# ProSed Australasia



## STATEMENT OF COMPLIANCE

This document is a protocol for a clinical research study. The study will be conducted in compliance with all stipulations of this protocol, the conditions of ethics committee approval, the NHMRC National Statement on Ethical Conduct in Human Research (2007) and the Note for Guidance on Good Clinical Practice (CPMP/ICH-135/95)

## PROTOCOL SYNOPSIS

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|---|---|
| Title | ProSed Australasia |
| Objectives | Primary: Create a database of procedural sedation with RNSH as a pilot site<br>Secondary: Analyse safety and efficacy of different aspects of procedural sedation, feasibility of creating a database |
| Study Design | Retrospective observational study |
| Planned Sample Size | Ongoing data collection |
| Selection Criteria | All patients undergoing procedural sedation |
| Study Procedures | Data collected by clinician at time of procedural sedation |
| Statistical Procedures | Sample Size Calculation: Ongoing data collection at a rate of approximately 1 patient per day<br>Analysis Plan: Varies by study |
| Time Period of Data Collection | Ongoing data collection from 1st December 2021 onwards |
| Duration of the study | Ongoing basis |

Protocol Version Control box

| **Protocol Version Number** | **Date** | **Summary of Changes** |
|---|---|---|
| 1 | 04/11/2021 | |
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| | | |

## 1 Study Management

### 1.1 Principal Investigator

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### 1.2 Associate Investigators

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### 1.3 Statistician (if applicable)

N/A

### 1.1 Sponsor

Northern Sydney Local Health District

### 1.2 Funding and resources

In kind support from Royal North Shore Hospital Emergency Department.

No external funding.

## 2. INTRODUCTION AND BACKGROUND

### 2.1 Background Information

Procedural sedation involves the administration of sedative medications to facilitate a painful or intolerable procedure. It is commonly performed in emergency departments for reduction of a range of orthopaedic injuries, to facilitate cardioversion for tachyarrhythmias, amongst other uses.

The usual practice involves one clinician performing sedation, another clinician performing a procedure, and a nurse assisting with medications, monitoring and documentation. It is generally performed in a resuscitation bay to be prepared for any complications that may arise.

### 2.2 Research Question

What are the current patterns of practice of procedural sedation in NSW Emergency Departments and what are the relationships between patient characteristics, procedure performed, medications/doses used, adverse events, depth/adequacy of sedation, and outcomes of the procedures?

### 2.3 Rationale for Current Study

Procedural sedation is commonly performed in Australasian emergency departments however the evidence base for the practice of it is not as robust as many other areas. Drugs used for procedural sedation have changed over time with introduction of newer agents, however there remains a lack of evidence as to best practices. As such the administration of procedural sedation varies widely with significant variation within departments and even wider variation internationally.

## 3 STUDY OBJECTIVES

### 3.1 Primary Objective

Create a database and initially collect data at Royal North Shore Hospital for analysis of procedural sedation practice with respect to the interaction between agents/doses used, adverse events, and outcomes for our patients. We envisage, eventually, collecting ED procedural sedation data statewide.

Confirm the feasibility of implementing a procedural sedation database in a tertiary emergency department in Sydney, Australia.

### 3.2 Secondary Objectives

Examine the safety of Australasian procedural sedation with respect to interactions between medications/doses used, adverse events, depth/adequacy of sedation, and outcomes of procedures.

## 4. STUDY DESIGN

### 4.1 Type of Study

Data collection will be ongoing for the purpose of retrospective observational studies.

### 4.2 Study Design

Initial studies on procedural sedation will focus on the feasibility of implementing a procedural sedation database, and the safety of the current practice of procedural sedation when measured against our local and international peers.

