

**MORPHINE PCA/NCA GUIDELINE FOR PAEDIATRIC PAIN MANAGEMENT (CHANGES TO GUIDELINE ONLY AFTER DISCUSSION WITH ANAESTHETIC CONSULTANT)**

<b>PATIENT CONTROLLED ANALGESIA</b>	MORPHINE SULPHATE 1 mg/kg made up to 50 mL with 0.9% sodium chloride = 20 micrograms/kg/mL
<b>NURSE CONTROLLED ANALGESIA</b>	
CHILDREN > 50 kg	MORPHINE SULPHATE 50 mg made up to 50 mL with 0.9% sodium chloride = 1 mg/mL

INITIAL PROGRAMMING	LOADING DOSE*		BACKGROUND INFUSION		BOLUS DOSE		LOCKOUT (mins)
	micrograms/kg	mL	micrograms/kg/hr	mL/hr	micrograms/kg	mL	
<b>PCA</b>	50 - 100	2.5 - 5	2 - 8	0.1 - 0.4	10 - 20	0.5 - 1	5
<b>NCA</b>	50 - 100	2.5 - 5	10 - 20	0.5 - 1	10 - 20	0.5 - 1	20

*\*The pump will not automatically deliver a loading dose unless programmed specifically  
The pump must be purged before connection to patient*

**MANAGEMENT**

1. Patients with PCA/NCA are to be closely monitored. Consider apnoea monitor in patients < 1 year
2. The infusion rate/prescription must be checked when collecting a patient from theatre and at the beginning of every shift
3. Record observations on PEWS chart or hourly observation chart
4. Urinary retention and pruritus - refer to urinary retention and pruritus algorithms
5. Solutions to be changed every 24 hours and any solution discarded, charted and countersigned
6. Anti-syphon / anti-reflux line to be changed every 72 hours
7. Paediatric Pain Service reviews at least twice daily
8. Refer to "Paediatric PCA/NCA guideline" for more detailed information

PAIN SCORES	ACTION
<b>SEVERE PAIN</b> 7 - 10	PCA/NCA bolus Administer regular analgesia <b>Contact Pain Service:</b> <b>CNS 1109</b> <b>Out of hours: Anaesthetist 1061</b>
<b>MODERATE PAIN</b> 4 - 6	PCA/NCA bolus Administer regular analgesia
<b>SLIGHT PAIN (WITH MOVEMENT)</b> 1 - 3	PCA: encourage bolus (10 min before activity) NCA: give bolus
<b>NO PAIN</b>	Continue

SEDATION SCORES	ACTION
<b>3 UNROUSABLE / ROUSABLE ONLY TO PAINFUL STIMULI (AVPU)</b>	Stop infusion Stimulate patient Administer oxygen Bleep <b>Anaesthetist 1061</b> Prepare/give naloxone
<b>2 ASLEEP / ROUSABLE TO VOICE / LIGHT TOUCH (AVPU)</b>	Continue with PCA/NCA observation as per guideline
<b>1 SLEEPY OR SLEEPING / MOVES SPONTANEOUSLY (AVPU)</b>	<b>If patient appears to become increasingly sleepy / drowsy contact Pain Service</b>
<b>0 AWAKE / ALERT (AVPU)</b>	

**PAIN SERVICE CONTACT DETAILS:**

**CNS:** bleep 1109

**Anaesthetist:** bleep 1061

**GENERAL PRESCRIBING INSTRUCTIONS:**

1. Specify patient's minimum respiratory rate
2. No additional opioids or central nervous system depressants unless ordered by anaesthetist
3. Insert 2 IV cannulae - 1 dedicated for IV morphine
4. Maintain IV access for 4 hours post PCA/NCA
5. Prescribe naloxone 4 micrograms/kg IV for respiratory depression
6. Prescribe naloxone 0.5 microgram/kg IV For pruritus and urinary retention
7. Prescribe ondansetron 100 micrograms/kg IV/PO 8 hourly for nausea and vomiting (max dose 4 mg). Refer to "Guideline on treatment of PONV" for further advice
8. Prescribe oral diazepam 100 micrograms/kg 6 hourly for orthopaedic muscle spasms (max dose 5 mg)

