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Same-day hip and knee joint replacement surgery key principles

Introduction

This document provides key principles for clinicians who are considering implementing hip or knee joint replacement surgery that enables the patient to be discharged within 24 hours of being admitted for surgery.

Same-day joint replacement surgery provides an opportunity for an alternative care pathway for patients accessing joint replacement surgery across NSW.

This model:

- supports elevating patient experience by allowing patients to recover in familiar surroundings at home with choice around meals and visitors
- empowers patients to be the leaders in their own care but provides safeguards of phone access for clinical concerns and an evidence informed recovery pathway to follow
- allows for early mobilisation and faster return to activities of daily living
- provides certainty for surgeons regarding theatre access by reducing surgery cancellations due to issues around bed access.

The document outlines the key principles of same-day joint replacement surgery protocols, the team members who need to be involved and the care that will allow the patient to have the best possible outcome.

It is acknowledged that additional resources may be required at a local level to support implementation of the protocol.

A stepped approach to same-day joint replacement may initially involve considering reduced length of stay protocols. The key principles can support NSW local health districts to offer same-day joint replacement surgery for suitable patients and where suitable resources are available.

Aims of the initiative

- Improve outcomes and experiences, alongside patient and carer participation in health-related decisions and engagement with care
- Optimise use of health system resources

Background

Improved surgical and anaesthetic techniques, combined with effective post-operative analgesia have resulted in a progressive reduction in the required length of stay following joint replacement surgery.

This trend has progressed to the point that same-day hip and knee arthroplasties are currently undertaken in facilities in NSW. Using this approach patients are discharged on the same day as their procedure.

Same-day joint replacement surgery models are multi-modal care pathways designed to achieve early recovery after surgical procedures. Consideration of these protocols presents an opportunity to improve patient outcomes for a select cohort of patients. These pathways can be considered for implementation alongside existing pathways.

Key principles

Key elements of these models include:

- establishment of a day-stay treatment team
- pre-operative patient education
- appropriate multi-modal analgesia
- early mobilisation
- patient follow up after discharge
- see Appendix 1, The perioperative trajectory: From contemplation of surgery to recovery, for an overview of the process.

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Comprehensive pre-operative baseline assessment should include the collection of Patient Reported Outcome Measures (PROMs). Same-day joint replacement models attempt to modify the physiological and psychological responses to major surgery but are likely only suitable for a subset with less impairment prior to surgery. PROM assessments will enable capture of these individuals.

Patient selection criteria

Comprehensive assessment of patient suitability and safety for the day-stay joint replacement surgery is an important aspect, and should include the surgeon, anaesthetist and allied health clinicians. Additional factors for consideration include:

- primary unilateral joint replacement
- patient willingness
- perceived self-efficacy and confidence in the approach
- home supports and home environment
- favourable anaesthetic and comorbidity profile.

It is also important to consider the patient's expectations and the support required for early mobilisation.

Pre-operative pathway

Key components of the pre-operative pathway are:

- consistent communication across disciplines involved regarding expected length of stay
- orthopaedic and allied health review, including participation in the Osteoarthritis Chronic Care Program (if available)
- patient education (detailed, procedure specific, patient centred and to include expectations around perioperative and postoperative care and pain relief) and arrangements of who will provide support after returning home after surgery
- completion of Patient Reported Measures (PRMS), through the HOPE (Health Outcomes and Patient Experience) platform
- pre-admission clinic for routine tests and patient education
- patient pre-operative instructions and preparation
- patients should be scheduled as early as possible on the operating list
- plan assessment and provision of equipment to facilitate a safe discharge.

Intra-operative pathway

Anaesthetic technique: compatible with day surgery; can be spinal or general anaesthetic as per the anaesthetists' preference. Minimal use of sedatives and opioids.

Surgical technique: incorporates best-practice procedures to minimise pain, swelling and bleeding and maximise post-operative function. This guidance is based on current evidence, as listed in the references.

Patient discharge

Patients are discharged when they meet routine discharge criteria. These are likely to include:

- adequate pain relief
- ability to mobilise safely at home
- no wound issues
- ability to eat and drink
- ability to perform activities of daily living independently or with appropriate support in place at home
- safe transport.

PRMs through HOPE should be collected at defined points as part of routine care in the community post-discharge or linked with follow up visits with their team.

Immediate post-operative care

Optimal post-operative pain management can lead to a quicker recovery, improved patient outcomes and a reduced length of stay.[1]

The experience of patients walking normally early after surgery can have a positive effect on self-efficacy and their experience of pain. It also encourages the patient to return to normality.

