

Point of care ultrasound in the NICU—training, accreditation and ownership

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The use of ultrasound by neonatologists to assist in understanding physiology and to help guide management in the NICU is rapidly expanding [4] with research demonstrating an important impact on clinical management [2]. The article by Singh et al. [6] sets out proposed consensus guidelines for the UK around the use of ultrasound (mainly focused on cardiac ultrasound) in the neonatal unit. The authors closely model these on a comprehensive set of guidelines for training of neonatologists in echocardiography published recently from North America [5]. These guidelines were heavily influenced by paediatric cardiology and highlight the differences between the traditional consultative model of ultrasound and the more recent evolution of ultrasound as an acute point of care diagnostic tool [1]. Although an important and needed initiative, this expert consensus statement for training and accreditation in the UK is limited in scope and focuses disproportionately on the exclusion of structural heart disease rather than the use of ultrasound for haemodynamic assessment, which is what most neonatal clinicians are mainly interested in.

The consensus guidelines describe best practice for training and accreditation for the use of cardiac ultrasound (termed ‘neonatologist performed echocardiography’ or NoPE by the authors) in the neonatal intensive care unit. The authors are noted experts/opinion leaders in their field and are representative of a broader group of paediatric cardiologists and

neonatologists. Several important principles are outlined including the performance of the ultrasound, care of the infant during the investigation, the aim to screen and establish gross normality on the first ultrasound (though in other statements the aim is higher than this ‘to confidently exclude structural lesions at the first scan’), the need for collaboration with a supportive paediatric cardiologist, use of a reporting template, image storage and regular audit/review of images. Training for 6 months in a neonatology placement and 6 months in a paediatric cardiology unit is recommended, even though the authors acknowledge that access to these training positions will be limited.

While much of this is to be lauded, there is a difference in training needs between being able to establish gross structural normality and being able to confidently exclude structural abnormality. The latter lifts the training needs close to that of a paediatric cardiologist but with the suggested training pathway well short of that required in the specialty. In our opinion, this enhances the risk of a non-cardiologist performing a cardiac ultrasound in a baby with congenital heart disease and deeming it a normal echocardiogram. Having a high training goal may also deter neonatologists from using cardiac ultrasound for a range of other non-structural heart disease purposes including acute exclusion of pericardial effusions, assessment of volume status in sepsis and on to understanding the pathophysiology of infants with hypoxic respiratory failure and right to left ductal shunting. Data from our audits and others show that the incidence of structural heart disease in a cohort of infants who had a neonatologist performed ultrasound is around 2 %, so the vast majority of scans performed by a neonatologist are for non-structural or functional purposes.

This is not to say that being able to recognise structural heart disease in a sick neonate is unimportant. It is our observation that the use of cardiac ultrasound for haemodynamic

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assessment in the NICU actually increases the early incidental pick up of structural heart disease, often before it presents clinically. Several series assessing the accuracy of non-cardiologists in diagnosing and referring structural heart disease confirm this. Neonatologists and paediatricians are on the front line of neonatal detection of congenital heart disease (CHD) anyway, and whether they use ultrasound or not, the goal is the same—to refer any baby with major CHD to the appropriate service in a timely and accurate way. So, the risk/benefit equation for detection of CHD is as follows: will better population diagnostic accuracy be achieved by training a small number to a higher level or a larger number to a realistic level?

Other craft groups using point of care US (anaesthetists, emergency physicians, paediatric intensivists) have concentrated on using US as a specific tool to answer defined questions—rather than trying to train clinicians to be equivalent to specialists [3]. Ultrasound information is just one part of the clinical puzzle, and we are just as likely to be ‘mised’ or make a wrong decision by hearing a murmur via stethoscope or a false negative blood culture or guessing what the cardiac output is from the base deficit. Using all of the available information sensibly is what defines a good clinician.

Terminology is important. The term ‘echocardiography’ has evolved from within cardiology and so carries with it an implication of a study performed by a cardiologist. These guidelines introduce new terminology defined by the acronym NoPE (‘neonatologist performed echocardiography’), which has the advantage of defining who has performed the study. Extending this further to avoid the term echocardiography completely by using the terminology ‘neonatologist performed cardiac ultrasound’ allows further delineation of the purpose of the study, who did the study and which organ was examined.

If the aim of these guidelines is to train a small number of neonatologists to perform echocardiograms to assess infants for structural heart disease with some functional information, then this is likely to be achieved. This may be at the expense of many clinicians deciding not to use cardiac ultrasound due to the time needed to train. Unachievable training requirements can be as bad as none because they will be bypassed. If on the other hand the aim is to encourage the use of ultrasound to

guide clinical treatment at the point of acute care, the consensus recommendations are unlikely to achieve this. There is certainly a role (and even a geographical necessity) for a group of paediatricians/neonatologists to practice at a more advanced level as in the PECSIG, but there are many neonatal clinicians who would use cardiac ultrasound at a more basic level to assess hemodynamics, if an appropriate training pathway was available. The group who are best able to assess the risks and benefits of such a programme are neonatologists, not cardiologists. Although there is clearly a role for input and advice from our cardiology colleagues, the concept of one professional group setting the standards to be used to train another is problematic and against principles guiding the autonomy of professional groups.

Conflict of interest The authors declare that they have no competing interests.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

Authors’ contributions Dr Martin Kluckow conceived the idea, drafted the commentary and edited and approved the subsequent final manuscript. Dr Nicholas Evans reviewed and edited the initial draft commentary and approved the final manuscript.

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