**RESPIRATORY RATES**

ACCEPTED MINIMUM RATES ARE:

AGE	RR
< 3 months	20-25
3/12 - 1 year	20
1 - 5 years	15
> 5 years	10
> 12 years	8



Royal London Hospital

FENTANYL PCA/NCA GUIDELINE FOR PAEDIATRIC PAIN MANAGEMENT (CHANGES TO GUIDELINE ONLY AFTER DISCUSSION WITH ANAESTHETIC CONSULTANT)

STANDARD INFUSION USING FENTANYL 50 micrograms/mL	
PATIENT CONTROLLED ANALGESIA	FENTANYL 1 mL/kg made up to 50 mL with 0.9% sodium chloride = 1 microgram/kg/mL
NURSE CONTROLLED ANALGESIA	
CHILDREN > 50 kg	FENTANYL 50 mL

INITIAL PROGRAMMING	LOADING DOSE*		BACKGROUND INFUSION		BOLUS DOSE		LOCKOUT (mins)
	micrograms/kg	mL	micrograms/kg/hr	mL/hr	micrograms/kg	mL	
PCA	0.5 - 1	0.5 - 1	0.5	0.5	0.5	0.5	5
NCA	0.5 - 1	0.5 - 1	1	1	1	1	20

*\*The pump will not automatically deliver a loading dose unless programmed specifically  
The pump must be purged before connection to patient*

**MANAGEMENT**

1. Patients with PCA/NCA are to be closely monitored. Consider apnoea monitor in patients < 1 year
2. The infusion rate/prescription must be checked when collecting a patient from theatre and at the beginning of every shift
3. Record observations on PEWS chart or hourly observation chart
4. Urinary retention and pruritus - refer to urinary retention and pruritus algorithms
5. Solutions to be changed every 24 hours and any solution discarded, charted and countersigned
6. Anti-syphon / anti-reflux line to be changed every 72 hours
7. Pain reviews at least twice daily
8. Refer to "Paediatric PCA/NCA guideline" for more detailed information

PAIN SCORES	ACTION
SEVERE PAIN 7 - 10	PCA/NCA bolus Administer regular analgesia <b>Contact Pain Service: CNS 1109 Out of hours: Anaesthetist 1061</b>
MODERATE PAIN 4 - 6	PCA/NCA bolus Administer regular analgesia
SLIGHT PAIN (WITH MOVEMENT) 1 - 3	PCA: encourage bolus (10 min before activity) NCA: give bolus
NO PAIN	Continue

SEDATION SCORES	ACTION
3 UNROUSABLE / ROUSABLE ONLY TO PAINFUL STIMULI (AVPU)	Stop infusion Stimulate patient Administer oxygen Bleep <b>Anaesthetist 1061</b> Prepare/give naloxone
2 ASLEEP / ROUSABLE TO VOICE / LIGHT TOUCH (AVPU)	Continue with PCA/NCA observation as per guideline
1 SLEEPY OR SLEEPING / MOVES SPONTAN- EOUSLY (AVPU)	<b>If patient appears to become increasingly sleepy / drowsy contact Pain Service</b>
0 AWAKE / ALERT (AVPU)	

**PAIN SERVICE CONTACT DETAILS:**

**CNS:** bleep 1109

**Anaesthetist:** bleep 1061

**GENERAL PRESCRIBING INSTRUCTIONS:**

1. Specify patient's minimum respiratory rate
2. No additional opioids or central nervous system depressants unless ordered by anaesthetist
3. Insert 2 IV cannulae - 1 dedicated for IV fentanyl
4. Maintain IV access for 4 hours post PCA/NCA
5. Prescribe naloxone 4 micrograms/kg IV for respiratory depression
6. Prescribe naloxone 0.5 micrograms/kg IV for pruritus and urinary retention
7. Prescribe ondansetron 100 micrograms/kg IV/PO 8 hourly for nausea and vomiting (max dose 4 mg). Refer to "Guideline on treatment of PONV" for further advice
8. Prescribe oral diazepam 100 micrograms/kg 6 hourly for orthopaedic muscle spasms (max dose 5 mg)