Enablers for implementation

It is vital that this approach to joint replacement surgery is well communicated to all stakeholders at hospitals that are considering implementing same-day joint surgery.

Enablers of this program are orthopaedic surgeons, anaesthetists, the day surgery, allied health departments, orthopaedic ward staff (nurse unit manager, clinical nurse consultant, clinical nurse specialist and allied health staff), pharmacy, radiology, operating theatre management, patient flow, booking office, patient discharge areas, at home support programs and carer/support person, emergency departments, general practitioners, integrated booking units, surgical short stay units, and sterilising departments.

The following four domains are essential to successfully implementing a same-day joint replacement model.

Robust governance and clinical oversight

Clinical leadership is an essential requirement for implementing a new model of care. A strong 'same-day' team that meets regularly to evaluate the program is recommended.

Implementation should be guided by an agreed project plan, which is appropriately resourced. Local steering committees and working groups should be established to support the same-day joint replacement project lead in developing and implementing a same-day joint replacement program.

It is essential to identify all relevant stakeholders who may be impacted by the introduction of a same-day joint replacement pathway. This includes clinical and non-clinical staff and executive leadership. Steering committees or working groups should include representation from surgical, anaesthetic, allied health clinicians and nursing. Developing and agreeing on clinical pathways will assist with clinical consensus regarding the management of same-day joint replacement patients.

Resourcing

Implementing a new model has the potential to impact resourcing. It is important that expectations are set regarding what is achievable using available resources. For example, is it feasible to recruit a same-day joint replacement coordinator utilising existing resources?

Or will the responsibility be incorporated into an existing role?

Consideration needs to be given to the flow-on effect to the physiotherapy or occupational therapy service to support patients in the pre-operative and post-operative phases.

The impact on the pre-admission clinic capacity also needs to be considered. Other resources may include printing clinical pathways and patient education booklets.

Commitment to patient and staff education

It is important that information is provided to patients in a manner that supports health literacy and builds trust.

This includes the collection and use of PRMs to inform shared-decision making in real time.

The same-day joint replacement process should be clearly explained, and expectations set for each day following surgery.

Patients should also be encouraged to adhere to the same-day joint replacement pathway.

It is acknowledged that new graduates, staffing turnover and junior medical officer changeover may impact on the implementation of a same-day joint replacement pathway.

Therefore, ongoing education of new medical, nursing and allied health staff is required.

A robust communications strategy is also important to support the implementation of the model.

Commitment to gathering and auditing data

Collection and auditing of data is an important consideration to facilitate the implementation of the same-day joint replacement model.

It is also important to monitor compliance. Specific data points may include the percentage of patients successfully completing the same-day joint replacement pathway, length of stay, complication rates, readmission rates, re-presentation rates, unplanned return to theatre, measure of return to function, falls at home, staff experience, and PRMs through HOPE.

A prospective data analysis may assist in supporting a case for development of a same-day joint replacement model. Consider arranging for consistent data collection points across sites.

Same-day joint replacement – suggested pathway elements

The approach needs to be surgeon driven and the motivation needs to be that the patient has a potentially better outcome and experience of care. Crucial to the implementation of this approach is a surgeon, or surgeons, at each facility who are enthusiastic about this model and its associated governance.

Establishment of a same-day team who can follow the patient from when they are placed on the waiting list until after discharge, is a key component to the same-day joint replacement pathway. The team includes an orthopaedic surgeon, anaesthetist, allied health, nursing, and day-stay care coordinator. Sites could consider an incremental approach to adopting a same-day joint replacement model. For example, a site could initially commit to an increase in next-day discharge.

The main same-day interventions that need to be used across different specialties in the pre-operative, intra-operative and post-operative phases are listed in this table.

	Criteria	Indicators
Patient selection criteria	**Pre-operative functional assessment**	• Independently mobile (with or without walking aid) • No faints or falls within the last 12 months • Single unilateral joint replacement • Consider assessment of the home environment • Identified as not-at-risk of worse pain or disability after surgery • Patient selection is consultant led
	Comorbidity profile	Patient selection is consultant-led based on clinical assessment, with a multidisciplinary approach Consideration of factors for example: • BMI < 35 • Age < 75 years • ASA 1 or 2 • No significant opioid use • No OSA, poorly controlled diabetes, history of IHD or CVA/significant cardiac history, no significant respiratory disease or renal disease or other medical issue requiring inpatient care • Smoking status • Consider cognitive assessment, risk of delirium, use of anticoagulants, medication review, renal function assessment, and urinary retention in male patients
	Psychosocial profile	• Patient competent and willing to be involved in a day-stay program • Availability of carer or support person to stay with the patient for at least 24 hours after discharge
	Distance or location	• Lives within 60-minutes travel of the hospital where the surgery occurred (applicable for regional or rural hospitals) • Suitable vehicle for transport available • Post-operative physiotherapy available (face to face or telehealth)

