

## Developing an effective day surgery service

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### INTRODUCTION

Day surgery is defined as surgery for which a patient is admitted and discharged on the same day. There has been a dramatic growth in day surgery over the past two decades. Previously regarded as an option only for well patients undergoing minor procedures, the development of new surgical techniques and shorter-acting anaesthetics has allowed the field to expand to a wider range of patients and increasingly complex surgeries.<sup>1</sup>

The incidence of death and major morbidity associated directly with day surgery is extremely low,<sup>2</sup> and there are some significant advantages when compared with inpatient surgery, including reductions in staffing costs, shorter waiting times and fewer hospital-acquired infections. In the UK, the Department of Health has recommended that 75% of elective procedures should be performed as day-case surgeries,<sup>3</sup> and the International Association for Ambulatory Surgery (IAAS) has been promoting the worldwide development of day surgery since 1995. In 2007, the World Health Organization published a policy brief to facilitate this aim (*Day Surgery: Making it Happen*).<sup>4</sup> This article will explore the factors involved in planning an effective day surgery service, as well as some of the potential barriers to implementation of such a service.

### PATIENT SELECTION

It is now accepted that most patients are suitable for day surgery unless there is a specific reason why an overnight stay would be required.<sup>5</sup> When selecting appropriate patients there are three main areas to consider: social, medical and surgical factors.

#### Social factors

The patient must understand the procedure and consent to have it performed as a day surgery. Patients who undergo general anaesthesia should be looked after by a responsible adult for the next 24 hours, and their home circumstances should be appropriate for postoperative care. They should not be expected to look after dependants during this time period.

Patients should be within 1 hour of medical facilities in case a postoperative complication occurs, and they should have access to a telephone. They need to be able to follow postoperative instructions, and refrain from driving, operating heavy machinery and decision-making during the recovery period.

#### Medical factors

Patients require a preoperative assessment to determine their physical health prior to day surgery. There has been a move away from arbitrary criteria, such as those laid down by the American Society of Anesthesiologists (ASA) or body mass index (BMI), and it is generally felt that patients with a chronic but stable illness are better managed at home as this results in less disruption to their routine.<sup>6</sup> Anyone with an unstable medical condition, such as crescendo angina or poorly controlled diabetes, is not suitable for day surgery.

#### Surgical factors

It is important that any procedure considered for day surgery should not carry a significant risk of major complications, nor should it require prolonged specialist care or observation. Table 1 gives a list of some of the common procedures suitable for day surgery, but is by no means exhaustive – more information can be found on the IAAS website ([www.ambulatorysurgery.org](http://www.ambulatorysurgery.org)) or from the British Association of Day Surgery ([www.daysurgeryuk.net](http://www.daysurgeryuk.net)). Minimally invasive surgical techniques should be employed if opening abdominal or thoracic cavities, and it should be possible to control pain with oral medications and/or local anaesthetic techniques. Patients should be able to resume normal functions (i.e. drinking) quickly, and should be able to mobilise before discharge.

In addition to the above, there are certain patient groups that may need further consideration when determining suitability for day surgery.

#### Infants

In the UK, day surgery is an option for full-term infants over 1 month of age, with a higher age limit for ex-premature infants (60 weeks post-conceptual age)

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**Table 1. Examples of day surgery procedures**


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Cataracts
Squint surgery
Surgical extraction of teeth
Tonsillectomy
Grommet insertion
Laparoscopy
Laparoscopic female sterilisation
Circumcision
Cystoscopy
Hernia repair
Laparoscopic cholecystectomy
Polypectomy
Knee arthroscopy
Carpal tunnel release
Cruciate ligament repair
Local excision of breast
Varicose vein removal

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because of an increased risk of apnoea in the perioperative period. Any infants with cardiac or respiratory disease or who have experienced a recent episode of apnoea, or from a family with a history of sudden infant death syndrome or adverse social circumstances, should be considered for overnight admission.<sup>5</sup>

### Obese patients

Minimally invasive surgery and the use of short-acting anaesthetic agents mean that there is no longer an upper weight limit when considering patients for day-case surgery. If short-acting anaesthetics are available, the majority of complications in this group are likely to occur either intraoperatively or in the immediate perioperative period,<sup>5</sup> and so they can be managed as part of a day surgery pathway. If such drugs are not available, or if pain management has required use of longer-acting opiates, these patients may need to be managed in hospital.

