Management of the Perioperative Patient

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Overview

- Fasting
- Case examples
  - Medication Management
  - Analgesia
  - Optimisation

Why do we fast patients?

- Reduce aspiration risk
- Anaesthesia-associated incidence: ~1:1 000-1:10 000
- Anaesthesia-associated fatal aspiration: ~1:300 000
  - Most significant cause of airway-related mortality under anaesthesia.

- The longer we fast → safer??

Preoperative oral fluids: how long is enough?

- RCT evidence:
  - Fasting 2-4h vs >4h:
    - No significant ▲ gastric volume or pH
    - →Less thirst and hunger

- Benefits: improved wellbeing, hydration status, optimises surgical stress response, reduced delirium risk

How are we doing at POWH?

- Fasting audit – Aug 2019 orthopaedic inpatients

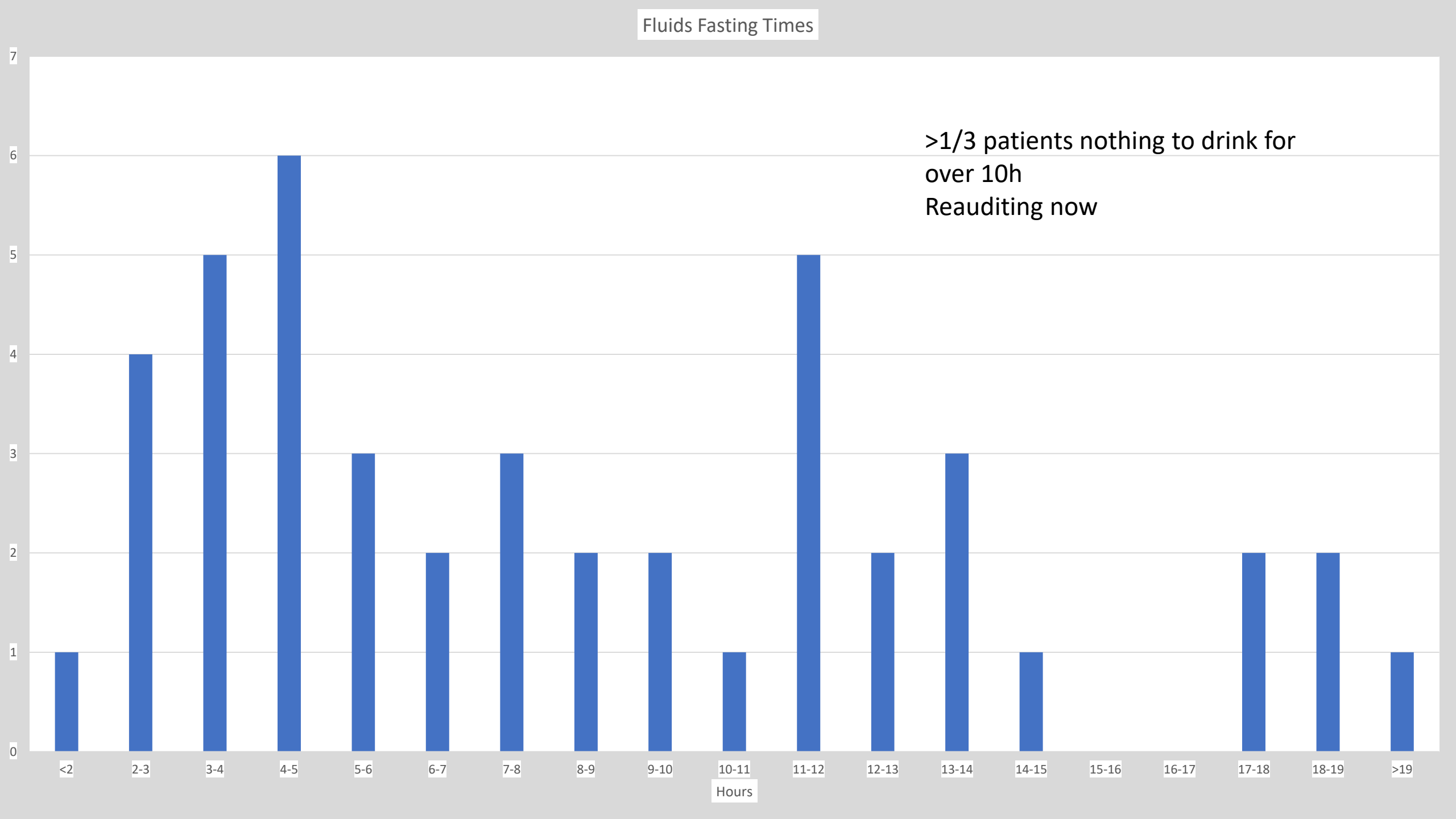
Findings

Fluids Fasting Times

- Shortest 1:51h
- Longest 20:50h
- Average 8:32h
- Median ~ 7h

Solids Fasting Times

- Shortest 4:34h
- Longest 25:08h
- Average 16:04h


Fluids Fasting Times
>1/3 patients nothing to drink for over 10h
Reauditing now
7
6
5
4
3
2
1
0
<2
2-3
3-4
4-5
5-6
6-7
7-8
8-9
9-10
10-11
11-12
12-13
13-14
14-15
15-16
16-17
17-18
18-19
>19
Hours

POWH Pre-Operative Fasting Guideline Summary

Solids: 6 hours

Solids include any food, milk, jelly, cloudy juice or thickened fluids.

