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Amplitude Integrated Electroencephalography (aEEG) Education

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Dear Sir,

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 (NICU), only recently was it considered important to use amplitude integrated electroencephalography (aEEG) to monitor brain function where encephalopathy or seizures are suspected.[1]

Measurement of electrical brain activity is recognized to have prognostic significance in severely ill newborns with altered consciousness.[2] Both early aEEG abnormalities and rate of resolution of abnormalities can provide objective and reliable information to the clinician.[3] Thus accurate evaluation of aEEG output is important to allow neonatal trainees to manage newborns with altered neurological status appropriately.

Our intervention, which took place in a Level 3 NICU, was devised following an review of neonatal trainees' knowledge of aEEG use, indications and interpretation. Our trainee group had 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 project group created content for a structured aEEG education programme which could be replicated and repeated. The intervention consisted of a didactic lecture and a written workbook that provided education on aEEG set up, indication and interpretation. Trainees attended two tutorials where the content of the written workbook was taught. Following enrolment in the 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 ($p<0.05$). 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.

Following the validation of the written workbook as an effective learning tool, our plan is to update and adapt the content into an online format through an educational grant awarded from the Royal College of Physicians of Ireland (RCPI). We are in the process of developing an interactive online module based on the content within our written workbook that will be accessible to doctors, through the RCPI website. The module will take the format of an online course enrolled through the RCPI website, similar to the current model for educational courses currently available. The module will be mobile and desktop responsive, allowing doctors to access it in a setting and at a time of their choosing.

Neonatal trainees have a responsibility to evaluate, interpret and act upon real time aEEG output in the NICU. Poor baseline knowledge of aEEG use and interpretation amongst trainees increases the risk of missing electroencephalographic abnormalities in the newborn and may increase rates of adverse events. Our programme significantly improved trainee skill and knowledge, thus equipping them with the necessary skillset to appropriately manage the neurologically compromised newborn.

We hypothesize that neonatal trainees coming from the paediatric setting worldwide have low baseline knowledge of aEEG use and interpretation and thus would benefit from a similarly focused education programme.

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