure (see Table 9).
- As part of an assessment of the German surgical site infection reference database for institutions involved in ambulatory surgery (the AMBU-KISS system), rates of surgical site infection observed for day surgery were compared with those observed for inpatient setting (through the OP-KISS database) for

29. <http://www.cclinparisnord.org/Inciso/INCISO.html>

Table 9. Results for INCISO studies 2001,2004,and 2009 for France Nord region programme for monitoring and prevention of surgical site infection in surgical wards.

Year	Day surgery	Numbers	SSI number	Infections rate 100 interventions	Relative Risk	CI 95 %	% of patients followed after 30 days
2001	Non	26 025	736	2,8%	-	-	54,2%
	Oui	4 406	26	0,6%	0,2	[0,1 - 0,3]	
2004	Non	26 533	544	2,0%	-	-	
	Oui	4 413	22	0,5%	0,2	[0,2 - 0,4]	54,6%
2009	Non	801 069	10 731	1,34%	-	-	
	Oui	222 369	480	0,22%	0,16	[0,15 - 0,17]	65,4%

patients at low risk of nosocomial infection (category 0 in the National Nosocomial Infections Surveillance Systems classification) for three key procedures. This monitoring system is based on a declaration by the patient's surgeon or primary care physician, via a questionnaire, concerning the occurrence of surgical site infection or wound contamination in the first 30 days following the procedure. No significant difference in the number of surgical site infections was observed (see Table 10) (81).

No other comparative studies of healthcare associated infection for patient populations that were otherwise identical were identified. It is nevertheless likely that day surgery will benefit patients in terms of a reduction in healthcare-associated infection, because:

- the risk of healthcare-associated infection increases with length of hospital stay (82). Early discharge, on the day of the procedure, therefore reduces the likelihood of exposure to a risk of healthcare-associated infection;
- the risk of SSI increases commensurately with the risk of exogenous contamination during prolonged procedures, during which tissue is exposed for lon-

ger (83). The use of minimally invasive techniques in day surgery is therefore likely to reduce the risk of surgical site infection.

### 7.1.3 Postoperative symptoms

One of the frequently cited benefits of day surgery is an improvement in care quality, as it enables the patient to be discharged on the day of the procedure in a satisfactory clinical condition. Adverse postoperative symptoms, even though they are in most cases not serious, can jeopardise this benefit.

In addition, some authors predict that an increase in the volume of procedures carried out as day surgery, a broadening of selection criteria and an increase in the technical complexity of such procedures will lead to an increase in morbidity and mortality (84).

#### Postoperative pain

##### Occurrence of postoperative pain

Thirteen observational studies were selected which examined the frequency of postoperative pain. All of these

Table 10. Comparison of the reference database (risk category 0 in OP-KISS) and AMBU-KISS.

Procedure	Number of procedures	Number of SSI	Rate of SSI%	p
Inguinal hernia				
OP-KISS	17 116	134	0,78	0,4895
AMBU-KISS	3 094	20	0,65	
Arthroscopic knee surgeryarthroscopy				
OP-KISS	15 896	17	0,11	0,8323
AMBU-KISS	7 931	7	0,09	
Vein stripping				
OP-KISS	2 656	17	0,64	0,1556
AMBU-KISS	5 020	19	0,38	

studies were prospective: twelve were non-interventional, and one was evaluative (see Table 11). None of these studies compared frequency levels for day surgery with those found in inpatient admission.

The numbers involved in these studies were between 76 and 5,703 patients.

Assessment of postoperative pain was the primary outcome of eleven of these studies (85-95).

Validated pain scales, such as the visual analogue scale (VAS), verbal numeric scale (VNS) or a numeric pain scale that evaluates the impact of pain on daily life (Brief Pain Inventory Short Form), were used in eight studies.

One study only assessed pain in the immediate postoperative period, before discharge; five assessed pain in the first 24 hours; two in the first 48 hours; one at 48 hours and beyond, and three at later points. In one study, the time at which pain was assessed was not clear.

The frequency of postoperative pain reported in these studies was approximately 25-40% (moderate to severe pain) and 5-20% (severe pain).

More specifically, pain at home was the most commonly observed complication after day surgery in adults (87, 89, 90, 96).

This symptom persisted on the following days; 95%, 83% and 64% of patients felt pain at the incision site at 24 hours, 48 hours and on day 7 following the procedure, respectively (87).

These findings are comparable with those found in a systematic review of 13 observational studies done between 1966 and January 2000 that was carried out by Wu et al Postoperative pain was the most common symptom, and was found to occur in 45% (range: 6-95%) of 7,675 patients undergoing day surgery (median patient monitoring: 1 day; range: 1-21 days) (97).



Table 11. Description of observational studies assessing the occurrence of postoperative pain following day surgery.

Authors	Publication date	Numbers	Type of study	Method of pain assessment	Time of assessment	Rate
Chung et al. (117)	1996	1 017	Prospective	Telephone call; yes/no questionnaire	Day 1	Incision pain: 26.9%
Chung et al. (90)	1997	3 729	Prospective	Use of analgesics on Day 0 Call after 24 hours; assessment method not clear	Day 0 (recovery room, DCS)	Severe pain: 5.3%
Rawal et al. (86)	1997	1 100	Prospective	12-item questionnaire to send back; 5 responses (none, mild, moderate, severe, extreme and unbearable)	Day 2	Severe pain within 24 hours: 7-10%
Beauregard et al. (87)	1998	89	Prospective	Self-administered questionnaire: verbal numeric scale from 0 to 10 Some items in the questionnaires used items from the: • Brief Pain Inventory • Patient Outcome Questionnaire • Barriers Questionnaire Analgesic use	Day 0 Day 1 Day 2 Day 7	Moderate to severe pain: • 42% during admission • 40% within 24 hours
Mackintosh et al. (88)	1998	430	Prospective	Questionnaire sent: 6-item scale (no pain, just noticeable, discomfort, severe, very severe, excruciating) Experience any pain or discomfort after the operation Pain was worse than expected Pain had caused to worry Pain during the first postoperative night	Unclear	Discomfort/pain: 17-20%
Pavlin et al. (93)	2002	175	Prospective	Interview: verbal numeric scale from 0 to 10	Day 0 (during recovery and before discharge)	Severe pain: 19% after surgery
McGrath et al. (92)	2004	5 703	Prospective	Telephone call: verbal numeric scale	Day 1	Moderate to severe pain: 30%

table continues on next page



Authors	Publication date	Numbers	Type of study	Method of pain assessment	Time of assessment	Rate
Pavlin et al. (89)	2004	175	Prospective	Telephone call: verbal numeric scale from 0 to 10	Day 1 Day 2	Pain within 24 hours: Moderate to severe: 60%. Severe: 20%
Mattila et al. (96)	2005	2 754	Prospective	Questionnaire sent: 4-item scale (none, mild, moderate, severe)	Day 0 Day 1 Day 3 - Day 7	Pain for: 2,144 adults: 57%. 588 children: 35%
Gramke et al. (91)	2007	648	Prospective	Interview on Day 0 followed by telephone calls: visual analogue scale/verbal numeric scale from 0 to 10	Day 0 Day 1 Day 2 Day 3 Day 4	Moderate to severe pain: 21%
Ismail et al. (94)	2007	76	Prospective	Telephone call on day 1: verbal numeric scale from 0 to 10	Day 0 (retrospectively) Day 1	< 24 hours: pain • Moderate: 30% • Severe: 10.5%  > 24 hours: pain • Moderate: 27% • Severe: 3%
Rosén et al. (95)	2011	230 à 50	Prospective	2 questionnaires given on discharge: 1 sent by post at 3 months; Brief Pain Inventory Short Form (BPI-SF) Procedure for telephone call if no response	Day 2 Day 7 M3	Moderate to severe pain: • Day 2: 55% • Day 7: 43% • Month 3: 34%
Lemarie et al. (85)	2011	531	Prospective Evaluative*	Telephone call: verbal numeric scale	Day 1	Moderate to severe pain: 28%

\*Assessment of frequency of pain depending on time at which analgesic prescription is provided.

## Impact of postoperative pain

Twenty-seven studies reporting postoperative pain as a factor that affected day surgery management were selected. All of these were observational studies.

Persistent postoperative pain was found to be a factor:

- in increasing time spent in the recovery room and in the DSU in six studies (90, 93, 98-101);
- in increasing admission rates in nine studies (74, 75, 93, 98, 102-106);
- in increasing readmission rates in three studies (64, 107, 108);
- in increasing rates of consultation outside hospitals in two studies (92, 109);
- in dissatisfaction in seven studies (87, 109-114).
- in a reduction in activity in five studies (87, 89, 95, 115, 116);
- in sleeping problems in one study (89).

## Predictive factors of postoperative pain

Six observational studies were identified which examined factors that were predictive of postoperative pain (87, 90, 92, 96, 118, 119). Just one of these studies used a multivariate logistic regression model, with selection using a forward stepwise procedure to develop a final model (119). The results for the day of the procedure and the day after are given in Table 12.

For the other studies, the lack of adjustment for potential confounding factors limits the interpretation of the main predictive factors that were found. The following factors were identified:

- type of surgery (90, 92, 96);
- type of anaesthesia (90);
- length of procedure (90, 96, 118);
- inadequate pain control in the initial hours following surgery (87);
- female sex (96);
- age (96).

## Current guidelines for management of postoperative pain

Careful management of postoperative pain after a day surgery procedure has already been addressed in gui-

delines by learned societies. It is recommended that an assessment be done at a specialist preoperative consultation of factors that can predict postoperative pain and tolerance to prescribed analgesics at home (7). Procedures for administering oral analgesics must be explained to the patient at that time, and prescriptions for analgesics can be given, along with the dosing schedule and the conditions under which stronger analgesics can be used if necessary (see "Medical aspects - anticipation of possible complications") (7, 39, 55).

## Postoperative nausea and vomiting

### Occurrence of postoperative nausea and vomiting

Seven observational studies of the occurrence of postoperative nausea and vomiting in day surgery were selected. These were all prospective studies (see Table 13). None of these studies compared these occurrences with those found in inpatient admission.

The numbers involved in these studies were between 175 and 17,638 patients.

Nausea and vomiting was the primary outcome for two studies (120, 121).

There is a wide variation in incidence, which is also found in a systematic review of 12 observational studies published between 1996 and January 2000, which was carried out by Wu et al. These authors aggregated the data in these studies, and found that these symptoms occurred in 17% (range: 0-55%) of 5,500 patients undergoing day surgery (median patient monitoring: 1 day; range: 1-7 days) (97).

Postoperative nausea and vomiting were mainly reported in the immediate postoperative period (89, 97, 100, 120, 121), but were also seen after patients were discharged (86, 89, 117, 121).

### Impact of postoperative nausea and vomiting

The International Association for Ambulatory Surgery stresses that:

- postoperative nausea and vomiting is one of the most unpleasant experiences associated with anaesthesia (17);
- although is usually minor, vomiting may also be associated with more serious outcomes including

Table 12. Factors associated with postoperative pain (defined on a visual analogue scale > 40 mm) on the day of the procedure and the day after, according to Gramke et al, 2009 - results of the logistic regression analyses (119).

	Day of Procedure N = 644	Day 1 N = 581
	OR [95% CI]	OR [95% CI]
Level of anticipation of pain		
Intermediate vs minor	1,4 [0,9 - 2,2]	2,0 [1,2 - 3,3]
Age		
< 45 vs 60+	1,4 [0,8 - 2,5]	2,8 [1,5 - 5,5]
45-59 vs 60+	1,0 [0,6 - 1,8]	2,0 [1,0 - 3,9]
Sex		
Female vs male	0,9 [0,6 - 1,4]	1,2 [0,7 - 2,0]
Level of education		
Low vs high		2,5 [1,3 - 4,8]
Middle vs high		1,5 [1,3 - 2,9]
Preoperative pain		
Yes vs no	3,1 [2,0 - 4,9]	3,6 [2,1 - 6,2]
Anaesthesia		
Regional vs general	0,4 [0,2 - 0,6]	-
Expected pain (VAS > 40 mm)		
Yes vs no	2,1 [1,4 - 3,2]	2,4 [1,5 - 3,9]
Short-term fear		
High (>9) vs low ( 9)	1,7 [1,1 - 2,6]	1,9 [1,2 - 3,2]
Area under curve associated with model	0,77	0,79

increased risk of aspiration, suture dehiscence, oesophageal rupture, subcutaneous emphysema and bilateral pneumothoraxes (17).

In eleven observational studies, postoperative nausea and vomiting were identified as a factor that caused:

- increased length of stay in the PACU and the DSU (in six studies) (98-101, 121, 122);
- increased unanticipated hospital admission rates (in five studies) (74, 102, 103, 105, 115);
- increased readmission rates (in one study) (122);
- dissatisfaction (in two studies) (110, 121).

### Predictive factors of postoperative nausea and vomiting

Two observational studies were selected to identify predictive factors of postoperative nausea and vomiting

(96, 120). One of these studies used a multiple logistic regression model, with backward stepwise elimination to develop a final model. An independent set of patients was used to validate the model (120). The results are given in Table 14.

The results from the study by Mattila et al, although they were not adjusted, found the following predictive factors (96):

- for nausea: general anaesthesia, young age, duration of surgery, female sex;
- for vomiting: general anaesthesia, female sex.

With the exception of age, the factors identified in these two studies are similar to those found in the literature review by Gan et al, identifying risk factors for PONV in adults and children, for all types of admission (inpatient or day surgery setting) (123).

**Table 13. Description of observational studies assessing the occurrence of postoperative nausea and vomiting, following day surgery.**

Authors	Date of publication	Numbers	Time of evaluation	Overall rate
Chung et al. (117)	1996	1 017	Day 1	7,1%
Rawal et al. (86)	1997	1 035	Day 2	21%
Sinclair et al. (120)	1999	17 638	PACU and DSU	4,6%
Chung et al. (100)	1999	16 411	PACU and DSU	7,2%
Pavlin et al. (89)	2004	175	Days 0, 1 and 2	46%
Mattila et al. (96) (96)	2005	2 754	Days 0, 1, 3 and 4	Nausea: 21% Vomiting: 6%
Parra-Sanchez et al. (121)	2011	100	Days 0, 1 and 3	Day 0: 37% Day 1: 42% Day 3: 49%

## Current guidelines for management of postoperative nausea and vomiting

According to SFAR, there is no specific strategy for prevention of postoperative nausea and vomiting (PONV) in a day surgery setting. PONV prevention, in day surgery just as inpatient admission, is based on an algorithm that includes risk factors, the specific context of the facility and the procedures it performs. In order to reduce the risk of PONV, a strategy that systematically reduces the underlying risk for all patients must be put in place: prevention of dehydration linked to preoperative fasting; the use of anaesthesia techniques that cause the least problems with vomiting, particularly locoregional anaesthesia, and effective management of postoperative pain using a multimodal approach which enables a reduction in the use of morphine analgesia.

A multimodal antiemetic prophylactic strategy is recommended for day surgery patients who are identified as having a high risk of postoperative nausea and vomiting.

The guidelines go on to say that treatment of postoperative nausea and vomiting after discharge should be based on prescription of antiemetics that are licensed for use in prophylaxis, and that different classes and pharmaceutical forms should be used if the first treatment choice fails (7).

## Urinary retention

Two prospective studies were selected to analyse the risk of urinary retention after day surgery (124, 125).

These studies involved 324 patients and 334 patients respectively. These studies were designed to study management strategies of bladder function.

The reported incidence of urinary retention after day surgery was 0.5% in low-risk patients and 5% in high-risk patients (124, 125).

There are currently no specific guidelines the prevention of urinary retention in day surgery procedures.

## Other adverse perioperative events

In the literature, mention is made of other postoperative adverse effects: drowsiness, dizziness, non-specific headaches, postdural puncture headache, asthenia, myalgia and sore throat.

None of the selected studies compared the occurrence of these events in day surgery with the occurrence in inpatient admission.

To assess this frequency, the literature review by Wu et al was used (97). The results are given in Table 15.

The incidence of adverse effects is very varied. This can be explained by differences in:

- methods of assessing patients, in terms of tools and of time elapsed before data collection;
- characteristics of patient population;
- type of procedure and anaesthetic techniques;
- type of day surgery facility.

## 7.1.4 Driving a vehicle after a day surgery procedure

Two studies were selected that reported the risk of driving a vehicle after a day surgery procedure (126, 127). These are:

- one non-randomised study comparing driving simulation performance of 20 patients who had undergone left knee arthroscopic surgery with 20 healthy controls. This study showed that alertness levels were lower, and that reduction in driving ability persisted two hours after the procedure. There was no significant difference in any driving performance parameters 24h postoperative versus preoperatively (126);
- one retrospective study that identified car accidents using a national database. Two serious car accidents on leaving hospital were reported. The total numbers of patients in the national database, and the duration of follow-up, were not clearly stated (127).

Some learned societies state that patients must not drive in the first 24 hours following a day surgery procedure, and that they must be accompanied by an escort when travelling home (5, 7, 35, 38, 40-42).

## 7.1.5 Specific paediatric management for day surgery

### Data from the literature

Eleven observational studies about management of day surgery in paediatrics were selected (96, 128-137).

These studies showed that life-threatening complications are very rare in children, but that there are many types

Table 14. Predictive factors from the final multiple logistic regression model associated with postoperative nausea and vomiting on the day of the procedure according to Sinclair et al (120).

	Sinclair et al. N = 17 638
	OR [95% CI]
Age (10-year intervals)	0,87 [0,8 - 0,9]
Sex (male vs female)	0,36 [0,3 - 0,5]
Smoking status (yes vs no)	0,66 [0,5 - 0,9]
History of previous PONV (yes vs no)	3,13 [2,1 - 4,6]
Duration of anaesthesia (units of 30 minutes)	1,59 [1,4 - 1,8]
General anaesthesia	10,6 [6,7 - 16,7]
Surgical procedure	
Plastic	6,68 [3,5 - 12,6]
Orthopaedics (shoulder)	5,91 [3,4 - 10,3]
Ophthalmologic	5,85 [3,8 - 9,0]
ENT	4,39 [2,1 - 9,2]
Gynecologic	3,31 [2,3 - 4,8]
Orthopaedic (knee)	2,82 [1,9 - 4,2]
Orthopedic (other)	2,57 [1,5 - 4,4]
Area under curve associated with model	0,785

of event that frequently cause postoperative complications (pain, nausea, vomiting, drowsiness, sore throat, bleeding, fever, dizziness, headache) (96, 128-132, 135-137).

Pain was the most commonly observed postoperative symptom (128-130, 135, 136) and was a source of dissatisfaction with management (133, 136).

However, the data are primarily those reported by parents, and do not reflect direct responses from patients.

Although parents were satisfied with day surgery management overall (133), they reported high levels of anxiety [45% in the study carried out by Grenier et al (128)].

Giving parents precise information, advising them on what to do and offering a number to call if they need

to are suggestions made by Darbyshire et al following a qualitative survey of mothers' experiences of their child's recovery in hospital and at home (134).

### Guidelines by learned societies

According to learned societies, children are excellent candidates for day surgery (7, 17). This management is particularly appropriate for limiting disturbance to the patient's usual routine (7). It does, however, require consideration of the specific requirements of young patients, both in the infrastructure and in the equipment that is used (7).

The specific requirements in paediatrics extends to the information that is given to parents and to patients. The SFAR recommends that the information provided is appropriate, personalised and understandable, for children as well as parents. The information provided should include the risk that the procedure may be postponed, depending on the child's clinical condition. The SFAR also recommends informing parents that there needs to be someone there who can accompany the child home, in addition to the driver. For children aged over 10 years, this second person is not required (7).

The code of practice that applies to children admitted to hospital states that children have the right to the best possible care, and states that day surgery should be considered in preference to inpatient admission, if possible. The guidelines drawn up by the French National Council for Paediatric Surgery (CNCE) are along similar lines (138).

### 7.1.6 Specific features of elderly management for day surgery

#### Literature data

Two epidemiological studies, involving large numbers of patients, evaluate morbidity and mortality data in elderly patients.

- Fleisher et al, using retrospective data from reimbursement databases, determined the mortality rate at day 7 for 564,267 day surgery procedures in patients aged over 65 years who had Medicare insurance. These procedures were carried out in hospital-based outpatient centers, freestanding ambulatory surgery centers (ASCs), and physicians' office facilities. Mortality rates for outpatient surgery were 2.5 and 5.0

per 100,000 procedures on the day of the procedure and on day 7. The authors concluded that advanced age, history of hospitalisation in the previous six months and invasiveness of surgery increased the risk of death (139).

- Chung et al analysed data from 17,638 ambulatory surgical patients managed at Toronto Western Hospital. Data were obtained from the Ministry of Health database for Ontario. They compared intraoperative and immediate postoperative events (on the day of the procedure) for subjects aged 65 years or older (27% of the sample) and younger subjects. Elderly patients experienced a higher incidence of all intraoperative events (adjusted OR (99.7% CI): 1.4 [1.0-2.0]) and cardiovascular intraoperative events (adjusted OR (99.7% CI): 2.0 [1.3-3.0]). However, they had a lower incidence of any postoperative events: pain, nausea and vomiting and dizziness. The authors' conclusions were that these risks did not constitute a contraindication to day surgery for elderly patients, but that this population may require more careful intraoperative cardiovascular management (115).

The review carried out by Bryson et al in 2004 confirmed these data and concluded that elderly patients may safely undergo ambulatory surgery but are at increased risk for hemodynamic variation in the operating room (140).

The main benefit of day surgery for elderly patients seems to be a reduction in cognitive dysfunction. A multi-centre prospective cohort study, published in 2003 by Canet et al and involving 372 patients aged over 60, showed that day surgery was protective against cognitive dysfunction. Assessment at 7 days showed that 9.8% [95% CI]: [5.7-15.4] of inpatients versus 3.5% [95% CI]: [1.4-8.0] of outpatients experienced cognitive dysfunction ( $p = 0.033$ ). Logistic regression analysis confirmed the results of the univariate analysis (inpatient versus outpatient): OR [95% CI]: 2.8 [1.2-6.3] (141).

### Guidelines by learned societies

The SFAR considers that advanced age is not in itself a contraindication to day surgery. Day surgery does appear to reduce the incidence of cognitive dysfunction in comparison with inpatient admission.

It therefore recommends that elderly patients be managed as day cases if the risk-benefit ratio is favourable, if such



Table 15. Incidence of postoperative symptoms observed in day surgery, according to the literature review of observational studies in Wu et al 2002 (97).

Symptom	Patients studied (n)	Studies included (n)	Time of surveillance in days, median (range)	Overall incidence of symptoms
Drowsiness	3 077	7	1	42% (11 – 62%)
Dizziness	3 389	7	1 (1 – 7)	18% (7 – 41%)
Non-specific headache	5 540	15	1 (1 – 7)	17% (2 – 30%)
Postdural puncture headache	1 271	8	7 (3 – 7)	9% (1 – 37%)
Asthenia	2 635	3	1 (1 – 2)	21% (19 – 54%)
Myalgia	3 339	3	3 (1 – 7)	31% (9 – 47%)
Sore throat	7 364	7	1 (1 – 7)	37% (6 – 47%)

management is possible and if the appropriate organisation is in place, particularly constant staff availability and continuity of care (7).

Currently, questions are being asked as to the anaesthesia techniques and agents that should preferably be used in the elderly. The SFAR states that currently, there are no literature data which suggest that one anaesthetic technique or agent should be favoured over any other. It nevertheless recommends avoiding benzodiazepines in the preoperative period. These drugs increase behavioural disorders in the postoperative period (7).

## 7.2 Clinical quality indicators

### 7.2.1 Unplanned return to the operating room

Just one study was selected, which analyses rates of unplanned return to the operating room on the day of

the procedure. This was a report written by the Australian Council on Healthcare Standards (ACHS). The study reports national data which showed the unplanned return to the operating room rate in day surgery is rare, and has been stable at 0.04% over a period of six years (142).

The International Association for Ambulatory Surgery specify that this indicator may reflect possible problems in the performance of procedures (17).

It is less useful when evaluating a patient's risk benefit ratio.

### 7.2.2 Postoperative stay prolonged, with no unplanned overnight admission

Six observational prospective studies were selected for an analysis of time taken in the day surgery unit to complete various stages of the process (from admission to unit to admission to theatre; from end of procedure to discharge from the PACU, from admission of patient to

the unit to the DSU to discharge from hospital) and the factors for them (see Table 16) (90, 93, 98-101).

The numbers involved in these studies were between 175 and 16,411 patients.

The main purpose was to analyse the factors determining length of stay of surgical day-case patients in four of these studies (98-101).

**Table 16. Description of observational studies that assess prolonged stays in day surgery units.**

Authors	Publication date	Numbers
Chung et al. (98)	1995	500
Chung et al. (90)	1997	3 729
Pavlin et al. (99)	1998	1 088
Chung et al. (100)	1999	16 411
Junger et al. (101)	2001	3 152
Pavlin et al. (93)	2002	175

Factors associated with delayed discharge were identified at various stages:

- preoperative;
  - female sex (99, 101)
  - advanced age (101)
  - congestive heart failure (100);
- intraoperative;
  - duration of surgery (100, 101)
  - general anaesthesia (99-101)
  - surgical procedure (99-101)
- postoperative;
  - postoperative pain (90, 93, 98-101, 121)
  - postoperative nausea and vomiting (98-101)
  - drowsiness (99)
  - delayed urination (98)
  - lack of person to accompany at discharge (98, 99).

However, only three of these six studies used multivariate models to identify these factors (93, 99, 100).

Length of stay is not a clinical indicator that is recommended by the International Association for Ambulatory Surgery, for the following reasons (17):

- some procedures can require more time, independently of the quality of management;
- focusing attention on this indicator creates pressure and risks increasing the number of premature discharges;
- patients must feel ready to leave, and it is up to them to choose when to go home.

Some authors also state that it is difficult to rule out factors that cause delay (63).

### 7.2.3 Unplanned overnight admission

#### Rates of unplanned overnight admission

Nineteen observational studies were selected in order to evaluate rates of unplanned overnight admission. Twelve were retrospective; seven were prospective. The retrospective studies identified patients using administrative databases or hospital information systems (see Table 17).

The numbers involved in these studies were between 500 and 783,558 patients.

Rates of unplanned overnight admission were between 0.2% and 26% (74, 98, 101-106, 122, 143-152).

The wide variation in observed rates can be explained by variability of patient selection, procedure type, differences in levels of surgical expertise and types of day surgery unit.

In particular, the study by Hofer et al reported a higher proportion of unplanned admissions than most of the observational studies (148). The following reasons could be used to explain this difference:

- possible difference in patient selection criteria, and bias in the patients selection who presented to this centre;
- higher-risk procedures are carried out as day cases;
- convenience of inpatient resources in the study setting compared with studies carried out in free-standing facility for ambulatory surgery.

Table 17. Description of observational studies assessing the unplanned overnight admission.

