

Ophthalmology Never Events: A 12-Year Retrospective Analysis Across NHS England

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BACKGROUND & METHODS

INTRODUCTION

Ophthalmology performs over **1 million procedures annually** in England. Never Events (NEs) are serious, largely preventable incidents which should never occur if available preventative measures are followed. Long-term national trends have not previously been extracted or analysed for ophthalmology.

OBJECTIVES

- Quantify long-term incidence of ophthalmology-specific NEs in NHS England (2013–2025)
- Characterise dominant error types, proportional burden and trends
- Propose internationally scalable safety interventions

DATA SOURCES

- All NHS England Never Events annual reports (n=12), drawn from StEIS
- Hospital Episode Statistics (HES) — eye procedure codes C01–C91
- NEs identified by explicit anatomical or procedural reference to ophthalmology
- Generic events (e.g. 'wrong site surgery') without eye specificity excluded

STATISTICAL ANALYSIS

- Descriptive statistics: Microsoft Excel
- Trend analysis: simple linear regression
- Year index (1–12) as independent variable; NE rate/10,000 procedures as dependent variable
- Significance threshold: $p < 0.05$

ETHICS

All data extracted from publicly available, fully anonymised, aggregate NHS England databases. No ethical approval required.

KEY FINDINGS

283

Ophthalmology NEs over 12 years

5.76%

of all 4,914 NHS NEs were ophthalmic

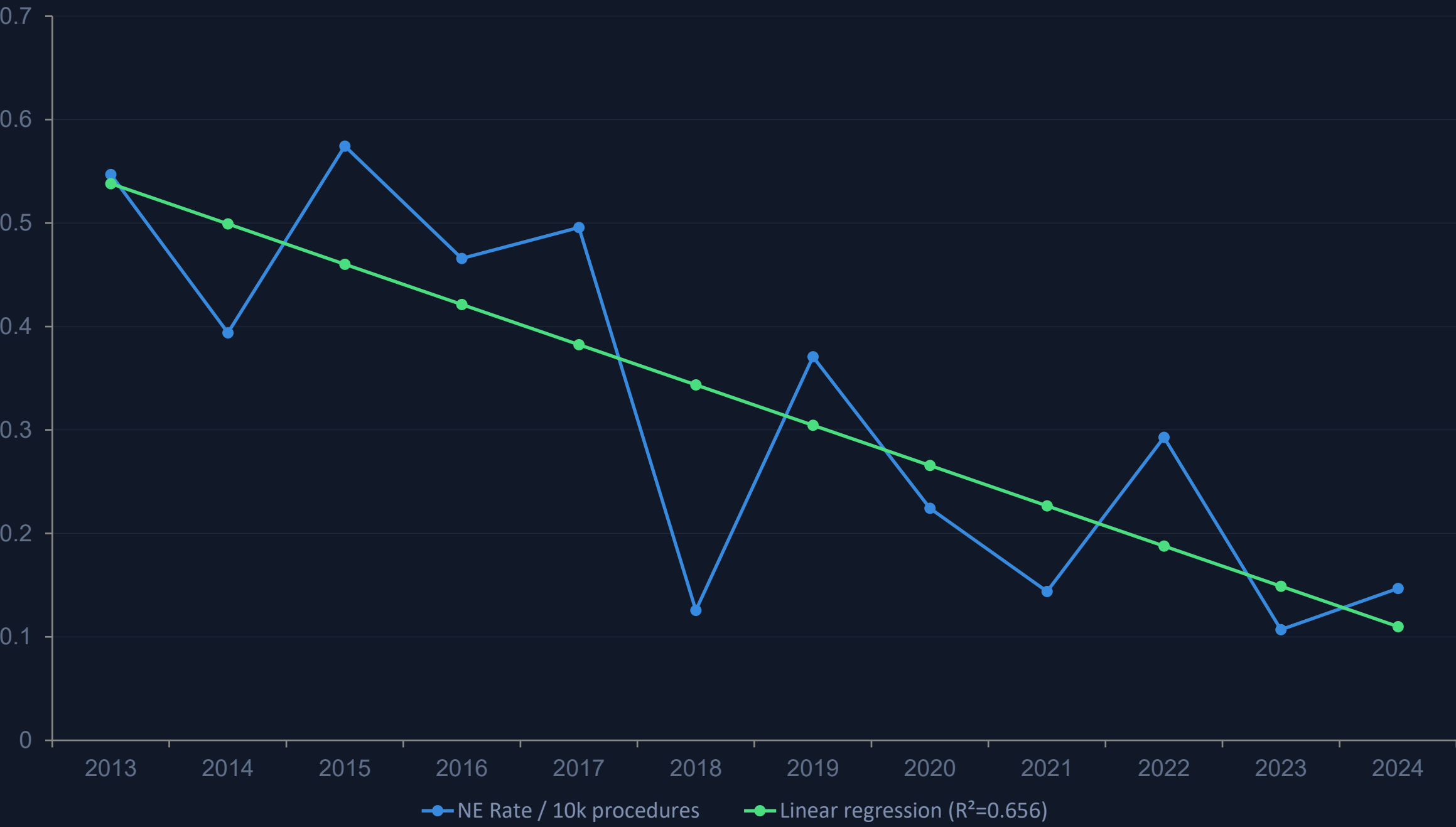
3.10

NEs per 100,000 procedures

9.13M

Total ophthalmic procedures 2013–25

ANNUAL NE RATE PER 10,000 PROCEDURES — WITH LINEAR REGRESSION



REGRESSION RESULTS (GraphPad Prism)

−0.039

slope/year ($p=0.0014$)

$R^2 = 0.656$

variation explained by time

~2028

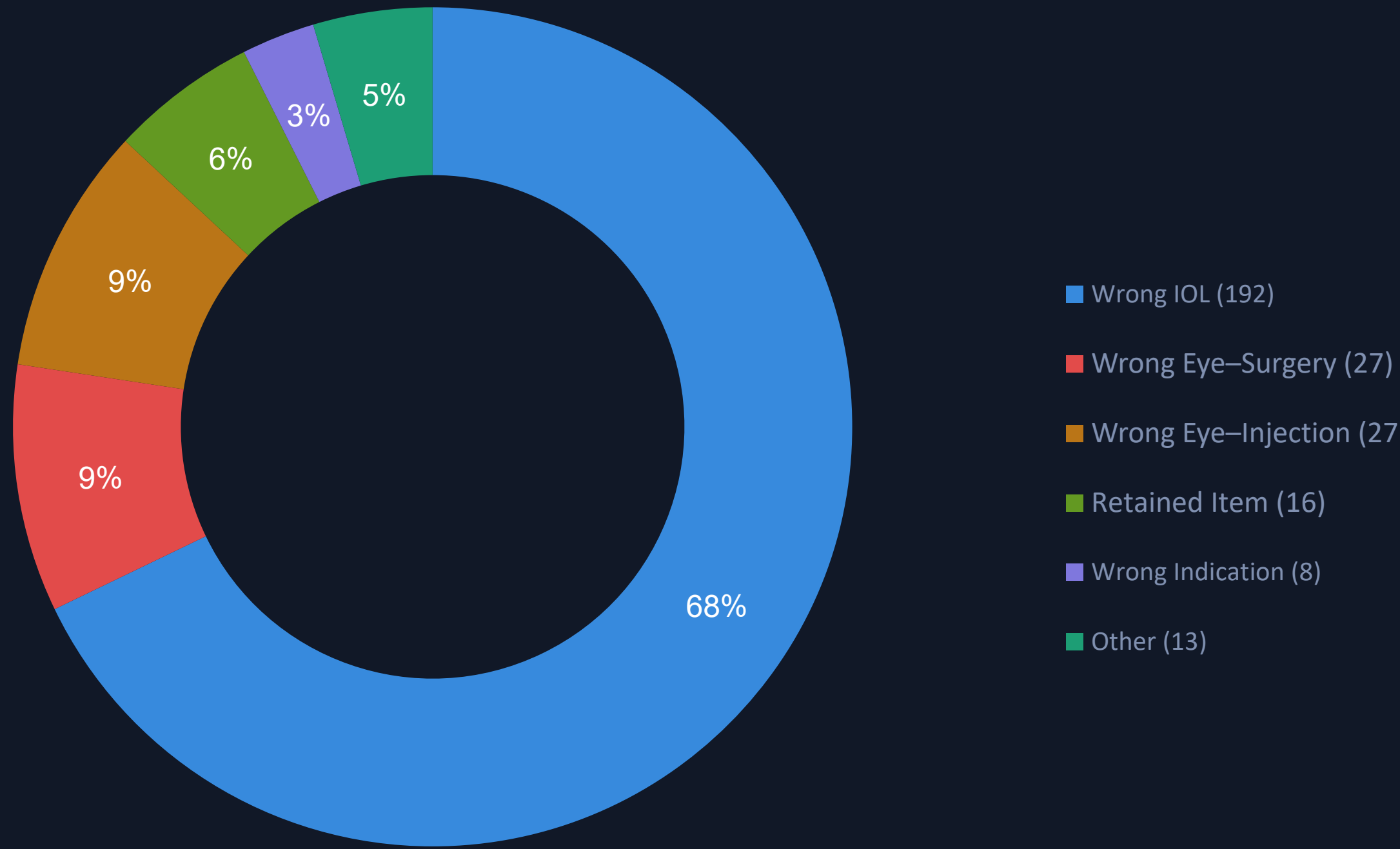
projected zero NE rate (yr 14–15)

