

Radiology Department Preparedness and knowledge on the management of mild to severe contrast medium reactions - Audit & Re- audit

Royal Shrewsbury and Telford NHS Trust

17 & 19 January 2024 / 09th & 19th June 2025

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Objectives

- Assess staff preparedness and awareness of RCR recommendations for managing mild–severe contrast reactions.
- Measure accuracy in key management questions, aiming for 100% compliance.

Standards

- 2016 RANZCR Iodinated Contrast Guidelines (updated 2018), validated by RCR.
- Resuscitation Council UK Anaphylaxis Guideline (May 2021).

Data Collection

Self-administered questionnaire (28 questions) based on RANZCR guidelines.

Topics: adrenaline, antihistamines, IV fluids, emergency protocols, contact numbers, crash cart, resuscitation course date, anaphylaxis chart.

Scored out of 100; target = 100% compliance.

Analysis of Results

Compliance
100%

No Compliance
<100%

Standard	Compliance (%)	
	Audit	Re- Audit
2016 RANZCR Iodinated Contrast Guidelines (updated 2018) have been validated by The Royal College of Radiology, which provides recommendations for the management of the mild to severe contrast medium reaction.	2.27%	26%
Treatment of anaphylaxis- Guideline for healthcare providers- Working Group of Resuscitation Council UK- May 2021, Resuscitation Council UK.	(1/44)	(13/50)

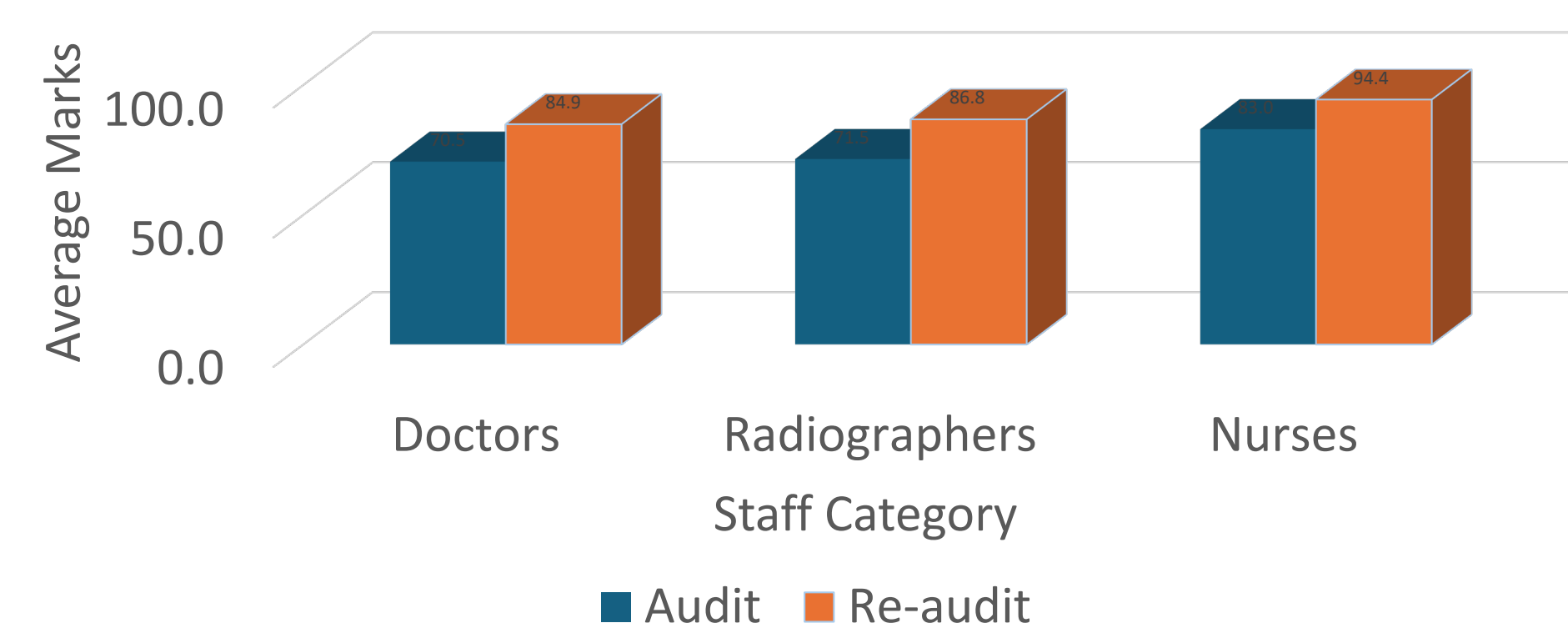
Comparison of audit and Re- audit results

