Rapid Decision Support

A product of the Contextualized Health Research Synthesis Program
Newfoundland & Labrador Centre for Applied Health Research

Disclaimer:

Researchers at the Newfoundland & Labrador Centre for Applied Health Research are not experts on this subject topic and are relaying work produced by others. This report has been produced quickly and it is not exhaustive, nor have any included studies been critically appraised.

This Rapid Decision Support report was published on September 26, 2023 and includes references and links to information that reflects the status of available information at the date of publication. Readers are cautioned that this information may change or become out-of-date after publication.

Rapid Decision Support for Outpatient Joint Arthroplasty: Components, Processes, Pathways and Guidelines

Search focus: For this *Rapid Decision Support* report, CHRSP researchers searched for and identified research evidence that examined the components, processes, and pathways involved in undertaking outpatient joint arthroplasty. We included articles with a focus on total hip and knee arthroplasty, total hip or total knee arthroplasty, and total joint arthroplasty overall.

What we found: The research evidence presented below includes evidence from one overview article by CADTH, 20 review articles, and three guidance documents published between 2017 and 2023. References are listed alphabetically, by article type. For each reference, we highlight key quotes and/or topics that address the components, process, protocols, guidelines, or implementation processes for outpatient joint arthroplasty.

Content summary: Most articles examined similar elements along the outpatient arthroplasty pathway, including some or all of: patient selection and pre-operative measures (e.g., patient inclusion/exclusion, patient education), peri-operative measures (e.g., analgesia, anesthetic, surgical technique), and post-operative measures (e.g. rehabilitation, discharge). In addition, some articles include information on specific surgical issues, cost effectiveness and implementation of outpatient programs. A few reviews also included some examination of evidence on the effectiveness of outpatient joint arthroplasty. Three guidance documents provide key principles for outpatient knee and hip arthroplasty from Canada (Enhanced Recovery Canada), UK (NHS) and Australia (NSW Agency for Clinical Innovation).

Overview Articles

CADTH (Banergee et al.) **Outpatient or Short Stay Total Hip or Knee Arthroplasty versus Conventional Total Hip or Knee Arthroplasty: A Review of Clinical Effectiveness, Cost Effectiveness, and Guidelines.** Ottawa: CADTH; 2020 Oct. (LINK)

- "The aim of this report is to summarize the evidence regarding the clinical effectiveness and cost effectiveness of outpatient or short stay THA compared with conventional (also referred to as inpatient) THA; as well as to summarize the evidence regarding the clinical effectiveness and cost effectiveness of outpatient or short stay TKA compared with conventional TKA. **An additional aim is to summarize the evidence-based guidelines regarding the outpatient or short-stay THA and TKA.**"
- One research question examined: "What are the evidence-based guidelines regarding outpatient or short-stay total hip arthroplasty and total knee arthroplasty?"
- Findings related to guidance: **"No evidence-based guidelines regarding the outpatient or short stay THA or TKA were identified."**

Review Articles

Baratta et al. **Total joint replacement in ambulatory surgery.** Best Practice & Research Clinical Anaesthesiology. Article in press 2023 (LINK)

- Review of current evidence for ambulatory total joint arthroplasty **(focused on knee and hip)**
- **Includes sections on**: Patient selection and preoperative optimization, Anesthetic considerations, Choice of local anesthetic for spinal anesthesia, Perioperative analgesia, Common reasons for failure to achieve same-day discharge after total joint arthroplasty, and Outcomes after ambulatory total joint arthroplasty.
- **Conclusions**: "Ambulatory TJA [total joint arthroplasty] is being increasingly performed at more and more centers but some questions remain. Large randomized controlled trials are needed to compare the impact of NA [neuraxial anesthesia] and GA [general anesthesia] on TJA outcomes specifically in the ambulatory setting. In addition, additional research to define the optimal choice and dose of local anesthetic is needed. Appropriate analgesia is still a significant barrier to ambulatory TJA, and additional studies comparing analgesic regimens in ambulatory TJA patients are needed to better refine the technique. Additional research is needed to identify risk factors and prevention strategies for complications that lead to failed ambulatory TJA such as POUR."
    - "Preoperative patient selection and patient education are important factors to achieve early ambulation and subsequent successful ambulatory total joint arthroplasty. Age, body mass index, certain comorbidities, and inadequate social support have all been found to be predictors of ambulatory total joint arthroplasty failure, although consistent recommendations are lacking in the literature."