Pre-operative Oral Fluids: 2 hours

Patients may drink to thirst until 2h pre-op. **Patients should be encouraged to drink 300-400mL just prior to 2h pre-op.** Approved preoperative oral fluids are listed in the SESLHD Guideline*, Fasting for Patients Undergoing Anaesthesia*.

Tablets: Any time

Ideally tablets should be taken >2h pre-op, but they can be taken at any time with small sips of water. (This excludes tablets that have been specifically withheld - please check plan if uncertain).

Morning procedures or time uncertain: last solids by 0200, last preoperative fluids by 0600.

Afternoon procedures: last solids by 0630, last preoperative fluids by 1030.

Drinking approved fluids up to two hours pre-op is safe. It improves wellbeing and reduces nausea & vomiting. It can improve a patient's stress response to surgery.

POWH Perioperative Unit 2021

Pre-Operative/Procedural Fasting for Patients Undergoing Anaesthesia (SESLHD)

Appendix A: Diet – Pre-operative Oral (Non-Diabetic)

	Allowed	*Not Allowed*
Beverages	Water Apple juice Cordial **Black** tea/coffee	All others, including: prune juice Milk Thickened fluids Carbonated drinks
Miscellaneous	Commercial re-hydration fluids Sugar/Sweetener	Cream Commercial supplements with milk or soy proteins
NO FOOD PRODUCTS IN THE SIX (6) HOURS PRIOR TO INDUCTION OF ANAESTHESIA		

ACI (2016). Key Principles: Preoperative fasting in NSW public hospitals.

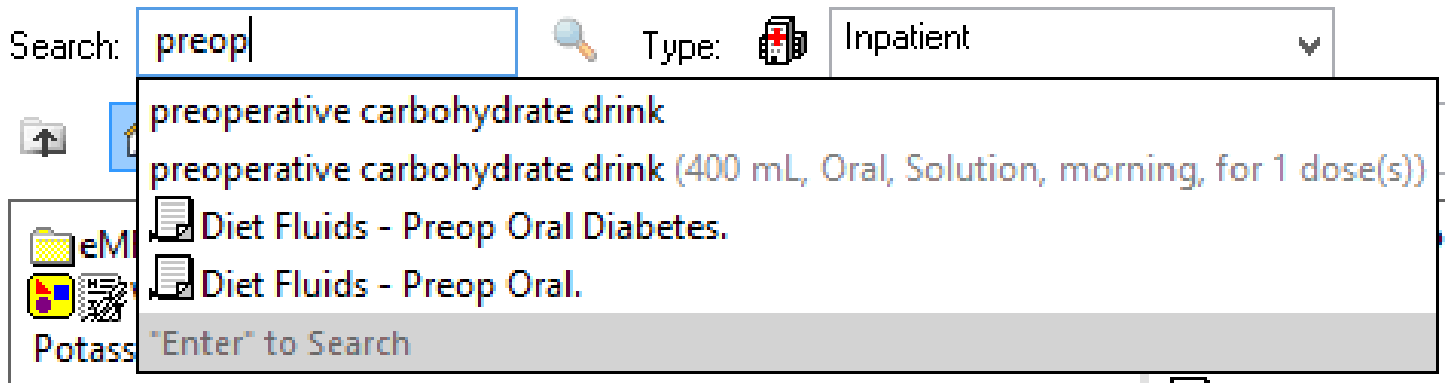
Appendix B: Diet – Pre-operative Oral (Diabetic)