Staff Categorisation	Number of Staff	
	Audit	Re- Audit
Radiologists	16	22
Radiographer	24	23
Nurses	04	05
Total	44	50

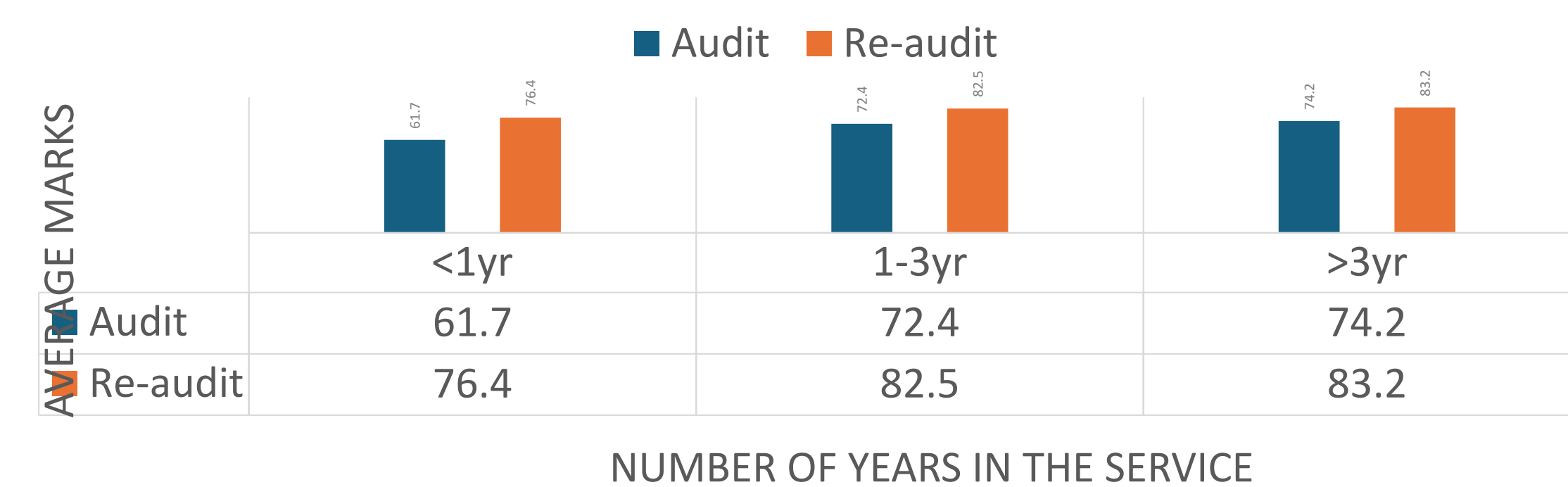
Average Marks by Staff Category

Staff Category	Audit	Re-audit
Doctors	70.5	84.9
Radiographers	71.5	86.8
Nurses	83.0	94.4

