CHILDREN'S PAIN SERVICE

THE PAEDIATRIC ACUTE PAIN SERVICE

(A) WORKFLOW

1. **The Paediatric Pain Team** consists of a Pain Consultant (PC), an Anaesthesia Resident/ Fellow/ Associate Consultant (AC) & Pain Nurse. The PC may be assigned to OT duties but should oversee daily rounds, be closely consulted & reported to. Rounds should be done by a minimum of 2 persons. After 5 pm, the On- Call team takes over but the PC remains available for consult.

2. **Requisite Pain & Hand-Over Rounds**:
   - **Morning Hand-over report** by previous night's On Call Team to the rostered Pain Team is compulsory & should highlight problems eg poorly controlled pain issues, update on therapy & progress, projected plans for escalation & weaning.
   - **Morning Pain Round** at 0830h
   - *An* **Afternoon Round** with the PAIN NURSE should be done at 3pm to review any problems & ensure all the logistics eg cartridge top-ups have been addressed.
   - **Afternoon Hand-over Communication** with prospective On-Call Team about the APS patients & outstanding issues
   - **Evening Pain Review** is required for patients on Epidurals / Continuous Regionals, as well as for any other patients on the APS who have problems controlling their Pain) ~ to be done preferably before 2200h) by the On Call Team.

3. **PCA pump keys**

   The On-Call team is responsible & accountable for PCA keys as well as Call Room card key. The hand-over of these keys to the subsequent/next On-Call Team each day is mandatory. The day team will utilise either the Pain Nurse's or the Ward's PCA keys. ***A fine as well as police report are mandatory if the keys are lost.***

4. **Admission to the APS:**
   - Requires prior discussion/approval at Anaesthetic A/C or C level
   - Occurs post-operatively or for a referred "Blue-Letter(B/L)" patient
   - Must be cared for in an accredited Ward with proper monitoring
   - *NB All continuous Epidurals/Caudal/AACA must be monitored in ICU or HD; PCAs can go to accredited Paeds Wards (55,56,65,66,75,76,85 & 86)*
   - Pain education/consent issues should be settled before admission
   - Necessary documentation on admission to APS includes : APS Form & Photocopy of Blue Letter & Reply

5. **PCA Pumps** are obtained through AU Nurses in MOT. They will record the pump unit number & track its movement & only release pump after the requisite prescription on the APS Form has been filled.

6. **Monitoring**

   All PCAs & Epidurals require continuous pulse oximetry (SpO2), regular assessment wrt Pain + Sedation Scores, vital signs (especially Respiratory Rate) & a SHINE form to audit all opiate- containing infusions. SpO2 may be reduced to 3 - 4 hourly monitoring (only after 24h) at the discretion of the PC provided patient is not overly sedated & has no background basal opioid infusion.

7. **Documentation**

   Orders should be documented & checked. Pain & sedation scores, Side-effects, other observed cues & response to therapy noted daily. Patient's current location should also be updated on the APS form.

8. **Trouble-shooting & Other Duties**
   - Appropriate dose adjustments (maintain, escalate or wean).
   - Add analgesic adjunct if needed
   - Manage side-effects (nausea/ vomiting/ pruritus/ constipation) with pre-emptive PRN prescriptions in CLMM (refer to suggested dosing on the last page of purple APS form).
   - Dilute & Top up all Epidural infusions /CADD cassettes.
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- Epidural (dressing integrity/change, catheter adjustment/removal upon which please document that catheter tip is intact).
- Communicate the analgesic plan & any changes to the Nursing Staff, Physician-in-charge, Parent & Patient.
- Daily Record of Patient's Progress (in APS Form, Case-Sheets / ICIP notes & in CLMM).
- Recognise & treat Abstinence Syndrome; monitor severity with WAT-1 scores every nursing shift.
- Any complications should be relayed to the staff responsible.

9. **Flagging "High Risk" patients for extra-vigilant follow-up**
   - Identify "High Risk" groups eg Neonates/Infants up to 1 year, ASA >2, emergent surgery, Airway/Respiratory/CVS/CNS /NM disorders
   - Implement closer monitoring (e.g. ICU /HD care) & additional review
   - Consider drug dose reduction, additional labs eg LFT, ABG

10. **Blue-Letter Referrals** must be faxed to MOT Reception (2227)
    - *During office hours*, the rostered pain team will manage
    - After office hours, the On Call Team will manage with a helpline from the rostered Pain Consultant. The PAIN NURSE should also be notified. A photocopy of the referral letter AND its reply should be added to the PAIN FILE (even if patient is not admitted to the APS). Relevant Audit Form & the PCA order must be filed if PCA is started.

