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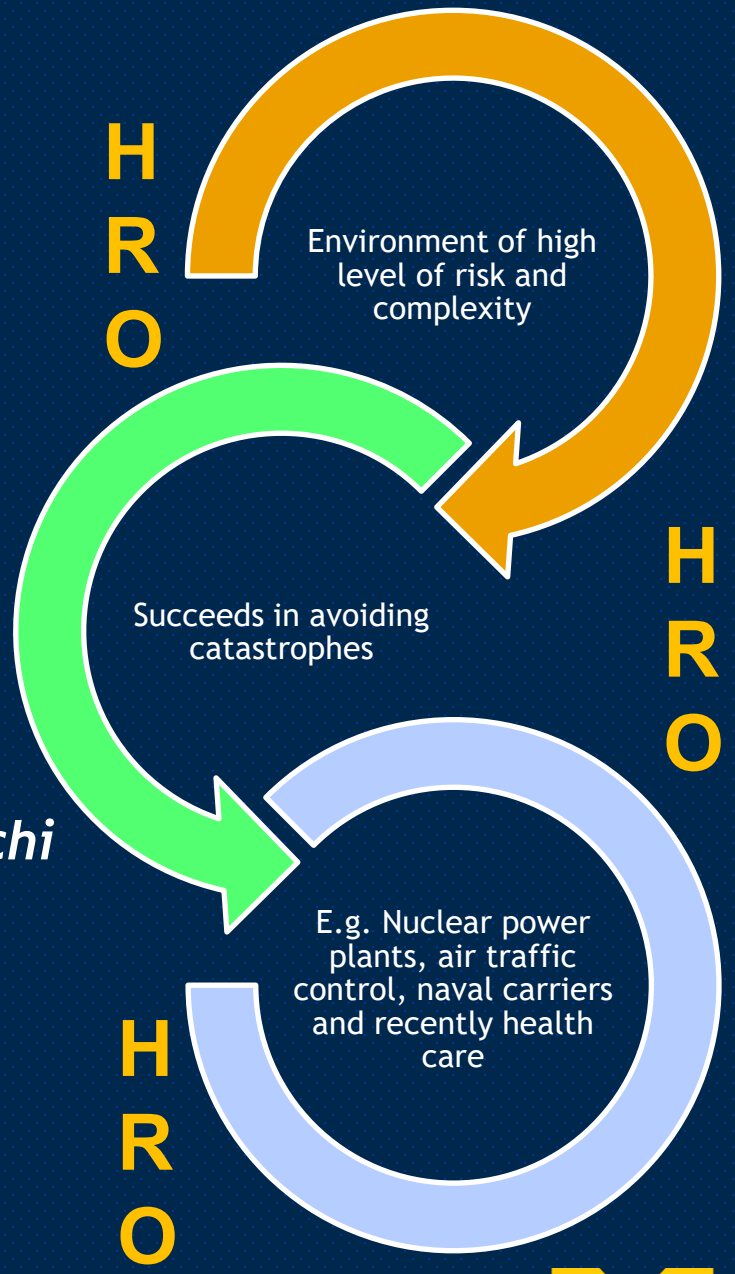
Impact of High Reliability Organization (HRO) training on extent and effectiveness of risk reporting in Radiology at a large academic center



Ashok Srinivasan, Crystal Blank, Glenn Houck, Elizabeth Lee, Prachi Agarwal

Department of Radiology, Michigan Medicine

University of Michigan, Ann Arbor

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BACKGROUND

- High Reliability Organizations (HROs) achieve safety, quality, and efficiency goals by employing 5 principles: -
- *Sensitivity to operations: Work with frontline employees*
- *Reluctance to simplify: Embrace complex solutions for complex problems*
- *Preoccupation with failure: Do not ignore failures*
- *Deference to expertise: Expertise valued over authority*
- *Practicing resilience: Anticipate and improvise*

INTRODUCTION

- Our organization transitioned to an HRO model in 2019 including an extensive and focused employee training reiterating the non-punitive nature of reporting quality/safety concerns, which rely on identifying system issues rather than individual level factors.