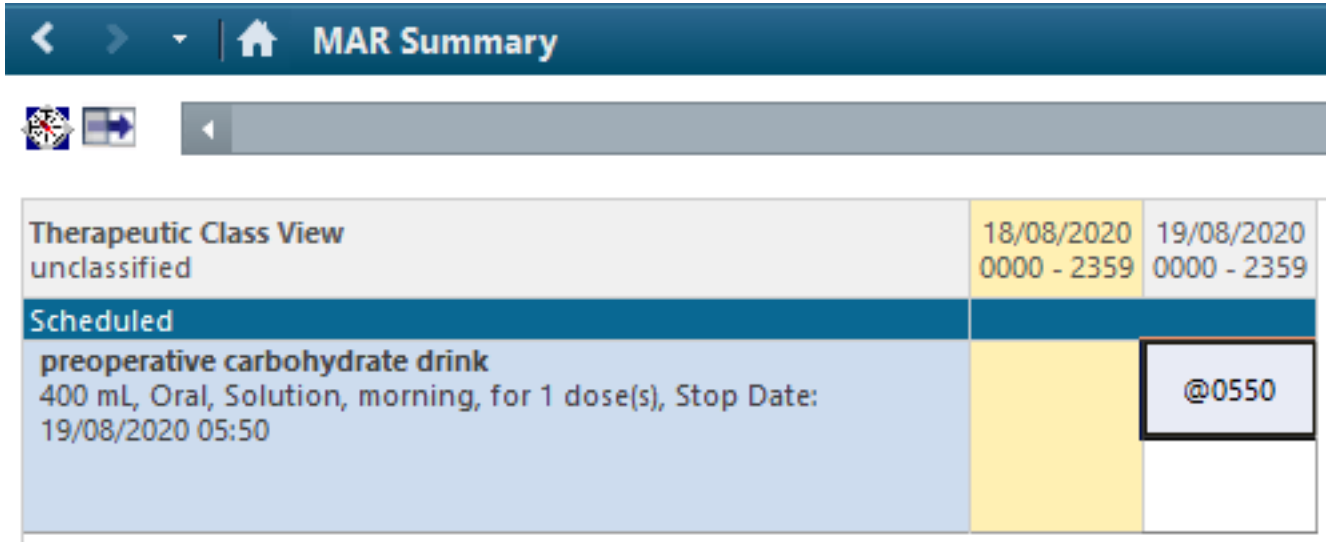
	Allowed	*Not Allowed*
Beverages	Water **Diet** cordial **Black** tea/coffee	All others, including juice Regular cordial Milk Thickened fluids Carbonated drinks
Miscellaneous	**Diet** Commercial re-hydration fluids Sweetener	Sugar Cream Commercial supplements with milk or soy proteins
NB: Some diabetic patients may require small amounts of carbohydrate-containing oral fluids to correct hypoglycaemia. This should be determined on a case-by-case basis following local protocols.		
NO FOOD PRODUCTS IN THE SIX (6) HOURS PRIOR TO INDUCTION OF ANAESTHESIA		

ACI (2016). Key Principles: Preoperative fasting in NSW public hospitals.

- Stocked on 2N only
- Not for pts with diabetes unless approved by physician
- Not for patients on a ”thickened fluid diet”

“Preoperative Carbohydrate Drink” is now on EMR





Fasting Instructions

- If unknown, assume 8am start time

- Fast as per protocol
- Last solids 2am
- Last preoperative oral fluids 6am
- (May have prn analgesia at any time with small sips H20)

Should I put up fluids for a patient once they are NBM?

- If procedure is happening imminently?
- Special circumstances:
  - Hip # patients?
  - Renal impairment?

Oliver

- 20yo male
- Fit and healthy
- Rugby tackle → tib/fib #
- The nursing staff page you to chart analgesia

- What further information would you require?

Pain Assessment

- Site
  - Primary location
  - Radiation
- Onset
- Character of pain
  - Nociceptive vs neuropathic
- Intensity of pain
  - Rest/movement
  - Continuous or intermittent
  - Aggravating or relieving factors
- Associated symptoms
- Effect of pain on activities and sleep
- Biopsychosocial
- Treatment
  - Current and previous
- Relevant medical history
- PHYSICAL EXAMINATION

Further Information

- 75kg, BMI 24
- Isolated injury, no concerns re concussion
- No past hx chronic pain or regular analgesia use
- Had paracetamol, ibuprofen and IV morphine in ED

- What should we prescribe for him?

What should we prescribe for Oliver?

- *Regular* paracetamol
- *Regular* NSAID
- Prn opioid – which?
- (Prn aperient)

Margaret

- 80yo p/w fall --> hip #

- Past Hx IHD, HTN
- BMI 23
- Walks 1km to shops daily, no chest pain or dyspnoea
- No other past medical history

- Fascia iliaca block in ED and is comfortable.

- Your registrar is booking the case, what other information may the anaesthetist require?

- Ischaemic heart disease, stent, takes aspirin.
  - Last cardiology review was 5 months ago
  - Stress echocardiogram: normal LV size and function, mild aortic stenosis, no ischaemic changes with stress.

- Does she require further cardiology investigations prior to her hip fracture surgery?
- Is she optimised for a general anaesthetic?

While waiting for surgery..

- Pain worsening as block wears off.
- What analgesia is appropriate?

- Margaret is booked on the emergency list tomorrow. Theatres cannot give a time. What is your fasting plan?

