

# OPERAS Study

## Opioid PrEscriPtions and Usage After Surgery

An international, multi-centre study of the prescription and usage of opioids after common surgical procedures

Study protocol version 2.0.2  
26 September 2021



### TASMAN

Website: <https://anzsurgsocs.org/tasman/>  
General email: [operas.tasman@gmail.com](mailto:operas.tasman@gmail.com)

REDCap queries:

Twitter: @TASMANCollab

### Key Study Dates

- Study registrations open:
- Data collection periods:
- REDCap Database Entry Deadline:

# Table of Contents

Table of Contents.....	2
Steering Committee .....	3
Scientific Advisory Group.....	3
Collaborative Partners .....	4
Study Delivery Timeline .....	5
Executive Summary .....	6
Prospectively over a four-month period in 2022.....	6
Introduction .....	7
Methods .....	8
1. Study Aims.....	8
2. Study Design.....	8
3. Setting.....	9
4. Project Timeline .....	9
5. Patients .....	9
6. Participant consent .....	10
7. Outcomes and variables.....	10
8. Opioid-data recording .....	11
9. Data collection and storage .....	11
10. Analysis plan.....	11
11. Local governance and ethical approval.....	12
12. Authorship and mini-teams.....	13
13. Expected outputs .....	15
Appendix A: Included Procedures by Specialty .....	15
Appendix B: Data Dictionary.....	17
Inpatient data points: .....	17
Follow-up data points .....	22
Appendix C: Relevant audit standard.....	26
Appendix D: Clavien-Dindo Grading of Surgical Complications .....	28
Appendix E: Patient identification recommendations.....	30
References.....	31

## Steering Committee

Name	Training stage	Twitter
Lorane Gaborit	3rd year medical student, Canberra, AUS	@LoraneGaborit
Isabella Ludbrook	Resident medical officer, Hunter New England, AUS	@isabella_lud
Laure Taher Mansour	5 <sup>th</sup> year medical student, Adelaide, AUS	@LaureMansour8
Chui Foong (Kelly) Ong	Final year medical student, Melbourne, AUS	@foong_ong
Melissa Park	4 <sup>th</sup> year medical student, Newcastle, AUS	@melissapar_k
Upasana Pathak	2 <sup>nd</sup> year medical student, Canberra, AUS	@Upasanaa5
Kyle Raubenheimer	Junior medical officer, Perth, AUS	@kyle.raube
Venesa Siribaddana	4th year medical student, Newcastle, AUS	@VenesaS2000
Chris Varghese	5th year medical student, Auckland, NZ	@chrsvarghese98
Cameron Wells	PhD candidate, Auckland, NZ	@drcamwells
William Xu	5th year medical student, Auckland, NZ	@williamxu_98

## Scientific Advisory Group

Name	Position	Twitter
Peter Pockney	Associate professor and consultant colorectal surgeon	@PPockney
Luke Peters	Clinical teaching fellow and SET trainee	
David Watson	Professor and consultant oesophagogastric surgeon	@CtanzDavid
Deborah Wright	Senior lecturer and consultant colorectal surgeon	@scalpel_deborah
Toby Richards	Professor and consultant vascular surgeon	@TobyRichardsUWA
Nagendra Dudi-Venkata	General surgical SET trainee	@surgnags
Nicolas Lightfoot	Consultant anaesthetist	
Jennifer Martin	Professor of clinical pharmacology and physician	
Rachel Sara	Consultant anaesthetist and pain specialist	
Arnab Banerjee	Senior lecturer and consultant anaesthetist	

## Collaborative Partners

<p><b>CTANZ</b></p>	
<p><b>VERITAS</b></p>	
<p><b>SPARTANS</b></p>	
<p><b>STRIVEWA</b></p>	
<p><b>STARCSA</b></p>	
<p><b>STRATA</b></p>	

## Study Delivery Timeline

Dates	Description
1 August 2021	OPERAS Study Launch
10 January 2022	First Hospital Lead REDCap Accounts Generated (then on a rolling twice-weekly basis for all new PIs) - Tuesdays and Fridays
24 January 2022	First Collaborator REDCap Accounts Generated (then on a rolling twice-weekly basis for all new collaborators – Tuesday and Fridays)
4 April 2022 - 17 April 2022	Study Period 1 - Data Collection Period (capture new intern prescribing practices)
2 May - 15 May 2022	Study Period 2 - Data Collection Period (all centres)
30 May 2022 - 12 June 2022	Study Period 3 - Data Collection Period (all centres)
27 June 2022 - 10 July 2022	Study Period 4 - Data Collection Period (all centres)
7 August 2022	REDCap Database Locked, Final Data Submission Deadline
August - September 2022	Data Analysis
October 2022	Planned Dissemination of Results

## Executive Summary

To assess the consumption of opioid analgesia after common surgical procedures in comparison to what is prescribed.

### Primary aim:

To quantify the amount of opiate medication prescribed at hospital discharge after surgery and consumed by patients at 7-days post-discharge.

### Secondary aims:

1. Describe variations in opioid prescription and consumption by procedure and specialty
2. Quantify the impact of postoperative opioid prescription on patient-reported outcome measures
3. Identify risk factors for opioid consumption and over-prescription at 7-days
4. Describe the use of ancillary analgesic use post-discharge after common procedures

### Who?

Patients undergoing common general, orthopaedic, urological, and gynaecological surgical procedures (summarised in **[Appendix A]**).

### What?

Data will be collected on opioids prescribed and consumed after common surgical procedures including type, form, dose, route, intended prescription length. Comparisons will be made across states/countries, specialties, and common operations.

### When?

Prospectively over a four-month period in 2022.

## Introduction

Pain relief is considered a fundamental right in medicine. With over 80% of patients reporting pain after surgical procedures (1,2), adequate postoperative analgesia is essential to patient care (1,3). However, pain management is complex and requires the consideration of many factors including the specific surgical procedure, patients' needs and their perceived analgesic control (4).

Opioid prescriptions for non-cancer related indications, including postoperative reasons, have been increasing in recent years (1,5). While often effective for acute pain, opioids are addictive and have numerous side effects, the most serious being respiratory depression (6). In the United States, there are 530 opioid-related deaths every week and the opioid epidemic has been recognised as a public health emergency (7,8). The many nonfatal health consequences of opioid abuse and addiction in Australia contribute to an annual cost of \$15.7 billion (9). In Australia, opioid-related deaths in adults between 15-64 years of age have increased by 3.8% per year since 2007 (10). In New Zealand, the figures are similar, with the rate of opioid-related deaths increasing by one third in total from 2001 to 2012 (11).

Globally, the over prescription of opioids after common surgical procedures is a well recognised contributor to the opioid epidemic (12), including in Australia (13,14). Opioid initiation post-surgical hospital visit leads to chronic use in a small but significant proportion of patients (15). Similarly, there are a wide variety of reasons for overprescribing (16,17). Awareness of opioid prescription practices locoregionally can advise targeted interventions to change prescribing patterns and reduce the overprescribing of postoperative discharge opioids (18).

The aim of this prospective multi-centre cohort study is to describe the correlation between discharge opioid prescriptions to consumption by patients after common surgical procedures and the impact on patient-reported outcomes.

# Methods

## 1. Study Aims

The primary aim of the OPERAS study is to quantify the amount of opiate medication prescribed at hospital discharge after surgery and identify the proportion of prescription medication consumed by patients at 7-days post-discharge. The secondary aims will be to describe the variations in opioid prescriptions and consumptions by procedure and specialty, quantify the impact of quantity of analgesia on patient-reported satisfaction, identify risk factors for opioid consumption and over-prescription at 7-days, and to describe the use of ancillary analgesia after post-discharge after common procedures.