Barra et al. **Same-Day Outpatient Lower-Extremity Joint Replacement: A Critical Analysis Review**. JBJS Rev. 2022 Jun 21. (LINK)

- JBJS Reviews, A Critical Analysis Review, focused on **lower extremity joint replacement**
- **Purpose**: "…to provide a critical analysis of current knowledge regarding the components of a successful outpatient TJA program, patient outcomes of inpatient versus outpatient TJA, and the

financial implications for involved parties (patients, insurers, hospitals, and physicians) (see Table I, Recommendations for Care)."

- **Includes sections on:** Patient selection, Anesthesia Considerations, Perioperative Management, and Financial Implications.
- **Summary findings regarding outcomes of same day TJA Relative to longer stay TJA**: "Overall, most preliminary studies suggest that TJA with same-day discharge from hospital-based or ASC settings is safe; however, many are limited by inherent selection bias evident in many cohort design studies, and many studies do not consistently align the definitions of "outpatient" TJA and same-day-discharge TJA. Further studies specific to the ASC setting are necessary to confirm its safety relative to the outpatient hospital setting."
- **Key Messages:**
    - "The economics of transitioning total joint arthroplasty (TJA) to standalone ambulatory surgery centers (ASCs) should not be capitalized on at the expense of patient safety in the absence of established superior patient outcomes."
    - "Proper patient selection is essential to maximizing safety and avoiding complications resulting in readmission."
    - "Ambulatory TJA programs should focus on reducing complications frequently associated with delays in discharge."
    - "The transition from hospital-based TJA to ASC-based TJA has substantial financial implications for the hospital, payer, patient, and surgeon."

Bodrogi et al**. Management of patients undergoing same-day discharge primary total hip and knee arthroplasty.** January 13, 2020**.** Canadian Medical Association Journal (LINK)

- A review of "observational and interventional research on the effectiveness of same-day discharge **total hip and total knee arthroplasty**."
- Defines same-day discharge arthroplasty as "protocols that see patients discharged home on the same calendar day as the procedure, usually within 4 to 8 hours after the end of the surgery. This is distinct from discharge within 23 hours after surgery, which is often labelled as "outpatient" in the literature. However, many large database studies do not distinguish between the 2 kinds of protocols, and some evidence presented herein includes patients who spent up to 23 hours in hospital."
- **Includes sections on**:
    - Which patients are good candidates for outpatient total hip and knee arthroplasty? (includes absolute and relative exclusion criteria and lists "**Severe Obstructive Sleep Apnea"** under relative exclusion criteria for TJA but does not give any more information)
    - What perioperative advances have enabled same-day discharge total joint arthroplasty?
    - What can a patient expect after outpatient total knee or hip arthroplasty?
    - How do outcomes of outpatient protocols compare with those of traditional inpatient protocols?
    - Do outpatient joint arthroplasty programs save the health system money?
    - How can primary care physicians optimize outcomes for patients who undergo same-day discharge total joint arthroplasty?

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- **Key points**:
    - "According to protocols developed to ensure patient safety, candidates for same-day surgery are people younger than 80 years without preoperative bleeding disorders, cirrhosis, clinically important cardiac disease or end-stage renal disease."
    - "When patients are selected appropriately, rates of adverse events and functional outcomes are similar to those observed among patients who undergo inpatient-protocol arthroplasty, patient satisfaction is high, and procedures are cost-effective."
    - "Careful education of patients, by surgeons and primary care physicians, can help to dispel myths about outpatient total joint arthroplasty and thereby optimize success."

Hall et al. **Day-case total hip arthroplasty: a safe and sustainable approach to improve satisfaction and productivity, and meet the needs of the orthopaedic population.** Orthopaedics and Trauma. February 2022. (LINK)