Fasting Instructions

- Last solids 6h pre-op (02:00)
- Last preoperative fluids 2h pre-op (06:00)
- All regular medicines at 06:00
- May have prn analgesia at any time with sips H20

- Start IVF at midnight (hip #)

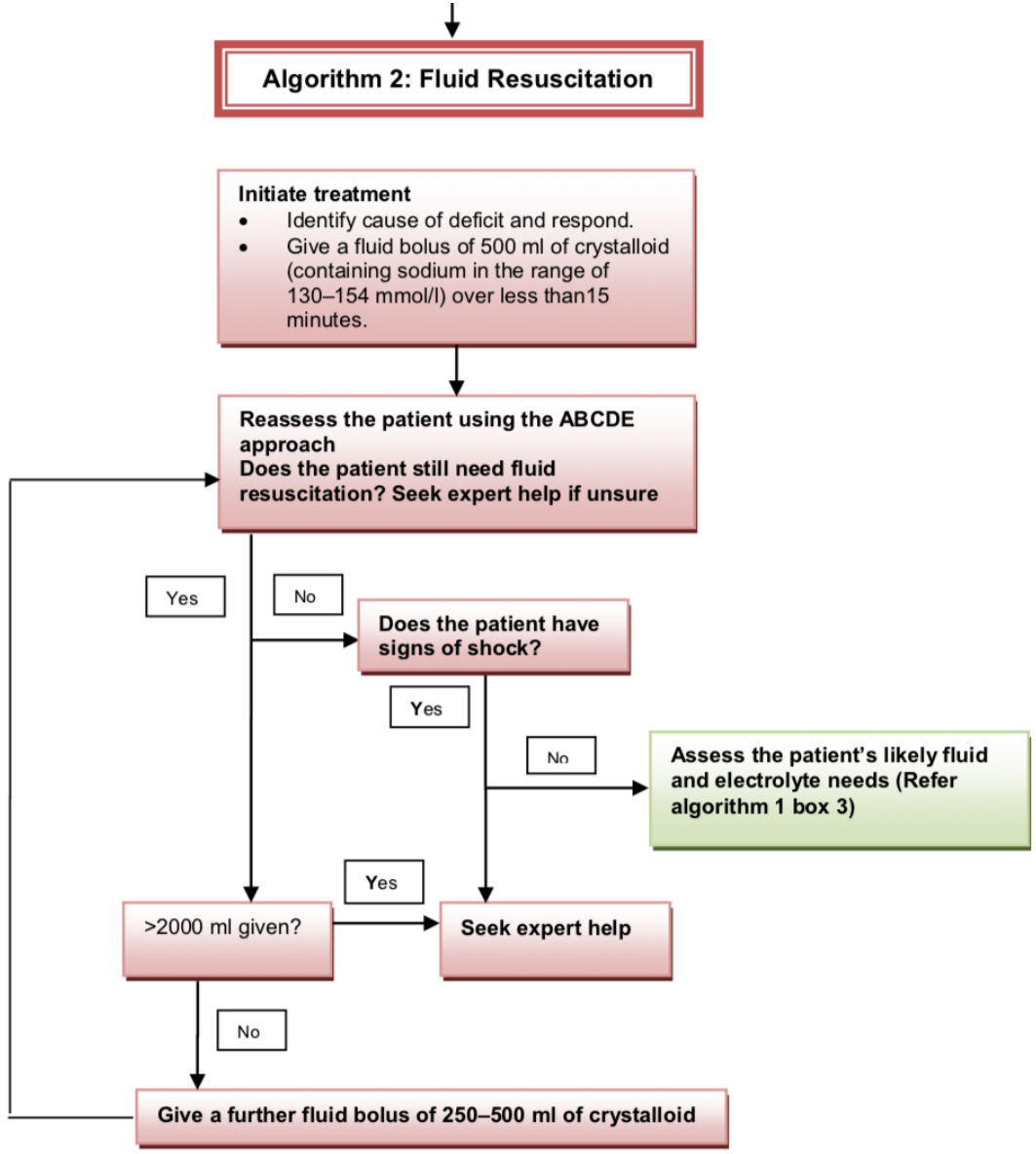
Post Op

- Margaret has surgery uneventfully. 4 h after return to the wards, you are called to review Margaret, her BP is 88/50 and her urine output is “low”. What is your approach?

- Margaret isn’t dizzy but her clinical examination is consistent with dehydration.

- What should you do?

NICE Guideline



https://www.nice.org.uk/guidance/cg174

Pain Assessment

- Site
  - Primary location
  - Radiation
- Onset
- Character of pain
  - Nociceptive vs neuropathic
- Intensity of pain
  - Rest/movement
  - Continuous or intermittent
  - Aggravating or relieving factors
- Associated symptoms
- Effect of pain on activities and sleep
- Biopsychosocial
- Treatment
  - Current and previous
- Relevant medical history
- PHYSICAL EXAMINATION

SOUTH EASTERN SYDNEY LOCAL HEALTH DISTRICT S1576 11/2011

PATIENT ID LABEL

Margaret.

