

Management of Acute Pain in Children

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1. Pain Assessment

Allow the child and their family to express any fears, concerns or anxieties relating to the pain or previous pain experiences

Ask about the pain:

Impact	On daily living e.g. play or school
Location	Where is the pain?
Intensity	How bad is it?
Type of pain	e.g. sharp, stabbing, aching, burning
Duration	How long has it been going on?
Exacerbation	Is it constant or intermittent? What makes it worse?
Interventions	What treatment has already been given? Has it helped?

- As a minimum, pain should be assessed with each full set of observations. Children in severe pain should be assessed more frequently (see **action & re-assessment** section)
- Use assessment to:
 - Determine the need for non-pharmacological and/or pharmacological interventions
 - Observe for deterioration in a child's condition. Consider surgical patients – could there be complications, do they need a surgical review?
 - Consider whether the pain is consistent with the child's working diagnosis (and think about alternative diagnosis)

PAIN ASSESSMENT TOOLS

1. FLACC – suggested for ages 2 months – 7 years (score /10)

Each indicator category is scored from 0-2, giving a total score of 0 to 10

Indicator	Score 0	Score 1	Score 2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves quietly	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort

2. Faces (Wong and Baker) – suggested ages 8 years and over (score /5)



3. Visual Analogue Scale (VAS) – suggested ages 8 years and over (score /10)



4. Non-communicating Children

For non-communicating children please see [Appendix 1](#) for the Non-Communicating Children's Pain Checklist – Revised (NCCPC-R)

2. Re-assessment & Action

Re-assessment must be timely and appropriate to the severity of the pain (see next page)

NO – MILD PAIN (FLACC score = 0 -3 / Faces score = 0- 1 / VAS score = 0-3)

- Re-assess pain as requested / at least with routine observations
- Give prescribed analgesia within 30 minutes of assessment
- Consider non-pharmacological intervention: e.g. play therapy, distraction, hot/cold pack
- Consider step-down needed from regular analgesia
- Analgesia should be available on the “as required” section of the drug chart

MODERATE - SEVERE PAIN (FLACC score = 4-10 / Faces score = 2-5 / VAS score = 4-10)

- Give prescribed analgesia as soon as possible or at least within 20 minutes of assessment
- Consider non-pharmacological intervention: e.g. play therapy, distraction, hot/cold pack
- May need opioid analgesia
- If IV Morphine is required titrate to resolve pain and discuss an escalation plan. The decision for morphine boluses is only made by a senior team member and use is restricted to CED / theatres.
- If PCA/NCA is started, assess every 30 minutes for at least the first 2 hours to ensure adequate pain relief is ongoing
- Re-assess frequently and contact relevant medical/surgical team for review and escalation

3. Non-pharmacological Interventions

Psychological	Physical/Sensory	Environmental
Parental presence	Alleviating pressure from pain site	Awareness of adverse effects of light, noise, music, alarms etc.
Reassurance, information and explanation to child and parents	Check position	Encourage normal sleep cycle and rest periods
Quiet, calm, child-orientated environment	Mattresses and pillows – can they be changes or adjusted?	
Allow choices	Physiotherapy	
Distraction techniques e.g. TV/DVD, schooling, play specialist, music	Hot/cold packs Massage	
Cognitive behaviour therapy	TENS	
Guided imagery	Breastfeeding	
Relaxation techniques	Non-nutritive sucking (dummy/pacifier)	
	Sucrose	

4. Pharmacological interventions

When prescribing:

- Anticipate pain at admission and ensure every child has analgesia prescribed in the “as required” section of the drug chart
- Children with regular analgesia prescribed should have an “as required” option
- Children should return to the wards following surgery with analgesia prescribed
- Escalation of prescribing may need to be rapid in some children (e.g. sickle cell crisis)

- Some children will have individualised pain management protocols based on previous experience – **use these**. The patient should have a copy, and there should be a copy in the medical notes.
- Assess the effectiveness of treatment and manage accordingly
- **DO** prescribe according to the patient's weight
- **DO NOT** prescribe according to the patient's age
- **DO** prescribe the dose in mg (milligrams)
- **DO NOT** prescribe the dose in mL (millilitres)
- **IF THE PATIENT IS OBESE: DISCUSS WITH PHARMACY TEAM / READ LINK BELOW**
<https://www.sps.nhs.uk/articles/how-should-medicines-be-dosed-in-children-who-are-obese/>
- **Use the analgesic drug formulary (below) for dosing of analgesia within the RACH.**
 - Consider the use of local analgesia (e.g. benzydamine (Difflam®) spray) at any stage

