Day surgery joint replacement surgery with routine resources in regional Australia

Pilot program

Dr Sam Martin

Grafton Base Hospital

Baringa Private Hospital

Declaration of Interest

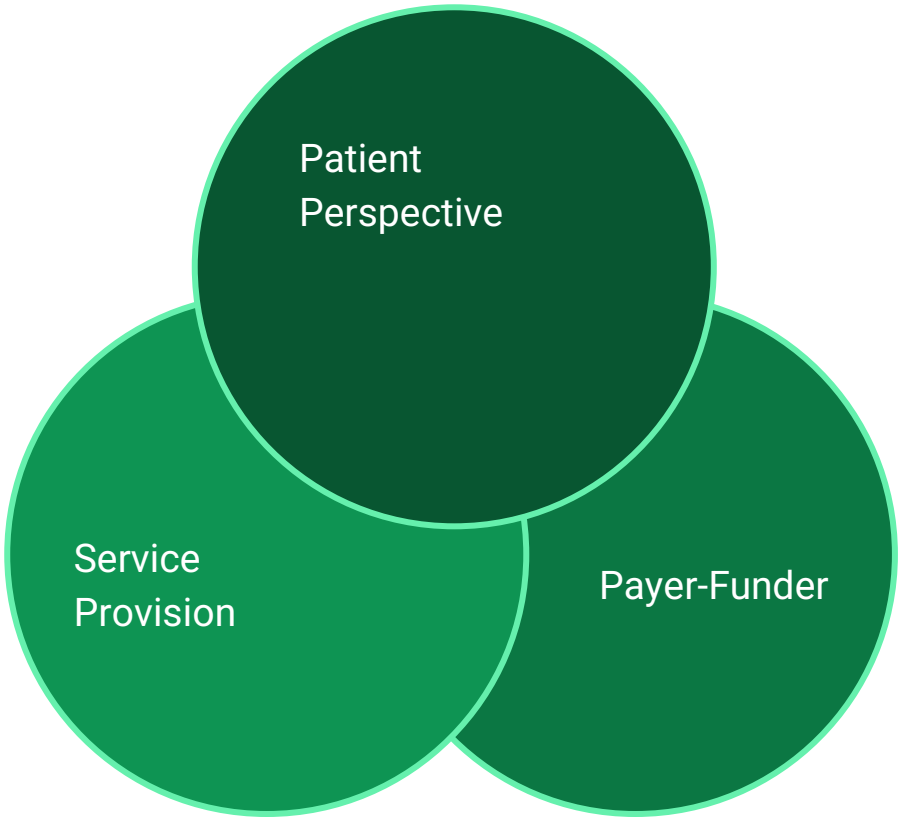
I declare that in the past three years I have:

- held shares in: Nil
- received royalties from: Nil
- done consulting work for: Nil
- given paid presentations for: Nil
- received institutional support from: Nil

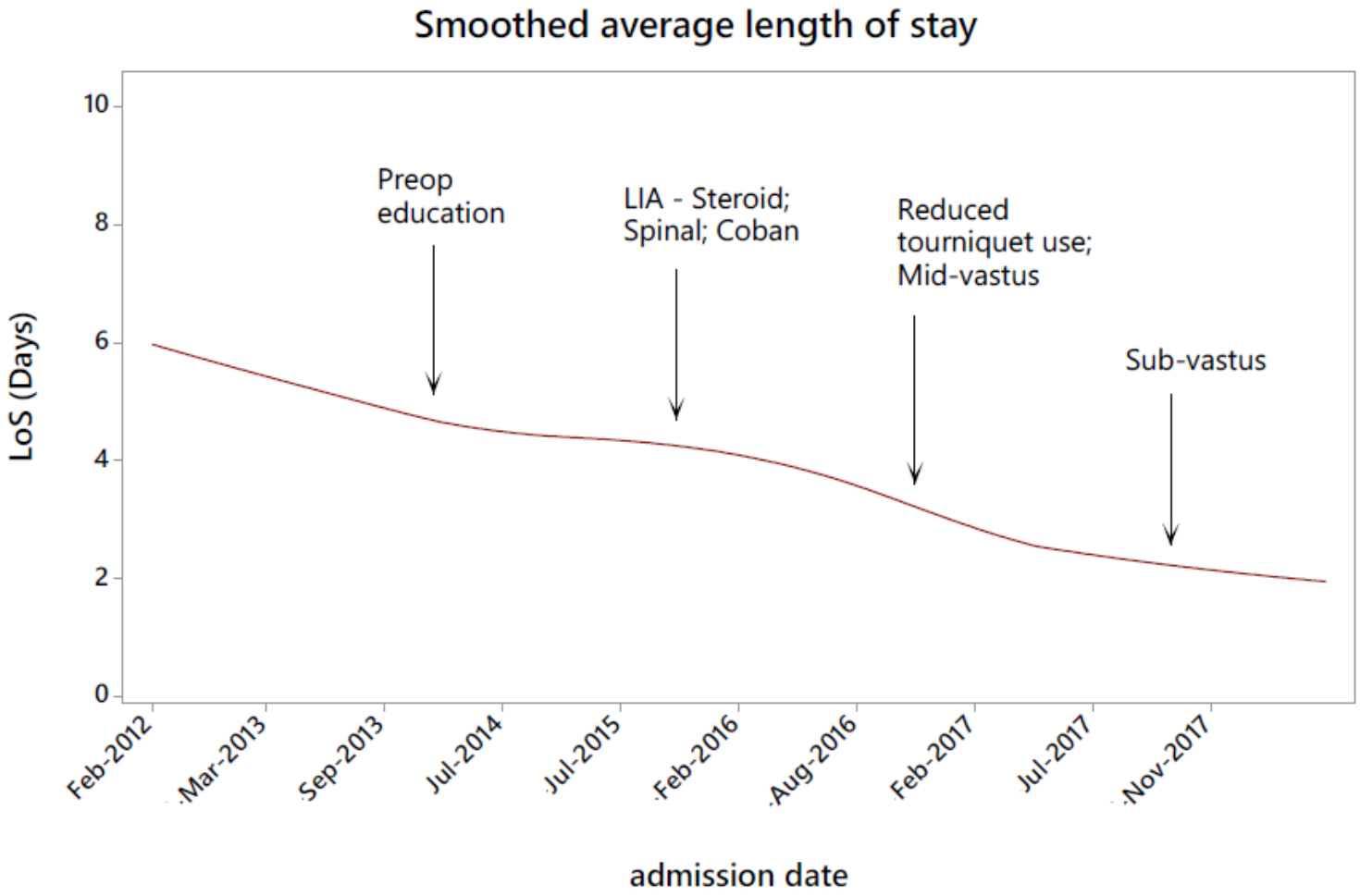
Signed: Sam Martin

Why fix it if it isn’t broken? What is the point?