## 2. Study Design

OPERAS is a snapshot, international, multi-centre, prospective observational study of discharge opioid prescription and consumption. This study will adapt the student- and trainee-led collaborative research model used by EuroSurg (19) and STARSurg (20) to an Australia and NZ context.

'Mini-teams' of collaborators will participate at each hospital, with a range of members including medical students, junior doctors, trainees, registrars, and supervising consultants (**Figure 1**) Data will be collected prospectively on patients being discharged following major surgery (included procedures in **Appendix A**).

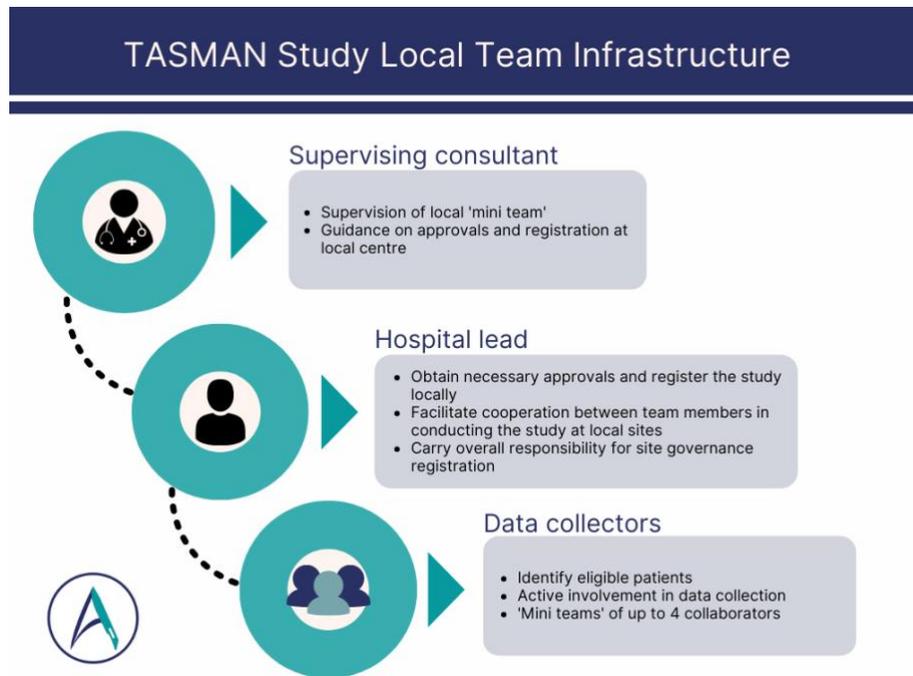


Figure 1: Mini-team structure

### 3. Setting

OPERAS is open to any hospital/site in Australia and New Zealand that performs major inpatient and day-case surgical procedures. All participating centres will be required to register the study according to local regulations, evidence of which must be uploaded onto REDCap prior to commencement of data collection from each respective site. It may be necessary to obtain formal research ethics approval in some participating countries.

### 4. Project Timeline

Collaborators at each participating centre will prospectively collect data for all patients discharged following a major surgical procedure meeting the inclusion criteria for their given surgical specialty over 1 or more 2-week periods across 2 months in April-May 2022:

1. **Period 1:** 4 April 2022 - 17 April 2022 (+7-day follow-up post-discharge)
2. **Period 2:** 2 May 2022 - 15 May 2022 (+7-day follow-up post-discharge)
3. **Period 3:** 30 May 2022 - 12 June 2022 (+7-day follow-up post-discharge)
4. **Period 4:** 27 June 2022 - 10 July 2022 (+7-day follow-up post-discharge)

Each period will have 14 consecutive days of patient recruitment. All eligible patients having their index operation within the recruitment period will be approached for inclusion. Consented patients will be monitored through their admission and prospective clinical data collection will be completed. They will subsequently be followed up 7 days after discharge from hospital.

If the patient is not discharged within the study period they can be excluded.

When patients are contacted via telephone call at 7-days post-day of discharge, we will confirm a) if the prescribed medication was picked up, b) total analgesia consumption, c) need for analgesic medication refills, d) readmission to hospital for uncontrolled pain or opioid related side effects, and e) satisfaction scores regarding pain management. The provisional deadline for entering new patients to REDCap will be 13 June 2022, this will be reviewed throughout.

### 5. Patients

Patients must fulfill all the following criteria to be included in the study:

- Adult patients (greater than or including 18 years of age)
- Acute or elective surgery
- Operated on within the pre-specified study periods
- Undergoing a surgery within the inclusion criteria (**Appendix A**) [to analyse procedure specific pain management]
- Discharged to home/community/usual residence

*All eligible patients must be included to avoid selection bias.*

The exclusion criteria is as follows:

- Paediatric patients (below 18 years of age)
- On the opiate replacement programme (on methadone, suboxone, buprenorphine)
- Patients discharged to hospice or with palliative intent
- Patients discharged to rehabilitation (including inpatient rehabilitation service), nursing or supported care services, or another hospital, or not discharged should be excluded
- Diagnostic procedures, e.g., endoscopy, diagnostic laparoscopy (without appendectomy)
- Multivisceral resections (defined as operations involving  $\geq 2$  distinct procedures of the gastrointestinal, hepatopancreatobiliary, genitourinary, or gynaecological systems e.g. hysterectomy with colorectal resection or any other operation where multiple eligible procedures are included) [to ensure the included standard procedures are internally consistent]
- Each individual patient should only be included once in the OPERAS study. Return to theatre during the same admission is regarded as a complication and should not form a duplicate entry onto REDCap.

## 6. Participant consent

Patient reported outcomes are routinely collected via follow up phone calls post-discharge, as recommended by local hospital protocols and adherence to Enhanced Recovery After Surgery (ERAS) guidelines (21,22). All eligible patients during the study inclusion periods will be approached as an inpatient to obtain written informed consent. Data collectors will discuss the purpose of the phone call and how the information will be used before completing the consent form with patients, as well as answer any questions raised in the process. Follow-up phone calls will be aided via a transcript to aid data collectors in ensuring consistent information is obtained from patients. Consent will be recorded in the data collection form and written consent forms uploaded to REDCap.

## 7. Outcomes and variables

The primary outcome is the proportion and amount (morphine equivalent doses) of prescribed opiates that are consumed at 7-days post-discharge

Secondary outcomes include:

- Patient reported outcomes, e.g., quality of life via EQ5D-5L, postoperative pain, adequacy of pain relief prescribed
- Rates of opioid prescription and consumption through primary care at 7-days post-discharge
- Requirement for further analgesia, hospital readmissions at 7-days post-discharge for opiate-related side-effects or pain related to surgical pathology/procedure

Audit standard outcomes:

- Are opioids prescribed in a down-titrating manner post-surgery?

- Are opioid prescription durations similar between procedures (i.e. opioid prescriptions post discharge should be guided by duration of pain anticipated to be at severity requiring an opioid).
- Describe use of slow-release opioids by specialty, procedure, and prescriber level.
- Proportion of short-acting versus long-acting opioid prescriptions.
- Appropriate use of ancillary analgesia post-discharge

Additional data will be collected on patient demographics and comorbidities, preoperative diagnosis, procedure-specific details, post-operative in-patient analgesia, and post-operative complications. This additional data will be collected to enable risk adjustment of outcomes. Without appropriately adjusting for risk factors, it is likely that any findings would be biased and unable to be appropriately analysed on a national and international scale.