Authors	Publication date	Type of study	Numbers	Unplanned overnight admission rate
Gold et al. (122)	1989	Retrospective	9 616	1,04%
Fancourt-Smith et al. (104)	1990	Retrospective	90 234	0,28
Levin et al. (143)	1990	Retrospective	1 971	9,5%
Johnson et al. (144)	1990	Retrospective	10 348	0,7%
Rudkin et al. (145)	1993	Prospective	5 000	1,28%
Osborne et al. (74)	1993	Retrospective	6 000	1,34%
Chung et al. (98)	1995	Prospective	500	0,2%
Greenburg et al. (105)	1996	Retrospective	15 132	0,85%
Fortier et al. (103)	1998	Prospective	15 172	1,4%
Margovsky et al. (149)	2000	Retrospective	920	4,7%
Junger et al. (101)	2001	Prospective	3 152	5,4%
Harahsheh et al. (150)	2001	Retrospective	5 182	2%
Tham et al. (106)	2002	Retrospective	10 801	1,5%
Awad et al. (102)	2004	Retrospective	10 772 children	2,2%
Shirakami et al. (151)	2005	Prospective	726	2%
Fleisher et al. (146)	2007	Retrospective	783 558	0,6%
Hofer et al. (148)	2008	Retrospective	Cases: 235 Control: 235	26% for obese patients vs 22% for non-obese patients (NS)
Blacoe et al. (152)	2008	Prospective	13 592 children	1,8%
Mattila et al. (75)	2009	Prospective	6 659	5,9%

In addition, there are two interesting results:

- The objective of the study done by Hofer et al was to compare the proportion of unplanned hospital admission or readmission among obese patients (body mass index > 40 kg/m<sup>2</sup>) with the proportion in non-obese patients (body mass index < 25 kg/m<sup>2</sup>) scheduled for ambulatory surgery. These rates were higher for obese patients (26%) than for non-obese patients (22.1%). After matching for age, sex, surgical procedure, type of anaesthesia and date of surgery, obesity was not a significant independent risk factor for unplanned admission (148).
- In the study by Awad et al, the incidence and causes of unplanned hospital admissions following day-case surgery in children are similar to those for adults (102).

### Causes of unplanned admission

Of the selected observational studies, the proportions of admissions for surgical, anaesthetic, medical and social reasons varied between studies (see Table 18).

Estimation of these proportions is difficult, because there is such a wide variety of ways of classifying causes.

- Overall, the most common causes of unplanned admission are surgical. Most of these are intense pain, bleeding and the need for more extensive surgery.
- Complications linked to anaesthesia, in most cases postoperative nausea and vomiting but also drowsiness, dizziness and aspiration, are the second most common cause of unplanned overnight admissions.
- In other cases, patients are admitted for medical reasons. Such admissions are caused by the presence or worsening of pre-existing medical conditions, such as diabetes or sleep apnoea, or by problems resulting from pre- or postoperative complications, such as rhythm disorders, myocardial infarction or bronchospasm.
- Finally, some unplanned admissions occur for social reasons, such as the lack of anyone to support or help at home, or following a request by the patient or their family.

### Predictive factors of unplanned overnight admission

Eight studies of those that were selected attempt to identify factors that are predictive of admission (102-105, 122, 146, 149, 150). Three of these confirmed their results using multivariate analysis methods (see Table 19).

Factors predictive of hospital admission identified in the other studies, although not adjusted for potential confounding factors, were similar and as follows:

- type of surgery (102, 104, 105, 149);
- late surgery (102);
- extremes of age: the elderly (149) and those aged under 3 months (150);
- medical history (149).

### 7.2.4 Unplanned return to hospital and/or readmission

Unplanned return to hospital and/or readmission rates

Ten observational studies were selected to assess unplanned return to hospital and/or readmission rates. Seven were retrospective, and three were prospective.

The retrospective studies identified patients using administrative databases in five studies, and from reviewing notes of readmitted patients for two studies.

The numbers involved in these studies were between 5,069 and 567,267 patients.

With the exception of two studies (75, 111), their primary objective was to analyse rates of unplanned readmission.

Two studies made no distinction between unplanned overnight admission and readmission (111, 139).

Rates of readmission were between 0.15% and 9.1% (see Table 20). The differences observed in times to follow-up and in definitions of readmission (planned or emergency, inpatient admission or return to hospital, related to surgery or several causes combined) can go some way towards explaining this variation.

Just one of these studies, which was published in 1989, carried out a retrospective comparison of readmission rates between day surgery and inpatient admission.

Readmission rates following day case and inpatient surgery were broadly similar. The only significant differences for emergency readmissions were those among patients who underwent female sterilisation, dilatation and curettage or cataract operations in whom more inpatients than day cases had emergency readmissions. (153).

Interpretation of these results is limited by the factors described below.

- There is no consistent definition of readmission. Some studies do not distinguish between:
  - readmission to hospital from unplanned overnight admission following the procedure;
  - emergency hospital admission and return to hospital for planned care or consultation;
- Length of follow-up varied between studies. Readmission to hospital in the 24 hours following discharge is in most cases associated with acute complication, while chronic complications and infection generally occur after this period. IAAS recommends that rates of unplanned return to a DSU/hospital and unplanned readmission to a DSU/hospital within the first 24 hours and in the first 28 days be identified separately (17);
- Follow-up place is a significant source of bias. Depending on local arrangements, patients may go back to a hospital other than that in which they underwent their procedure.

### **Causes of unplanned return to hospital and/or unplanned readmission**

The main causes of readmission that were identified in the selected studies are:

- surgical complications, primarily bleeding (66, 68, 69, 71, 75, 107, 108);
- pain (107, 108);
- urinary retention (107);
- infection (69, 71, 75, 107);
- thromboembolic events (69).

### **Predictive factors of unplanned return to hospital and/or unplanned readmission**

Of the seven studies that were selected to assess rates of unplanned return to hospital and/or unplanned readmission, seven attempted to identify predictive factors.

- Four studies identified type of surgery, namely general, ENT and urological surgery, as the main preoperative factor that predicts readmission (68, 75, 108, 111). However, these studies did not use multivariate analysis.
- Three other studies attempted to identify the factors that predicted readmission by using multivariate analysis methods, for the first 30 days (69, 107) and for the first 7 days following the procedure (139).
  - Results of the multivariate logistic regression carried out by Twersky et al identified urological surgery as an independent predictive factor of return to hospital because of complications (OR [95% CI]: 27.87 [3.78-74.86]). Age, ASA class, and gender were not significant predictors of return. (107).
  - Majholm et al stated that when they adjusted for surgical specialty, age, sex and day surgery centre, they found that centre, surgical specialty and sex were factors that were associated with return to hospital and/or unplanned readmission ( $p < 0.0001$ ). Age did not appear to have an impact on risk of return to hospital (for consultation or readmission). Methods for measuring associations are not specified in the article (69).
  - The results of the study done by Fleisher et al are more difficult to interpret: the authors only included patients aged over 65 who were covered by Medicare insurance in the United States. Procedures took place in one of three different types of facility: physicians' offices facilities, hospital-based outpatient centers, freestanding ambulatory surgery centers (ASCs). Type of procedure, ethnic origin, male sex, age, type of day surgery facility and prior inpatient hospital admission are risk factors for emergency department visit within 7 days (139).

## **7.3 Social and environmental criteria**

### **7.3.1 Patient satisfaction**

Patient satisfaction is one of the overall efficacy indicators for day surgery (17, 63, 155).

#### **Satisfaction rates for day surgery**

Twelve observational studies assessing satisfaction of patients undergoing day surgery were selected (see Table 21).

None of these studies compared satisfaction rates for day surgery with those for inpatient admission.

The numbers involved in these studies were between 89 and 34,015 patients.

Data were collected using:

- a written questionnaire, filled in on discharge from hospital in five studies;
- an in-person or telephone interview, in seven studies. Patients were asked the day following the procedure in four studies, the day of discharge in one study, and the day of discharge and the 30th day in one study. Time of interview/questionnaire was not specifying in one study.

There is wide variation in ways of assessing patient satisfaction.

Satisfaction rates with day surgery were high, but these varied according to the type of data collection, the delay between procedure and data collection and the type of DSU facilities. There was also a selection bias because some people could not be contacted and did not send back the written questionnaire.

### Factors that influence patient satisfaction

Fourteen observational studies were selected, which identify patient satisfaction levels.

Two of these studies had analysis of factors that influence satisfaction as a primary outcome (112, 161); for two others, the objective was to assess patient preferences relating to day surgery (110, 162).

Just two studies used multivariate analysis models to identify the factors that influence patient satisfaction (113, 161).

The main factors that affect satisfaction were related to:

- intraoperative management;
  - preoperative anxiety (110);
  - discomfort when receiving IV treatment (110);
- occurrence of postoperative adverse events and how these are managed;
  - pain (87, 109-114);

- postoperative nausea and vomiting (110, 113, 121);
- how the facility is organised;
  - waiting times (109, 111-113, 158);
  - feeling of having been discharged too early (109, 156);
  - respect for privacy within the unit (109, 113);
  - a phone call the following day (157);
  - postoperative visit by the surgeon (112);
  - interpersonal relations: communication and pre- and postoperative information (109, 113, 114, 162, 163); how pleasant the staff and environment were (112, 113, 161);
- social reasons (113).

These studies showed that great importance was attached to information, communication and interpersonal relationships with the care team.

Asking for information is one of the essential points that is emphasised by the French Federation of health system users (CISS), which calls for fuller, clearer and better information<sup>30</sup>.

### Limitations of satisfaction studies

The results of patient satisfaction studies need to be interpreted with caution:

### Definitions and dimensions of satisfaction

Patient satisfaction has several dimensions.

Fung et al envisages patient satisfaction as healthcare recipients' reactions to their care, a reaction that is composed of both a cognitive evaluation and an emotional response. They state that patients have an appreciation of the expected standard of care, and have some expectations that can vary depending on the context, their level of education, experience and ideals. Other factors, such as accessibility and level of comfort of services, the type of facility, interpersonal relationships and the skills of the healthcare professionals, can influence satisfaction levels. Patients can assimilate discrepancies between this expected standard of care and that which is actually experienced. In other words, patient satisfaction depends on the congruence between what is expected by the patient and what occurs to the patient (164).

30. <http://www.leciss.org>

Table 18. Causes of unplanned admission following day surgery.

		References
Surgical	Pain	Osborne, 1993 (74) ; Awad, 2004 (102) ; Fortier, 1998 (103) ; Fancourt-Smith, 1990 (104) ; Greenburg, 1996, (105) ; Tham, 2002 (106) ; Mattila, 2009 (75) ; Chung, 1995 (98)
	Bleeding	Osborne, 1993 (74) ; Fortier, 1998 (103) ; Harahsheh, 2001 (150) ; Fancourt-Smith, 1990 (104) ; Greenburg, 1996 (105) ; Blacoe, 2008 (152)
	Need for more extensive surgery	Fancourt-Smith, 1990 (104) ; Levin, 1990 (143) ; Margovsky, 2000 (149) ; Blacoe, 2008 (152)
Anaesthesia	Postoperative nausea and vomiting	Osborne, 1993 (74) ; Awad, 2004 (102) ; Fortier, 1998 (103) ; Greenburg, 1996 (105) ; Blacoe, 2008 (152)
	Drowsiness	Osborne, 1993 (74) ; Awad, 2004 (102) ; Fortier, 1998 (103)
	Aspiration	Osborne, 1993 (74) ; Fortier, 1998 (103) ; Fancourt-Smith, 1990 (104)
Medical	Myocardial infarction, diabetes, thromboembolic events	Osborne, 1993 (74) ; Fortier, 1998 (103) ; Greenburg, 1996 (105) ; Fancourt-Smith, 1990 (104)
	Obesity	Hofer, 2008 (148)
Social and environmental	No escort	Osborne, 1993 (74) ; Fortier, 1998 (103) ; Fancourt-Smith, 1990 (104)
	Insufficient help at home	Osborne, 1993 (74)
	Request from patient or family	Fortier, 1998 (103) ; Tham, 2002 (106)
	Not specify	Mattila, 2009 (75)



Table 19. Factors associated with unplanned admission, from Gold et al 1989, Fortier et al 1998 and Fleisher et al, 2007 – results from multi-variate logistic regression (103, 122, 146).

	Gold et al. (122) N= 9 616	Fortier et al. (103) N= 15 172	Fleisher et al. (146) N=783 558
	OR [95% CI]	OR [95% CI]	OR [95% CI]
<b>Preoperative</b>			
ASA 2 and 3		2,1 [1,5-2,8]	
Sex		0,7 [0,5-0,9]	
Age ≥ 65 years			1,58 [1,42-1,77]
Age (30-year intervals)	2,56 [1,32-4,94]		
Cardiac disease			0,74 [0,53-1,04]
Peripheral vascular disease			3,15 [1,89-5,23]
Cerebrovascular disease			3,73 [1,83-7,64]
Malignancy			1,62 [1,42-1,85]
HIV seropositivity			2,33 [1,09-4,96]
Drive > 1 hour	1,49 [0,79-2,80]		
<b>Intraoperative</b>			
ENT surgery		29,6 [15,1-58,1]	
Urological surgery		8,3 [3,6-19,0]	
Plastic surgery		4,7 [2,1-10,5]	
Orthopaedic surgery		4,3 [2,5-7,4]	
Neurosurgery		3,9 [1,6-9,6]	
Ophthalmology		1,9 [1,1-3,4]	
Abdominal surgery	2,89 [1,07-7,79]		
Laparoscopy	1,71 [0,69-4,22]		
Surgery ended after 3pm		2,5 [1,8-3,7]	
Regional anaesthesia			1,53 [1,12-2,10]
General anaesthesia	5,18 [2,60-10,30]		11,94 [10,41-13,70]
Anaesthesia > 1 hour		2,2 [1,6-3,1]	
Operation room time (minutes)			
60-120			2,63 [2,37-2,92]
> 120			4,34 [3,86-4,88]
> 60	2,72 [1,46-5,08]		
<b>Postoperative</b>			
Bleeding		266,8 [71,7-991,9]	
Pain		4,2 [3,0-5,9]	
Drowsiness		4,1 [1,6-10,5]	
Nausea/vomiting	3,03 [1,35-6,81]	4,0 [2,8-5,8]	
Dizziness		2,7 [1,5-4,8]	

Table 20. Description of observational studies assessing rates of unplanned readmission.

Authors	Publication date	Numbers	Type of study and collection	Time to follow-up	Rate
Henderson et al. (153)	1989	35 168	Retrospective Database	28 days	Emergency readmission: from 0% to 1.9% depending on type of procedure
Sibbritt et al. (154)	1994	181 311	Retrospective Database	28 days	All causes: from 4.4% to 9.1% depending on type of procedure
Twersky et al. (107)	1997	6 243	Retrospective	30 days	All causes: 3% For complications: 1.3%
Bain et al. (111)	1999	5 069	Prospective	> 15 days	Admission and readmission All causes: 7.8%
Mezei et al. (68)	1999	17 638	Retrospective Database	30 days	All causes: 1.1% Related to surgery: 0.15%
Coley et al. (108)	2002	20 817	Retrospective	30 days	All causes: 5.7% Related to surgery: 1.5%
Fleisher et al. (139)	2004	564 267	Retrospective Database	7 days	Elderly: admission or readmission from 0.8% to 2.1% depending on organisation
Engbaek et al. (71)	2006	18 736	Retrospective Database	60 days	All causes: 0.6%
Mattila et al. (75)	2009	6 659	Prospective	24 hours and 30 days	Within 24 hours: <ul style="list-style-type: none"> <li>Return to hospital: 0.4%</li> <li>Readmission: 0.1%</li> </ul> Within 28 days: <ul style="list-style-type: none"> <li>Return to hospital: 3.7%</li> <li>Readmission: 0.7%</li> </ul>
Majholm et al. (69)	2012	57 709	Prospective Database	30 days	Rate of return to hospital: <ul style="list-style-type: none"> <li>All causes: 1.21%</li> <li>Haemorrhage/haematoma: 0.50%</li> <li>Infection: 0.44%</li> <li>Thromboembolic event: 0.03%</li> </ul>

Table 21. Description of observational studies assessing patient satisfaction after a day surgery procedure.

Authors	Publication date	Numbers in day surgery	Method for assessing satisfaction; dimensions of satisfaction	Time of assessment	Rate of satisfaction
Icenhour et al. (156)	1988	150	In-person interviews. Questions about: <ul style="list-style-type: none"> <li>emotional support (nurses'support of patients'feelings, physicians'emotional support, staf willingness to listen, staff understand and sufficient time with nurses and physicians);</li> <li>patient teaching, information;</li> <li>previous surgeries, social support, educational level.</li> </ul>	At time of discharge	90%
Philip et al. (116)	1992	86	Written questionnaire, 5 questions with this one "If you needed it, wuld you choose to be a Day Surgery patient again?"	Return home	97%
Ghosh et al. (109)	1994	557	Written questionnaire. Patients were asked on their level of satisfaction about: outpatient services, admission procedure, the DSU itself, quality of preoperative and postoperative information, postopretaiive apin relief and postoperative management	Return home	> 50%
Hawkshaw et al. (157)	1994	1 492	Telephone interviews. Satisfaction with pain management and information.	Day 1	<ul style="list-style-type: none"> <li>Excellent level of satisfaction with pain management: 21.9%</li> <li>Information: 72.3%</li> </ul>
Rudkin et al. (158)	1996	826	Telephone interviews. Patient opinion relating to day of surgery instructions, anaesthesia, surgery, pre and post operative waiting times, overall rating of care and preference for inpatient management.	Day 1	Depending on facility: <ul style="list-style-type: none"> <li>freestanding: from 74.1% to 86.7%</li> <li>hospital-integrated units with dedicated recovery areas: from 53% to 65.2%</li> <li>hospital-integrated units with inpatient mixed recovery room</li> </ul>

table continues on next page

Authors	Publication date	Numbers in day surgery	Method for assessing satisfaction; dimensions of satisfaction	Time of assessment	Rate of satisfaction
Tong et al. (113)	1997	2 730	Telephone interviews: <ul style="list-style-type: none"> <li>the patient would return to the same facility for a similar ambulatory surgery?</li> <li>satisfaction with anesthesia by asking the patient to rate care as poor, good or excellent.</li> </ul>	Day 1	97,5%
Beauregard et al. (87)	1998	89	Written questionnaire 6-point Likert scale from "very dissatisfied" to "very satisfied".	Day 0 Day 1	Mean of 80%
Bain et al. (111)	1999	5 069	Written questionnaire Satisfaction score not specify.	Return home	85%
French Health insurance survey (25)	2003	34 015	Telephone interviews: <ul style="list-style-type: none"> <li>was the patient satisfied with day surgery-management?</li> <li>would the patient agree to the same type of treatment in future?</li> </ul>	Return home	90%
Aldwinckle et al (159)	2004	1 647	Telephone interviews. Collection method not clear	Day 1	95%
Canoui-Poitrine et al (160)	2008	503	Written questionnaire. 24 items, 7 dimensions.	Return home	<ul style="list-style-type: none"> <li>Mean of overall satisfaction score 91,3/100</li> </ul>
Lemos et al (114)	2009	251	In-person and telephone interview by the same person. 6-point numerical scale.	Day 0 Day 30	95%

Some authors specify the following points:

- patients are generally satisfied if there are no major discrepancies between their expectations and their experience (155);
- level of care is only one of the factors that determine satisfaction levels, and it is not possible to determine patients' expectations or to assess the discrepancy between what was expected and what was received (17);
- discontent is only expressed when a serious event occurs, and for this reason a positive response in a satisfaction study may only mean that nothing very bad happened to the patient (160);
- patient satisfaction may be more an indication of a patient's sense of relief and gratitude that they survived their surgery without incident rather than a true measure of satisfaction with the care they received (155);

- patients may also be unwillingness to criticize their caregivers when asked to evaluate their experience of care (155);
- patients seem more concerned with the interpersonal skills of the hospital staff (how nice they are) than with technical skills, having sometimes difficulty in fully understanding or judging the care that they receive (17).

### Validity of satisfaction questionnaires

Some authors emphasise the need to use a properly constructed psychometric approach, preferably using multi-item questionnaires, and to test these questionnaires in order to confirm their validity and reliability, and in order to ensure that the psychological approach to satisfaction measurement is properly accounted for (155).

The studies selected for assessment of patient satisfaction after a day surgery procedure did not use valid instruments.

A recent literature review showed that there is still no valid or reliable questionnaire for measuring patient satisfaction in ambulatory anaesthesia (166).

### Guidelines by learned societies

Patient satisfaction is one of the clinical indicators for day surgery as defined by the International Association for Ambulatory Surgery (17).

The IAAS recommends that in order to have more complete and reliable results, feedback needs to assess all aspects of the quality of care that impinge on patient satisfaction:

- the structure of the institution of DSU;
- the process that enables the services to be delivered;
- and the outcome.

It also recommends:

- that data be collected especially on two different occasions: on in the immediate postoperative period (concerning the first two aspects) and the other later, around one month, to evaluate global patient satisfaction;
- to have a long follow-up evaluation in order to have a real feedback of the final outcome and in order to reduce bias caused by non-responders and those

who are lost to follow-up.

### 7.3.2 Functional recovery

Two observational studies were identified that analysed time to functional recovery in day surgery:

- the prospective study by Swan et al had as its primary objective description of functional status after hernia repair and laparoscopy procedures done as day surgery. The study involved 100 patients. Assessment was performed using a standardised questionnaire, the Functional Status Questionnaire, at four points in time: preoperatively, the day after the procedure, on postoperative day 4 and on day 7;
- the prospective study by Philip et al, which included 86 patients, did not have analysis of functional recovery as a primary outcome. It nevertheless contained one item in the form of a closed question (“Were you able to do your usual activities the next day?”) in a questionnaire given to patients on discharge.

Swan et al showed that patients experienced a decreased of functional ability during the first seven postoperative days, and that only 22% of them had returned to full or part-time work fully by the seventh postoperative day. The authors concluded that although the provider “cost” may have been reduced with the transition to ambulatory surgery, a significant portion of cost or impact of this care may have been merely shifted to the patient and family (167).

Philip et al showed that only 38% of respondents were able to return to their usual activities the day after the surgery, and the remainder required 3.2 +/- 2 additional days (116).

Persistent postoperative pain was found to be a factor that reduced activity levels in the four selected studies that analysed the impact of postoperative pain in a day surgery setting (87, 89, 95, 115, 116) (see “Impact of postoperative pain”).

The main limitation of these studies is that they did not use scales that were specific to day surgery. Tools for assessing functional capacity after day surgery are now available (168-170). Currently, monitoring of this indicator is not recommended by any learned society (59).

### 7.3.3 Satisfaction of healthcare professionals in hospitals

Just one non-comparative observational study has been identified that studies satisfaction levels among health-care professionals in hospitals.

This was a French study of 682 hospital-based health-care professionals.

The satisfaction rate among these professionals was 92.3%. However, the participation rate in this study was only 58.2% (60.1% for doctors, 55.5% for hospital managers, 63.2% for medical secretaries and 45.9% for administrators).

Of those who responded, 97.3% of professionals would recommend the day surgery centre to others or would have surgery there themselves. The vast majority of professionals had a mainly positive view of the service provided to patients by the DSU. In their view, organisational innovation plays an important role in this choice (160).

### 7.3.4 Primary care

No study about the primary care use following a days surgery was identified (general practitioner consultation, nurses care, etc), from the point of view of patients or of healthcare professionals.

Four observational studies partially examined this issue, but main objective of the studies and populations were highly different:

- a retrospective study of 100 paediatric day-case-surgery showed that no parents visited their general practitioner (GP) on the day following surgery, and that 19% contacted their GP within the first two weeks following surgery (133);
- in the study by Grenier et al involving 104 children who had undergone day surgery, 14% of parents called their GP, but the period that elapsed before this information was collected is not clear (128);
- in the retrospective study by Ghosh et al involving 557 patients, 24 patients (4.3%) contacted their GPs in the 48 hours after discharge; 8 patients (1.4%) contacted a district nurse (109);
- a prospective study done in France by Robaux et al involving 958 generalist physicians assessed the views of GPs in North-East France concerning pain

relief at home after ambulatory surgery (171). GPs reported to be visited by outpatients:

- >1 time a week for 5.7% following the procedure;
- <1 time a week for 31.7%;
- 1 time a month for 48%;
- <1 time a year for 12%;
- never for 2.5% of them.

The authors concluded that there is a great lack of information and collaboration between GPs and the medical hospital team after ambulatory surgery in France.

In an economic point of view, study of transfer of expenditure between primary care and hospitals, as a result of transfers of activity between inpatient admission and day surgery management, was carried out in France in 2001 as part of the National Inter-regime Programme (PNIR) by the three main health insurance funds (172). The study established that admissions for day surgery were less costly for health insurance than stays under inpatient admission. The survey also showed that this difference in expenditure was mainly linked to the admission period and not to the periods before or after it (see Economic Benefit - French study of costs for health insurance).

## 7.4 Evaluation of risks and benefits of day surgery in comparison with inpatient admission for two surgical procedures

### 7.4.1 Focus 1: Day care versus in-patient surgery for age-related cataract

The number of cataract operations carried out as day cases has increased rapidly over the last ten years. In France, the proportion grew from 32% in 2000 to 78% in 2009, according to the OECD (173). This trend is confirmed by figures from the national day surgery observatory at CNAMTS (174).

A Cochrane review was selected to assess the benefit of day surgery management of age-related cataracts in comparison with inpatient admission (175).

This review included two randomised controlled trials (day surgery versus inpatient admission) involving a total of 1,284 patients.

The primary outcome was the achievement of a satisfactory visual acuity six weeks after the procedure,

defined as corrected visual acuity of  $\geq 6/18$ . This particular assessment was not reported in any of the studies. The authors therefore assessed the best levels of visual acuity correction four months after the procedure.

The review also assessed the following secondary outcomes:

- occurrence of adverse effects;
- occurrence of intraoperative complications (proportion of patients with posterior capsule rupture, with or without vitreous loss, misplaced intraocular lenses and anaesthesia related complications);
- occurrence of postoperative complications (wound leakage, other suture related problems, corneal oedema and/or decompensation, secondary glaucoma and postoperative endophthalmitis);
- quality of life measures, using a validated scale (VF14 and SF36) and subjective assessment of patient satisfaction;
- economic data: Cost-effectiveness of the procedures carried out as day case and in-patient.

These trials were not blinded, and there were probable attrition and reporting biases (methods of collecting adverse event data were not clearly explained for one of the studies).

The mean change in visual acuity of the operated eye four months postoperatively was 4.1 (standard deviation (SD) = 2.3) for the day care group and 4.1 (SD = 2.2) for the in-patient group ( $p = 0.74$ ) (see Table 22).

There were no data available from either study on intraoperative complications.

Analysis of postoperative complications showed statistically significant differences in early postoperative complication rates with an increased risk of increased intraocular pressure in the day care group which appeared to have no clinical relevance to visual outcomes four months postoperatively. Analysis of other postoperative complications (wound leakage, corneal oedema, endophthalmitis) during the first 24 hours and/or in the first four months after the procedure showed no significant differences between day care and inpatient surgery.

The authors concluded that success, safety and cost-effectiveness of cataract surgery as a day care procedure appear to be acceptable.

Future research may well focus on evidence provided by high quality clinical databases and registers which would enable clinicians and healthcare planners to agree clinical and social indications for in-patient care and so make better use of resources, by selecting day case surgery unless these criteria are met.

#### 7.4.2 Focus 2: Day-case versus overnight stay for laparoscopic cholecystectomy

A Cochrane review was selected to assess the safety and benefits of day-case surgery compared to overnight stay in patients undergoing elective laparoscopic cholecystectomy (176).

This literature review identified five randomised trials, with 429 patients randomised to the day case group and 214 to the overnight stay group.