Stepwise approach to pain management Omit drugs which are contraindicated – see below				Oral Morphine Regular	IV Morphine (PCA/NCA)	Epidural / local anaesthetic infusions
			Oral Morphine PRN			
		NSAID Regular	NSAID Regular	NSAID Regular	NSAID Regular	NSAID Regular
Paracetamol PRN/Regular	Paracetamol Regular	Paracetamol Regular	Paracetamol Regular	Paracetamol Regular	Paracetamol Regular	Paracetamol Regular

Start pain relief at an appropriate step to the patient's level of pain (e.g. post-operative patients may require PCA/NCA + regular oral analgesia as a minimum)

Cautions and Contraindications:

Paracetamol	NSAIDs	Opioids
Consider reduced doses in hepatic impairment (discuss with a pharmacist)	True Allergy Contraindicated	Avoid use / reduce doses / increase interval in renal impairment – discuss all use in this situation with consultant.
	Upper GI bleed Contraindicated	Can cause respiratory depression
	Renal disease Contraindicated	May cause nausea and vomiting
	Thrombocytopenia or other bleeding disorder	Caution in chronic headache – risk of medication overuse headache
	Asthma (check if NSAIDs have previously been tolerated)	
	Age restrictions (PR diclofenac from 6 months only)	

Simple Analgesics (Paracetamol & NSAIDs)

- When escalating analgesia, these **must** be given regularly and at maximum doses
- Do not avoid NSAIDs if nil by mouth or if patient has a poor appetite.
Consider the duration of use and whether providing gastric protection is indicated. In the absence of additional risk factors, gastric protection is not routinely required.
- **Omit** NSAIDs if contraindicated (see above): it may be necessary to replace with oral opioids.
- Paracetamol can be given orally, rectally or intravenously.
- Do not prescribe Paracetamol as 'PO / IV' – **doses can be different**. If switching from one route to the other, re-prescribe, stating the new route.
- **Post-operative paracetamol dose not used at RACH routinely**. Discuss individual cases with Pharmacist
- **No paracetamol dose should be greater than 1 g every 4–6 hours (max QDS)**

Opioids

- Morphine is the opioid medicine of choice at RACH. **CODEINE is NOT used** at RACH as it is a pro-drug and there is a wide variation in how a person metabolises it. Worldwide there have been deaths in children due to codeine use.
- Naloxone and anti-emetics **must** be prescribed "as required" alongside ongoing opioid prescriptions, irrespective of the route
- For initial analgesia of traumatic injuries or severe pain, intranasal fentanyl may be given in CED (see below).
- For longer term opioid use (> 2 days), laxatives should be prescribed
- Oral Morphine liquid is the first line choice. Immediate release Morphine tablets can be used if the liquid is not tolerated, or tablets are preferred. Modified Release Morphine preparations are not recommended for acute pain.
- Dihydrocodeine may be used as an oral alternative in older children.
- Boluses of IV Morphine may be given to establish pain relief, which may then be followed by regular oral doses, or a PCA/NCA depending on the clinical situation, **however the use of morphine boluses is restricted to CED / theatres only, and the decision for use must be made and supervised by a senior team member. Only the 50mg/50mL preparation should be used for morphine boluses.**

Opioids (cont.)

- Patients who need two or more doses of IV morphine to relieve pain may need PCA/NCA (see guidance at the end of the document).
- When IV Morphine boluses are given in CED or theatres, the child should have appropriate monitoring to ensure that respiratory depression is recognised.

Avoid use / reduce doses / increase interval in renal impairment – discuss all use in this situation with consultant.

Intranasal fentanyl

Typically used in the CED for fast acting analgesia for the relief of moderate to severe pain.

- **Indication for use**
 - Initial analgesia for traumatic injuries e.g. fractures, burns/scalds, fingertip injuries
 - Procedures: suturing, painful dressing changes.
- **Contraindicated in:**
 - Children <10kg / known allergy / children with a head injury or decreased GCS / anisotaxia / airway / respiratory problem
- **Dose used 1.5 micrograms/kg (maximum 75 micrograms per microgram/kg intravenous dose).**
- **Fentanyl solution of 50 micrograms/ml should be used.**
Use a 1ml syringe attached to a mucosal atomizer.



Absorption can be as fast as the intravenous route with therapeutic serum levels obtained within 2 mins, therefore the same side effects can occur.