Further detail is detailed in the case report forms and data dictionary outlined in **Appendix B**. Data will be collected to align with relevant audit standards found in **Appendix C**.

## 8. Opioid-data recording

If patients are prescribed opiates at discharge, the agent, total dose in mg, and route of administration will be collected (type, dose, frequency of dosing, route, total number of pills prescribed, immediate vs. sustained/extended-release formulations (common brand names described in **Appendix B**).

Oral morphine equivalent (OME) doses will be calculated as per the ANZCA guidelines (23). Opioid conversions will be completed by the analysis team. Conversion functionality will occur automatically within the REDCap database. An appendix of included opioids (both 'weak' and 'strong' can be found in **Appendix B**). The Faculty of Pain medicine calculator at Faculty of Pain <http://www.opioidcalculator.com.au/> will be used.

## 9. Data collection and storage

Data collection will be done via two distinct phases. Firstly, patient demographic and in-patient variables (diagnosis/procedure/analgesia) will be collected from routine clinical records by data collectors. Secondly, 7-day follow-up will be conducted through a phone call by data collectors. Data collectors will ask pre-specified questions (**Appendix B**) regarding analgesia prescription, use, and patient-reported satisfaction.

Data will be collected and stored online via the Research Electronic Data Capture (REDCap) web application (24,25), hosted and managed by the University of Auckland, New Zealand. No patient identifiable data will be uploaded or stored on the REDCap database.

## 10. Analysis plan

Descriptive statistics will be used to characterise the quantity of prescribed and consumer opioids in oral morphine equivalents (OME); these data will be stratified by procedure. Normally distributed data will be reported as mean (standard deviation (SD), and non-normally distributed data as median

(interquartile range (IQR)). Independent *t*-tests or ANOVAs for normally distributed variables, Mann-Whitney U and Kruskal-Wallis tests for non-normally distributed continuous or ordinal variables, and chi-squared tests for categorical variables will be used for comparisons.

Multivariable, multilevel, mixed-effects linear regression model will be conducted to assess the association between quantity of prescribed opioids to consumed opioids; this will be risk-adjusted for confound factors such as age, sex, smoking status, alcohol use, cancer, obesity, ASA grade, elective vs emergency surgery, and patient reported pain scores.

Risk factors for unused opiates at 7-days, requirements for further analgesia, and pain-related readmissions within 7-days will also be investigated using a multivariable, mixed effects logistic regression model. Hospitals will comprise the random effect in the above multivariable models.

No comparisons of data will be completed between individual sites. However, regional differences at the state- and country-level will be made to describe variations in practice. P-value < 0.05 is considered significant.

A planned subgroup analysis will be completed of patients taking preoperative opiates.

No previous literature has established minimal clinically important differences in OME dose of opioid consumption. The PANSALD trial by Thybo et al., considered a difference of 10 mg of morphine to be minimally clinically significant (26). Based on pilot data and unpublished work that this study is based on, there was a mean difference of -17.4 OME with a standard error of 2.8 (SD 4.2). Howard et al., found in United States cohort of elective or emergent inpatient or outpatient general, vascular or gynaecological surgery, median 150 (IQR 135 - 225) OME, equivalent to 30 pills (27-45) was prescribed compared to a median 45 (IQR 5-125) OME, equivalent to 9 pills (IQR 1-25) consumed; this represents a 70% discrepancy in postoperative opioid prescription to consumption (27). We estimate that a discrepancy of >25% would be clinically relevant. A formal power calculation was not performed for this observational study due to the overall goal of characterising postoperative, discharge opioid prescription practices in Australia and New Zealand.

## 11. Local governance and ethical approval

The hospital lead with supervision from a consultant/ attendant supervisor is responsible for obtaining necessary local approvals (e.g., audit approval, service evaluation, research ethics committee or institutional review board approval) at each site. This is an investigator-led, non-commercial study, which requires no changes to normal patient care and only routinely available non-identifiable data will be collected. No patient identifiable data will be uploaded or stored on the REDCap database.

In New Zealand, Health and Disability Ethics Committees (HDEC) will be approached for national ethical approval with locality assessments and approvals at each DHB prior to the commencement of the study. In Australia, ethical approval will be sought from National Mediator Accreditation System (NMAS). Individual patient informed consent will be sought from each patient while they are an inpatient.

*It is compulsory to have a consultant supervisor who is able to guide and advise how you may register the study at your hospital, and what approvals will be required. These must be added to the REDCap database as evidence of approvals. You may also seek advice from your local audit department or get in touch with the TASMAN for further advice.*

## 12. Authorship and mini-teams

All research outputs from the OPERAS study will be authored as per the National Research Collaborative (NRC) authorship guidelines (28). All collaborators will be listed as PubMed-citable collaborators within the TASMAN Collaborative in accordance with the roles defined below (so long as the minimum requirements for authorship are met).

A local supervising consultant/attending and a maximum of four additional collaborators will be identified per specialty, making a total of five collaborators per specialty at each participating site. Additional mini-teams can participate at the same site if they are part of different surgical specialties. One consultant/attending may supervise more than one mini-team. Additional collaborators may be allowed in certain cases, such as at particularly high-volume centres, only after discussion with, and at the discretion of, the TASMAN Steering Group.

To be credited with authorship, all collaborators must provide a valid ORCID identifier (<https://orcid.org/register>) which will be used to generate authorship lists for all papers.

Collaborator role descriptions are as follows:

1. **Local supervising consultant/attending:** provide guidance for approval processes, facilitate communication within the hospital, and mentor and facilitate medical students, junior doctors and registrars in conducting the study at your local site. They have overall responsibility for the site governance registration and should support data collection. Only one person can fulfil this role. Minimum requirements for authorship include:
  - Sponsorship of local study registration, and responsibility to ensure local collaborators act in accordance with local governance guidelines.
  - Successful completion of data collection at a centre which meets the criteria for inclusion within the OPERAS dataset.
  - Facilitation of local result presentation and support of appropriate local interventions.

Sponsorship through the audit approval / project registration process by a consultant does not constitute authorship, nor does inclusion of a consultants' patients alone in the audit serve sufficient for authorship.

2. **Hospital lead:** this role can be fulfilled by a medical student, junior doctor, trainee or the consultant supervisor/PI (as above). Prior experience in collaborative research is recommended but not essential. Additional support can be sought from TASMAN. They will be the single lead

point of contact for data collection at each site and will liaise with the local PI and TASMAN. You must be responsive to communication from the PI, governance bodies, and TASMAN.

- Primary person responsible in obtaining local approvals for conduct of the OPERAS Study (e.g., registration of the audit, seeking permission to upload data to REDCap).
  - Successful completion of data collection at a centre which meets the criteria for inclusion within the OPERAS dataset.
3. **Local collaborators:** A team of up to four data collectors per specialty, per centre, although this may be adjusted based on the anticipated caseload with express permission from the TASMAN steering committee). Minimum requirements for authorship on OPERAS publications include:
- Compliance with local audit approval processes and data governance policies.
  - Active involvement in data collection over at least one data collection period at a centre which meets the criteria for inclusion within the OPERAS dataset.
  - Collaboration with the hospital leads to ensure that the audit results are reported back to the audit office / clinical teams.

