Northamptonshire Healthcare
NHS Foundation Trust

MMG021Guidance on the use of Naloxone in the management of opioid-induced respiratory depression

Table of Contents

Why we need this guidance?

Naloxone is a potent opioid antagonist. It reversibly blocks access to opioid receptors and displaces opioid agonists due to its higher affinity. This guidance aims to support clinicians working within the hospices to safely prescribe and administer naloxone.

Which stakeholders have been involved in the creation of this guidance?

Specialist Palliative Care Clinicians

Medicines Management Committee

Key duties

The Chief Operating Officer and the Director of Nursing, AHPs & Quality

are responsible for ensuring the implementation of this guidance across the clinical areas.

Hospice members of staff

(including Responsible Clinician and Multi-disciplinary Team) - All clinical hospice members of staff have a responsibility for ensuring that they have an awareness of the guidance.

Doctor

- Initial assessment of patient
- Stopping medication
- Prescribing medication
- Cannulation
- Discussion with Consultant
- Administering boluses of naloxone

N.B The Doctor must stay on site (or come in to the hospice if on-call) if a patient requires treatment with naloxone and must stay until the consultant deems it suitable to leave

Nurse

- Monitoring respiratory rate
- Drawing up bolus naloxone
- Administering boluses of naloxone
- Making up and administering naloxone infusion

Guideline detail

CONSULTANTS ADVICE MUST BE SOUGHT PRIOR TO INITIATING NALOXONE

THE PATIENT NEEDS TO BE KEPT UNDER CONTINUOUS ONE-TO-ONE SUPERVISION

Indications:

- Management of acute opioid overdose (not covered by this guideline – see BNF)
- Reversal of **life-threatening** respiratory depression associated with medicinal use of opioids

Formulation:
Naloxone is presented as an ampoule containing 400micrograms/ml (1ml ampoule)

Cautions:
- Naloxone is NOT indicated for:
    - Patients receiving opioids who are dying
    - Opioid induced drowsiness and/or delirium which is not life threatening (see below)
    - Previous life-threatening sensitivity reaction to naloxone

- Patients receiving regular opioids for symptom control are physically dependent on that opioid.
    - If naloxone is given in too large a dose or too quickly, it can result in rapid reversal of the physiological effects of opioids and an acute withdrawal syndrome, including an abrupt return of pain with hyperalgaesia which can be difficult to control.

- Buprenorphine is incompletely reversed by naloxone – higher doses will be required.

Side effects:
- Acute withdrawal syndrome:
    - anxiety, agitation, nausea and vomiting and return of pain
- Increase in sympathetic nervous stimulation and cytokine release
    - tachycardia, hypertension, and rarely tachyarrhythmias, pulmonary oedema and cardiac arrest.
- Patients with pre-existing cardiac disease are more at risk of side effects

Management:

See staff responsibilities section above

Assess the patient and consider other causes of respiratory dysfunction (e.g pneumonia and pulmonary embolism **–** these usually cause hypoxia without low respiratory rate), other drug causes of respiratory depression (i.e. benzodiazepines) or if they are dying.
Consider:
- possible causes for the opioid overdose, e.g.:
    - excessive dosing (e.g. pain poorly responsive to opioids)
    - drug–drug interaction (e.g. fentanyl and clarithromycin)
    - drug accumulation because of an opioid with a long half-life (e.g. methadone)
    - reduced elimination because of renal impairment (e.g. morphine)

If the patient has a respiratory rate of EIGHT or more breaths per minute, is easily rousable with oxygen saturations (SpO2) >85% and is not cyanosed they do NOT have life-threatening respiratory depression.

- Monitor closely to ensure they do not develop life-threatening respiratory depression. As a minimum:
    - If respiratory rate 8 - 10, monitor this every 30 minutes
    - If respiratory rate more than 10, then monitor this hourly

- Review long-acting opioid dose in discussion with the Consultant
    - Stop / reduce dose of continuous subcutaneous opioid infusion
    - Remove / reduce dose of any opioid patch
    - Omit / reduce dose of oral modified-release opioid

- Obtain IV access and prescribe Naloxone 80 - 100 micrograms PRN IM/IV* (or subcutaneous if IV access is not possible) on patient's chart in case required later

- Take bloods for FBC, U&Es, LFTs and calcium

Life-threatening respiratory depression is present where respiratory rate is LESS THAN eight breaths per minute (or higher but falling rapidly) AND