### Elderly

There is no evidence that advancing age correlates with poor day surgery outcomes,<sup>7</sup> and postoperative cognitive dysfunction may be better managed at home in a familiar environment.<sup>1</sup>

### Urgent surgery

Some centres have begun to include certain urgent surgeries in their day-case schedules. Examples of suitable operations include incision and drainage of an abscess and evacuation of retained products of conception. The patient should be seen beforehand, and must be deemed safe to be left at home for 1–2 days.<sup>5</sup> Patients must receive

clear preoperative patient information, in writing, so that they are aware of when to seek additional help.

## MANAGEMENT AND STAFFING

Day surgery units should have a clinical lead with a specific interest in day surgery who is responsible for the development of local policies and guidelines.<sup>5</sup> Clinical leads should be supported by a day surgery manager, who is in charge of the day-to-day running of the unit and who will often come from a nursing background. Staff nurses, operating department practitioners, physician's assistants and other staff are also key to the success of any day surgery enterprise, and should ideally be multiskilled and able to work in different areas within the day surgery unit. It is recommended that surgeons and anaesthetists are senior clinicians, to promote forward flow and minimise admission rates and complications.

## FACILITIES

Day surgery should ideally occur in a self-contained unit, separate from in-patient facilities and with good transport options nearby. When this is not possible efforts should be made to ensure there is a separate nursing team, so that patients having day surgery are helped to achieve a rapid recovery.<sup>5</sup> Trolleys can be used instead of traditional beds for day surgery, with one trolley being used for two or more patients per day. The unit should be open late enough to allow patients at the end of operating lists sufficient time to recover and be discharged, and there should be a separate area for children, with toys and nurses skilled in paediatric care.

## ANAESTHETIC MANAGEMENT

### Preoperative assessment

Preoperative assessment is fundamental to achieving successful day surgery pathways, and should be performed by someone trained in day surgery.<sup>5</sup> The service is commonly nurse led and based around a standardised questionnaire, with the aim of identifying patients at high risk of experiencing complications. Such patients can then be referred to anaesthetic team for advice. Effective preoperative assessment ensures that appropriate investigations are ordered and that necessary protocols are implemented, i.e. fasting guidelines, administration of regular medications. Patients are also given the opportunity to ask questions about the process, and so anxiety is minimised. Preoperative assessment should ideally be done before the day of surgery, to reduce cancellation rates and maximise efficiency.<sup>8</sup> Figure 1 shows how preoperative assessment fits into an ideal day surgery pathway.

Anaesthesia for day surgery includes general and regional anaesthesia, local techniques, sedation or any combination of these. The type of anaesthetic chosen will be influenced by surgical requirements,