The authors specify that the selection criteria varied, but most included only patients without other diseases. The patients were living in easy reach of the hospital and with a responsible adult to take care of them.

Mortality and complications to surgery-related morbidity (bile duct injury, intraabdominal collection, wound infection, infected intraabdominal collection) were analysed as primary outcomes.

The secondary outcomes were rates of prolonged hospitalisation, readmission, reviewed by doctor but not admitted, Pain (however defined by authors), nausea (however defined by authors), vomiting (however defined by authors), patient anxiety (however defined by authors), quality of life of patients (however defined by authors), patient satisfaction, proportion of patients who would recommend the same treatment to others, return to normal activity and return to work.

None of the trials reported any deaths.

There was no significant difference between the two groups in the overall morbidity (RR [95% CI]: 1.26 [0.54-2.94]), morbidity occurring after discharge (RR [95% CI]: 1.23 [0.44-3.46]), prolonged hospitalisation (RR [95% CI]: 0.99 [0.69-1.43]), readmission rates (RR [95% CI]: 0.90 [0.25-3.26]), the proportion of patients seeking a review by a doctor but who did not require re-admission (RR [95% CI]: 1.88 [0.45-7.91]) or for scores for pain, nausea and vomiting, patient anxiety, patient quality of life, patient satisfaction, percentage of patients who



Table 22. Summary of results of Cochrane review by Fedorowicz et al 2001 (175) comparing day care versus in-patient surgery for age-related cataract.

	Day surgery N = 464	Inpatient N = 471	
Visual acuity in operated eye at 4 months			
Mean change (SD)	4,1 (2,3)	4,1 (2,2)	P = 0,74
Early postoperative complications (< 24 hours)			RR (CI)*
Wound leakage	5 (1,1%)	4 (0,8%)	1,27 (0,34–4,77)
Corneal oedema	49 (10,6%)	36 (7,6%)	1,42 (0,91–2,24)
Intraocular pressure > 30 mmHg	16 (3,4%)	5 (1,1%)	3,33 (1,21–9,16)
Late postoperative complications (< 4 months)			
Corneal oedema	32 (6,9%)	24 (5,1%)	1,38 (0,80–2,38)
Wound leakage	4 (0,9%)	7 (1,5%)	0,76 (0,17–0,98)
Intraocular pressure > 30 mmHg	3 (0,6%)	5 (1,1%)	0,61 (0,14–2,55)
Endophthalmitis	2 (0,4%)	0 (0,0%)	-

	Day surgery N = 150	Inpatient N = 155	
Quality of life at 4 months			
Mean VF14 score (SD)	92,8 (12,2)	87,6 (20,3)	
Change score preoperative	25,2 (21,2)	23,5 (25,7)	P = 0,3

\* RR (CI): Relative risk (confidence interval)

would recommend the same treatment (RR [95% CI]: 1.26 [0.54-2.94]), return to normal activity or return to work.

The proportion of patients requiring unplanned prolonged hospitalisation was 19.5% in the day-case group and 20.1% in the overnight stay group. The proportion of people who required re-admission was 2.0% and 2.3% respectively.

These rates were higher than those found in large cohorts involving a variety of procedures.

These results are not surprising, as this is more complex surgery that can be associated with more complications.

The authors conclude that despite the high risk of bias in the selected studies, day-case elective laparoscopic cholecystectomy seems to be a safe and effective intervention in selected patients (with no or minimal systemic disease and within easy reach of the hospital) with symptomatic gallstones.

## 8. ECONOMIC BENEFIT

The economic benefit is one of the main reasons for promoting day surgery over conventional admission. At a time when control of health expenditure is sought, day surgery is primarily perceived as one of the ways in which a reduction in hospital admission expenditure can be achieved.

CREDES and IAAS have put forward several economic arguments in favour of day surgery (5, 10):

- reduction in length of stay associated with day surgery will reduce the direct costs of hospital admission;
- day surgery involves less use of radiology, care facilities, and hospital facilities, as well as drug prescriptions and number of medical consultations;
- day surgery would improve usage levels of operating theatres, which would in turn lead to productivity gains;
- staff costs would be lower, as centres would be closed at night and because there would be less absenteeism;
- as day surgery is centred around patient comfort, savings could be made on the indirect costs<sup>31</sup>, particularly time off work and the benefits of better productivity when patients go back to work.

Increased opportunities<sup>32</sup> would arise as a result:

- day surgery would enable inpatient beds to be reserved for patients with the most complex conditions;
- limitation of waiting lists would enable faster treatment, thereby limiting the lost of chance.

The economic benefit is, however, tempered by several considerations:

- day surgery management can give rise to savings for hospitals, but may entail additional costs for other healthcare providers. As postoperative monitoring is carried out at home, the GPs, laboratory and paramedical services may become heavily involved. There may also be extra health transport costs;
- any economic benefit is dependent on day surgery being a true substitute for inpatient admission. There is not always an actual reduction in costs, since if

inpatient beds are not closed, both types of bed can coexist;

- some procedures that used to be carried out in physicians' offices or as outpatient consultations could be carried out as day surgery, which would entail additional costs for health insurance;
- conversion of premises into dedicated day surgery facilities requires high levels of investment, because of the architectural changes that are required (10);
- in some cases, day surgery management can prove to be more costly than inpatient admission. This can be the case when the nature and seriousness of the procedure leads to specific requirements in terms of postoperative care, and can also depend on the social and economic profile of the patients being treated (10).

### 8.1 Data from the international literature

In 1997, ANAES (2) carried out a review of the international literature containing economic assessments of day surgery, and identified thirteen studies that were published between 1975 and 1996. Just two comparative studies looking at French data (day surgery versus inpatient admission) were identified. Overall, the studies showed that day surgery management used fewer resources than inpatient admission, in terms of direct costs.

In 2007, IAAS (5) reported 19 published studies involving eight types of procedure<sup>33</sup> and five countries<sup>34</sup> between 1972 and 2003, showing that the cost of day surgery to hospitals was lower than that of inpatient admission, by between 25% and -68%.

Other studies of specific procedures reached the same conclusion:

#### Laparoscopic cholecystectomy

- Ahmad reported four studies, published between 1998 and 2006 (177), and concluded that the cost of day surgery is lower than the cost of inpatient admission;

31. The idea of indirect costs reflects the impact of day surgery procedures on patients' activity, regardless of whether this activity is paid.

32. This means that some of the resources that were used for conventional surgical admissions were made available as a result of the transfer to day surgery. It then becomes possible to carry out other procedures.

33. Hernia repair, paediatric surgery, testicular surgery, laparoscopy or arthroscopy or cystoscopy, laparoscopic cholecystectomy, anterior cruciate ligament, arthroscopic Bankart repair, laparoscopic sterilisation.

34. Belgium, Canada, United States, United Kingdom, Portugal.

- in an Italian study of 250 patients that was published in 2007, Bona (178) found that day surgery was 20% cheaper than inpatient ;
- in a retrospective study done in 2002-03 involving 4,040 patients in Florida, Paquette (179) reported that the mean cost to a inpatient was \$12,978 (standard deviation \$5,149) compared with \$6,391 (standard deviation \$2,035) in a day surgery centre, meaning that the day surgery centre was almost 50% cheaper. Patients treated in free standing day surgery centre were younger and had fewer comorbidities than those treated in hospitals, and the length of hospital stay was not stated; this was therefore more a comparison of two types of facility than of types of admission;
- in a British study done in 2004 involving 269 patients, Jain et al (180) reported that mean hospital costs per patient were £768 for day surgery and £1,430 for inpatient admission, meaning that day surgery was 46% less costly.

### Cataracts

A Cochrane review on cataract surgery, by Fedorowicz in 2011 (175), reported one study (181) showing that costs were 20% higher using inpatient admission, but this review stresses the possible hidden costs for the community.

### Ileostomy closure

In one case-control study (182) that was carried out in 2003 involving around thirty patients, the mean cost to the hospital of surgery using inpatient admission was \$3,811 (range \$2,864 - \$5,241, standard deviation \$624) compared with \$2,665 (range \$1,907 - \$3,010, standard deviation \$253) in day surgery, a difference of 30%.

There are few studies, all are specific to one type of procedure, and all conclude that day surgery incurs lower costs, but the extent of the costs that are considered often varies between studies, and most only consider the direct cost to the hospital. Published studies do not

enable comparison of costs involved in all funding types, and do not include an economic evaluation that would enable a comparative cost-effectiveness, cost-utility or cost-benefit analysis of the two types of management. In addition, differences in funding, management and pricing between countries mean that such conclusions would be difficult to translate into the French context.

## 8.2 Study of costs to French health insurance bodies

In 2001, the three main health insurance funds (the general, agricultural and independent workers' regimes) carried out a broad-based study into day surgery as part of the National Inter-Regime Programme (PNIR) (32). The objectives of the study were to evaluate expenditure on health insurance incurred by both types of management (admission with and without accommodation) for five procedures<sup>35</sup>, chosen because they were common, and to identify any transfer of expenditure from hospital to ambulatory care sector or vice versa.

The analysis population consisted of 5,104 patient records<sup>36</sup>, from 889 public and private facilities in which surgery was performed. The results are presented by types of hospitals (profit-making private hospitals and public or non-profit-making private hospitals) and by procedures, see Table 23. The data were corrected for sampling bias<sup>37</sup>.

For this study, information about health care consumption was collated on a form that was filled in by a medical officer for each patient file, and this was cross-checked with the information available in the expense validation systems of the three main health insurance regimes. Mean overall expenditure of the insured patients was evaluated for a period of three weeks before and two months after the admission.

The study established that admissions for day surgery were less costly for health insurance than stays under inpatient admission.

35. Unilateral cataract surgery, knee arthroscopy with meniscectomy, unilateral carpal tunnel nerve release, extraction of two wisdom teeth under general anaesthesia and unilateral operation on lower limb varicose veins.

36. Patients with ASA status 1 or 2 were used (American Society of Anesthesiologists classification: there are five levels. According to guidelines published by groups of medical experts, only patients of stable status 1, 2, or 3 are eligible for day surgery management), with similar age profiles and short stays in conventional admission (maximum 72 hours) to avoid including patients who are more complex or older, who have more comorbidities and a higher risk of nosocomial infection, as this risk increases with length of stay.

37. Each stay was weighted according to the procedure done, the type of funding, the type of management (conventional admission, day surgery) and region.

Table 23. Breakdown of samples used.

Procedure	Public or non-profit-making private hospitals			Profit-making private hospitals			TOTAL
	Conventional admission	Day surgery	Total	Conventional admission	Day surgery	Total	
Cataracts	69	37	106	250	165	415	521
Arthroscopy	147	93	240	538	302	840	1 080
Carpal tunnel	75	454	529	253	1 485	1 738	2 267
Wisdom teeth	28	32	60	119	74	193	253
Varicose veins	166	27	193	603	187	790	983
<b>TOTAL</b>	<b>485</b>	<b>643</b>	<b>1 128</b>	<b>1 763</b>	<b>2 213</b>	<b>3 976</b>	<b>5 104</b>

Source: PNIR survey "Day Surgery" - expenditure section (172).

Depending on the procedure, this differential was between 7% (cataracts) and -26% (varicose veins) in profit-making private hospitals, and between -25% (dental extractions) and -51% (varicose veins) in Public or non-profit-making private hospitals<sup>38</sup> (see Table 24 and Table 25).

The survey also showed that this difference in expenditure was mainly linked to the admission period and not to the periods before or after it.

In addition, there were no results showing that day surgery management led to a transfer of some of the expenditure of a hospital stay into the periods before or after the hospital stay.

Finally, day surgery management reduced the health insurance expenditure on ambulatory care, particularly laboratory tests, diagnostic procedures (including radiology), specialist medical consultations and pharmacy during the hospital stay, and without extra expenditure before or after the admission.

This national baseline study enabled the costs of day surgery management to be calculated. It is methodologically sound.

It nonetheless has two main limitations:

- it only examined five procedures, and a limited number of stays;
- it only considered expenditure by the public health insurance funds and not by all funding providers (such as co-payment by patients). There was therefore no assessment of the possible transfer of the burden of funding from health insurance to patients or to supplementary insurance funds.

### 8.3 Cost for patients

No French studies looking at the costs for patients and supplementary insurance funds of day surgery in comparison with inpatient admission were found.

Few studies have been done in other countries to examine the differences in cost for patients.

38. In this context, two methods of costing stays were studied: a per diem basis, or using ISA points (Indice Synthétique d'Activité or Summary Index of Activity), a way of representing the unit cost of work done by a hospital.

A Finnish study, which was carried out in 2004 (183) using a questionnaire given to 145 patients aged over 18, most of whom were receiving orthopaedic treatment in a university hospital, showed that the cost incurred by patients in day surgery was between €5 and €772 (mean = 182.4, standard deviation 45.8). The co-pay-

ment was heavily dependent on the type of procedure, and orthopaedic patients spent more than others, mainly because of drug treatments and postoperative medical consultations for pain management. This study did not compare the out-of-pocket payments for day surgery and surgery done under inpatient admission.

Table 24. Overall expenditure (in euros) by type of management, profit-making private hospitals.

Procedure and type of management	Frequency	Mean	CI	Standard deviation	Difference CA - Day	p-value	Degree of significance
<b>Cataracts</b>							
Conventional admission	250	1 799,36	± 43,00	346,88	-7 %	0,000	***
Day surgery	165	1 671,03	± 45,83	300,33			
<b>Arthroscopy</b>							
Conventional admission	538	1 271,72	± 27,40	324,3	-12 %	0,000	***
Day surgery	302	1 114,76	± 33,02	292,73			
<b>Carpal tunnel</b>							
Conventional admission	253	965,35	± 42,07	341,43	-18 %	0,000	***
Day surgery	1 485	787,61	± 12,65	248,66			
<b>Dental extractions</b>							
Conventional admission	119	776,88	± 26,23	145,96	-23 %	0,000	***
Day surgery	74	600,84	± 28,7	125,97			
<b>Varicose veins</b>							
Conventional admission	603	1 355,3	± 24,42	305,89	-26 %	0,000	***
Day surgery	187	1 004,83	± 43,27	301,86			

\*\*\* significant at 0.1%

Source: PNIR survey, day surgery-expenditure section (172).

Table 25. Overall expenditure (in euros) by type of management, Public or non-profit-making private hospitals.

Procedure and type of management	Frequency	Mean	CI	Standard deviation	Difference CA - Day	p-value	Degree of significance
<b>Cataracts</b>							
<i>Costing per diem</i>							
Conventional admission	69	1 514,99	± 172,00	728,98	- 44 %	0,000	***
Day surgery	37	847,02	± 84,27	261,52			
<i>Costing by ISA points</i>							
Conventional admission	69	2 289,51	± 98,9	419,14	- 31 %	0,000	***
Day surgery	37	1 577,08	± 52,97	164,39			
<b>Arthroscopy</b>							
<i>Costing per diem</i>							
Conventional admission	147	1 207,00	± 72,63	449,31	- 37 %	0,000	***
Day surgery	93	763,91	± 57,50	282,91			
<i>Costing by ISA points</i>							
Conventional admission	147	1 903,84	± 41,95	259,53	- 25 %	0,000	***
Day surgery	93	1 435,00	± 47,58	234,12			
<b>Carpal tunnel</b>							
<i>Costing per diem</i>							
Conventional admission	75	1 038,27	± 94,15	416,02	- 28 %	0,000	***
Day surgery	454	748,48	± 24,61	267,51			
<i>Costing by ISA points</i>							
Conventional admission	75	1 189,28	± 52,28	230,99	- 28 %	0,000	***
Day surgery	454	859,85	± 20,81	226,26			

suite du tableau page suivante

Procedure and type of management	Frequency	Mean	CI	Standard deviation	Difference CA - Day	p-value	Degree of significance
<b>Dental extractions</b>							
<i>Costing per diem</i>							
Conventional admission	28	903,99	± 95,66	258,26	- 37 %	0,000	***
Day surgery	32	571,7	± 58,91	170,03			
<i>Costing by ISA points</i>							
Conventional admission	28	1 429,9	± 36,36	98,15	- 25 %	0,000	***
Day surgery	32	1 077,68	± 34,26	98,89			
<b>Varicose veins</b>							
<i>Costing per diem</i>							
Conventional admission	166	1 439,9	± 79,39	521,89	- 51 %	0,000	***
Day surgery	27	712,67	± 48,73	129,9			
<i>Costing by ISA points</i>							
Conventional admission	166	1 940,94	± 43,98	289,13	- 41 %	0,000	***
Day surgery	27	1 145,37	± 41,76	110,71			

List in Source: PNIR survey "Day Surgery" - expenditure section (172).

A Spanish study (184) involving 133 patients aged between 16 and 90 years, undergoing abdominal wall hernia repair in 2008 (in the Tarancon region) examined the "accessibility" costs<sup>39</sup> of a day surgery centre and a

hospital (which were 80 km apart). For all patients, the difference in accessibility costs was just €1,061<sup>40</sup> (not significant) with the day surgery centre seeing lower costs for identical clinical outcomes.

39. Including transport costs for patients and their families, the cost of working days lost, valued at the minimum interprofessional wage in Spain, the cost of informal care valued using data from the Spanish National Institute of Statistics.

40. Namely €208,028.09 for the day surgery centre compared with €209,088.94 for the hospital.



## 9. CURRENT INCENTIVES IN FRANCE

Once it was noted that France was behind in terms of day surgery rates, a system of incentives was established in order to encourage development of day surgery. These began in the late 1980s and were strengthened from 2004, with the introduction of activity-based pricing (T2A)

### 9.1 Initial wave of incentives (1999-2003)

Incentives initially concentrated on the creation of places that acted as a substitute for inpatient beds. Decree no. 99-444 dated 31 May 1999, and the order dated 31 May 1999 which enforces article D. 712-13-1 of the Public Health Code, encouraged the development of day surgery as a substitute for traditional surgery:

- using a calculated ratio, such as the number of stays in day surgery as an alternative to inpatient admission, expressed as a proportion of the total stays in these beds, those requesting authorisation to create or renew a day surgery facility had to make a commitment to reduce the number of traditional surgical beds, adjusted according to existing rates of day surgery. The substitution rate was therefore 1 bed for one place if the ratio was 55% (i.e. if the use of day surgery as a substitute was already well-developed), and 1.5 beds per place created if the ratio was 50%, and up to 2 beds per place created if the ratio was only 40%;
- if the commitment was not met, an additional reduction in surgical beds was applied, which could be up to 3.25 inpatient beds to create one day surgery place.

The administrative simplification order of 4 September 2003 abolished the “health resource planification” and the concept of beds and places, and thereby also the substitution ratios. Nevertheless:

- this order incorporated the development of day surgery into plans for surgery in general, which led to day surgery being included in almost all third-generation Regional Schemes of Healthcare Organisation (SROS) (2006-2011)<sup>41</sup>;
- by creating the concept of a health region, it encouraged the creation of regional medical projects, which means that consideration can be given to the development of day surgery<sup>42</sup>;

- it introduces the idea of quantified targets for health-care supply, for each care activity and for each health region, and by hospitals using multiyear contracts of objectives and means (CPOM), which are five-year agreements with regional health agencies.

### 9.2 Second wave of incentives (2004-2011)

New incentives were introduced in 2004.

- Pricing incentives to promote the establishment of activity-based pricing (see 9.2.1): these are based on significant changes to the classification of hospital stays, on closing the pricing gap between inpatient surgical admission and day surgery, and better management of the relationship between pricing and cost.
- Other incentives have been put in place (see 9.2.2): these are based on ways of planning care supply and indicators or authorisations put in place by health insurance funds.

#### 9.2.1 Pricing incentives

These incentives are part of the general activity based payment (T2A) funding model. It is based on a classification of hospital stays that has progressively evolved to include day surgery. Pricing incentives involve closing the gap between the price of surgery as inpatient admission and as day cases, and changes in pricing for stays on the lower limits. Some studies have found a negative margin between price and cost, but this has not been confirmed by recent data. Further progress towards pricing incentives was made in 2011 and 2012.

#### ► New system of hospital funding in France, since 2004

A new funding system (activity-based pricing or T2A) for hospitals was introduced in France in 2004 for public and non-profit-making private hospitals and 2005 for profit-making private. Since 2008, this funding system has been extended to types of care in hospitals with the exception of psychiatry and rehabilitation care (SSR). The pricing that is applied is based on a weighted mean cost of a sample of hospital stays.

41. See circular DHOS/O1/F2/F3/F1/2008/147 dated 29 April 2008 concerning the development of day surgery in healthcare organisations.

42. Assurance maladie, Lettre Réseau LR-DM-13/2005.

## Calculation of weighted mean cost of hospital stays

Using the classification of hospital stays into Groupes Homogènes de séjours (GHS), which was introduced in the early 1980s, a mean national hospital stay cost for each GHS is calculated by a public administrative body, the Technical Agency for Hospital Information (ATIH), on the basis of information drawn from hospitals' cost accounting systems, provided by around a hundred hospitals<sup>43</sup>.

There are several statistical procedures whereby costs provided by hospitals can be adjusted:

- as mean costs are dependent on the composition of the sample of stays, ATIH adjusts the raw values from the sample (this is done using a macro called SAS CALMAR, which was developed by the French National Institute for Statistics and Economic Studies, INSEE);
- a procedure known as “trimming” can detect and remove stays that are abnormally long or short in duration, and those for which the costs seem very high or low (just 92 stays were removed on this basis in 2007) (185);
- in addition, the costs obtained are reduced by a specific deduction for teaching, research, reference and innovation activities (MERRI), which is between 1.2 and 16.6%, and is sometimes topped up by a geographical weighting<sup>44</sup> of between 7% in Île-de-France and 30% for facilities in la Réunion.

Methods are the same for public and private organisations, and this has enabled the creation of a common national scale of costs (ENCC), which is based on the mean costs of hospital stays. The ENCC is the basis for activity-based pricing.

Overall, the full cost of the ENCC includes clinical expenditure for medicine, surgery, obstetrics concerning intensive care, technical medical expenses, expenditure linked to general and medical logistics, direct charges - including physician fees- but not building costs and finance charges<sup>45</sup>.

## Determination of GHS tariffs

One of the principles of T2A is that GHSs costs must generally be covered by tariffs (186). Reference costs in the ENCC therefore serve as a basis for creation of GHS prices, which are paid by health insurance funds for each hospital stay.

Price levels are decided on by the Ministry of Health, and are adjusted to the ENCC in order to account for the constraints of the overall budget of hospital expenditure that is allocated each year as part of the national health insurance expenditure target (ONDAM), which is set by parliament (185), and the priorities of public health or of policies that promote one type of management over others (for example hospitalisation at home or day surgery) (186).

The known costs of the ENCC are two years behind pricing levels (ENCC 2009 for 2011 prices). To bring costs up to date, two correction methods can be used<sup>46</sup> (187):

- update the ENCC, by applying the rate of growth of the budget of hospital expenditure in the national target for health insurance expenditure (ONDAM);
- use the growth rates published by ATIH for the various categories of hospital expenditure used by ministry of health to set hospitals' budgets.

The pricing for each GHS is the same regardless of patient length of stay, since it is contained within a pre-determined interval around the mean length of stay for the GHS. This type of pricing acts as an incentive for hospitals to reduce length of stay and increase activity.

Prices are, however, weighted in each hospital by a “transition weighting”, in order to avoid the negative consequences of an overly sudden change in pricing model. The weighting will be phased out (i.e. it will be equal to 1 from 2012).

## Difference in scope between costs and prices

Despite the adjustments that have been made, full costs and prices still do not have the same scope<sup>47</sup>:

43 private hospitals and 62 public hospitals, of a total of over 2,760 hospitals in France in 2010.

44. The aim of geographical weightings is to increase prices for hospitals in each of the six regions that are assumed to have additional costs (Corsica, Guadeloupe, Guyana, Île-de-France, Martinique and Réunion) (186).

45. Facilities costs (building depreciation, finance charges on borrowed sums, regardless of destination), are presented in the ENCC, but are not included in “full costs” and are therefore not included in T2A costs, which suggests that most building depreciation costs and finance charges are funded by means other than pricing (186).

46. These were not applied in the tables below.

47. Source: ATIH, following review of the provisional version of the report.

- some charges are included GHS costs, but not financed by the tariff (e.g. continuity of care, patient precariousness, expensive drugs and devices, daily supplements for resuscitation work, intensive care, continuous monitoring);
- prices fund part of the facility costs, while the full costs published in the reference guide do not include facility costs;
- some specific features, such as the presence of individual wards, have an effect on the mean cost value. However, it is not possible to determine which proportion of the charges incurred by these wards is included in the pricing or in the specific income from these wards.

Given these reservations, and the fact that cost and price are not comparable as a result, ATIH has commissioned the creation of a pricing scale along the same lines as the scale of costs. A feature of this scale is that it will be possible to compare it to pricing structures, and that such a comparison will measure the distortion involved in creating pricing structures that adhere closely to cost hierarchies.

When creating this pricing scale, the most important consideration was to make costings more robust. Despite the operations mentioned above, mean cost based on results of a single year's data collection is dependent on the composition of the sample. To make cost assessments more robust, an algorithm was created to estimate mean cost using all available cost data<sup>48</sup>. This algorithm has led to the creation of a multiyear cost scale. From this scale of costs, it is possible to break down the pricing fund for each GHS, and thereby to determine cost-based pricing. These pricing levels that result from costs adhere closely to the scale of costs, with no consideration of public health measures (including measures that act as incentives to carry out day surgery) and targeted convergence in prices between hospital sectors measures.

These results enabled ATIH to carry out a study to compare current pricing with cost-based pricing, and thereby

to measure the distortion created by public health measures. These results for 2011 pricing will be published in the first half of 2012. While this work is still ongoing, comparing ENCC cost and GHS tariffs for day surgery and inpatient admission activity is not relevant.

### Other potential resources for funding surgery

Hospitals can obtain resources in addition to activity-based pricing, namely<sup>49</sup>:

- income from full or partial admission that is not reimbursed by health insurance (costs that are incurred by patients or their supplementary health insurance, particularly the partial payment requirement, additional fees and revenue such as individual rooms, meals for accompanying persons, etc);
- differences connected with any transition weighting applied to the organisation.

Overall, the hospital may also benefit from grants under the system of Missions of Public Interest and Support for Contracting (MIGAC) and for its missions of teaching, research, reference and innovation (MERRI).

Finally, funding for specific conversion of premises that is required for the development of day surgery, and restructuring of technical facilities<sup>50</sup> can be obtained as part of the investment support programme in the 2007 Hospital Plan, and later the 2012 Hospital Plan (188).

### ► Changes to hospital stay classification that enable day surgery to be isolated

The system for classification of hospital stays is reviewed periodically. Several changes have affected the scope and classification of day surgery.

Category Major 24 (CM 24)<sup>51</sup>, was initially reserved for sessions. It was extended to sessions and stays of less than 24 hours (period 1992-2003, corresponding to versions 1-7 of the GHS classification) and then to sessions and stays of less than 2 days<sup>52</sup> (period 2004–2005) from version 9 of the GHS classification, and then from ver-

48. For the ex-DG sector, cost data from the periods 2006-2009 were used, and for the profit-making private hospitals, only the 2008 data were not available.

49. Order dated 21 June 2010 setting out templates for provisional revenue and expenditure status (EPRD) for public healthcare organisations and private healthcare organisations as mentioned in sections b and c of article L. 162-22-6 of the Social Security Code.

50. Circular DHOS/O1/F2/F3/F1/2088/147 dated 29 April 2008 concerning the development of day surgery in healthcare organisations.