### **Criteria for site inclusion within OPERAS**

- Successful in obtaining all relevant local approvals for conduct of the OPERAS Study
- Have completed the site survey
- Successful data collection of at least one eligible patient per period for each site
- Individual sites must also ensure
  1. They obtain **>95% data completeness** for all required fields
  2. All data has been uploaded by the specified database closure deadline

Should these criteria not be met, the contributing mini-team and any data they contribute may not be included in the final study, and they may be removed from any authorship lists. You are advised to get in touch with us as soon as possible so we may support you with ensuring your site is able to successfully collect data towards the OPERAS Study.

Further details regarding authorship categories i.e. steering committee roles, writing groups, data analysis and management groups, and scientific advisory groups can be found under the TASMAN Authorship Policy v.1.0 (15.05.2021) found [here](https://docs.google.com/document/u/2/d/1rbAuUMGOQ7ZcZmJe2IUJGTmJV9MqY3leQsOMnVTkzA/edit):  
<https://docs.google.com/document/u/2/d/1rbAuUMGOQ7ZcZmJe2IUJGTmJV9MqY3leQsOMnVTkzA/edit>.

For guidance relating to mini-team setup and audit registration, please contact your local principal investigator (PI). If you would be interested in signing up as a PI for a new centre not currently involved, or for any general enquiries regarding the protocol, please contact us via email ([operas.tasman@gmail.com](mailto:operas.tasman@gmail.com)) or Twitter (@TASMANCollab)

## 13. Expected outputs

Unit level data for comparison will be fed back to collaborators to support local service improvement (upon request). This project will be submitted for presentation at national and international conferences. Manuscript(s) will be prepared following close of the project.

## Appendix A: Included Procedures by Specialty

### General Surgery

- Cholecystectomy
  - Laparoscopic or open
  - Includes subtotal cholecystectomies
  - Excludes cholecystectomy in conjunction with other major surgical procedures (e.g. Whipple's, colonic resections etc.)
- Appendicectomy
  - Laparoscopic or open
  - Excludes patients with pseudomyxoma peritonei
  - If planned associated cecectomy or right hemicolectomy, include under colonic resection group
- Inguinal hernia repair
  - Laparoscopic or open
  - Mesh or no mesh
- Colon resection with or without stoma
  - Laparoscopic or open or converted
  - Included ileocolic resection, total colectomy, subtotal colectomy, extended hemicolectomy, left hemicolectomy, right hemicolectomy, transverse colectomy, sigmoid colectomy/Hartmann's procedure, anterior resection, panproctocolectomy, completion proctectomy
  - Ileostomy formed Y/N or colostomy formed Y/N
  - Abdominoperineal resections and any colorectal resection resecting the anorectal complex are excluded
- Antireflux surgery (Nissen fundoplication)
  - Open or laparoscopic
- Sleeve gastrectomy
  - Open or laparoscopic

### Orthopaedic Surgery

- Total shoulder arthroplasty/reverse shoulder arthroplasty
  - Total vs reverse
  - Open vs arthroscopic
- Rotator cuff repair/labral repair
- ACL repair
- Hip arthroplasty
  - Indication should be for arthritis, neck of femur fractures are excluded

- Total vs partial
- Robotic vs conventional
- Knee arthroplasty
  - Total vs partial
  - Robotic vs conventional

### **Gynaecology**

- Hysterectomy
  - Abdominal (open), laparoscopic, vaginal
  - Benign and malignant indications
  - Exclude multivisceral resections or pelvic exenteration
- Oophorectomy and/or Salpingectomy
  - Unilateral or bilateral

### **Urology**

- Prostatectomy
  - Open/robotic/laparoscopic
- Cystectomy
- Nephrectomy
  - Partial or total

## Appendix B: Data Dictionary

Inpatient data points:

Baseline Demographic Data Fields	Required data (definition/comment)
Data collection period	<ol style="list-style-type: none"> <li>1. <b>Period 1:</b> 4 April 2022 - 17 April 2022</li> <li>2. <b>Period 2:</b> 2 May 2022 - 15 May 2022</li> <li>3. <b>Period 3:</b> 30 May 2022 - 12 June 2022</li> <li>4. <b>Period 4:</b> 27 June 2022 - 10 July 2022</li> </ol>
Age	Years (whole years at the time of operation)
Gender	Male / Female / Other
Ethnicity	European Māori Pacific Peoples Asian Middle Eastern Latin American African Aboriginal or Torres Strait Islander Other Not reported
ASA	I, II, III, IV, V
BMI	Height, weight, BMI (calculator)
Underlying comorbidities (select all that apply)	<ul style="list-style-type: none"> <li>● Myocardial Infarction (MI) or Congestive Heart Failure (CHF)</li> <li>● Peripheral Vascular Disease (PVD)</li> <li>● Cerebrovascular Accident (CVA) or Transient Ischaemic Attack (TIA)</li> <li>● Peptic Ulcer Disease</li> <li>● Diabetes Mellitus (Type 1 or Type 2).</li> <li>● Chronic Kidney Disease (CKD) (eGFR &lt;60/ml/min/1.73m<sup>2</sup>, dialysis or post kidney transplant, or uraemia.</li> <li>● Liver Disease</li> <li>● Cancer (active, remission)</li> <li>● None of the Above</li> </ul> <p><i>Definitions for Diabetes Mellitus: Uncomplicated is defined as medically managed and no end-organ damage</i>  <i>Definitions for Liver Disease: Mild defined as chronic hepatitis or cirrhosis without portal hypertension; Moderate defined as cirrhosis and portal hypertension but no variceal</i></p>

	<i>bleeding history; Severe defined as cirrhosis and portal hypertension with variceal bleeding history</i>
Relative or absolute contraindication to opioids	Y/N Allergy Renal impairment Severe respiratory disease Previous adverse event Previous addiction/ abuse Concurrent benzodiazepine use (Free text option)
Relative or absolute contraindication to NSAIDS	Y/N Previous GI bleeding/ulcer Allergy Renal impairment NSAID responsive asthma
Substance use	<ul style="list-style-type: none"> <li>• Smoking (never, ex-smoker &gt;12 months, ex-smoker &lt;12 months, current)</li> <li>• Alcohol consumption (standard drinks/week)</li> </ul>
<b>Operative data points</b>	
Surgical procedure	See <b>Appendix A</b> + free-text entry for additional procedural details
Indication for surgery	Malignancy / Benign
Urgency	Emergency/elective
Duration procedure (mins)	Minutes (from knife-to-skin to closure of skin)
Complications while as an <b>inpatient</b> (Clavien-Dindo grade)	None I II IIIa/IIIb/IVa/IVb
Length of stay (LOS)	Total number of nights spent in hospital after operation (collect retrospectively if operation occurred prior to study period but discharge occurred within study period.) Therefore discharge on the day of surgery is considered LOS: 0. Discharge for the day immediately following surgery is considered LOS: 1.
<b>In-patient analgesia data points</b>	
Referral to Acute Pain Service:	Y / N