EBM ANALYTICS



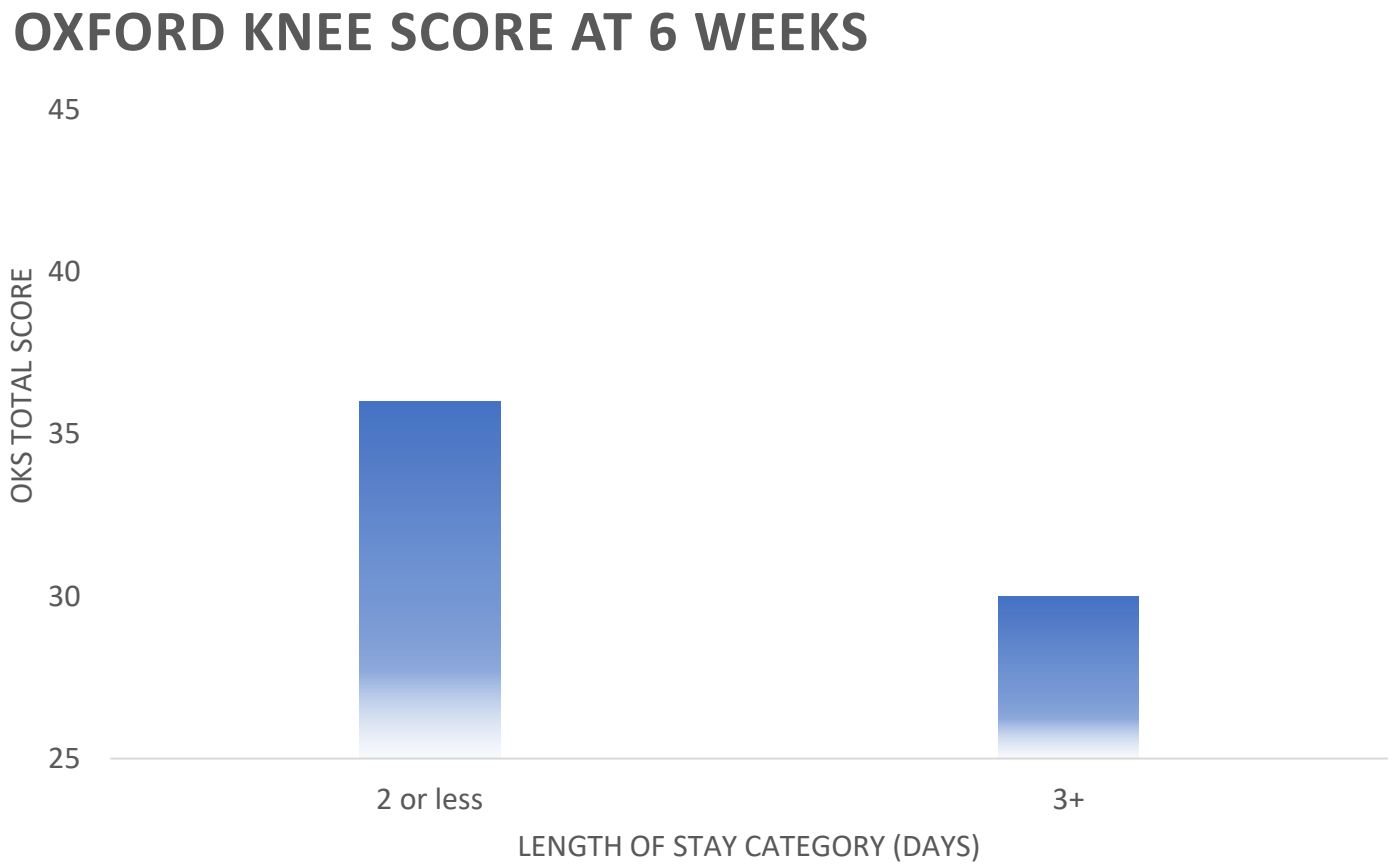
LOS shortens as we implement changes



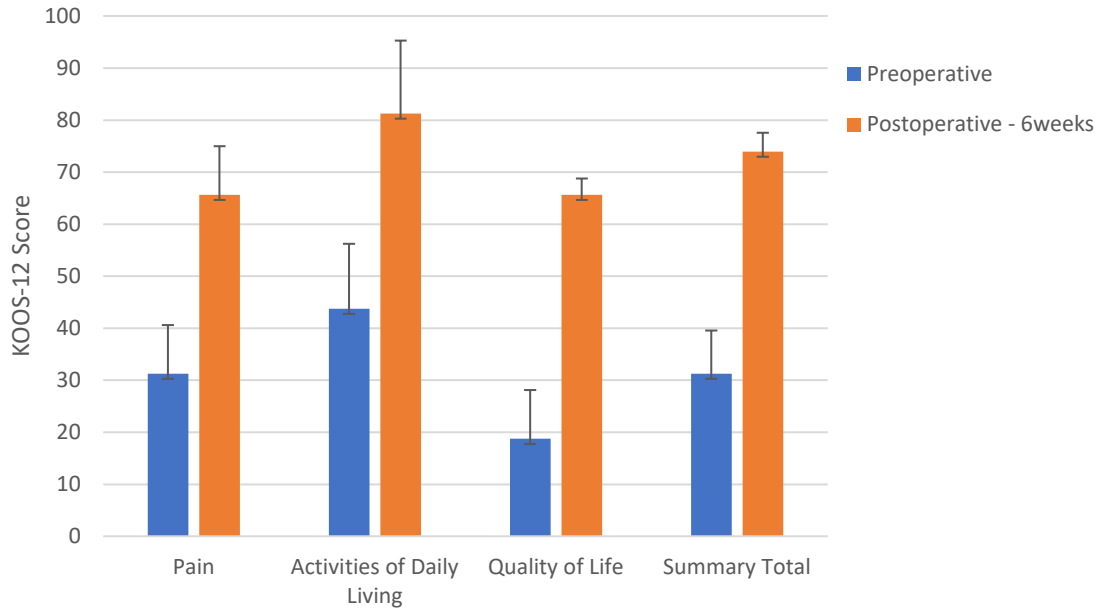
Shorter stay TKR outcomes may be superior