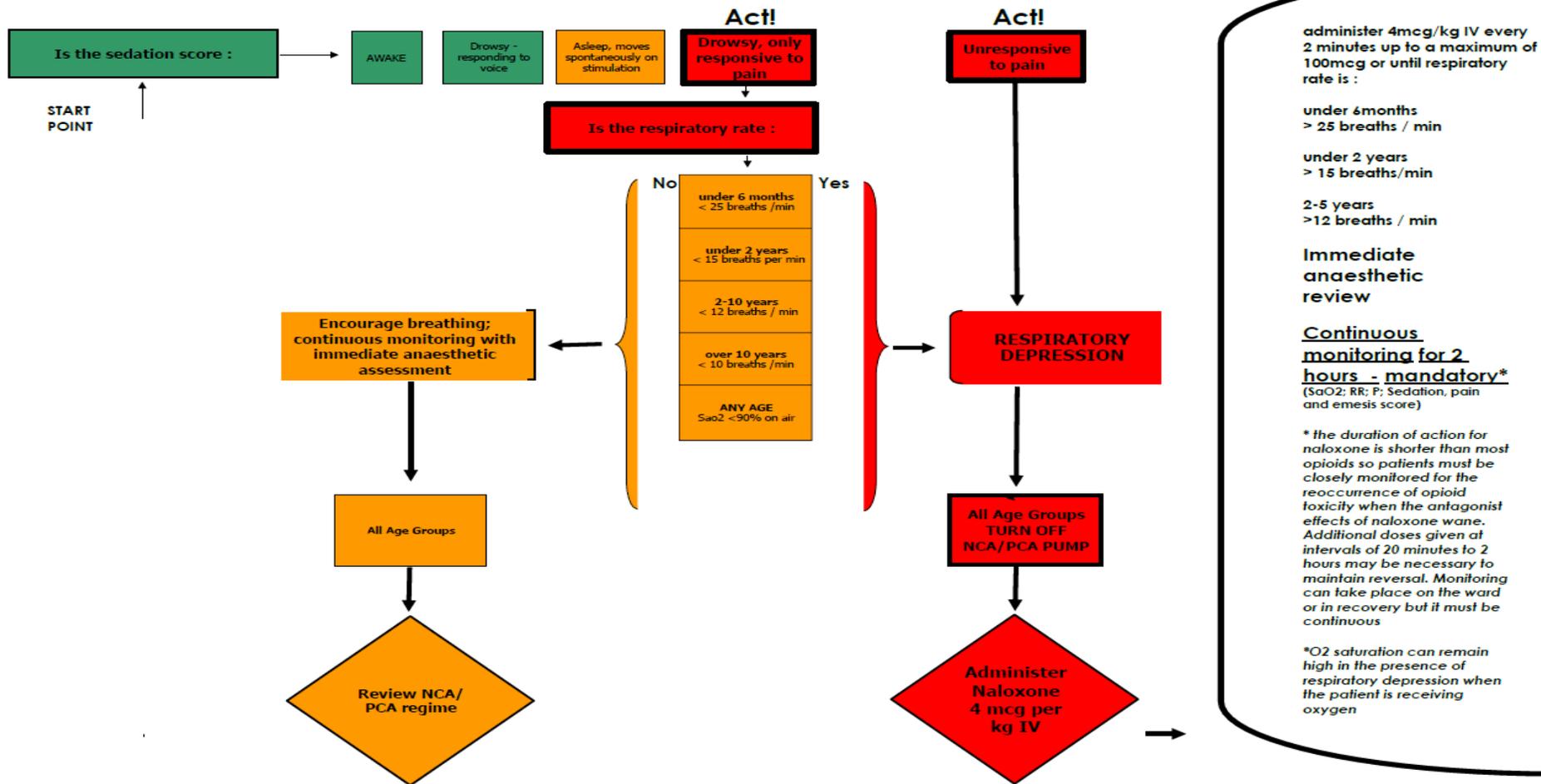
Optimum effects last for 30 minutes but pain relief is often experienced for much longer.