**RESPIRATORY RATES**

ACCEPTED MINIMUM RATES ARE:

AGE	RR
< 3 months	20-25
3/12 - 1 year	20
1 - 5 years	15
> 5 years	10
> 12 years	8

## MORPHINE NCA GUIDELINES FOR NEONATAL PAIN MANAGEMENT [CHANGES TO GUIDELINE **ONLY** AFTER DISCUSSION WITH ANAES CONS]

NURSE CONTROLLED ANALGESIA	MORPHINE SULPHATE 1 mg/kg made up to 50 mL with 0.9% sodium chloride = 20 micrograms/kg/mL
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INITIAL PROGRAMMING	LOADING DOSE***		BACK-GROUND INFUSION		BOLUS DOSE		LOCK OUT/min
	microgram/kg	mL	microgram/kg/hr	mL/hr	microgram/kg	mL	
<b>NCA</b>	25 - 50	1.25 - 2.5	0 – 4	0 - 0.2	10	0.5	20

\*\*\*Please note - the machines will not automatically give a loading dose unless you programme it to.  
The pump **MUST** be purged before connecting to patients

### MANAGEMENT

1. Patients with NCA to be closely monitored and readily visible from nurses station
2. The infusion rate/prescription **MUST** be checked when collecting patient from theatre and at the beginning of every shift
3. Record observations on paediatric pain chart
4. Solutions to be changed every 24 hours and any solution discarded charted and countersigned [see over]
5. Line to be changed every 72 hours

PAIN SCORES:	ACTION:
<b>SEVERE PAIN</b>	Contact Paediatric Pain CNS bleep 1109 Out of hours Paediatric anaesthetist bleep1061
<b>MODERATE PAIN</b>	NCA: give bolus
<b>SLIGHT PAIN WITH MOVEMENT</b>	NCA : give bolus (10 mins before activity)
<b>NO PAIN</b>	Continue

	SEDATION SCORES:	ACTION:
<b>S3</b>	ASLEEP & UNROUSABLE	Stop infusion Stimulate patient Administer oxygen Call Paediatric anaesthetist bleep 1061 Prepare/give naloxone
<b>S2</b>	ASLEEP BUT ROUSABLE	Continuous saturation recordings
<b>S1</b>	DROWSY/ASLEEP BUT MOVES SPONTANEOUSLY	Continuous saturation recordings
<b>S0</b>	AWAKE	Continue

### GENERAL PRESCRIBING INSTRUCTIONS

1. Specify patient's minimum respiratory rate
2. No additional opioids or central nervous system depressants unless ordered by anaesthetist
3. Insert 2 IV cannulae - 1 dedicated for IV morphine
4. Maintain IV access for 4 hours post NCA for prn doses
5. Prescribe naloxone 4 micrograms/kg IV for respiratory depression

### RESPIRATORY RATES

ACCEPTED **MINIMUM** RATES ARE:

AGE	RR
< 3 months	25



Royal London Hospital

**KETAMINE & MORPHINE PCA/NCA GUIDELINE FOR PAEDIATRIC PAIN MANAGEMENT**

(CHANGES TO GUIDELINE ONLY AFTER DISCUSSION WITH ANAESTHETIC CONSULTANT)

PATIENT CONTROLLED ANALGESIA	KETAMINE 1 mg/kg & MORPHINE SULPHATE 1 mg/kg made up to 50 mL with 0.9% sodium chloride = 20 micrograms/kg/mL
NURSE CONTROLLED ANALGESIA	
CHILDREN > 50 kg	KETAMINE 50 mg & MORPHINE SULPHATE 50 mg made up to 50 mL with 0.9% sodium chloride = 1 mg/mL