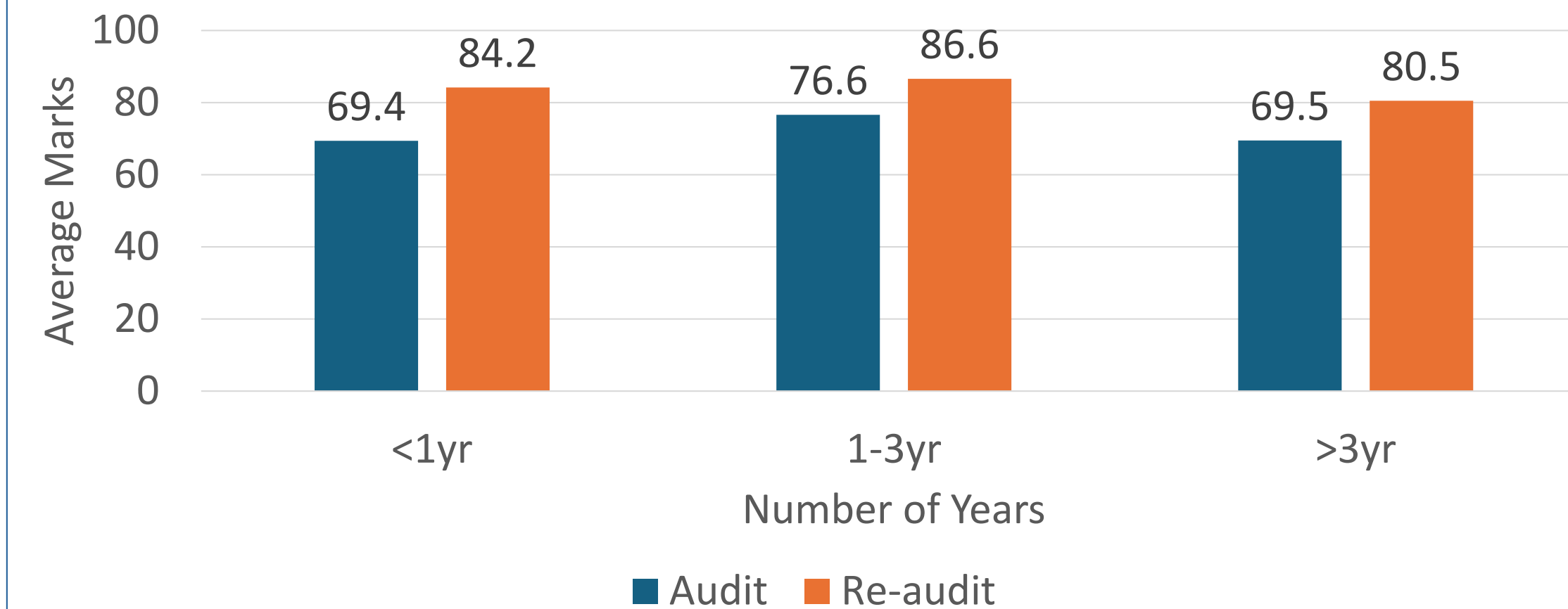
Average Marks by Staff Category



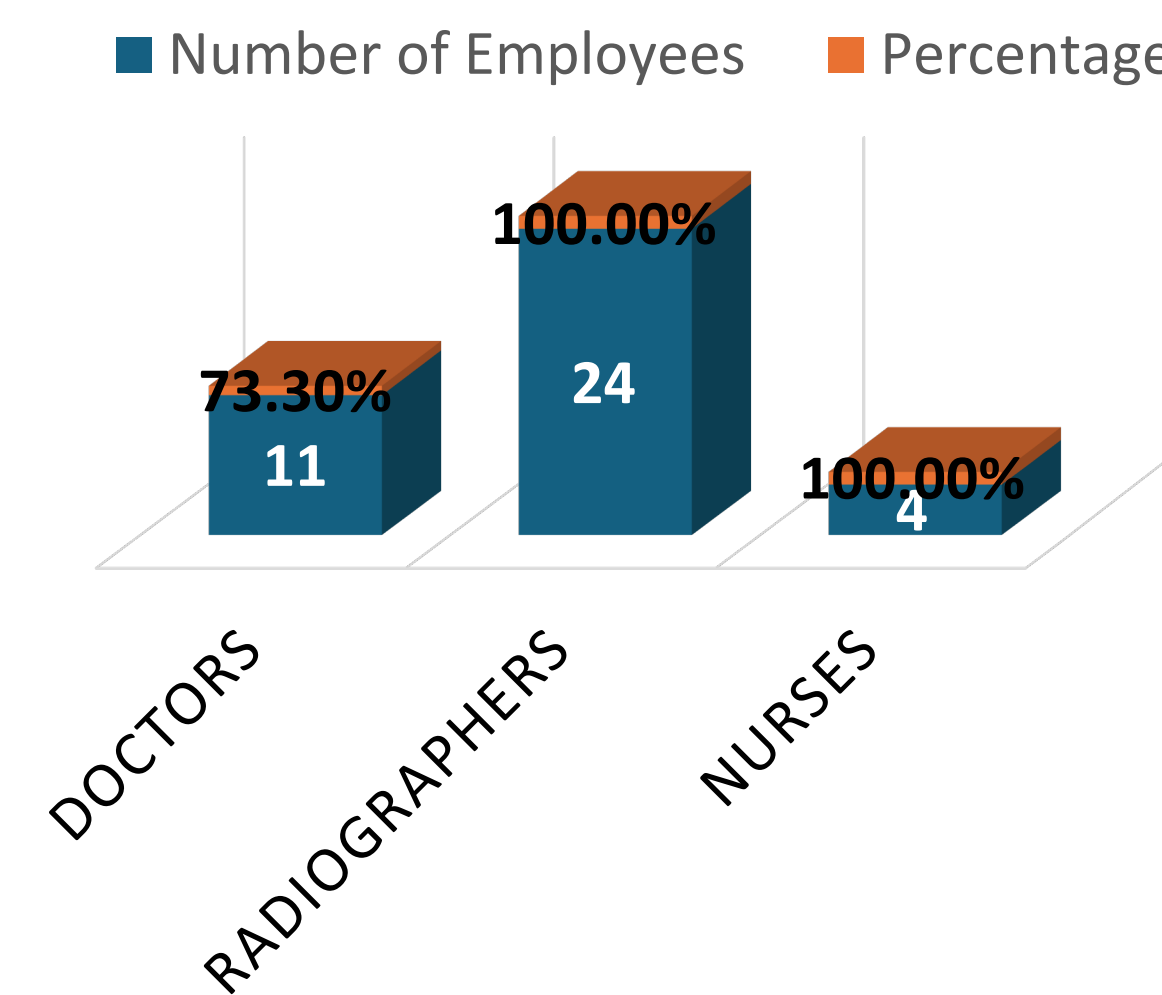
AVERAGE MARKS ACCORDING