<p><i>(This excludes referrals that are routine in postoperative care, only enter Yes, if non-routine acute pain service input was required due to difficulty managing analgesia).</i></p>	
<p><b>Last 24h AND at discharge analgesia data points - collect from discharge record</b> (if day-case, immediate postoperative consumption).</p>	
<p>Opiate medication consumed in the last 24 hours of hospitalization (see protocol page 19-21 for brand names)</p>	<p><b>Type of medication (select all that apply)</b>                  (Morphine, Tramadol, Oxycodone, Fentanyl, Codeine, Buprenorphine, Pethidine, Hydromorphone, Tanpentadol, Dextropropoxyphene ± other)  <b>For each medication used specify:</b>                  Formulation: <i>Slow-release/immediate release/both</i>                  Route: PO/PO liquid/epidermal patch/IV/other                  Total amount consumed in the last 24 hours (amount, units: mcg/mg)</p>
<p>Discharge paracetamol advised</p>	<p>Y / N</p>
<p>Discharge NSAIDs advised</p>	<p>Y / N</p>
<p>Discharge medications for neuropathic pain such as gabapentinoids (e.g., pregabalin, gabapentin)</p>	<p>Y / N</p>
<p>Discharge medications for neuropathic pain such as tricyclic antidepressants (e.g., amitriptyline)</p>	<p>Y / N</p>
<p>Discharge opioid prescription</p>	<p>Y / N</p>
<p><i>If yes, please specify drug/amount/route:</i></p>	
<p>Morphine (Kapanol, MS Mono)</p> <p><u>Brand names</u>  <i>Immediate release morphine</i></p> <ul style="list-style-type: none"> <li>• RA-Morph®</li> <li>• Sevredol®</li> <li>• Anamorph</li> </ul> <p><i>Sustained/modified release morphine</i></p> <ul style="list-style-type: none"> <li>• MORPHINE MR APOTEX</li> <li>• MS Contin</li> <li>• Momex SR</li> <li>• Morphine MR Mylan</li> <li>• m-Eslon SR®</li> <li>• Kapanol</li> <li>• LA-Morph®</li> <li>• Arrow-Morphine LA®</li> <li>• MS Mono</li> </ul>	<p><i>Prescribed: Y/N</i>  <i>Formulation: Slow-release/immediate release/both</i>  <i>Dose per tablet: ____ (mg)</i>  <i>Overall dose</i>  <i>Route: PO/other</i>  <i>Frequency of dosing: od / bd / tis / qid / PRN</i>  <i>Total number of pills prescribed: ____</i>  <i>If liquid - total volume ____ mL</i></p>
<p>Tramadol (Tramal, Tramedo, Zydol)</p>	<p><i>Prescribed: Y/N</i>  <i>Formulation: Slow-release/immediate release/both</i></p>

<p><u>Brand names</u>  <i>Immediate release morphine</i></p> <ul style="list-style-type: none"> <li>• Tramal</li> <li>• Tramedo</li> <li>• Zydol</li> </ul> <p><i>Sustained/modified release morphine</i></p> <ul style="list-style-type: none"> <li>• Tramal SR</li> <li>• Tramedo SR</li> <li>• Zydol SR</li> <li>• Tramahexal SR</li> </ul> <p>Tramadol with paracetamol</p> <ul style="list-style-type: none"> <li>• Zaldair</li> </ul>	<p><i>Combined pill with paracetamol: Y/N</i>  <i>Dose: ____ (mg)</i>  <i>Route: PO/other</i>  <i>Frequency of dosing: od / bd / tis / qid / PRN</i>  <i>Total number of pills prescribed: ____</i></p>
<p>Oxycodone (Endone, Novacodone, OxyContin, OxyNorm, Proladone, Targin)</p> <p><u>Brand names</u>  <i>Immediate release</i></p> <ul style="list-style-type: none"> <li>• Endone</li> <li>• OxyNorm</li> <li>• OxyNorm liquid</li> </ul> <p><i>Controlled release</i></p> <ul style="list-style-type: none"> <li>• Novacodone</li> <li>• OxyContin</li> </ul> <p><i>With Naloxone</i></p> <ul style="list-style-type: none"> <li>• Targin</li> </ul>	<p><i>Prescribed: Y/N</i>  <i>Formulation: Slow-release/immediate release/both</i>  <i>Dose: ____ (mg OR mg/5ml)</i>  <i>Route: PO/PO liquid/other</i>  <i>Frequency of dosing: od / bd / tis / qid / PRN</i>  <i>Total number of pills prescribed: ____</i>  <i>If liquid - total volume ____ mL</i></p>
<p>Fentanyl          (Abstral, Fentora, Actiq, Denpax, Durogesic, Dutran, Fenpatch)</p> <p><u>Brand names</u>  <i>Patch</i></p> <ul style="list-style-type: none"> <li>• Denpax,</li> <li>• Durogesic,</li> <li>• Dutran,</li> <li>• Fenpatch</li> </ul> <p><i>Oral</i></p> <ul style="list-style-type: none"> <li>• Abstral</li> <li>• Fentora</li> <li>• Actiq</li> </ul>	<p><i>Prescribed: Y/N</i>  <i>Formulation: Slow-release/immediate release/both</i>  <i>Dose: ____ (mg)</i>  <i>Route: Epidermal patch/other</i>  <i>Frequency of dosing: od / bd / tis / qid / PRN</i>  <i>Total number of pills prescribed: ____</i></p>
<p>Codeine (Panadeine forte, Actacode Linctus, Aspalgin, Nurofen Plus, Ibudeine)</p> <p><u>Brand names</u>  <i>Codeine only</i></p> <ul style="list-style-type: none"> <li>• Codeine Phosphate</li> </ul> <p><i>Codeine with Aspirin</i></p> <ul style="list-style-type: none"> <li>• Aspalgin</li> </ul> <p><i>Codeine with Ibuprofen</i></p> <ul style="list-style-type: none"> <li>• Brufen Plus,</li> <li>• Nurofen Plus</li> <li>• Ibuprofen/Codeine</li> <li>• Ibudeine</li> </ul> <p><i>Codeine with paracetamol</i></p> <ul style="list-style-type: none"> <li>• Panamax Co</li> <li>• Panadeine Forte</li> <li>• Codalgin Forte,</li> <li>• Codapane Forte,</li> <li>• Comfarol Forte,</li> </ul>	<p><i>Prescribed: Y/N</i>  <i>Formulation: Slow-release/immediate release/both</i>  <i>Combined pill with paracetamol: Y/N</i>  <i>Combined pill with NSAIDs: Y/N</i>  <i>Dose: ____ (mg)</i>  <i>Route: PO/other</i>  <i>Frequency of dosing: od / bd / tis / qid / PRN</i>  <i>Total number of pills prescribed: ____</i></p>