INITIAL PROGRAMMING	LOADING DOSE*		BACKGROUND INFUSION		BOLUS DOSE		LOCKOUT (mins)
	micrograms/kg	mL	micrograms/kg/hr	mL/hr	micrograms/kg	mL	
PCA	50 - 100	2.5 - 5	2 - 8	0.1 - 0.4	10 - 20	0.5 - 1	5
NCA	50 - 100	2.5 - 5	10 - 20	0.5 - 1	10 - 20	0.5 - 1	20

*\*The pump will not automatically deliver a loading dose unless programmed specifically  
The pump must be purged before connection to patient*

**MANAGEMENT**

1. Patients with PCA/NCA are to be closely monitored. Consider apnoea monitor in patients < 1 year
2. The infusion rate/prescription must be checked when collecting a patient from theatre and at the beginning of every shift
3. Record observations on PEWS chart or hourly observation chart
4. Urinary retention and pruritus - refer to urinary retention and pruritus algorithms
5. Solutions to be changed every 24 hours and any solution discarded, charted and countersigned
6. Anti-syphon / anti-reflux line to be changed every 72 hours
7. Paediatric Pain Service reviews at least twice daily
8. Refer to "Paediatric PCA/NCA guideline" for more detailed information

PAIN SCORES	ACTION
SEVERE PAIN 7 - 10	PCA/NCA bolus Administer regular analgesia <b>Contact Pain Service: CNS 1109 Out of hours: Anaesthetist 1061</b>
MODERATE PAIN 4 - 6	PCA/NCA bolus Administer regular analgesia
SLIGHT PAIN (WITH MOVEMENT) 1 - 3	PCA: encourage bolus (10 min before activity) NCA: give bolus
NO PAIN	Continue

SEDATION SCORES	ACTION
3 UNROUSABLE / ROUSABLE ONLY TO PAINFUL STIMULI (AVPU)	Stop infusion Stimulate patient Administer oxygen Bleep <b>Anaesthetist 1061</b> Prepare/give naloxone
2 ASLEEP / ROUSABLE TO VOICE / LIGHT TOUCH (AVPU)	Continue with PCA/NCA observation as per guideline
1 SLEEPY OR SLEEPING / MOVES SPONTAN- EOUSLY (AVPU)	<b>If patient appears to become increasingly sleepy / drowsy contact Pain Service</b>
0 AWAKE / ALERT (AVPU)	

**PAIN SERVICE CONTACT DETAILS:**

**CNS:** bleep 1109

**Anaesthetist:** bleep 1061

**GENERAL PRESCRIBING INSTRUCTIONS:**

1. Specify patient's minimum respiratory rate
2. No additional opioids or central nervous system depressants unless ordered by anaesthetist
3. Insert 2 IV cannulae - 1 dedicated for IV ketamine & morphine
4. Maintain IV access for 4 hours post PCA/NCA
5. Prescribe naloxone 4 micrograms/kg IV for respiratory depression
6. Prescribe naloxone 0.5 micrograms/kg IV for pruritus and urinary retention
7. Prescribe ondansetron 100 micrograms/kg IV/PO 8 hourly for nausea and vomiting (max dose 4 mg). Refer to "Guideline on treatment of PONV" for further advice
8. Prescribe oral diazepam 100 micrograms/kg 6 hourly for orthopaedic muscle spasms (max dose 5 mg)

**RESPIRATORY RATES**

ACCEPTED MINIMUM RATES ARE:

AGE	RR
< 3 months	20-25
3/12 - 1 year	20
1 - 5 years	15
> 5 years	10
> 12 years	8

**KETAMINE & FENTANYL PCA/NCA GUIDELINE FOR PAEDIATRIC PAIN MANAGEMENT**

TO BE COMMENCED BY ANAESTHETIC CONSULTANT / PAIN TEAM ONLY. CHANGES TO GUIDELINE ONLY AFTER DISCUSSION WITH ANAESTHETIC CONSULTANT.

