Dilemma of same day admission - **Where do we draw the line?**

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INTRODUCTION

Same day admission (SDA), even for major surgery, is already a reality in South Africa with in excess of 80% of patients being admitted on the day of surgery. It represents a natural component of the "fast track" approach to surgery and has been integrated into clinical care pathways for a variety of major surgical conditions. All of these entities, while they expose optimal patient management, care and outcome, are essentially economically driven. In other words, they are designed to save funders (and hopefully, the entire health care system) money.

SDA has been compared in numerous studies with previously established practice (be it previous evening admission; admission for complete work up prior to surgery; or admission for medical optimisation prior to surgery). While the results of the studies are widely disparate, depending on local circumstances and practice, certain themes are fairly consistent, namely

- Cost saving
- Better patient turnover
- Reduced length of stay
- Low / reduced cancellation rates
- No adverse effect on outcome.

These beneficial effects are not inherent in SDA but depend entirely on SDA forming the final stage of a pre-operative screening and preparation protocol, aimed at presenting properly prepared and optimised patients to the surgical team on the day of surgery.

Prior to SDA, the traditional approach was to admit the patient to hospital and request an anaesthetic consultation to direct special investigations, further specialist opinions and optimisation of health status. The patient was then presented for surgery once fully prepared. This would typically involve a week in hospital prior to surgery for a patient undergoing, for instance, peripheral vascular surgery. This approach had significant limitations in terms of time wastage, cost and inefficiency of bed utilisation. The risk of cancellation was also not eliminated, as the assessing and surgical anaesthetists were often not the same person. However, the major advantage was that the anaesthetist had ample time to optimise the patient, seek expert assistance and plan the anaesthetic. The risk to patient and anaesthetist are thus minimised.

SDA stands in stark contrast to this. Here, the patient is presented to the anaesthetist minutes to hours before even major surgery. In addition, with advancing technology, there is an increasing incidence of multi-disciplinary surgery calling for specific assistants and support personnel (radiographers, pathologists, company representatives etc.). As such, lists tend to be inflexible in terms of order and timing. In order to avoid acrimony, costs and inconvenience, anaesthetists are virtually compelled to deliver an immobile patient to the surgical team at the designated time. But, fundamentally, this must be done without added risk to the patient or anaesthesiologist! It is therefore essential that the anaesthesiologist has access to all of the relevant clinical information for the particular patient and is aware of, and involved in the treatment pathway. In addition, the patient's condition must have been optimised on an outpatient basis and relevant information presented regarding the treatment plan. It is clear that all of this cannot be achieved during a 5 – 15 minute pre-operative assessment.

SDA must be done without added risk to the patient or anaesthesiologist

Various options exist to ensure that a well-prepared patient arrives on the day of surgery:

- Pre-operative questionnaires completed at the surgeon's rooms, telephonically or at a nurse-driven pre-admission clinic. These are useful only if they are scrutinised and any "red flags" (regarding health status, medications or previous anaesthesia-related problems) are acted upon and the appropriate further action taken e.g. anaesthesiologist or other specialist referral; special investigations or referral to a pre-operative clinic. These are frequently utilised in the private sector in SA, but positive findings are infrequently reported to the anaesthesiologist concerned. There is ample evidence that a clear questionnaire has a powerful negative predictive value in terms of rate of cancellations, rate of requirement for special investigations and occurrence of anaesthetic problems.
- Nurse-controlled pre-operative clinic. Here, clinical examination is added to the questionnaire. The same provisos and consequences apply as with pre-operative questionnaires. A case cancellation rate of only 1.4% and a delay rate of 3.4% attest to the satisfactory nature of nursing assessment – particularly the negative predictive value, i.e. ability to identify patients not requiring further work up. At some local clinics, the facility has been introduced for sisters to contact the relevant anaesthesiologist, should concerns arise from the pre-operative assessment.
- Physician-driven pre-operative assessment clinic. This is becoming the norm in the public and private sectors in much of the first world. A wide range of styles of clinic exists, with about 50% being anaesthesiology-run. The advantages and limitations will be described in the next section.
- Routine physician referral, assessment and optimisation on a same-day, outpatient basis, for particular patient groups and surgical procedures. This is very much the rule in SA private practice. This is very convenient for the patient and reduces preparation time for surgery Concerns have been expressed about appropriateness and adequacy of assessment; risk of over-investigation and inappropriate or unnecessary interventions (coronary angiograms & stents in asymptomatic patients); and excess costs associated with these and with referral of patients without indications. In addition, it is unusual for anaesthesiology opinions to be requested or requirements canvassed. Access to physician assessments

appears, inexplicably, to be problematic and the anaesthetist is frequently presented with only vague patient or surgical recollections of the physician's findings. This could be corrected by attachment of the physician's report to the surgical list as a matter of routine.