<ul style="list-style-type: none"> <li>• Prodeine Forte</li> </ul>	
<p><b>Buprenorphine</b> (Bupredermal, Norspan, Temgesic)</p> <p><u>Brand names</u> <i>Oral</i></p> <ul style="list-style-type: none"> <li>• Temgesic</li> </ul> <p><i>Patch</i></p> <ul style="list-style-type: none"> <li>• Bupredermal</li> <li>• Norspan</li> </ul>	<p><i>Prescribed: Y/N</i> <i>Formulation: Slow-release/immediate release/both</i> <i>Dose: ____ (mg)</i> <i>Route: PO/patch/other</i> <i>Frequency of dosing: od / bd / tis / qid / PRN</i> <i>Total number of pills prescribed: ____</i></p>
<p><b>Pethidine</b></p>	<p><i>Prescribed: Y/N</i> <i>Formulation: Slow-release/immediate release/both</i> <i>Dose: ____ (mg)</i> <i>Route: PO/other</i> <i>Frequency of dosing: od / bd / tis / qid / PRN</i> <i>Total number of pills prescribed: ____</i></p>
<p><b>Hydromorphone</b> (Dilaudid, Journista)</p> <p><u>Brand names</u> <i>Immediate release</i></p> <ul style="list-style-type: none"> <li>• Dilaudid</li> </ul> <p><i>Controlled release</i></p> <ul style="list-style-type: none"> <li>• Journista</li> </ul>	<p><i>Prescribed: Y/N</i> <i>Formulation: Slow-release/immediate release/both</i> <i>Dose: ____ (mg)</i> <i>Route: PO/other</i> <i>Frequency of dosing: od / bd / tis / qid / PRN</i> <i>Total number of pills prescribed: ____</i></p>
<p><b>Tapentadol</b> (Palexia)</p> <p><u>Brand names</u> <i>Immediate release</i></p> <ul style="list-style-type: none"> <li>• Palexia IR</li> </ul> <p><i>Controlled release</i></p> <ul style="list-style-type: none"> <li>• Palexia SR</li> </ul>	<p><i>Prescribed: Y/N</i> <i>Formulation: Slow-release/immediate release/both</i> <i>Dose: ____ (mg)</i> <i>Route: PO/other</i> <i>Frequency of dosing: od / bd / tis / qid / PRN</i> <i>Total number of pills prescribed: ____</i></p>
<p><b>Dextropropoxyphene (Di-Gesic, Doloxene)</b></p>	<p><i>Prescribed: Y/N</i> <i>Formulation: Slow-release/immediate release/both</i> <i>Dose: ____ (mg)</i> <i>Route: PO/other</i> <i>Frequency of dosing: od / bd / tis / qid / PRN</i> <i>Total number of pills prescribed: ____</i></p>
<p><b>Other opiate prescribed</b></p>	<p><i>Prescribed: Y/N</i> <i>Formulation: Slow-release/immediate release/both</i> <i>Dose: ____ (mg) per tablet</i> <i>Route: PO/other</i> <i>Frequency of dosing: od / bd / tis / qid / PRN</i> <i>Total number of pills prescribed: ____</i></p>
<p><b>Safety net ((29))</b></p>	<p>Information provided about safe disposal of surplus opioids Y/N</p>

## Follow-up data points

Briefly explain to patients what an opioid is and some examples of medications which are opioids.

7-day follow up data points	Required data (definition / comment)
Information provided and verbal consent obtained	Y/N
<b>Medication-related</b>	
<i>If discharge opiate prescription = Y</i>	
Did you take your <b>hospital</b> -prescribed opiates	Y/N
Quantity of opiates taken from <b>hospital prescription</b> (if liquid, quantify mLs consumed)	<i>Only to fill in relevant medications</i>
Morphine	<i>Number of tablets remaining from hospital prescription: _____ (tablets)</i>
Tramadol	<i>Number of tablets remaining from hospital prescription: _____ (tablets)</i>
Oxycodone	<i>Number of tablets remaining from hospital prescription: _____ (tablets) or ____ mL</i>
Fentanyl	<i>Number of tablets remaining from hospital prescription: _____ (tablets) or ____ (patches)</i>
Codeine	<i>Number of tablets remaining from hospital prescription: _____ (tablets)</i>
Buprenorphine	<i>Number of tablets remaining from hospital prescription: _____ (tablets) or ____ (patches)</i>
Pethidine	<i>Number of tablets remaining from hospital prescription: _____ (tablets)</i>
Hydromorphone	<i>Number of tablets remaining from hospital prescription: _____ (tablets)</i>
Tapentadol	<i>Number of tablets remaining from hospital prescription: _____ (tablets)</i>
Other opiate prescribed	<i>Number of tablets remaining from hospital prescription: _____ (tablets)</i>

While you've been at home have you had any of the following side effects? Please circle "0" if no; if yes, please circle the one number that best shows the severity of each:	0 (none) - 10 (extreme)
Nausea/vomiting	
Drowsiness	
Itching	
Dizziness	
Constipation	
Were laxatives (e.g. laxsol) or anti-sickness with the opioids (e.g. cyclizine, metoclopramide, ondansetron) prescribed?	Y/N
<i>For all</i>	
During the first week after your discharge, did you use <b>paracetamol</b> (panadol) to manage your post-surgical pain?	Y/N
During the first week after your discharge, did you use <b>NSAIDs</b> (ibuprofen, naproxen, celecoxib, diclofenac, etc) to manage your post-surgical pain?	Y/N
Did you seek medical help for your pain i.e., requesting increased pain relief or additional pain relief prescriptions?	Y - GP Y - Urgent care/Emergency department Y - Readmission to hospital Y - family/friends/own stock Y - other N
If yes - other:	Where?
If you did seek medical help, did you receive additional opiates i.e. a repeat prescription	Y/N

If yes, was the dose:	Higher The same Lower
Did you seek medical help for side effects of your pain medication?	Y - GP Y - Urgent care/Emergency department Y - Readmission to hospital N
For the past 3 months prior to your admission, were you using any routine pain killer medications?	No Yes: 1 / 2 / 3 / 4 / 5 / 6 / 7 days per week
If yes:	Tick all that apply: <b>Paracetamol</b> (panadol), <b>NSAIDs</b> (ibuprofen, naproxen, celecoxib, diclofenac, etc) <b>Weak opioids</b> (tramadol, codeine, etc) <b>Strong opioids</b> (sevredol, oxycodone etc)
<b><i>Patient-reported pain and satisfaction outcomes</i></b>	
<b>EQ-5D-5L + EQ-VAS:</b> <i>Under each heading, please tick the ONE box that best describes your health TODAY</i>	<a href="#"><u>EQ - 5D</u></a>
MOBILITY	<ol style="list-style-type: none"> <li>1. I have no problems in walking about</li> <li>2. I have slight problems in walking about</li> <li>3. I have moderate problems in walking about</li> <li>4. I have severe problems in walking about</li> <li>5. I am unable to walk about</li> </ol>
SELF-CARE	<ol style="list-style-type: none"> <li>1. I have no problems washing or dressing myself</li> <li>2. I have slight problems washing or dressing myself</li> <li>3. I have moderate problems washing or dressing myself</li> <li>4. I have severe problems washing or dressing myself</li> <li>5. I am unable to wash or dress myself</li> </ol>
USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)	<ol style="list-style-type: none"> <li>1. I have no problems doing my usual activities</li> <li>2. I have slight problems doing my usual activities</li> <li>3. I have moderate problems doing my usual activities</li> <li>4. I have severe problems doing my usual activities</li> <li>5. I am unable to do my usual activities</li> </ol>
PAIN / DISCOMFORT	<ol style="list-style-type: none"> <li>1. I have no pain or discomfort</li> <li>2. I have slight pain or discomfort</li> <li>3. I have moderate pain or discomfort</li> </ol>

	<p>4. I have severe pain or discomfort 5. I have extreme pain or discomfort</p>
ANXIETY / DEPRESSION	<p>1. I am not anxious or depressed 2. I am slightly anxious or depressed 3. I am moderately anxious or depressed 4. I am severely anxious or depressed 5. I am extremely anxious or depressed</p>
<p>We would like to know how good or bad your health is TODAY. This scale is numbered from 0 to 100. 100 means the best health you can imagine. 0 means the worst health you can imagine. Please indicate on the scale to indicate how your health is TODAY</p>	0 (worst health imaginable) - 100 (best health imaginable)
How often were you in <b>severe pain</b> in the first week after discharge?	0% (none of the time) - 100% (all of the time)
Did you receive information, advice, or education managing pain from your doctor or nurse before discharge?	Y/N
The amount of pain medication I received was:	<p>Too little Just right Too much</p>
Circle the one number that best shows how <b>satisfied</b> you were with the results of your pain treatment in the first week after discharge	0 (extremely dissatisfied) - 10 (extremely satisfied)

## Appendix C: Relevant audit standard

The following audit standard data were used to inform the development of the OPERAS protocol.