- **Short stay (≤2 days) higher OKS total at 6 weeks (P<0.05)**
- **Short stay higher rate of OKS >PASS (40 vs 14%, P < 0.05)**
- **Short stay higher rate of 6MWT >MCID (30 vs 17%, P < 0.05)**

- Sample of 69 patients
- Operated at regional public hospital 2018-2019



Recent TKRs 6/52 proms vs preop (<48 hrs LOS)



Greater than MCID in all fields by 6/52

Safety of outpatient arthroplasty

- No differences in
  - Readmission
  - Complications
  - Reoperations
  - ED visits

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

Inpatient Versus Outpatient Arthroplasty: A Single-Surgeon, Matched Cohort Analysis of 90-Day Complications

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ABSTRACT

Background: Although some prior work supports the safety of same-day arthroplasty performed in a hospital, concerns remain when these procedures are performed in a free-standing ambulatory surgery center. The purpose of this study is to compare 90-day complication rates between matched cohorts that underwent inpatient vs outpatient arthroplasty at an ambulatory surgery center.
Methods: A single-surgeon cohort of 243 consecutive patients who underwent outpatient arthroplasty was matched with 243 inpatients who had the same procedure. One-to-one nearest-neighbor matching with respect to gender, age, American Society of Anesthesiologists Score, and body mass index was utilized. The 486 primary arthroplasties included 178 unicondylar knees (36.6%), 146 total hips (30.0%), 92 total knees (18.9%), and 70 hip resurfacings (14.5%). Ninety-day outcomes including reoperation, readmission, unplanned clinic or emergency department visits, and major and minor complications were compared using a 2-sample proportions test.
Results: The 2 cohorts were similar in distribution of demographic variables, demonstrating successful matching. The inpatient and outpatient cohorts both had readmission rates of 2.1% ($P = 1.0$). With the number of subjects studied, there were no statistically significant differences in rates of major complications (2.1% vs 2.5%, $P = 1.0$), minor complications (7.0% vs 7.8%, $P = .86$), reoperations (0.4% vs 2.1%, $P = .22$), emergency department visits (1.6% vs 2.5%, $P = .52$), or unplanned clinic visits (3.3% vs 5.8%, $P = .19$).
Conclusion: This study suggests that arthroplasty procedures can be performed safely in an ambulatory surgery center among appropriately selected patients without an increased risk of complications.

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Original research

Is it safe? Outpatient total joint arthroplasty with discharge to home at a freestanding ambulatory surgical center

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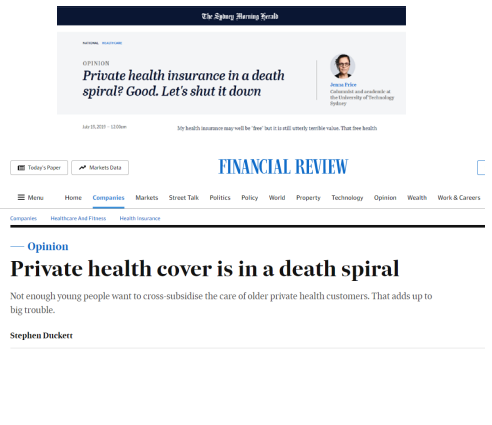
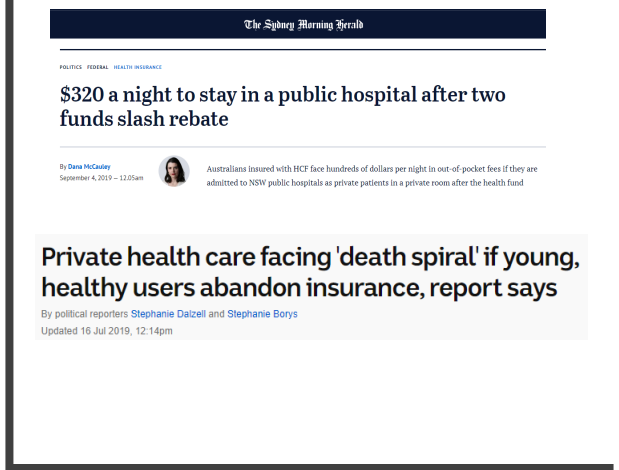
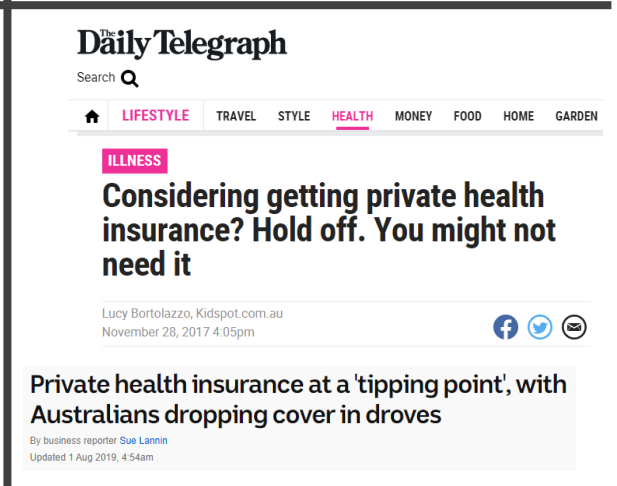
ABSTRACT