**STANDARD INFUSION USING KETAMINE 50 mg/mL & FENTANYL 50 micrograms/mL**

<b>PATIENT CONTROLLED ANALGESIA</b>	<b>KETAMINE 1 mg/kg &amp; FENTANYL 50 micrograms/kg (= 1 mL/kg)</b> made up to 50mL total volume in syringe - with <b>0.9% sodium chloride</b>
<b>NURSE CONTROLLED ANALGESIA</b>	
<b>CHILDREN &gt; 49 kg</b>	<b>KETAMINE 50 mg (= 1 mL) &amp; FENTANYL 2450 micrograms (= 49 mL)</b> Total volume in syringe = 50 mL

INITIAL PROGRAMMING	LOADING DOSE* (mL)	BACKGROUND INFUSION (mL/hr)	BOLUS DOSE (mL)	LOCKOUT (mins)
<b>PCA</b>	0.5 - 1	0.5	0.5	5
<b>NCA</b>	0.5 - 1	1	1	20

*\*The pump will not automatically deliver a loading dose unless programmed specifically  
The pump must be purged before connection to patient*

**MANAGEMENT**

1. Patients with PCA/NCA are to be closely monitored. Consider apnoea monitor in patients < 1 year
2. The infusion rate/prescription must be checked when collecting a patient from theatre and at the beginning of every shift
3. Record observations on PEWS chart or hourly observation chart
4. Urinary retention and pruritus - refer to urinary retention and pruritus algorithms
5. Solutions to be changed every 24 hours and any solution discarded, documented and countersigned
6. Anti-syphon / anti-reflux line to be changed every 72 hours
7. Pain reviews at least twice daily
8. Refer to "Paediatric PCA/NCA guideline" for more detailed information

PAIN SCORES	ACTION
<b>SEVERE PAIN</b> 7 - 10	PCA/NCA bolus Administer regular analgesia <b>Contact Pain Service:</b> <b>CNS 1109</b> <b>Out of hours: Anaesthetist 1061</b>
<b>MODERATE PAIN</b> 4 - 6	PCA/NCA bolus Administer regular analgesia
<b>SLIGHT PAIN (WITH MOVEMENT)</b> 1 - 3	PCA: encourage bolus (10 min before activity) NCA: give bolus
<b>NO PAIN</b>	Continue

SEDATION SCORES	ACTION
<b>3 UNROUSABLE / ROUSABLE ONLY TO PAINFUL STIMULI (AVPU)</b>	Stop infusion Stimulate patient Administer oxygen Bleep <b>Anaesthetist 1061</b> Prepare/give naloxone
<b>2 ASLEEP / ROUSABLE TO VOICE / LIGHT TOUCH (AVPU)</b>	Continue with PCA/NCA observation as per guideline
<b>1 SLEEPY OR SLEEPING / MOVES SPONTANEOUSLY (AVPU)</b>	<b>If patient appears to become increasingly sleepy / drowsy contact Pain Service</b>
<b>0 AWAKE / ALERT (AVPU)</b>	

**PAIN SERVICE CONTACT DETAILS:****CNS:** bleep 1109**Anaesthetist:** bleep 1061**GENERAL PRESCRIBING INSTRUCTIONS:**

1. Specify patient's minimum respiratory rate
2. No additional opioids or central nervous system depressants unless ordered by anaesthetist
3. Insert 2 IV cannulae - 1 dedicated for IV fentanyl
4. Maintain IV access for 4 hours post PCA/NCA
5. Prescribe naloxone 4 micrograms/kg IV for respiratory depression
6. Prescribe naloxone 0.5 micrograms/kg IV for pruritus and urinary retention
7. Prescribe ondansetron 100 micrograms/kg IV/PO 8 hourly for nausea and vomiting (max dose 4 mg). Refer to "Guideline on treatment of PONV" for further advice
8. Prescribe oral diazepam 100 micrograms/kg 6 hourly for orthopaedic muscle spasms (max dose 5 mg)

**RESPIRATORY RATES**

ACCEPTED MINIMUM RATES ARE:

AGE	RR
< 3 months	20-25
3/12 - 1 year	20
1 - 5 years	15
> 5 years	10
> 12 years	8



For use at Royal London Hospital only**OXYCODONE PCA/NCA GUIDELINE FOR PAEDIATRIC PAIN MANAGEMENT (CHANGES TO GUIDELINE ONLY AFTER DISCUSSION WITH ANAESTHETIC CONSULTANT)**

