

NEW ZEALAND DATA SHEET

1 PRODUCT NAME

NALOXONE HYDROCHLORIDE (Hameln) 400 micrograms/mL Solution for Injection

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ampoule of 1 mL contains naloxone hydrochloride 400 micrograms (0.4 mg) (as naloxone hydrochloride dihydrate).

Excipient

1 mL solution for injection/infusion contains 3.54 mg of sodium.

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Solution for injection/infusion.

Clear, colourless solution free from visible particulates.

pH: 3.1 – 4.5

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Naloxone hydrochloride Injection is indicated for the complete or partial reversal of narcotic depression, including respiratory depression, induced by opioids including natural and synthetic narcotics, propoxyphene, methadone and the narcotic antagonist analgesics: nalbuphine, pentazocine and butorphanol. Naloxone hydrochloride is also indicated for the diagnosis of suspected acute opioid overdose.

4.2 Dose and method of administration

Naloxone hydrochloride may be administered intravenously, intramuscularly, or subcutaneously. The most rapid onset of action is achieved by intravenous administration and it is recommended in emergency situations. Since the duration of action of some narcotics may exceed that of naloxone hydrochloride the patient should be kept under continued surveillance and repeated doses of naloxone hydrochloride should be administered, as necessary.

Intravenous infusion: Naloxone hydrochloride may be diluted for intravenous infusion in normal saline or 5% dextrose solutions. The addition of 2mg of naloxone hydrochloride in 500 mL of either solution provides a concentration of 0.004 mg/mL. Mixtures should be used within 24 hours. After 24 hours, the remaining unused solution must be discarded. The rate of administration should be titrated in accordance with the patient's response.

Parenteral medicine products should be inspected visually for particulate matter and discolouration prior to administration whenever solution and container permit. Naloxone hydrochloride should not be mixed with preparations containing bisulphite, metabisulphite, long-chain or high molecular weight anions, or any solution having an alkaline pH. No medicine or chemical agent should be added to

NEW ZEALAND DATA SHEET

naloxone hydrochloride unless its effect on the chemical and physical stability of the solution has first been established.

Adults

Narcotic Overdose. Known or Suspected. An initial dose of 0.4 mg to 2 mg of naloxone hydrochloride may be administered intravenously. If the desired degree of counteraction and improvement in respiratory functions is not obtained it may be repeated at 2 to 3 minute intervals. If no response is observed after 10mg of naloxone hydrochloride have been administered, the diagnosis of narcotic induced or partial narcotic induced toxicity should be questioned. Intramuscular or subcutaneous administration may be necessary if the intravenous route is not available.

Postoperative Narcotic Depression. For the partial reversal of narcotic depression following the use of narcotics during surgery, smaller doses of naloxone hydrochloride are usually sufficient. The dose of naloxone hydrochloride should be titrated according to the patient and response. For the initial reversal of respiratory depression, naloxone hydrochloride should be injected in increments of 0.1 to 0.2 mg intravenously at two to three minute intervals to the desired degree of reversal i.e. adequate ventilation and alertness without significant pain or discomfort. Larger than necessary dosage of naloxone hydrochloride may result in significant reversal of analgesia and increase in blood pressure. Similarly, too rapid reversal may induce nausea, vomiting, sweating or circulatory stress.

Repeat doses of naloxone hydrochloride may be required at one to two hour intervals depending upon the amount, type (i.e. short or long acting) and time interval since last administration of narcotic. Supplemental intramuscular doses have been shown to produce a longer lasting effect.

Naloxone hydrochloride can alternatively be administered as an I.V. infusion.

Infusion: The duration of action for some opioids is longer than that of the naloxone hydrochloride I.V. bolus. Therefore, in situations where depression is known to be induced by such substances or there is a reason to suspect this, naloxone hydrochloride should be administered as a continuous infusion. The infusion rate is determined according to the individual patient, depending on the response of the patient to the I.V. bolus and on the reaction of the patient to the I.V. infusion. The use of the continuous intravenous infusion should be carefully considered and respiratory assistance should be applied if necessary.

Paediatric Populations

Children

Narcotic Overdose - Known or Suspected. The usual initial dose in children is 0.01 mg/kg body weight given I.V. If this dose does not result in the desired degree of clinical improvement a subsequent dose of 0.1 mg/kg body weight may be administered. If an I.V. route of administration is not available, naloxone hydrochloride may be administered I.M. or S.C. in divided doses if necessary. naloxone hydrochloride can be diluted with sterile. Water for Injection.

