

Pain Management in renal impairment

This guideline is for adult patients with chronic renal impairment.

For patients with AKI stage 3 (Stage 3 is defined by a >3 fold increase in sCR or sCr \geq 350 μ mol/l with an acute rise of 40 μ mol/l) refer to advice as GFR < 10 (unless otherwise advised).

STEP 1: Mild Pain

Paracetamol 1g qds +/- adjuvant analgesia (see below)

AVOID NSAIDs

STEP 2: Mild to Moderate Pain

Paracetamol 1g qds + low dose opiate +/- adjuvant analgesia (see below)

AVOID NSAIDs

Low dose opiates

- **Codeine (preferred)** – Use with caution, metabolites can accumulate. Increased risk of drowsiness in renal patients.

GFR 30 – 50: Use normal dose (30-60mg up to 4 times a day) monitor closely.
GFR 10 – 30: 30mg up to every 4 hours. Increase if tolerated*.
GFR < 10: 30mg up to every 6 hours. Increase if tolerated but with caution*.
Dialysis: 30mg up to every 6 hours. Increase if tolerated but with caution*.
(* if required, increase slowly every 2 – 3 days to maximum 240mg in 24 hours)

OR

- **Dihydrocodeine** – Prolonged effect in renal impairment. Use cautiously.

GFR 30 – 50: Use normal dose (30mg every 4-6 hours), monitor closely
GFR 10 – 30: Use smaller doses (e.g 30mg qds) – titrate to response[^]
GFR < 10: Use smaller doses (e.g. 30mg bd) – titrate to response[^]
Dialysis: Use smaller doses (e.g 30mg bd) – titrate to response[^]
([^] Maximum 240mg in 24 hours but no more than 120mg daily if GFR < 30)

OR

- **Tramadol** – Use with caution

GFR 20 – 50: Use normal dose (50-100mg up to 4 times a day), monitor closely
GFR 10 – 20: 50mg every 8 hours and titrate to response[#]
GFR < 10: Use with caution. 50mg every 12 hours and titrate to response[#]
Dialysis: Use with caution. 50mg every 12 hours and titrate to response[#]
([#] if required, titrate very slowly every 2 – 3 days. Maximum 400mg in 24 hours but only with caution)

STEP 3: Moderate to Severe pain

Paracetamol 1g qds + opiate + adjuvant analgesia

- stop weak opiate (tramadol may be continued in some circumstances)

AVOID NSAIDs

Opiates

Morphine/Diamorphine – AVOID. Accumulates extensively in renal impairment.

Oxycodone

- Relatively safe in renal impairment but can accumulate so use cautiously.
- Start with small prn doses (e.g 2.5 – 5mg qds up to 2 – 4 hrly) of short acting oxycodone - available as caps, liquid and IV/SC injection - and increase as tolerated according to frequent pain assessment.
- Convert to long acting oral preparation as necessary.

See opiate conversion table if converting from another opiate.

Fentanyl - senior or specialist supervision/advice only

- Excreted mainly by the liver but renal impairment may have a moderate effect so titrate cautiously. *See opiate conversion table if previously on oxycodone.*
- Available as patches and injection.

Short-acting Fentanyl preparations – on the advice of palliative care/pain team only

- Fentanyl lozenges (Actiq)
- *UNDER PALLIATIVE CARE/PAIN ADVICE ONLY: Fentanyl Trans-mucosal preparations*

Short acting Fentanyl can only be used if the patient has been on high dose opiates (equivalent of 60mg morphine daily – see table) for at least a week and oxycodone is not appropriate.

Alfentanil - senior or specialist supervision/advice only

- Excreted mainly by the liver therefore no dosage adjustment is required.
- Used in cases of intolerance to other strong opiates or when administration volume needs to be minimised.
- Short acting injection (suitable for 24 hour syringe driver).

See conversion table for dosage.

Transient fall in BP and bradycardia may occur on administration.

Methadone

On the advice of palliative care/pain Consultant only

All opiates (except metabolites of morphine) are not significantly affected by dialysis

Adjuvant analgesics

- **Amitriptyline** – No dosage adjustment required, but start with lower doses (e.g. 10mg nocte) and increase gradually due to extra risk of dizziness and postural hypotension.

OR

- **Nortriptyline** - (used in place of amitriptyline if sedation becomes problematic). No dosage adjustment required, start with lower doses (e.g. 10mg nocte) and increase gradually.

- **Gabapentin** – can accumulate. Use very cautiously and avoid large doses (e.g > 300mg unless advised by renal/pain/palliative care team)

GFR 30 – 60:	Start at low dose (e.g 100mg od) and increase gradually according to response.
GFR 15 – 30:	Start at low dose (e.g 100mg od) and increase gradually according to response.
GFR < 15:	100mg at night. Increase very gradually according to tolerability.
Dialysis:	100mg at night. Increase very gradually according to tolerability. Gabapentin is dialysed so dose should be taken after dialysis.

OR

- **Pregabalin** (second line – only if not tolerating gabapentin)

GFR 30 – 60:	Initial dose 75mg daily and titrate accordingly to tolerability and response.
GFR 15 – 30:	Initial dose 25 - 50mg daily and titrate accordingly to tolerability and response.
GFR < 15:	Initial dose 25mg daily and titrate accordingly to tolerability and response.
Dialysis:	Initial dose 25mg daily and titrate accordingly to tolerability and response. Approx 50% of dose is dialysed during 4 hour session so dose should be taken after dialysis

- **Ketamine** – **On the advice of the palliative care/pain team ONLY**
No dosage adjustment required in any degree of renal impairment but contraindicated in patients with severe hypertension and caution in patients prone to hallucinations and psychotic disorders.