PATIENT CONTROLLED ANALGESIA	OXYCODONE 1 mg/kg made up to 50 mL with 0.9% sodium chloride = 20 micrograms/kg/mL
NURSE CONTROLLED ANALGESIA	
CHILDREN > 50 kg	OXYCODONE 50 mg made up to 50 mL with 0.9% sodium chloride = 1 mg/mL

INITIAL PROGRAMMING	LOADING DOSE*		BACKGROUND INFUSION		BOLUS DOSE		LOCKOUT (mins)
	microgram/kg	mL	microgram/kg/hr	mL/hr	microgram/kg	mL	
PCA	50 - 100	2.5 - 5	2 - 8	0.1 - 0.4	10 - 20	0.5 - 1	5
NCA	50 - 100	2.5 - 5	10 - 20	0.5 - 1	10 - 20	0.5 - 1	20

*\*The pump will not automatically deliver a loading dose unless programmed specifically  
The pump must be purged before connection to patient*

**MANAGEMENT**

1. Patients with PCA/NCA are to be closely monitored. Consider apnoea monitor in patients < 1 year.
2. The infusion rate/prescription must be checked when collecting a patient from theatre and at the beginning of every shift
3. Record observations on PEWS chart or hourly observation chart.
4. Urinary retention and pruritus - refer to urinary retention and pruritus algorithms
5. Solutions to be changed every 24 hours and any solution discarded charted and countersigned
6. Anti-syphon / anti-reflux line to be changed every 72 hours
7. Paediatric Pain Service reviews at least twice daily
8. Refer to "Paediatric PCA/NCA guideline" for more detailed information.

PAIN SCORES	ACTION
SEVERE PAIN 7 - 10	PCA/NCA bolus Administer regular analgesia <b>Contact Pain Service: CNS 1109 Out of hours: Anaesthetist 1061</b>
MODERATE PAIN 4 - 6	PCA/NCA bolus Administer regular analgesia
SLIGHT PAIN (WITH MOVEMENT) 1 - 3	NCA: give bolus PCA: encourage bolus (10 min before activity)
NO PAIN	Continue

SEDATION SCORES	ACTION
3 UNROUSABLE / ROUSABLE ONLY TO PAINFUL STIMULI (AVPU)	Stop infusion Stimulate patient Administer oxygen Bleep <b>Anaesthetist 1061</b> Prepare/give naloxone
2 ASLEEP / ROUSABLE TO VOICE / LIGHT TOUCH (AVPU)	Continue with PCA/NCA observation as per guideline
1 SLEEPY OR SLEEPING / MOVES SPONTAN- EOUSLY (AVPU)	<b>If patient appears to become increasingly sleepy / drowsy contact Pain Service</b>
0 AWAKE / ALERT (AVPU)	

**PAIN SERVICE CONTACT DETAILS:****CNS:** bleep 1109**Anaesthetist:** bleep 1061**GENERAL PRESCRIBING INSTRUCTIONS:**

1. Specify patient's minimum respiratory rate
2. No additional opioids or central nervous system depressants unless ordered by anaesthetist
3. Insert 2 IV cannulae - 1 dedicated for IV oxycodone
4. Maintain IV access for 4 hours post PCA/NCA
5. Prescribe naloxone 4 micrograms/kg IV for respiratory depression
6. Prescribe naloxone 0.5 microgram/kg IV for pruritus and urinary retention
7. Prescribe ondansetron 100 micrograms/kg IV/PO 8 hourly for nausea and vomiting (max dose 4 mg). Refer to "Guideline on treatment of PONV" for further advice
8. Prescribe oral diazepam 100 microgram/kg 6 hourly for orthopaedic muscle spasms (max dose 5 mg)

**RESPIRATORY RATES**ACCEPTED **MINIMUM** RATES ARE:

AGE	RR
< 3 months	20-25
3/12 - 1 year	20
1 - 5 years	15
> 5 years	10
> 12 years	8