ANAESTHETIST

DATE / /

SURGEON

OPERATION PERFORMED (L) hip hemiarthroplasty.

ALLERGY

AIRWAY MANA[...]

- ☐ Mask

Size:

Throat Pack

VIEW OF L[...]

Gra[...]

Good v[...]

VENTIL[...]

- ☐ Spo[...]
- ☐ Co[...]

CIRC[...]

- ☐ **GENERAL ANAESTHESIA**
- ☑ **SEDATION**
- ☑ **REGIONAL**

GENERAL

Induction
- ☐ Rapid sequence (Pre. Ox. + C.P.)
- ☐ Intravenous
- ☐ Inhalational

Maintenance
- ☐ N20/02
- ☐ Volatile
- ☐ Intravenous

REGIONAL
- ☐ Nerve Block Site Spinal lateral
- ☐ Infiltration Sterile H/G/GpM
- ☐ IV regional
- ☑ Subarachnoid Site L4/5 Needle 25G Whitacre
- ☐ Epidural Site Needle

Catheter position

LOR (air/saline)

AGENTS (volume & Concentration) / COMMENTS Chlorhex 2% + ETOH.
1st pass Ø Blood Ø paraesthesia CSF ✓
2-8mL 0-5% heavy bupivacaine + 15microg fent.

MONITORS
- ☐ Nil
- ☑ Pulse oximeter
- ☑ ECG
- ☑ BP Indirect
- ☑ BP Direct
- ☑ 02 Analyser
- ☑ Capnograph
- ☐ Agent monitor
- ☐ Disconnect Alarm
- ☐ Temperature probe
- ☑ Urine output
- ☐ Peripheral nerve stimulator
- ☐ CVP
- ☐ PA catheter
- ☐ Cardiac output
- ☐ Anaesthetic Depth
- ☐ EEG
- ☑ Other

ANCILLARIES
- ☑ Forced air warmer
- ☐ Water Blanket
- ☐ Overhead Heater
- ☑ Blood Warmer
- ☐ Rapid Infuser
- ☐ Calf Compressors
- ☐ Cell Saver
- ☐ CPB
- ☐ TOE
- ☐ Eye pads
- ☐ Tourniquet

POSTURE
- ☐ Supine
- ☐ Prone
- ☐ Lateral
- ☐ Lithotomy
- ☐ Parkbench
- ☐ Trendelenburg/Rev. Trend
- ☐ Sitting
- ☐ Other

TIME (24hr Clock) → 10:00, 10:30, 11:00 (KTS), 11:30, 12:00.

FLOW RATE $N_20/0_2$

%

	10:00	10:30	11:00	11:30	12:00
1 Propofol TCI Cet	1 — 2 —	1 —	2 —	—	— //
2 Alfentanil	200				
3					
4 Metaraminol	0.5	↑ ↑	↑		
5					
6 Tranexamic acid.			1g —	—	
7 Cephazolin		2g	—		
8					
9					
10					
11					

1 Plasmalyte	1000	1000.	
2			

RECORD

- At 2am, Margaret complains of worsening pain. There is no analgesia charted except paracetamol. What would you do?

What about breakthrough pain post elective hip/knee replacement?

- Would management be different?

SOUTH EASTERN SYDNEY LOCAL HEALTH DISTRICT S1576 11/2011

ANAESTHESIA AND RECOVERY ROOM RECORD

PATIENT ID LABEL

Derek.

ANAESTHETIST

DATE / /

SURGEON

OPERATION PERFORMED
(2) TKR

☐ GENERAL ANAESTHESIA ☑ SEDATION ☑ REGIONAL

GENERAL

Induction
- ☐ Rapid sequence (Pre. Ox. + C.P.)
- ☐ Intravenous
- ☐ Inhalational

Maintenance
- ☐ N20/02
- ☐ Volatile
- ☐ Intravenous

(1) REGIONAL
Adductor canal clear & touch. 20mL ropivacaine 0.2%, u/s guided.

- ☐ Nerve Block Site
- ☐ Infiltration
- ☐ IV regional
- ☑ Subarachnoid
- ☐ Epidural

Spinal. Sterile H/G/G/M

Site L4/5 Needle 25G whitacre
Site Needle
Catheter position
LOR (air/saline)

AGENTS (volume & Concentration) / COMMENTS Chlorhex 2%+ETOH.
1st pass PBlood & paraesthesia. 3mL 0.5% bupivacaine + 15microg fentanyl + *125microg IT Morphine*

MONITORS
- ☐ Nil
- ☑ Pulse oximeter
- ☑ ECG
- ☑ BP Indirect
- ☐ BP Direct
- ☑ 02 Analyser
- ☑ Capnograph
- ☐ Agent monitor
- ☐ Disconnect Alarm
- ☑ Temperature probe
- ☑ Urine output
- ☐ Peripheral nerve stimulator
- ☐ CVP
- ☐ PA catheter
- ☐ Cardiac output
- ☐ Anaesthetic Depth
- ☐ EEG
- ☐ Other