- Narrative review + experiences of successful units for **lower limb arthroplasty**
- "The first part of this article offers a narrative review of day case THA and considers the relative merits of this approach to lower limb arthroplasty services. The second part describes the experiences of successful units and provides a summary of the principles that are essential to deliver safe and effective care."
- **Includes sections on**:
    - The case for day case total hip arthroplasty (with subsections on Global disease burden, Challenges facing services, Sustainability of current strategies, Efficiency and feasibility, Safety, Success, Satisfaction),
    - Delivering a day case total hip arthroplasty service (with subsections on Patient selection, Hospital technique, Surgical technique, Discharge and aftercare).
- From sub-section on Efficiency and feasibility for definition of outpatient:
    - "Typically, 'outpatient' surgery is defined as a surgical procedure associated with a very short LOS (less than 24 hours) but where patients remain in hospital for one night. 'Day case' surgery is where a patient is admitted and discharged on the same calendar day with no overnight stay."
    - "Successful day case services require the development of high-quality protocolized approaches to care that are both evidence-based and efficient, as well as the careful consideration of resource utilization. Units that have established a successful day case process typically report improved efficiency across their service, with iterative gains made on existing traditional or enhanced recovery processes."
- From sub-section on Safety:
    - "When considering the literature pertaining to the safety of outpatient and day case surgery it is important to consider the role of selection bias because these approaches are typically reserved for patients that are healthier and relatively uncomplicated."

Khetarpal et al. **Outpatient Joint Arthroplasty-Working and Rising through the Pitfalls and Challenges.** Br J Pharm Med Res. March - April 2021. (LINK)

- Review of 93 articles "discussing the journey of transition from inpatient arthroplasty to present scenario of outpatient arthroplasty for the last 20 years."
- **Includes sections on**: Patient selection criteria, Discharge Criteria, Enhanced recovery after surgery (ERAS), Choice of Anaesthesia, and Barriers to same- day discharge.

- **Conclusions**: "From anesthesiologist point of view the type of anaesthesia, PNB, and medication as part of multimodal analgesia to be included in protocol depends on skills of anaesthesiologist, resources and infrastructure of each institution"

Krause et al. **Outpatient Total Knee Arthroplasty: Are We There Yet? (Part 1)**. Orthop Clin North Am. Epub 2017 Oct 27. (LINK)

- Review of "current data and recommendations for implementing successful TKA [total knee arthroplasty] and unicompartmental knee arthroplasty outpatient protocols. Specifically, this review will provide information regarding cost reduction, patient selection criteria, and preoperative medical optimization**."**
- **Key Messages**:
    - "Patients who qualify for outpatient knee arthroplasty are generally younger than 65 years old, with a range of 45 to 80 years. Patients older than 75 years have been found to have a higher risk of postoperative falls, knee stiffness, pain, and urinary retention, and an increased readmission risk within 1 year of surgery."
    - "A key part of improving outcomes, reducing costs, and improving patients' overall health status is correlated with the level of patient activation."
    - "Risk factors for infection include malnutrition, anemia, obesity, diabetes, alcohol or intravenous (IV) drug use, corticosteroid use, chronic liver disease, post-traumatic arthritis, prior surgery, and greater severity of comorbidities."

Krause et al. **Outpatient Total Knee Arthroplasty: Are We There Yet? (Part 2).** Orthop Clin North Am. Epub 2017 Oct 26. (LINK)

- "This article reviews current recommendations for implementing successful total knee arthroplasty (TKA) and unicompartmental knee arthroplasty outpatient protocols. Specifically, information regarding anesthesia and analgesia modalities, perioperative care, operative technique, and postoperative care within outpatient TKA pathways is discussed."
- **Key Points**:
    - "Regional anesthesia with various combinations of pain control medication has proved successful, with a combination of oxycodone hydrochloride, ketorolac, hydrocodone, and acetaminophen."
    - "With regard to perioperative care, it is recommended to avoid use of Foley catheterization, screen and decolonize for methicillin-resistant Staphylococcus aureus, and provide appropriate antibiotic dosing in a timely fashion and appropriate DVT prophylaxis with aspirin in select patients."
    - "Various accelerated clinical care pathways have been implemented and proved successful in enhancing postoperative outcomes. These are generally optimized when coupled with best evidence-based medical interventions, such as enhanced recovery pathways."

Lazic et al. **Day-case surgery for total hip and knee replacement: How safe and effective is it?** EFORT Open Rev. 2018 Apr 27. (LINK)

- "This instructional review aims at answering this questioning by defining the safety and effectiveness of day-case arthroplasty."