Background: Total joint arthroplasty (TJA) is trending toward shorter hospitalizations; as a result, there are many ambulatory surgical centers (ASCs) starting to perform outpatient TJA. However, there are limited studies examining the safety of outpatient TJA in the freestanding ASC setting. This study aims to evaluate 30-day and 90-day complication rates in patients who underwent outpatient TJA at a free-standing, independent ASC with direct discharge to home.
Methods: A retrospective cohort review using health records was performed on the first 115 TJAs performed between August 2015 and March 2017 by one of the 4 orthopedic surgeons. Before the first TJA, the ASC had developed a multidisciplinary TJA pathway.
Results: Of the 115 TJAs, 37 (32%) were total hip arthroplasties (THAs), 53 (46%) total knee arthroplasties (TKAs), and 25 (22%) unicompartmental knee arthroplasties, with a mean age of 57 ± 7 years and body mass index of 30 ± 5 kg/m². There were no intraoperative or direct ASC-related complications. There was 1 instance (0.9%) of a postoperative minimally displaced intertrochanteric femur fracture after THA due to a fall treated nonoperatively complication within 30 days of surgery. Of the 90-day complication events, there were 2 patients (2%) with postoperative arthrofibrosis of the knee after TKA requiring manipulation under anesthesia, 1 postoperative patellar tendon rupture during therapy after TKA requiring surgical repair and 1 delayed hematogenous infection after international travel after THA requiring 2-staged exchange.
Conclusions: Outpatient TJA with discharge to home at a freestanding, independent ASC is a safe option after development of a multidisciplinary TJA pathway.





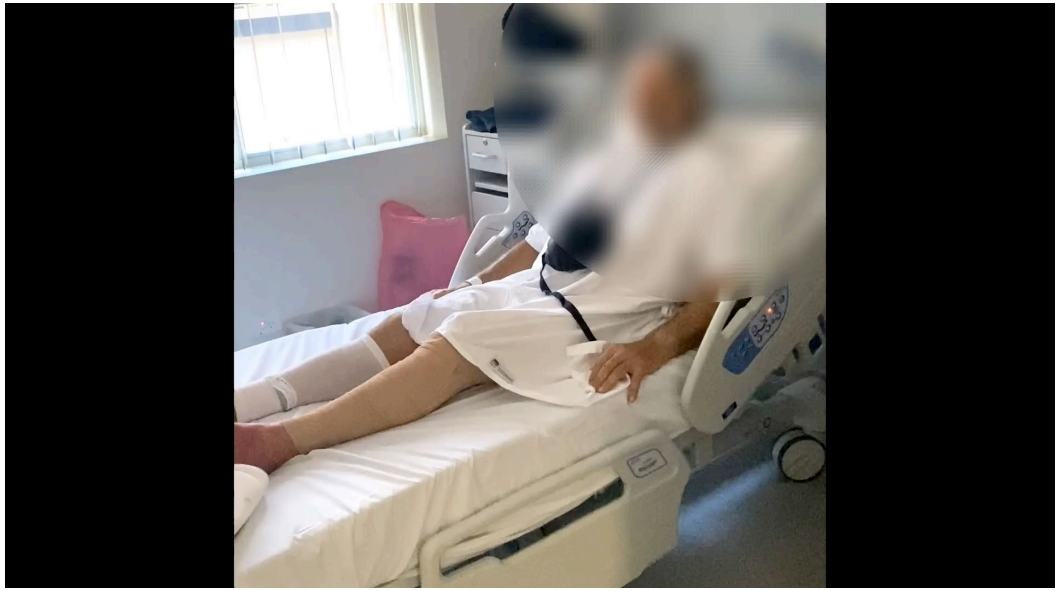


Funder perspective

- Volume of procedures per year (AOANJRR 2018)
  - 48 000 total + partial hip
    - Incl. 4270 revisions (2017)
  - 63 800 total + partial knee
    - Incl. 4530 revisions (2017)
- Average length of stay (AIHW 2014-2015)
  - Hip – 5.6 days
  - Knee – 5.5 (private), 5.4 (public)
  - Average cost of stay ? $4000
- Total estimated cost (per year)
  - $AUD 450 million (?1/5 total cost)

Facility perspective

Patient Perspective



Patient perspective

Patient Story highlights

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The whole day was a really good experience.

When I went to bed I slept until 6am.

The next day I got up and showered myself and felt fine.

My family came to visit and couldn’t believe I was up and walking around the kitchen without using my crutches.

Patient story continued

EBM ANALYTICS

I had some swelling in the knee but not really any pain, so I took nothing stronger than panadol after I was discharged.

This didn’t feel like major surgery.

I was totally informed before and after surgery, so I felt totally equipped from start to finish.

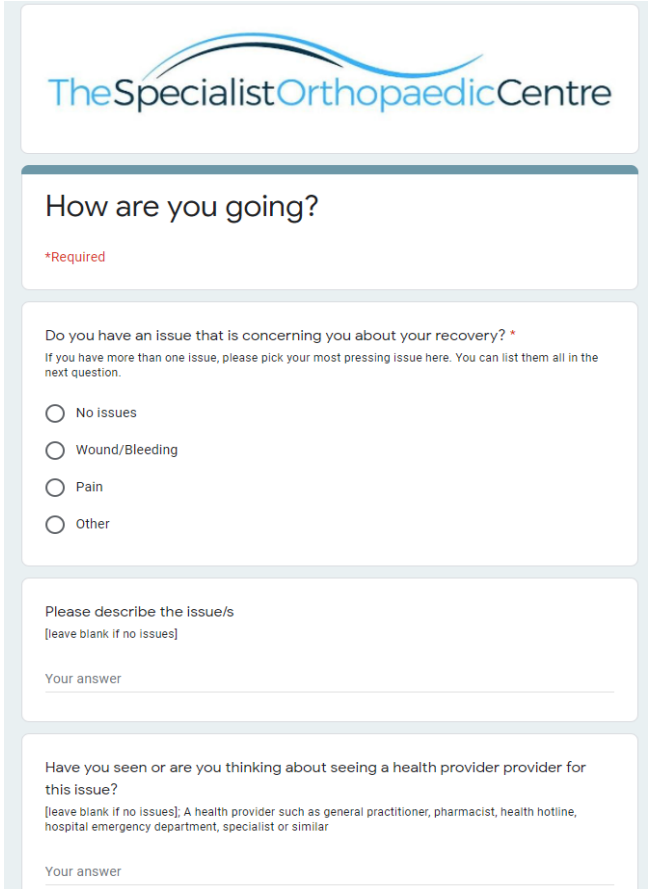
If I needed another, I’d do exactly the same.

Patient outcomes

Monitoring and reporting

remote monitoring system

EBM ANALYTICS


TheSpecialistOrthopaedicCentre

How are you going?