ANCILLARIES
- ☑ Forced air warmer
- ☐ Water Blanket
- ☐ Overhead Heater
- ☑ Blood Warmer
- ☐ Rapid Infuser
- ☐ Calf Compressors
- ☐ Cell Saver
- ☐ CPB
- ☐ TOE
- ☐ Eye pads
- ☐ Tourniquet

POSTURE
- ☑ Supine
- ☐ Prone
- ☐ Lateral
- ☐ Lithotomy
- ☐ Parkbench
- ☐ Trendelenburg/Rev. Trend
- ☐ Sitting
- ☐ Other

TIME (24hr Clock) → 0800 0830 KIS 0900

FLOW RATE N_2O/O_2 %

1 Midazolam	2					1										1						1
2 Propofol TCI Cet						2										3						3
3 Paracetamol						3			1g.							5						5
4 Parecoxib						5			40.							7						7
5 Cephazolin						7										9						9
6 Tranexamic acid						9										11						11
7						11																
8																						
9																						
10																						
11																						

1 Plasmalyk	1000				1000.																	
2																						
3																						
4																						

IT Morphine Safety: Respiratory Depression vs Time

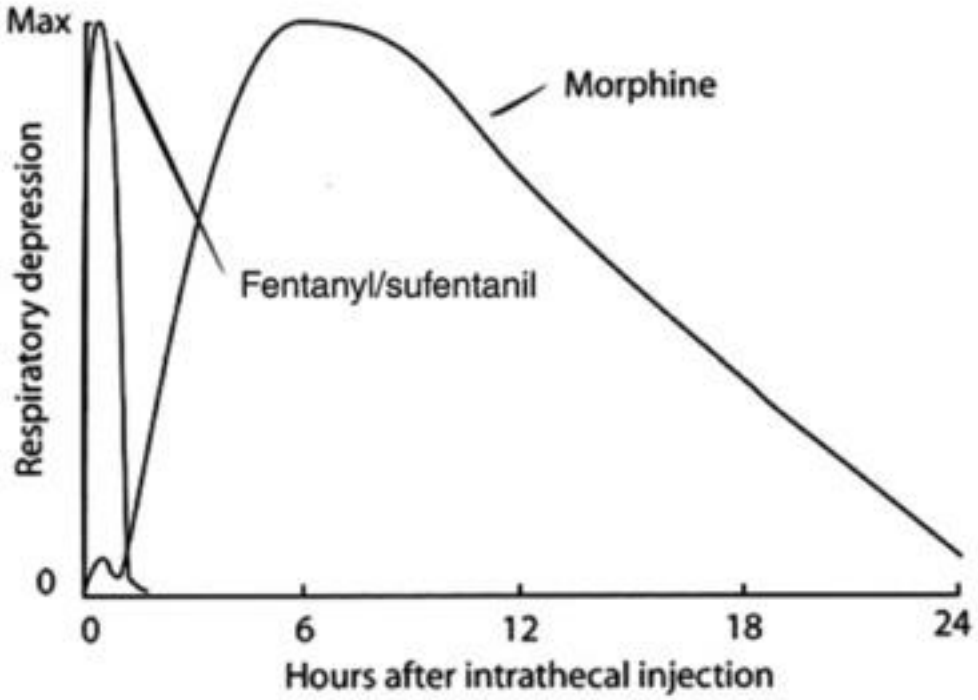


Fig 2 Time to onset of respiratory depression after fentanyl and morphine.

For the first 24h post IT morphine, all charting of pain control and sedatives is the responsibility of anaesthetists. Assess the patient then discuss with anaesthetics.

Linda

- 55yo post op laparotomy for SBO secondary to adhesions.
- Past Hx: Chronic back pain – regular amitriptyline.

- You are asked to see her overnight on Day 0 post op for poorly managed pain. She has a PCA and says it's not working.

- What is your approach?

Pain Assessment

- Site
  - Primary location
  - Radiation
- Onset
- Character of pain
  - Nociceptive vs neuropathic
- Intensity of pain
  - Rest/movement
  - Continuous or intermittent
  - Aggravating or relieving factors
- Associated symptoms
- Effect of pain on activities and sleep
- Biopsychosocial
- Treatment
  - Current and previous
- Relevant medical history
- PHYSICAL EXAMINATION

Linda

- PCA: 50mg morphine in 10h
- Regular IV paracetamol
- Amitriptyline continued

- Where to from here?

SOUTH EASTERN SYDNEY LOCAL HEALTH DISTRICT S1576 1

Linda.