Pre-operative	Patient review by orthopaedic surgeon and allied health • To ensure appropriate equipment in place prior to admission • Consider need or availability of follow up physiotherapy and care
	Involvement of Osteoarthritis Chronic Care Program services as early as possible
	Notify same-day team members of the admission day, also nurse unit manager, pharmacy, allied health and ward staff Consider allocation of a day-stay bed
	Pre-admission clinic • Assess medical condition, and review home arrangements to support same-day discharge • Patient attends pre-admission clinic for routine tests • Routine test results reviewed by the same-day team in a timely manner to address issues • Complete Patient Reported Measures through HOPE
	Physiotherapy and occupational therapy pre-operative assessment, dietetics education and equipment prescription (ensure home visit completed pre-operatively if required). Ensure post-operative appointments are made. Establish protocols for management of post-operative complications and escalation process/es.
	Confirm patient willingness and appropriateness for same-day joint replacement surgery
	Patient pre-operative education Provide recovery and pain management education, wound management advice, scheduled pathology tests and pre-operative preparation. Pre-operative education for same-day surgery should be provided once the patient is placed on the waiting list and reinforced with them until admission. Provide this information in the form of written instructions and answer any resulting questions. Communicate advice to the general practitioner regarding the surgery
	Pre-operative preparation Patient follows instructions provided, for example, fasting time for fluids and solids
	Thromboembolic prophylaxis Venous thromboembolism prophylaxis will be achieved as per surgeon preference