- **Includes sections on:** Evidence supporting day-case arthroplasty (Patient eligibility, Patient education, Anesthesia, Analgesia, Venous thromboembolism prophylaxis, Blood loss management, Surgical technique, Rehabilitation, Patient discharge criteria), and Day-case arthroplasty protocols.
- **Key messages:**
    - "Multimodal protocols for pain control, blood loss management and thromboprophylaxis have been shown to benefit patients by being more effective and as safe (fewer iatrogenic complications) as conventional protocols."
    - "Proper patient selection and education, multimodal protocols and a well-defined clinical pathway are all key for successful day-case arthroplasty."
    - "By potentially being more effective, cheaper than and as safe as inpatient arthroplasty, day-case arthroplasty might be beneficial for patients and healthcare systems."
    - "In order to guarantee its safety and effectiveness, there is still a need for further prospective studies on the long-term outcomes after day-case arthroplasty as well as clinical trials to demonstrate the clinical relevance compared with current standards."

Li J et al. **Essential elements of an outpatient total joint replacement programme**. Curr Opin Anaesthesiol. 2019 Oct. (LINK)

- Review **with special focus on total knee and total hip arthroplasty** that summarizes "the safety and feasibility of outpatient total joint arthroplasty (TJA) from the perspectives of short-term complications, long-term functional outcomes, patient satisfaction and financial impact, and to **provide evidence-based guidance on how to establish an outpatient TJA programme**."
- **Concerns about Outpatient safety**
    - **"…the definition of 'outpatient' versus 'inpatient' is somewhat vague in the current literature of TJA,** and the so-named 'outpatient' surgery in databases, such as ACS-NSQIP, may in reality have had hospital stays of 0, 1, even 2 days, although there is no difference in outcome between 'outpatient' THA and TKA with variable lengths of stay."
- **Summary**: "With a standardized clinical pathway, outpatient TJA can be safe and effective in a subset of patients. Essential components of a successful outpatient TJA programme include proper patient selection, preoperative patient/family education, perioperative multidisciplinary coordination and opioid-sparing analgesia, and early and effective post discharge planning. More studies are needed to further assess and optimize this new care paradigm."
- **See Table 3: Essential components of an outpatient total joint arthroplasty programme**
    - 1. A high-volume center with a multidisciplinary clinical pathway
    - 2. Preoperative planning, including patient selection and mandatory education
    - 3. Experienced surgeons
    - 4. Anesthesiologists skilled in regional anesthesia and multimodal acute pain management
    - 5. Structured rehabilitation with flexibility in inpatient/outpatient/virtual physical therapy
    - 6. Postoperative navigation through dedicated coordinators with proper patient follow-up

Mariorenzi et al. **Outpatient Total Joint Arthroplasty: A Review of the Current Stance and Future Direction**. R I Med J (2013). 2020 Apr 1. (LINK)

- "The purpose of this review is to outline some of the major considerations when transitioning to performing total **hip and knee arthroplasty** in the outpatient setting. The review will discuss patient selections, **perioperative management pathways**, and outcomes related to outpatient total joint arthroplasty (TJA)."
- "**Perioperative Management**: In order to provide a successful outpatient TJA experience, pre-operative education class and physical therapy session can set expectations and prepare the patient for the post-operative recovery at home. Specific anesthesia techniques focus on regional blocks, multi-modal pain control, and reduction of post-operative nausea and vomiting and rapid recovery protocols have been developed to provide early mobilization and physical therapy."
- "**Outcomes**: Nationwide analyses have found improved complication rates ranging from 1.3%–3% in outpatient TJA group compared to 3%–12% in the inpatient TJA group. Financial analyses have found significant cost savings for outpatient TJA mostly related to reduction in surgical floor care."
- "**Conclusions**: Outpatient TJA has the potential to improve patient experience with cost savings and no increased risk of complications in the appropriately selected patient population."

Meneghini et al. **The American Association of Hip and Knee Surgeons, Hip Society, Knee Society, and American Academy of Orthopaedic Surgeons Position Statement on Outpatient Joint Replacement**. J Arthroplasty. 2018 Dec. (LINK)

- Position statement (based on review) for **hip and knee arthroplasty** "was developed systematically in a true collaboration with key stakeholders with interest in the safety and well-being of patients who undergo outpatient hip and knee arthroplasty and the surgeons who perform them…..intended to clearly state our priority of preserving patient safety and to outline specific recommendations for surgeons and institutions considering discharge of hip and knee replacement patients on a **same-day outpatient** basis…. An initial draft was review and edited by the American Association of Hip and Knee Surgeons, the American Academy of Orthopaedic Surgeons, the Hip Society, and the Knee Society….was also reviewed and received support from AdvaMed who represents the collaboration with our industry partners. The final position statement in this manuscript represents the culmination of all reviews and edits performed by the aforementioned organizations."
- **Essential elements of outpatient program**:
    - "Patient selection (on medical grounds)
    - Patient education and expectation management (e.g., preoperative "joint school")
    - Social support and environmental factors (family or professional outpatient support)
    - Clinical and surgical team expertise
    - Institution facility or surgery center factors (history of successful team work and an environment conducive to optimizing surgical outcomes)
    - Evidence-based protocols and pathways for pain management, blood conservation, wound management, mobilization, and VTE prophylaxis."
- "It is our opinion that some total hip and knee replacements can be appropriately performed in the outpatient setting with safe discharge on the day of surgery if the abovementioned factors, elements, and sufficient practitioner and surgeon experience are maintained."