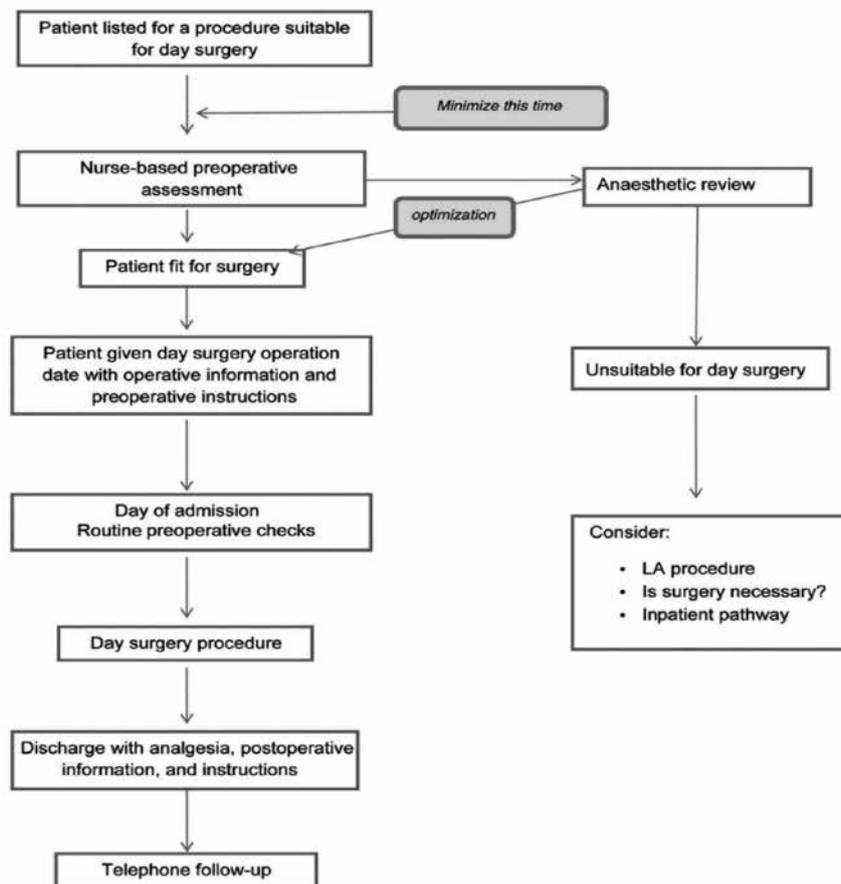


Figure 1. An ideal day surgery pathway. Reproduced with permission from Quemby and Stocker<sup>1</sup>

patient-specific considerations, the experience of the anaesthetist and the facilities and personnel available.<sup>9</sup> It should ideally be rapid in onset and offset, and confer minimal risk of postoperative nausea and vomiting (PONV), dizziness or drowsiness.

Providing good analgesia is essential,<sup>8</sup> and a multimodal approach of paracetamol, non-steroidal anti-inflammatory drugs (unless contraindicated) and local anaesthetics should be employed. Careful use of short-acting opioids is often appropriate. Longer-acting agents such as morphine should be used with caution because they may have unwanted side-effects such as nausea and sedation; if a patient has received morphine before, and has tolerated it well, it is reasonable to use it for procedures that may result in significant pain (e.g. laparoscopic cholecystectomy). If regional anaesthesia is used, it is acceptable to discharge patients with a residual blockade, provided that the affected limb is protected and that support is available to help with the patient's daily needs. Patients should be given written instructions about protecting their limb during this time, as well as information about when the block should fade and who to contact with any concerns. Of particular note, beware of inadvertent femoral nerve block following local anaesthetic administration for inguinal hernia repair. With any regional anaesthesia it is important that oral

analgesia is started before the local anaesthetic wears off, and that it is given regularly afterwards. Patients should be fully informed and prepared for this – the pain of arthroscopic shoulder surgery can be considerable when an interscalene block wears off on the first postoperative night. Neuraxial blockade can be used, but predictable adverse effects, such as postural hypotension and urinary retention, can limit discharge. Lower doses and lower concentrations of local anaesthetic agents, with added neuraxial opioid can minimise these unwanted effects.<sup>5</sup>

PONV is a cause of unplanned admission following day surgery, and patients at risk of PONV should be given two or three prophylactic antiemetics. Minimal starvation times and the routine use of intravenous fluids can reduce the risk of PONV, and it should be treated seriously when it occurs. Total intravenous anaesthesia should be used for patients in whom antiemetics have proven ineffective after previous procedures.

The incidence of venous thromboembolism is lower in the day surgery population than among inpatients, but risk assessment and preventative measures should still be taken, in accordance with local guidelines.

## RECOVERY AND DISCHARGE

There are three stages of recovery from day surgery.<sup>5</sup>

### First stage

The initial stage lasts until the patient is awake, protective reflexes have returned and any immediate pain on waking is well controlled. This stage should take place in a recovery area with trained staff. Some patients will be able to bypass this stage, for example those undergoing regional anaesthesia with no sedation.

