



# Education innovation: Emergency Critical Care Ultrasound (ECCU) paramedical course: A novel curriculum for training paramedics in ultrasound

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## Key words

Emergency Medical Technicians,  
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## Conflict of Interest

R Henneberry, D Lewis, and P Atkinson serve as  
ECCU Course Directors



Link to all  
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Research

**Innovation concept:** Ultrasonography (US), performed in the Emergency Department (ED) by Emergency Physicians, is well established. Educational studies have shown some promise in training paramedics in US use. We have developed and piloted a novel curriculum for paramedic US education.

**Methods:** Based on an informal needs assessment, an US curriculum for paramedics was developed to include: Basic principles, Focused assessment with sonography for trauma (FAST), cardiac, and vascular access. Participants included ED-based and pre-hospital paramedics including all paramedics with critical care training who routinely perform vascular access and procedural sedation within our ED. Comparisons were made using paired non-parametric tests (GraphPad).



**Curriculum/Tool/or Materials:** Participants (N=9) were provided pre- reading materials prior to completing a 6-hour course, consisting of a mix of didactic and practical sessions with live models and vascular access phantoms.

Each module was introduced with a 30 minute didactic session, led by an Emergency Physician trained in US, followed immediately by a 1 hour hands-on session lead by either an Emergency Physician or an Emergency Medicine Resident at a learner to instructor ratio of 3:1.

At the end of the course, participants were asked to complete a short 10 minute survey that included (1) an assessment of the course quality with regard to preparatory material and course content/delivery (4 point Likert scale; excellent, good, fair, poor); (2) self reported US knowledge pre and post course on a scale of 1-10 (10 high, 1 low); (3) general yes/no questions related to the future of ECCU paramedical and (4) a subjective written section for additional comments.

All participants rated the content favorably: 97% scoring it as excellent, and 3% as good. The participants' median self-reported US knowledge score increased from 2/10 (IQR 2-3) to 8/10 (IQR 7.25-8; p=0.009) post- course. All comments from the text field were positive in nature.

**Conclusions:** We report a paramedic US course curriculum, which when piloted resulted in high learner satisfaction and a high rate of self reported improvement in US knowledge. Further study will include an assessment of knowledge acquisition and practical performance. Future modifications in our curriculum will be based on needs assessment and may include additional modules.