PRE-OPERATIVE ASSESSMENT CLINICS

These form an integral part of the management plans for major surgical patients being admitted on a SDA basis in much of the first world. In 1998 in the USA, pre-operative clinics were found in 88% of university hospitals and 70% of community hospitals. The goal is to produce high-quality, cost-effective pre-operative assessment and preparation. Below is a synopsis of the evidence in the literature for the success of these entities:

1. Staffing issues

- Approximately half of pre-operative clinics are anaesthesia-run. The others are multi-disciplinary or under control of physicians or nurses.
- > 50% have a specialist presence, although the bulk of staffing consists of trainees.
- In one series, only 23% of cases were assessed by the anaesthesiologist responsible for administration of the anaesthetic.
- Trainee assessment would be facilitated by the presence of protocols but their availability is variable. For instance, protocols relating to peri-operative -blockade in patients at risk for ischaemic heart disease are present in only 10% of Australian & NZ assessment clinics.
- Most offer "same day service", but should specialist consultation or high tech special investigations be required, a waiting time of 14 - 30 days is usual and deemed acceptable.

2. Cancellation rates

- Overall, 90% of cancellations occur on the day of surgery, causing emotional trauma to the patient and approximately 90 minutes of theatre time wastage per case.
- As compared to previous day admission, work up and assessment, pre-operative clinics and SDA reduce the rate of cancellation for medical reasons by between 50 and 90% to between 0.2 and 0.9%.
- Interestingly, cancellation rates in patients deemed not to require pre-operative clinic assessment are intermediate between the two above rates. Only about 5% of these cases were felt by the responsible anaesthetist to have actually required clinic assessment and 1/4 of these were, indeed, cancelled.
- Cancellations related mainly to under-appreciated disease severity (often trainee-assessed) and to assessment by an anaesthesiologist other than the one responsible for administration of the anaesthetic.
- Clearly, a reduction in cancellation (and re-admission) rate would have an advantageous effect on cost and on efficiency of ward and theatre usage.

3. Inadequate assessment / preparation rates

- Concerns exist about non-anaesthesiologist assessment; assessment by junior colleagues and lack of involvement of the responsible surgical anaesthetist in so far as relevance, quality and completeness of assessment.
- As seen from the cancellation rates, these are rarely justified.
- In elective surgery, about 5% of patients presenting after pre-operative clinic assessment are judged to be inadequately assessed or prepared. 90% of these are of high ASA status (3+).
- Patients seen in pre-op clinic, even though they tend to be of higher ASA status, have a 60% lower rate of under-preparation than a basket of other patients undergoing forms of assessment other than pre-op clinic.

Available data:

i. The Australian Incident Monitoring Study reported that inadequate or incorrect pre-operative assessment contributed to 7% of adverse intra-operative events and inadequate or incorrect preparation to a further 3%. In 3% of cases, assessment / preparation failure was directly responsible for the event.
ii. 37% of adverse outcomes were rated as severe.
iii. 57% were regarded as definitely preventable with proper assessment or preparation.
iv. Of the directly implicated group, 10% (half elective) had no anaesthetic assessment whatsoever. The other major causes are tabulated below:

CAUSE	INCIDENCE
Poor airway assessment	29%
Communication problems • 63% missing charts or investigations • 37% failure of patient reporting	23%
Inadequate medical evaluation • 64% cardio-respiratory	21%
Other • inappropriate drugs for particular patient • no anaesthetic review • inadequate blood crossmatch • inadequate pre-op resuscitation • etc	27%

v. In 2 previous Australian studies, 53 out of 135 and 18 out of 43 anaesthetic deaths had inadequate assessment and / or preparation as an underlying cause.
vi. It is estimated that inadequate assessment or preparation increases anaesthetic mortality 6 fold.
vii. Another study examining unexpected intra-operative events (UIE) revealed that the odds ratio for an UIE after proper pre-op clinic assessment is 0.46 compared with an inadequate in-patient assessment. No figure was quoted to compare with a well-prepared in-patient.
viii. Interestingly, surgical anaesthetists rated pre-operative assessment by physicians as satisfactory in 84% of cases. Of the remaining cases, 3/4 were judged to have been subjected to excessive investigation and preparation, while the remaining 1/4 were felt to be inadequately prepared.