Postoperative Narcotic Depression. Follow the recommendations and cautions under Adult Postoperative Depression. For the initial reversal of respiratory depression naloxone hydrochloride should be injected in increments of 0.005mg to 0.01mg intravenously at two to three minute intervals to the desired degree of reversal.

NEW ZEALAND DATA SHEET

Neonates

Narcotic-induced Depression. The usual initial dose is 0.01 mg/kg body weight administered I.V., I.M. or S.C. This dose may be repeated in accordance with adult administration guidelines for postoperative narcotic depression.

Special Populations

Elderly

In elderly patients with pre-existing cardiovascular disease or in those receiving potentially cardiotoxic medicines, naloxone hydrochloride should be used with caution since serious adverse cardiovascular effects such as ventricular tachycardia and fibrillation have occurred in post-operative patients following administration of naloxone hydrochloride.

4.3 Contraindications

Hypersensitivity to naloxone hydrochloride or to any of the excipients listed in section 6.1.

4.4 Special warnings and precautions for use

Naloxone hydrochloride must be given with caution to patients who have received high doses of opioids or are physically dependent on opioids. Too rapid reversal of the opioid effect can cause an acute withdrawal syndrome in such patients. Hypertension, cardiac arrhythmias, pulmonary oedema and cardiac arrest have been described. This also applies to newborn infants of such patients.

The patient who has satisfactorily responded to naloxone hydrochloride should be kept under continued surveillance and repeated doses of naloxone hydrochloride should be administered, as necessary, since the duration of action of some narcotics may exceed that of naloxone hydrochloride.

Naloxone hydrochloride is not effective against respiratory depression due to non-opioid medicines. In addition to naloxone hydrochloride, other resuscitative measures such as maintenance of a free airway, artificial ventilation, cardiac massage, and vasopressor agents should be available and employed when necessary to counteract acute narcotic poisoning.

Several instances of hypotension, hypertension, ventricular tachycardia and fibrillation, and pulmonary oedema have been reported. These have occurred in postoperative patients most of whom had pre-existing cardiovascular disorders or received other medicines which may have similar adverse cardiovascular effects. Although a direct cause and effect relationship has not been established, naloxone hydrochloride should be used with caution in patients with pre-existing cardiac disease or patients who have received potentially cardiotoxic medicines.

This medicinal product contains 3.8 mmol (88.5 mg) sodium per maximum daily dose of 10 mg naloxone hydrochloride. This should be taken into consideration by patients on a controlled sodium diet.

4.5 Interaction with other medicines and other forms of interaction

Naloxone reverses the analgesic and other effects of opioid agonist-antagonists such as pentazocine, so may precipitate withdrawal symptoms if used concurrently with these drugs in physically dependent patients.

NEW ZEALAND DATA SHEET

Naloxone reverses the analgesic and other effects of opioid agonist analgesics, and may precipitate withdrawal symptoms if used concurrently with these drugs in physically dependent patients, including patients receiving methadone to treat opioid dependence.

When naloxone is used post-operatively to reverse the central depressive effects of opioid agonists used as anaesthesia adjuncts, the dose of naloxone must be carefully titrated to achieve the desired effect without interfering with control of post-operative pain, or causing other adverse effects.

With a standard naloxone hydrochloride dose there is no interaction with barbiturates and tranquillizers.

Data on interaction with alcohol are not unanimous. In patients with multi-intoxication as a result of opioids and sedatives or alcohol, depending on the cause of the intoxication, one may possibly observe a less rapid result after administration of naloxone hydrochloride.

When administering naloxone hydrochloride to patients who have received buprenorphine as an analgesic complete analgesia may be restored. It is thought that this effect is a result of the arch-shaped dose-response curve of buprenorphine with decreasing analgesia in the event of high doses. However, reversal of respiratory depression caused by buprenorphine is limited.

Severe hypertension has been reported on administration of naloxone hydrochloride in cases of coma due to a clonidine overdose.

4.6 Fertility, pregnancy and lactation

Pregnancy

Reproduction studies performed in mice and rats at doses up to 1,000 times the human dose, revealed no evidence of impaired fertility or harm to the foetus due to naloxone hydrochloride. There are, however, no adequate and well controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, naloxone hydrochloride should, therefore, be administered to pregnant patients only when, in the judgement of the physician, the potential benefits out weigh the possible hazards.

