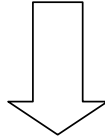


**DOES THE PATIENT REQUIRE A POTENTIALLY PAINFUL PROCEDURE?**

(this is not an exhaustive list, but it is known to be effective in the following)

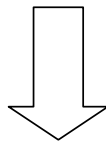
- |                             |                                |
|-----------------------------|--------------------------------|
| - Change of dressing/pack   | - Venapuncture                 |
| - Removal of sutures/drains | - Bone marrow biopsy           |
| - Physio                    | - Positioning for radiotherapy |
| - Fracture manipulation     | - Laceration suturing          |
| - Application of traction   | - Insertion of skeletal pins   |



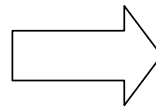
**YES**

**DOES THE PATIENT HAVE ANY OF THE FOLLOWING  
CONTRAINDICATIONS?**

- |                           |                                 |
|---------------------------|---------------------------------|
| - Frequent use of Entonox | - Severe bullous emphysema      |
| - Head injury             | - Maxillofacial injuries        |
| - Pneumothorax            | - Air embolus                   |
| - Recent under water dive | - Decompression sickness        |
| - Intestinal obstruction  | - Intoxication                  |
| - Myringoplasty           | - Following air encephalography |
| - Patient non-compliance  |                                 |



**NO**



**YES**

Do not administer  
Entonox – Bleep  
2257 for further  
advice.

See guidelines  
for the  
administration of  
Entonox for  
Procedural Pain.

## Guidelines for the administration of Entonox for procedural pain

### Standard Title:

Patients will be offered Entonox for procedural pain relief providing it is not contra-indicated.

**Date Guideline Developed:** June 2001

**Review Date:** December 2002

**Rationale:** To enable the patient to safely administer Entonox during short periods of pain.

**Location:** All wards in UCH/The Middlesex/ EGA

**Who:** Qualified nurses

**When:** For patients requiring short periods of pain relief for a procedure to be performed.

### How:

- Assess the need for Entonox for short painful procedures (See algorithm for indications for use).
- Check that there are no contra-indications (See algorithm for contra-indications).
- Ensure that there is a valid prescription for the use of Entonox on the drug chart.
- Turn the hand wheel two full turns anti-clockwise to turn the cylinder on. Check the contents of the cylinder and change if needed.
- Select mask or mouthpiece as appropriate for the patient and attach single-use anti-bacterial filter.
- Depress the test button on the demand valve and a flow of gas should be heard.
- Explain the procedure to the patient and explain to them to breathe normally. Encourage the patient to breathe gas for at least two minutes before commencing the procedure. Never hold the mask on the patient's face as the safety of the system depends on self-administration.
- Continually assess during the procedure and maintain patient safety. The Entonox may make the patient drowsy and then the seal between the mouth and the demand valve will be lost. However, the effects wear off quickly, therefore encourage to use again.
- At the end of the procedure observe the patient until the effects have worn off.
- Close the cylinder valve in a clockwise direction. Depress the test button to exhaust the residual pressure in the system.
- Dispose of filter, mouthpiece or clean face mask and return with cylinder.
- Document the use of Entonox in the nursing notes. If a patient requires Entonox frequently, discuss with the Acute Pain Team.

Примечание [AU1]:

# ENTONOX

(supporting information to accompany Entonox policy)

Entonox is used widely by midwives and the ambulance service. But it is also the ideal analgesic for short surgical procedures and other hospital situations that cause discomfort and where longer acting agent are not indicated.

Entonox is a 50/50 combination of nitrous oxide and oxygen. Its rapid onset and offset characteristics, as well as its predictable and reliable effects, make Entonox one of the most effective analgesic agents available today.

Nitrous oxide in the form of Entonox comes closest of all drugs to being the ideal analgesic (Energy Information System (USA) 1995):

**Rapid onset:** effects of Entonox are felt after just three or four breaths.

**Short duration:** effects disappear rapidly once Entonox is withdrawn.

**Minimal side effects:** millions, possibly billions, of patients have used Entonox without a single serious adverse event having been reported.

**Ease of administration:** patients can self administer under the supervision of an appropriately trained member of staff.

**Flexibility of use:** Entonox can be used alone or in conjunction with other analgesic agents such as Morphine and Pethidine. When used in combination therapy, Entonox may enable a reduction in the doses of other drugs and therefore a reduction in the side effects associated with them.

**Cost effectiveness:** as well as being a safe and effective alternative or adjunct to other, commonly used analgesics, Entonox also offers unbeatable value for money.

How Entonox works has never been fully explained. Its effects take place within the pain centres of the brain and spinal cord and are, in part at least, due to the release of endogenous neurotransmitters (Finck et al 1995).

With its low blood gas/gas solubility, Entonox works very quickly and has been compared to opiates: 30 to 50% of Nitrous oxide and oxygen has been shown to be comparable to 15mg of Morphine (Chapman et al 1943) or 100mg of Pethidine (Dundee & Moore 1960).

Entonox is not metabolised by the body and is completely eliminated through the lungs.

## **Side effects:**

- Entonox has only minor effects on cardiovascular and respiratory systems and has been used safely in extremely ill patients.
- No detrimental effect on bowel function has been identified.
- There is little evidence to suggest that Entonox has an emetic effect and studies have demonstrated only very low levels of nausea and vomiting.
- Continuous use of Nitrous oxide for more than 6-8 hours may result in vitamin deficiencies, leading to anaemia and impaired bone marrow function. Only in extreme circumstances, however, is this harmful to patients (Nunn et al 1986).

## REFERENCES:

Chapman WP, Arrowhead JG, Beecher HK: The analgesic effects of low concentrations of nitrous oxide compared in man with morphine sulphate. Clin Invest 22:817-75, 1943

Dundee JW, Moore J: Alterations in response to somatic pain: an evaluation of a method of analgesimetry. Br Journal of Anaesth 32:396, 1960

Energy Information Administration (USA) 1995

Finck AD, Samaniego E, Ngai SH: Nitrous Oxide selectively releases met 5-enkephalin-arg-6-phe7 into canine third ventricular cerebrospinal fluid. Anesth Analg 80(4):664-70

Nunn JF, Chanarin I, Tanner AG et al. Megaloblastic bone marrow changes after repeated nitrous oxide anaesthesia. Reversal with folic acid. Br J Anaesth 58: 1469-70, 1986

