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Impact of a One-day teaching Course on Invasive Procedures Training in Foundation Year Doctors

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Abstract
Background: Junior doctors are performing invasive procedures, normally taught at core training, at an increasingly earlier stage in their careers after being taught opportunistically at the bedside by senior colleagues.
Aim: To determine the impact of a one-day invasive procedures skills course on the self-confidence of foundation doctors and its usefulness in their day-to-day jobs.
Methods: An intake of foundation year doctors (n=19) attended a one day course teaching chest drain insertion, lumbar puncture and central line insertion on mannequins supervised by consultants and registrars. Questionnaires assessing their confidence in performing these procedures under senior supervision on a scale of 1(not confident at all) to 5 (very confident) before and after the course were completed.
Results: Feedback was universally positive. Before the course, 5.3% selected a grade of 4 while 68.4% selected 1. After the course, 36.8% selected 4 while none selected 1. 100% thought the course was both useful and necessary for foundation doctors. 94.7% thought it should be repeated yearly.
Conclusion: The course produced a significant increase in the short-term confidence of foundation doctors. More data collection is required to assess their long-term confidence. This study could also be extrapolated to involve additional procedures like ascitic tap/drain, pleural tap and chest drain removal.

Key Words: Medical education; Procedure simulation; Invasive procedures; Foundation year doctors; Teaching.

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Problem

We found that foundation doctors are performing invasive procedures at an early stage of their careers after being taught at the bedside by senior colleagues. We believe this compromises patient safety as the majority of foundation doctors do not receive formal teaching on invasive procedures before they actually perform the said procedures on real patients such as lumbar puncture, chest drain insertion and central line insertion.

Background

Junior doctor working hours has seen a marked reduction in recent years in light of the European Working-Time Directive. This has meant that less time is being devoted to training, especially to perform procedures in emergency settings. It is well known that medical students have formal model-based training in phlebotomy and cannulation. However, a limited number of hospitals provide clinical skills facilities to formally train their doctors in performing more complex albeit invasive procedures. This has led to clinicians learning opportunistically with the acutely unwell patient via the commonly known method of "see one, do one, teach one" method[3]. Besides obvious implications regarding competency to perform and patient safety issues, one study has shown that there was particular discomfort amongst trainees in learning to perform procedures on real patients with simulation on mannequins being preferred first.[6]

Model-based training has been shown to improve both competency and confidence in trainees performing procedures[11-13,17] as well as patient safety[9]. Risk reduction in performing invasive procedures was reflected in recent National Institute for Clinical Excellence (NICE) guidelines[2] which has recommended the use of ultrasound-guided CV line placement with clear evidence that this decreases complication rates of the procedure. With that idea in mind, we feel formal simulated training for invasive procedures needs to be undertaken by foundation doctors at an early stage in their careers to improve their competency and confidence as well as patient safety.

Baseline measurement

We have carried out an initial survey in two different foundation trusts, involving 71 foundation year doctors. Five questions were asked.

1. Confidence in performing invasive procedures on a scale of one (not confident at all) to five (very confident): (**Figure 1**)? Fifty eight percent were not confident at all in performing the procedures. Twenty one percent rated "two". Fourteen percent rated "three", four percent rated "four". Three percent failed to choose an option. Zero percent rated as being very confident. ?
2. Formal training on mentioned invasive procedures:? 77% declared having not received any formal training. Twenty three percent received formal training.?
3. Relevance in teaching programme?: Ninety seven percent agreed in the need to implement this teaching programme formally in the foundation curriculum.?
4. Previous experience with mentioned invasive procedures: ?73% declared having never done any of these procedures before. Twenty seven percent have done at least one of the mentioned procedures before.?
5. Usage of mannequins: ?89% wanted to be taught formally with mannequins under a controlled environment before having real experience.

Design

We organised an invasive procedures training course for Foundation Year doctors in one of the surveyed foundation trust hospitals. The course was facilitated by consultants and registrars employed by the hospital and comprised of teaching stations involving lumbar puncture, chest drain insertion and central line insertion through the use of mannequins. The event took place in the post-graduate centre of the hospital. Participants were divided into three groups and each group rotated through three stations, each lasting 50 minutes.

We approached the clinical skills unit staff to enquire about availability of mannequins suitable for these procedures. We discussed about this project and the results of the first survey with the consultants and registrars working in A&E and general medicine as well as consultant anaesthetists. We managed to secure a date where they would be available to run the course.