11. Discharge from the Service

This should be done by the Pain Team who should then notify the surgeon or physician in charge. A discharge note on adequacy of analgesia/other feedback should be done at the time of stopping APS, together with the requisite sign off from APS with date & time.

Post-discharge review/progress note is done the following day. Continued follow up is required until resolution of complications.

12. Charge codes

Remember to fill in the charge codes upon cessation of APS.
Patients may be charged for 1, 3, 7 or 14 days' review.
B/L referrals are also billed on the patient's booklet.

13. Miscellaneous issues & avoiding disruption of pain therapy

- *PCA Fentanyl in older children*: there may be insufficient stock in the Ward or Satellite Pharmacy to provide seamless analgesia. Temporary arrangements can be made with OT as a loan after office hours but please arrange for a prescription to be written for the projected duration of therapy (e.g. over the weekend) so that they can obtain adequate stock from the Main Pharmacy.
- *Oxycodone* is not ward stock in some areas & only available after a **formal written prescription** (in addition to CLMM entry) is given to the satellite pharmacy
- Procedures (eg MRI, chemotherapy, DXT) may interrupt opioid infusions & provisions must be made for alternative analgesia.

(B) PAPERWORK

1. **FORMS**
   - The APS Form (white & purple. A3 size) is essential
   - This form is kept in the red APS FILE (in Major OT Recovery Room). It tracks progress & patient's location & should not be misplaced. Check Citrix for update in patient's location.
   - All relevant sections/data must be recorded daily [eg 24h opiate totals (in mcg or mg; not mls)].
   - In event of a lost form, it must be filled in anew & filed in the red file
   - Prescriptions need to be recorded and signed in the CLMM

THE RED APS FILE

Please file forms in the appropriate section of the APS file - current follow-up, post discharge review, completed.

Any prescription changes (including PCA program and syringe top ups) should be recorded in the CLMM, casenotes and the APS Form *(white).* This is for medicolegal and billing purposes.
Important contact numbers, guidelines and information can be found in this file.

KK Women's and Children's Hospital
SingHealth

Reg No 19890422 7G

CHILDREN'S PAIN SERVICE (REFERRAL FORM)

Patient's name label

Ward: _____ Bed: _____
Drug Allergies: ☐ No ☐ Yes: _____
Age: _____ **WEIGHT:** _____ **KG**
Referral date: ____/____/____
Anaesthetist: _____

Diagnosis ☐ **Surgical Procedure** ☐ **Non-Surgical Problem**

Reminder:
1) Please file in Pain Folder.
2) Pass over to on-call team.

Discipline

Surgical: ☐ GS ☐ Ortho ☐ NS ☐ ENT ☐ Plastic ☐ CTS ☐ Eye ☐ Dental ☐ Other: _____
Medical: ☐ Oncology ☐ Rheumatology ☐ Other: _____

Site of Surgery

☐ NA ☐ Head ☐ Neck ☐ Thorax ☐ Up Abdomen ☐ Lower Abdomen ☐ Back ☐ Pelvic ☐ UL ☐ LL

☐ Regional

Centre Neuraxial Block
☐ Caudal ☐ Epidural ☐ Spinal
☐ Other: _____

Peripheral Nerve Block
☐ UL: _____
☐ LL: _____
☐ Truncal: _____
☐ Other: _____

Single shot:
LA used: _____ %x_____ ml

Additive:
☐ Nil ☐ S-ketamine ☐ Clonidine
☐ Others: _____
Dose: _____ mg/mcg
Block repeated? ☐ No ☐ Yes Time: _____
Details: _____

Catheter insertion details:
Aid: ☐ Nil ☐ Nerve stimulator ☐ U/S ☐ LOR-Saline
Touhy_____G, Catheter_____G, Level:_____
Depth of space: _____cm, Length in space_____cm, Skin marking:_____ cm
Insertion attempts: ☐ Specialist (times) ☐ Non-specialist (times)
Infusion details:
LA: _____% + additive: _____mcg/mg per ml
Infusion rate:_____ml/hr Range:_____to_____ml/hr

Complications: ☐ Nil ☐ Yes
☐ Bloody tap ☐ Dural tap ☐ Failed to thread
☐ Other: _____

Start Date/Time: _____ Sign/Name/MCR: _____

Analgesics / Other Drugs

☐ Paracetamol ☐ NSAIDs ☐ Oxycodone ☐ Oxycontin ☐ Morphine
☐ Tramadol ☐ Others: _____

☐ Diazepam ☐ Clonidine ☐ Anti-histamine ☐ Metoclopramide ☐ Steroids
☐ 5-HT3 Antagonists ☐ Others: _____

Special notes/instructions:

