

## CHALLENGE STATEMENT #05

### 1. Challenge Owner Index and Pseudonym

#05 – Angio-Radio

### 2. Challenge Statement

Angiography training for radiographers is manpower draining and poses a risk to the staff and patient. Current training is via in-situ with actual patients during actual procedures. Senior radiographers are on-hand in the scenario where the trainee requires a rescue. A new system to train radiographers in a safe and controlled manner needs to be developed to improve the quality of the training as well as the mental safety of the trainee.

### 3. About the Challenge Owner Organisation

Angio-Radio is a healthcare institution where various lifesaving medical procedures requires specialised staff trained in a radiographic modality to operate and assist physicians.

### 4. Define the Challenge

#### Current Situation

Currently radiographer trainees undergoing angiography training would be thrown to the deep end and perform the procedures under supervision of a senior. The stress from this scenario is significant as trainees would be prone to errors that would distract the team, primarily the physician. Errors made by the trainee would also have detrimental health effects on the team as well as the patient due to the exposure of radiation. Unlike general radiography, which is similar to taking a picture, angiography is like taking a video. A video where every second of exposure means that the staff and the patients are receiving radiation doses.

A year is the current timescale where a radiographer would be deemed qualified to perform procedures independently.

The stress of training introduces mental health problems that can interfere with future training and staff retention. This contributes highly to the attrition rate of angiographers.

#### Past & Current Solutioning Efforts

At the present, radiographers are being trained through less complicated cases. The definition of less complex cases would be limited manipulation of the x-ray systems, so that this can “wet” their feet so that they can gather the muscle memory. After about half a year of less complex cases, the trainees would be exposed to more routine cases so that they can build on what they already know and gain the confidence to perform at a higher level.

A key factor would be the experience gained from learning to anticipate the needs of the team especially the physician performing the procedure. This would allow the radiographer to be a key team player and allow the procedure to proceed at a smooth pace.

Through the experience gained, the radiographer become adaptable to many different clinical scenarios.

### **Challenge / Gap / Unrealised Potential**

The current method of training drains the manpower as a senior radiographer would need to oversee the trainee in an actual case. The duty of the senior would be to ensure that the proper protocols are followed and that if the trainee is not performing as required, to take over the trainee. This current arrangement puts the trainee under much stress which limits their potential.

However, with off-site simulation, a trainee would be able to develop the core skills free of the stressors of an actual case. This would greatly help with the mental health as well as the situation preparedness for future cases. The ability to track progress of the trainee would also be excellent as the trainee would be able to work harder on aspects, they are weak in.

### **5. Targeted Learners / Users**

The primary target learners would be those who are new to angiography. They would start with the simulator training alongside on-site learning experience. This is to ensure that the information learnt during the simulator is directly applicable to actual clinical experience. Another set of primary target learners would be the qualified angiographers, who need to brush up on their skills or learn new techniques based on the current evidence-based practice system we have.

Currently the target population is around 10 radiographers/angiographers. The small number is for the pilot of the simulator in Angio-Radio. Radiographers with similar scope of practice would be invited to test out the prototype and provide feedback, this number we are unable to provide.

Upon a successful pilot test of the simulator, radiographers from other healthcare institutions would be called upon to see applicability to their own scope of practice. This number could be between 20-50 radiographers.

Additionally, if interest from other professions to include a simulated type training for their clinical practice, this project would be able to scale up to 100 healthcare professionals.

### **6. Solution Partner and Deliverables**

We are looking for a solution partner that is able to come up with an alternative method of training. The new type of training should ensure that the basic/advance techniques are well-communicated and that the trainee is within a safe environment. The assessor/trainer must also be able to communicate with the trainee to give immediate feedback or at a later opportunity.

### **7. Expectations of Solution**

An offsite clinical simulation training environment would need to be developed to assist in the training. A simulated clinical environment solution would assist in building up the muscle memory required for the clinical practice, as well as provide a psychologically safe place for a trainee. Due to the nature of the practice involving radiation, there is no practical method of training currently that would not expose the trainee to radiation, and cumulative exposure to radiation can pose health risks to the trainee and the trainer.

A simulated training environment would also enable the use of rooms that were not fully utilised.

## 8. Measures of Success

Quality of training – Via assessments both on the off-site training systems and actual real-life cases.

Seniors using the system would provide feedback to the developers regarding how transferable the knowledge gained from the offsite system to the actual scenarios.

Surveys would be handed out to other members of the team i.e., doctors, nurses, medical technologists, to evaluate the capabilities of the radiographer.

Observable outcomes:

- Improved confidence in the trained angiographer
- Mentally healthy individual
- Key player in the procedures performed
- Adaptable in any scenario, able to draw on previous experiences

Measurable outcomes:

- Accelerated training times to be within 8 months
- Assessment of competencies done in proper framework
  - o Structured feedback on current skill levels
- Eases the entry level expectations for an angiographer
  - o Able to provide the doctors with the required images in the most efficient manner
  - o Manages radiation exposure to patients and staff
  - o Improves teamwork