TO THE DURATION IN THE DEPARTMENT



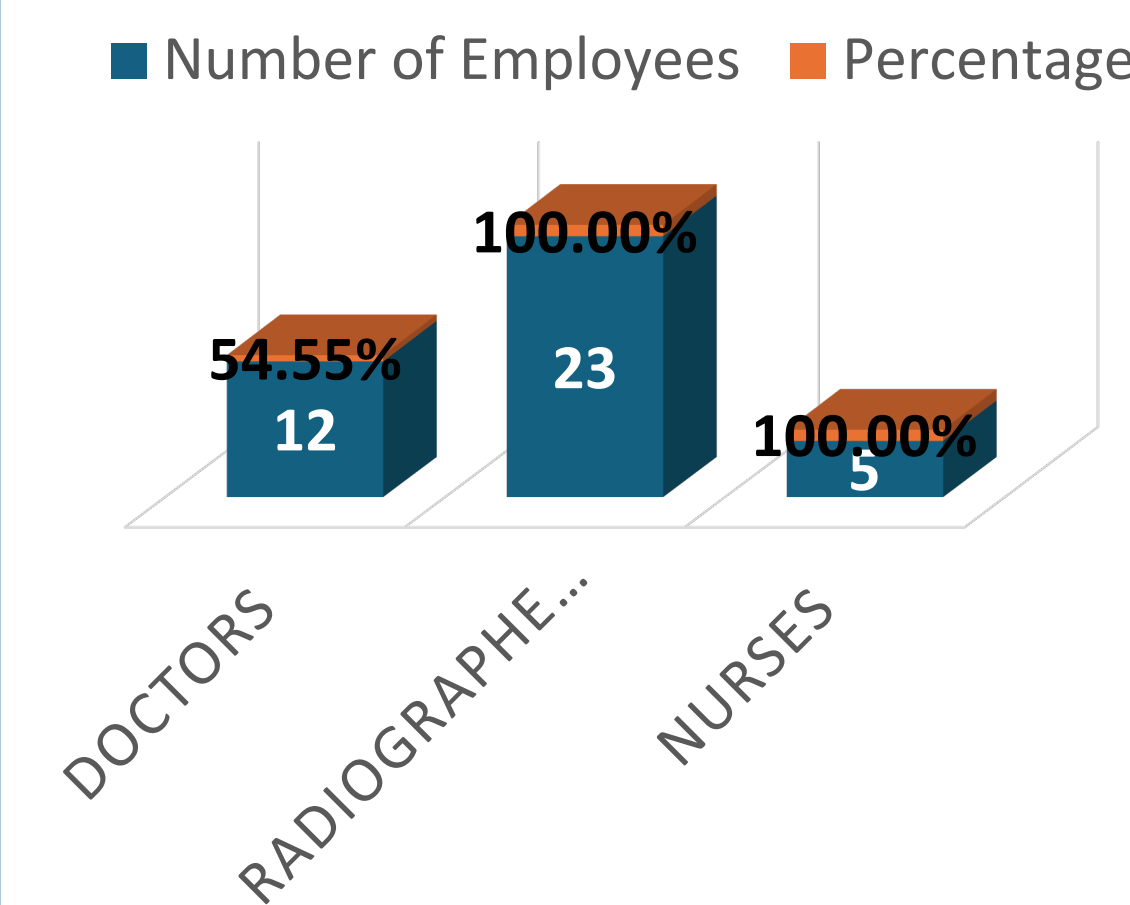
Average marks according to the last resuscitation course