Our feasibility study will focus on the following areas:

- Acceptability – how the clinicians involved in the project react to the intervention
- Demand – the current demand in our department related to our inability to efficiently document and audit procedural sedation
- Implementation – can the database be effectively implemented and continue to collect data
- Practicality – what is the extent of impact on the busy clinicians performing the sedation and collecting data
- Adaptation – what modifications need to be made to the data collection form to accommodate the requirements both for data collection and medical documentation
- Integration – how practice changes with regard to procedural sedation once data collection begins
- Expansion – if the database is successful at Royal North Shore Hospital can it be rolled out statewide for wider data collection

Our safety study will evaluate the incidence of adverse events for all sedation performed in the department. Results will be broken down as follows:

- Incidence of minor adverse events (transient airway obstruction, vomiting, apnoea without desaturation, hypotension with SBP 90-100, hypertension with SBP 180-220, tachycardia with HR 120-150) or requirement for management (pressor, fluid bolus, call for assistance)
- Incidence of moderate adverse events (dysphoria, anaphylaxis, arrhythmia, hypotension with SBP 80-89, hypertension with SBP >220, bradycardia with HR 30-40, tachycardia with HR >150, hypoxia with SpO2 80-92%) or requirement for management (airway adjuncts, reversal agent, increased sedation).
- Incidence of major adverse events (aspiration, laryngospasm, cardiac arrest, hypoxia with saturations <80%, hypotension with systolic blood pressure <80mmHg, bradycardia with HR <30) or the requirement for advanced management (intubation/LMA insertion, chest compressions)

- Incidence of procedure failure
- Incidence of patients requiring admission to the ward or ICU as a result of sedation, or patients who died in ED.

Subsequent studies will evaluate other associations as mentioned in 3.1.

### 4.3 Number of Participants

We will undertake an initial review of data collected from the first 100 patients for both safety purposes as well as to evaluate whether we have achieved the goals of the feasibility study. Following this we will proceed with data collection on an ongoing basis.

### 4.4 Study sites

Initial data collection will proceed from Royal North Shore Hospital Emergency Department and data collection will be ongoing at a rate of around 1 case per day for the foreseeable future. We aim to expand data collection to involve a variety of emergency departments across NSW following our initial feasibility study.

### 4.5 Expected Duration of Study

Data collection is expected to begin in December 2021 on an ongoing basis without an explicit end date.

### 4.6 Primary and Secondary Outcome Measures

The primary outcome measure is the feasibility of implementing a procedural sedation database in a tertiary Australasian emergency department.

The secondary outcome measures include procedure success rates, rates of admission due to sedation, deaths in ED, and the incidence of minor/moderate/major adverse events as described in 4.2.

## 5. PARTICIPANT ENROLLMENT

### 5.1 Recruitment

Participants will not be real-time recruited for this study. They will be identified by the doctors performing procedural sedation on site at RNSH, who will subsequently fill out the data collection form embedded in eMR. At regular intervals, patient de-identified data will be extracted from eMR by our data managers using a report tailored to the data collection form.

### 5.2 Eligibility Criteria

#### 5.2.1 Inclusion Criteria

Patients of all ages receiving medications for procedural sedation in Royal North Shore Hospital Emergency department (including midazolam, propofol, ketamine, nitrous oxide, fentanyl and morphine).

#### 5.2.2 Exclusion Criteria

Nil

### 5.3 Key Elements of Recruitment (As per NS)

#### 5.3.1 Who will be recruited?

Patients of all ages receiving medications for procedural sedation in Royal North Shore Hospital Emergency department (including midazolam, propofol, ketamine, nitrous oxide, fentanyl and morphine) will be eligible for inclusion in the study.

#### 5.3.2 How will participants be identified and recruited?

Participants will not be real-time recruited for this study. They will be identified by the doctors performing procedural sedation on site at RNSH, who will subsequently fill out the data collection form embedded in eMR. At regular intervals, patient de-identified data will be extracted from eMR by our data managers using a report tailored to the data collection form.

#### 5.3.3 Will the potential participants be screened?

The only screening of participants will be exclusion of incomplete data.

#### 5.3.4 What is the impact of any relationship between researchers and potential participants on recruitment?

N/A

#### 5.3.5 How will the recruitment strategy facilitate obtaining the consent of participants?

N/A – being performed under waiver of consent

#### 5.3.6 How will the recruitment strategy ensure that participants can make an informed decision about participation?

N/A

#### 5.3.7 Are there any risks associated with the recruitment strategy for potential participants or for the viability of the project?

The only risk we can envisage is a potential breach of confidentiality. Patient information will be both securely stored and de-identified to mitigate this risk.