Other considerations:

- NSAIDs can be considered short-term for patients on dialysis, but patients will be at an increased risk of GI bleeding.
- Carbamazepine is sometimes used for trigeminal neuralgia. No dosage adjustment is required in renal impairment.
- Clonazepam tablets (*Subcutaneous injection is not readily available – discuss with palliative care team*) can be started at low doses (e.g. 0.5mg) for anxiety/restless legs and

increased cautiously according to response. (Clonazepam is preferred to diazepam as diazepam can result in excessive sedation and encephalopathy in renal patients).

- Hyoscine Butylbromide for gastrointestinal or genitourinary pain/discomfort
No dosage adjustment required in any degree of renal impairment.
- Baclofen for muscle spasms should be used with caution.
 - GFR 20 – 60: 5mg tds and titrate according to response
 - GFR 15 – 30: 5mg bd and titrate according to response
 - GFR < 15: 5mg daily and titrate according to response
 - Dialysis: 5mg daily and titrate according to response
- Antidepressants used as an adjuvant for pain should be discussed with the pain/**palliative care** and renal team before commencing (some antidepressants will need dosage adjustments depending on renal function).
- Lidocaine patches are licensed for use in postherpetic neuralgia and do not require dosage adjustment in renal impairment.
- Capsaicin cream for painful diabetic neuropathy under consultant supervision only.
- Capsaicin patches (NEEMMC approved in January 2012, to be prescribed by Pain consultants only)

Analgesia via patches

- **Buprenorphine** – Patches are not suitable for acute pain.
It may take up to 30 hours for plasma concentration of buprenorphine to decrease by 50% after the patch has been removed. Do not give another opiate for 24 hours after removal of patch.
 - GFR 20 – 50: Dose adjustment is not required.
 - GFR 10 – 20: Dose adjustment is not required (avoid very high doses e.g. > 35mcg/hr)
 - GFR < 10: Initially reduce dose by 25 – 50% and increase as tolerated.
 - Dialysis: Initially reduce dose by 25 – 50% and increase as tolerated.
- **Fentanyl** - Excreted mainly by the liver but renal impairment may have a moderate effect so titrate cautiously.

Analgesia via syringe driver

- Diamorphine – AVOID
- Morphine – AVOID
- Oxycodone – calculate 24 hour requirement and give via syringe driver. Oxycodone for breakthrough pain.
- Alfentanil (**senior or specialist supervision/advice only**) – Used when intolerant to other strong opiates or when administration volume needs to be minimised. See conversion table for dosage.
- Fentanyl (**senior or specialist supervision/advice only**) – calculate 24 hour requirement and give via syringe driver. For large volumes consider alfentanil.

Patients with GFR < 30 or AKI stage 3 – discuss with palliative care team

Analgesia via PCA

- Diamorphine – AVOID
- Morphine – AVOID
- Fentanyl – 1mg in 100ml normal saline (10microgram/ml). 10microgram dose with 6 minute lockout.
- Oxycodone – 100mg in 100ml normal saline (1mg/ml). 1mg dose with 6 minute lockout. (made in aseptics – order in advance)

Oral morphine (mg) (in 24 hour period)	SC morphine (mg) (in 24 hour period)	Oral Oxycodone (mg) (in 24 hour period)	SC Oxycodone (mg) (in 24 hour period)	Fentanyl Patches (mcg/hr) (given over 72 hours)	SC Fentanyl (mcg) (in 24 hour period)	SC Alfentanil (mg) (in 24 hour period)	Buprenorphine Patches (mcg/hr) (given over 96 hours)
30	15	15	7.5	12	150	1	35
60	30	30	15	12-25	300	2	35
90	45	45	20	25	450	3	52.5
120	60	60	30	25-37	600	4	70
180	90	90	45	50	*	6	105
240	120	120	60	75	*	8	140
300	150	150	75	75	*	10	-
360	180	180	90	100	*	12	-
420	210	210	105	125	*	14	-
480	240	240	120	125	*	16	-
540	270	270	135	150	*	18	-
600	300	300	150	150	*	20	-
660	330	330	165	175	*	22	-

*Injectable fentanyl is only available at a concentration of 50mcg/ml. At higher doses the volume is too large for the SC route – change to patches or alfentanil.

PO morphine to SC morphine divide by 2
 PO morphine to PO oxycodone divide by 2
 PO oxycodone to SC oxycodone divide by 2
 PO morphine (24hours) to fentanyl patch (72hrs) divide by 4 (morphine mg, fentanyl mcg/hr)

Contact Numbers:

- Renal Consultant – 01206 286632 (or via switchboard)
- Pain Team – ext 2621 or bleep 308
(Out of hours – Consultant Anaesthetist via switch)
- Palliative Care Team
Monday – Sunday (9am – 5pm): 01206 746272
Outside of these hours: 01206 890360 (Single point) and ask for on-call Doctor
- Pharmacy - 01206 742161 (medicines information)
 - Bleep 351 (renal pharmacist)
 - via switchboard (on-call pharmacist)

References:

1. The Renal Drug Handbook – 3rd edition. Caroline Ashley and Aileen Currie
2. BNF volume 67 – March 2014
3. CHUFT guideline: Simplified Opioid Conversion Chart
<http://intranet.rde.local/intranet/documents/320/3457/Opioid%20conversion%20chart.pdf>

4. CHUFT formulary: http://www.colchesterhospital.nhs.uk/formulary/formulary_home.shtml

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Protocol reviewed by Medicines Information

Protocol approved by NEEMMC: December 2014

Next Review Date: December 2016