Hospital opioid stewardship programs in Australia and New Zealand are highly variable, with clinicians mostly relying on site-specific guidelines and advice.

There are no specific Australasian guidelines for opioid prescription following cholecystectomy, appendectomy, inguinal hernia repair, mastectomy, bimalleolar ankle fracture ORIF, distal radius fracture ORIF, total shoulder arthroplasty, total hip arthroplasty, total knee arthroplasty, anterior cruciate ligament reconstruction, rotator cuff tear repair, and abdominal/laparoscopic/vaginal hysterectomy (30–32).

Some key principles have been identified regarding postoperative analgesia in general.

**From ANZCA, Position statement on the use of slow-release opioid preparations in the treatment of acute pain.** Accessed at: [blob:https://www.anzca.edu.au/9b47a506-ee4f-48de-b8c2-ceb78ad97fae](https://www.anzca.edu.au/9b47a506-ee4f-48de-b8c2-ceb78ad97fae)

- Slow-release opioids are not recommended for use in the management of patients with acute pain.
- In most patients, pain intensity will decrease reasonably rapidly over a few days. In order to minimise the risk of opioid-related adverse effects, the patient's opioid doses must also decrease over this time.
- When opioids are used for acute pain, especially for discharge or in the community, the quantity prescribed should be based on the expected duration of pain which is severe enough to require an opioid.
- In postoperative or post-traumatic patients with prolonged pain states, it may sometimes be useful to introduce a slow-release opioid in a previously opioid-naive individual on a temporary basis after careful reassessment. Consideration should then be given to opioids with the least sedative (and therefore respiratory depressant) effect. In establishing an appropriate dose, time to steady state should also be considered. As daily opioid requirements may vary considerably in the acute pain setting, the dose should be frequently assessed and reduced appropriately. Communication with the primary service (including rehabilitation services) or general practitioner about the temporary basis of this prescription is essential.
- The planning of weaning and ceasing the opioid remains the responsibility of the person who initiated it. The need for discharge opioids should be assessed. Appropriate instructions should be conveyed to the patient about opioid weaning as well as timely formal communication to junior medical staff and/or the patient's general practitioner about discontinuation of these medications in a planned time frame.

**From RACGP, Prescribing drugs of dependence in general practice, Part A Clinical governance framework.** Accessed at:

<https://www.racgp.org.au/FSDEDEV/media/documents/Clinical%20Resources/Guidelines/Drugs%20of%20dependence/Prescribing-drugs-of-dependence-in-general-practice-Part-A.pdf>

- Registrars are permitted to supply opioid analgesic continuation therapy provided there is a plan to reduce and cease all opioid analgesia within a fortnight for most surgery, but up to 6 weeks for joint replacement or thoracotomy is undertaken

**From Australian Prescriber, Management of postsurgical pain in the community.** Accessed at: <https://www.nps.org.au/australian-prescriber/articles/management-of-postsurgical-pain-in-the-community>

- When considering management of postsurgical pain in the community;
  - Opioid doses should be titrated
  - Opioids should be weaned at a rate that matches the resolution of the pain
  - Short-acting opioids should be used in preference over long-acting opioids to manage post-surgical pain

Outside the Australian and New Zealand context, the RCA Faculty of Pain Medicine provide detailed pre and post operative recommendations, including discharge planning.

**From RCA Faculty of Pain Medicine, Surgery and Opioids Best Practice Guidelines 2021.**

Accessed at: [https://fpm.ac.uk/sites/fpm/files/documents/2021-03/surgery-and-opioids-2021\\_4.pdf](https://fpm.ac.uk/sites/fpm/files/documents/2021-03/surgery-and-opioids-2021_4.pdf)

- postoperative recommendations regarding discharge planning:
  - Immediate-release opioids are preferred in the management of postoperative pain (to decrease risk of respiratory impairment and long term continuation), when simple analgesics such as paracetamol or NSAIDs are not effective enough to allow the achievement of agreed functional goals.
  - Advice on medicine self administration: On discharge, patients must be advised how to self-administer medicines safely, wean analgesics, dispose of unused analgesic medications and of the dangers of driving/operating machinery while taking opioid medicines. The dangers of mixing opioids with alcohol and other illicit drugs that increase risk of harm should be communicated. A patient leaflet should be provided to reinforce these messages.
  - Local protocols for the prescription of discharge medications after surgery (“TTOs”) should be developed to minimise the chances of subsequent inappropriate opioid use. Ideally this should be managed between the hospital and primary care.
  - The hospital discharge letter must explicitly state the recommended opioid dose, amount supplied and planned duration of use.
  - Identification of patients for de-escalation of opioids: Some painful conditions, such as osteoarthritis of the knee, may require surgical procedures to treat pain and improve function. Patients with these conditions may be taking opioid medications before surgery. These opioids should be gradually withdrawn, where possible, after surgery.
  - Medicine review post discharge: Guidance should be given about necessary medicine review following discharge from hospital. Usually, 5 days and no more than 7 days medication should be prescribed.

See also RCA Guidelines for the provision of anaesthesia services for inpatient pain management 2020. Accessed at: <https://www.rcoa.ac.uk/sites/default/files/documents/2020-02/GPAS-2020-11-Pain.pdf>

## Appendix D: Clavien-Dindo Grading of Surgical Complications

Grade	Definition
Grade I	Any deviation from the normal postoperative course not requiring surgical, endoscopic or radiological intervention. This includes the need for certain drugs (e.g., antiemetics, antipyretics, analgesics, diuretics and electrolytes), treatment with physiotherapy and wound infections that are opened at the bedside
Grade II	Complications requiring drug treatments other than those allowed for Grade I complications; this includes blood transfusion and total parenteral nutrition (TPN)
Grade III	Complications requiring surgical, endoscopic or radiological intervention <ul style="list-style-type: none"> <li>● Grade IIIa - intervention not under general anaesthetic</li> <li>● Grade IIIb - intervention under general anaesthetic</li> </ul>
Grade IV	Life-threatening complications: this includes CNS complications (e.g. brain haemorrhage, ischaemic stroke, subarachnoid haemorrhage) which require intensive care, but excludes transient ischaemic attacks (TIAs) <ul style="list-style-type: none"> <li>● Grade IVa - single-organ dysfunction (including dialysis)</li> <li>● Grade IVb - multi-organ dysfunction</li> </ul>
Grade V	Death of the patient

## Appendix E: American Society of Anesthesiologists (ASA) Classification

ASA Class	Definition
I	A normally healthy patient
II	A patient with mild systemic disease
III	A patient with severe systemic disease
IV	A patient with severe systemic disease that is a constant threat to life
V	A moribund patient who is not expected to survive without the operation
VI	A declared brain-dead patient whose organs are being removed for donor purposes

## Appendix F: Patient identification recommendations

To capture all eligible patients within the study period the patient identification process will be as follows:

1. 2-week inclusion period:
  - a. Theatres lists will be prospectively screened for a 2-week period to identify patients undergoing eligible procedures. This patient will be kept track of using a patient identification key (spreadsheet with study ID, procedure, and corresponding patient identifier (MRN or NHI equivalent))
2. Patients identified during this 2-week inclusion period will be followed up by data collectors. At 7-days post-discharge, a phone-call will be made to collect data on analgesic usage and pain control. Consent for inclusion into the study will be made while they are an inpatient or at follow-up as per local ethical requirements. No data on patients will be collected before consent is confirmed.