### 5.4 Confounders

Potential confounders include patient characteristics and the clinical situation influencing medical decision making and medication/dose selection, thus limiting the ability to confirm causation.

### 5.5 Study Limitations

As our study is purely observational, while associations in data can be drawn they cannot confirm causation.

## 6. Informed Consent Process

### 6.1 Waiver of Consent

Patients requiring procedural sedation present to the emergency department with an acute injury or illness requiring emergent treatment and as such would be unable to fully give informed consent for recruitment into a study.

For example these patients commonly have arrived to emergency by ambulance with a broken, deformed limb requiring reduction, having received morphine and/or ketamine from paramedics due to their extreme pain. Further examples include trauma with a collapsed lung and severe chest pain/difficulty breathing, or extensive burns to their body requiring debridement. Other patients requiring procedural sedation include those in Atrial Fibrillation with rapid heart rates often accompanied by low blood pressure, chest pain or feeling faint.

### 6.1 Participant Withdrawal

#### 6.1.1 Reasons for withdrawal

N/A – being performed under waiver of consent

## 7. STUDY VISITS AND PROCEDURES SCHEDULE

N/A

## 8. SERIOUS ADVERSE EVENT REPORTING

Data collected will be regularly monitored for any serious adverse events (aspiration, cardiac arrest, requirement for intubation/LMA/chest compressions, admission/ICU admission due to sedation, or deaths in ED) to ensure these cases are promptly identified and acted upon. We will feed back to the clinician involved about these complications, and notify the convenor of our monthly departmental morbidity and mortality meeting to ensure these cases are included.

## 9. STATISTICAL METHODS

The primary objective is creating a living database with no defined end point.

### 9.1 Sample Size Estimation

The sample size required for each study will vary with the specific question being asked of the database.

### 9.2 Statistical Analysis Plan

Statistical analysis will vary for each study undertaken using the database.

### 9.3 Interim Analyses (if applicable)

Initial interim study of 100 patients as a pilot. Following this will be a safety study of the initial 6 months' worth of data collection. Subsequently interim analyses will be undertaken 6 monthly.

## 10. DATA MANAGEMENT

### 10.1 Data Collection

Participants will be identified by the doctors performing procedural sedation on site at RNSH. They will subsequently fill out the data collection form and record data in eMR. Once enough entries have been placed in eMR the data will be extracted by our data managers using a report tailored to the data collection form. This will only extract data from patients who have had our data collection form filled out.

Drug books in the resuscitation area will be periodically audited to identify patients who were administered any of the agents usually used for procedural sedation – ketamine, propofol, midazolam, nitrous oxide, morphine and fentanyl. For any cases identified as receiving procedural sedation without a data collection form entered, the clinician will be reminded to complete the form.

### 10.2 Data Storage

Data will initially be stored on eMR on-site. Data will then be extracted and de-identified, then stored in an excel spreadsheet on the Royal North Shore Hospital Emergency Department's password protected shared drive.

### 10.3 Data confidentiality

Immediately on extraction of data from eMR the excel spreadsheet will be de-identified to ensure patient identifiers such as name and date of birth. The MRN field will also be de-identified after safety checks have been performed to ensure there are no serious adverse events contained within.

On an ongoing basis the only patient identifiers stored will be age and gender.

### 10.4 Study Record Retention

All study records will be retained for a minimum of 15 years.

## 11. ADMINISTRATIVE ASPECTS

### 11.1 Independent HREC approval

This study has been approved by the Northern Sydney Local Health District 2021/ETH12032.

### 11.2 Amendments to the protocol

Any amendments will be submitted to the HREC for review prior to implementation as per HREC guidelines.

### 11.3 Participant reimbursement

Nil

### 11.4 Financial disclosure and conflicts of interest

Nil

## 12. USE OF DATA AND PUBLICATIONS POLICY

The protocol should specify not only dissemination of results in the scientific media, but also to the community and/ or the participants, and consider dissemination to the policy makers where relevant. Publication policy should be clearly discussed- for example who will take the lead in publication and who will be acknowledged in publications, etc.