51. Categories of GHS are grouped into major diagnostic categories (CMD in French; from 1 to 23, 25, 26, if this information is given by the primary diagnosis attached to the stay) and major categories (CM 24, 27, 28, 90, if other information than the primary diagnosis carries this information).

52. For T2A purposes, a length of stay of one or two days corresponds to one or two nights spent in the facility.

sion 10 (2006–2008) to all stays of less than two days. Day surgery therefore fell into this CM 24 category, which meant that it was not possible to identify day cases among procedures known as “frontier” (cutting-edge) activity, which fall under no particular surgical or anaesthetic sector. This change to coding is nonetheless an indirect incentive to the development of day surgery, as there is no longer any benefit to prolonging a patient’s stay.

In the 11<sup>th</sup> version of the classification, which has been used since 2009 (circular no. DHOS/F2/F3/F1/DSS/1A/2009/78 dated 17 March 2009), several changes to stay classification were introduced. The result of these changes was that day surgery stays became easier to identify:

- the CM 24 category was abolished, and within the relevant GHS diagnostic category, true groups for day surgery (date of admission = date of discharge) were created, coded with the letter J;
- most GHSs were grouped into four levels of severity (from 1 to 4, with level 1 being the least severe), which were representative of the patient’s condition in that they take better account of the associated complications and morbidities as well as of the effects of age;
- the concept of the primary diagnosis was redefined in line with the newly introduced severity levels, to be based more on the reason for the patient’s admission and not (as it had previously been) on the reason for the management type that involved the greatest use of medical resources;
- creation of “investigation and monitoring” groups that were not eligible for classification into severity levels;
- creation of GHSs of very short duration, to resolve the problem of stays of less than two days for medical GHSs with high LOS;
- creation of new diagnosis categories, and adjustment of some GHSs.
- closing the pricing gap between inpatient admission (of severity level 1) and day surgery (stays coded J)

Activity-based pricing (T2A) generally set a different price

for inpatient admission and day surgery, with the latter having lower pricing than the former, which does not provide an incentive to develop day surgery. However, in order to promote the development of day surgery, specific pricing measures were put in place in 2007.

Since 2007<sup>53</sup> (circular DHOS/F2/F3/F1/DSS/1A/2007/74 dated 21 February 2007), five GHSs<sup>54</sup> for surgical day cases have been subject to activity-based pricing on the basis of a national pricing structure.

In addition, in order to make day surgery more attractive, 15 pairs of GHSs that correspond to short admissions, and one or more GHS that correspond to admissions of more than two days in length, were created. It was decided to reduce the difference in pricing within these pairs by 50% for public or non-profit-making private hospitals.

In 2008, this closure of the pricing gap for public or non-profit-making private hospitals extended (circular DHOS/F2/F3/F1/DSS/1A/2008/82 dated 3 March 2008) to pairs of GHSs which were relatively similar in pricing.

In 2009, following the creation of version 11 of the French GHSs (circular DHOS/F2/F3/F1/DSS/1A/2009/78 dated 17 March 2009), a single pricing structure for day surgery stays (coded J) and the first level of severity for inpatient admission (coded with 1 at the end of the GHS number) was put in place for 18 GHSs<sup>55</sup>. This single pricing structure corresponds to the mean price for code J and level 1, weighted by rates in the hospital sector in which day surgery is the highest<sup>56</sup>.

**Overall, of nearly 90 GHSs of level 1 with J coded stays, only 18 have a single pricing level**, and the others therefore still have a lower price for day surgery, but the mean difference in pricing in 32 pairs in which there is potential substitution reduced by 18% in 2010 (189).

Many surgical GHSs that have severity level 1 do not have a J code. When these procedures are carried out as day cases, pricing depends on length of stay and level of severity (see below).

53. 1 January 2008 for other activities.

54. “Procedures involving lens of the eye”, “tympanostomy tubes”, “vein ligation and stripping”, “Circumcisions”, “Carpal tunnel release and release of other superficial nerves”.

55. The initial list of 19 GHSs with single price levels for day surgery and conventional admission, and of severity level 1, was updated to remove interventional GHS 03K02J “Conditions of the mouth and teeth with some extractions, repairs and dental prostheses, done as day cases”, which was initially included in this list (and which is not, in fact, day surgery according to the French definition). This is now referred to as the “historic” list of the 18 GHSs with single pricing.

56. DGOS “Chirurgie ambulatoire, Concertation sur le financement” [“Day surgery: meeting concerning funding], 26 January 2012.

### ► Pricing calculation based on lower limit of length of stay

For each GHS, a mean length of stay is determined, as is a range of variation around this length of stay. All stays within this range are paid at the same price level. If a stay does not fall within this range (lower limit), it is subject to a specific pricing level.

#### **Day cases and stays with mean LOS less than 2.5 days: no lower limit**

Limits are not calculated for day case GHSs (coded J) and GHSs of very short duration (i.e. with suffix T, 0, 1 or 2 days) (190).

For GHSs with a mean LOS of between 1.4 and 2.5 days, there is no lower limit. These are therefore paid at the GHS pricing level, regardless of length of stay.

In surgical admissions with no J pricing, with low mean LOS, 113 have no lower limit, and their pricing is therefore neutral with respect to length of stay.

#### **Stays with mean duration of more than 2.5 days: pricing depends on level of severity**

Firstly, it should be noted that day surgery is not well-represented in this category (around 1% for public and non profit-making private hospitals and profit-making private hospitals<sup>57</sup>).

If a stay is shorter than the so-called “lower” limit<sup>58</sup> of the length of stay that is assigned to this GHS (e.g. a one-day admission for a GHS with a lower limit set at three days), until 2010 this stay would have been paid at 50% of the set price for the GHS, with no consideration of the actual length of stay.

Admissions with a lower limit on length of stay that were carried out as day cases were therefore paid at 50% of the GHS pricing, which potentially led to slower development of short-stay procedures, particularly as the 50% pricing could be lower than the production cost.

### *In 2009*

From 2009 (190), this funding model was changed, with funding on a per diem basis using a pricing calculation known as “EXB” for admissions of level 1 with no J code and with a length of stay that was below the lower limit (the 50% “principle” therefore no longer applied).

The calculation was done on the following basis: if the length of stay was below the lower limit (e.g. lower limit was four days and observed length of stay three days) the pricing of the below-lower-limit stay (SBB) was:

SBB = Pricing for level 1 GHS - (Number of EXB days x EXB pricing)

- where EXB pricing = GHS pricing/Length of below-lower-limit stay;
- and Number of EXB days = length of below-lower-limit stay - observed length of stay;
- if the observed length of stay is zero (day case) then the Number of EXB days is equal to the lower limit length of stay - 0.5.

For example, if the GHS pricing is €2000 and the lower limit of length of stay is four days, the EXB pricing is €500 (2000/4). The number of EXB days is 4-3 = 1. The 3-day admission would therefore be paid at €2000 - (1 x €500) = €1500, or 75% of the price of the admission at the lower limit of length of stay. If the admission is done as a day case, the price is €2000 - ((4 - 0.5) x €500) = €250, which is just 12.5% of the GHS pricing.

If that same admission had had a lower limit mean LOS of three days, the EXB length of stay would have been 3 - 0.5 = 2.5, and the day admission would have been paid at €2000 - (2.5 x €500) = €750, i.e. at a higher rate than the previous case.

Per diem payment would therefore enable length of stay to be taken into account, and would provide a better reflection of the cost of admissions with length that is close to the lower limit. However, funding for admissions that are substantially shorter than the lower limit was less favourable than before, particularly if the mean LOS for that admission type was relatively high. For this reason,

57. ATIH estimate, internal communication for HAS.

58. The lower limit of a GHS is the duration that corresponds to the lower limit of the mean LOS/2.5 (where mean LOS = mean length of stay of the relevant GHS), to which 1 is added. The lower limit is frequently set at three days. See ATIH DL-VS-999-2009 “Évolution de la notion de séjours bas entre la V10 et la V11” (“Changes in the idea of short stays between versions 10 and 11”).



from 2010 EXB pricing began to be calculated in order to take into account the costs incurred by a short admission.

### Since 2010

During the 2010 funding campaign, the concept of “funding basis” (“socle de financement”) was defined. This basis corresponds to the pricing of admissions with no overnight stay, the value of which is calculated using ENCC cost data. As a result, since 2010 funding of day surgery admissions (0 days) is not dependent on the EXB pricing, but on a specially calibrated basis using ENCC stays of 0 days (or 0/1 days).

The EXB pricing is now only used for admissions of at least one day. It is also useful to note that for GHSs with mean LOS of less than four days, the funding basis was fixed at at least 66% of the level 1 pricing<sup>59</sup> and is therefore higher than the old 50% pricing mechanism.

It is worth noting that the headline pricing for level 1 depends on the value of the lower limit. Any change in the lower limit (particularly removal) will necessarily lead to a downward change in the headline pricing for level 1 (given the principle of conservation of total funds).

#### ► Difference between pricing and cost observed for day surgery

At an organisational level, pricing is an incentive to the development of day surgery if its production cost is lower than prevailing prices, in other words if it has a positive margin. Cost per stay in a particular organisation is not known. Two studies (28, 191, 192, 189) compared pricing levels with ENCC costs, but ATIH has expressed reservations about the calculation method used.

In 2011 (28, 191, 192), DREES published a study that aimed to measure the impact of price incentives put in place between 2004 and 2009 on the development of day surgery.

The ENCC cost of day surgery for stays of severity level 1 appears to be lower than that of inpatient admission, with the difference being between -15 and -50%. As GHS pricing is identical for 18 diagnostic categories,

organisations have a theoretical incentive to favour day surgery over inpatient admission wherever possible, for these diagnostic categories.

This general observation, however, is not as simple as it first appears; in some cases, the actual pricing level is lower than the ENCC for both day surgery and inpatient admission for level 1 severity (carpal tunnel, other operations on the hand, varicose veins, other knee arthroscopy, arthroscopic meniscectomy, circumcision, dilation and curettage, correction of protruding ears), which means that organisations are potentially carrying out these procedures at a loss.

The 2010 report by the French social security audit commission (189) previously reached the same conclusion, and noted that the proportion of equivalent pairs of procedures for which day surgery management was more attractive increased between versions 10 and 11 of the admissions classification, but that for more than a quarter of such pairs, the relative margins<sup>60</sup> favoured inpatient admission. In addition, the aggregate balance for organisations<sup>61</sup> remained negative, as the overall income from surgical activity that was targeted by incentives fell by 9%, and losses on inpatient admissions were only partly compensated for by gains on admissions of less than 48 hours.

**However, the methodologies used in these two studies have been questioned by ATIH, for the reasons mentioned above (see “Difference in scope between costs and pricing”).**

Pricing levels used in 2011 for single-pricing procedures carried out as day surgery and as inpatient admission, as compared with the national scale of costs 2009<sup>62</sup>, are presented in Tables 28 and 29. It can be seen that for all GHSs, inpatient admission costs are higher than day surgery costs, in both public and non-profit making private hospitals and profit-making private hospitals. Single pricing is therefore an incentive to opt for day surgery.

**At the time of writing, it is not possible to calculate a theoretical margin (difference between pricing and cost) for each GHS. An ATIH publication, expected in the first half of 2012, should resolve this problem.**

59. When the cost-related basis for funding was less than 66% of the level 1 cost. In the opposite case, the funding basis is still cost related.

60. The theoretical margin is the difference between the pricing of the admission and its mean cost (ENCC).

61. Calculated as the product of the number of admissions multiplied by the theoretical margin (i.e. pricing-cost mean) for each admission group.

62. ENCC costs are always two years behind the pricing structure that applies to the organisation.

## ► Strengthening incentives using pricing changes introduced in 2011 and 2012

The Ministry of health, aware of the pricing-cost adjustment problems for some J-coded GHSs that were not subject to single pricing, proposed changes as part of the 2011 and 2012 pricing round, with the purpose of boosting incentives via pricing policies.

### Pricing changes introduced in 2011

For J-coded GHSs (those not on the single pricing list), the pricing basis was reviewed in 2011 to take into account a balance between the costs contained in the national scale of costs (ENCC) and J-code pricing, and pricing was adjusted to meet adjusted<sup>63</sup> (circular no. DGOS/R1/2011/125 dated 30 March 2011 concerning the 2011 pricing round for hospitals).

Nevertheless, if there is a positive difference of more than 30% between pricing and cost, and if the rate of day surgery is over 80%, a slight reduction in pricing was applied (the two GHSs affected were operations on the lens of the eye with or without vitrectomy, and tympanotomy tubes)<sup>64</sup>.

Unlike in 2010, day surgery was excluded from the targeted convergence process in 2011<sup>65</sup>, so as not to create contradictory effects as a result of the various price measures that have been put in place for all GHSs.

### Pricing round in 2012 and beyond

The 2012 pricing round continues the previously established financial incentive system, and introduces several new pricing incentives (the creation of new J-coded GHSs, and removal of the lower limit).

#### **J-coded GHSs**

- New J-coded GHSs are subject to single pricing (particularly those with a mean length of stay less than or equal to three days); 12 major categories of GHS have been identified that fall into this category. These were selected using the following criteria:

- at least two thirds of procedures are common to J-coded and level 1 inpatient admission;
- medical validation by experts.

Pricing levels for GHSs were calculated using the mean of J and level 1. The list of GHSs and pricing for 2012 is presented in Table 26.

- Continued closure of the pricing gap between inpatient admission with severity level 1 and J-coded GHSs for 18 GHSs (not subject to single pricing); pricing of J code being at least 75% of the level 1 pricing.
- Continuation of the 2011 policy of shifting pricing to a level that is close to adjusted costs.
- The J-coded GHS for tonsillitis and adenoid hypertrophy was split in two, because these conditions are treated differently in day surgery.

#### **For GHSs with no J code**

- Nine new J-coded GHSs were created within broader diagnosis categories in which there were previously no such codes. These GHSs were adopted because there had been a sufficient number of admissions and commonly agreed and stable practice over time. These GHSs are also subject to the single pricing principle (see table 27). In total, the number of J-coded GHSs with single pricing therefore rose from 18 in 2011 to 39 (18 + 12 + 9) in 2012.
- For some GHSs with no J-code, with a lower limit of two days and a mean LOS of less than four days (i.e. 16 GHSs in profit-making private hospitals and 11 GHSs in public and non-profit-making private hospitals) the lower limit has been removed, which has led to a change in the pricing of day surgery, which is now paid at the same level as an overnight stay. It should be noted that few procedures of this type are carried out as day surgery; these are “innovative” day cases (they are procedures with severity level 1, such as insertion of cochlear implants, operations for malignant and non-malignant tumours of the thyroid, operations for malignant tumours of the testicle, gastroplasty for obesity, etc.).

63. Adjusted costs: the scope of costs is adjusted to the scope of pricing, so that the fund represented by adjusted costs can be directly compared to funding that is distributed by price.

64. DGOS “Presentation of 2011 Campaign”, 2 March 2011.

65. convergence means that in France, by 2018, pricing of public or non-profit-making private hospitals and profit-making private hospitals will be the same.



In addition, from 2012 it has been proposed that consideration be given to how to adapt classification systems to the challenges of day surgery, given the mixed nature of GHSs, the complexity of day cases, lower limits etc. This process will be supported by a technical group.

## 9.2.2 Other incentives

### ► Measures taken as part of care supply planning

#### SROS

Circular no. 101/DHOS/0/2004 dated 5 March 2004 concerning the creation of third-generation (2006-2011) Regional Scheme of Healthcare Organisation (SROS) made day surgery development part of the health regions project. Most surgical plans in SROS 3 contain a tar-

get for increasing day surgery rates in hospitals (circular DHOS/01/F2/F3/F1/2008/147 dated 29 April 2008).

In 2011, day surgery was classed as a national priority in changes in care supply for the SROS/PRS period 2011-2016, and is part of the ten priorities contained in the risk management programme (GDR).

#### Formalisation by contract

Since 2004, targets for developing day surgery have been set out in CNAMTS-URCAM (national and regional health insurance funds) target contracts, ARH-DHOS (ministry of health and regional hospital regulation agencies) contracts and multiyear contracts of objectives and resources (CPOM) that are drawn up between hospitals and regional hospital regulation agencies<sup>66</sup>.

Table 26. New GHSs under single pricing from 2012.

GHS wording	Diagnostic category Severity 1 or J	Public or non-profit- making private hospitals, €	Profit-making private hospitals, €
Retina surgery	02C02	2 577,05	1 212,8
Primary surgery of the iris	02C06	1 179,04	616,84
Other intraocular procedures, not for severe conditions	02C11	1 189,98	651,28
Rhinoplasty	03C09	1 614,46	781,98
Creation and recreation of arteriovenous fistula for conditions in MDC 05	05C21	1 931,36	1 027,1
Localised bone resection and/or removal of internal fixation material in a location other than hip or femur	08C14	1 253,11	593,44
Skin grafts for conditions of the musculoskeletal system or connective tissue	08C20	1 785,89	654,04
Arthroscopy of other locations	08C40	2 319,09	1 265,4
Creation and recreation of arteriovenous fistula for conditions in MDC 11	11C09	1 823,59	1 022,92
Surgery on the testicles for non-malignant conditions, age over 17 years	12C07	1 307,24	667,66
Dilation & curettage, cone biopsy for malignant tumours	13C11	984,01	327,24
Skin grafts for lesions other than burns	21C02	1 830,10	1 000,72

66. Circular DHOS/01/F2/F3/F1/2008/147 dated 29 April 2008 concerning the development of day surgery in healthcare organisations.

In 2012, CPOM contracts between the state and regional health regulation agencies (which substitute regional hospital regulation agencies) include regional targets for day surgery, which involve both procedures that are subject to prior approval by health insurance providers, and the overall rate of day surgery. This target was to be broken down for all hospitals that carry out surgery (193).

### ► Measures taken by health insurance providers

#### Rates of day surgery for five surgical procedures

In 2001, a list of procedures was created as part of the CNAMTS survey. Development targets were set for the five most frequently performed procedures on this list (cataracts, dental extractions, knee arthroscopy, surgical repair of varicose veins and adenoidectomy/tonsillectomy). The extent to which these targets were met was assessed using GHSs database. These indicators were included in the CNAM/CRAM service agreements for 2004–2005<sup>67</sup>. A DHOS/CNAMTS framework agreement was drawn up in 2005 in order to harmonise targets and ways of collecting information about the corresponding indicators.

#### Prior agreement

From 2008, as part of the social security funding law (LFSS), health insurance providers tested and then extended a system of prior agreement (MSAP) as an incentive for organisations to carry out day surgery. MSAP for an organisation is determined by the regional health agency following a proposal from a health insurance provider, for a maximum period of six months. This system initially included (29) 5 surgical procedures, and was rolled out in 2009 to include

12 new procedures. In practice, this means that if inpatient admission is sought for a patient undergoing one of these selected procedures, the medical department of the health insurance provider must provide prior agreement (approval to be given within 48 hours). If agreement is not given, the organisation is informed by email, and the patient by letter, in the following days; they are infor-

med that the procedure will be reimbursed by the health insurance provider if it is performed on a day surgery basis.

In late 2010, 17 surgical procedures had been selected<sup>68</sup>: 5 in 2008 (adenoidectomy, lens surgery [cataracts], dental extraction, knee arthroscopy, varicose vein surgery) and 12 new procedures in 2009<sup>69</sup>. About ten new procedures are due to be incorporated into the prior agreement system (29).

## 9.3 Impact of incentives on hospitals

In 2010, a DREES monograph study (28) involving four hospitals showed that:

- T2A-linked incentives were not well known by health professionals (practitioners or hospital managers), and only one management team was able to produce a precise description of the pricing incentives that were in place. The Department of Medical Information (DIM) had a confused view of pricing structures, which is linked to various different versions of the GHS classification and to annual pricing changes;
- the incentives in place proved to be reduced in the public sector, because of the general reduction in prices linked to the pricing convergence process, and in the private sector because of the national scale of costs (ENCC);
- for two hospitals that were able to compare pricing with their own costs (as they were part of the ENCC), their day surgery work was only guaranteed to be profitable when their centre was completely full.

Factors that favoured the development of day surgery (28) were therefore more organisational in nature (e.g. a dedicated, well-organised centre) or linked to the prior agreement system. Other positive factors were identified, such as technical capabilities and the innovative nature of the work, patient requests, competition with a private facility within the region, saturation of inpatient beds in some specialties, the opportunity to organise surgery rigorously, and a reduction in costs resulting from closing the centre in the evening and at weekends.

67. Health insurance, "Guide de définition et de calcul des indicateurs des contrats d'engagements" ["Guide to definition and calculation of service agreement indicators"], CNAM/CRAM 2004-2005.

68. The CNAMTS list includes some procedures that are not targeted in the pricing harmonisation by GHS, such as surgery for strabismus or conjunctivitis (28).

69. Inguinal hernia, breast surgery/tumourectomy, surgery involving the uterus/vulva/vagina and fertility treatment, laparoscopic procedures in gynaecology, conjunctivitis surgery, strabismus surgery, anus surgery, scrotal surgery, carpal tunnel release and other nerve release procedures, surgery for Dupuytren's contracture, surgery to repair ligaments and tendons (hand), removal of synovial cyst.

Table 27. New J-code GHSs with single pricing from 2012.

GHS wording	Diagnostic category Severity 1 or J	Public or non- profit-making private hospitals, €	Profit-making private hospitals, €
Insertion of bone marrow stimulator	01C10	2 234,71	895,6
Joint surface osteotomy	03C19	3 876,22	1 855,74
Amputation of upper limb or toe(s) because of circulatory difficulties	05C13	2 342,80	870,87
Cholecystectomy without exploration of main bile duct, except for acute disease	07C14	2 480,60	1 439,31
Maxillofacial procedures	08C28	2 665,11	1 571,18
Transurethral resection of the prostate	12C04	2 859,22	1 824,61
Surgery to repair the female reproductive system	13C04	2 847,92	1 822,5
Wound dressing for lesions other than burns	21C03	1 956,80	569,03
Non-extensive burns with skin graft	22C02	6 435,03	3 772,3
Surgery on the testicles for non-malignant conditions, age over 17 years	12C07	1 307,24	667,66
Dilation & curettage, cone biopsy for malignant tumours	13C11	984,01	327,24
Skin grafts for lesions other than burns	21C02	1 830,10	1 000,72

Table 28. Comparison of costs per GHS (using 2009 costs as a reference) and 2011 pricing for GHS categories under single pricing, public or non-profit-making private hospitals.

	GHS for day surgery			GHS for conventional admission	
	Single pricing 2011, €	Diagnostic category	ENCC cost 2009, € *	Diagnostic category Severity 1	ENCC cost 2009, €
Carpal tunnel release and release of other superficial nerves	787,3	01C13J	1 057	01C131	1 465
Procedures involving the lens of the eye, with or without vitrectomy	1 392,05	02C05J	1 432	02C05	1 700
Isolated tonsillectomy and/or adenoidectomy, age less than 18 years	590,52	03C10J	-	03C101	1 085
Vein ligation and stripping	1 272,99	05C17J	1 664	05C171	1 779
Inguinal and crural hernia repair, age over 17 years	1 732,03	06C12J	1 623	06C121	1 994
Other operations on the hand	1 361,67	08C44J	1 277	08C441	1 602
Arthroscopic meniscectomy	1 047,65	08C45J	1 410	08C451	1 518
Other knee arthroscopy	1 585,93	08C38J	1 762	08C381	2 300
Surgery of the testicle for non-malignant conditions, age under 18 years	1 386,2	12C06J	1 467	12C061	1 802
Circumcision	596,1	12C08J	874	12C081	1 229
Surgery on the vulva, vagina or cervix	931,95	13C08J	950	13C081	1 295
Dilation & curettage, cone biopsy for non malignant conditions	718,85	13C12J	1 055	13C121	1 272
Conditions of the mouth and teeth, with some extractions, repairs and dental prosthesis	921,83	03K02J	1 291	03K021	1 498
Correction of prominent ears	1 444,38	03C21J	1 403	03C211	1 735
Tympanostomy tube, age less than 18 years	622,78	03C14J	640	03C141	1 305
Tympanostomy tube, age over 17 years	627,19	03C15J	580	03C151	1 097
Surgery involving the anal and perianal regions	1 216,14	09C08J	1 018	09C081	1 354
Biopsy and local excision for non-malignant conditions of the breast	1 343,06	09C07J	1 166	09C071	1 643
Repair of hernia and rupture, age less than 18 years	1 522,57	06C10J	1 239	06C101	1 728

\* Excluding facilities costs.

Source: ENCC database and GHS pricing, ATIH ([www.atih.sante.fr](http://www.atih.sante.fr)), data collation done by HAS.

Table 29. Comparison of costs per GHS (using 2009 costs as a reference) and 2011 pricing for GHS categories under single pricing, profit-making private hospitals.

	GHS for day surgery			GHS for conventional admission	
	Single pricing 2011, €	Diagnostic category	ENCC cost 2009, € *	Diagnostic category Severity 1	ENCC cost 2009, €
Carpal tunnel release and release of other superficial nerves	447,87	01C13J	586	01C131	975
Procedures involving the lens of the eye, with or without vitrectomy	827,81	1086	1 086	02C051	1 200
Isolated tonsillectomy and/or adenoidectomy, age less than 18 years	350,46	03C10J		03C101	693
Vein ligation and stripping	730,63	05C17J	979	05C171	1 224
Inguinal and crural hernia repair, age over 17 years	1 131,61	06C12J	1 354	06C121	1 676
Other operations on the hand	584,21	08C44J	857	08C441	1 188
Arthroscopic meniscectomy	591,68	08C45J	845	08C451	1 013
Other knee arthroscopy	823,13	08C38J	1 184	08C381	1 473
Surgery of the testicle for non-malignant conditions, age under 18 years	571,47	12C06J	951	12C061	1 038
Circumcision	355,93	12C08J	510	12C081	753
Surgery on the vulva, vagina or cervix	424,55	13C08J	601	13C081	885
Dilation & curettage, cone biopsy for non malignant conditions	369,61	13C12J	631	13C121	648
Conditions of the mouth and teeth, with some extractions, repairs and dental prostheses	444,36	03K02J	759	03K021	833
Correction of prominent ears	603,63	03C21J	805	03C211	978
Tympanostomy tube, age less than 18 years	370,24	03C14J	437	03C141	
Tympanostomy tube, age over 17 years	301,48	03C15J	356	03C151	
Surgery involving the anal and perianal regions	565,46	09C08J	558	09C081	926
Biopsy and local excision for non-malignant conditions of the breast	554,74	09C07J	710	09C071	965
Repair of hernia and rupture, age less than 18 years	627,24	06C10J	926	06C101	1 107

\* Excluding facilities costs.

Source: ENCC database and GHS pricing, ATIH ([www.atih.sante.fr](http://www.atih.sante.fr)), data collation done by HAS.

# CONCLUSION

---

Day surgery is surgery without overnight admission for selected patients. It is clearly defined by a regulatory framework in France: practising day surgery is subject to requirements relating to the definition of a hospital as well as the concept of a minimal care environment. The surgical procedure used in day surgery is the same as that used in inpatient admission, but it is carried out under specific organisational circumstances that mean that the patient can be discharged on the same day.

Day surgery rates in France did increase over the period 2000–2011, but it remains behind other developed countries, and has not made the best of the potential development that has been identified in various studies.