SURGEON: JD

OPERATION PERFORMED: Laparotomy

[x] **GENERAL ANAESTHESIA** [ ] **SEDATION** [ ] **REGIONAL**

GENERAL

Induction
- [x] Rapid sequence (Pre. Ox. + C.P.)
- [x] Intravenous
- [ ] Inhalational

Maintenance
- [ ] N20/02
- [x] Volatile
- [ ] Intravenous

REGIONAL
- [x] Nerve Block Site
- [ ] Infiltration
- [ ] IV regional
- [ ] Subarachnoid — Site — Needle
- [ ] Epidural — Site — Needle

Catheter position

LOR (air/saline)

AGENTS (volume & Concentration) / COMMENTS

Bilateral TAP Block. U/S guided. Chlorhex prep 2%, sterile gloves + probe, clean no touch. 20mL ropivacaine 0.2% to each side at end case. KTS.

MONITORS
- [ ] Nil
- [x] Pulse oximeter
- [x] ECG
- [x] BP Indirect
- [ ] BP Direct
- [x] 02 Analyser
- [x] Capnograph
- [x] Agent monitor
- [x] Disconnect Alarm
- [x] Temperature probe
- [x] Urine output
- [x] Peripheral nerve stimulator
- [ ] CVP
- [ ] PA catheter
- [ ] Cardiac output
- [x] Anaesthetic Depth BIS
- [ ] EEG
- [ ] Other

ANCILLARIES
- [x] Forced air warmer
- [ ] Water Blanket
- [ ] Overhead Heater
- [x] Blood Warmer
- [ ] Rapid Infuser
- [x] Calf Compressors
- [ ] Cell Saver
- [ ] CPB
- [ ] TOE
- [x] E
- [ ] T

POSTURE
- [x] Supine
- [ ] Prone
- [ ] Lateral
- [ ] Lithotomy
- [ ] Parkbench
- [ ] Trendelenburg/Rev. Tren
- [ ] Sitting

Pressure Points Padded

TIME (24hr Clock) → 14:00 … 15:00 … 16:00 (↓ KTS. at approx. 14:45)

FLOW RATE N_2O/O_2

		14:00	14:15	14:30	14:45	15:00	15:15	15:30	15:45	16:00
	Sevo %									
1	Midazolam	1.5								
2	Propofol	150								
3	Alfentanil	1mg	Oxycodone 5			3		2		
4	Cephazolin	2g								
5	Dexamethasone	4mg								
6	Rocuronium	80		20			20			
7	Paracetamol		1g							
8	Parecoxib		40							
9	Ondansetron								4	
10	Droperidol								0.625	
11	Sugammadex									200

		14:00	14:15	14:30	14:45	15:00	15:15	15:30	15:45	16:00
1	Plasmalyte	1000				1000				
2										
3										
4										
5										
	FI02									
	TEMPERATURE									
	ETC02									
	SP02									

BP

INDIRECT: SYST. DIAST. MEAN

DIRECT: SYST. DIAST. MEAN

H. RATE

CVP

RESP.

PAWP.

240 220 200 180 160 140 120 100 80 60 40

SRO (circled)

PCA (Patient Controlled Analgesia) (ADULT)

Prescription is valid for a maximum of 4 days unless ceased earlier.
Refer to local hospital policy for standardised PCA drug solutions

Route	Primary drug	Amount (mg or microgram)	Diluent	Total volume	Primary drug Concentration (mg or microgram per mL)
IV	Morphine	50mg	Sodium chloride 0.9%	50 mL	1mg / per mL
	Additional drug	Amount (mg or microgam)			
	—	—			

Date:	Prescriber's signature	Print your name:	Contact:	Pharmacy
19/8	[signature]	LOWES.		

PCA PROGRAM:

Date	Time	PCA bolus dose (mg or microgram)	Lockout interval (minutes)	Background infusion (mg or microgram per hr)	Prescriber's signature	Print your name	Contact
19/8	1420	1mg = 1 mL	5 minutes	= mL per hr	[signature]	LOWES	
		= mL	minutes	= mL per hr			
		= mL	minutes	= mL per hr			

PCA + NEURAXIAL OPIOID SINGLE DOSE (intrathecal or epidural).

If the patient has also been given a neuraxial opioid, complete the following:
Observations to be recorded: ☐ *Hourly for 6 hours* *OR* ☐ *Hourly for 12 hours.*
Then second hourly until 24 hours post administration even if PCA has not been used or has been ceased.

Date	Time	Drug	Route	Dose given (mg or microgram)	Prescriber's signature	Print your name	Contact

NALOXONE: For sedation score 3 or when sedation score is 2 and respiratory rate less than or equal to 5 breaths per minute.

STOP PCA. Obtain urgent medical review. Commence resuscitation including administering prescribed naloxone (as below) until respirations greater than 10 breaths per minute and sedation score less than or equal to 2. Provide ventilatory assistance if required. (Recommended dosage up to 100 microgram, x4 every 2-3 minutes).

Date	Drug (Print 'naloxone')	Route	Dose (microgram)	Number of doses	Frequency (minutes)	Prescriber's signature	Print your name	Contact
19/8	Naloxone	IV	100 microg	x4	q2min	[signature]	LOWES.	

