

## Laughter midst the COVID 19 pandemic – Audit of Paediatric Entonox use

J. Hayden, O. Neylon

Department of Paediatrics, University hospital Limerick (UHL), Limerick, Ireland

Dear editor,

Pain can often go undertreated due to timing, caution due to perceived medication side effects and busy departments. Entonox<sup>®</sup> is a gas mixture comprising 50% nitrous oxide and 50% oxygen. Analgesic effects may be noted from 20 seconds, with a peak effect after 3–5 minutes<sup>1</sup>. The reflexes of coughing and airway protection are not usually affected, rendering airway and respiratory compromise less likely<sup>2</sup>. Its first use in the clinical setting was in 1884 to facilitate dental extractions(3). Despite its long history, newer approaches to pain management may mask its potential benefit in paediatric departments.

The aim of this study was to ensure safe delivery and appropriate administration of Entonox<sup>®</sup> in our paediatric emergency department (ED), dayward and in-patient wards. This was assessed before and after a departmental Entonox<sup>®</sup> guideline was introduced. There was a total of eight patients in both the pre and post guideline introduction groups.

The majority of indications for use were for phlebotomy, cannulation or lumbar punctures. No contraindications to use were noted. Mandatory written consent post guideline introduction was required, which was suboptimal at 25%. This was attributed to computers being adversely affected by a national cyber-attack and therefore inability to access the requisite printed consent form. Relevant equipment was checked prior to use in all patients. Location of use was documented. Vital signs were checked in all patients. Entonox was prescribed in the drug kardex in 50% pre guideline introduction and 62.5% post.

No side effects were reported in the 1<sup>st</sup> group. In the post guideline introduction group, one patient reported dizziness and one had abdominal pain and bloating. The University of Michigan Sedation score (UMSS) for the majority of patients was 0 with only 1 patient 0-1 range in the 2<sup>nd</sup> group. The procedure was considered successful based on self-reported verbal patient satisfaction response post procedure. 87.5% in the first group and 75% in the second thought the procedure went well with the use of Entonox. Adjunct analgesia, including Ametop (tetracaine gel) topically or paracetamol, was used in 25% and 37.5% in both groups respectively.

Only two patients had transient side effects noted in our study which may be due to suggestibility or a random effect, given the small numbers. The University of Michigan Sedation score (UMSS) is a

validated tool for sedation depth and these scores were normal in all patients, supporting its safety profile. Many studies reporting sedation risk of Entonox<sup>®</sup> are published, highlighting with correct use it is a safe mode of analgesia<sup>4</sup>.

Our study supports the use of Entonox<sup>®</sup> in multiple settings and highlights its safety and efficacy in this population. Departments that have a formal Entonox<sup>®</sup> guideline available to staff encourage use by highlighting the safety profile and promoting its use in numerous paediatric scenarios. It is convenient once staff are familiar with the equipment and the child can have an active role in their own pain management. With investment in appropriate staff education, there is great potential to increase Entonox<sup>®</sup> use with resultant improvement in the experiences of young patients undergoing painful medical procedures.

**Corresponding author:**

Dr. Jenny Hayden,  
Department of Paediatrics,  
University hospital Limerick (UHL),  
Co. Limerick,  
Ireland.  
E-Mail: jennyhayden40@gmail.com

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