Although there is no single architectural model for day surgery, common to all facilities is a patient centred organisation of care, in which analysis of the clinical pathway is essential as a quality management tool. In order to support clinical pathways, there are consensus-based international guidelines governing good professional practice and operational procedures for day surgery units. These guidelines are centred on the key elements: patient selection, a rigorous risk/benefit analysis, co-ordination between the various parties involved and continuity of care.

It is a matter of consensus that the risk/benefit ratio has shifted to favour day surgery. Analysis of the literature has found no reason to question the benefits of day surgery, in terms of clinical outcomes and patient satisfaction, but the data comparing day surgery with inpatient admission are insufficient:

- There are only a few reported major adverse events associated with day surgery procedures in the literature; however, the studies in which these events were reported were not comparative, and the studies are not always sufficiently powerful. In addition, description of how day surgery is organised, of selection criteria and of follow-up procedures is insufficient.
- There does appear to be a real gain in terms of a reduction in healthcare associated infection; exposure to this risk increases commensurately with length of stay. However, there are few sufficiently powerful comparative studies that have demonstrated this.
- In theory the occurrence of adverse postoperative events should be no greater for day surgery than it is for inpatient admission, as the surgical and

anaesthetic techniques are the same in each case. However, occurrence of such events will limit the ability to discharge the patient safely on the day of the procedure, and is a source of patient dissatisfaction.


- Assessment of other indicators, such as unplanned overnight admission, unplanned return and readmission rates, shows that there is still much room for improvement in care quality and shows the importance of identifying the precise causes of failure in day surgery in order to prevent such things happening in future. Recent publications have sought to identify factors that predict these events in order to create relevant eligibility criteria and suitable management procedures.
- Many observational studies have reported very high levels of patient satisfaction, but these must be interpreted with caution, as several dimensions of patient satisfaction need to be taken into account, and there is currently no validated questionnaire to evaluate all these dimensions after day surgery.

Very few studies have looked at healthcare professionals' attitudes to day surgery. A more careful examination of use of local healthcare and the perceptions of general practitioner and other healthcare professionals is needed.

All studies agree that day surgery is the right economical choice, but these studies calculate costs from the point of view of the hospital or the public health insurance funds. They do not consider the wider cost to society (all funding providers), and do not assess indirect costs (time off work, provision of care at home, etc.).

To support the development of day surgery, pricing and regulatory incentives have been put in place as part of activity-based pricing (T2A). The main aspects of this are:

- creation of a single pricing level (for day surgery and inpatient admission) for some GHSs of severity level 1 carried out as day surgery and as inpatient admission of less than two days in length, and, in 2012, the removal of the lower length of stay limit for some GHSs.
- a list of key procedures will now be subject to prior agreement by health insurance providers. Agreement must be obtained before a procedure can be carried out as an inpatient surgical admission, as day surgery will be considered to be the norm.

- 
- These incentives have had a positive effect on the development of day surgery, but this effect has been less than was expected. There are several possible explanations for this:
    - current pricing does not take into account the actual conditions under which organisations operate (volume, case mix, organisation and conditions under which day surgery is used as a substitute for inpatient admission);
    - healthcare professionals and hospitals have a limited knowledge:
      - of the incentives that are in place, particularly since the pricing rules are complex and the regulatory framework has seen rapid change, sometimes being part of an overall pricing policy (such as convergence of pricing between the public and private sectors, which was applied until 2010 but was removed in 2011 for day surgery);
      - the organisation's production costs and the gains or losses associated with development of day surgery.



# IMPLICATIONS FOR FURTHER RESEARCH

---

Points to consider in order to improve development of day surgery have been identified. Further research will be developed in the ANAP and HAS projects.

## Clinical

- Patient eligibility criteria will be revisited regarding current practices and risk management considerations.

## Organisational

- Sites description, which aims to offer solutions that are as close as possible to the issues faced by the health organisation, namely:
  - analysis of the organisational risks faced by 5 hospitals;
  - a benchmarking study of 15 hospitals that are pioneering the development of day surgery;
  - support for 20 hospitals and 3 or 4 regional health agencies;
- production of tools that aim to make available templates for organisational plans, clinical pathways and appropriate check-lists.

## Economic

- Provide hospitals with tools so that they can understand their real costs better, so that they can determine the conditions under which day surgery can be developed so that a balance between costs and revenue can be achieved (at the very least).

- Analysis of all the economic consequences of the current pricing rules, in the light of an analysis of the literature about incentives associated with activity-based pricing, supplemented by a study of pricing rules that apply in other countries.
- In addition, one of the factors that may be holding back the development of day surgery may be the out-of-pocket costs or indirect costs incurred by patients and their families. It would therefore be useful to initiate studies or perform a search in health insurance funds databases in order to document this phenomenon.

This work will help to establish indicators for each user.

Eventually, changes to hospital accreditation reference standards are being planned, with the aim of providing “medical team accreditation” and thereby beginning a commitment to excellence (by developing programmes to identify trained teams). Updating the hospital accreditation guide will therefore provide consistent support for the projects carried out beforehand.

# ASSESSMENT METHOD

---

Using published data, articles were selected according to the abstracts and/or full texts.

For the definitions, regulations, framework, and organisational sections, the following criteria were used:

- guidelines for day surgery written by experts' groups whose members are involved in day surgery;
- regulatory texts about the practice of day surgery in France.

As the literature is not highly specific and has little description of these organisational aspects, all documents and guidelines that contained sufficient information and detail about day surgery organisation were used, regardless of the methods used to create them.

For the section about risks and benefits, only articles that examined a group of surgical procedures carried out as day surgery were selected. Articles that focused on only one type of procedure were not used. Document search was restricted to the years 2000-2011, and then was extended to relevant articles that were contained in the bibliographies of the selected articles. For each area of assessment, selection was done using the following strategy:

- if data were available that compared day surgery with inpatient admission, these were used as a first choice;
- if there was an insufficient number of comparative studies, descriptive studies were used:
  - for the assessment of mortality and major morbidity, only studies with high statistical power were used,
  - for other areas, studies were selected according to the usefulness of their methods and the extent to which they were specific to this area,
  - studies that compared various strategies for managing postoperative complications (pain, postoperative nausea and vomiting, prevention and monitoring of urinary retention) were not included, as the objective of this present review is not to assess such strategies.

In order to present some examples, particular attention was given to two procedures that are carried out as day surgery:

- cataract surgery, which is mainly carried out as day surgery;
- and laparoscopic cholecystectomy, an innovative procedure which is not yet often done as day surgery.

For the sections on the economic aspects of day surgery and the evaluation of why France is behind:

- a search of the French literature was done in the BDSP (the public health database) for the period 2000-2011, together with direct consultation of the websites of the various institutions involved (National Health Insurance Fund CNAMTS, Institute for research and information in health economics (IRDES), the General Inspectorate of Social Affairs, the National Assembly, the Court of Audit, Technical Agency for Information on Hospitals). This identified studies that helped in assessing the level of development of day surgery, the cost for health insurance providers, and to clarify the pricing rules that applied;
- the last stage of the analysis was the interrogation of two databases: annual statistics for health care organisations (SAE), ENCC data and GHS pricing data published by the Technical Agency for Information on Hospitals (ATIH);

An international document search was done in order to identify published studies about the cost of day surgery in comparison with inpatient admission, regardless of type of procedure.

The provisional version of this report was revised by AFCA, Ministry of health and ATIH in February and March 2012. Consideration was given to comments and contributions that helped to meet the objectives of this knowledge base.

# LIST OF TABLES AND FIGURES

<b>Figure 1.</b> Percent of Outpatient Surgeries by Facility Type, 1981 – 2005.....	19
<b>Figure 2.</b> Rates of day surgery and estimation of potential increase .....	24
<b>Figure 3.</b> Graphical representation of observed mean weighted rates of day surgery and lower and upper mean weighted eligibility rates for day surgery in key procedures (proportions expressed as percentages), for all regions (in brackets: number of regions in which this procedure was studied) .....	25
<b>Figure 4.</b> Rates of surgery in 2010 (per 1000 inhabitants) (gross rates and rates standardised by age) (26).....	30
<b>Figure 5.</b> Rates of day surgery in 2010 (per 1000 inhabitants) (gross rates and rates standardised by age). Mainland France (26). .....	30
<b>Table 1.</b> Definitions of terms in day surgery (3).....	11
<b>Table 2.</b> Rates of day surgery in IAAS surveys for a list of procedures and as a% of total surgical activity or of planned surgery in Europe and the United States .....	21
<b>Table 3.</b> Analysis of factors that affect the development of day surgery, according to experts (19) .....	23
<b>Table 4.</b> Number of surgical beds (inpatient admission) and places (day surgery) between 2000 and 2009.....	26
<b>Table 5.</b> Activity and changes in day surgery and conventional admission between 2004 and 2010.....	27
<b>Table 6.</b> Day surgery in 2009, for procedures subject to prior approval by health insurance .....	29
<b>Table 7.</b> Number of stays of severity level 1 and code J, and changes between 2009 and 2010 in the 19 single-pricing GHS diagnostic categories, as a proportion of total.....	31
<b>Table 8.</b> Description of observational studies involving large numbers of patients that report rates of major mortality and morbidity following day surgery. ....	43
<b>Table 9.</b> Results for INCISO studies 2001,2004,and 2009 for France Nord region programme for monitoring and prevention of surgical site infection in surgical wards .....	45
<b>Table 10.</b> Comparison of the reference database (risk category 0 in OP-KISS) and AMBU-KISS.....	46
<b>Table 11.</b> Description of observational studies assessing the occurrence of postoperative pain following day surgery .....	47
<b>Table 12.</b> Factors associated with postoperative pain (defined on a visual analogue scale > 40 mm) on the day of the procedure and the day after, according to Gramke et al, 2009 - results of the logistic regression analyses (119).....	50
<b>Table 13.</b> Description of observational studies assessing the occurrence of postoperative nausea and vomiting, following day surgery. ....	51
<b>Table 14.</b> Predictive factors from the final multiple logistic regression model associated with postoperative nausea and vomiting on the day of the procedure according to Sinclair et al (120). ....	53
<b>Table 15.</b> Incidence of postoperative symptoms observed in day surgery, according to the literature review of observational studies in Wu et al 2002 (97). ....	55
<b>Table 16.</b> Description of observational studies that assess prolonged stays in day surgery units. ....	56
<b>Table 17.</b> Description of observational studies assessing the unplanned overnight admission. ....	57
<b>Table 18.</b> Causes of unplanned admission following day surgery. ....	61
<b>Table 19.</b> Factors associated with unplanned admission, from Gold et al 1989, Fortier et al 1998 and Fleisher et al, 2007 – results from multivariate logistic regression (103, 122, 146).....	62
<b>Table 20.</b> Description of observational studies assessing rates of unplanned readmission. ....	63
<b>Table 21.</b> Description of observational studies assessing patient satisfaction after a day surgery procedure. ....	64
<b>Table 22.</b> Summary of results of Cochrane review by Fedorowicz et al 2001 (175) comparing day care versus in-patient surgery for age-related cataract. ....	69
<b>Table 23.</b> Breakdown of samples used.....	72
<b>Table 24.</b> Overall expenditure (in euros) by type of management, profit-making private hospitals. ....	73
<b>Table 25.</b> Overall expenditure (in euros) by type of management, Public or non-profit-making private hospitals.....	74
<b>Table 26.</b> New GHSs under single pricing from 2012	83
<b>Table 27.</b> New J-code GHSs with single pricing from 2012.....	85
<b>Table 28.</b> Comparison of costs per GHS (using 2009 costs as a reference) and 2011 pricing for GHS categories under single pricing, public or non-profit-making private hospitals .....	86
<b>Table 29.</b> Comparison of costs per GHS (using 2009 costs as a reference) and 2011 pricing for GHS categories under single pricing, profit-making private hospitals. ....	87

# APPENDIX. PROFESSIONAL AND ORGANISATIONAL GUIDELINES

## **Association of Anaesthetists of Great Britain and Ireland. Day case and short stay surgery: 2, 2011 (41)**

This consensus document was produced by experts from a working group and approved by the Association of Anaesthetists of Great Britain and Ireland and by the British Association of Day Surgery.

## **Day Surgery Data Project. Report on DS current organization and performance in participating countries – WP4, 2011 (194)**

The aim of this project, which was requested by the European Commission, was to promote day surgery by identifying professional and organisational practice.

## **Haute Autorité de Santé. Quels niveaux d'environnements techniques pour la réalisation d'actes interventionnels en ambulatoire? [What kind of technical environment is required to carry out interventional procedures as day cases?] 2010 (43)**

Assessment was based on critical review of the data identified in the literature and on a questionnaire gathering opinions from healthcare professionals involved, which was discussed at a working meeting.

A search limited to publications in English and French was done for the period January 1998 to August 2010. These search terms were monitored until August 2010.

As the literature about these organisational aspects is sparse and not highly specific, all documents that acted as certification standards for healthcare facilities or as guidelines were used, regardless of the methods used to create them. The main aim was to create a description of the technical requirements of care, and to identify the criteria used to refer patients to day surgery.

The experts' groups involved in this area were consulted, using a questionnaire in which their opinion was sought as to the content of the report, creation of specific technical environments and identification of criteria to determine which particular type of technical environment is most suitable for particular procedures. A working group was then organised in order to present the questionnaire results and to look at the various aspects of this assessment.

## **Day Surgery Data Project. Report on the analysis of DS indicators available at International level – WP4, 2010 (59)**

The purpose of this project, which was requested by the European Commission, is to promote day surgery by identifying good professional and organisational practice

and analysing day surgery indicators internationally. It was based on a review of the international literature, followed by critical analysis of the indicators that were identified.

## **French Society of Digestive System Surgery. Recommendations sur la pratique de la chirurgie digestive et endocrinienne ambulatoire de l'adulte [Guidelines for practicing adult digestive tract and endocrine surgery as day surgery], 2010 (36)**

Compilation of these guidelines was done by summarising multiple and dispersed data sources about the practice of day surgery, with the aim of determining the optimal medical strategy for each condition. HAS' suggested method for creating clinical practice guidelines was put into practice together with a sponsor, an organising committee, a working group represented by the joint SFCD ACHBT assessment committee, and a review board. These professional guidelines have been officially approved by HAS.

## **French Ministry of Health, Youth and Sport and French National Fund of health insurance for employees (CNAMTS). Abécédaire: chirurgie ambulatoire (ABC of Day Surgery), 2009 (9)**

This document was written with expert guidance, with the aim of providing a way of understanding the issues that are most frequently raised in discussions between healthcare professionals about day surgery.

## **Société française d'anesthésie et de réanimation (French Society of Anaesthesia and Intensive Care). Prise en charge anesthésique des patients en hospitalisation ambulatoire [Management of anaesthesia for patients admitted as day cases], 2009 (7)**

The method used was guidelines formalised by experts (RFE in French). Because of the lack of uncontroversial scientific data, an opinion, gathered at a specific time from a group of experts working in the field, was considered to be necessary. A literature review was done using four databases: Pubmed, Cochrane, OVID and the whole of the INIST database. The keywords used were as follows: « ambulatory surgery », « ambulatory surgery procedures » including related items. The search was narrowed using the following criteria: « published in the last 10 years », « Humans », « Clinical Trial », « Meta-Analysis », « Practice Guideline », « Randomized Controlled Trial », « Review », « English », « French ».. The experts created the guidelines after analysis and summary of the medical literature. This analysis was performed using the GRADE methodology. For each theme selected by the guidelines organising

committee, the experts determined the various issues of interest, using a systematic literature review. For each issue, crucial and important criteria for judgement were identified, with a classification of level of evidence and an assessment of the risk/benefit ratio. Three levels of evidence were determined: randomised trial (high level of evidence), observational study (low level of evidence) and other sources of data (very low level of evidence). The level of evidence of each selected study was scored, according to the strengths and weaknesses which were evaluated methodically by the expert team. If the experts did not reach a consensus, if the level of evidence were judged to be too low or if the GRADE method could not be used (if there was little or no scientific data, in response to indirect or partial studies, or for other reasons), the guidelines were subject to professional agreement after one or more rounds of scoring using the nominal group technique, adapted from the RAND/UCLA method. Guidelines that are subject to this type of professional consensus express the opinion of a group of experts at a given moment and in a field in which practice is not well codified. After assessing the risk/benefit ratio, guidelines are classified into strong guidelines and optional guidelines. The presence of a strong guideline does not mean that all patients must be managed identically, but is an attempt to reflect a decision-making choice that will probably be made by the majority of practitioners and by the majority of appropriately informed patients.

Guidelines proposed by experts are subject to several rounds of scoring by all the experts, which means that guidelines receiving strong or weak agreement can be kept and refined.

In the context of these expert-created guidelines (RFE), four rounds of scoring were necessary in order to create 71 consensus-based guidelines.

**Royal College of Anaesthetists. Guidance on the provision of anaesthetic services for Day Surgery, 2009 (42)**

This guide was created by the UK Royal College of Anaesthetists with the aim of providing high quality day surgery for patients and to improve the skills of staff working in day surgery units.

**Association des anesthésistes réanimateurs pédiatriques d'expression française (Association of French-speaking Paediatric Anaesthetists and Intensivists). Day surgery in children (aged under 18 years): Guidelines, 2008 (53)**

These guidelines were drawn up by the French National

Paediatric Surgery Council (CNCE) in partnership with the Association of French speaking Paediatric Anaesthetists and Intensivists (ADARPEF); and the aim was not to set out standards for management, but to specify the quality and safety conditions for performing day surgery or other one-day interventions in children. These specifications must be easy to apply for anyone working in surgery and interventions involving the under-18s, while taking into account the specific requirements of paediatric surgery as a way of delivering high-quality management of paediatric patients. These guidelines were created using methods described and formalised by experts.

**Société française d'anesthésie et de réanimation (French Society of Anaesthesia and Intensive Care). Recommandations formalisées d'experts 2008, prise en charge de la douleur postopératoire chez l'adulte et l'enfant [Guidelines formalised by experts (RFE) 2008, management of postoperative pain in adults and children], 2008 (55)**

The method used is guidelines formalised by experts (RFE in French), using the GRADE method.

**Ministry of Health and Consumer Affairs, Spain. Day Surgery Unit Guide: Standards and Recommendations, 2008 (35)**

These recommendations, which were requested by the Spanish Ministry of Health and which were based on a literature review and on expert opinions, aimed to improve the safety and quality of day surgery.

**Société française d'anesthésie et de réanimation (French Society of Anaesthesia and Intensive Care). Prise en charge des nausées et vomissements postopératoires [Managing of postoperative nausea and vomiting], Expert Conference - Short text presented at the SFAR conference in September 2007 (195)**

The purpose of this conference was to determine the appropriate management of postoperative nausea and vomiting. The chosen assessment system in these guidelines is the GRADE system.

**International Association for Ambulatory Surgery. Policy Brief Day Surgery: Making it Happen, 2007 (5)**

The aim of this document by IAAS, created jointly with the European Observatory on Health Systems and Policies and the WHO, is to examine how day surgery can respond both to the policy needs of hospital administrators and to the surgical care needs of specific patients. In order to



achieve this, the barriers experienced in day surgery development were identified, and guidelines were proposed by an international working group.

**International Association for Ambulatory Surgery. Day surgery: development and practice, 2006 (17)**

The aim of this document is to create a set of basic and pragmatic international guidelines for practising day surgery. The authors are experts in the field from many different countries.

**Wales Audit Office. Making better use of NHS day surgery in Wales, 2006 (49)**

This document was created by the audit office in Wales. The method was based on a literature review, on opinions gathered from clinicians, administrators and learned societies involved in day surgery, using interviews, analysis of statistical data from various surveys, site visits, and consultation of a panel of experts.

**Royal College of Anaesthetists. Section 5: Day surgery services, 2006 (56)**

This document by the Royal College of Anaesthetists is part of the book *Raising the standard: a compendium of audit recipes*.

**Health Services Scotland. The Planned Care Improvement Programme: Day Surgery in Scotland, 2006 (48)**

The aim of this document by the Scottish government was to create a basis for measuring performance in day surgery and for identifying opportunities to increase the development of day surgery in Scotland.

**Société française d'anesthésie et de réanimation (French Society of Anaesthesia and Intensive Care). Aspects réglementaires et architecturaux de la chirurgie ambulatoire [Regulatory and infrastructural aspects of day surgery], 2005 (37)**

This document presents the regulatory texts that have laid the foundations for and developed day surgery, as well as an analysis of the organisational and infrastructural aspects.

**Association of perioperative Registered Nurses. AORN Guidance Statement: preoperative patient care in the ambulatory surgery setting, 2005 (61)**

The purpose of these guidelines is to implement postoperative procedures in day surgery units.

**Care Quality Commission. Acute hospital portfolio review: Day surgery, 2005 (50)**

This report is based on an analysis by the UK Healthcare Commission, done in 2004-2005 (using national data and data from 311 day surgery units).

**Royal Australasian College of Surgeons. Day Surgery in Australia: Report and Recommendations, 2004 (38)**

The objective of this document is to set out guidelines about anaesthesia and day surgery in Australia.

**National Salaried Workers' Health Insurance Fund (CNAMTS). Évolution des parts de marché de la chirurgie classique dans 20 régions entre 1999 et 2001 [Changes in the proportion of surgery done on traditional admission in 20 regions between 1999 and 2001], 2004 (196)**

The aim of this project was to examine the relationship between changes in the proportion of inpatient surgery and the development of day surgery, with an investigation of the monopolistic situation of the private sector and the risk that elective surgery in the public sector might end.

**Royal College of Nursing. Day Surgery Information: Selection criteria and suitable procedures, 2004 (51)**

The aim of and methods used in this document are not described.

**British Association of Day Surgery. Integrated care pathways for day surgery patients, 2004 (47)**

This document by the British Association of Day Surgery is a guide to the development, implementation and assessment of clinical pathways in day surgery.

**National Salaried Workers' Health Insurance Fund (CNAMTS, France). Conditions du développement de la chirurgie ambulatoire [Conditions for the development of day surgery], 2003 (25, 31, 32, 172, 197, 198)**

The main aim of this national survey of day surgery, involving all insurance regimes, was to assess the proportion of surgery currently done on full admission that could potentially be done as day surgery, and to assess costs to national health insurance. This was carried out in partnership with AFCA and CREDES. It comprises 4 parts: description of the current situation and of types of health-care organisation, potential for substitution (of day surgery for full admission), expenditure and a study of the factors that encourage and hold back this process.

.....

**British Association of Day Surgery. Skill mix and nursing establishment for day surgery, 2003 (45)**

This document, by the British Association of Day Surgery, is a guide to the management of staff in a day surgery unit.

**International Association for Ambulatory Surgery. Ambulatory (day) surgery: suggested international terminology and definitions, 2003 (3)**

This publication sets out the vocabulary and definitions that are held to be standard by the International Association for Ambulatory Surgery (IAAS), in English, and has been provided with full definitions and translations by all relevant national associations in their national languages, with the necessary commentaries.

**British Association of Day Surgery. Guidelines about the discharge process and the assessment of fitness for discharge, 2002 (58)**

This document brings together good practice from the British Association of Day Surgery concerning discharge procedures for patients undergoing day surgery.

**The Hong Kong College of Anaesthesiologists. Guidelines on anaesthesia for day surgery, 2002 (52)**

The aim of and methods used in this document are not described.

**Department of Health. Day Surgery: Operational guide, 2002 (39)**

This guide was created by a multidisciplinary working group and commissioned by the UK Department of Health. Its aim was to help clinicians and administrators to improve the efficiency of their day surgery units.

**Haute Autorité de Santé La chirurgie ambulatoire [Ambulatory Surgery], 1997 (2)**

This document was created using HAS' own method, with a review of the international literature and consultation with experts as starting points.

**South Australia Health Commission. Guidelines for the conduct of day surgery in South Australia, 1994 (40)**

This document, which was written by the South Australian Health Commission, is designed to identify indicators and set out guidelines for day surgery in South Australia.



# AUTHORS

---

This report was written by:

- Mrs Cécile MIGNOT and Mrs Aurélie GAREL PACULL, project manager for the HAS professional practices service, under the responsibility of Mrs Michèle MORIN-SURROCA, Assistant Manager, and Ms. Sun-Hae LEE ROBIN, manager.
- Mrs Isabelle HIRTZLIN, project manager in the HAS economic evaluation and public health service, under the responsibility of Mr Olivier SCEMAMA, Assistant Manager, and Mrs Catherine RUMEAU-PICHON, head of department.

The literature search was conducted by Mrs Emmanuelle BLONDET with the help of Yasmine LOMBRY under the responsibility of Mrs Christine DEVAUD, Assistant Manager, and Mrs Frédérique PAGES manager.

The logistics and secretarial work were made by Mrs Louise TUIL and Mrs Suzie DALOUR.

Mr Eric DARVOY designed and applied the common graphic HAS-ANAP charter under the responsibility of Mrs Annie CHEVALLIER according to joint guidelines of HAS-ANAP communication teams.

Mr Gilles BONTEMPS, Associate Director, Mr Christian ESPAGNO & Mr. Jamel MAHCER, managers at the ANAP contributed to the reading of the draft report and the identification of some documents.

The following learning societies and institutions were solicited reading of the draft report:

- French Association of Ambulatory Surgery (AFCA).
- French Society of Anesthesia and Intensive Care (SFAR).
- National Academy of Surgery (ANC).
- National Council of surgery (CNC).
- Ministry of Health (branch dedicated to hospitals (DGOS).
- Technical Information Agency on hospitalization (ATIH).