*Required

Do you have an issue that is concerning you about your recovery? *

If you have more than one issue, please pick your most pressing issue here. You can list them all in the next question.

- No issues
- Wound/Bleeding
- Pain
- Other

Please describe the issue/s

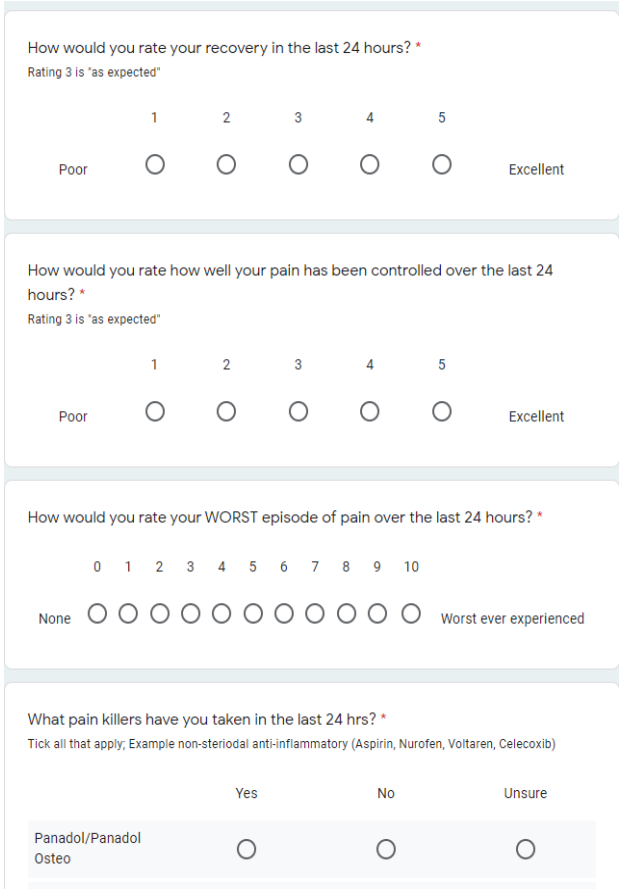
[leave blank if no issues]

Your answer

Have you seen or are you thinking about seeing a health provider provider for this issue?

[leave blank if no issues]; A health provider such as general practitioner, pharmacist, health hotline, hospital emergency department, specialist or similar

Your answer


How would you rate your recovery in the last 24 hours? *

Rating 3 is "as expected"

	1	2	3	4	5	
Poor	○	○	○	○	○	Excellent

How would you rate how well your pain has been controlled over the last 24 hours? *

Rating 3 is "as expected"

	1	2	3	4	5	
Poor	○	○	○	○	○	Excellent

How would you rate your WORST episode of pain over the last 24 hours? *

	0	1	2	3	4	5	6	7	8	9	10	
None	○	○	○	○	○	○	○	○	○	○	○	Worst ever experienced

What pain killers have you taken in the last 24 hrs? *

Tick all that apply; Example non-steriodal anti-inflammatory (Aspirin, Nurofen, Voltaren, Celecoxib)

	Yes	No	Unsure
Panadol/Panadol Osteo	○	○	○

- Extension of practice registry
- Sms invites to brief web survey
- Daily for 1st 7 days post op
- 2nd daily during second week
- Surgeon notified if concerns or high pain score

Day stay - ongoing results

EBM ANALYTICS

August 2020 - March 2021

Sample and inclusion rate

- 12 TKR patients met criteria & discharged same day
- 100% successful day of surgery discharge
- 81 patients screened (14.8% inclusion rate)
- 5 females; 7 males; median age 66 (IQR 59.5 - 70)

Adverse events- 2 ED presentations

- One case POD1 to check on pain pump
- One case POD106 to rule out DVT after ankle sprain

Remote monitoring

- All patients replied at least once to sms-system in first week
- Average participation was 86% (6 responses from 7 messages); range 4-7 responses

Patient satisfaction

- No patients reported satisfaction at 6 weeks below 9 out of 10
- At 6 weeks all patients indicated a preference for day of surgery discharge for future joint replacement

Pain: should be worried about patients in hospital?

EBM ANALYTICS

Patients asked to rate worst episode of pain in the preceding 24 hrs (daily for 1 week)

Median worst score for the entire week was 6

Day patients surgery worst episode of pain

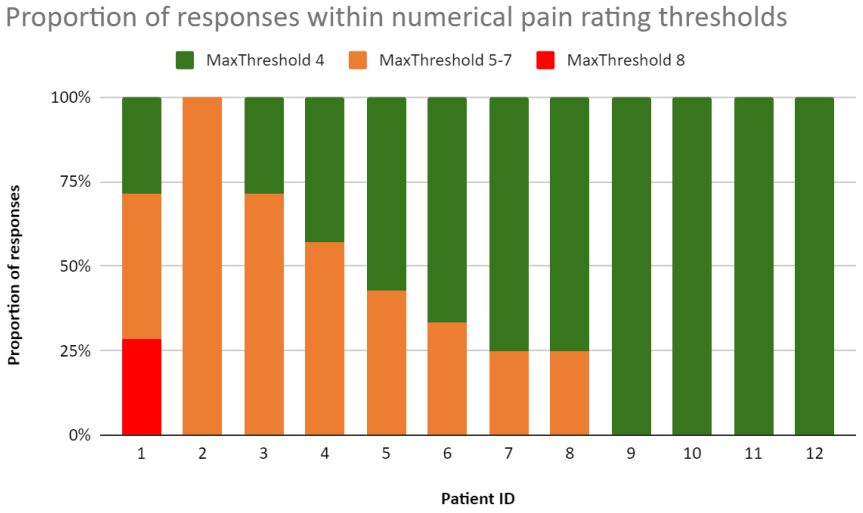
- 1 (8%) patient reported worst pain severe
- 4 (33%) patients reported worst pain mild
- 7 patients reported worst pain moderate

