

AUDIT OF HEAD CT – LENS EXCLUSION



Dr Fatima Ibrahim Shaikh
Radiology Department, Saint Mary’s Hospital , Isle of Wight NHS Trust , UK

INTRODUCTION

CT heads are one of the most common investigations performed in radiology department across the country.Exclusion of the lens on a standard CT brain examination is ideal reducing the radiation dose to the eyes and the likelihood of lens damage and cataract formation.

AIMS

Assess & improve current compliance of eye lens exclusion of CT brain scans at St Mary’s hospital with RCR Guidance

METHODS

A total of two audits over a period of eight months to look at the rate of lens exclusion on CT brain examinations by random review of 50 consecutive CT brain scans from 08/11/2022 to 11/12/2022 for Phase 1 and 12/06/2023 to 15/06/2023 for Phase 2. Scans where the examination of the orbits was a requirement were excluded.

RESULTS & INTERVENTIONS

- Only 12 % (6/50) of examinations included in our initial study complied with the Eye Lens Exclusion standard.
- First Action Plan**
- The audit report and recommendations circulated among the CT team and raddiographers via emails and oral presentations.
 - Protocol and positioning advice to CT radiographers , Patient ‘chin-down’ head positioning and radiographic baseline (**Scan parallel to supra orbito meatal line starting from the superior orbital rim and not the orbitomeatal line**).
 - Radiographers’ awareness /education of axial CT appearance and importance of Eye lens Exclusion. (Figure 1).
 - Displaying reminder posters in all CT consoles. (Figure 2).
 - Re-audit to ensure implementation of interventions.

Reaudit demonstrated Exclusion in 48 % (24/50) cases.

- The data suggests that scanners with gantry tilt capability /chin tuck help reduce inadvertent lens scanning.
 - Age distribution: > 50% of patients were > 75 years , Older age groups more likely to have lenses scanned than younger age groups. (Figure 3).
 - Outpatients more likely to have lenses scanned than non out patients. (Figure 4).
- Audit target may be adjusted to 90% considering the demographics in view of large of proportion of patients in older age group.