# REFERENCES

1. Nicoll JH. The surgery of infancy. *Br Med J* 1909; 2:753-5.
2. Agence nationale de l'accréditation et de l'évaluation en santé. La chirurgie ambulatoire. Paris: ANAES; 1997.  
[www.has-sante.fr/portail/upload/docs/application/pdf/ca.pdf](http://www.has-sante.fr/portail/upload/docs/application/pdf/ca.pdf).
3. International Association for Ambulatory Surgery. Ambulatory (day) surgery. Suggested international terminology and definitions. London: IAAS; 2003.
4. Parmentier G. Suggested international terminology and definitions. A short presentation 2005.  
[www.chirurgie-ambulatoire.org/sites/chirurgie-ambulatoire.org/files/documents/professionnels/references-scientifiques/terminologie-iaas-fr.pdf](http://www.chirurgie-ambulatoire.org/sites/chirurgie-ambulatoire.org/files/documents/professionnels/references-scientifiques/terminologie-iaas-fr.pdf).
5. International Association for Ambulatory Surgery. Policy brief day surgery: making it happen. London: IAAS; 2007.
6. De Lathouwer C, Poullier JP. Ambulatory surgery in 1994-1995: the state of the art in 29 OECD countries. *Ambul Surg* 1998;6:43-55.
7. Société française d'anesthésie et de réanimation. Prise en charge anesthésique des patients en hospitalisation ambulatoire. Texte long. Paris: SFAR; 2009.  
[www.sfar.org/\\_docs/articles/207-rfe\\_ambulatoire2009.pdf](http://www.sfar.org/_docs/articles/207-rfe_ambulatoire2009.pdf).
8. Conférence de consensus. La chirurgie sans hospitalisation. Rapport de la conférence. *Rev Hosp France* 1995;2:156-71.
9. Caisse nationale d'assurance maladie des travailleurs salariés, Ministère de la santé de la jeunesse et des sports. Abécédaire Chirurgie ambulatoire. Paris: Ministère de la Santé de la Jeunesse et des Sports; 2009.  
[www.sante-jeunesse-sports.gouv.fr/IMG/pdf/Abecedaire\\_chir\\_ambu.pdf](http://www.sante-jeunesse-sports.gouv.fr/IMG/pdf/Abecedaire_chir_ambu.pdf).
10. Mahieu A, Raffy-Pihan N. La chirurgie ambulatoire en France, bilan et perspectives. Paris: CREDES; 1997.  
[www.irdes.fr/Publications/Rapports1997/rap1203.pdf](http://www.irdes.fr/Publications/Rapports1997/rap1203.pdf)
11. Bontemps G, Coustar N, Toupin M-H. Enquête nationale sur la chirurgie ambulatoire. Conditions du développement. *Technologie et santé CNEH* 2004;(53):1-100.
12. Health Care Statistics, Cullen,KA, Hall,MJ, Golosinskiy,A. Ambulatory Surgery in the United States, 2006. National Health Statistics reports n°11, revised. Hyattsville: NCHS; 2009.  
[www.cdc.gov/nchs/data/nhsr/nhsr011.pdf](http://www.cdc.gov/nchs/data/nhsr/nhsr011.pdf)
13. American Hospital Association, Avalere Health. TrendWatch Chartbook 2011. Trends Affecting Hospitals and Health Systems. Washington: AHA; 2011.  
[www.aha.org/research/reports/tw/chartbook/2011chartbook.shtml](http://www.aha.org/research/reports/tw/chartbook/2011chartbook.shtml)
14. American Hospital Association, Avalere Health. TrendWatch Chartbook 2009. Trends Affecting Hospitals and Health Systems. Washington: AHA; 2009.  
[www.aha.org/research/reports/tw/chartbook/2009chartbook.shtml](http://www.aha.org/research/reports/tw/chartbook/2009chartbook.shtml)
15. American Hospital Association, Avalere Health. TrendWatch Chartbook 2008. Trends Affecting Hospitals and Health Systems. Washington: AHA; 2008.  
[www.aha.org/research/reports/tw/chartbook-2008chartbook.shtml](http://www.aha.org/research/reports/tw/chartbook-2008chartbook.shtml)
16. De Lathouwer C, Poullier JP. How much ambulatory surgery in the World in 1996-1997 and trends? *Ambul Surg* 2000;8(4):191-210.
17. International Association for Ambulatory Surgery. Day surgery. Development and practice. London: IAAS; 2006.
18. Toftgaard C. Day surgery activities 2009. International survey on ambulatory surgery conducted 2011. *Ambul Surg* 2012;17.3:53-63.
19. Kroneman MW, Westert GP, Groenewegen PP, Delnoij DM. International variations in availability and diffusion of alternatives to in-patient care in Europe: the case of day surgery. *Ambul Surg* 2001;9:147-54.
20. Organisation for Economic Co-operation and Development, Hurst,J, Siciliani,L. Tackling Excessive Waiting Times for Elective Surgery: A Comparison of Policies in Twelve OECD Countries. Paris: OECD; 2003.  
[www.oecd.org/dataoecd/24/32/5162353.pdf](http://www.oecd.org/dataoecd/24/32/5162353.pdf)
21. Mahieu A, Raffy-Pihan N. La chirurgie ambulatoire en France bilan et perspectives. *Questions d'économie de la santé* 1998;(2).
22. Sourty-Le Guellec MJ. La chirurgie ambulatoire : potentiel de développement pour 17 gestes marqueurs. *Questions d'économie de la santé* 2002;(50):1-6.
23. Busson,O, Doussin,A, Sourty-Le Guellec,MJ. Estimation du potentiel de développement de la chirurgie

ambulatoire. L'exemple des cures de hernies inguinales ou crurales. Paris: CREDES; 2000.

[www.irdes.fr/Publications/Rapports2000/rap1303.pdf](http://www.irdes.fr/Publications/Rapports2000/rap1303.pdf)

24. Sourty-Le Guellec MJ. Le potentiel de développement de la chirurgie ambulatoire de la cataracte en France, en 1999. Questions d'économie de la santé 2001;(41):1-6.

25. Caisse nationale d'assurance maladie des travailleurs salariés, Caisse centrale de la mutualité sociale agricole, Caisse nationale de l'assurance maladie des professions indépendantes. Condition du développement de la chirurgie ambulatoire. Evaluation du potentiel de substitution pour 18 gestes marqueurs en juin 2001. Fascicule 1 : méthode, résultats toutes régions concernées. Paris: CNAMTS; 2003.

26. Agence technique de l'information sur l'hospitalisation. Etat des lieux 2010 sur l'activité de chirurgie ambulatoire. Analyse nationale et régionale complémentaire. Données 2010. Lyon: ATIH; 2010.

[www.atih.sante.fr/openfile.php?id=3479](http://www.atih.sante.fr/openfile.php?id=3479)

27. Agence technique de l'information sur l'hospitalisation. État des lieux sur les évolutions de l'activité de chirurgie ambulatoire. Analyse nationale et régionale. Données 2007-2009. Lyon: ATIH; 2011.

[www.atih.sante.fr/openfile.php?id=3476](http://www.atih.sante.fr/openfile.php?id=3476)

28. Direction de la recherche des études de l'évaluation et des statistiques. Étude sur la réactivité des établissements de santé aux incitations tarifaires. Paris: DREES; 2011.

29. Caisse nationale d'assurance maladie des travailleurs salariés. Progression du taux de chirurgie ambulatoire entre 2006 et 2009, liée à la mise sous accord préalable 2010.

[www.ameli.fr/fileadmin/user\\_upload/documents/Dp\\_chir\\_ambulatoire\\_vdef.pdf](http://www.ameli.fr/fileadmin/user_upload/documents/Dp_chir_ambulatoire_vdef.pdf).

30. Direction de la recherche des études de l'évaluation et des statistiques. Le panorama des établissements de santé. Paris: DREES; 2010.

31. Caisse nationale d'assurance maladie des travailleurs salariés, Caisse centrale de la mutualité sociale agricole, Caisse nationale de l'assurance maladie des professions indépendantes. Condition du développement de la chirurgie ambulatoire. État des lieux et Typologies des établissements de santé en 1999. Paris: CNAMTS; 2003.

32. Caisse nationale d'assurance maladie des travailleurs salariés, Caisse centrale de la mutualité sociale agricole, Caisse nationale de l'assurance maladie des professions indépendantes. Condition du développement de la chirurgie ambulatoire. Synthèse et mise en perspective des quatre volets de l'enquête. Paris: CNAMTS; 2003.

[www.ameli.fr/fileadmin/user\\_upload/documents/Conditions\\_de\\_developpement\\_de\\_la\\_chirurgie\\_ambulatoire.pdf](http://www.ameli.fr/fileadmin/user_upload/documents/Conditions_de_developpement_de_la_chirurgie_ambulatoire.pdf)

33. Centre fédéral d'expertise des soins de santé. Étude des disparités de la chirurgie électorale en Belgique. KCE reports vol. 42B. Bruxelles: KCE; 2006.

[https://kce.fgov.be/sites/default/files/page\\_documents/d20061027346.pdf](https://kce.fgov.be/sites/default/files/page_documents/d20061027346.pdf)

34. Ministère du travail de l'emploi et de la santé. Rapport 2011 au Parlement sur la tarification à l'activité (T2A). Paris: Ministère du travail, de l'emploi et de la santé; 2011.

[www.sante.gouv.fr/IMG/pdf/Rapport\\_T2A\\_au\\_Parlement\\_2011\\_transmis\\_1509\\_11.pdf](http://www.sante.gouv.fr/IMG/pdf/Rapport_T2A_au_Parlement_2011_transmis_1509_11.pdf)

35. Spain Ministry of Health and Consumer Affairs. Day Surgery Unit Guide. Standards and Recommendations. Madrid; 2008.

[www.msc.es/organizacion/sns/planCalidadSNS/docs/guiaCMA\\_eng.pdf](http://www.msc.es/organizacion/sns/planCalidadSNS/docs/guiaCMA_eng.pdf)

36. Société française de chirurgie digestive, Association de chirurgie hépatobiliaire et de transplantation. Indications de la chirurgie digestive et endocrinienne pratiquée en ambulatoire chez l'adulte. J Chir 2010;147(Supplément 4).

37. Jouffroy L, Hartmann G. Aspects réglementaires et architecturaux de la chirurgie ambulatoire. ALRF; 2005.

38. Australian Day Surgery Council. Day surgery in Australia. Report and recommendations of the Australian Day Surgery Council. Melbourne: ADSC; 2004.

[www.anzca.edu.au/resources/books-and-publications/Day%20Surgery%20in%20Australia.pdf](http://www.anzca.edu.au/resources/books-and-publications/Day%20Surgery%20in%20Australia.pdf)

39. UK Department of Health. Day surgery: operational guide. London: DH; 2002.

[www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4005487?IdcService=GET\\_FILE&dID=17206&Rendition=Web](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4005487?IdcService=GET_FILE&dID=17206&Rendition=Web)

40. South Australia Health Commission. Guidelines for the conduct of day surgery in South Australia. Adelaide:

- SAHC; 1994.  
[www.publications.health.sa.gov.au/cgi/viewcontent.cgi?article=1009&context=med](http://www.publications.health.sa.gov.au/cgi/viewcontent.cgi?article=1009&context=med)
41. Association of Anaesthetists of Great Britain and Ireland, British Association of Day Surgery. Day case and short stay surgery: 2. Anaesthesia 2011;66(5):417-34.
42. Royal College of Anaesthetists. Guidance on the provision of anaesthetic services for Day Surgery. London: RCOA; 2009.  
[www.rcoa.ac.uk/docs/GPAS-daySurg.pdf](http://www.rcoa.ac.uk/docs/GPAS-daySurg.pdf)
43. Haute Autorité de santé. Quels niveaux d'environnements techniques pour la réalisation d'actes interventionnels en ambulatoire ? Saint-Denis la Plaine: HAS; 2010.  
[www.has-sante.fr/portail/upload/docs/application/pdf/2011-02/rapport\\_definition\\_environnements\\_techniques.pdf](http://www.has-sante.fr/portail/upload/docs/application/pdf/2011-02/rapport_definition_environnements_techniques.pdf)
44. Gandjbakhch I. Bloc opératoire. Rapport. Bull Acad Natl Med 2009;193(4):981-8.
45. British Association of Day Surgery. Skill mix and nursing establishment for day surgery. London: BADS; 2003.  
[www.daysurgeryuk.net/bads/joomla/files/Handbooks/SkillMix.pdf](http://www.daysurgeryuk.net/bads/joomla/files/Handbooks/SkillMix.pdf)
46. Agence nationale de l'accréditation et de l'évaluation en santé. Chemin clinique. Une méthode d'amélioration de la qualité. Saint-Denis la Plaine: ANAES; 2004.  
[www.has-sante.fr/portail/upload/docs/application/pdf/2009-08/chemin\\_clinique\\_guide.pdf](http://www.has-sante.fr/portail/upload/docs/application/pdf/2009-08/chemin_clinique_guide.pdf)
47. British Association of Day Surgery. Integrated care pathways for day surgery patients. London: BADS; 2004.  
[www.daysurgeryuk.net/bads/joomla/files/Handbooks/IntegratedCarePathways.pdf](http://www.daysurgeryuk.net/bads/joomla/files/Handbooks/IntegratedCarePathways.pdf)
48. National Health Services Scotland. The Planned Care Improvement Programme. Day Surgery in Scotland. Edinburgh: NHS Scotland; 2006.  
[www.scotland.gov.uk/Resource/Doc/154924/0041643.pdf](http://www.scotland.gov.uk/Resource/Doc/154924/0041643.pdf)
49. Wales Audit Office. Making better use of NHS day surgery in Wales. Cardiff: Auditor General for Wales; 2006.  
[www.wao.gov.uk/assets/englishdocuments/WAO\\_Day\\_Surgery\\_Eng\\_web.pdf](http://www.wao.gov.uk/assets/englishdocuments/WAO_Day_Surgery_Eng_web.pdf)
50. UK Commission for Healthcare Audit and Inspection. Acute hospital portfolio review. Day surgery. London: CQC; 2005.  
[archive.cqc.org.uk/\\_db/\\_documents/04018390.pdf](http://archive.cqc.org.uk/_db/_documents/04018390.pdf)
51. Royal College of Nursing. Day Surgery Information. Selection criteria and suitable procedures. London: RCN; 2004.  
[www.rcn.org.uk/\\_\\_data/assets/pdf\\_file/0004/78511/001436.pdf](http://www.rcn.org.uk/__data/assets/pdf_file/0004/78511/001436.pdf)
52. Hong Kong College of Anaesthesiologists. Guidelines on anaesthesia for day surgery 2002.  
[www.hkca.edu.hk/ANS/standard\\_publications/guidep05.pdf](http://www.hkca.edu.hk/ANS/standard_publications/guidep05.pdf)
53. Association des anesthésistes réanimateurs pédiatriques d'expression française, Conseil national de la chirurgie de l'enfant. Chirurgie ambulatoire de l'enfant (de moins de 18 ans). Recommandations. ADARPEF ; CNCE; 2008.  
[www.adarpef.ouvaton.org/congresadarpef2009/CNEA-DARPEF.pdf](http://www.adarpef.ouvaton.org/congresadarpef2009/CNEA-DARPEF.pdf)
54. Association of Anaesthetists of Great Britain and Ireland. Day case surgery. The Anaesthetist's role in promoting high quality care. London: AAGBI; 1994.
55. Société française d'anesthésie et de réanimation. Recommandations formalisées d'experts 2008. Prise en charge de la douleur postopératoire chez l'adulte et l'enfant. Ann Fr Anesth Reanim 2008;27:1035-41.
56. Royal College of Anaesthetists. Section 5: Day surgery services. London: RCOA; 2006.  
[www.rcoa.ac.uk/docs/ARB-section5.pdf](http://www.rcoa.ac.uk/docs/ARB-section5.pdf)
57. Association of periOperative Registered Nurses. AORN Guidance Statement: postoperative patient care in the ambulatory surgery setting. AORN J 2005;81(4):881-8.
58. British Association of Day Surgery. Guidelines about the discharge process and the assessment of fitness for discharge. London: BADS; 2002.  
[www.daysurgeryuk.net/bads/joomla/files/Handbooks/badsdischargecriteria.pdf](http://www.daysurgeryuk.net/bads/joomla/files/Handbooks/badsdischargecriteria.pdf)
59. Day Surgery Data Project. Report on the analysis of DS indicators available at International level. WP4. DSDP; 2010.  
[www.dsdp.eu/wp-content/uploads/2010/07/REPORT-WP4-FINALVERSION.pdf](http://www.dsdp.eu/wp-content/uploads/2010/07/REPORT-WP4-FINALVERSION.pdf)

60. Department of Health Social Services and Public Safety. Day surgery in Northern Ireland. Regional summary. Belfast: DHSSPS; 2002.  
[www.dhsspsni.gov.uk/day\\_surgery\\_in\\_northern\\_ireland\\_regional\\_summary.pdf](http://www.dhsspsni.gov.uk/day_surgery_in_northern_ireland_regional_summary.pdf)
61. Association of periOperative Registered Nurses. AORN Guidance Statement: preoperative patient care in the ambulatory surgery setting. *AORN J* 2005;81(4):871-8.
62. Joint Commission Accreditation Ambulatory Care. Standards for ambulatory surgery centers. Oakbrook Terrace: Joint Commission; 2012.
63. Shnaider I, Chung F. Outcomes in day surgery. *Curr Opin Anaesthesiol* 2006;19(6):622-9.
64. Chung F, Mezei G. Adverse outcomes in ambulatory anesthesia. *Can J Anaesth* 1999;46(5 Pt 2):R18-R34.
65. Aker J. Safety of ambulatory surgery. *J Perianesth Nurs* 2001;16(6):353-8.
66. Vaghadia H, Scheepers L, Merrick PM. Readmission for bleeding after outpatient surgery. *Can J Anaesth* 1998;45(11):1079-83.
67. Duncan PG, Cohen MM, Tweed WA, Biehl D, Pope WD, Merchant RN, et al. The Canadian four-centre study of anaesthetic outcomes: III. Are anaesthetic complications predictable in day surgical practice? *Can J Anaesth* 1992;39(5 Pt 1):440-8.
68. Mezei G, Chung F. Return hospital visits and hospital readmissions after ambulatory surgery. *Ann Surg* 1999;230(5):721-7.
69. Majholm B, Engbaek J, Bartholdy J, Oerding H, Ahlburg P, Ulrik AM, et al. Is day surgery safe? A Danish multicentre study of morbidity after 57,709 day surgery procedures. *Acta Anaesthesiol Scand* 2012;56(3):323-31.
70. Vila H, Soto R, Cantor AB, Mackey D. Comparative outcomes analysis of procedures performed in physician offices and ambulatory surgery centers. *Arch Surg* 2003;138(9):991-5.
71. Engbaek J, Bartholdy J, Hjortso NC. Return hospital visits and morbidity within 60 days after day surgery: a retrospective study of 18,736 day surgical procedures. *Acta Anaesthesiol Scand* 2006;50(8):911-9.
72. Natof HE. Complications associated with ambulatory surgery. *JAMA* 1980;244(10):1116-8.
73. Warner MA, Shields SE, Chute CG. Major morbidity and mortality within 1 month of ambulatory surgery and anesthesia. *JAMA* 1993;270(12):1437-41.
74. Osborne GA, Rudkin GE. Outcome after day-care surgery in a major teaching hospital. *Anaesth Intensive Care* 1993;21(6):822-7.
75. Mattila K, Hynynen M, Intensium Consortium Study Group. Day surgery in Finland: a prospective cohort study of 14 day-surgery units. *Acta Anaesthesiol Scand* 2009;53(4):455-63.
76. Samama CM. Faut-il une prévention de la maladie thromboembolique veineuse (MTEV) en chirurgie ambulatoire ? *Prat Anesth Reanim* 2009;13(3):165-7.
77. Sewonou A, Rioux C, Golliot F, Richard L, Massault PP, Johanet H, et al. Incidence des infections du site opératoire en chirurgie ambulatoire: résultats du réseau de surveillance INCISO en 1999-2000. *Ann Chir* 2002;127(4):262-7.
78. Centre de coordination de la lutte contre les infections nosocomiales de l'interrégion Paris-Nord. Programme de surveillance et de prévention des infections du site opératoire. Services de chirurgie de l'inter-région Nord. Réseau INCISO. Rapport Octobre 2001. Paris: CCLIN Paris-Nord; 2001.  
[www.cclinparisnord.org/Inciso/2001/rapport2001.pdf](http://www.cclinparisnord.org/Inciso/2001/rapport2001.pdf)
79. Centre de coordination de la lutte contre les infections nosocomiales de l'interrégion Paris-Nord. Programme de surveillance et de prévention des infections du site opératoire. Services de chirurgie de l'inter-région Nord. Réseau INCISO. Rapport Novembre 2004. Paris: CCLIN Paris-Nord; 2004.
80. Centre de coordination de la lutte contre les infections nosocomiales de l'interrégion Paris-Nord. Programme de surveillance et de prévention des infections du site opératoire. Services de chirurgie de l'inter-région Nord. Réseau INCISO. Rapport Novembre 2010. Paris: CCLIN Paris-Nord; 2010.  
[www.cclinparisnord.org/Inciso/2010/Rapport\\_INCISO10.pdf](http://www.cclinparisnord.org/Inciso/2010/Rapport_INCISO10.pdf)



81. Mlangeni D, Babikir R, Dettenkofer M, Daschner F, Gastmeier P, Ruden H. AMBU-KISS: quality control in ambulatory surgery. *Am J Infect Control* 2005;33(1):11-4.
82. Australian Government. Australian guidelines for the prevention and control of infection healthcare. Canberra: NHMRC; 2010.  
[www.nhmrc.gov.au/\\_files\\_nhmrc/file/guidelines/consult/consultations/ICG\\_draft\\_10jan10.pdf](http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/consult/consultations/ICG_draft_10jan10.pdf)
83. National Institute for Health and Clinical Excellence. Surgical site infection. Prevention and treatment of surgical site infection. London: NICE; 2008.  
[www.nice.org.uk/nicemedia/pdf/CG74NICEGuideline.pdf](http://www.nice.org.uk/nicemedia/pdf/CG74NICEGuideline.pdf)
84. Bettelli G. High risk patients in day surgery. *Minerva Anesthesiol* 2009;75(5):259-68.
85. Lemarie M, Compère V, Fourdrinier V, Lignot S, Legrand L, Marguerite C, et al. Evaluation de l'impact d'une prescription d'antalgiques réalisée lors de la consultation d'anesthésie sur l'incidence de la douleur à domicile en chirurgie ambulatoire orthopédique. *Ann Fr Anesth Reanim* 2011;30(12):883-7.
86. Rawal N, Hylander J, Nydahl PA, Olofsson I, Gupta A. Survey of postoperative analgesia following ambulatory surgery. *Acta Anaesthesiol Scand* 1997;41(8):1017-22.
87. Beauregard L, Pomp A, Choinière M. Severity and impact of pain after day-surgery. *Can J Anaesth* 1998;45(4):304-11.
88. Mackintosh C, Bowles S. Audit of postoperative pain following day case surgery. *Br J Nurs* 1998;7(11):641-5.
89. Pavlin DJ, Chen C, Penaloza DA, Buckley FP. A survey of pain and other symptoms that affect the recovery process after discharge from an ambulatory surgery unit. *J Clin Anesth* 2004;16(3):200-6.
90. Chung F, Ritchie E, Su J. Postoperative pain in ambulatory surgery. *Anesth Analg* 1997;85(4):808-16.
91. Gramke HF, de Rijke JM, van Kleef M, Raps F, Kessels AG, Peters ML, et al. The prevalence of postoperative pain in a cross-sectional group of patients after day-case surgery in a university hospital. *Clin J Pain* 2007;23(6):543-8.
92. McGrath B, Elgendy H, Chung F, Kamming D, Curti B, King S. Thirty percent of patients have moderate to severe pain 24 hr after ambulatory surgery: a survey of 5,703 patients. *Can J Anaesth* 2004;51(9):886-91.
93. Pavlin DJ, Chen C, Penaloza DA, Polissar NL, Buckley FP. Pain as a factor complicating recovery and discharge after ambulatory surgery. *Anesth Analg* 2002;95(3):627-34, table.
94. Ismail S, Hussain AM. Adequacy of postoperative pain relief after discharge. *J Pak Med Assoc* 2007;57(7):371-3.
95. Rosén HI, Bergh IH, Odén A, Mårtensson LB. Patients experiences of pain following day surgery - at 48 hours, seven days and three months. *Open Nurs J* 2011;5:52-9.
96. Mattila K, Toivonen J, Janhunen L, Rosenberg PH, Hynynen M. Postdischarge symptoms after ambulatory surgery: first-week incidence, intensity, and risk factors. *Anesth Analg* 2005;101(6):1643-50.
97. Wu CL, Berenholtz SM, Pronovost PJ, Fleisher LA. Systematic review and analysis of postdischarge symptoms after outpatient surgery. *Anesthesiology* 2002;96(4):994-1003.
98. Chung F. Recovery pattern and home-readiness after ambulatory surgery. *Anesth Analg* 1995;80(5):896-902.
99. Pavlin DJ, Rapp SE, Polissar NL, Malmgren JA, Koerschgen M, Keyes H. Factors affecting discharge time in adult outpatients. *Anesth Analg* 1998;87(4):816-26.
100. Chung F, Mezei G. Factors contributing to a prolonged stay after ambulatory surgery. *Anesth Analg* 1999;89(6):1352-9.
101. Junger A, Klasen J, Benson M, Sciuk G, Hartmann B, Sticher J, et al. Factors determining length of stay of surgical day-case patients. *Eur J Anaesthesiol* 2001;18(5):314-21.
102. Awad IT, Moore M, Rushe C, Elburki A, O'Brien K, Warde D. Unplanned hospital admission in children undergoing day-case surgery. *Eur J Anaesthesiol* 2004;21(5):379-83.
103. Fortier J, Chung F, Su J. Unanticipated admission after ambulatory surgery: a prospective study. *Can J Anaesth* 1998;45(7):612-9.

104. Fancourt-Smith PF, Hornstein J, Jenkins LC. Hospital admissions from the Surgical Day Care Centre of Vancouver General Hospital 1977-1987. *Can J Anaesth* 1990;37(6):699-704.
105. Greenburg AG, Greenburg JP, Tewel A, Breen C, Machin O, Mcrae S. Hospital admission following ambulatory surgery. *Am J Surg* 1996;172(1):21-3.
106. Tham C, Koh KF. Unanticipated admission after day surgery. *Singapore Med J* 2002;43(10):522-6.
107. Twersky R, Fishman D, Homel P. What happens after discharge? Return hospital visits after ambulatory surgery. *Anesth Analg* 1997;84(2):319-24.
108. Coley KC, Williams BA, Dapos SV, Chen C, Smith RB. Retrospective evaluation of unanticipated admissions and readmissions after same day surgery and associated costs. *J Clin Anesth* 2002;14(5):349-53.
109. Ghosh S, Sallam S. Patient satisfaction and postoperative demands on hospital and community services after day surgery. *Br J Surg* 1994;81(11):1635-8.
110. Jenkins K, Grady D, Wong J, Correa R, Armaniou S, Chung F. Post-operative recovery: day surgery patients' preferences. *Br J Anaesth* 2001;86(2):272-4.
111. Bain J, Kelly H, Snadden D, Staines H. Day surgery in Scotland: patient satisfaction and outcomes. *Qual Health Care* 1999;8(2):86-91.
112. Tarazi EM, Philip BK. Friendliness of OR staff is top determinant of patient satisfaction with outpatient surgery. *Am J Anesthesiol* 1998;25(4):154-7.
113. Tong D, Chung F, Wong D. Predictive factors in global and anesthesia satisfaction in ambulatory surgical patients. *Anesthesiology* 1997;87(4):856-64.
114. Lemos P, Pinto A, Morais G, Pereira J, Loureiro R, Teixeira S, et al. Patient satisfaction following day surgery. *J Clin Anesth* 2009;21(3):200-5.
115. Chung F, Mezei G, Tong D. Adverse events in ambulatory surgery. A comparison between elderly and younger patients. *Can J Anaesth* 1999;46(4):309-21.
116. Philip BK. Patients' assessment of ambulatory anesthesia and surgery. *J Clin Anesth* 1992;4(5):355-8.
117. Chung F, Un V, Su J. Postoperative symptoms 24 hours after ambulatory anaesthesia. *Can J Anaesth* 1996;43(11):1121-7.
118. McGrath B, Chung F. Postoperative recovery and discharge. *Anesthesiol Clin North America* 2003;21(2):367-86.
119. Gramke HF, de Rijke JM, van Kleef M, Kessels AG, Peters ML, Sommer M, et al. Predictive factors of postoperative pain after day-case surgery. *Clin J Pain* 2009;25(6):455-60.
120. Sinclair DR, Chung F, Mezei G. Can postoperative nausea and vomiting be predicted? *Anesthesiology* 1999;91(1):109-18.
121. Parra-Sanchez I, Abdallah R, You J, Fu AZ, Grady M, Cummings K, et al. A time-motion economic analysis of postoperative nausea and vomiting in ambulatory surgery [prépublication en ligne]. *Can J Anaesth* 2012.
122. Gold BS, Kitz DS, Lecky JH, Neuhaus JM. Unanticipated admission to the hospital following ambulatory surgery. *JAMA* 1989;262(21):3008-10.
123. Society for Ambulatory Anesthesia, Gan TJ, Meyer TA, Apfel CC, Chung F, Davis PJ, et al. Society for Ambulatory Anesthesia guidelines for the management of postoperative nausea and vomiting. *Anesth Analg* 2007;105(6):1615-28, table.
124. Pavlin DJ, Pavlin EG, Gunn HC, Taraday JK, Koerschgen ME. Voiding in patients managed with or without ultrasound monitoring of bladder volume after outpatient surgery. *Anesth Analg* 1999;89(1):90-7.
125. Pavlin DJ, Pavlin EG, Fitzgibbon DR, Koerschgen ME, Plitt TM. Management of bladder function after outpatient surgery. *Anesthesiology* 1999;91(1):42-50.
126. Chung F, Kayumov L, Sinclair DR, Edward R, Moller HJ, Shapiro CM. What is the driving performance of ambulatory surgical patients after general anesthesia? *Anesthesiology* 2005;103(5):951-6.
127. Chung F, Assmann N. Car accidents after ambulatory surgery in patients without an escort. *Anesth Analg* 2008;106(3):817-20, table.
128. Grenier B, Dubreuil M, Siao D, Meymat Y. Paediatric day case anaesthesia: estimate of its quality at home. *Paediatr Anaesth* 1998;8(6):485-9.
129. Kokinsky E, Thornberg E, Ostlund AL, Larsson LE. Postoperative comfort in paediatric outpatient surgery. *Paediatr Anaesth* 1999;9(3):243-51.