5. Opioid Antagonists: Respiratory suppression / Overdose

Over dosage with opioids see BNFC

Respiratory suppression

Protocol for Opioid Induced Respiratory Depression - RACH



6. Analgesic Drug Formulary

Part 1: Children >1 month old (corrected gestational age)

Simple Analgesics						
Drug	Route	Weight/Age	Dose	Frequency	Formulations	Notes
Paracetamol	Oral	>1 month	15mg/kg Max 1g	4-6 hourly Max QDS	<u>Suspension:</u> 120mg/5mL 240mg/5mL <u>Tablets:</u> 500mg	Rectal uptake is slower and more variable than other routes Oral drug is rapidly absorbed from the small bowel with almost 100% bioavailability, and has a similar onset time to IV preparation.
	Rectal	>1 month	15mg/kg Max 1g		<u>Suppositories:</u> 60mg 125mg 250mg 500mg	
	IV infusion over 15 minutes	<10kg	7.5mg/kg		<u>IV infusion:</u> 1g /100mL 500mg/ 50mL 100mg/10mL	
		≥50kg	1g		Doses under 100mg should use the 100mg in 10mL ampoules to reduce risk of error	
Ibuprofen	Oral	>1 month	10mg/kg or	8 hourly or	<u>Suspension:</u> 100mg/5mL <u>Tablets:</u> 200mg 400mg	These are maximum doses. For pain and inflammation in rheumatic disease including juvenile idiopathic arthritis doses, see BNFC
			7.5mg/kg	6 hourly		
Naproxen	Oral	>1 month	5mg/kg Max 500mg	12 hourly	<u>Tablets:</u> 250mg 500mg	Note only available in tablet form
Diclofenac	Rectal	>6 months 8-11kg	12.5mg	12 hourly Max 4 days	<u>Suppositories:</u> 12.5mg 25mg 50mg	Oral diclofenac is non-formulary
		>6 months 12kg+	1mg/kg Max 50mg	8 hourly Max 4 days		

Opioid Analgesics						
Drug	Route	Weight/Age	Dose	Frequency	Formulations	Notes
Morphine Sulphate	Oral	1-3 months	50-100 micrograms/kg	4 hourly	<u>Solution:</u> 10mg/5mL <u>Tablets:</u> 10mg 20mg	All doses are for initiation of treatment and should be adjusted according to response. <div style="border: 2px solid red; padding: 5px; text-align: center;"> The use of morphine boluses for pain is restricted to CED / theatres only, and decision for use must be made and supervised by a senior team member </div> Ensure Naloxone and anti-emetic is prescribed for every child.
		3-6 months	100-150 micrograms/kg			
		6-12 months	200 micrograms/kg			
		1-12 years	200-300 micrograms/kg			
		12 years +	5 – 10 mg			
	IV injection over 5 minutes	1-6 months	100 micrograms/kg	6 hourly	<u>Injection:</u> 50mg/50ml only	
		6 months-12 years	100 micrograms/kg	4 hourly		
		12-17 years	5mg	4 hourly		
	SC injection	1-6 months	100-200 micrograms/kg	6-hourly	<u>Injection:</u> 10mg/mL 30mg/mL	
		6 months-2 years	100-200 micrograms/ kg	4-hourly		
2-12 years		200 micrograms/kg	4-hourly			
12-18 years		2.5-5mg	4-hourly			
Fentanyl	IN intranasal	Children > 10 kg	1.5 micrograms/kg (max dose 75 micrograms)	Can give second dose after 30 minutes	Injection: 50 micrograms/ml	
Dihydrocodeine	Oral	1-4 years	500 micrograms/kg	4-6 hourly Max QDS	Tablets: 30mg	
		4-12 years	0.5-1mg/kg			
		12-17 years	30mg			

Naloxone						
Drug	Route	Weight/Age	Dose	Frequency	Formulations	
Naloxone	IV	All ages	<u>Respiratory depression</u> 4-10 micrograms/kg <i>If no respiratory improvement:</i> 100 micrograms/kg (max 2mg) may be used	Repeat at intervals of 1 minute up to a maximum of 2mg total	<u>Injection:</u> 400 micrograms/mL	
			<u>Severe Pruritus</u> 0.5 micrograms/kg	Repeat at 10 minute intervals up to a maximum of 4 doses		

Part 2: Children <1 month old (corrected gestational age)

Drug	Route	Weight/Age	Dose	Frequency	Formulations
Paracetamol	Oral	28-32 weeks CGA	10-15mg/kg Max 30mg/kg/day	8 – 12 hourly	<u>Suspension:</u> 120mg/5mL
		>32 weeks CGA	10-15mg/kg Max 60mg/kg/day	6 – 8 hourly	
	Rectal	28-32 weeks CGA	10-15mg/kg Max 30mg/kg/day	12 hourly	<u>Suppositories:</u> 60mg 125mg
		>32 weeks CGA	15-20mg/kg Max 60mg/kg/day	8 hourly	
	IV infusion over 15 minutes	<32 weeks CGA	7.5mg/kg	12 hourly	<u>IV infusion:</u> 500mg/ 50mL 100mg/10mL
		>32 weeks CGA		8 hourly	
Morphine Sulphate	Oral	All neonates	<i>Initially:</i> 50-100 micrograms/kg	<i>Initially:</i> 4 hourly	<u>Solution:</u> 10mg/5mL 100 micrograms/mL
	For IV Morphine in Neonates refer to Neonatal guidelines. In this age group, this will usually be given in NICU.				