OXYGEN THERAPY: Give oxygen at 2 to 4 litres per minute via nasal prongs or 6 litres per minute via face mask at all times unless otherwise ordered.

CEASE PCA ACCORDING TO INSTRUCTIONS IN THE MEDICAL RECORD
Refer to entry in the medical record written on Date:..... Time:.....

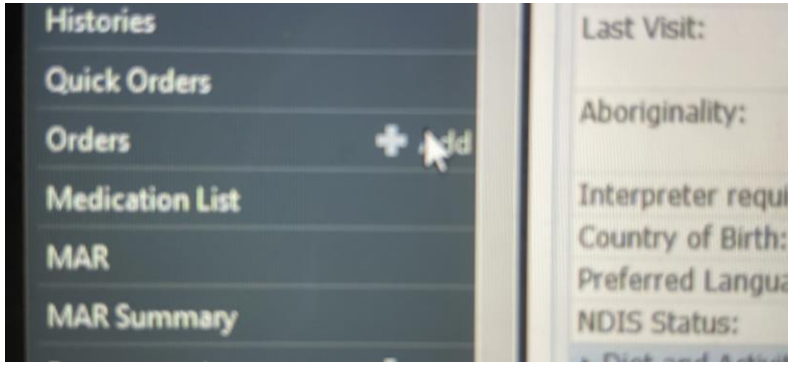
NO WRITING

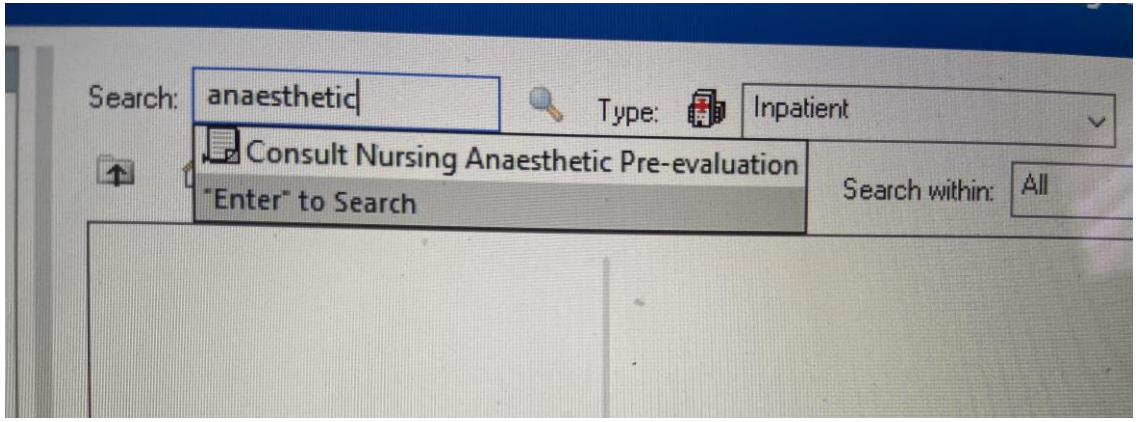
	10										
	5										
Oxygen therapy L/min											
Oxygen device / mode											
Key: RA = Room air, NP = Nasal prongs, FM = Simple face mask, NRB = Non-rebreather, VM= Venturi mask											
Nausea or vomiting ●	Yes										
	No										
PCA DELIVERY											
Total primary PCA dose (cumulative) mg microgram or mL (Circle one)											
Background infusion rate (hourly) mg microgram or mL (Circle one)											
Total demands											
Successful demands											
PCA program checked (initial)											
COMMENTS											
INITIAL: (two initials for change of PCA program)											

- D/w anaesthetic registrar who adds ketamine infusion with good effect

Final thoughts..

- DA 0427 242 727 (<48h until surgery)
- APEC (>48h until surgery)
  - eMR referral
  - CNC: 0424 403 474





Which patients have the best outcomes?

- Cardiovascular optimisation
- Respiratory optimisation
- Good diabetes control
- Other comorbidities optimised eg thyroid disease
- Good perioperative analgesia
- Appropriate fasting
- Appropriate VTE prophylaxis
- Appropriate medication management

Is the patient fit for a GA?

- Depends on what it's for…

Urgent <----------> Elective

High risk <----------> Low risk

Risk of M/M <----------> Improved length and/or quality of life

Take Homes

- ~~NBM From Midnight~~ → fast for 8am, as per protocol
- Fasting doesn't mean no tablets
- Patients can and should have analgesia as required pre op
- Limit script duration when prescribing temporary meds eg oxyCONTIN, paracetamol
- Optimise your patients
- Reviewing the anaesthetic chart can be helpful
- Review patient → call if uncertain

Questions/Feedback

- Louisa.lowes@health.nsw.gov.au