130. Kotiniemi LH, Ryhänen PT, Valanne J, Jokela R, Mustonen A, Poukkula E. Postoperative symptoms at home following day-case surgery in children: a multicentre survey of 551 children. *Anaesthesia* 1997;52(10):963-9.
131. Letts M, Davidson D, Splinter W, Conway P. Analysis of the efficacy of pediatric day surgery. *Can J Surg* 2001;44(3):193-8.
132. Segerdahl M, Warren-Stomberg M, Rawal N, Bratwall M, Jakobsson J. Children in day surgery: clinical practice and routines. The results from a nation-wide survey. *Acta Anaesthesiol Scand* 2008;52(6):821-8.
133. Hicklin L, Tostevin PM, Wyatt ME. Parental satisfaction with paediatric day-case ENT surgery. *J Laryngol Otol* 1999;113(12):1072-5.
134. Darbyshire P. Mothers' experiences of their child's recovery in hospital and at home: a qualitative investigation. *J Child Health Care* 2003;7(4):291-312.
135. Jonas DA. Parent's management of their child's pain in the home following day surgery. *J Child Health Care* 2003;7(3):150-62.
136. Faponle AF, Usang UE. Post-operative symptoms at home in children following day case surgery. *Middle East J Anesthesiol* 2007;19(1):185-96.
137. Minai F, Shafiq F, Rehman A. Audit of postoperative nausea and vomiting in paediatric day case surgery. *J Pak Med Assoc* 2011;61(3):273-6.
138. Association des anesthésistes réanimateurs pédiatriques d'expression française, Conseil national de la chirurgie de l'enfant, Leculée R, Courrèges P. Chirurgie ambulatoire de l'enfant de moins de 18 ans: recommandations CNCE/ADARPEF. *Arch Pediatr* 2010;17(6):844-5.
139. Fleisher LA, Pasternak LR, Herbert R, Anderson GF. Inpatient hospital admission and death after outpatient surgery in elderly patients: importance of patient and system characteristics and location of care. *Arch Surg* 2004;139(1):67-72.
140. Canadian Ambulatory Anesthesia Research and Education, Bryson GL, Chung F, Finegan BA, Friedman Z, Miller DR, et al. Patient selection in ambulatory anesthesia. An evidence-based review: part I. *Can J Anaesth* 2004;51(8):768-81.
141. Canet J, Raeder J, Rasmussen LS, Enlund M, Kuipers HM, Hanning CD, et al. Cognitive dysfunction after minor surgery in the elderly. *Acta Anaesthesiol Scand* 2003;47(10):1204-10.
142. Australian Council on Healthcare Standards. Determining the potential to improve the quality of care in Australian health care organisations. ACHS clinical indicator results for Australia and New Zealand 1998-2003. Sydney: ACHS; 2004.
143. Levin P, Stanziola A, Hand R. Postoperative hospital retention following ambulatory surgery in a hospital-based program. *Qual Assur Util Rev* 1990;5(3):90-4.
144. Johnson CD, Jarrett PE. Admission to hospital after day case surgery. *Ann R Coll Surg Engl* 1990;72(4):225-8.
145. Rudkin GE, Osborne GA, Doyle CE. Assessment and selection of patients for day surgery in a public hospital. *Med J Aust* 1993;158(5):308-12.
146. Fleisher LA, Pasternak LR, Lyles A. A novel index of elevated risk of inpatient hospital admission immediately following outpatient surgery. *Arch Surg* 2007;142(3):263-8.
147. Davies KE, Houghton K, Montgomery JE. Obesity and day-case surgery. *Anaesthesia* 2001;56(11):1112-5.
148. Hofer RE, Kai T, Decker PA, Warner DO. Obesity as a risk factor for unanticipated admissions after ambulatory surgery. *Mayo Clin Proc* 2008;83(8):908-16.
149. Margovsky A. Unplanned admissions in day-case surgery as a clinical indicator for quality assurance. *Aust N Z J Surg* 2000;70(3):216-20.
150. Harahsheh BS. Unexpected admissions following a day case surgery. *Saudi Med J* 2001;22(10):882-4.
151. Shirakami G, Teratani Y, Namba T, Hirakata H, Tazuke-Nishimura M, Fukuda K. Delayed discharge and acceptability of ambulatory surgery in adult outpatients receiving general anesthesia. *J Anesth* 2005;19(2):93-101.
152. Blacoe DA, Cunning E, Bell G. Paediatric day-case surgery: an audit of unplanned hospital admission Royal Hospital for Sick Children, Glasgow. *Anaesthesia* 2008;63(6):610-5.
153. Henderson J, Goldacre MJ, Griffith M, Simmons HM. Day case surgery: geographical variation, trends

- and readmission rates. *J Epidemiol Community Health* 1989;43(3):301-5.
154. Sibbritt DW. Readmissions of day-only patients in NSW acute hospitals. *J Qual Clin Pract* 1994;14(1):31-8.
155. Deutsch N, Wu CL. Patient outcomes following ambulatory anesthesia. *Anesthesiol Clin North America* 2003;21(2):403-15.
156. Icenhour ML. Quality interpersonal care. A study of ambulatory surgery patients' perspectives. *AORN J* 1988;47(6):1414-9.
157. Hawkshaw D. A day surgery patient telephone follow-up survey. *Br J Nurs* 1994;3(7):348-50.
158. Rudkin GE, Bacon AK, Burrow B, Chapman MH, Claxton M, Donovan B, et al. Review of efficiencies and patient satisfaction in Australian and New Zealand day surgery units: a pilot study. *Anaesth Intensive Care* 1996;24(1):74-8.
159. Aldwinckle RJ, Montgomery JE. Unplanned admission rates and postdischarge complications in patients over the age of 70 following day case surgery. *Anaesthesia* 2004;59(1):57-9.
160. Canouï-Poitrine F, Logerot H, Frank-Soltysiak M. Évaluation de la satisfaction des professionnels et des patients d'une unité multidisciplinaire de chirurgie ambulatoire. *Pratiques et Organisation des Soins* 2008;39(4):323-30.
161. Holland MS, Counte MA, Hinrichs BG. Determinants of patient satisfaction with outpatient surgery. *Qual Manag Health Care* 1995;4(1):82-90.
162. Fung D, Cohen M. What do outpatients value most in their anesthesia care? *Can J Anaesth* 2001;48(1):12-9.
163. de Jesus G, Abbotts S, Collins B, Burvill A. Same day surgery: results of a patient satisfaction survey. *J Qual Clin Pract* 1996;16(3):165-73.
164. Fung D, Cohen MM. Measuring patient satisfaction with anesthesia care: a review of current methodology. *Anesth Analg* 1998;87(5):1089-98.
165. Mattila, K. Day Surgery in Finland. Randomized and cross-sectional studies on treatment, quality, and outcome. Academic dissertation. Helsinki: University of Helsinki; 2010.
166. Chanthong P, Abrishami A, Wong J, Herrera F, Chung F. Systematic review of questionnaires measuring patient satisfaction in ambulatory anesthesia. *Anesthesiology* 2009;110(5):1061-7.
167. Swan BA, Maislin G, Traber KB. Symptom distress and functional status changes during the first seven days after ambulatory surgery. *Anesth Analg* 1998;86(4):739-45.
168. Hogue SL, Reese PR, Colopy M, Fleisher LA, Tuman KJ, Twersky RS, et al. Assessing a tool to measure patient functional ability after outpatient surgery. *Anesth Analg* 2000;91(1):97-106.
169. Wong J, Tong D, De Silva Y, Abrishami A, Chung F. Development of the functional recovery index for ambulatory surgery and anesthesia. *Anesthesiology* 2009;110(3):596-602.
170. Myles PS, Hunt JO, Nightingale CE, Fletcher H, Beh T, Tanil D, et al. Development and psychometric testing of a quality of recovery score after general anesthesia and surgery in adults. *Anesth Analg* 1999;88(1):83-90.
171. Robaux S, Bouaziz H, Cornet C, Boivin JM, Lefèvre N, Laxenaire MC. Acute postoperative pain management at home after ambulatory surgery: a French pilot survey of general practitioners' views. *Anesth Analg* 2002;95(5):1258-62.
172. Caisse nationale d'assurance maladie des travailleurs salariés, Caisse centrale de la mutualité sociale agricole, Caisse nationale de l'assurance maladie des professions indépendantes. Condition du développement de la chirurgie ambulatoire. Dépenses de l'assurance maladie : étude comparative entre les prises en charge en hospitalisation complète et ambulatoire en 2001. Paris: CNAMTS; 2003.
173. Organisation for Economic Co-operation and Development. Health at a Glance 2011: OECD Indicators. Paris: OECD; 2011.
174. Caisse nationale d'assurance maladie des travailleurs salariés. La chirurgie ambulatoire dans les établissements de santé français : une évolution positive entre 2006 et 2008 2009. [www.ameli.fr/fileadmin/user\\_upload/documents/Dossier\\_de\\_presse\\_Chirurgie\\_ambulatoire\\_vdef2.pdf](http://www.ameli.fr/fileadmin/user_upload/documents/Dossier_de_presse_Chirurgie_ambulatoire_vdef2.pdf).

175. Fedorowicz Z, Lawrence D, Gutierrez P, van Zuuren EJ. Day care versus in-patient surgery for age-related cataract. *Cochrane Database of Systematic Reviews* 2011;7:CD004242.
176. Gurusamy K, Junnarkar S, Farouk M, Davidson BR. Meta-analysis of randomized controlled trials on the safety and effectiveness of day-case laparoscopic cholecystectomy. *Br J Surg* 2008;95(2):161-8.
177. Ahmad NZ, Byrnes G, Naqvi SA. A meta-analysis of ambulatory versus inpatient laparoscopic cholecystectomy. *Surg Endosc* 2008;22(9):1928-34.
178. Bona S, Monzani R, Fumagalli Romario U, Zago M, Mariani D, Rosati R. Outpatient laparoscopic cholecystectomy: a prospective study of 250 patients. *Gastroenterol Clin Biol* 2007;31(11):1010-5.
179. Paquette IM, Smink D, Finlayson SR. Outpatient cholecystectomy at hospitals versus freestanding ambulatory surgical centers. *J Am Coll Surg* 2008;206(2):301-5.
180. Jain PK, Hayden JD, Sedman PC, Royston CM, O'Boyle CJ. A prospective study of ambulatory laparoscopic cholecystectomy: training economic, and patient benefits. *Surg Endosc* 2005;19(8):1082-5.
181. Castells X, Alonso J, Castilla M, Ribo C, Cots F, Anto JM. Outcomes and costs of outpatient and inpatient cataract surgery: a randomised clinical trial. *J Clin Epidemiol* 2001;54(1):23-9.
182. Kalady MF, Fields RC, Klein S, Nielsen KC, Mantyh CR, Ludwig KA. Loop ileostomy closure at an ambulatory surgery facility: a safe and cost-effective alternative to routine hospitalization. *Dis Colon Rectum* 2003;46(4):486-90.
183. Virtanen H, Salanterä S, Johansson K, Heikkinen K, Hiltunen A, Kaljonen A, et al. A survey of patients' personal expenditure related to ambulatory surgery. *Ambul Surg* 2009;15(4):73-6.
184. Ibáñez R, Sánchez JC, Al Saied SA, Vallejo JA, Canales JM, Priet CB, et al. Study of accessibility costs and satisfaction comparing a MAS unit incorporated in a Hospital versus a theoretical model in a peripheral centre. *Cir Esp* 2011;89(1):42-54.
185. European Observatory on Health Systems and Policies Series, Busse R, Geissler A, Quentin W, Wiley M. Diagnosis-related groups in Europe: moving towards transparency, efficiency and quality in hospitals. Maidenhead: Open University Press; 2011.
186. Cour des comptes. La mise en oeuvre de la T2A : bilan à mi-parcours. In: Cour des comptes, ed. *Rapport sur l'application des lois de financement de la sécurité sociale 2009*. Paris: Cour des comptes; 2009. p. 171-212.
187. Mission nationale d'expertise et d'audit hospitaliers. Nouvelle gouvernance et comptabilité analytique par pôles. Paris: MEAH; 2009.  
[www.anap.fr/uploads/tx\\_sabasedocu/Nouvelle\\_gouvernance\\_et\\_compta\\_analytique\\_2009.pdf](http://www.anap.fr/uploads/tx_sabasedocu/Nouvelle_gouvernance_et_compta_analytique_2009.pdf)
188. Mallot, J. Rapport d'information déposé en application de l'article 145 du règlement par la Commission des affaires sociales en conclusion des travaux de la mission d'évaluation et de contrôle des lois de financement de la sécurité sociale sur le fonctionnement de l'hôpital. Paris: Assemblée nationale; 2010.  
[www.assemblee-nationale.fr/13/rap-info/i2556.asp](http://www.assemblee-nationale.fr/13/rap-info/i2556.asp)
189. Commission des comptes de la sécurité sociale. Les comptes de la sécurité sociale. Résultats 2009, prévisions 2010. Paris: Commission des comptes de la sécurité sociale; 2010.  
[www.ladocumentationfrancaise.fr/var/storage/rapports-publics//104000286/0000.pdf](http://www.ladocumentationfrancaise.fr/var/storage/rapports-publics//104000286/0000.pdf)
190. Agence technique de l'information sur l'hospitalisation. Evolution de la notion de séjours bas en v10 et en v11. Lyon: ATIH; 2009.  
[www.atih.sante.fr/openfile.php?id=2531](http://www.atih.sante.fr/openfile.php?id=2531)
191. Cash, E, Cash, R, Dupilet, C, Direction de la recherche des études de l'évaluation et des statistiques. La réactivité des établissements de santé aux incitations tarifaires. Rapport final. Paris: DREES; 2011.  
[www.sante.gouv.fr/IMG/pdf/serieetud106.pdf](http://www.sante.gouv.fr/IMG/pdf/serieetud106.pdf)
192. Cash E, Cash R, Dupilet C. La réactivité des établissements de santé aux incitations tarifaires. *Dossiers Solidarité et Santé* 2011;(21):1-31.
193. Direction générale de l'offre de soins. Guide méthodologique pour l'élaboration des CPOM. Paris: DGOS; 2012.  
[www.sante.gouv.fr/IMG/pdf/Guide\\_CPOM\\_2012.pdf](http://www.sante.gouv.fr/IMG/pdf/Guide_CPOM_2012.pdf)
194. Day Surgery Data Project. Report on DS current organization and performance in participating countries.

WP4. DSDP; 2011.

[www.gencat.cat/salut/depsan/units/aatrm/pdf/daysafe\\_finalreportwp4.pdf](http://www.gencat.cat/salut/depsan/units/aatrm/pdf/daysafe_finalreportwp4.pdf)

195. Société française d'anesthésie et de réanimation. Prise en charge des nausées et vomissements postopératoires. Conférence d'experts. Texte court. Paris: SFAR; 2007.

[www.sfar.org/\\_docs/articles/cexp\\_nvpo.pdf](http://www.sfar.org/_docs/articles/cexp_nvpo.pdf)

196. Caisse nationale d'assurance maladie des travailleurs salariés. Evolution des parts de marché de la chirurgie « classique » dans 20 régions entre 1999 et 2001 : réalités et perspectives. Paris: CNAMTS; 2004.

[www.ameli.fr/fileadmin/user\\_upload/documents/Evolution\\_des\\_parts\\_de\\_marche.pdf](http://www.ameli.fr/fileadmin/user_upload/documents/Evolution_des_parts_de_marche.pdf)

197. Caisse nationale d'assurance maladie des travailleurs salariés, Caisse centrale de la mutualité sociale

agricole, Caisse nationale de l'assurance maladie des professions indépendantes. Condition du développement de la chirurgie ambulatoire. Évaluation du potentiel de substitution pour 18 gestes marqueurs en juin 2001. Fascicule 2 : résultats régionaux. Paris: CNAMTS; 2003.

198. Caisse nationale d'assurance maladie des travailleurs salariés, Caisse centrale de la mutualité sociale agricole, Caisse nationale de l'assurance maladie des professions indépendantes. Condition du développement de la chirurgie ambulatoire. Freins et Leviers. Enquête d'opinion de professionnels dans les établissements de santé en 2001. Paris: CNAMTS; 2003.

[www.parhtage.sante.fr/re7/aqu/doc.nsf/VDoc/C3C6B7A5AA2B85A1C1257289002B3A3E/\\$FILE/PNIR\\_chirurgie\\_ambulatoire\\_freins\\_et\\_leviers.pdf](http://www.parhtage.sante.fr/re7/aqu/doc.nsf/VDoc/C3C6B7A5AA2B85A1C1257289002B3A3E/$FILE/PNIR_chirurgie_ambulatoire_freins_et_leviers.pdf)

# ANNEXE 1. LITERATURE SEARCH STRATEGY

---

Research has addressed the ambulatory surgery as a whole, and not otherwise.

Literature searches were conducted from June 2011 to March 2012, and served as a working basis for the entire project, both on the organizational aspects and clinical aspects.

## Sources

- Automated bibliographic data bases:
  - Medline (National Library of Medicine, United-States);
  - Econlit;
  - The Cochrane Library (Wiley Interscience, United-States);
  - BDSP – Banque de données en santé publique;
  - National Guideline Clearinghouse (Agency for Healthcare Research and Quality, United-States);
  - HTA Database (International Network of Agencies for Health Technology Assessment).

Total number of references obtained: 8 797.

Total number of references analysed: 953.

Total number of references used: 198.

In addition, summaries of the following journals have been exploited throughout the project:

- Annals of Internal Medicine;
- Archives of Internal Medicine;
- British Medical Journal;
- Canadian Medical Association Journal;
- JAMA;
- Lancet;
- New England Journal of Medicine;
- Presse Médicale;
- Surgery;
- Ambulatory Surgery;
- British Journal of Surgery;
- Archives of Surgery;
- “Annales de Chirurgie”;
- “Journal de Chirurgie”.

Study type / topic	Terms	Research period	Number of references
Recommendations		01/2000–02/2012	
Step 1	"Ambulatory Surgical Procedures"[Mesh] OR "Surgicenters"[Mesh] OR (Ambulatory Surgery OR Outpatient Surgery OR Outpatient Surgeries OR Ambulatory Surgeries OR Day Surgeries OR Day Surgery OR Surgicenters OR day case surgery Or same day surgery) Field: Title		
AND			
Step 2	Guidelines as Topic[MeSH] OR Practice Guidelines as Topic[MeSH] OR Health Planning Guidelines[MeSH] OR Guideline[Publication Type] OR "Standard of Care"[Mesh] OR "Consensus"[Mesh] OR "Consensus Development Conferences as Topic"[Mesh] OR "Consensus Development Conferences, NIH as Topic"[Mesh] OR "Consensus Development Conference, NIH"[Publication Type] OR "Consensus Development Conference"[Publication Type] Or (consensus OR guideline* OR recommend* Or standard) Field: Title		99
Clinical pathway		01/1990–02/2012	
Step 1			
AND			
Step 3	"Critical Pathways"[Mesh] OR "Case Management"[Mesh] OR "Patient Care Planning"[Mesh:NoExp] OR (protocol OR pathway) Field: Title		109
Readmission (all study types)		01/2000–02/2012	
Step 1			
AND			
Step 4	"Patient Readmission"[Mesh] OR (re-admission OR readmission) Title		58
Anesthesia / Meta-analyzes, systematic reviews		01/2000–02/2012	
Step 1			
AND			
Step 5	"Anesthesia"[Majr] OR Anesthes*[Title] AND ("Meta-Analysis as Topic"[Mesh] OR "Meta-Analysis"[Publication Type] OR "Review Literature as Topic"[Mesh] OR "Meta Analysis" OR "systematic Review" OR "Literature review" Or "Quantitative Review" [Field: Title/Abstract		11
Anesthesia / Randomized Controlled Trials		01/2000–02/2012	
Step 1			
AND			
Step 6	"Anesthesia"[Majr] OR Anesthes*[Title] AND "Random Allocation"[Mesh] OR "Randomized Controlled Trials as Topic"[Mesh] OR "Randomized Controlled Trial"[Publication Type] OR Random*[title :abstract]		265





Study type / topic	Terms	Research period	Number of references
Anesthetic complications in children		01/2000–02/2012	
Step 1			
AND			
Step 7	("Anesthesia"[Mesh] OR Anesthes* Field: Title) AND mortality Or death OR "mortality"[Mesh] OR "Cause of Death"[Mesh] Field: Title OR "Postoperative Complications"[Mesh] OR "Anesthesia/ complications"[Mesh] OR "intraoperative complications"[Mesh] OR complication* Field: Title) AND ("child"[Mesh] OR "Pediatrics"[Mesh] OR child* Or infan* or pediatric* or paediatric Field: Title)		67
Anesthetic complications in the elderly		01/2000–02/2012	
Step 1			
AND			
Step 8	("Anesthesia"[Mesh] OR Anesthes* Field: Title) AND mortality Or death OR "mortality"[Mesh] OR "Cause of Death"[Mesh] Field: Title OR "Postoperative Complications"[Mesh] OR "Anesthesia/ complications"[Mesh] OR "intraoperative complications"[Mesh] OR complication* Field: Title) AND "Aged"[Mesh] OR elder*Field: Title		117
Complications / Meta-analyzes, systematic reviews		01/2000–02/2012	
Step 1			
AND			
Step 9	("Postoperative Complications"[Mesh]OR "intraoperative complications"[Mesh] OR complication*Field: Title)OR"Ambulatory Surgical Procedures/adverse effects"[Mesh] AND("Meta-Analysis as Topic"[Mesh] OR "Meta-Analysis "[Publication Type] OR "Review Literature as Topic"[Mesh] OR "Meta Analysis" OR "systematic Review" OR "Literature review" Or "Quantitative Review" [Field: Title/Abstract]		33
Complications / Randomized Controlled Trials		01/2000–02/2012	
Step 1			
AND			
Step 10	("Postoperative Complications"[Mesh]OR "intraoperative complications"[Mesh] OR complication*Field: Title) OR "Ambulatory Surgical Procedures/adverse effects"[Mesh] AND "Random Allocation"[Mesh] OR "Randomized Controlled Trials as Topic"[Mesh] OR "Randomized Controlled Trial "[Publication Type] OR Random* [title:abstract]		374

Study type / topic	Terms	Research period	Number of references
Postoperative pain		01/2005–02/2012	
Step 1			
AND			
Step 11	"Pain, Postoperative"[Mesh:NoExp] Or pain Field: title	181	
Nausea / vomiting		01/2005–02/2012	
Step 1			
AND			
Step 12	"Postoperative Nausea and Vomiting"[Mesh] OR Nausea OR Vomit? Field: Title		107
Urinary retention		01/2005–02/2012	
Step 1			
AND			
Step 13	"Urinary Retention"[Mesh] Or urinary retention Field: Title	10	
Patient discharge / All types of studies		01/2000–02/2012	
Step 1			
AND			
Step 14	"Patient Discharge"[Mesh] OR discharge Field: Title]		177
Mortality / All types of studies		01/2000–02/2012	
Step 1			
AND			
Step 15	(mortality Or death Field: Title OR "mortality"[Mesh] OR "Cause of Death"[Mesh]) OR "Ambulatory Surgical Procedures/mortality"[Mesh]		105
Child care / Randomized Controlled Trials		01/2000–02/2012	
Step 1			
AND			
Step 16	("child"[Mesh] OR "Pediatrics"[Mesh] OR child* Or infan** or pediatric* or paediatric Field: Title AND "Random Allocation"[Mesh] OR "Randomized Controlled Trials as Topic"[Mesh] OR "Randomized Controlled Trial "[Publication Type] OR Random*[title:abstract]		39



Study type / topic	Terms	Research period	Number of references
Child Care / all types of studies but randomized controlled trials		01/2000–02/2012	
Step 1			
AND			
Step 17	("child"[Mesh] OR "Pediatrics"[Mesh] OR child* Or infan** or pediatric* or paediatric Field: Title NOT "Random Allocation"[Mesh] OR "Randomized Controlled Trials as Topic"[Mesh] OR "Randomized Controlled Trial "[Publication Type] OR Random*[title:abstract])		177
Postoperative management / literature reviews, meta-analyses		01/2000–02/2012	
Step 1			
AND			
Step 18	("Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Pain, Postoperative"[Mesh] OR "Postoperative Hemorrhage"[Mesh] OR "Postoperative Nausea and Vomiting"[Mesh]) AND ("Meta-Analysis as Topic"[Mesh] OR "Meta-Analysis "[Publication Type] OR "Review Literature as Topic"[Mesh] OR "Meta Analysis" OR "systematic Review" OR "Literature review" Or "Quantitative Review" Field:Title/Abstract		25
Postoperative management / Randomized Controlled Trials		01/2000–02/2012	
Step 1			
AND			
Step 19	("Postoperative Period"[Mesh] OR "Postoperative Care"[Mesh] OR "Pain, Postoperative"[Mesh] OR "Postoperative Hemorrhage"[Mesh] OR "Postoperative Nausea and Vomiting"[Mesh]) AND "Random Allocation"[Mesh] OR "Randomized Controlled Trials as Topic"[Mesh] OR "Randomized Controlled Trial "[Publication Type] OR Random* Field:Title/Abstract		359
Quality of Life / All types of studies		01/2000–02/2012	
Step 1			
AND			
Step 20	("Quality of Life"[Mesh] or quality of life Field: Title)		68
Quality of Life / All types of studies		01/2000–02/2012	
Step 1			
AND			
Step 21	(patient safety Or risk management) Field: Title OR "Risk Management"[Mesh] OR "Safety Management"[Mesh] AND ("Meta-Analysis as Topic"[Mesh] OR "Meta-Analysis "[Publication Type] OR "Review Literature as Topic"[Mesh] OR "Meta Analysis" OR "systematic Review" OR "Literature review" Or "Quantitative Review" Field :Title/Abstract		3