Inadequate assessment or preparation increases anaesthetic mortality 6 fold.

4. Special investigations

- It is very rare that history and examination fail to reveal a significant medical problem. It is therefore not surprising that routine pre-operative special investigations have been discredited. Routine (non-indicated) lab tests provide relevant new information in < 0.2% of patients. There is no place for a battery of routine special investigations in pre-operative patients - whatever their mode of admission.
- Pre-operative clinics have seen a fall in overall pre-op investigations with the average number of lab tests decreasing from 2.4 to 1.5 and 37% of patients requiring no special investigations at all (vs. 17% for in-patient admission).
- Anaesthetists order 30 - 60% less investigations than medical or surgical colleagues. Anaesthetic-driven clinics are, therefore, substantially cheaper than others.
- Anaesthetists judged 3/4 of investigations ordered by other specialties as "not indicated".
- As mentioned, average waiting times for more major special investigations are of the order of 2 weeks. A study has shown that a waiting time between pre-operative assessment and surgery of 4 weeks produces equal outcomes to one of 24 hours. This delay, therefore, appears acceptable.

There is no place for a battery of routine special investigations in pre-operative patients – whatever their mode of admission.

5. Cost effectiveness / savings

- There can be no question that cost factors have been the major driving force behind the development of pre-op clinics.
- Numerous factors related to pre-op assessment clinics and SDA contribute to reductions in overall health costs. These include savings on pre-op hospital admission days; increased number of SDA; reduced overall length of stay; greater patient turnover; better theatre utilisation due to less cancellations and reduction in special investigations.
- Estimates of cost savings range from $360 – 2500 per patient compared with traditional in-patient assessment.
- Attendance at a pre-operative assessment clinic substantially reduces pre-operative stay for vascular surgery patients compared with in-hospital preparation (1.9 vs. 7 days for carotid endarterectomy; 2.8 vs. 9 days for peripheral vascular surgery).
- The reduced overall length of stay results mainly from savings on pre-operative admission days, but has a contribution from earlier discharge of better-assessed and prepared patients. Overall, reduction of stay is of the order of 1 - 4.7 days.
- The rate of SDA has increased by > 50% since the advent of pre-op clinics.
- Even with CABG surgery, as many as 2/3 of the (healthier) patients are suitable for SDA.
- In Canada, SDA has been shown to increase case flow and efficiency by ~ 12%.
- One major concern regarding costs relates to cost shifting. Some of the savings that accrue to healthcare funders are transferred to the patient and family members or care givers. They must sacrifice working days (and possibly income) to attend the pre-op clinic and possibly subsequent special investigations, where these were previously done as fully funded in-patients.

6. Outcomes / benefits

- Despite the higher average ASA status of pre-op clinic attendees, there is a trend towards reduced cardio-pulmonary morbidity in these patients, when judged adequately prepared, compared with standard approaches.
- Up to 37% of pre-op clinic attendees are admitted to hospital for pre-operative medical optimisation. This is likely to impact favourably on outcome.
- Pre-operative clinics and SDA confer other benefits and advantages that are summarised in box 1.

Box 1: Benefits and advantages of pre-operative clinics and SDA

i. The rate of cognitive dysfunction in the elderly is substantially reduced by SDA.
ii. The pre-operative clinic is the ideal place (and time) to educate the patient about the peri-operative plan and anaesthetic issues - continuation or cessation of medications, analgesia, wake up tests etc. The morning of surgery is, by comparison, a very poor option.
iii. It also provides the patient with a forum to air their concerns, requests and preferences (blood transfusion etc.) and, provided communication with the responsible anaesthesiologist is adequate, for formulation of a tailored anaesthetic plan.
iv. Proper cross-matching of blood is facilitated (vast majority of same day group & screen analyses have not been completed by the cutting time - can pose a significant risk if unexpected / excessive bleeding occurs).

In summary, pre-operative assessment clinics (with or without SDA) are indicated in:

- High risk patients
- Major surgical procedures
- Where problems are identified on pre-operative questionnaire
- By surgeon's request
- By patient's request.

There is little evidence of any benefit for such clinics in low risk patients undergoing minor surgical procedures. Likewise, there is no point in any admission approach other than SDA for these patients unless medical optimisation is required.