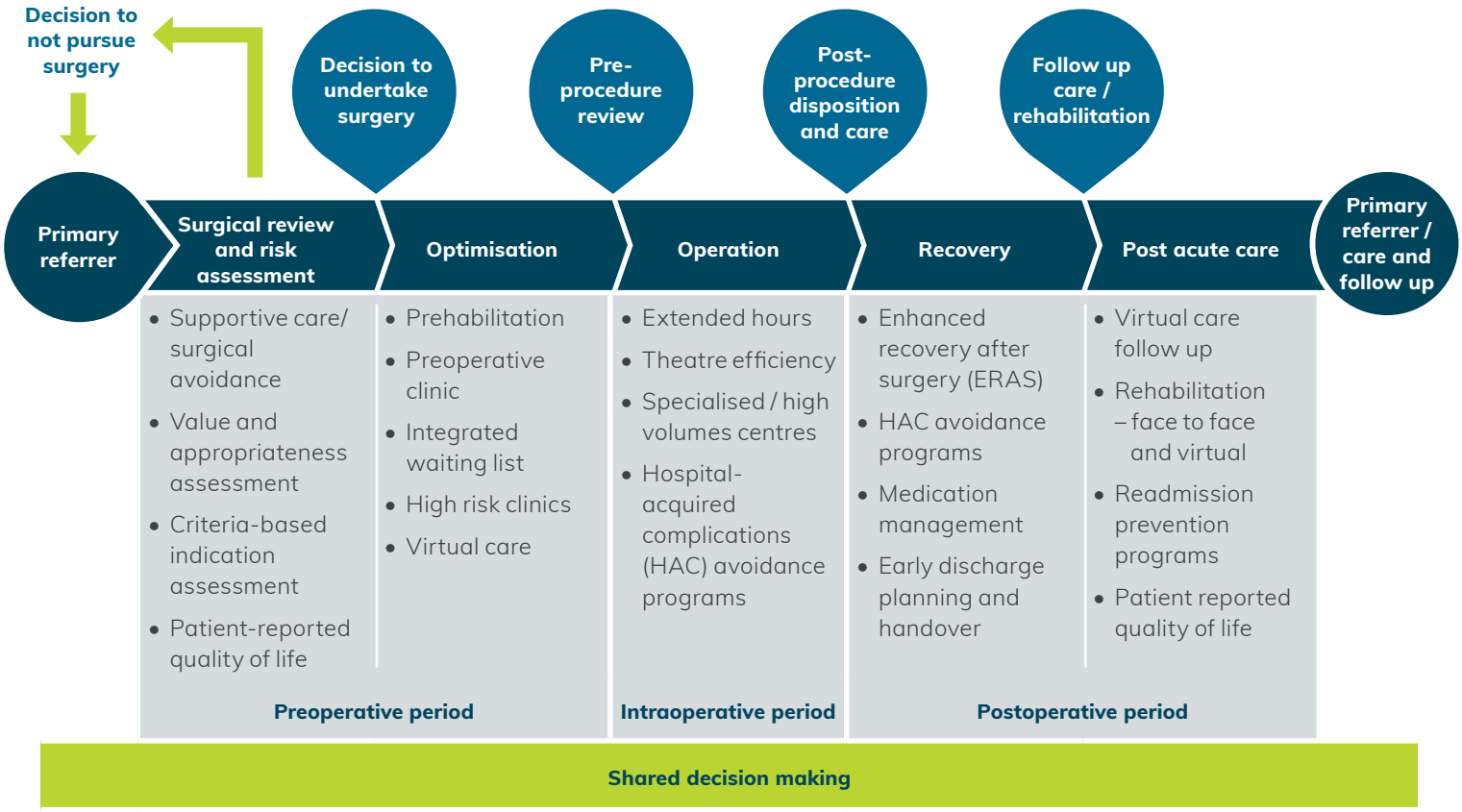
Pre-operative	**Anaesthetic technique** Anaesthetic technique to facilitate day case joint surgery may involve either general anaesthesia, spinal anaesthesia or a combination of both Technique will depend on local practice and anaesthetist preference, but the following anaesthetic goals should be considered: • Provide optimal analgesia with minimal side effects. Consider pre-emptive analgesia before surgery. Use multimodal analgesia as well as high volume local anaesthetic infiltration • Allow rapid recovery of lower limb motor function for mobilisation. If using spinal anaesthesia, use intermediate acting agents in the lowest dose possible. If using regional anaesthesia apply only motor sparing blocks • Avoid post-operative nausea and vomiting. Use total intravenous anaesthesia if general anaesthesia is applied. Minimise use of opioids. Use prophylactic anti-emetics • Avoid prolonged sedation • Avoid urinary retention. Use minimal or no opioids in neuraxial blockade • Avoid vasovagal syncope • Ensure ACE inhibitors and ARBs are withheld preoperatively • Ensure patients are well hydrated when presenting to surgery. • Avoid unnecessarily long fasting times • Avoid drugs that cause hypotension Consider patient's risk of deep vein thrombosis and thromboprophylaxis
Post-operative	**Surgical technique** Incorporate best practice surgical procedures to minimise pain, swelling and bleeding and maximise post-operative function. For example, the use of a considered and targeted local anaesthetic infiltration technique, use of tranexamic acid, minimal tourniquet use in knee replacement surgery, and local anaesthetic infiltrate of the surgical field. May consider minimally invasive approach. Generally, less than two hours in theatre
	Post-operative analgesia Regular paracetamol plus non-steroidal anti-inflammatory drugs unless contraindicated. Provide patients with options for break-through pain. Minimal use of opioids. Opioid-weaning plan if opioids given with discharge Provide patient and their general practitioner with a post-operative pain-management protocol.
	Post-operative care Efficient patient transfer post-surgery for X-ray, physiotherapy and early mobilisation. The patient should be given the opportunity to walk independently (with or without walking aid) if assessed as safe to do so. Patient to be discharged when they meet routine discharge criteria, including ability to perform activities of daily living independently and able to mobilise safely at home. Provide written post-operative instructions and contact name and phone number for the patient to telephone should they experience complications. Consider readmission process, system for medication review and management of complications, such as DVT, pain, undetected hypotension, hypoxia, urinary retention, poor mobilisation and delirium.
	Follow up Phone, in-person or virtual review by a care team member within 24-48 hours after discharge. Consider pain management assessment and a medication review. Arrange wound review at two weeks post surgery, or as required. As per usual reviews for the surgeon, physiotherapy and general practitioner. Include the completion of PRMs through HOPE as an integral part of the follow up process.
	Ongoing audit of outcomes

For further information

Please contact the Surgery and Anaesthesia team at aci-surgery@health.nsw.gov.au.

Appendix 1:

The perioperative trajectory: From contemplation of surgery to recovery



This diagram is adapted from *The perioperative medicine timeline – From the contemplation of surgery to recovery* developed by the Australian and New Zealand College of Anaesthetists. The timeline is available here: https://www.anzca.edu.au/getattachment/5cdbc388-e417-4814-9ff3-2ba277db1840/The-perioperative-medicine-timeline

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