☐ PCA ☐ Nurse led ☐ Parent assisted

☐ Morphine
☐ Fentanyl
☐ Other: _____

_____ mg/mcg of drug in 50 ml of diluent
1ml: _____ mg/mcg

Load: _____ ml
Bolus: _____ ml
Lockout: _____ mins
Max/hr: _____ mg/mcg
Background:_____ ml/hr

Start Date/Time: _____
Sign: _____

☐ Infusion 1

☐ Morphine
☐ Fentanyl
☐ Ketamine
☐ Other: _____

_____ mg/mcg of drug in 50 ml of diluent
1ml/hr: _____(mg/mcg)/kg/hr
Infusion rate:_____ ml/hr

Start Date/Time: _____
Sign: _____

☐ Infusion 2

☐ Morphine
☐ Fentanyl
☐ Ketamine
☐ Other: _____

_____ mg/mcg of drug in 50 ml of diluent
1ml/hr: _____(mg/mcg)/kg/hr
Infusion rate:_____ ml/hr

Start Date/Time: _____
Sign: _____

Please see back page for dosing guidelines

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Sample Page of the Pain Service Form (APS)

Recommended Initial PCA and Analgesic Infusion Settings

Drug	Morphine	Fentanyl	Ketamine
Dilution instruction	1mg/kg (Max 50mg) in 50 mls diluent	15 mcg/kg (Max 750mcg) in 50 mls diluent	5mg/kg (Max 250mcg) in 50 mls diluent
Concentration 1ml =	20mcg/kg max: 1mg/ml	0.3mcg/kg max: 15mcg/ml	100mcg/kg max: 5mg/ml
Infusion Range	0 - 4 ml/hr	0 - 4 ml/hr	0 - 4 ml/hr
PCA settings	Load: 2 mls (optional) Bolus: 1 ml Lock out: 5 min Max/hr: 0.3 mg/kg Background: 1 ml /hr (optional)	Load: 2 mls (optional) Bolus: 1 ml Lock out: 3 min Max/hr: 5 mcg/kg Background: 1 ml /hr (optional)	NA

Recommended Initial Epidural Infusion Settings

Age	LA Concentration(%)	Additive concentration	Rate Range
Standard (>1 year)	0.10% Bupivacaine	Fentanyl 2 mcg/ml or Clonidine 1 mcg/ml	0.1 - 0.4ml/kg/hr
6mths - 1 year	0.10% Bupivacaine	Fentanyl 1 mcg/ml	0.1 - 0.3 ml/kg/hr
< 6 mths	0.10% Bupivacaine	Nil	0.1 - 0.2 ml/kg/hr
< 2 mths	0.05% Bupivacaine	Nil	0.1 - 0.2 ml/kg/hr

Oral analgesics	Paracetamol	15-20 mg/kg (max 90mg/kg/day for up to 48hr, thereafter reduce to 60mg/kg/day)Term neonates = (max 40mg/kg/day)	4 - 6 hrly	**IV analgesics**	Paracetamol	Term neonates = 7.5mg/kg (max 40mg/kg/day) All other children:15mg/kg (max 60mg/kg/day)	6 hrly (max 4 doses)
	Diclofenac	0.5-1 mg/kg (max 60mg/dose)	8 -12 hrly		Tramadol	1 - 2 mg/kg (Load 2-3mg/kg)	6 hrly over 10 min
	Ibuprofen	10 mg/kg/dose (max 400mg/dose)	6 hrly		Ketorolac	0.2mg/kg/dose (max 10mg)	6 hrly
	Indomethacin	0.5 - 1 mg/kg	8 - 12 hrly		Clonidine (analgesia/ sedation/ anxiolysis)	1 - 2 mcg/kg	give slowly and 8 hrly
	Naproxen	7 mg/kg (max 500mg/dose)	12 hrly	**Antiemetics**			
					Metoclopramide	0.2 mg/kg/dose (max 20mg) load 0.5mg/kg	6 hrly (over 10 min)
	Tramadol	1-2 mg/kg (max 400mg/day)	6 hrly		Dexamethasone	0.15 mg/kg (max 8mg)	Once daily (slowly)
	Oxycodone	0.1-0.2 mg/kg Oral oxycodone: oral morphine = 2:3	4 - 6 hrly		Ondansetron	0.1 mg/kg (max 4 mg)	8 hrly over 10 min
	Oxycontin(SR) *Do not Crush*	Calculate depending on opioid requirement	12 hrly		Promethazine	0.5 mg/kg (max 25 mg)	8 hrly
	Oral morphine	0.2-0.5 mg/kg	4 hrly				
	Diazepam	0.1mg/kg (for muscle spasms)	4 hrly				
	Amitriptyline	1-2 mg/kg	ON	**Opioid antogonist Naloxone**	Pruritus	1mcg/kg. If returns consider infusion	PRN x 1-2
	Gabapentin	5-10 mg/kg Start incremental doses over 3 days	8 hrly		Urinary retention	1-2mcg/kg	PRN x 1-2
					Sedation	2 mcg/kg over 2 minutes	
					Resus	10mcg/kg over 2 minutes	

Incident reporting: *Please report any management related issues that impacted or could have impacted patient care. Please indicate date/ time. Anonymous. Can be more than 1 report.*

What happened?/Learning points?/Need further discussion?/Ideas?