- Cyanosis
- SpO_2 < 85%
- Barely rousable or unconscious

1. Stop the opioid
   - Remove any opioid patches
   - Stop continuous subcutaneous infusion
2. Prescribe and administer Oxygen (commence with 2 litres of Oxygen in the first instance)
3. Obtain IV access*
4. Dilute 400 micrograms of naloxone to 10 ml (40 micrograms/ml) with 0.9% sodium chloride in a 10ml syringe.
5. Draw up a 20ml 0.9% sodium chloride in a 20ml syringe, for use as a flush
6. Administer 100 micrograms (2.5ml) as IV bolus and flush through with 0.9% sodium chloride
7. Monitor respiratory rate
8. Repeat doses of 80micrograms (2mls) every 2 minutes until respiratory rate is more than EIGHT.
   - Flush the cannula with 0.9% sodium chloride after each dose administered.

Dose is titrated to respiratory rate only, NOT to conscious level

9. If little or no improvement in respiratory rate after a further 2 doses of 80micrograms naloxone given (excluding bolus, as patients will usually respond to this) consider alternative causes e.g
   - Non-opioid sedative medications
   - Intracranial event
10. Once patient stable
    - Take bloods for FBC, U&Es, LFTs and calcium to assess for possible causes of opioid accumulation
    - Continue to monitor the patient closely as the duration of action of naloxone is 15 - 90 minutes (less than the duration of action of most opioids) and further doses may therefore be required.

      ❖ Respiratory rate and SpO_2 to be checked as a minimum:
      - every 15 minutes for 1 hour
      - every 30 minutes for the subsequent 2 hours
      - then hourly

    - Discuss with the Consultant regarding ongoing management of analgesia for the patient and prescribe accordingly

***NB:** The intravenous route has the fastest onset of action (1 - 2 minutes) but if not feasible then the intramuscular or subcutaneous routes can be used, but the onset of action is longer (2 - 5 minutes) and higher doses may be required.

Prolonged or recurrent respiratory depression:
Where repeated naloxone doses are required, a continuous IV infusion of naloxone may be necessary. This should only be commenced in discussion with the Consultant.

- To make up the infusion add 1mg of naloxone (2.5 ampoules of 400 micrograms/ml) to 100mls 0.9% sodium chloride to give a concentration of 10 micrograms/ml.
- To calculate the dose requirement per hour: total all naloxone bolus doses given and divide by number of hours these were administered over.
- Start the infusion at 50% of this calculated hourly rate

Example:

- Patient required 100mcg bolus dose, and additional 6 x 80mcg top ups in 1.5hours to maintain RR >8.
- Total dose given = 580mcg.
- Divide Total dose by 1.5hours = 387mcg/hour
- 50% of 387mcg/hour is 193mcg/hour.
- ROUND UP to nearest 10
- Dose to be infused is 200mcg/hours = 20mls/hour

- Adjust the rate of the infusion to maintain respiratory rate more than 8 (do not titrate to level of consciousness as total antagonism will cause a return of severe pain)
- Continue to monitor the patient closely
  - ❖ Respiratory rate and SpO_2 to be checked as a minimum:
    - every 15 minutes for 2 hours
    - every 30 minutes for the subsequent 4 hours
    - then hourly
- Additional bolus doses of naloxone may be required (as per guidance above) if respiratory rate falls below 8
- Continue the infusion until the patient's condition has stabilised

Training requirements associated with this Guideline

There is no mandatory training associated with this guideline.

Equality considerations

Refer to MMP001Control of Medicines Guideline

Harvard Reference Guide

- Twycross, R. Wilcock, A & Howard P. 2014. Palliative Care Formulary (PCF) 6th edition. September 2017
- NHS England Patient safety alert dated 20/11/2014: Risk of distress and death from inappropriate doses of naloxone in patients on long-term opioid/opiate treatment. Reference NHS/PSA/W/2014/016
- Scottish Palliative Care Guidelines – Naloxone. Accessed from: http://www.palliativecareguidelines.scot.nhs.uk/
- Pilgrims Hospices in East Kent: Guidelines for the use of naloxone in Buprenorphine Overdose and Iatrogenic Opiate Overdose. 2014.
- BNF 75
- Document control details

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1	19.07.16	20.07.16	19.07.18	New guidance
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