Naloxone Intravenous for Adults

Who can administer

May be administered by registered competent doctor or nurse/midwife

Important information

- See **Monitoring requirements** and **Further Information**- below
- The duration of action of some opioids (including dihydrocodeine and methadone) may exceed that of naloxone. (ref UK SPC)
- Doses used in acute opioid overdosage may not be appropriate for the management of opioid-induced respiratory depression and sedation in those receiving palliative care and in chronic opioid use (see differing doses below). This is due to potential acute withdrawal syndrome (ref 6)

Available preparations

Naloxone 400 microgram per 1ml ampoule

Naloxone 400 microgram per 1ml minijet

Reconstitution

Already in solution

Draw up using a 5 micron filter needle

Infusion fluids

Sodium chloride 0.9% or Glucose 5%

Methods of intravenous administration

Bolus intravenous injection (usual route, all indications)

- Administer via intravenous injection

Continuous intravenous infusion (only used in opioid overdose) (administer using an electronically controlled infusion device)

- **Toxbase suggested concentration:** Add 4mg (10 x 400microgram vials) to 30mL infusion fluid (100micrograms per mL)
- **Alternative dilutions**
  - Add 10,000 micrograms (10mg = 25ml of 0.4mg per mL) to 25mL infusion fluid **(200micrograms/mL)** (unlicensed concentration) (ref 1)
  - or
  - Add 2,000 micrograms (2mg) to 500mL infusion fluid **(4micrograms per mL)**
- Titrate to response
- Initial rate may be set at 60% of initial resuscitative intravenous injection dose (in microgram/hour, see example under "Dose"). The initial resuscitative dose is that which maintained satisfactory respiratory effort for at least 15 minutes(ref 2)

Dose in adults

1: Acute opioid overdose -high-dose regimen (when rapid titration with naloxone is necessary to reverse potentially life-threatening effects) [ref 2]

- Give 400 micrograms by **bolus intravenous injection;** if no response after 1 minute, give 800 micrograms, and if still no response after another 1 minute, repeat dose of 800 micrograms. If still no response, give 2mg (4mg may be required in a seriously poisoned patient), then review diagnosis. Further doses may be required if respiratory function deteriorates [ref 2] following initial response
- If no response is observed after 10mg of naloxone has been administered, the diagnosis of opioid or partial-opioid induced toxicity should be questioned
- In some circumstances (see under Important information) it may be necessary to use a **continuous intravenous infusion** (see above for suitable dilutions)
  - Consider an initial rate over 1 hour, equal to 60% of the initial resuscitative intravenous injection (ref 2)
  - For example, if 400microgram stat dose given, consider an initial rate for this infusion of 240 micrograms per hour for the first hour and titrate to response.

2: Opioid overdose - low-dose regimen [when there is risk of acute withdrawal, or when a continued therapeutic effect is required (e.g. postoperative use, palliative care)]; [ref 2]

- Initially 100 to 200 micrograms, then 100 micrograms for up to 2 doses at 1 minute intervals if no response to preceding dose
- Continue titrating up to a maximum of 2 mg until adequate response achieved
- If still no response, give a further 2 mg dose (4 mg dose may be required in seriously poisoned patients), then review diagnosis;
- Further doses may be required if respiratory function deteriorates following initial response

3: Severe itch or vomiting due to intrathecal or epidural morphine [ref 4,5]

- Give 40 micrograms intravenously
- Repeat every 20 minutes
- Use as needed until the analgesia/opiate regimen has been reviewed by the pain team or anaesthetist

4: Severe itch or vomiting due to PCA opiate, when standard antiemetics and antipruritics have failed [ref 4,5]

- Give 40 micrograms intravenously
- Repeat every 20 minutes
- Use as needed until the analgesia/opiate regimen has been reviewed by the pain team or anaesthetist

Monitoring

- Patients should be monitored to ensure respiratory depression does not recur
- Further doses may be necessary in this situation

Further information

- Naloxone is not effective against respiratory depression caused by non-opioid drugs
- Reversal of buprenorphine-induced respiratory depression may be incomplete
- If IV administration is impractical, naloxone may be administered by the IM or SC route, although onset of action may be slower [ref 2]
- The duration of action of some opioids (including dihydrocodeine, methadone) may exceed that of naloxone. In these circumstances, an **intravenous infusion** of naloxone will provide sustained

antagonism of the opioid without the need for repeated injections

Storage

- Store below 25^{0}C

References

SPC Naloxone hydrochloride injection USP 400 micrograms/ml Orpha-Devel Oct 2019Â

UK SPC Hameln Pharma 1/4/2020

1. Injectable Medicines Guide Medusa, accessed online 19/01/2023

2. BNF accessed via Medicinescomplete 19/01/2023

3. Injectable Medicines guide accessed via Medicinescomplete 19/01/2023

4. Dr Olivia Finnerty, consultant anaesthetist. Expert opinion. December 10th, 2019

5. King Edward Memorial Hospital, Western Australia Adult medication monograph September 2017 (doses in this reference are higher than suggested by local expert)

6. Naloxone hydrochloride for in patient use, Tees, Esk and Wear Valleys NHS 25th March 2021

Therapeutic classification

Opioid antagonists