## 13. REFERENCES

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## 14. APPENDICES

Appendix 1: Mock-up of data collection form to be embedded in the electronic medical record

| | | | | |
|---|---|---|---|---|
| **Consent for procedure** | ○ Verbal consent<br>○ Implied consent | ○ Written consent | **Risks discussed** | |
| **Indication for sedation:** | ○ Reduction of fracture: [ ]<br>○ Reduction of dislocation: [ ]<br>○ Laceration repair<br>○ Examination under anaesthesia | | ○ DC cardioversion<br>○ Intercostal catheter insertion<br>○ Burns debridement/escharotomy<br>○ Other | |
| **Procedure location:** | ○ Resus bay | ○ Paediatrics Procedure room | ○ Other | |
| **Sedationist role:** | ○ ED Consultant<br>○ ED Advanced Trainee | ○ ED Provisional Trainee<br>○ Anaesthetist | ○ Other | |
| **Sedationist experience:** | ○ <10 sedations | ○ 10-50 Sedations | ○ >50 sedations | |
| **Proceduralist:** | ○ ED Consultant<br>○ ED Advanced Trainee | ○ ED Provisional Trainee<br>○ Surgical registrar (ortho/hands/plastics) | ○ Surgical consultant<br>○ Other | |
| **Patient weight** | [ ] kg | **Fasting time** [ ] | **Procedure duration** | [ ] minutes |
| **ASA** | ○ 1 Normal, healthy | ○ 2 Mild systemic disease (smoker, obese, pregnant) | ○ 3 Systemic disease limiting activity (COPD, CCF, ESRD) | ○ 4 Systemic disease which is a constant threat to life (severe CCF/valvulopathy, recent vascular event) | ○ 5 Moribund and not expected to survive without procedure |

| | | Initial bolus | Subsequent doses | | Initial bolus | Subsequent doses | |
|---|---|---|---|---|---|---|---|
| **Drug used** | Ketamine<br>Propofol<br>Midazolam | [ ] mg<br>[ ] mg<br>[ ] mg | [ ] mg<br>[ ] mg<br>[ ] mg | Fentanyl<br>Morphine<br>Nitrous oxide | [ ] mcg<br>[ ] mg<br>[ ] % | [ ] mcg<br>[ ] mg | ☐ Other |

| | | | | Initial | Worst |
|---|---|---|---|---|---|
| **Adverse events** | ☐ Nil<br>☐ Apnoea >20 seconds<br>☐ Aspiration<br>☐ Airway obstruction<br>☐ Laryngospasm<br>☐ Cardiac arrest | ☐ Dysphoria<br>☐ Vomiting<br>☐ Arrhythmia<br>☐ Procedure Failure<br>☐ Anaphylaxis<br>☐ Other | ☐ Hypotension SBP <100<br>☐ Hypertension SBP >180<br>☐ Bradycardia HR <40<br>☐ Tachycardia HR >120<br>☐ Hypoxia SpO2 <92% | [ ] mmHg<br>[ ] mmHg<br>[ ] bpm<br>[ ] bpm<br>[ ] % | [ ] mmHg<br>[ ] mmHg<br>[ ] bpm<br>[ ] bpm<br>[ ] % |
| **Measures taken** | ☐ Nil<br>☐ Positioning/Jaw thrust<br>☐ Pressor<br>☐ Fluid bolus<br>☐ Stimulation | ☐ Nasopharyngeal airway<br>☐ Oropharyngeal airway<br>☐ Intubation<br>☐ LMA<br>☐ BVM | ☐ Chest compressions<br>☐ Increased sedation<br>☐ Call for assistance<br>☐ Reversal agent | ☐ Other | |
| **Deepest level of sedation achieved (SAS)** | ○ 1 Unarouseable<br>Minimal or no response to noxious stimuli | ○ 2 Very sedated<br>Arouses to physical stimuli, does not follow commands or communicate | ○ 3 Sedated<br>Difficult to rouse, awakens to verbal stimuli | ○ 4 Calm and cooperative<br>Alert, follows commands | |
| **Disposition** | ○ EMU/short stay for observation<br>○ Home | ○ Admission (due to presenting illness/injury)<br>○ Admission (due to sedation) | ○ ICU (due to presenting illness/injury)<br>○ ICU (due to sedation) | ○ OT for procedure<br>○ Died in ED | |
| **Other comments/notes** | | | | | |