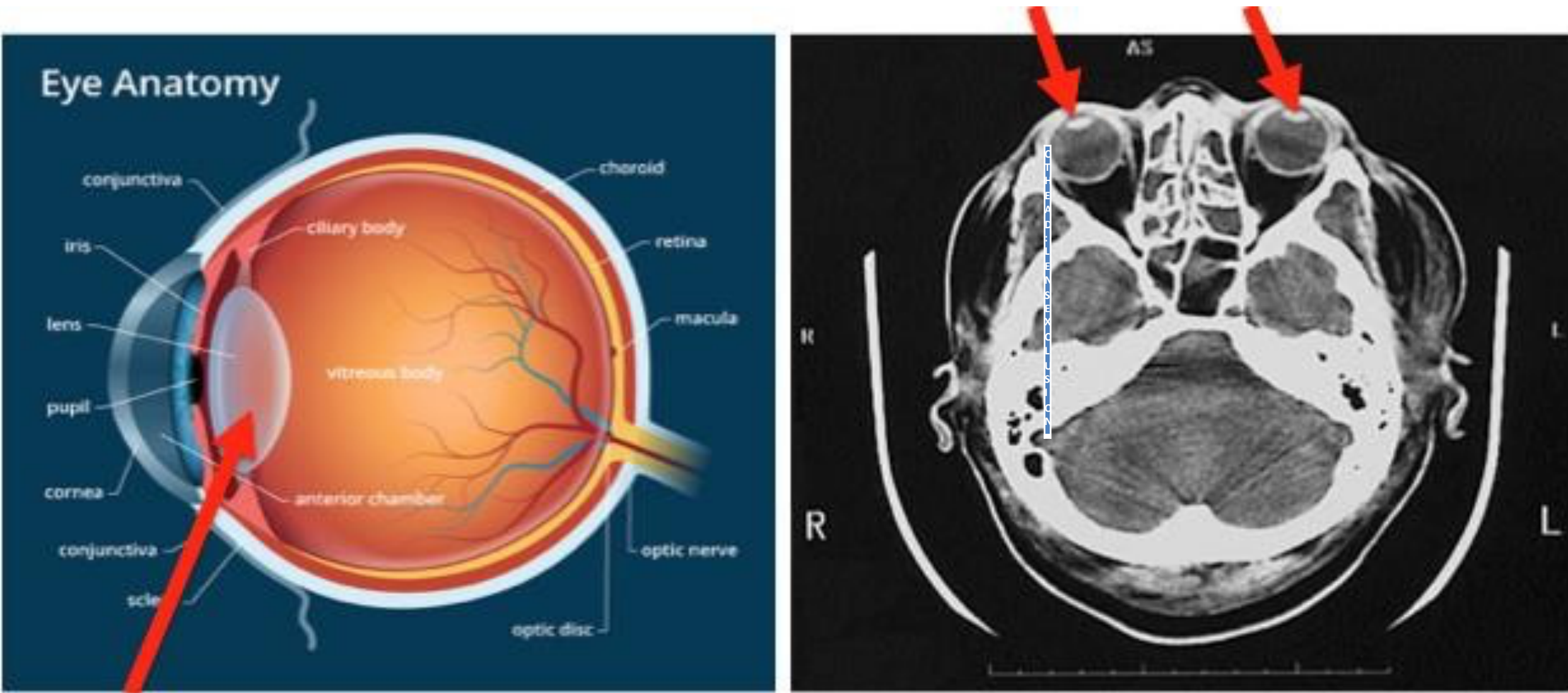


Figure 1. Eye Lens Anatomy (left) and axial CT appearance (right)

	Phase 1	Phase 2
Total	n=50	n=50
Lens exclusion overall %		
Both lenses excluded	6/50 (12%)	24/50 (48%)
One lens excluded	3/50 (6%)	4/50 (8%)
No lens excluded	41/50 (82%)	22/50 (44%)