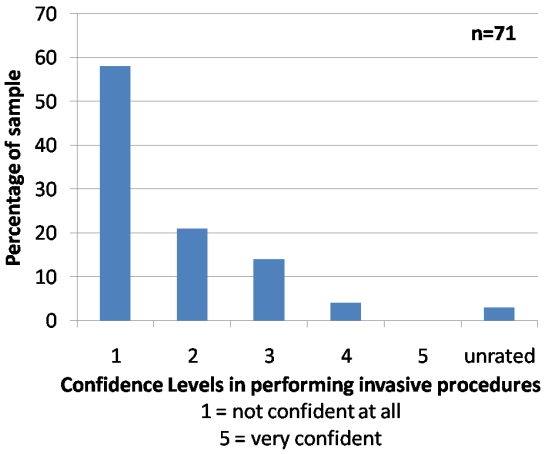

Figure 1: Survey in 2 foundation trust hospitals in the North West

Strategy

After analysing the scale of the problem through two surveys in two different foundation trusts, we sought help from senior registrars and consultants who immediately gave their support and help.

We would then conduct the one-day course and analyse the confidence levels immediately before and after the course.

Based the trend of our results, feedback and suggestions from candidates, we would then tailor our course to make it suitable to implement it in the training schedule of foundation doctors within the trusts and possibly deanery.

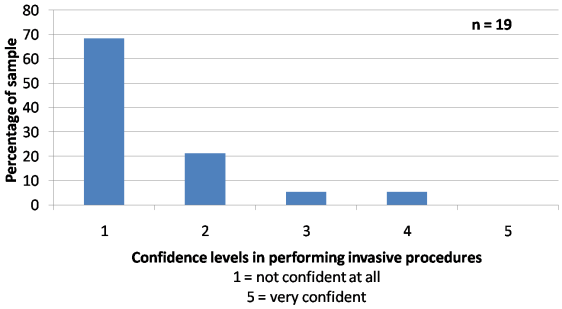

Figure 2: Pre-course confidence levels in 1 foundation trust hospital

Results

We then performed a second survey after the teaching course which 19 trainees attended. A confidence scale of one (not confident at all) to five (very confident) was used for questions one and two.

1. 68.4% reported as not confident at all prior to being taught; 21.1% rated "two", 5.3% rated "three" and 5.3% rated "four". Zero percent rated as being very confident. **(Figure 2)**
2. After the teaching course, zero percent were not confident at all, 10.5% rated "two", 26.3% rated "3", 36.8% rated four, 15.8% rated five. (**Figure 3**)
3. Hundred percent agreed the session was helpful.
4. Hundred percent agreed the session was necessary for foundation year doctors.
5. Hundred percent agreed this training course should be implemented in the foundation training curriculum.

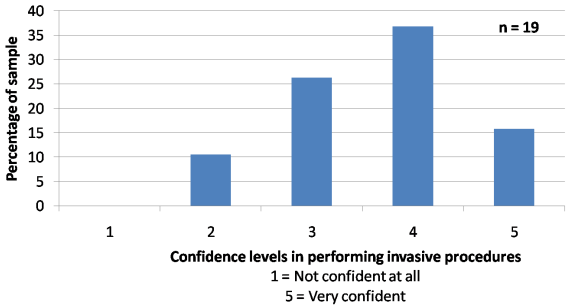

Figure 3: Post-course interval levels in 1 foundation trust hospital

6. 78.9% agreed that other procedures besides the ones taught, should be added. Answers suggested included ascitic tap, ascitic drain, pleuritic tap, suprapubic catheterisation.

Lessons and limitations

We found that good organisational skills and perseverance are required in organising a teaching course. It was difficult to gather consultants and registrars to be available for teaching this course due to their clinical commitments. Therefore, communication through emails and liasing with post-graduate administrators was key to the successful running of this course.

Mannequins were limited for various procedures and we thus had to limit the course to three procedures.

We would have included more diverse procedures to the teaching course to meet the different needs of foundation doctors. We would also hope to audit the confidence of the trainees at a later point in the future for these procedures.

Conclusion

We noted a significant improvement in the confidence of foundation year doctors after being taught in a standard way under controlled conditions. We strongly believe that a standardised method of teaching procedures will markedly reduce the incidence of mistakes or errors made during such procedures, thereby improving patient safety and health care.

Following the successful outcome of this course, we are organising a similar course in the other surveyed foundation trust before aiming to implement it in the training schedule of foundation doctors within the trusts.

We believe standard teaching methods lead to standard delivery of health care and patient safety. This will reduce the scope for mistakes or errors due to incompetency or lack of information.

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