### Second stage

This stage ends when the patient is ready for discharge from the hospital or day unit. It should occur in an area near to theatres, so that staff are able to contact both the anaesthetist and surgeon with any concerns. Nurses should be able to deal with PONV and pain, and should be trained to detect emergencies such as haemorrhage or cardiovascular events. Many day surgeries have a protocol to

allow nurse-led discharge (see Table 2). There should be facility to admit patients if necessary, and resuscitation equipment such as supplemental oxygen and suction should be available.<sup>9</sup>

### Late recovery

The final stage of recovery is complete following full physiological and psychological recovery from the procedure. This can take weeks or even months.

Prior to being discharged, patients need to be given clear information in writing about what to expect after surgery and what to do if concerned. This information should be tailored to the specific surgery and needs to provide information about possible complications and how to seek help. Instructions should also be given verbally, to assess understanding and consolidate written information. From the anaesthesia point of view, patients should be advised not to drink alcohol, operate machinery or drive for a period of 24 hours. However this advice must be appropriate to the agents that they have received during general anaesthesia – following administration of

**Table 2.** Discharge checklist for day surgery. Reproduced with permission from the British Association of Day Surgery. Nurse Led Discharge. London, BADS, 2009.

Criterion	Yes	No	Not applicable	Initials
Vital signs stable				
Orientated to time, place and person				
Passed urine (if applicable)				
Able to dress and walk (where applicable)				
Oral fluids tolerated (if applicable)				
Minimal pain				
Minimal bleeding				
Minimal nausea and vomiting				
Cannula removed				
Responsible escort present				
Has carer for 24 hours postoperatively				
Written and verbal postop instructions				
Know who to contact in an emergency				
Follow-up appointment?				
Removal of sutures required?				
Referrals made				
Dressings supplied				
Patient copy of GP letter				
Carbon copy of consent				
Sick certificate				
Has take-home medications				Next dose
Information leaflet for tablets				
Postoperative phone call required?				

longer-acting volatile anaesthetics (isoflurane and halothane), current UK recommendation is that this period should be 72 hours. After this time, patients should not resume driving until their pain is sufficiently controlled that they can perform an emergency stop and there are no procedure-specific limitations, as advised by the surgical team.

All patients should receive appropriate analgesics to take home, as well as advice on dose, dosing interval and whether to take with food or not. Many day surgeries have pre-packaged analgesia readily available to the nursing team, to prevent undue delays in discharge.

Discharge summaries should be given to the patient, with copies sent to the family doctor. This can be vital if the patient needs treatment overnight. Patients should know who to phone for first 24 hours if they have any concerns.

## AUDIT

Audit should be seen as an essential tool to assess, monitor and maintain efficiency and quality of patient care. Routine nurse-led follow-up (via phone call) is one way to monitor complications and patient experience, and allows continuous collection of data for regular audit and review. Audits and evaluations of unplanned admissions may help to highlight areas for improvement in services.

## BARRIERS TO DAY SURGERY

Increasing the availability of day surgery for patients often requires a change in mind-set. Alterations to national policies and regulations may well be necessary, and existing health care structures may need to be reorganised. According to the World Health Organization, there are seven main barriers to delivering effective day surgery.<sup>4</sup>

### Economic

There may be financial incentives for either the hospital or the surgeon associated with inpatient stays.

### Regulatory

National legislation may block a shift towards day surgery.

### Educational

Medical students and doctors may not be trained in the benefits of day surgery, and so may lack the motivation to drive change.

### Facility design

Health facilities may not be structured to favour the development of day surgery.

## Local, home and community support

There may be a lack of adequate community services to support change, i.e. community nursing.

## Information

Patients and health care providers may not be aware of day surgery as an option.

## Organisational

Effective day surgery requires strong multidisciplinary team working, and this may be difficult to achieve.

## CONCLUSION

Developing a successful day surgery requires investments in educational programmes for staff, as well as removal of any economic and regulatory barriers. Expansion of day case facilities needs to occur alongside reductions in inpatient capacity, and community services may need to be developed. Trying to shift towards viewing day surgery as the norm for most elective patients may seem a daunting challenge, but can result in real benefits to both patients and healthcare services.

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