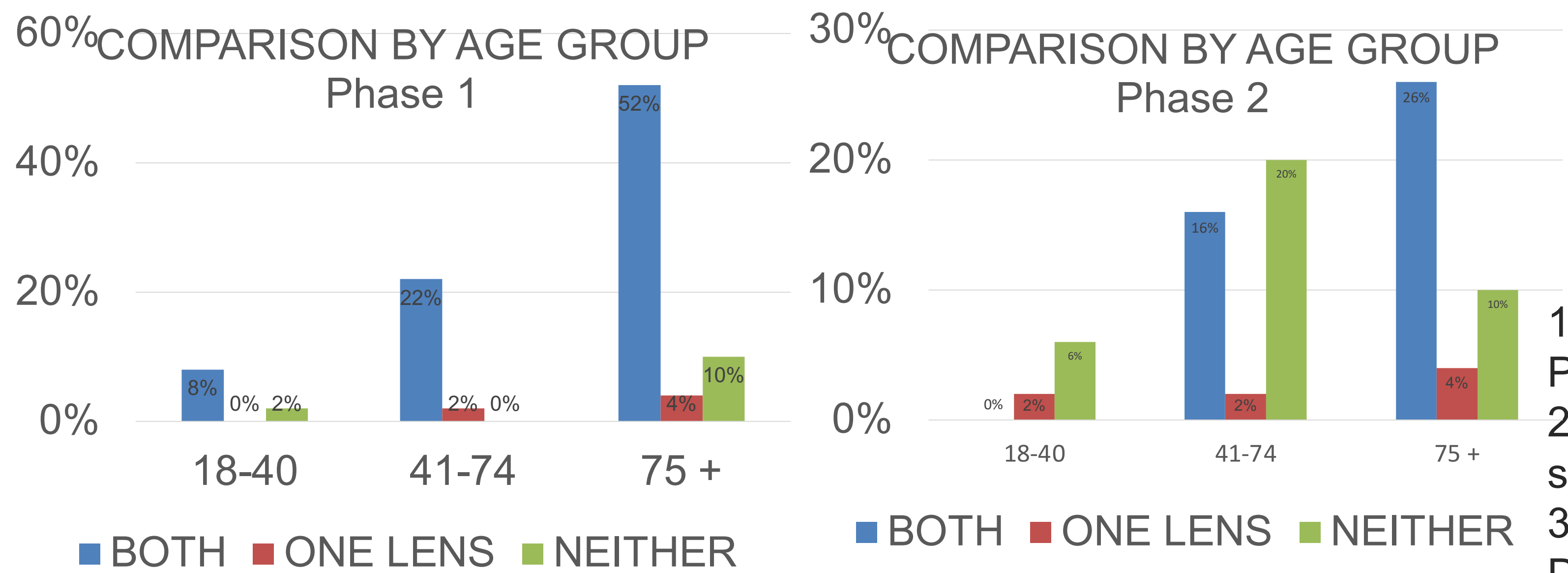
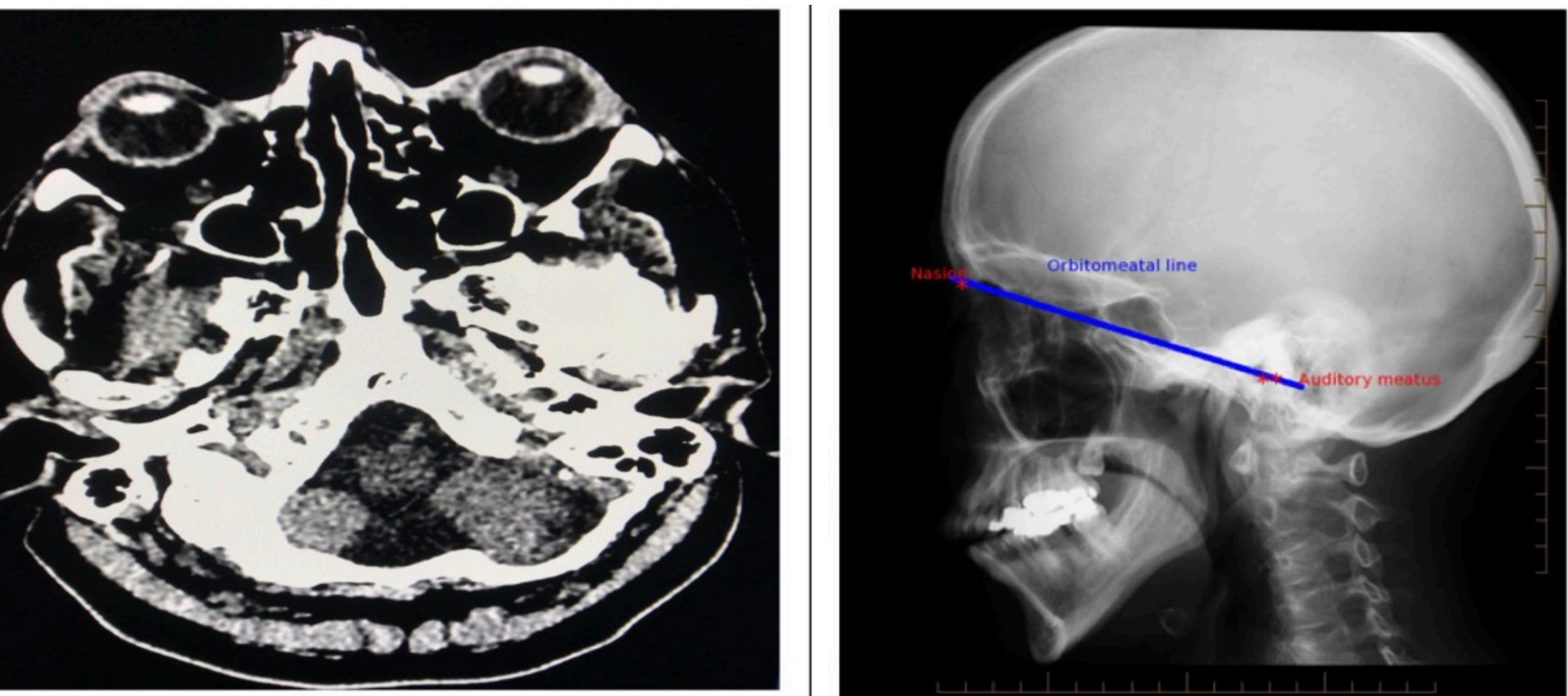


Figure 3.

Figure 2. Reminder Poster displayed in CT Control Room.

Poster to be Displayed in all CT Consoles

CT HEAD : LENS EXCLUSION



To protect the patient from radiation-induced cataract:

- Advise the patient to **CHIN TUCK**
- Scan from **Superior -Orbito-Meatal (S.O.M) line**