Breast-feeding

It is not known whether naloxone hydrochloride is excreted in human milk. Because many medicines are excreted in human milk, caution should be exercised when naloxone hydrochloride is administered to a nursing woman.

Fertility

No information available.

4.7 Effects on ability to drive and use machines

Naloxone hydrochloride may be likely to produce minor or moderate adverse effects that may impair the patient's ability to concentrate and react and therefore constitute a risk in the ability to drive and use machines.

NEW ZEALAND DATA SHEET

4.8 Undesirable effects

Abrupt reversal of narcotic depression may result in nausea, vomiting, sweating, tachycardia, increased blood pressure, and tremulousness. In postoperative patients, larger than necessary dosage of naloxone hydrochloride may result in significant reversal of analgesia, and in excitement. Hypotension, ventricular tachycardia and fibrillation, and pulmonary oedema have been associated with the use of naloxone hydrochloride postoperatively (see Warnings and Precautions & Usage in Adults Postoperative Narcotic Depression). Seizures have been reported to occur infrequently after the administration of naloxone; however, a causal relationship has not been established.

Reporting suspected adverse reactions after authorisation of the medicine is important. It allows continued monitoring of the benefit/risk balance of the medicine. Healthcare professionals are asked to report any suspected adverse reactions <https://nzphvc.otago.ac.nz/reporting/>

4.9 Overdose

There is no clinical experience with naloxone hydrochloride overdosage in humans. In the mouse and rat the intravenous LD₅₀ is 150 ± 5 mg/kg and 109 ± 4 mg/kg respectively. In acute subcutaneous toxicity studies in newborn rats the LD₅₀ (95% CL) is 260 (228-296) mg/kg. Subcutaneous injection of 100 mg/kg/day in rats for 3 weeks produced only transient salivation and partial ptosis following injection, no toxic effects were seen at 10 mg/kg/day for 3 weeks.

Symptoms

Symptoms of overdosage would be expected to be similar to the effects seen with therapeutic use (see section 4.8).

Treatment

Treatment of overdosage is symptomatic and supportive.

For advice on the management of overdose please contact the National Poisons Centre on 0800 POISON (0800 764766).

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

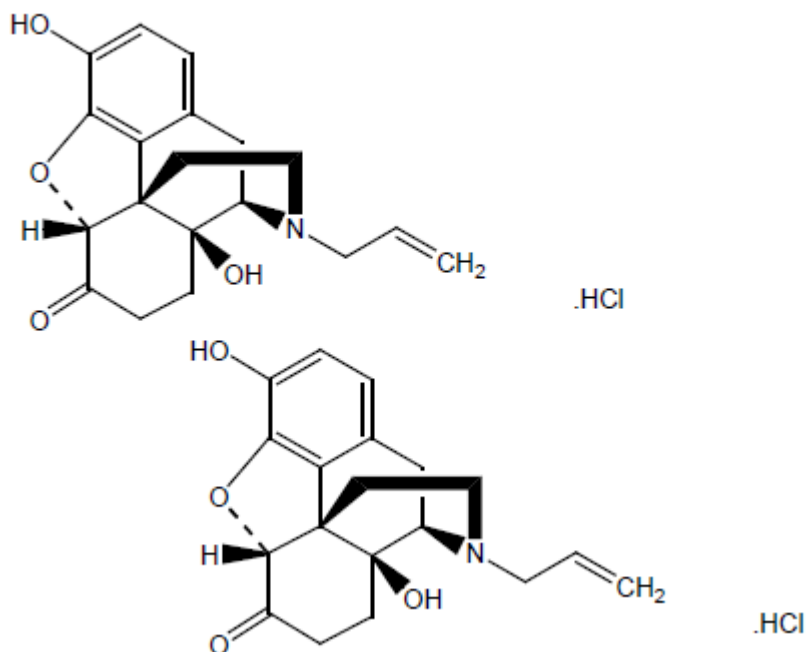
Pharmacotherapeutic group: Antidotes

ATC-Code: V03AB15

Naloxone is a semi-synthetic opioid antagonist which differs structurally from oxymorphone only in that the methyl group on the nitrogen atom of oxymorphone is replaced by an allyl group.

Naloxone hydrochloride is 17-allyl-4,5 α -epoxy-3,14-dihydroxymorphinan-6-one hydrochloride. Its chemical structure is shown below:

NEW ZEALAND DATA SHEET



The chemical formula for anhydrous naloxone hydrochloride is $C_{19}H_{21}NO_4 \cdot HCl$. Its molecular weight is 363.84 and its CAS registry number is 357-08-4.