Register et al. **Establishing a Successful Outpatient Joint Arthroplasty Program**. AORN J. 2018 Jul. (LINK)

- Review on the management of outpatient joint arthroplasty (OJA)
- **Includes sections on**: Comprehensive care for joint replacement programs, Outpatient selection criteria, **Perioperative protocols, and Implementing an OJA program**
- **Key Messages**:
    - "Many surgical procedures are performed in outpatient settings, and outpatient joint replacements are one of the emerging trends in orthopedics."
    - "Not all patients are candidates for outpatient joint arthroplasty (OJA); however, careful selection of appropriate patients can allow for successful outpatient surgery and recovery at home."
    - "The perioperative protocols guiding patient care before and after OJA play a large role in determining outcomes for patients. Evidence shows a positive effect of patient education, the presence of a case manager, physical therapy, specialized surgical techniques, pain management and anesthesia, and blood management strategies on OJA outcomes."
    - "A successful OJA program requires the engagement of all key stakeholders, including organizational leaders and surgeons. A major consideration for successfully implementing an OJA program is to develop a predictable OR experience. Leaders should identify the most successful inpatient care practices and adapt them to the outpatient arena."

Rodríguez-Merchán EC. **Outpatient total knee arthroplasty: is it worth considering**? EFORT Open Rev. 2020 Mar 2. (LINK)

- "The purpose of this review article is to better understand the outcomes of outpatient TKA [total knee arthroplasty], to determine whether it is worth consideration."
- **Includes sections on**: Inclusion criteria for outpatient TKA; Is outpatient TKA safe? Results and complications of outpatient TKA; Requirements for performing a successful outpatient TKA (Preoperative considerations, Perioperative considerations, Postoperative considerations, Areas that require more research)
- Outpatient TKA defined as (duration of hospital stay < 1 day)
- **Key messages**:
    - "Some authors have reported that outpatient total knee arthroplasty (TKA) is a successful, safe and cost-effective treatment in the management of advanced osteoarthritis."
    - "The success obtained has been attributed to the coordination of the multidisciplinary team, standardized perioperative protocols, optimal hospital discharge planning and careful selection of patients."
    - "One study has demonstrated a higher risk of perioperative surgical and medical outcomes in outpatient TKA than inpatient TKA, including component failure, surgical site infection, knee stiffness and deep vein thrombosis."
    - **"There remains a lack of universal criteria for patient selection**. Outpatient TKA has thus far been performed in relatively young patients with few comorbidities."

- "It is not yet clear whether outpatient TKA is worth considering, except in very exceptional cases (young patients without associated comorbidities)."
- **"Outpatient TKA should not be generally recommended at the present time."**

Rozell et al**. Outpatient Total Joint Arthroplasty: The New Reality.** J Arthroplasty**.** Epub 2021 Feb 12. (LINK)

- "This article will review the data supporting outpatient arthroplasty, the business and legal aspects involved, if surgeons can align with their hospital to offer these services, and how tightly knit and highly organized teams are key to the success of safely **offering hip and knee arthroplasty** on an outpatient basis."
- **Includes sections on:** Patient selection and data supporting outpatient arthroplasty, Business and legal aspects of ambulatory surgery centers, Legal considerations, Aligning with your hospital for outpatient arthroplasty, Private practice, Academic Practice, Barriers to integration, Know your bargaining chips, Develop a "leave behind" for health systems, Trust in negotiation, Teams are critical to success: anesthesia, medical and surgical considerations
- **Conclusions:** "While it appears that highly skilled and organized teams that follow evidence-based protocols can perform these procedures safely on an outpatient basis, it requires substantial time and effort on behalf of the surgeon and their team. Patient selection is critical and close remote follow-up is recommended. Among the payoffs, however, is the ability for the surgeon to work in an environment where they have more control than in a standard hospital. This sense of control over the work atmosphere can lead to increased physician satisfaction which may further augment patient outcomes."