7. Patient Controlled Analgesia (PCA) & Nurse Controlled Analgesia (NCA)

The decision to use a PCA/NCA should be made by a Consultant and discussed with the Pain Team / third on Anaesthetist, and a strategy for analgesia must be documented in the clinical notes.

See separate PCA / NCA policy for indications and preparation of the child and family.

- NB. Regular simple analgesia **must** be continued
- Record Baseline observations *including* a pain score before commencing a PCA/NCA

PCA/NCA prescriptions

- IV bolus doses of morphine are given prior to starting PCA/NCA to achieve complete pain control, but only in CED or theatres, and only on senior team member's decision and supervision.
- If pain returns after PCA/NCA is commenced, review the patient, history, pump usage and prescription and check this against the pump
 - Pain control should be regained with prescribed morphine "top-up" doses.
 - These may be given via the pump with "clinician override" once prescribed on the medication chart.
 - Choose a dose according to pain severity – repeated doses of the existing PCA/NCA bolus dose for milder pain, or up to 50 micrograms/kg for severe pain
 - Repeat up to four times at 5 minute intervals with monitoring (as described above)
- The PCA/NCA dose should then be doubled OR the background infusion titrated upwards as appropriate depending on the history of pump usage. This should always be done after discussion with the Consultant
- **If pain is still not controlled** a consultant to consultant discussion should take place with the on call paediatric anaesthetic consultant, and an escalation plan made.

Morphine PCA/NCA prescriptions

	Children < 50kg		Children ≥ 50kg	
	NCA	PCA	NCA	PCA
Morphine Sulfate	1mg/kg in 50mL sodium chloride 0.9% (1mL = 20 micrograms/kg)		50mg in 50mL sodium chloride 0.9% (1mL = 1mg)	
Loading Dose	2.5 – 5mL (50 – 100 micrograms/kg)		1 – 5mL (1 – 5mg)	
Bolus Doses	0.5 – 1mL (10 – 20 micrograms/kg)		0.5 – 1mL (0.5 – 1mg)	0.5 – 2mL (0.5 – 2mg)
Max dose in 4 hours				
Lockout	20 minutes	5 – 10 minutes	20 minutes	5 – 10 minutes
Background Infusion	0, 0.2, 0.5 or 1 mL/hr	0 or 0.2 mL/hr	0, 0.2, 0.5 or 1 mL/hr	0 or 0.2 mL/hr

Fentanyl PCA/NCA prescriptions

	Children < 50kg		Children ≥ 50kg	
	NCA	PCA	NCA	PCA
Fentanyl	25 micrograms/kg in 50mL sodium chloride 0.9% (1mL = 0.5 micrograms/kg)		1250 micrograms in 50mL sodium chloride 0.9% (1mL = 25 micrograms)	
Loading Dose	0.5 – 2mL (0.25 – 1 microgram/kg)		0.5 – 2mL (12.5 – 50 micrograms)	
Bolus Doses	5 – 50kg: 0.5 – 1mL (10 – 20 micrograms/kg)	0.5 – 2mL (0.25 – 1 microgram/kg)	0.5 – 1mL (12.5 – 25 micrograms)	
	< 5kg: 0.2 – 0.5mL (0.1 – 0.25 micrograms/kg)			
Max dose in 4 hours	20mL (10 micrograms/kg)		20mL (500 micrograms)	
Lockout	20 – 30 minutes	5 – 10 minutes	20 – 30 minutes	5 – 10 minutes
Background Infusion	5 – 50kg: 0.2 – 1mL/hr	0 – 0.2 mL/hr	0.2 – 1 mL/hr	0.2 – 2 mL/hr
	< 5kg: 0.2 – 0.5mL/hr			

8. Discharge Considerations

The NHS belongs to everybody and we must ensure that its resources are used in the best possible way for all patients. Paracetamol and ibuprofen are approximately four times more expensive when it is prescribed on the NHS compared to when it is purchased in pharmacies or supermarkets. This policy reflects the Position Statement on the Prescribing of Paracetamol and Ibuprofen in Brighton and Hove CCG.