Naloxone hydrochloride occurs as a white to slightly off-white powder and is soluble in water, dilute acids and strong alkalis and is slightly soluble in alcohol. It is practically insoluble in ether or chloroform.

Naloxone hydrochloride, a narcotic antagonist, is a synthetic congener of oxymorphone. Naloxone hydrochloride prevents or reverses the effects of opioids including respiratory depression, sedation and hypotension. Also, it can reverse the psychotomimetic and dysphoric effects of agonist-antagonists such as pentazocine. Naloxone hydrochloride is an essentially pure narcotic antagonist, i.e. it does not possess the "agonistic" or morphine-like properties characteristic of other narcotic antagonists; Naloxone hydrochloride does not produce respiratory depression, psychotomimetic effects of pupillary constriction. In the absence of narcotics or agonistic effects of other narcotic antagonists it exhibits essentially no pharmacologic activity.

Naloxone hydrochloride has not been shown to produce tolerance nor to cause physical or psychological dependence. In the presence of physical dependence on narcotics naloxone hydrochloride will produce withdrawal symptoms.

While the mechanism of action of naloxone hydrochloride is not fully understood, the preponderance of evidence suggests that naloxone hydrochloride antagonises the opioid effects by competing for the same receptor sites.

5.2 Pharmacokinetic properties

When naloxone hydrochloride is administered intravenously the onset of action is generally apparent within two minutes; the onset of action is only slightly less rapid when it is administered

NEW ZEALAND DATA SHEET

subcutaneously or intramuscularly. The duration of action is dependent upon the dose and route of administration of naloxone hydrochloride. Intramuscular administration produces a more prolonged effect than intravenous administration. The requirement for repeat doses of naloxone hydrochloride, however, will also be dependent upon the amount, type and route of administration of the narcotic being antagonised.

Following parenteral administration naloxone hydrochloride is rapidly distributed in the body. It is metabolised in the liver, primarily by glucuronide conjugation and excreted in the urine. In one study the serum half-life in adults ranged from 30 to 81 minutes (mean 64 ± 12 minutes). In a neonatal study the mean plasma half-life was observed to be 3.1 ± 0.5 hours.

5.3 Preclinical safety data

Carcinogenicity and mutagenicity studies have not been performed with naloxone hydrochloride. Reproductive studies in mice and rats demonstrated no impairment of fertility.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Sodium chloride
Water for injection
Hydrochloric acid, diluted (for pH adjustment).

6.2 Incompatibilities

It is recommended that infusions of naloxone hydrochloride should not be mixed with preparations containing bisulphite, metabisulphite, long-chain or high-molecular-weight anions, or solutions with an alkaline pH. This medicinal product must not be mixed with other medicinal products except those mentioned in section 6.6.

6.3 Shelf life

3 years

Shelf-life after first opening

After first opening the medicinal product should be used immediately.

Shelf-life after dilution

Chemical and physical in-use stability has been demonstrated for 24 hours below 25°C.

From a microbiological point of view, the dilution should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and would normally not be longer than 24 hours at 2 – 8°C, unless dilution has taken place in controlled and validated aseptic conditions.

NEW ZEALAND DATA SHEET

6.4 Special precautions for storage

Keep the ampoules in the outer carton in order to protect from light.

Store below 25°C.

Store diluted solutions below 25°C.

6.5 Nature and contents of container

Type I clear, colourless glass ampoules.

Packs of 5 or 10 ampoules of 1 mL.

Not all pack sizes may be marketed.

6.6 Special precautions for disposal and other handling

For I.V. infusion, naloxone hydrochloride is diluted with sodium chloride 0.9% or glucose 5%.

This product is for single use only.

Please inspect the medicinal product visually prior to use (also after dilution). Use only clear and colourless solutions practically free from particles.

7 MEDICINE SCHEDULE

Prescription Medicine

8 SPONSOR

Max Health Ltd
PO Box 65 231
Mairangi Bay
Auckland 0754
Telephone: (09) 815 2664.

9 DATE OF FIRST APPROVAL

29 June 2017

10 DATE OF REVISION OF THE TEXT

20 February 2018

SUMMARY TABLE OF CHANGES

Date of Revision	Section Changed	Summary of new information
20 February 2018	4.4, 4.5	<ul style="list-style-type: none">Additional safety wording added.