They are most effectively and economically managed by anaesthesiologists. They carry numerous advantages in terms of economy and outcome, but are not infallible and their successful functioning demands:

- Assessment by the most qualified personnel
- Algorithms for less experienced trainees to use
- Good communication between clinic and theatre personnel

The fact that a patient has been passed fit for surgery by the pre-op clinic does not relieve the surgical anaesthetist of his responsibility to meet, assess and familiarise himself with the patient. His / hers is the responsibility for the successful conduct of the anaesthetic - and, by definition, the responsibility to cancel or continue lies with him or her.

WHERE DO WE DRAW THE LINE?

There are very few patients who are not candidates for SDA if

properly assessed and prepared via one of the options described above. However, the responsibility for our patients' well being remains ours. An inadequately prepared patient is at greater risk for complications and the anaesthesiologist is placed in a position of stress and increased medico-legal risk. It should be possible in virtually all elective surgical situations to avoid both risk taking and cancellations, merely by effective communication between those responsible for pre-operative assessment and the anaesthesiologist concerned. However, if the patient's condition is less than acceptable and / or relevant information or investigations are not available, there is no option but to delay or cancel the procedure – irrespective of inconvenience to patient or colleagues; costs or limitations on admission duration from the funder.

Before we attempt to define which patients are not suitable for same day admission, it is important to emphasise some points:

- We must make ourselves available to surgical and medical colleagues to guide pre-operative assessment and preparation.
- Likewise, the lines of communication must be open in the opposite direction so that we can access relevant patient information.
- Ideally, information regarding high risk cases or those undergoing major procedures should be available to us at least the day before the procedure, so that the anaesthetic can be planned and the patient and staff informed of the peri-operative plan.
- Previous day or evening admission for work up is a poor substitute for proper pre-operative assessment with SDA. Little will be achieved; investigations will either be unavailable or not done until the next morning; there will be little time for medical optimisation; the patient may be sleep deprived and disgruntled and, in the frequent event of inability to visit the patient the evening before surgery, there will be no more time for pre-operative assessment and information transfer than if the patient was admitted on a SDA basis. There are few specific indications for previous day admission in elective patients - but these may include bowel washout in infirm or stoma patients; thromboprophylaxis in certain very high risk cases and geographical factors.

Some relatively absolute indications for in-patient assessment and optimisation of patients include:

- Medical indications
  - unstable systemic disease with significant potential impact on survival irrespective of whether surgical candidates or not (no ASA 4 patient is a candidate for SDA). ASA 3 patients for major surgery may be candidates for SDA if fully worked up, optimised and anaesthesiologist informed.
  - Patients requiring tight control of anti-coagulation, esp. if heparin infusion is being used to bridge warfarin therapy.
  - Specific medical conditions e.g. phaeochromocytoma.
  - Any unassessed or inadequately assessed ASA 3 (or higher) patient.
  - Patients with history of regular substance abuse (esp. cocaine) to avoid anaesthetising acutely intoxicated cases.
- Surgical indications
  - Bowel preparation in infirm / incompetent patients or those with stomas.
  - Renal protection in patients requiring significant amounts of radio-contrast media.
- Anaesthetic / analgesic indications
  - 24 hour epidural / plexus analgesia prior to lower limb amputation.

While this is not an exhaustive list, it should be evident that the vast majority of cases are suitable for SDA. However, it cannot be emphasised strongly enough that SDA should never be a synonym for inadequate assessment and preparation. While we can all deal with an unexpected difficult intubation or episode of hypotension due to myocardial ischaemia, these are clearly risk factors to both the patient and ourselves and are much better avoided. An adequately informed anaesthesiologist can perform a high quality assessment of a prepared and optimised ASA 3 patient for major surgery and formulate a peri-operative plan in 15 minutes! There is simply no place for compromise and assumption in high-risk patients. The investigations, consultations and optimisation manoeuvres need to have been done and the results to be available. Failing this, the patient must be postponed until optimal, irrespective of inconvenience to colleagues, patient, funders and self. A patient who is informed why he is being postponed will have far more confidence in his doctor than one who has the impression that he is being rushed into an ill-prepared and poorly planned scenario.

SDA should never be a synonym for inadequate assessment and preparation

The foundations of SDA are algorithms for pre-operative management and communication between all team members. These translate seamlessly into protocols for intra and post-operative care. Each individual is aware of his / her responsibility in the care pathway. If we feel we are being left in the dark and treated as technicians, it is because we have allowed it to occur. For our own good and that of our patients, we must insist on timeous inclusion. **SAJAA**

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