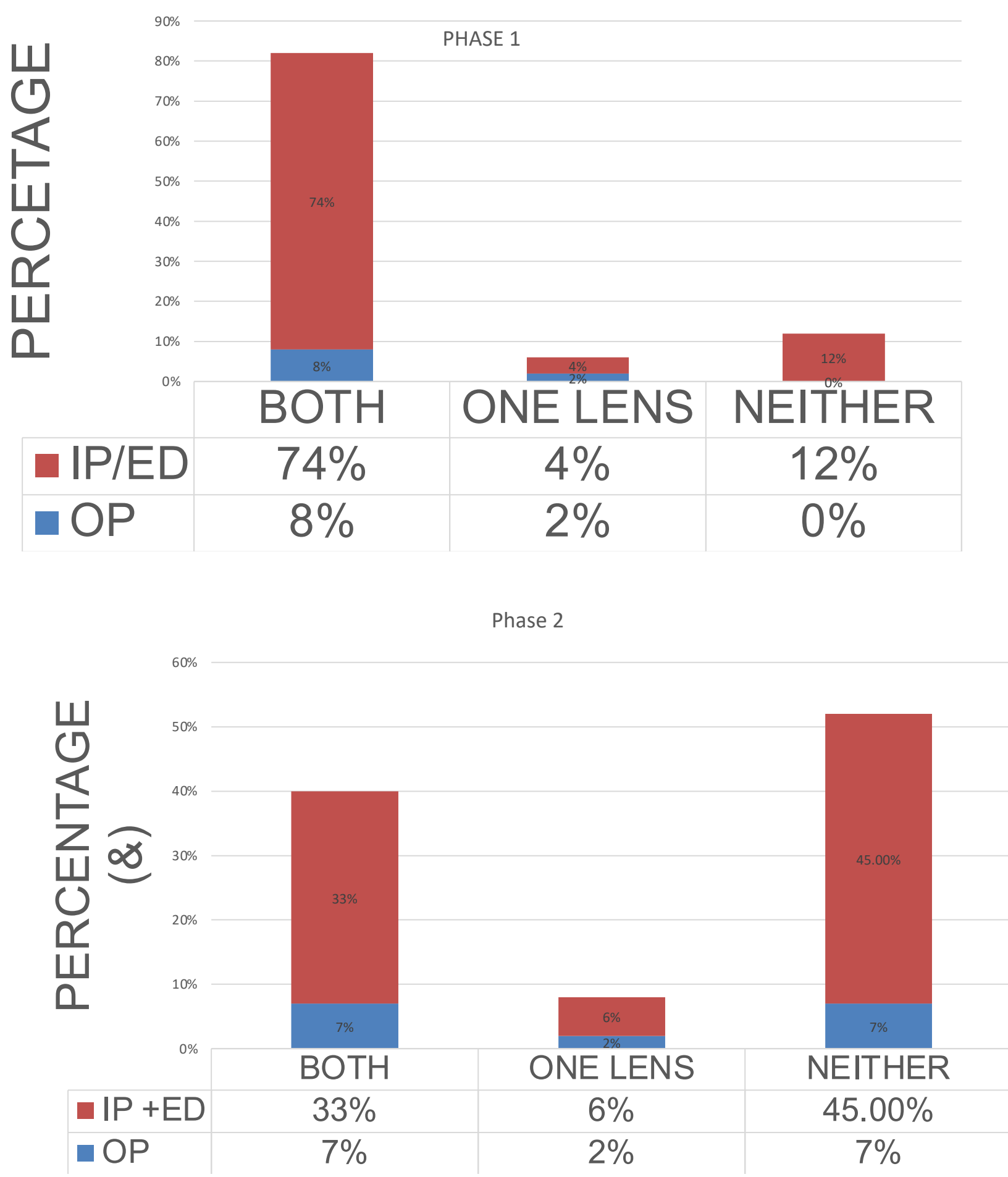


Figure 4.

CONCLUSIONS

We have significantly improved Eye Lens Exclusion at our hospital using a number of measures, with particular focus on increasing Radiographers’ awareness of the importance of appropriate CT Head Examination planning.

Compliance is still very far from the 100% target.

FURTHER WORK

To further increase compliance with CT Eye Lens Exclusion we aim to continue to focus on improving Radiographer awareness with regular Teaching sessions and regular surveillance/audit.

REFERENCES

- Lens Dose in Routine Head CT: Comparison of Different Optimisation Methods with Anthropomorphic Phantoms. AJR:204: 2015; 117-123
- The Risk of Cataract Associated with Repeat Head and Neck CT studies– a nationwide population based study. AJR 201:2013; 626-630
- National Radiological Protection Board. Protection of the Patient in X-ray Computed Tomography. Didcot: NRPB, 1992.
- Royal College of Radiologists. Head CT - Lens Exclusion. Royal College of Radiologists. 2022. Available from: <https://www.rcr.ac.uk/audit/headct-lens-exclusion>