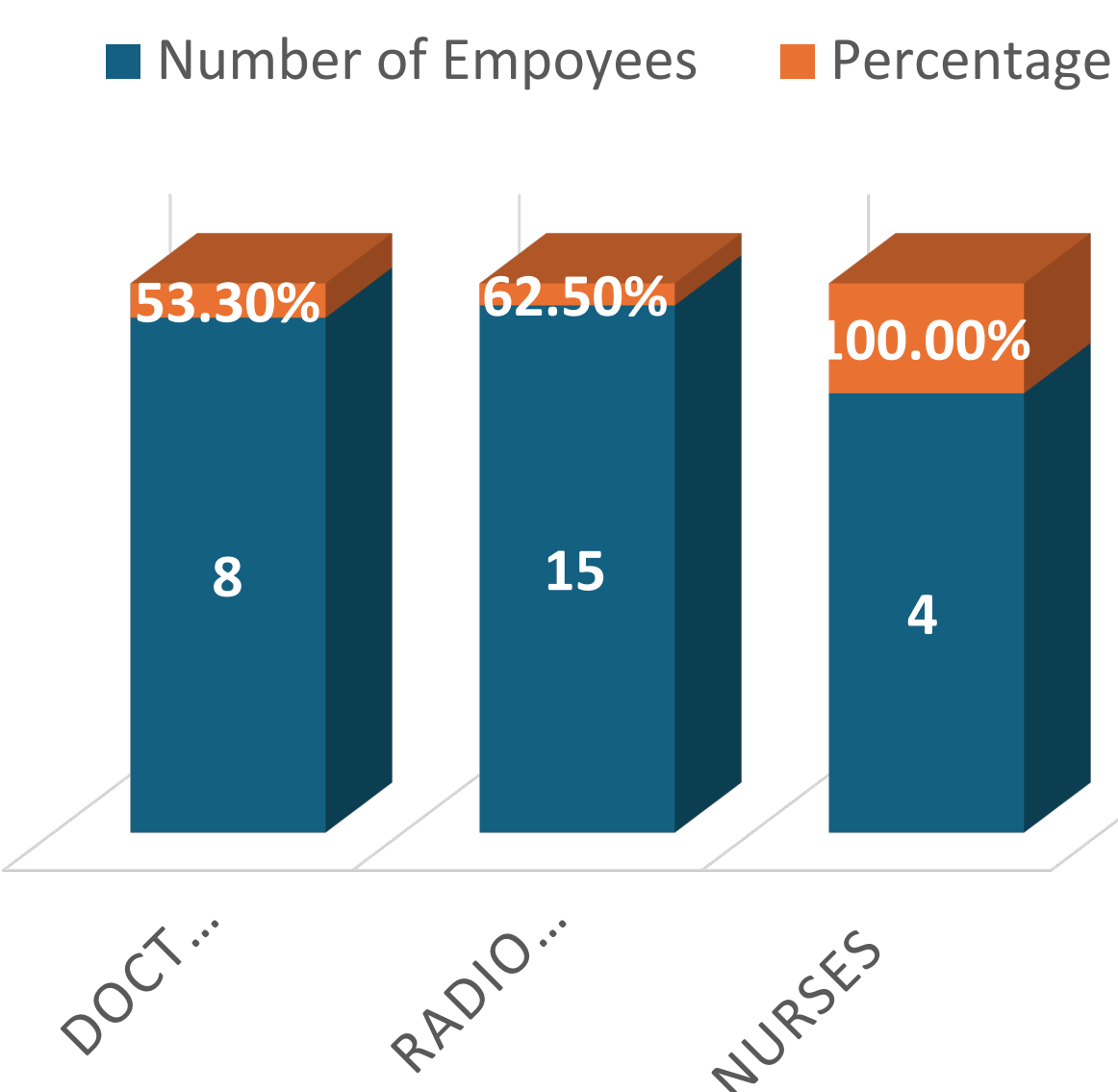
KNOWLEDGE ON EMERGENCY CONTACT NUMBER - AUDIT