Sayeed et al. **Total Hip Arthroplasty in the Outpatient Setting: What You Need to Know (Part 1).** Orthop Clin North Am. Epub 2017 Oct 26. (LINK)

- This review article discusses "**all components involved in creating and implementing a successful outpatient THA pathway.** Specifically, reviews patient selection criteria, preoperative education, and preoperative medical optimization."
- **Key messages**:
  - "The Anesthesiologists Physical Status Classification System and the Charlson Comorbidity Index have often been used as surrogates for arthroplasty selection and risk assessment."
  - "The components of a given education course may be institution-specific; however, most courses have an underlying theme to empower patients to participate in their recovery and manager their expectations."
  - "Preoperative patient blood management protocols using epoeitin-alpha may be amenable to reduce length of stay, as they have been associated with reduced transfusion rates in elective total hip arthroplasty."
- "Although, there is no gold standard for preoperative optimization of outpatient THA patients, evidence-based approaches will likely minimize AEs [adverse events] and improve care nationally"

  (Box 1) "General preoperative recommendations for outpatient total hip arthroplasty:
  - General preoperative recommendations for outpatient total hip arthroplasty
  - Create patient selection criteria for outpatient THA pathways that is institution-specific
  - Medically optimize patients prior to inducting into outpatient THA pathway

- Utilize preoperative blood management protocols for anemic patients
- Utilize preferred method of TXA administration depending on institution review of evidenced-based recommendations
- Enhance patient activation by creating live joint classes and workshops to reduce patient anxiety and answer possible patient inquiry"

Sayeed et al. **Total Hip Arthroplasty in the Outpatient Setting: What You Need to Know (Part 2).** Orthop Clin North Am. Epub 2017 Oct 26. (LINK)

- "This article is the second instalment of understanding the components involved in creating and implementing a successful outpatient THA pathway…. reviews intraoperative factors involved in outpatient THA such as anesthesia and analgesia modalities, operative techniques, and intraoperative efficiency….elaborates on postoperative considerations for outpatient THA including rehabilitation."
- **Includes sections on:** Anesthesia and analgesia modalities, Intraoperative considerations for outpatient total hip arthroplasty, and Postoperative care.
- **Key messages:**
  - "General anesthesia is known to be associated with postoperative drowsiness and hypotension that might interfere with the fast-track protocols. General anesthesia, if used, will be done with sevoflurane and fentanyl in addition to peripheral nerve blocks."
  - "Intraoperative room efficiency may be optimized by minimizing staff turnover, traffic flow, and the size of the surgical team."
  - "Regional anesthesia allows for less narcotic administration, which has been associated with decreased postoperative nausea and hypotension."
- **Summary:** "Outpatient THA has potential for more rapid recovery and return to function for eligible candidates. Careful patient selection, implementation of newer anesthetic and rehabilitation protocols, and minimally invasive approaches to THA all play a role in outpatient care pathways. The general concept remains that each process, whether pre-, intra-, or postoperative, holds tremendous value for patients involved in the care continuum. **Although no gold standard pathway exists, it is clear that further evidence is needed to provide surgeons with examples on how to conduct such procedures at their respective institutions**."

Thompson et al**. The introduction of day-case total knee arthroplasty in a national healthcare system: A review of the literature and development of a hospital pathway.** Surgeon. Epub 2021 Mar 23. (LINK)

- **"**We present the development of an evidence-based multidisciplinary perioperative care **pathway for day-case total knee arthroplasty (TKA)** in a United Kingdom National Health Service (NHS) institution, in conjunction with a review of the literature upon which the protocol is founded."
- **Includes sections on:** University College London Hospitals elective day surgery arthroplasty pathway, Pre-operative measures, Peri-operative measures, and Post-operative measures.
- **Key Messages:**
  - "Day-case TKA has been demonstrated in the literature to be as safe and effective."
  - "Day-case TKA can benefit both patients and healthcare systems alike."
  - "Careful patient selection paralleled with well-defined care pathways are essential."
  - "This review further validates the introduction of our institutional EDSAP for TKA."
  - "Continued investigation is warranted in order to further improve this service."

