A pilot study: Implementing a structured amplitude integrated electroencephalography (aEEG) education programme in an Irish neonatal intensive care unit (NICU) setting

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BACKGROUND

Whereas monitoring of respiratory rate, heart rate, oxygen saturations and blood pressure has been well integrated into the routine care of any newborn infant admitted to a neonatal intensive care unit, only recently was it considered important to use aEEG to monitor brain function where encephalopathy or seizures are suspected.

Measurement of electrical brain activity is recognized to have prognostic significance in severely ill newborns with altered consciousness. Both early aEEG abnormalities and rate of resolution can provide objective and reliable information to the clinician. Azzopardi et al have shown that the duration and severity of abnormalities of the aEEG tracing is highly predictive of subsequent neurologic outcome. Thus accurate evaluation of aEEG output is important to allow clinicians to manage newborns with altered neurological status appropriately.

Presently, aEEG is not used in the general paediatric ward. As a result, neonatal trainees, who all come from the paediatric setting, receive minimal training in using and interpreting aEEG equipment.

AIM

The aim of the study was to objectively improve our trainees skillset in using and interpreting aEEG devices, through a structured education programme

METHODS

Participants were neonatal trainees in the NICU of the National Maternity Hospital, Dublin, from January 2017-July 2017. Out of 19 doctors, 12 gave implied consent by completion of a pre-intervention questionnaire.

The questionnaires collected demographic details and examined baseline knowledge of aEEG use, indications and interpretation

A structured education programme was then established involving: a didactic lecture; a training workbook; bedside teaching; an aEEG protocol session and lanyard aide memoires. An identical questionnaire collecting demographic details and examining knowledge of aEEG use, indications and interpretation was given before and after the intervention

RESULTS

Our project demonstrated poor baseline knowledge of aEEG set up (mean score 4.4/8 [55%]), indications (mean score 4.5/8 [64%]) and interpretation (mean score 7.5/20 [37%]). Our demographic data showed that all had at least 1 month of experience in the NICU with 60% (8/12) having more than 6 months experience. After enrolment in a structured educational programme, there was an increase in mean scores across all measured domains; aEEG set up (mean score 5.5/8 [78%]), indications (mean score 7.9 [98%]) and interpretation (mean score 16.2/20 [81%]). The improvement in interpretation mean score was statistically significant (p<0.05

	Pre Intervention	Post intervention
Mean Score (Out of 8)	4.4 (55%)	7.9 (98%)
Standard deviation	+/- 1.9	+/- 0.8

Figure 1: Knowledge of aEEG indications

	Pre Intervention	Post intervention
Mean Score (Out of 7)	4.5 (64%)	5.5 (78%)
Standard deviation	+/- 1.8	+/- 0.3

Figure 2. Knowledge of aEEG set up.

	Pre Intervention	Post intervention
Mean Score (Out of 20)	7.5 (37%)	16.2 (81%)
Standard deviation	+/- 3.7	+/- 0.9

Figure 3. Knowledge of aEEG knowledge .

DISCUSSION

Our project demonstrated poor baseline knowledge of aEEG use, indications and interpretation amongst neonatal trainees.

After enrolment in a structured educational programme, there was an increase in mean scores across all measured domains.