Study type / topic	Terms	Research period	Number of references
Risk management, patient safety / Randomized Controlled Trials		01/2000–02/2012	
Step 1			
AND			
Step 22	(patient safety Or risk management) Field: Title OR "Risk Management"[Mesh] OR "Safety Management"[Mesh] AND "Random Allocation"[Mesh] OR "Randomized Controlled Trials as Topic"[Mesh] OR "Randomized Controlled Trial "[Publication Type] OR Random* Field:Title/ Abstract		22
Satisfaction of patients and professionals meta-analyses, systematic reviews		01/2000–02/2012	
Step 1			
AND			
Step 23	("Personal Satisfaction"[Mesh] OR "Job Satisfaction"[Mesh] OR "Patient Satisfaction"[Mesh] OR "Consumer Satisfaction"[Mesh]) AND Meta-Analysis as Topic"[Mesh] OR "Meta-Analysis "[Publication Type] OR "Review Literature as Topic"[Mesh] OR "Meta Analysis" OR "systematic Review" OR "Literature review" Or "Quantitative Review" Field : Title		8
Satisfaction of patients and professionals / Randomized Controlled Trials		01/2000–02/2012	
Step 1			
AND			
Step 24	AND ("Personal Satisfaction"[Mesh] OR "Job Satisfaction"[Mesh] OR "Patient Satisfaction"[Mesh] OR "Consumer Satisfaction"[Mesh]) AND "Random Allocation"[Mesh] OR "Randomized Controlled Trials as Topic"[Mesh] OR "Randomized Controlled Trial "[Publication Type] OR Random* Field : Title/Abstract		88
Patient selection meta-analyses, systematic reviews		01/2000–02/2012	
Step 1			
AND			
Step 25	patient Selection Field: Title OR "patient selection"[Mesh]) AND Meta-Analysis as Topic"[Mesh] OR "Meta-Analysis "[Publication Type] OR "Review Literature as Topic"[Mesh] OR "Meta Analysis" OR "systematic Review" OR "Literature review" Or "Quantitative Review" Field : Title		2
Patient Selection / Randomized Controlled Trials		01/2000–02/2012	
Step 1			
AND			
Step 26	(Patient Selection Field: Title OR "patient selection"[Mesh]) AND "Random Allocation"[Mesh] OR "Randomized Controlled Trials as Topic"[Mesh] OR "Randomized Controlled Trial "[Publication Type] OR Random* Field : Title/Abstract		10



Study type / topic	Terms	Research period	Number of references
"Day surgery" versus "Inpatient surgery"		01/2000–02/2012	
Step 1			
AND			
Step 27	"in hospital" OR "in-patient" OR "in patient" OR traditional OR overnight Field: Title		77
Admission		01/2000–02/2012	
Step 1			
AND			
Step 28	"Patient Admission"[Mesh] or admission Field : Title		83
Nosocomial infections in ambulatory surgery		01/2000–02/2012	
Step 1			
AND			
Step 29	"Cross Infection"[Mesh] OR "Surgical Wound Infection"[Mesh] Or infection Field : Title	80	
Economical aspects		01/2000–02/2012	
Step 1			
AND			
Step 30	"Accounting"[Mesh] OR "Financial Management"[Mesh] OR "Financial Management, Hospital"[Mesh] OR "Health Expenditures"[Mesh] OR "Marketing of Health Services"[Mesh] OR "Reimbursement Mechanisms"[Mesh] OR "Physician Incentive Plans"[Mesh] OR Reimbursement, Incentive OR Reimbursement Mechanisms OR "Financing, Organized"[Mesh] OR "Diagnosis-Related Groups"[Mesh] OR "Prospective Payment System"[Mesh] OR "Economics, Hospital"[Mesh] OR "Economics"[Mesh] "Cost Allocation"[MeSH] OR "Cost-Benefit Analysis"[MeSH] OR "Costs and Cost Analysis"[MeSH] OR "Cost Control"[MeSH] OR "Cost Savings"[MeSH] OR "Cost of Illness"[MeSH] OR "Health Care Costs"[MeSH] OR "Economics, Medical"[Mesh] OR "economics"[MeSH] OR "Cost Sharing"[Mesh] OR Cost OR economic* OR indirect cost OR reimbursement OR payment OR Payment for performance OR (P4P) OR Payment by results Field : Title OR "Ambulatory Surgical Procedures/economics"[Mesh] OR Surgicenters/economics"[Mesh]	652	



Study type / topic	Terms	Research period	Number of references
Organisations (all types)		01/2000–02/2012	
Step 31	<p>"Ambulatory Surgical Procedures"[Majr] OR "Surgicenters"[Majr] OR Ambulatory Surgery OR Outpatient Surgery OR Outpatient Surgeries OR Ambulatory Surgeries OR Day Surgeries OR Day Surgery OR Surgicenters OR day case surgery Or same day surgery Field: Title AND "Organization and Administration"[Majr:NoExp] OR "Capacity Building"[Majr] OR "Decision Making, Organizational"[Majr] OR "Fee Schedules"[Majr] OR "Health Facility Administration"[Majr] OR "Health Facilities"[Majr] OR "Health Personnel"[Majr] OR "Maintenance"[Majr] OR "Financial Management, Hospital"[Majr] OR "Materials Management, Hospital"[Majr] OR "Management Information Systems"[Majr] OR "Models, Organizational"[Majr] OR "Personnel Management"[Majr] OR "Waiting Lists"[Majr] OR "Patient Selection"[Majr] OR "Patient Readmission"[Majr] OR "Organizational Culture"[Majr] OR "Organizational Objectives"[Majr] OR "Program Development"[Majr] OR "Risk Management"[Majr] OR "Safety Management"[Majr] OR "Time Management"[Majr] Or organiz* Field: Title AND "Comparative Effectiveness Research"[Mesh] OR "Efficiency"[Mesh] OR "Outcome and Process Assessment (Health Care)"[Mesh] OR "Peer Review, Health Care"[Mesh] OR "Health Care Quality, Access, and Evaluation"[Mesh] OR "Management Audit"[Mesh] OR "Financial Audit"[Mesh] OR "Quality Assurance, Health Care"[Mesh] OR "Total Quality Management"[Mesh] OR "Total Quality Management"[Mesh] OR "Reference Standards"[Mesh] OR "Quality Indicators, Health Care"[Mesh] OR "Management Quality Circles"[Mesh] OR "Total Quality Management"[Mesh] OR "Quality Control"[Mesh] OR "Quality Improvement"[Mesh] OR "Utilization Review"[Mesh] OR "Health Care Evaluation Mechanisms"[Mesh] OR "Accreditation"[Mesh] OR "Benchmarking"[Mesh] OR "Outcome Assessment (Health Care)"[Mesh] OR "Process Assessment (Health Care)"[Mesh] OR "Program Evaluation"[Mesh] OR "Evaluation Studies as Topic"[Mesh] Or performance Or efficiency Or effectiveness Field: Title</p>		766
French literature			
Step 32	"chirurgie ambulatoire" Or chirurgie sans hospitalisation OU chirurgie d'un jour		262



# WEBSITES

International companies outpatient surgery websites, learned societies of general and specialized surgery, anesthesia, accreditation-ment agencies, security agencies and improving patient quality of care, and finally

health economics and administrative authorities sites were explored in addition to sources interviewed systematically.

Organisms	URL
Adelaide Health Technology Assessment	<a href="http://www.adelaide.edu.au/ahta">www.adelaide.edu.au/ahta</a>
Agence technique de l'information hospitalière	<a href="http://www.atih.sante.fr">www.atih.sante.fr</a>
Agencia de Evaluación de Tecnología e Investigación Médicas de Cataluña	<a href="http://www.gencat.cat/salut/depsan/units/aatrm/html/es/Du8/index.html">www.gencat.cat/salut/depsan/units/aatrm/html/es/Du8/index.html</a>
Agencia de Evaluación de Tecnologías Sanitarias de Galicia	<a href="http://www.sergas.es/MostrarContidos_Portais.aspx?IdPaxina=60538">www.sergas.es/MostrarContidos_Portais.aspx?IdPaxina=60538</a>
Agency for Healthcare Research and Quality	<a href="http://www.ahrq.gov">www.ahrq.gov</a>
Agency for Healthcare Research and Quality /National Quality Measures	<a href="http://qualitymeasures.ahrq.gov">qualitymeasures.ahrq.gov</a>
Agency for Healthcare Research and Quality /Patient Safety Network	<a href="http://psnet.ahrq.gov">psnet.ahrq.gov</a>
Alberta Heritage Foundation for Medical Research	<a href="http://hwww.rso.ualberta.ca/ahfmr.cfm">hwww.rso.ualberta.ca/ahfmr.cfm</a>
Ambulatory Surgery Center Association	<a href="http://www.ascassociation.org/Home">www.ascassociation.org/Home</a>
American Academy of Pediatrics	<a href="http://www.aap.org">www.aap.org</a>
American Academy of Ophthalmology	<a href="http://www.aaoo.org">www.aaoo.org</a>
American College of Physicians	<a href="http://hwww.acponline.org">hwww.acponline.org</a>
American College of Surgeons	<a href="http://www.facs.org">www.facs.org</a>
American Association for Accreditation of Ambulatory Surgery Facilities	<a href="http://www.aaaasf.org">www.aaaasf.org</a>
American Medical Association	<a href="http://www.ama-assn.org">www.ama-assn.org</a>
American Society of Anesthesiologists	<a href="http://www.asahq.org">www.asahq.org</a>
American Society of Colon and Rectal Surgeons	<a href="http://www.fascrs.org">www.fascrs.org</a>
Asociación Española de Cirugía Mayor Ambulatoria (ASECMA)	<a href="http://web.asecma.org">web.asecma.org</a>
Association of Anaesthetists of Great Britain and Ireland	<a href="http://www.fascrs.org/physicians">www.fascrs.org/physicians</a>
Association française de chirurgie ambulatoire	<a href="http://www.chirurgie-ambulatoire.org">www.chirurgie-ambulatoire.org</a>
Association française de pédiatrie ambulatoire	<a href="http://www.afpa.org">www.afpa.org</a>
Association des anesthésistes-réanimateurs d'expression française	<a href="http://www.adarpef.org">www.adarpef.org</a>
Association belge pour la chirurgie ambulatoire	<a href="http://www.baas.be/mn_francais.htm">www.baas.be/mn_francais.htm</a>
Association of Paediatric Anaesthetists of Great Britain and Ireland	<a href="http://www.apagbi.org.uk">www.apagbi.org.uk</a>
Assurance maladie	<a href="http://www.ameli.fr/l-assurance-maladie/connaitre-l-assurance-maladie/missions-et-organisation/l-assurance-maladie/les-missions-de-la-cnamts.php">www.ameli.fr/l-assurance-maladie/connaitre-l-assurance-maladie/missions-et-organisation/l-assurance-maladie/les-missions-de-la-cnamts.php</a>
Audit Commission (UK)	<a href="http://www.audit-commission.gov.uk/Pages/default.aspx">www.audit-commission.gov.uk/Pages/default.aspx</a>
Australian Patient Safety Foundation	<a href="http://www.apsf.net.au">www.apsf.net.au</a>

Organisms	URL
Australian Commission on Safety and Quality in Health Care	<a href="http://www.safetyandquality.gov.au">www.safetyandquality.gov.au</a>
Australian Council on Healthcare Standards	<a href="http://www.achs.org.au">www.achs.org.au</a>
Australian Day Hospital Association	<a href="http://www.adha.asn.au">www.adha.asn.au</a>
Australian Day Surgery Nurses Association	<a href="http://www.adsna.info">www.adsna.info</a>
Australian Government – Department of Health and Ageing	<a href="http://www.health.gov.au">www.health.gov.au</a>
Blue Cross Blue Shield Association – Technology Evaluation Center	<a href="http://www.bcbs.com">www.bcbs.com</a>
Bibliothèque médicale Lemanissier	<a href="http://www.bmlweb.org">www.bmlweb.org</a>
British Association of Day Surgery	<a href="http://daysurgeryuk.net/bads/joomla">daysurgeryuk.net/bads/joomla</a>
British Association of Pediatric surgeons	<a href="http://www.baps.org.uk">www.baps.org.uk</a>
British Society of Gastroenterology	<a href="http://www.bsg.org.uk">www.bsg.org.uk</a>
Canadian Association for Accreditation of Ambulatory Surgical Facilities	<a href="http://caaasf.org">caaasf.org</a>
Canadian Agency for Drugs and Technologies in Health	<a href="http://cadth.ca">cadth.ca</a>
Comité de coordination de l'évaluation clinique et de la qualité en Aquitaine	<a href="http://www.cceccqa.asso.fr">www.cceccqa.asso.fr</a>
Centers for Disease Control and Prevention	<a href="http://www.cdc.gov">www.cdc.gov</a>
California Technology Assessment Forum	<a href="http://www.ctaf.org">www.ctaf.org</a>
CHKS Healthcare Accreditation & Quality Unit	<a href="http://www.chks.co.uk">www.chks.co.uk</a>
Care quality commission	<a href="http://www.cqc.org.uk">www.cqc.org.uk</a>
Canadian Anesthesiologists' Society	<a href="http://www.cas.ca">www.cas.ca</a>
Centre fédéral d'expertise des soins de santé	<a href="http://kce.fgov.be/fr">kce.fgov.be/fr</a>
CISMeF	<a href="http://www.chu-rouen.fr/cismef">www.chu-rouen.fr/cismef</a>
CMAInfobase	<a href="http://www.cma.ca/index.php/ci_id/54316/la_id/1.htm">www.cma.ca/index.php/ci_id/54316/la_id/1.htm</a>
Collège des médecins du Québec	<a href="http://www.cmq.org">www.cmq.org</a>
College of Physicians and Surgeons of Ontario	<a href="http://www.cpso.on.ca">www.cpso.on.ca</a>
Cochrane Library Database	<a href="http://www.cochrane.org">www.cochrane.org</a>
Collège français des anesthésistes et réanimateurs	<a href="http://www.cfar.org">www.cfar.org</a>
Council for Health Service Accreditation of Southern Africa	<a href="http://www.cohsasa.co.za">www.cohsasa.co.za</a>
Cour des comptes	<a href="http://www.ccomptes.fr/fr/JF/Accueil.html">www.ccomptes.fr/fr/JF/Accueil.html</a>
Conseil canadien d'agrément des services de santé	<a href="http://www.accreditation.ca">www.accreditation.ca</a>
Centre for Review and Dissemination databases	<a href="http://www.york.ac.uk/inst/crd">www.york.ac.uk/inst/crd</a>
Danish Association of Day Surgery	<a href="http://www.dsd.dk">www.dsd.dk</a>
Danish Institute for Quality and Accreditation in Healthcare	<a href="http://www.ikas.dk/English.aspx">www.ikas.dk/English.aspx</a>
DaySafe	<a href="http://www.daysafe.eu">www.daysafe.eu</a>

Organisms	URL
Department of Health (UK)	<a href="http://www.dh.gov.uk/en/index.htm">www.dh.gov.uk/en/index.htm</a>
Department of Health and Human Services, Tasmania	<a href="http://www.dhhs.tas.gov.au">www.dhhs.tas.gov.au</a>
Department of Health, Victoria	<a href="http://www.health.vic.gov.au">www.health.vic.gov.au</a>
Direction de la recherche, des études, de l'évaluation et des statistiques	<a href="http://www.sante.gouv.fr/direction-de-la-recherche-des-etudes-de-l-evaluation-et-des-statistiques-drees,5876.html">www.sante.gouv.fr/direction-de-la-recherche-des-etudes-de-l-evaluation-et-des-statistiques-drees,5876.html</a>
Dutch Association of Day Care & Short Stay	<a href="http://www.nvdk.nl">www.nvdk.nl</a>
ECRI Institute	<a href="http://www.ecri.org">www.ecri.org</a>
Évaluation des technologies de santé pour l'aide à la décision	<a href="http://www.etsad.fr/etsad/index.php">www.etsad.fr/etsad/index.php</a>
European Society of Anaesthesiology	<a href="http://www.euroanesthesia.org">www.euroanesthesia.org</a>
European Network of Economic Policy Research Institutes	<a href="http://www.enepri.org">www.enepri.org</a>
European Society of Gastrointestinal Endoscopy	<a href="http://www.esge.com">www.esge.com</a>
European Network for Patient Safety	<a href="http://90plan.ovh.net/~extranet">90plan.ovh.net/~extranet</a>
Euroscan	<a href="http://euroscan.org.uk">euroscan.org.uk</a>
Fédération hospitalière de France	<a href="http://www.fhf.fr">www.fhf.fr</a>
Fédération des établissements hospitaliers et d'aide à la personne	<a href="http://www.fehap.fr">www.fehap.fr</a>
Fondation pour la sécurité des patients	<a href="http://www.patientensicherheit.ch/fr/actualite.html">www.patientensicherheit.ch/fr/actualite.html</a>
German Association for Ambulatory Surgery	<a href="http://www.operieren.de">www.operieren.de</a>
GIN (Guidelines International Network)	<a href="http://www.g-i-n.net">www.g-i-n.net</a>
Haut Conseil de la Santé publique	<a href="http://www.hcsp.fr/explore.cgi/accueil?ae=accueil">www.hcsp.fr/explore.cgi/accueil?ae=accueil</a>
Haute Autorité de Santé	<a href="http://www.has-sante.fr/portail/jcms/j_5/accueil">www.has-sante.fr/portail/jcms/j_5/accueil</a>
Health and Safety Commission	<a href="http://www.hse.gov.uk">www.hse.gov.uk</a>
Health Economics Research and Evaluation	<a href="http://www.chere.uts.edu.au/about/index.html">www.chere.uts.edu.au/about/index.html</a>
Health foundation	<a href="http://www.health.org.uk">www.health.org.uk</a>
Health Information and Quality Authority	<a href="http://www.hiqa.ie">www.hiqa.ie</a>
Health Quality and Safety Commission of New Zealand	<a href="http://www.hqsc.govt.nz">www.hqsc.govt.nz</a>
Italian Society of Ambulatory Surgery and Day Surgery	<a href="http://www.sicads.com">www.sicads.com</a>
Health Quality Service	<a href="http://www.ukaf.org.uk/HQS.htm">www.ukaf.org.uk/HQS.htm</a>
King's Fund	<a href="http://www.kingsfund.org.uk">www.kingsfund.org.uk</a>
Horizon Scanning	<a href="http://www.horizonsscanning.gov.au">www.horizonsscanning.gov.au</a>
Ideas Repec database	<a href="http://repec.org">repec.org</a>
Inspection générale des affaires sociales	<a href="http://www.igas.gouv.fr">www.igas.gouv.fr</a>

Organisms	URL
Institut de santé et d'économie	<a href="http://www.isesuisse.ch/fr/index.htm">www.isesuisse.ch/fr/index.htm</a>
Institute for Health Economics Alberta	<a href="http://www.ihe.ca">www.ihe.ca</a>
Institut canadien pour la sécurité des patients	<a href="http://hwww.patientsafetyinstitute.ca/french/Pages/default.aspx">hwww.patientsafetyinstitute.ca/french/Pages/default.aspx</a>
Institute for Healthcare Improvement	<a href="http://www.ihl.org/Pages/default.aspx">www.ihl.org/Pages/default.aspx</a>
Institute for Clinical Evaluative Sciences	<a href="http://www.ices.on.ca">www.ices.on.ca</a>
Institute for Clinical Systems Improvement	<a href="http://www.icsi.org">www.icsi.org</a>
Institute of Medicine (IOM)	<a href="http://www.iom.edu">www.iom.edu</a>
International Health Economics Association	<a href="http://www.healtheconomics.org">www.healtheconomics.org</a>
International Association for Ambulatory Surgery	<a href="http://www.iaas-med.com">www.iaas-med.com</a>
Institut national d'excellence en santé et en services sociaux	<a href="http://www.inesss.qc.ca">www.inesss.qc.ca</a>
Instituto de Salud Carlos III / Agencia de Evaluación de Tecnologías Sanitarias	<a href="http://www.isciii.es/ISCIII/es/contenidos/fd-el-instituto/fd-organizacion/fd-estructura-directiva/fd-subdireccion-general-servicios-aplicados-formacion-investigacion/fd-centros-unidades/centros-y-unidades-AETS.shtml">www.isciii.es/ISCIII/es/contenidos/fd-el-instituto/fd-organizacion/fd-estructura-directiva/fd-subdireccion-general-servicios-aplicados-formacion-investigacion/fd-centros-unidades/centros-y-unidades-AETS.shtml</a>
Iowa Healthcare collaborative	<a href="http://www.ihconline.org">www.ihconline.org</a>
Institut de recherche et documentation en économie de la Santé	<a href="http://www.irdes.fr">www.irdes.fr</a>
Joanna Briggs Institute	<a href="http://www.joannabriggs.edu.au">www.joannabriggs.edu.au</a>
Joint Commission	<a href="http://www.jointcommission.org">www.jointcommission.org</a>
Journées d'enseignement postuniversitaire d'anesthésie réanimation	<a href="http://www.jepu.net">www.jepu.net</a>
London school of Economics	<a href="http://www2.lse.ac.uk/home.aspx">www2.lse.ac.uk/home.aspx</a>
Medical Services Advisory Committee	<a href="http://www.msac.gov.au/internet/msac/publishing.nsf/Content/home-1">www.msac.gov.au/internet/msac/publishing.nsf/Content/home-1</a>
Ministère de la Santé, de la Jeunesse et des Sports	<a href="http://www.sante.gouv.fr">www.sante.gouv.fr</a>
Ministerio de Sanidad, Servicios Sociales	<a href="http://www.msps.es/en/home.htm">www.msps.es/en/home.htm</a>
National Coordinating Centre for Health Technology Assessment	<a href="http://www.hta.ac.uk">www.hta.ac.uk</a>
National Horizon Scanning Centre	<a href="http://www.nhsc-healthhorizons.org.uk">www.nhsc-healthhorizons.org.uk</a>
National Health and Medical Research Council	<a href="http://www.nhmrc.gov.au">www.nhmrc.gov.au</a>
National Health Service Institute Innovation and Improvement	<a href="http://www.institute.nhs.uk">www.institute.nhs.uk</a>
Healthcare Quality Improvement Scotland	<a href="http://www.healthcareimprovementscotland.org/home.aspx">www.healthcareimprovementscotland.org/home.aspx</a>
National Institute for Health and Clinical Excellence	<a href="http://www.nice.org.uk">www.nice.org.uk</a>
National Institutes of Health	<a href="http://consensus.nih.gov">consensus.nih.gov</a>
National Patient Safety Goals (Joint Commission)	<a href="http://www.jointcommission.org/standards_information/npsgs.aspx">www.jointcommission.org/standards_information/npsgs.aspx</a>
National Patient Safety Foundation	<a href="http://www.npsf.org">www.npsf.org</a>

Organisms	URL
National Patient Safety Agency	<a href="http://www.npsa.nhs.uk">www.npsa.nhs.uk</a>
New Zealand Guidelines Group	<a href="http://www.nzgg.org.nz">www.nzgg.org.nz</a>
Norwegian Day Surgery Association (NORDAF)	<a href="http://www.nordaf.no">www.nordaf.no</a>
Organisation de coopération et de développement économiques	<a href="http://www.oecd.org/home/0,3675,fr_2649_201185_1_1_1_1_1_1,00.html">www.oecd.org/home/0,3675,fr_2649_201185_1_1_1_1_1_1,00.html</a>
Ontario Health Technology Advisory Committee	<a href="http://www.hqontario.ca/en/mas/ohtac_home.html">www.hqontario.ca/en/mas/ohtac_home.html</a>
Patient Safety Institute	<a href="http://www.patientsafetyinstitute.ca/french/Pages/default.aspx">www.patientsafetyinstitute.ca/french/Pages/default.aspx</a>
Portuguese Association of Ambulatory Surgery (APCA)	<a href="http://www.apca.com.pt">www.apca.com.pt</a>
RAND Corporation	<a href="http://www.rand.org/topics/health-and-health-care.html">www.rand.org/topics/health-and-health-care.html</a>
Royal Australasian College of Surgeons	<a href="http://www.surgeons.org">www.surgeons.org</a>
Royal College of Anaesthetists	<a href="http://www.rcoa.ac.uk">www.rcoa.ac.uk</a>
Royal College of Ophthalmologists	<a href="http://www.rcophth.ac.uk">www.rcophth.ac.uk</a>
Royal College of Nursing	<a href="http://www.rcn.org.uk">www.rcn.org.uk</a>
Santé Canada	<a href="http://www.hc-sc.gc.ca/index-fra.php">www.hc-sc.gc.ca/index-fra.php</a>
Scottish Intercollegiate Guidelines Network	<a href="http://www.sign.ac.uk">www.sign.ac.uk</a>
Servicio de Evaluación de Tecnologías Sanitarias OSTEBA	<a href="http://www.osakidetza.euskadi.net/r85-pkoste02/es/contenidos/informacion/osteba_presentacion/es_osteba/osteba_presentacion.html">www.osakidetza.euskadi.net/r85-pkoste02/es/contenidos/informacion/osteba_presentacion/es_osteba/osteba_presentacion.html</a>
Singapore Ministry of Health	<a href="http://www.moh.gov.sg/content/moh_web/home.html">www.moh.gov.sg/content/moh_web/home.html</a>
Société française de pédiatrie	<a href="http://www.sfpediatric.com">www.sfpediatric.com</a>
Société française de chirurgie orthopédique et traumatologique	<a href="http://www.sofcot.fr">www.sofcot.fr</a>
Société française ophtalmologie	<a href="http://www.sfo.asso.fr">www.sfo.asso.fr</a>
Société française de médecine générale	<a href="http://www.sfm.org/accueil">www.sfm.org/accueil</a>
Société française d'hygiène hospitalière	<a href="http://www.sf2h.net">www.sf2h.net</a>
Société française d'anesthésie et de réanimation	<a href="http://www.sfar.org/accueil">www.sfar.org/accueil</a>
Société française d'endoscopie digestive	<a href="http://www.sfed.org">www.sfed.org</a>
Société nationale française de gastro-entérologie	<a href="http://www.snfge.asso.fr">www.snfge.asso.fr</a>
Society for Ambulatory Anesthesia	<a href="http://www.sambahq.org">www.sambahq.org</a>
Society of American Gastrointestinal and Endoscopic Surgeons	<a href="http://www.sages.org">www.sages.org</a>
Society for Pediatric Anesthesia	<a href="http://www.pedsanesthesia.org">www.pedsanesthesia.org</a>
Stockholm School of Economics	<a href="http://www.hhs.se/Pages/default.aspx">www.hhs.se/Pages/default.aspx</a>
Swedish Institute for Health Economics	<a href="http://www.ihe.se/start-2.aspx">www.ihe.se/start-2.aspx</a>
Tripdatabase	<a href="http://www.tripdatabase.com">www.tripdatabase.com</a>
Wales Audit Office	<a href="http://www.wao.gov.uk">www.wao.gov.uk</a>



Organisms	URL
West Midlands Health Technology Assessment Collaboration	<a href="http://www.wmhtac.bham.ac.uk">www.wmhtac.bham.ac.uk</a>
World Federation of Societies of Anaesthesiologists	<a href="http://www.anaesthesiologists.org">www.anaesthesiologists.org</a>
World Health Organization	<a href="http://www.who.int/en">www.who.int/en</a>





*“ Together for the development of **day surgery** ”*

April 2012 – Update october 2012 – English version november 2013