It is normal for patients being discharged from RACH **NOT** to be supplied with paracetamol or ibuprofen on their TTO's.

- We recognise that over the counter (OTC) dosing guidance is different from prescribed doses.
 - In situations where it is felt that the higher doses are essential to patient care these doses should be prescribed on a TTO in mg and in ml for the dose. It is essential and in line with hospital policy that these TTO's are screened by a pharmacist before the patient is discharged. However there will be no supply of medication. Oral syringes will be provided if needed for dose administration.
- Supplies **will** be made for patients who have had:
 - Tonsillectomy see **Tonsillectomy & Adenoidectomy Discharge Pro-forma** (Microguide > Paediatric and Neonatology > Paediatrics > A-Z > D > Daycare / Level 7 guidelines)
 - Emergency surgery and are being discharged the same day

- Other situations which must be discussed with pharmacy and agreed before the TTO is dispensed.
- Under 3 months a supply MUST be made if needed.

Other analgesia, not available OTC may be prescribed on discharge if needed by the patient. This could include rectal diclofenac, or any opioid analgesic prescribed.

Morphine sulphate 10mg/5ml oral solution is treated as a Controlled drug (CD) within the trust. The total quantity to supply, in words and figures, is required on the TTO.

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Appendix 1 – Non-communicating Children’s Pain Checklist

The NCCPC-R was designed to be used for children, aged 3 to 18 years, who are unable to speak because of cognitive (mental/intellectual) impairments or disabilities. It can be used whether or not a child has physical impairments or disabilities. The NCCPC-R was designed to be used without training by parents and caregivers (carers). It can also be used by other adults who are not familiar with a specific child (do not know them well).

How often has this child shown these behaviours in the last 2 hours?

0 = NOT AT ALL 1 = JUST A LITTLE 2 = FAIRLY OFTEN 3 = VERY OFTEN NA = NOT APPLICABLE

i. Vocal

1. Moaning, whining, whimpering (fairly soft)	0	1	2	3	NA
2. Crying (moderately loud)	0	1	2	3	NA
3. Screaming/yelling (very loud)	0	1	2	3	NA
4. A specific sound or word for pain (e.g. a word, cry or type of laugh)	0	1	2	3	NA

ii. Social

5. Not co-operating, cranky, irritable, unhappy	0	1	2	3	NA
6. Less interaction with others, withdrawn	0	1	2	3	NA
7. Seeking comfort or physical closeness	0	1	2	3	NA
8. Being difficult to distract, not able to satisfy or pacify	0	1	2	3	NA

iii. Facial

9. A furrowed brow	0	1	2	3	NA
10. A change in eyes, including: squinching, opened wide, frowning	0	1	2	3	NA
11. Turning down of mouth, not smiling	0	1	2	3	NA
12. Lips puckering up, tight, pouting or quivering	0	1	2	3	NA
13. Clenching or grinding teeth, chewing or thrusting tongue out	0	1	2	3	NA

iv. Activity

14. Not moving, less active, quiet	0	1	2	3	NA
15. Jumping around, agitated, fidgety	0	1	2	3	NA

v. Body and Limbs

16. Floppy	0	1	2	3	NA
17. Stiff, spastic, tense, rigid	0	1	2	3	NA
18. Gesturing to or touching part of body that hurts	0	1	2	3	NA
19. Protecting, favouring or guarding part of body that hurts	0	1	2	3	NA
20. Flinching or moving the body part away, being sensitive to touch	0	1	2	3	NA
21. Moving the body in a specific way to show pain e.g. head back, arms down, curls up etc.	0	1	2	3	NA

vi. Physiological

22. Shivering	0	1	2	3	NA
23. Change in colour, pallor	0	1	2	3	NA
24. Sweating, perspiring	0	1	2	3	NA
25. Tears	0	1	2	3	NA
26. Sharp intake of breath, gasping	0	1	2	3	NA
27. Breath holding	0	1	2	3	NA

vii. Eating/Sleeping

28. Eating less, not interested in food	0	1	2	3	NA
29. Increase in sleep	0	1	2	3	NA
30. Decrease in sleep	0	1	2	3	NA

Score summary:

Category	i	ii	iii	iv	v	vi	vii	Total
Score								

A total score of 7 or more indicates a child has pain