- **Conclusions:** "Careful patient selection paralleled with well-defined care pathways, including patient education, tailored perioperative protocols, multimodal analgesia, meticulous surgical technique, discharge criteria and established post-operative procedures are essential for successful introduction of day-case TKA into the NHS. As we begin to introduce day-case TKA into our national healthcare system, continued investigation into all aspects of the surgical episode are warranted in order to further improve this service."

Thompson et al. **Day-case total hip arthroplasty: a literature review and development of a hospital pathway.** Bone Jt Open. 2021 Feb. (LINK)

- "We present the development of a **day-case total hip arthroplasty (THA) pathway** in a UK National Health Service institution in conjunction with an extensive evidence-based summary of the interventions used to achieve successful day-case THA to which the protocol is founded upon."
- **Includes sections on:** University College London Hospitals day-case arthroplasty pathway, Preoperative measures, Perioperative measures, Postoperative measures, Limitations to the evidence of day-case THA
- **Key messages:**
    - "Early literature demonstrates day-case total hip arthroplasty (THA) proves to be as safe, effective, and more cost-effective than inpatient THA, benefitting both patients and healthcare systems alike."
    - "In a UK NHS-based system, initial results for day-case THA are promising, with low 30-day and 90-day readmission and complication rates."
    - "Careful patient selection and education, adequate perioperative considerations, and appropriate postoperative pathways are essential for successful day-case THA."

Vendittoli et al. **Combining enhanced recovery and short-stay protocols for hip and knee joint replacements: the ideal solution.** Can J Surg. 2021 Feb 3**.** (LINK)

- Review on the rational for Enhanced Recovery After Surgery (ERAS) in Canada.
- "Enhanced Recovery Canada and the Canadian Patient Safety Institute support the development of ERAS pathways for orthopedic procedures. The goal is to provide patients, health care providers and leaders with helpful tools and resources to effectively implement and sustain ERAS protocols."
- **Plain Language Summary**: "Pressure to reduce health care costs, limited hospital bed availability as well as improvements in surgical techniques and perioperative care motivated many health care centres to implement short-stay protocols for patients undergoing hip or knee arthroplasty. To improve patient outcomes and maintain care safety, we strongly believe the best way to implement a successful outpatient program would be to embrace the principles of Enhanced Recovery After Surgery (ERAS), and to improve patient recovery to a level such that the patient could leave the hospital sooner. Enhanced Recovery Canada and the Canadian Patient Safety Institute support the development of ERAS pathways for orthopedic procedures. The goal is to provide patients, health care providers and leaders with helpful tools and resources to effectively implement and sustain ERAS protocols. Reducing the rate of adverse events while reducing the length of hospital stays to less than 24 hours is a winning situation for everyone."

- **Includes sections on:** What is ERAS?, Preoperative patient optimization, Pain control, Gastrointestinal function, Early mobilization; Blood conservation, Prevention of thromboembolic events, Wound care; Evaluation of an ERAS short-stay protocol
- **Discussion Points:**
    - "To be effective, ERAS protocols should be applied systematically and include the patient and family at the core, supported through the efforts of the interdisciplinary team. In most cases, implementation involves important practice modifications. Following a common, clearly defined goal is key."
    - **"ERC pathways for THA and TKA will soon be available on the Canadian Patient Safety Institute website"**

Zomar et al. **Implementation of Outpatient Total Joint Arthroplasty in Canada: Where We are and Where We Need to Go**. Orthop Res Rev. Feb 2020. (LINK)

- Review of the implementation of outpatient total joint arthroplasty in Canada.
- **Includes sections on:** Outpatient arthroplasty, International experience, Canadian experience, Cost savings, Need for future studies, Implementation in the Canadian setting, Provider factors, Patient factors, Organization factors, Potential solutions.
- **Conclusions**: "There are many provider-, patient- and organization-level barriers suggested that may be hindering the implementation of outpatient arthroplasty procedures in Canada. Most of these barriers can be overcome with communication between the various care providers combined with adequate patient and caregiver education. Communication is essential for establishing new pathways within hospitals and to ensure efficient patient care within a shorter timeline prior to discharge. Education for patients and caregivers could alleviate safety concerns and ensure they are comfortable with managing their own pain and dressing changes as well as reduce unnecessary trips to the emergency room when concerns arise. A key incentive of its implementation for hospitals is the proposed cost savings, which can help alleviate the large economic burden arthroplasty procedures represent by reinvesting cost savings into arthroplasty programs to provide more procedures and reduce waitlists. Ultimately, many patients believe that home is the best place to recover, however more research is required to fully elucidate the effects of outpatient discharge on patient safety and cost savings as there are currently no high-quality randomized control trials or full economic analyses published in the literature. With committed leadership, this paradigm shift in the post-operative care of arthroplasty patients is imminently possible in collaboration with patients, caregivers, allied health care workers and other key stakeholders."

