

National Audit of Neonatal Intubation Practices

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Sir,

Advances in neonatology have resulted in more premature infants surviving. These infants often require emergency intubation at birth, periods of prolonged ventilation or suffer complications of prematurity (infection, NEC) and may need to be reintubated for a variety of reasons. Despite the widespread recognition that awake intubations are poorly tolerated by neonates,^{1,2} the practice of intubations without premedication continues in semi-elective situations.

We undertook an audit of current practice of semi-elective intubations in neonatal units throughout Ireland. A structured questionnaire pertaining to semi-elective intubations was sent to the director of 20 neonatal units which were categorised using the Vermont Oxford Network classification. Specific questions were asked about the existence of guidelines for sedation (benzodiazepines, phenobarbitone), analgesia (opioids) and paralysis (muscle relaxants) prior to intubation. Four clinical scenarios were presented and individuals were asked about their practice in each case (Table 1).

Table 1 Details of the 4 clinical scenarios posed to the individual representatives of each neonatology unit

	Clinical Scenario
I	A 27 week gestation infant delivered by emergency LSCS for maternal PET has apgars of 91 & 95 and requires no resuscitation. He is transferred to NICU and requires elective intubation at 6 hours old for increasing respiratory distress.
II	A 29 week gestation infant on day 10 of life develops apnoea requiring intubation and ventilation presumed secondary to sepsis.
III	A term newborn infant with Pierre Robin sequence requires intubation and ventilation after failing conservative management (oral airway and positioning).
IV	A term baby is transferred to NICU with abdominal distension, vomiting and shock. After initial resuscitation it is decided to transfer the baby for further investigation and management of presumed intra-abdominal pathology. The infant requires intubation and ventilation for transport.

There was a 100% response rate. There were 8 Level 1, 4 Level 2 and 8 Level 3 units. Only 15% had specific written guidelines and 10% had verbal guidelines (Table 2). The remaining 75% have no specific guidelines on pre-medication prior to intubation. Units that had specific guidelines in place were more likely to administer premedication when faced with a specific clinical scenario. Units without guidelines are least likely to premedicate.

Table 2 Details of medications used by units with premedication policies

Sedation, Analgesia and Paralysis Medications Used

Morphine only	5
Morphine + Midazolam	2
Morphine + Phenobarbitone	2
Morphine + Midazolam + Phenobarbitone	1
Morphine + Midazolam + Atracurium	1
Fentanyl + Succinylcholine	1
No premedications	8

Although pre-medication in the Irish neonatal population is underused, a literature review strongly supports its use. Endotracheal intubation without sedation has many adverse physiological effects, including hypoxia, bradycardia, systemic hypertension and intracranial hypertension. An increase in blood pressure of 47% and an increase of 500%² in intracranial pressure have been recorded in babies intubated without pre-medication, particularly concerning in infants at risk of intraventricular haemorrhage.

Intubation is better tolerated by the infant and technically easier if the infant is pre-medicated.⁴ One of the main factors cited for not using premedication is the experience of the physician and the lack of backup facilities should an airway be difficult to secure. While avoiding paralysis in an airway that may be difficult to secure may be justified, we strongly endorse the routine use of sedation (such as a benzodiazepine and an opioid) prior to any semi-elective neonatal intubation. Premedication with both atropine and a muscle relaxant (succinylcholine^{5,6}) has been shown to help protect against hypoxia, intracranial hypertension and to decrease time taken to intubate.

Another reason is the concern of possible side-effects. The literature would suggest that pre-medication is very safe.⁷

We encourage each unit caring for neonatal patients to introduce specific guidelines regarding premedication prior to neonatal intubation, with due regard to the actions to be taken by staff should any of the specific and well-recognised side-effects occur.

CS O'Gorman, R Bhatia, WA Gorman, A Twomey.

Department of Neonatology, National Maternity Hospital, Holles Street, Dublin 2.

Correspondence: Clodagh O'Gorman, Our Lady's Hospital for Sick Children, Crumlin, Dublin 12.

Email: Clodagh.ogorman@hotmail.com

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