

## 1. **Title:** Improving Contrast Reaction Response using Simulation

## 2. **Abstract**

Simulation is widely used in medical education to improve patient safety and prevent healthcare errors. The purpose of this study was to assess and improve the knowledge and confidence of radiology residents, nurses, and technologists regarding allergic reactions to intravenous contrast media through a team approach. These contrast reactions can be life-threatening, and the preparedness of healthcare workers is critical. At our institution, the nurses and technologists are not formally trained on contrast reactions, yet they are the first healthcare workers to recognize that such a reaction exists. Residents, nurses, and technologists could all benefit from participating in a simulation together to increase their confidence and improve communication skills. This quantitative study will follow a pre-survey and post-survey design. Learners will complete a survey before and after participating in several contrast reaction simulation scenarios to assess knowledge and confidence. After eight weeks, learners will complete the post-survey a second time to assess long-term learning – a measure which has not been assessed in previous studies. We hypothesize that training the residents, nurses, and technologists as a team in a contrast reaction simulation series will increase content knowledge, confidence, and communication skills. The scores on the post-survey eight weeks after the training may decrease some from the initial post-survey, but we hypothesize the learners will retain an appropriate level of knowledge after eight weeks. The results of the eight week post-survey will also guide how frequently contrast reaction training should be performed.

## 3. **Purpose**

Specific Objectives:

- a. To determine whether or not a simulation training for contrast reactions is effective promoting content knowledge and confidence in nurses, techs, and residents.
- b. To determine the length of time the potential changes in content knowledge and confidence last (until another simulation or booster of some kind is needed).
- c. To compare the potential differential impacts of team (resident, tech, nurse) vs. singular professional track simulations. Does doing the simulation in a team/interprofessional environment lead to better results?

## 4. **Background/ Lit Review coming**

## 5. **Methodology**

- a. **Subjects:** Approximately 24 residents, 28 MRI nurses, and 77 radiology techs working for WVU medicine.
- b. **Data Collection Procedures:**
  - i. Learning Space will be used to administer pre and post surveys electronically. Immediately after the training, and again 4 weeks out, all participants will take the post survey after completing the simulation training.



## **Teaching Scholars Radiology Research Project**

### **Mentor**

We will be working with Dr. Hogg and Dr. Williams

### **Research Question**

Can including nurses, techs, and residents in a Contrast Reading training simulation series increase content knowledge, communication skills, and confidence to take the appropriate action?

### **Rationale**

Nurses and Tech are not explicitly trained on contrast readings, leading them to potentially make errors in action. Residents, along with the rest of the team, could benefit from knowing the many roles involved in contrast readings, communicating effectively both up and down the chain, and taking initiative to act in the correct way that could save the patient from further complications.

### **Method & Design**

This quantitative study will follow a pre and post survey design. Participants will take a survey, participate in the simulation training, and then take a post survey.

### **Summary of Procedures thus far:**

1. An online data collection tool will be developed in order to make it possible for participants to take the pre and post surveys electronically.
2. All Radiology Residents will be required to participate in the simulation training and all nurses and techs will be strongly encouraged to do so.
3. All residents, nurses, and techs in Radiology will be asked to participate in the pre-survey before receiving the simulation training.
4. Immediately after the training, and again 4 weeks out, all participants will take the post survey after completing the simulation training.
5. Data will be analyzed and Findings will be reported in a Radiology Journal