

# High-fidelity Multi-professional In-situ Simulation in the Cardiac Catheter Laboratory in a Tertiary UK Centre

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## INTRODUCTION

The catheter laboratory (*cath lab*) is an unique clinical environment where a wide array of complex cardiac procedures are preformed. It is a multi-professional environment that only functions well if all members of the team work in harmony.

We set out to design a high fidelity, in-situ simulation programme that incorporated all members of the team including specialised nurses, radiographers and cardiac physiologists as well as cardiologists. We recognised that "whilst doctors learn in a variety of settings using a range of methods, including work-based placed experimental learning, formal postgraduate teaching and simulation based education"(1), this was not true of the remainder of the multi-professional team members that work in the cath lab environment.

Whilst scenarios have a clinical setting, there is a strong focus on human factors and team interactions. The programme has also been designed to link into clinical governance to test pathways, implement action plans and re-run clinical scenarios where serious incidents occurred.

## COURSE DESIGN AND SETUP

The course was developed by staff at the department of Cardiology, Nottingham University Hospitals NHS Trust (NUH) and Nottingham University Trent Simulation Centre.

Ring-fenced training time was ensured by running the first simulation session during a monthly audit afternoon where there was a "half-day" shutdown in one cath lab and staff were released specifically for CPD activities. Low-tech, hybrid and high-tech simulators were available dependent on the scenario.



Cath Lab Location

Hi-tech simulators

2 scenarios were designed with 8 staff members involved, taking it in turns to either take part in a scenario or watch colleagues via a video link and give feedback during structured discussion sessions. Members of the simulation team acted in a variety of capacities including facilitation of feedback, acting as a patient or doctor or providing technical support.

The first scenario centered around a registrar struggling to obtain radial then femoral access on a patient as part of a diagnostic coronary angiogram. The focus of the scenario was the empowerment of staff to speak up and put the patient first by challenging the registrar and suggesting escalation to a consultant colleague and other strategies.

The second scenario simulated the end of a coronary angioplasty. The patient was noted to be unable to talk. The focus was on following a recent updated local hospital stroke pathway and escalating for an urgent CT brain and discussions regarding thrombolysis or manual thrombectomy.

## COURSE DESIGN AND SETUP continued

The dual roles of some of the members involved in clinical governance meant that there was the possibility of feedback loops originating directly from clinical experiences to explore good practice as well as improvements both within the team but also on a more structural or institutional level.

The scenarios were live streamed to an adjacent room to allow additional participants to observe and later be involved in active debrief. Debrief was performed using the PEARL (Promoting Excellence and Reflective Learning in Simulation) format to allow fluidity in the debrief dependent on the candidate cohort.(2) Co-debriefing was undertaken by a simulation team and a clinical team member for additional clinical context. Course feedback in the form of anonymised questionnaires were collected pre and post course using 5 point Likert scoring.

## RESULTS

Q. How confident do you feel that...	Mean course score pre, post (Δ)
Your clinical knowledge is appropriate for your role?	3.8, 4.4 (0.6 ↑)
That you practice within the limitations of the role?	4.5, 4.5 (←→)
That you possess strategies to raise concerns?	4.2, 4.6 (0.4 ↑)
That you can manage an acutely unwell patient?	3.9, 4.4 (0.5 ↑)
That you can communicate to the rest of the MDT?	4.2, 4.5 (0.3 ↑)
That you can manage a cardiac arrest?	4, 4.2 (0.2 ↑)

## PARTICIPANT FEEDBACK

Very appropriate as I have had similar scenarios in my real practice

An extremely useful learning tool. Helped me think about communicating in awkward situations

Highlighted the importance of communication, teamwork and standing up to difficult doctor to advocate for the patient

Made me consider conflict resolution techniques when in front of patients

## FUTURE PLANS

We have developed a diet of courses over the next few months that combine ongoing hi-fidelity simulation training as outlined in this poster, as well as more focused human factors training.

We have used real serious incidents and events in the cath lab that have been through the clinical governance processes, to shape scenario design. Furthermore we also envisage that some serious incident accident plans, where they contain a training element, can be completed via simulation training.

Finally we have submitted a business case to appoint a simulation training fellow part funded by NUH and part funded by Health Education England (HEE). This fellow will undertake clinical and teaching duties and obtain a Masters in Clinical Education. They will also be allocated 2-3 PAs a week to focus solely on the design and implementation of future cath lab simulation and human factors courses.

## CONCLUSIONS

The Trent Simulation team and a clinical team from NUH have come together to develop a hi-fidelity cath lab simulation programme embedded within the clinical governance process with a focus on patient safety, non clinical skills and team interactions. The programme addresses the lack of multi-professional staff simulation training and has direct clinical feedback loops to assess local environment and practices.

## REFERENCES

1. Curriculum for Cardiology Training. Joint Royal Colleges of Physicians Training Board. June 2021
2. Eppich, W et al. Promoting Excellence and Reflective Learning in Simulation (PEARLS): Development and Rationale for a Blended Approach to Health Care Simulation Debriefing. *Simul Healthc.* 10(2):p 106-115, April 2015.

## OBJECTIVES

To develop realistic simulation opportunities for the Cardiac Catheter Laboratory multidisciplinary team with a focus on:

- Non technical skills and human factors
- High Fidelity Environment
- Responsiveness to local clinical governance requirements/events/errors/near misses
- Platform for pathway assessment



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