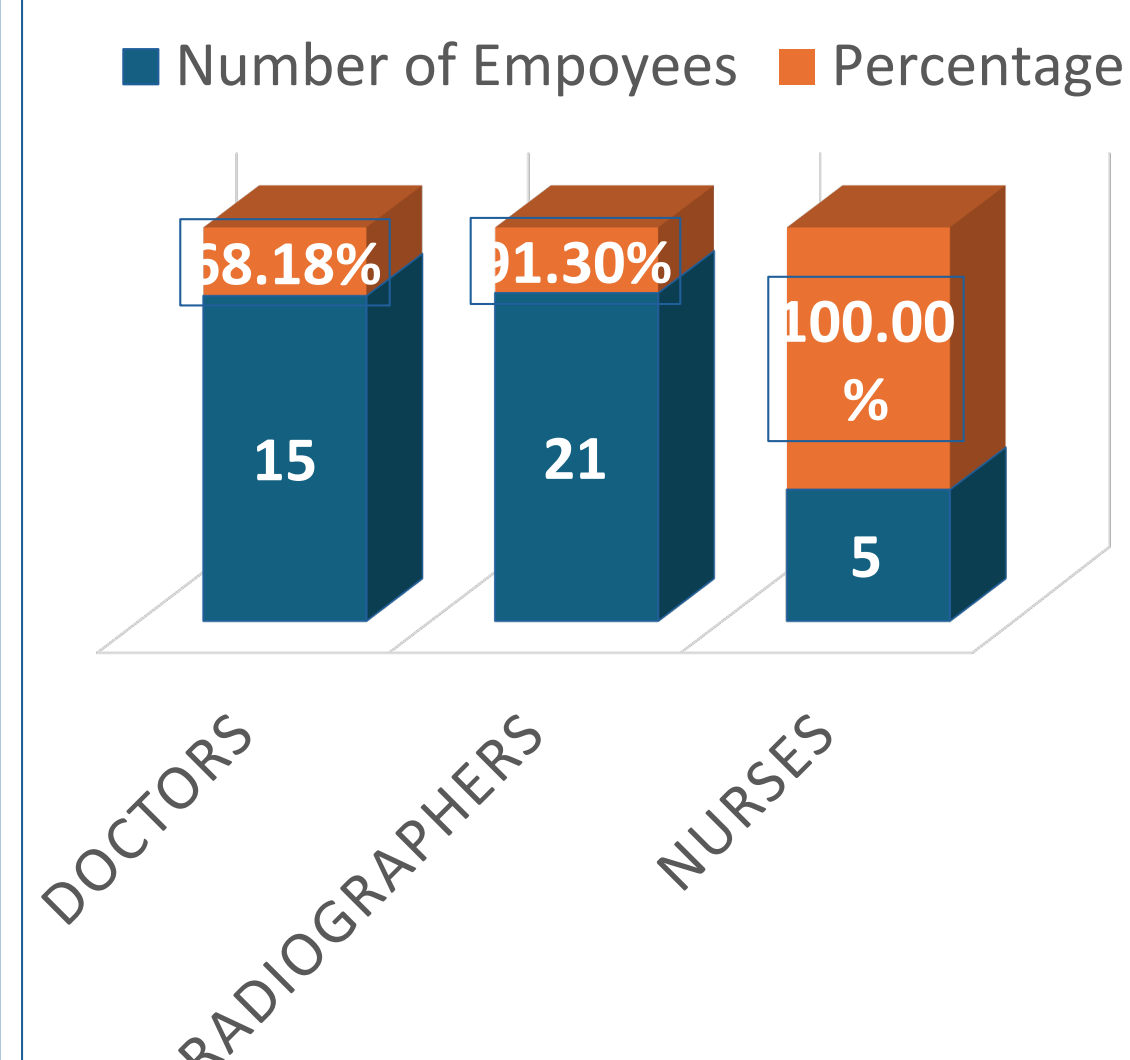
KNOWLEDGE ON EMERGENCY CONTACT NUMBER - RE-AUDIT



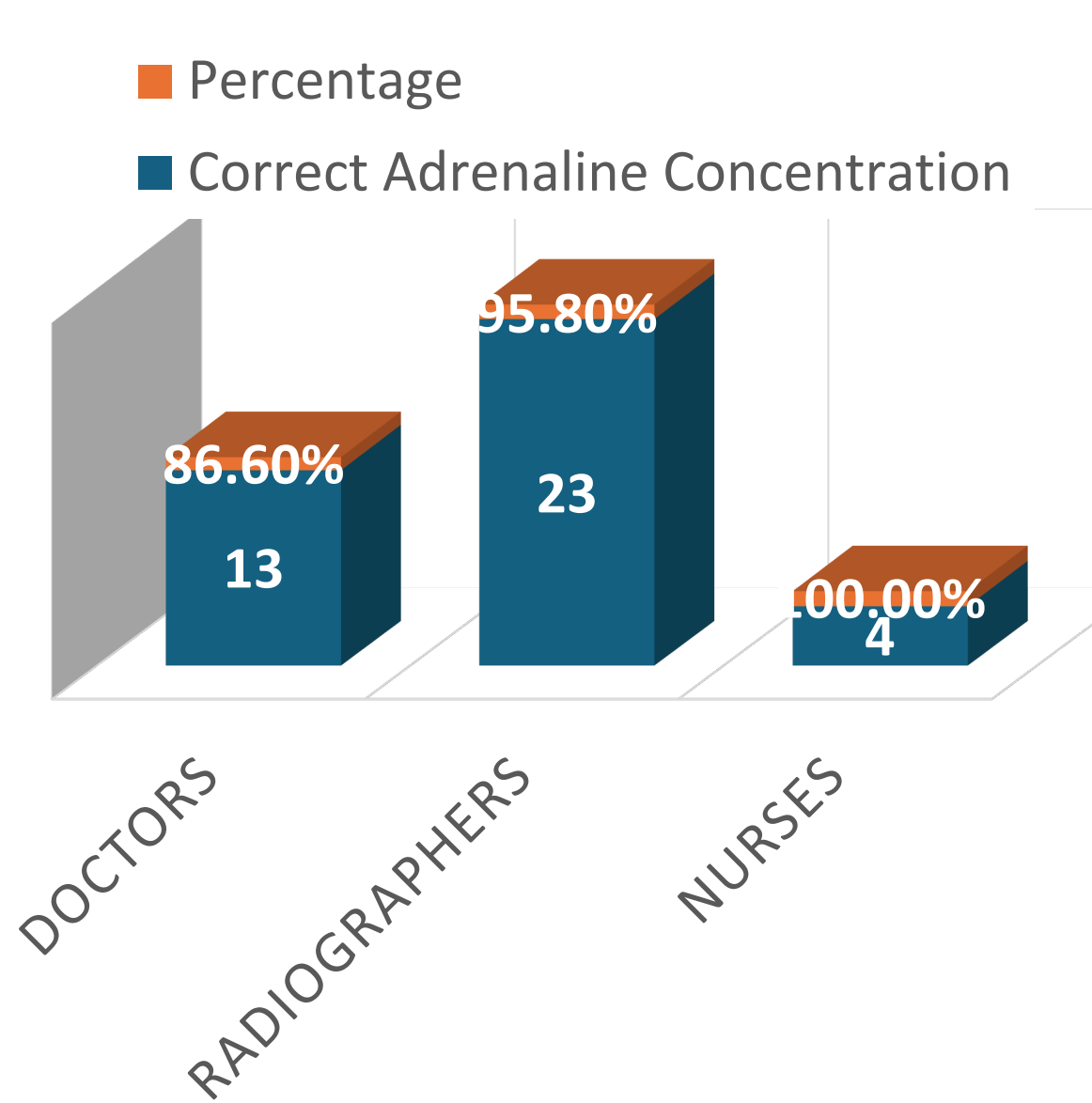
KNOWLEDGE ON EMERGENCY CART OF THE DEPARTMENT: AUDIT