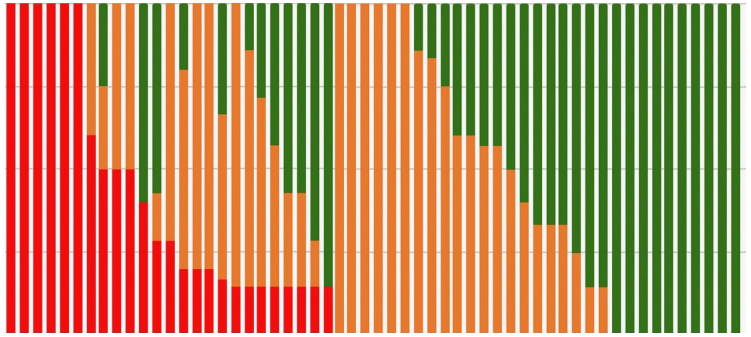
Non day stay (56 recent patients LOS>1)

- 45% with an episode of worst pain severe
- 11% with all responses severe
- 18% with worst pain mild

(1-4 mild, 5-7 moderate, 8-10 severe)

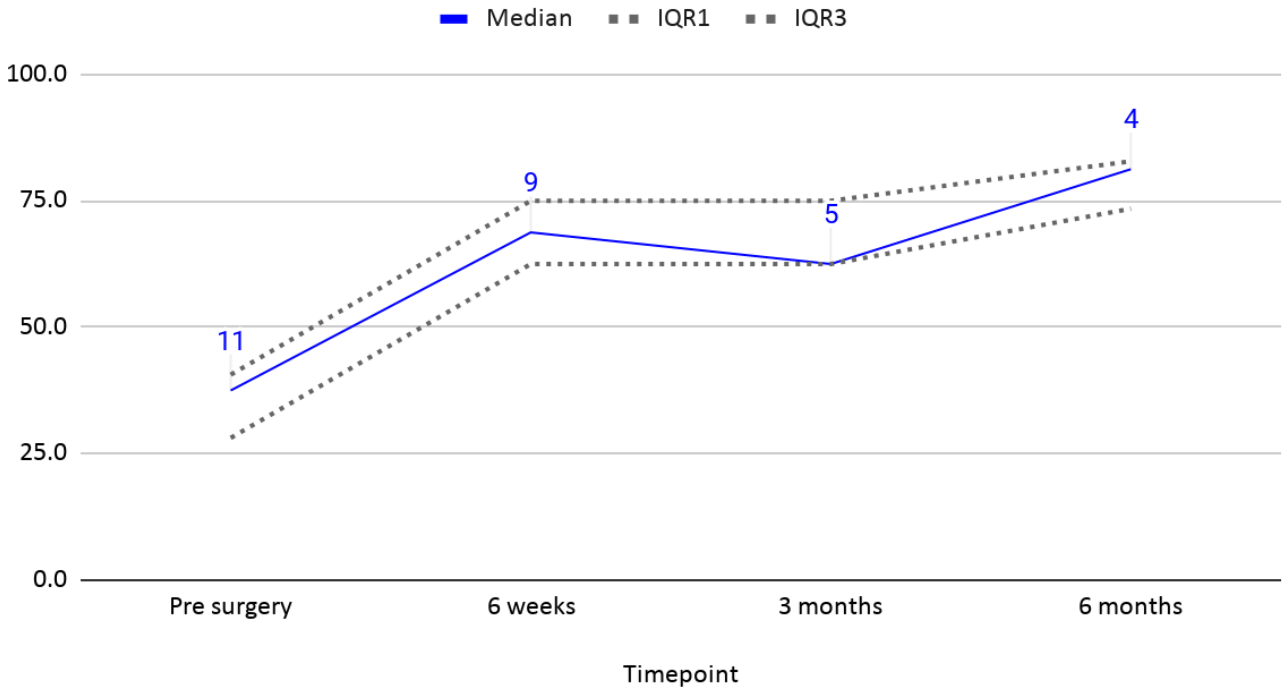
Day-stay group worst pain responses

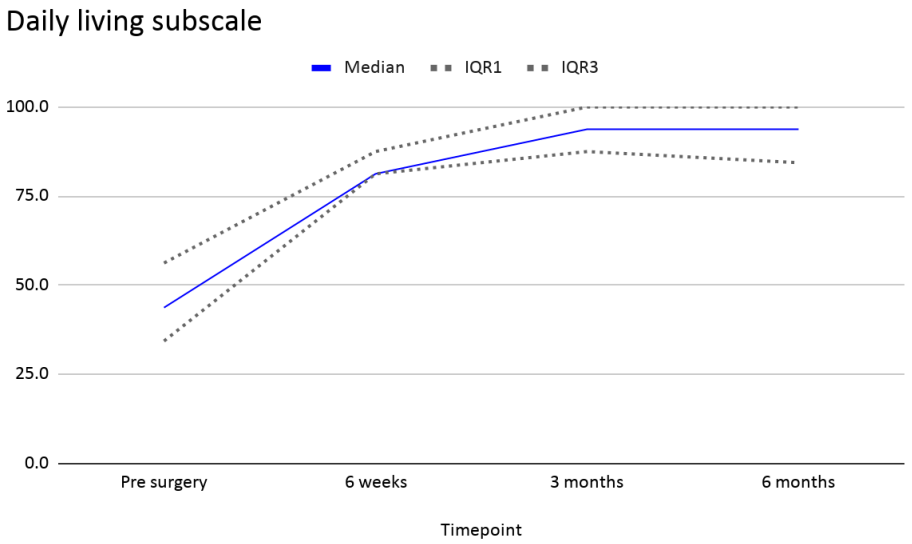


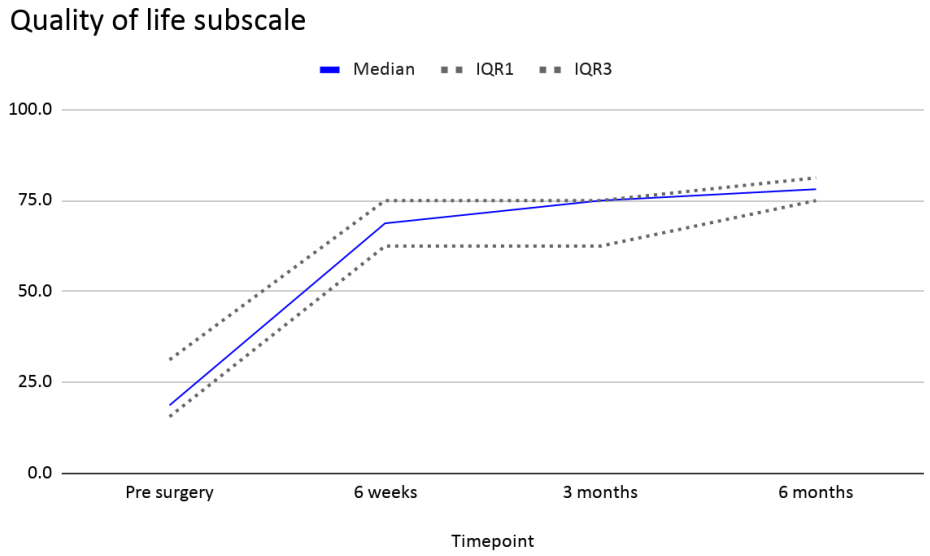


Non day-stay worst pain responses

Knee Osteoarthritis Outcome Score (12)