Guidance Documents

Enhanced Recovery Canada. **Clinical Pathway for Inpatient and Outpatient Hip and Knee Arthroplasty Enhanced Recovery Canada**: A Collaborative to Improve Surgical Care. 2021. (LINK)

- **Purpose**: "to provide practitioners in Canada with evidence-based strategies to improve surgical outcomes in hip and knee arthroplasty patients. Applying these principles will also help to reduce hospital length of stay. Based on patient's personal and medical conditions they may be candidates for an **outpatient surgery (discharged home on the same calendar day as the surgery) or a day surgery (discharge <24 h after surgery**)."

- **Disclaimer**: "The recommendations made in this document are a synthesis of currently accepted approaches based on a review of relevant scientific literature."
- **Target Population**: "All adult patients who require total hip arthroplasty (THA) or total knee arthroplasty (TKA) or unicompartmental knee arthroplasty (UKA) should be considered for ERAS management using the recommendations provided in this clinical pathway regardless of the planned hospital length of stay (outpatient or hospitalized)."
- Includes exclusion criteria for ERAS outpatient procedure (p.2).
- Includes Patient characteristics that merit caution and individual evaluation before attempting an ERAS outpatient procedure with the present pathway (p.2).
- **Includes key messages on:** Patient and Family Engagement, Patient Optimization, Analgesia, Surgical Best Practice, Fluid Management, Nutrition, Mobility and Physical Activity

GRIFT et al. **Orthopaedic Elective Surgery Guide to delivering perioperative ambulatory care for patients with hip and knee pain requiring joint replacement surgery.** British Orthopaedic Association, NHS. March 2023. (LINK)

- "This document details an approach to delivering safe and effective elective primary hip and knee arthroplasty using ambulatory pathway principles (default 0- or 1-night stay)."
- **List 8 key principles that have enabled a step change in LoS for elective hip and knee arthroplasty at exemplar hub sites**:
    - "1. All patients are put on an ambulatory pathway by default, apart from patients who are preidentified as requiring post-operative level 1.5 or greater care"
    - "2. Enhanced post-operative management is divided into two phases with a list of discharge competences. Time achieved is documented against these competences to assess readiness for discharge."
    - "3. Extension of therapy services/alternative provision options to support acquisition of mobility discharge competences until 20.00hrs on any day with elective operating (5- or 6-day service)."
    - "4. Patient education programme embeds the expectation of a 0- or 1-night stay as the default"
    - "5. Highly refined clinical pathways providing maximal patient optimisation and enhanced recovery. Small modifications in current practice can yield cumulatively powerful results in achieving shorter stay surgery – sharing of best practice developed in centres."
    - "6. Reduce variation – adherence to protocols is critical for success"
    - "7. Consolidate elective inpatient bed base. Reducing LoS offers opportunities to make efficient use of inpatient elective bed provision, and protect the ring-fenced status of the required number of beds."
    - "8. Multi-disciplinary engagement through clinical, managerial, and executive levels is paramount to success. Teams on the ground must be empowered by their trust's executive team and management structure to be supported to achieve change."
- **See Section on Presentation and Referral:** "All day theatre lists are booked as 4 joints as standard practice unless high complexity flagged. Cases which are pre-identified as >0-day LoS are scheduled for the afternoon. Some surgical teams will be able to operate on 5 or 6 patients whilst more junior consultants may need a period of mentoring until they are able to consistently undertake 4 joints per all day session."

NSW Agency for Clinical Innovation. **Same-day hip and knee joint replacement surgery key principles.** Agency for Clinical Innovation. March 2022. (LINK)

- Guidance document that "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…. 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."
- **Includes sections on:** Patient selection criteria, Pre-operative pathway, Intra-operative pathway, Patient discharge, Immediate post-operative care.
- "**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."
- **Enablers for implementation included:** Robust governance and clinical oversight, Resourcing, Commitment to patient and staff education, Commitment to gathering and auditing data
- See p. 4 for suggested pathway elements for same-day joint replacement