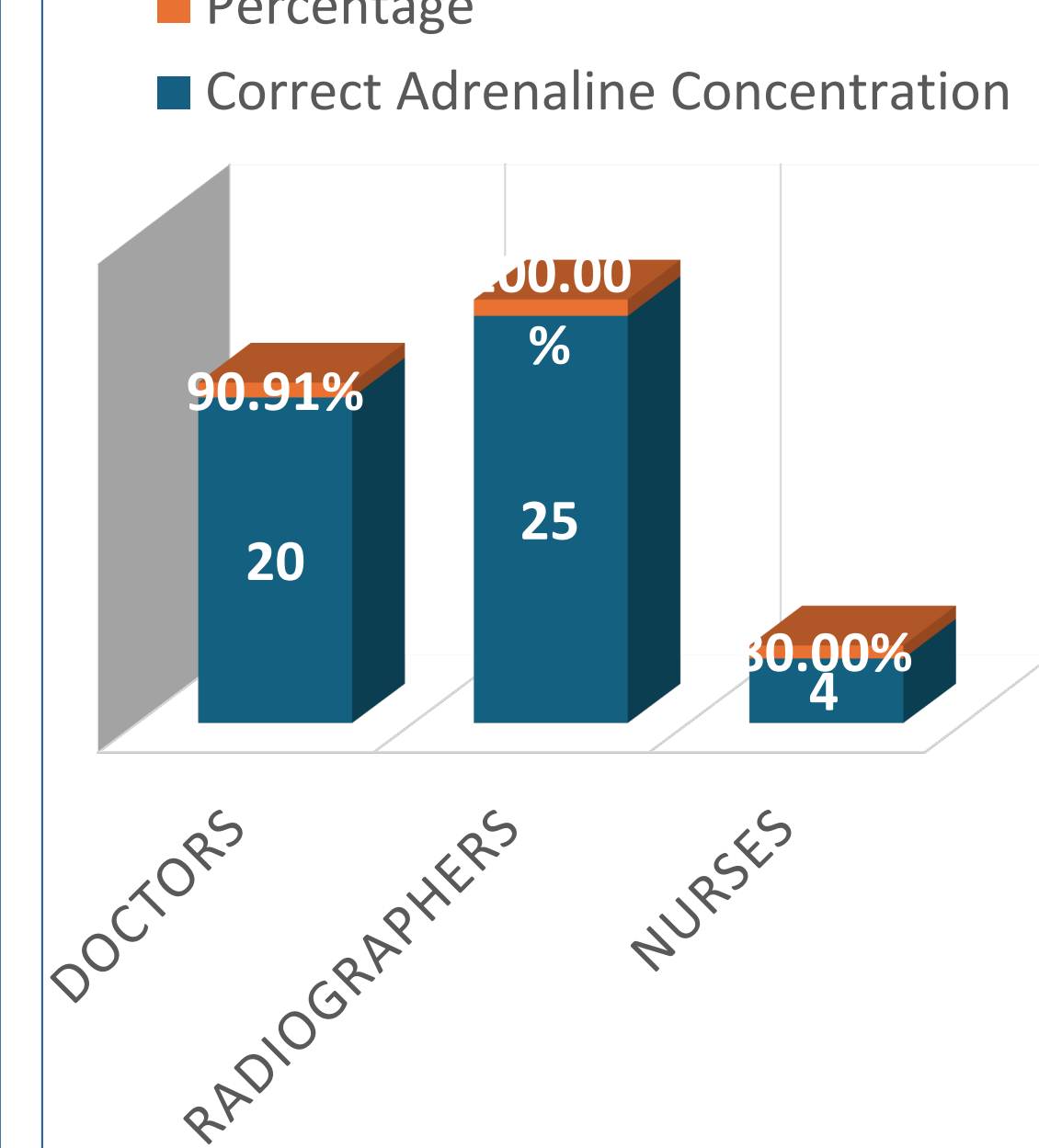
KNOWLEDGE ON EMERGENCY CART OF THE DEPARTMENT: RE-AUDIT