Day surgery benefits for the entire service

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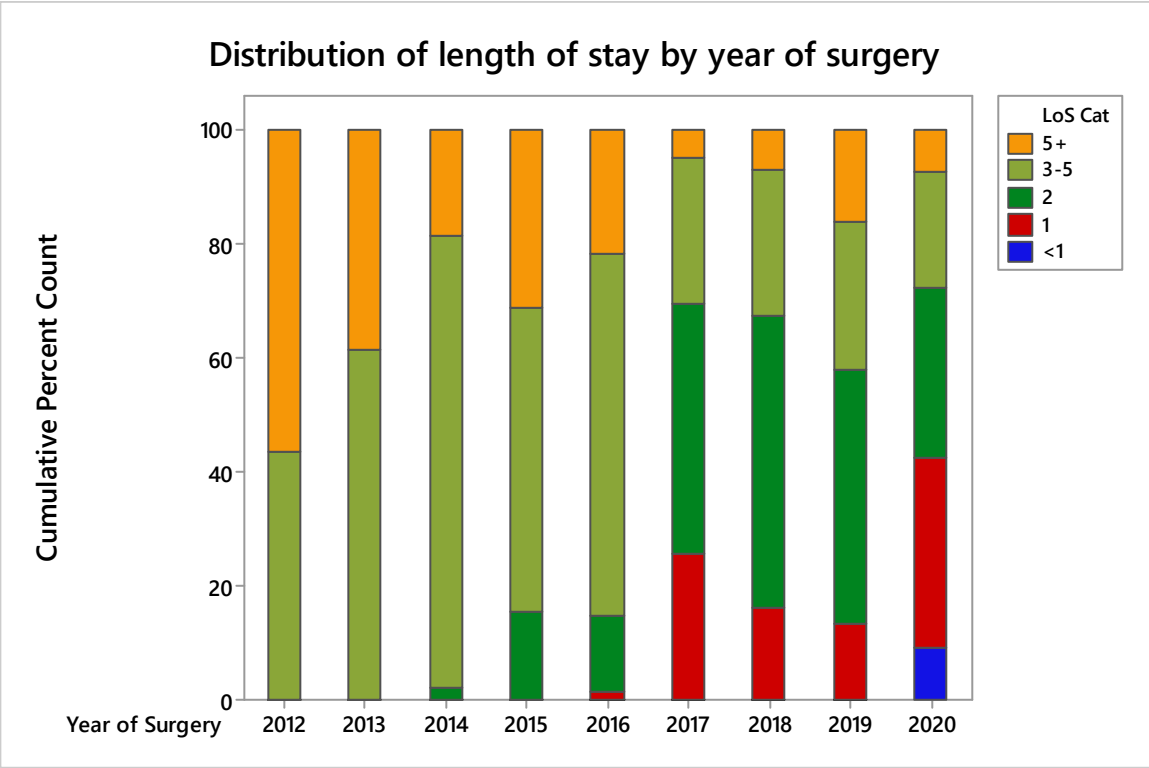


Length of stay has decreased in non day surgery patients after introduction of day stay program (proportion of patients staying >2 days has decreased by more than proportion of day stay pts)

Probably multifactorial

- Anaesthetics compatible with DOS mobilisation and more DOS mobilisation
- Ward comfort with evening discharge
- Subtle technical refinements eg better LA infiltration

*2018-2020 are partial years

Day Stay Recipe at Grafton Base

Day stay components

EBM ANALYTICS

At private clinic	At hospital clinic	In hospital	On ward	At private clinic; GBH Physio; SMS system
Waitlist for Joint Replacement	**Suitability assessment**	**Day of Surgery**	**Discharge**	**Follow up**
1. Physio review 2. VMO review 3. Pre-surgical workup	1. Functional assessment 2. Patient profile 3. Social supports 4. Geography and home situation	1. Dietary management 2. Theatre list order 3. Anaesthetic strategy 4. Surgical technique 5. Dressing/bandaging 6. Physio mobilisation	1. Standard criteria a. Pain b. Ambulation 2. Physio assessment 3. Wound state 4. Urological function 5. Food and fluids	1. Physio call following morning 2. VMO review POD 2-3; 14 3. Physio review POD 7-10 4. SMS daily POD1-7; 2nd day POD 8-14

Joint replacement wait list review

Knee And Hip Arthritis Service (KAHAS)

- Physio led service within GBH outpatients
- Review for suitability for surgical referral

VMO review

- Before/after initial KAHAS
- Offered day stay

PAC clinic

- Optimise medical condition/ comorbidities (Anaemia, MSSA, MRSA carriage, symptomatic UTI in female or + any positive urine in male etc)
- Allied health input
- Patients provided with;
  - Information booklet
  - Scheduled pathology tests as above (ECG, FBC ELFT, MSU, MSSA, MRSA swabs)
  - 3 surgical sponges
  - 3 sachets of Movicol
  - Surgical drinks

Suitability Assessment

Functional assessment

- Independently mobile without an aid
- Oxford knee or hip score > 15
- 6 minute walk test > 350 m
- No faints or falls in the last 5 years
- Primary joint replacement

Patient profile

- BMI < 40
- Age <75
- ASA 1 or 2
- No pre-operative opioid or benzodiazepine use
- No OSA, poorly controlled diabetes, history of IHD or CVA or other medical issue requiring inpatient care.
- No medical issues precluding an anaesthetic technique compatible with day surgery
- No antiplatelet or anticoagulant therapy aside from aspirin
- Willingness to participate in short stay