Classification:

- ☐ CNS
- ☐ RESP
- ☐ CVS
- ☐ Monitoring
- ☐ Education
- ☐ Communication
- ☐ Equipment
- ☐ Drug related
- ☐ Documentation
- ☐ Other

Date/time:								
Reviewer (s):								
Pain assessment	At Rest							
	Dynamic							
	Pt satisfaction Y/N							
	Slept well (Y/N)? If No, why?							
Side effects:	Sedation score							
	Nausea							
	Vomiting							
	Pruritis							
	Respiratory depression							
	Urinary retention/IDC							
	IV site ok?							
Analgesic/Adjuvants	Paracetamol							
	NSAID							
	Oxycodone							
	Oxycontin							
	Tramadol							
Others:								
	Dexa/Ondo/Metoc/Promet							
Analgesic Infusions:	Morphine(ml/hr)							
Indicate X when ceased.	Fentanyl(ml/hr)							
	Ketamine(ml/hr)							
Others:								
PCA	Morphine							
	Fentanyl							
Settings:	Bolus (mg/mcg)							
	Lockout (min)							
	Max/hr (mg/mcg)							
	Infusion (ml/hr)							
	Tries total/good							
	Usage/24hrs (mg/mcg)							
Cessation of PCA	Indicate (X) ans time							
Regional Infusion:	LA Solution (%)							
	Additive/Conc							
	Rate (ml/hr)							
	Bolus given / Time							
Assessment:	Left Dermatome							
	Right dermatome							
	Bromage score R							
	L							
	other							
Problem checks:	TMax							
	Haem.markers (eg FTW)							
	4-HR/ABP							
	Cath. skin marking (cm)							
	Catheter site clean? (Y/N)							
	Dressing changed (✓)							
	Pressure areas checked (✓)							
Catheter issues:	eg Blocked/Disconnected							
Post cath removal instructions	Given to caregiver (✓)							
Cessation of infusion	Indicate (✓) and time							
Catheter removal. Tip intact?	Y / N							
Plans / Notes								

CHILDREN'S PAIN SERVICE	
Code	Description
WS041P	3-Day Review
WS042P	Weekly Review
WS043P	Bi-weekly Review

OFF PAIN SERVICE	(Time and sign off)							

SEDATION SCORE: 0=awake, 1=awake, tired, sleepy, 2=sedated, asleep, easily aroused, 3 =sedated/asleep, hard to arouse, 4=unrousable, 5=sleep

BROMAGE SCORE: 0=none/full flexion knee/feet, 1=partial/just moves knees, 2=almost complete/moves feet only, 3=complete/unable to move leg

Patient Charged: ☐

(C) PROTOCOLS

Adherence to workflow, monitoring & dosing/ prescription guidelines are important for safety. Additional information and details on protocols & policies can be found on the KKH intranet. All trainees should be fluent in setting up safe & effective prescriptions for PCA, Epidural as well as IV Morphine infusions for children of all weights.

(D) EQUIPMENT

PCA Pumps

- Graseby Omnifuse & CADD Solis Pumps
- All opiate & ketamine containing infusions must have an anti-reflux valve device in place
- Practical orientation session on equipment is compulsory

(E) SERVICE QUALITY STANDARDS

PCAs & epidural infusions should be started in the Recovery Room. Patients should be able to use the PCAs effectively before leaving Recovery (PACU). Epidural patients must be comfortable & free of side-effects. If excessive sedation prevents this then an expedited review in the ward is needed to rectify this.

Severe pain & analgesic gaps need to be reported & addressed with input by PC. Loading or additional boluses are recommended instead of increasing infusion rates to expedite pain control. Strict multimodal analgesia with paracetamol ± NSAIDs is recommended.

It is the responsibility of all anaesthetists (admitting patient to the APS, discharging from Recovery Area & on call) to ensure that the patient is comfortable upon transfer to the Ward / HD / ICU.

Good communication (parent / nurse / anaesthetist / Pain Service) is essential to ensure safe & effective therapy. All changes to the initial regimen & additional bonuses must be noted in the CLMM & APS forms plus Progress Notes, noted by attendant nurse with a two-way read back clarification of prescription, likely problems & plan.

High risk patients need parameter guidelines as to when to alert APS.
Anti-emetics PRN need to be prescribed when opiates are on board.