ANNUAL DATA (2013–2025)

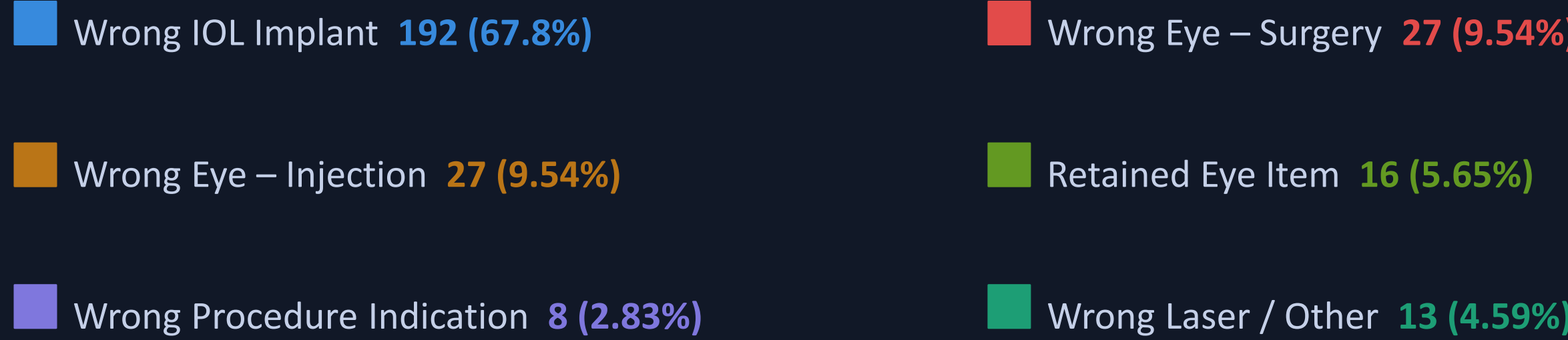
Year	NEs	Procedures	Rate/10k
2013-14	36	658k	0.547
2014-15	28	711k	0.394
2015-16	41	714k	0.574
2016-17	33	709k	0.466
2017-18	34	686k	0.496
2018-19	9	717k	0.126
2019-20	28	755k	0.371
2020-21	10	446k	0.224
2021-22	11	765k	0.144
2022-23	27	922k	0.293
2023-24	11	1028k	0.107
2024-25	15	1021k	0.147