## References

1. Gan TJ. Poorly controlled postoperative pain: prevalence, consequences, and prevention. *J Pain Res.* 2017 Sep 25;10:2287–98.
2. Gan TJ, Habib AS, Miller TE, White W, Apfelbaum JL. Incidence, patient satisfaction, and perceptions of post-surgical pain: results from a US national survey. *Curr Med Res Opin.* 2014 Jan;30(1):149–60.
3. Kharasch ED, Brunt LM. Perioperative Opioids and Public Health. *Anesthesiology.* 2016 Apr;124(4):960–5.
4. Schäfer WLA, Stulberg JJ. Addressing (over)prescribing of opioids in surgery. *Am J Surg.* 2020 Oct;220(4):821–2.
5. Blanch B, Pearson S-A, Haber PS. An overview of the patterns of prescription opioid use, costs and related harms in Australia [Internet]. Vol. 78, *British Journal of Clinical Pharmacology.* 2014. p. 1159–66. Available from: <http://dx.doi.org/10.1111/bcp.12446>
6. Benyamin R, Trescot AM, Datta S, Buenaventura R, Adlaka R, Sehgal N, et al. Opioid complications and side effects. *Pain Physician.* 2008 Mar;11(2 Suppl):S105-20.
7. Understanding the Epidemic [Internet]. 2020 [cited 2021 Mar 16]. Available from: <https://www.cdc.gov/drugoverdose/epidemic/>
8. Blendon RJ, Benson JM. The Public and the Opioid-Abuse Epidemic. *N Engl J Med.* 2018 Feb 1;378(5):407–11.
9. Whetton S, Tait R, Chrzanowska A, Donnelly N, McEntee A, Muhktar A, et al. Quantifying the social costs of pharmaceutical opioid misuse and illicit opioid use to Australia in 2015/16. In: National Drug Research Institute. 2020.
10. Roxburgh A, Dobbins T, Degenhardt L, Peacock A. Opioid-, amphetamine-, and cocaine-induced deaths in Australia: August 2018. Sydney: National Drug and Alcohol Research Centre, UNSW [Internet]. 2018; Available from: <https://ndarc.med.unsw.edu.au/sites/default/files/ndarc/resources/How%20to%20guide%20Drug%20Induced%20deaths%20Drug%20Trends%20Bulletin.pdf>
11. Shipton EE, Shipton AJ, Williman JA, Shipton EA. Deaths from opioid overdosing: Implications of coroners' inquest reports 2008–2012 and annual rise in opioid prescription rates: A population-based cohort study. *Pain Ther.* 2017 Dec;6(2):203–15.
12. Homepage - OpiVoid [Internet]. 2020 [cited 2021 Sep 3]. Available from: <https://www.opivoid.org/>
13. Makary MA, Overton HN, Wang P. Overprescribing is major contributor to opioid crisis. *BMJ.* 2017 Oct 19;359:j4792.
14. Opioid overdose [Internet]. [cited 2021 Sep 3]. Available from: <https://www.who.int/news-room/fact-sheets/detail/opioid-overdose>
15. Roughead EE, Lim R, Ramsay E, Moffat AK, Pratt NL. Persistence with opioids post discharge from hospitalisation for surgery in Australian adults: a retrospective cohort study. *BMJ Open.* 2019

Apr 16;9(4):e023990.

16. Thiels CA, Anderson SS, Ubl DS, Hanson KT, Bergquist WJ, Gray RJ, et al. Wide Variation and Overprescription of Opioids After Elective Surgery. *Ann Surg.* 2017 Oct;266(4):564–73.
17. Chen EY, Marcantonio A, Tornetta P. Correlation Between 24-Hour PredischARGE Opioid Use and Amount of Opioids Prescribed at Hospital Discharge. *JAMA Surg.* 2018 Feb 1;153(2):e174859–e174859.
18. Meisenberg BR, Grover J, Campbell C, Korpon D. Assessment of Opioid Prescribing Practices Before and After Implementation of a Health System Intervention to Reduce Opioid Overprescribing. *JAMA Netw Open.* 2018 Sep 7;1(5):e182908.
19. Collaborative E. EuroSurg: a new European student-driven research network in surgery [Internet]. Vol. 18, *Colorectal Disease.* 2016. p. 214–5. Available from: <http://dx.doi.org/10.1111/codi.13260>
20. Nepogodiev D, Chapman SJ, KoliAs AG, Fitzgerald JE, Lee M, Blencowe NS, et al. The effect of trainee research collaboratives in the UK. *Lancet Gastroenterol Hepatol.* 2017 Apr;2(4):247–8.
21. NSW Agency for Clinical Innovation. ACI ERAS Case Study Report [Internet]. 2016 Apr. Available from: [https://aci.health.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0005/341087/ACI\\_ERAS\\_Case\\_Study\\_Report.pdf](https://aci.health.nsw.gov.au/__data/assets/pdf_file/0005/341087/ACI_ERAS_Case_Study_Report.pdf)
22. Takchi R, Williams GA, Brauer D, Stoentcheva T, Wolf C, Van Anne B, et al. Extending Enhanced Recovery after Surgery Protocols to the Post-Discharge Setting: A Phone Call Intervention to Support Patients after Expedited Discharge after Pancreaticoduodenectomy. *Am Surg.* 2020 Jan 1;86(1):42–8.
23. ANZCA. PS01(PM) (Appendix). 2021.
24. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)--a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform.* 2009 Apr;42(2):377–81.
25. Harris PA, Taylor R, Minor BL, Elliott V, Fernandez M, O'Neal L, et al. The REDCap consortium: Building an international community of software platform partners. *J Biomed Inform.* 2019 Jul;95:103208.
26. Thybo KH, Hägi-Pedersen D, Dahl JB, Wetterslev J, Nersesjan M, Jakobsen JC, et al. Effect of Combination of Paracetamol (Acetaminophen) and Ibuprofen vs Either Alone on Patient-Controlled Morphine Consumption in the First 24 Hours After Total Hip Arthroplasty: The PANSAID Randomized Clinical Trial. *JAMA.* 2019 Feb 12;321(6):562–71.
27. Howard R, Fry B, Gunaseelan V, Lee J, Waljee J, Brummett C, et al. Association of Opioid Prescribing With Opioid Consumption After Surgery in Michigan. *JAMA Surg.* 2019 Jan 1;154(1):e184234.
28. National Research Collaborative & Association of Surgeons in Training Collaborative Consensus Group. Recognising contributions to work in research collaboratives: Guidelines for standardising reporting of authorship in collaborative research. *Int J Surg.* 2018 Apr;52:355–60.
29. Hill AG. Prescribing of opioids in surgical patients on discharge from Australian public hospitals:

work to do. ANZ J Surg. 2020 Jun;90(6):950.

30. Scully RE, Schoenfeld AJ, Jiang W, Lipsitz S, Chaudhary MA, Learn PA, et al. Defining Optimal Length of Opioid Pain Medication Prescription After Common Surgical Procedures. JAMA Surg. 2018 Jan 1;153(1):37–43.
31. Traven SA, Brinton DL, Woolf SK, Leddy LR, Gottschalk MB, Slone HS. Notable Variability in Opioid-prescribing Practices After Common Orthopaedic Procedures. J Am Acad Orthop Surg. 2021 Mar 1;29(5):219–26.
32. Griffith KC, Clark NV, Zuckerman AL, Ferzandi TR, Wright KN. Opioid Prescription and Patient Use After Gynecologic Procedures: A Survey of Patients and Providers. J Minim Invasive Gynecol. 2018 May;25(4):684–8.