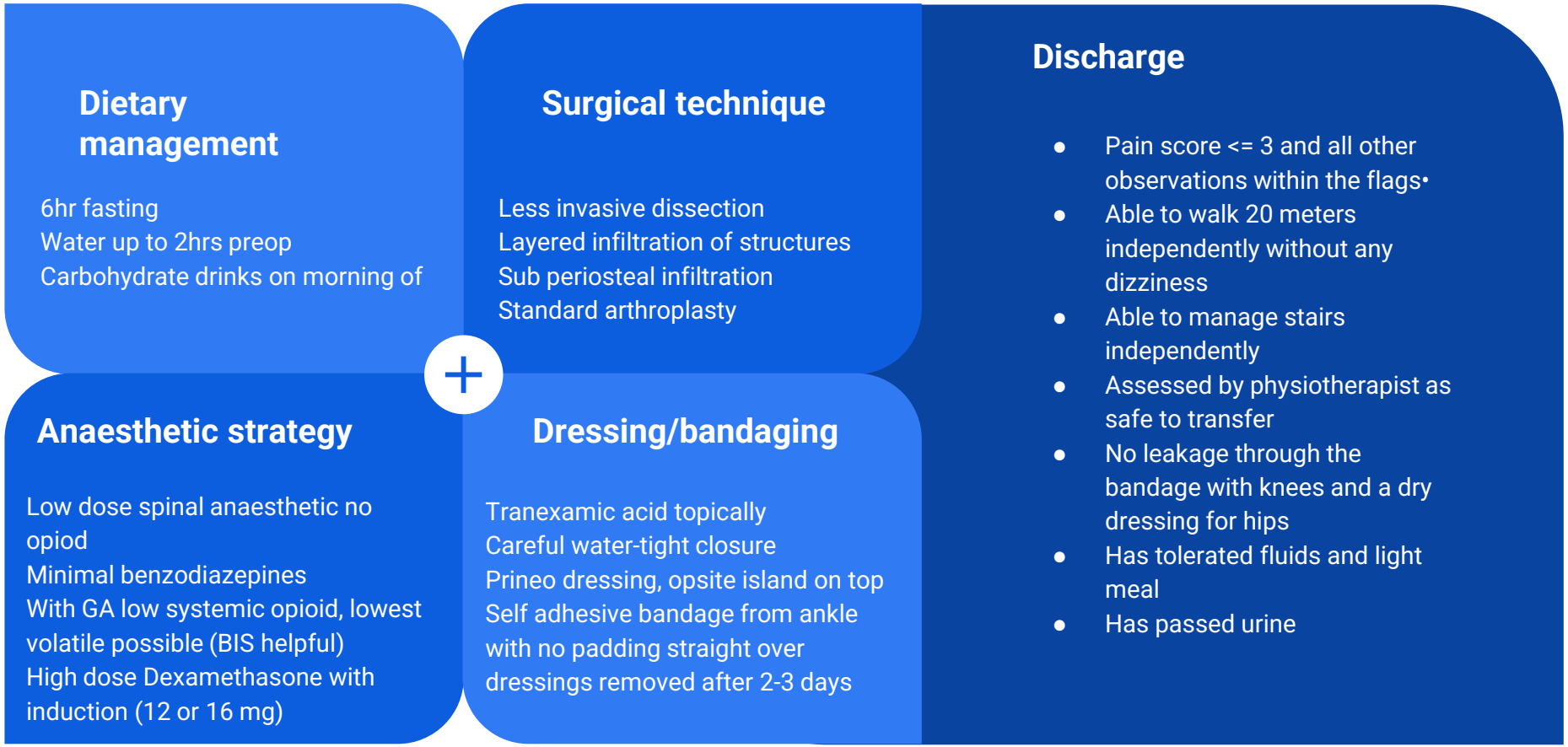
Social supports

- Stay with patient for 72 hours after discharge
- Is competent and willing to be involved in post operative care
- Is willing to be involved in provision of post operative education

Geography

- Lives within 60min drive of Hospital
- Suitable vehicle for transport available

Day of surgery



Postoperative and follow up

EBM ANALYTICS

Analgesia

- Pain buster inserted during surgery
  - 400 ml 0.2 % ropivacaine 5 ml hour
- Regular paracetamol plus non steroidal anti-inflammatory drugs unless contraindicated
- Prescribe tapentadol and oxycodone for break through pain in addition to the pain buster
- Information about analgesia and de-escalation is provided to patients.

Follow up

- Phone call by physio on following morning
- Appointment on post operative Day 3 -pain Buster removed.
- Wound check with orthopaedic surgeons at 2 weeks and another review at 8 weeks.
- Physio per routine model of care- 1st visit typically 7-10 days post op
- Remote (SMS/Web) monitoring service for POD1-14

Lessons Learned

What is day surgery? How does it work?

EBM ANALYTICS

day-stay is:

A treatment protocol that results in less pain and better function at all time points such that patients can be discharged earlier than otherwise after meeting routine discharge criteria with (essentially) routine post op care.

day-stay isn't:

Pushing patients who are in pain and struggling with poor function out the door and then somehow recreating some hospital resources at home.

Lessons Learned from short stay

EBM ANALYTICS

- Significant early post op pain does not need to be a feature of TKR THR recovery
- Quads lag doesn’t have to be part of TKR recovery
- Early return to function is not only about pain- swelling and muscle function matter too
- We don’t need super out of hospital resources
- Highly multifactorial, cumulative/ interdependent nature of contributing factors (but leaving out one “ingredient” is ok)
- Requires a well functioning unit with confidence regarding everything from wound ooze to constipation
- Team approach, communication, coordination and consistent message are crucial

Lesson learned from day stay

EBM ANALYTICS

- If we perform every operation as if undertaken under LA only, surgery hurts less
- Patients can walk well on the day of surgery- they haven't forgotten how
- Patients want to go home even at 8pm!
- Mobilizing on DOS protects against barriers such as dizziness
- We can start how we want to finish- with low levels of pain, swelling and good early function
- Rebound type pain phenomenon do not seem to be a concern. Day surgery patients are remarkably comfortable.
- People sleep very poorly in hospital
- Progression to shorter los will be limited without enthusiasm from all stakeholders

Thank You

- Michel Genon (FRACS)
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- Staff and students

The Specialist Orthopaedic Centre

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