Structured Training of Radiology Residents in the Management of Acute Intravascular Contrast Reactions

Victoria Dekany, B.S., Syndey Wonski, D.O.

1. Introduction

- The current study was a quality improvement initiative that included observation of resident physicians performing emergency safety protocols and related documentation.
- We then assessed the resident knowledge of contrast media complications, availability of emergency kits, safety protocols, and awareness of the clinic support staff.

2. Methods

- Residents completed a survey before and after the training session.
- Topics included knowledge of contrast media complications, availability of emergency kits, safety protocols, and awareness of the clinic support staff.
- During the session, residents were tested on their knowledge of the ACR Manual safety card (Fig 1)

3. Results

- Overall confidence levels increased from pre to post survey responses (Fig 2).
- Although all categories increased only one was found to be statistically significant.
- Study limited by low number of residents surveyed (<10).

4. Discussion

- We identified knowledge and practice gaps in contrast reaction emergency preparedness training.
- We propose a model of structured training and evidence-based practices to ensure the highest safety levels during procedures employing contrast media.

Variable (Question)	Pre-Survey (n=6)	Post-Survey (n=4)	p-value
How confident are you performing baseline life support (IV access, administration of medication, CPR)? (Q1)	3.83 ± 0.983	4.5 ± 0.5774	0.261*
How confident are you in recognizing the signs and symptoms of an acute intravascular reaction necessitating immediate medical treatment? (Q2)	4.17 ± 0.753	4.8 ± 0.447	0.1341*
How confident are you in correctly responding once an allergic or physiologic event has taken place? (Q3)	4.0 ± 0.633	4.5 ± 1	0.3559*
How confident are you in applying the correct dosage (both pediatric and adult) of medication when responding to an acute intravascular event? (Q4)	3.33 ± 1.211	4.4 ± 0.894	0.1379*
When performing imaging procedures, how confident are you that extravasation is not occurring? (Q5)	3.83 ± 0.753	4.6 ± 0.5487	0.0911*
How confident are you identifying the location of your institution's crash cart items? (Q6)	4.2 ± 0.837	4.4 ± 0.894	0.7245*
How confident are you identifying the potential co-morbidities (i.e. asthma) that increase the risk for adverse events related to the administration of oral agents? (Q7)	4.0 ± 0.633	4.6 ± 0.894	0.2247*
How confident are you in evaluating and treating the rare adverse events related to the administration of oral contrast agents? (Q8)	3.33 ± 1.211	4.6 ± 0.548	0.0602*
How confident are you in taking the first steps necessary to mitigate a life-threatening event? (Q9)	4.33 ± 0.516	4.6 ± 0.894	0.5503*
How confident do you feel in implementing the emergency protocol if an intravascular event occurs? (Q10)	4.17 ± 0.408	4.8 ± 0.447	0.0364*

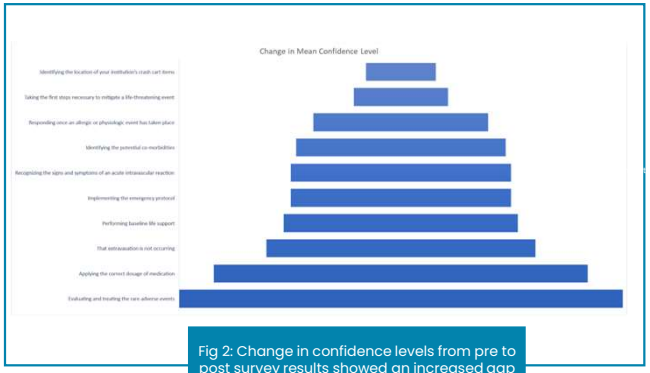

Fig 2: Change in confidence levels from pre to post survey results showed an increased gap in responses.

Participants are **more confident** in implementing the emergency protocol if an intravascular event occurs.

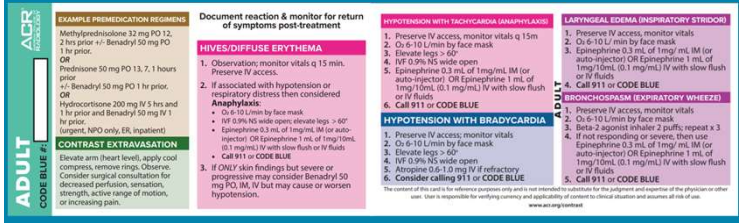

Fig 1: Adult Safety Card from ACR Contrast Media Manual.

COLLEGE OF MEDICINE
CENTRAL MICHIGAN UNIVERSITY

References

1. https://www.acr.org/-/media/ACR/Files/Clinical-Resources/Contrast_Media.pdf

2. 2022-NIS-Study-Guide-v2.

3. https://www.acr.org/-/media/ACR/Files/Radiology-Safety/MR-Safety/Manual-on-MR-Safety.pdf