KNOWLEDGE ON ADRENALINE CONCENTRATION: AUDIT



KNOWLEDGE ON ADRENALINE CONCENTRATION: RE-AUDIT



Action Plan

Educational poster displayed in CT areas and notice boards.

Published in governance newsletter, emailed to radiologists, shared with ED and acute medicine teams.

Management of Mild to Severe Iodinated Contrast Medium Reactions
RANZCR Iodinated Contrast Guidelines (updated 2018) / Standards for intra vascular contrast agent administration to adult patients- second edition
Emergency treatment of anaphylaxis- Guidelines for healthcare providers , Resuscitation council, UK (May 2021)
Dr. Chulangani Abayaratne

Adrenaline concentration 1:1000
Emergency Contact Number 2222

The Treatment of contrast reactions
Generalised anaphylactoid reaction

- Look for Airway, Breathing & Circulation compromise
- Call for resuscitation team.
- Remove the trigger.
- Suction airway, if needed.
- Elevate patient's legs, if hypotensive.
- Oxygen by mask (6-10l/min).
- Adrenaline: 1:1000 (0.5ml or 0.5mg) IM.
- IV fluids- crystalloids: 500ml-1000ml.

Laryngeal Oedema

- Oxygen by mask. (6 to 10l/min.)
- Adrenaline 1:1000 (0.5mg or 0.5ml) IM. Repeat as needed

IV Contrast medium extravasation

- Record details of the incident in CRIS and complete a Datix
- Elevate the affected limb.
- Apply ice packs to the affected area.
- If symptoms do not resolve, admit and monitor.
- Aftercare sheet to be given to ward/patient.
- Skin blistering, paraesthesia, tissue perfusion and increasing or persistent pain-4 hrs, severe injury, seek surgical advice (Plastic Surgeon)

Isolated Hypotension:

- Elevate patient's legs.
- Oxygen by mask (6-10l/min)
- IV fluid: rapidly, normal saline/lactated Ringers
- Hartmann's solution.
- Unresponsive: adrenaline 1:1000 (0.5ml or 0.5mg) IM. Repeat, as needed.

Vagal reaction (Hypotension & Bradycardia)

- Atropine (0.6-3mg) IV; repeat, if necessary, after 3-5 minutes to 3mg total (0.04mg/kg).

Emergency kit/cart is in the same room/within the premises of CT

Bronchospasm

- Oxygen by mask (6-10ml).
- B-2 agonist metered dose inhaler (2-3 deep inhalations).
- Normal Blood pressure adrenaline 1:1000 (0.1-0.3ml or 0.1-0.3mg) IM. (smaller dose for patient with coronary artery disease or elderly patients).
- Decreased blood pressure: adrenaline 1:1000 (0.5ml or 0.5mg) IM.

Urticaria

Scattered, transient: Supportive treatment/ observation.
Scattered, Protracted: appropriate H1-antihistamine (Chlorpheniramine) 4mg/4hr
If/Oral/IV
rowsiness+/hypotension may occur.
found: consider adrenaline. 1:1000 (0.1-0.3ml or 0.1-0.3mg) IM. Repeat as needed.

Nausea/vomiting

transient: supportive treatment.
ever: protracted: anti-emetic drug should be considered.

Conclusion

- Compliance improved (2.27% → 26%) but below target.
- Radiographers and nurses achieved RCR benchmarks on basic awareness; doctors unchanged at 54%.
- No link between tenure/training attendance and knowledge retention.

Further Action Plan

- Simulation training with Trust education unit. CT room demonstrations of anaphylaxis management.
- Hands-on practice: adrenaline preparation, IM administration.
- Regular sessions with practical engagement to reinforce protocols and close knowledge gaps.