

# Targeted neonatal echocardiography training: a survey of trainees in a region of England

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**To cite:** Cleator AJ, Subhedar NV. Targeted neonatal echocardiography training: a survey of trainees in a region of England. *BMJ Paediatrics Open* 2022;**6**:e001465. doi:10.1136/bmjpo-2022-001465

► Additional supplemental material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/bmjpo-2022-001465>).

Received 28 February 2022  
Accepted 11 April 2022

## ABSTRACT

Targeted neonatal echocardiography (TNE) is an important skill to advise diagnosis and management. Training in TNE is currently optional for neonatal subspecialty (grid) trainees and accessing training is often challenging. We disseminated a survey, asking neonatal grid trainees for their views on TNE training. 48 out of 91 trainees (53%) completed the survey. 96% of trainees (n=48) wanted to learn TNE with similar numbers eager to access a formal training package, using a variety of teaching media. Identified barriers to TNE training included time, access to supervision and the perceived complexity of the skill. These findings will influence the design and delivery of a regional TNE training programme.

Targeted neonatal echocardiography (TNE) is an increasingly used skill in the care of the unwell newborn and premature baby. Expert consensus statements exist in the UK,<sup>1</sup> Europe<sup>2</sup> and the USA,<sup>3</sup> which outline suggested requirements for developing proficiency in TNE, including the need for paediatric cardiology and neonatology placements during training and practical guidance on scanning, reporting and referral to a cardiologist. These statements differ in their recommendations and there remains a lack of a formal TNE syllabus and access to appropriate accredited training opportunities.

We are considering developing a TNE curriculum and training package, to be delivered to neonatal grid trainees during their subspecialty training in the region. We sought to obtain the views of current trainees about TNE, their desire for formal training and what elements they considered important in a proposed training package. We identified potential participants from a North of England neonatal trainees' education group that was established during the coronavirus pandemic and meets virtually for educational activities on a regular basis. The group is comprised of neonatal trainees from six different deanery training programmes. The two authors developed

an original online survey (online supplemental appendix 1), comprising a mixture of Likert scale, multiple-choice and free-text questions. The survey was distributed to 91 neonatal grid trainees. The response rate was 53%, with 48 trainees responding. The process made trainees aware that their survey responses would be used as data for this project.

Our data demonstrated that 96% (46/48) of the responding trainees want to learn and develop TNE as a skill, with 94% (45/48) of them highlighting that a formal training programme would be welcomed. Ninety-six per cent of these trainees would be willing to fund such a programme from their study leave budgets and all of them would be willing to travel within their local deanery to access training. Over half of the trainees (56% (27/48)) felt very strongly about TNE, expressing that a formal training programme should be considered a compulsory element of subspecialty training.

We explored trainees' views on how such a programme would be delivered. Online modules and virtual small group sessions were favoured against in-person lectures and tutorials to cover the theoretical elements of TNE. The option of a paper-based workbook was appealing to only 17% (8/48) of trainees. Small group cot-side teaching was preferred over one to one teaching for the practical elements of the course and 77% (37/48) of surveyed trainees expressed that an echo simulator would aid in learning and development of skills.

All trainees agreed that some form of assessment would be required during a training programme with 90% (43/48) of trainees suggesting that their images should be critiqued by an assigned supervisor. Accessing appropriate supervision was identified as a problem by several trainees in the free-text part of the survey. One explained how appropriate support and supervision was the main barrier to her



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further developing skills learnt on a TNE course, while another expressed that consultant support was essential but not currently present on her unit. Other identified barriers to accessing training included time and the perception that TNE is more difficult to learn and practice than other neonatal skills.

The authors recognise the likelihood that trainees interested in TNE were more likely to respond to this survey. Despite this, the results demonstrate that interested trainees are motivated to access a formal, structured TNE training programme. The programme should contain a mixture of virtual and in-person elements and present an opportunity for trainees to be assessed and critiqued. Appropriate supervision in developing TNE skills has been highlighted as a potential barrier to learning. Similar local projects could lead to deanery collaborations and a refined national syllabus, promoting the importance of expertise in TNE within the specialty.

**Contributors** NVS conceptualised the study. The survey was designed by AJC and NVS. The methodology and data collection were completed by AJC. The manuscript was written by AJC and edited by NVS.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient and public involvement statement** Patients and the public were not involved in this project.

**Patient consent for publication** Not applicable.

**Ethics approval** Not applicable.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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## Targeted neonatal echocardiography training: a survey of trainees in a region of England. Survey questions.

**1. Which of the following would best describe your current level of experience with targeted neonatal echocardiography (TNE)? Please select all that apply to you.**

- I have no experience with TNE
- I've attended a neonatal/paediatric echo course
- I've had some informal echo teaching during my training (opportunistic cot-side teaching etc.)
- I can acquire a few basic images
- I can acquire all necessary images
- I can acquire all necessary images and interpret them under supervision
- I scan regularly and feel confident interpreting my images

**2. On a scale from 1 (Not at all) to 5 (Definitely) - Is TNE a skill you wish to learn/develop as a neonatal grid trainee?**

- 1
- 2
- 3
- 4
- 5

**3. If you do not wish to learn and practise TNE, can you tell us why?**

**4. On a scale from 1 (Not at all) to 5 (Definitely) - Do you think TNE training should be a compulsory element of the neonatal sub-specialty curriculum?**

- 1
- 2
- 3
- 4
- 5

**5. On a scale from 1 (Not at all) to 5 (Definitely) - Would you find a formal, structured TNE training programme useful as a neonatal grid trainee?**

- 1
- 2
- 3
- 4
- 5

**6. On a scale from 1 (Not at all) to 5 (Definitely) - Would you be willing to pay for a formal TNE training programme/package or have it taken from your study leave allowance?**

- 1
- 2
- 3
- 4
- 5

**7. How do you see the theory elements of a TNE training programme being delivered? Please select as few/many as you feel appropriate.**

- Online modules that I complete at my own pace
- Live online/virtual small group lectures with the opportunity for interaction
- In-person lectures/tutorials
- A paper-based workbook

**8. How do you see the practical elements of a TNE training programme being taught? Please select as few/many as you feel appropriate.**

- Online module(s) that I complete at my own pace – I'd practice in my own time
- Teaching sessions using an echo simulator under supervision
- Small group face-to-face teaching at the cot-side with an opportunity to practice what we've just seen demonstrated
- One-to-one teaching at the cot-side with an opportunity to practice what we've just seen demonstrated

**9. Which of the following (if any) do you see as forming part of the assessment element of a TNE training programme? Please select as many/few as you feel appropriate.**

- Quizzes/questions during or after each theory module
- Echo image interpretation quizzes
- Scan images reviewed and critiqued by a supervisor

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- Having your own scans observed by a supervisor
- A written and practical examination at the end of the training programme
- I would not want to be assessed in any way

**10. On a scale from 1 (Not at all) to 5 (Definitely) - Would you be willing to travel (within your deanery) to access a TNE training programme?**

- 1
- 2
- 3
- 4
- 5

**11. On a scale from 1 (Not at all) to 5 (Definitely) - would you be willing to travel outside of your deanery to access some (or all) of a TNE training programme?**

- 1
- 2
- 3
- 4
- 5

**12. Is there anything else you'd like to tell us about your views on TNE training and what you think should be included in a TNE training programme? Any other thoughts about how such a programme could be delivered? Would you like to expand on any of the answers you've already given us?**