ERROR TYPE DISTRIBUTION

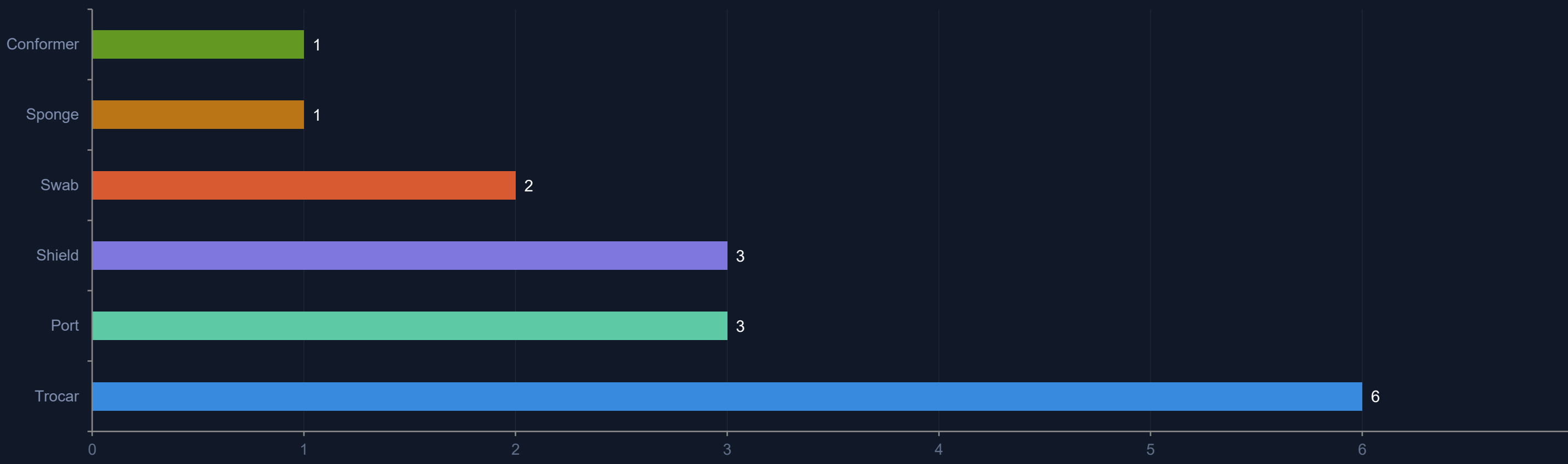
DISTRIBUTION OF OPHTHALMOLOGY NEVER EVENT CATEGORIES



BREAKDOWN BY CATEGORY



RETAINED ITEM SUB-TYPES (n = 16)



IOL ERROR: DOMINANT PATTERN

Incorrect IOL implantation was the leading NE in **every single year** of the 12-year study period, accounting for **67.8%** of all ophthalmic NEs. Mean of ≥ 16 incorrect IOL implantations per year in England.



DISCUSSION & CONCLUSIONS

OVERALL SAFETY TRAJECTORY

Despite rising national surgical volume, ophthalmology NEs have fallen markedly over 12 years — a **substantial national patient safety success**. The declining trend supports the efficacy of existing NHS safety frameworks including the WHO Surgical Safety Checklist (2008) and electronic patient records.

IOL VERIFICATION

- Multi-step workflow: biometry → lens selection → verification → implantation
- Existing safeguards include WHO checklist, colour-coded packaging, theatre timeout
- Despite these, ≥ 16 incorrect implantations/year persist — failure at ≥ 1 workflow step
- Digital IOL verification systems piloted in several NHS trusts show significant promise
- More stringent electronic cross-checking and dual-verification pathways recommended

WRONG SITE — INJECTIONS & SURGERY

- High-volume outpatient injection clinics present a fast-paced environment — increased risk of laterality error
- Visible site marking essential including in the outpatient setting prior to each procedure
- Mandatory pause/timeout required prior to each intravitreal injection
- Cross-check patient records and patient's self-reported laterality before commencing
- Consequences include irreversible vision loss in the intended treatment eye

STUDY LIMITATIONS

- 4 years (2018-19, 2020-21, 2023-24, 2024-25) used generalised reports — possible NE underreporting
- NHS trust participation in StEIS reporting grew over time — earlier years may be undercounted
- Never Events list criteria changed annually across the study period
- Generic events without ophthalmology specificity excluded — may underestimate true burden

CONCLUSION

This first national 12-year analysis provides a **critical benchmark** for ophthalmic surgical safety. The significant downward trend in NE rates, despite rising volumes, reflects meaningful progress. Persistence of IOL errors and wrong-site events highlights targeted areas for enhanced safety protocols. These findings offer **internationally transferable strategies** to strengthen ophthalmic surgical safety worldwide.