- The aim of this study was to evaluate the impact of HRO training on the extent and effectiveness of risk reports. This ties with 'preoccupation with failure' and 'sensitivity to operations' principles.

- Identification of issues helps establish targeted interventions

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METHODS

- In this study, we analyzed reporting of all risk events pertaining to Radiology.
- The data was analyzed from 1/1/2018 till 12/31/2023.
- The trends in risk reporting after HRO training in 2019 were evaluated.

- The following metrics were measured : -
  - Overall volume of risk reports (events)
  - Number of events categorized as >E3 (defined as more than temporary harm-physical)
  - Number of reports filed by different employee types &
  - Number of action items (including local reviews, apparent cause analysis, multidisciplinary reviews).

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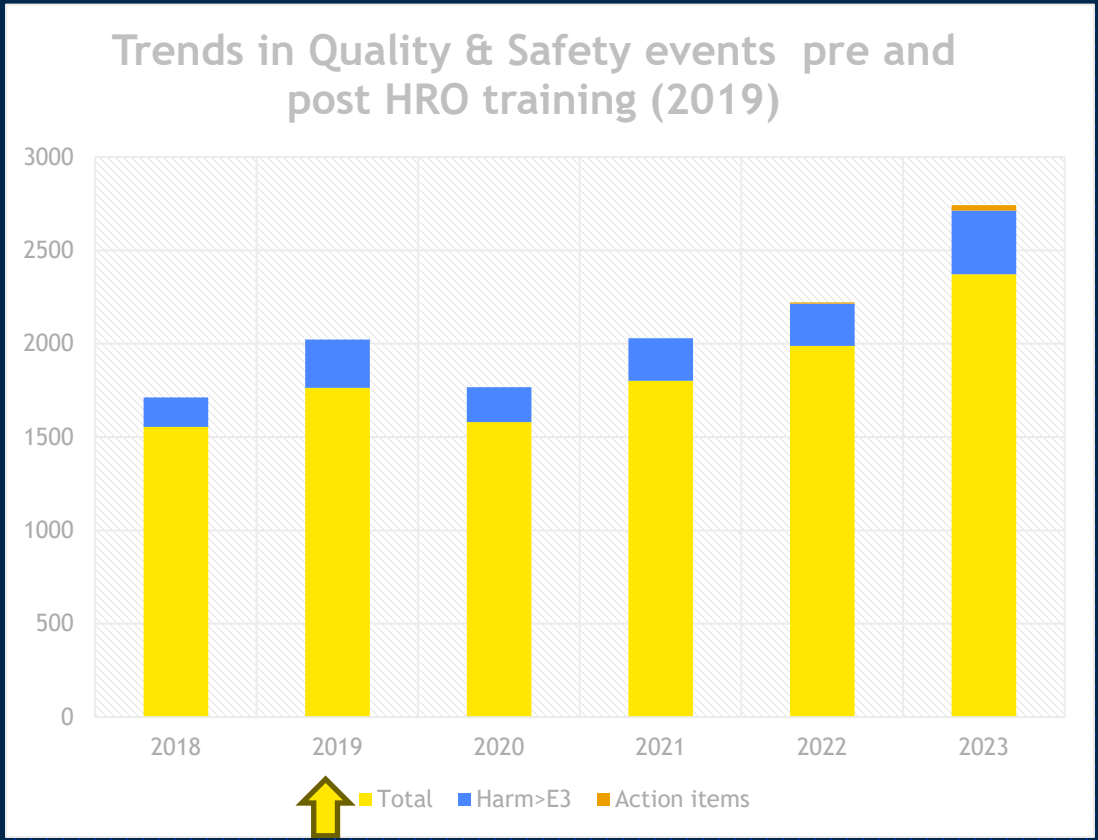
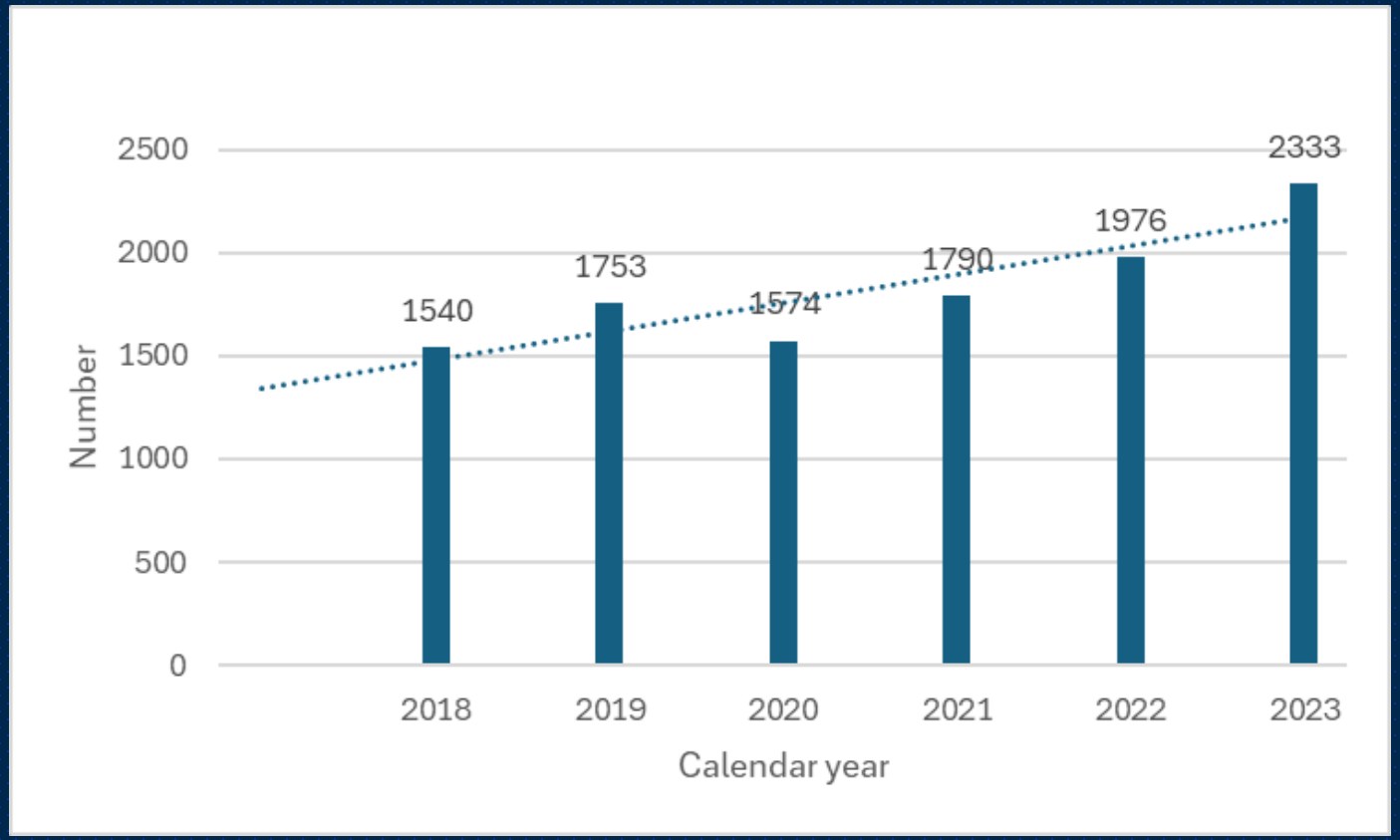
Total number of risk events per year





- There was a steady increase in overall risk events reported year after year (exception: decrease in 2020 due to COVID related service shutdowns)

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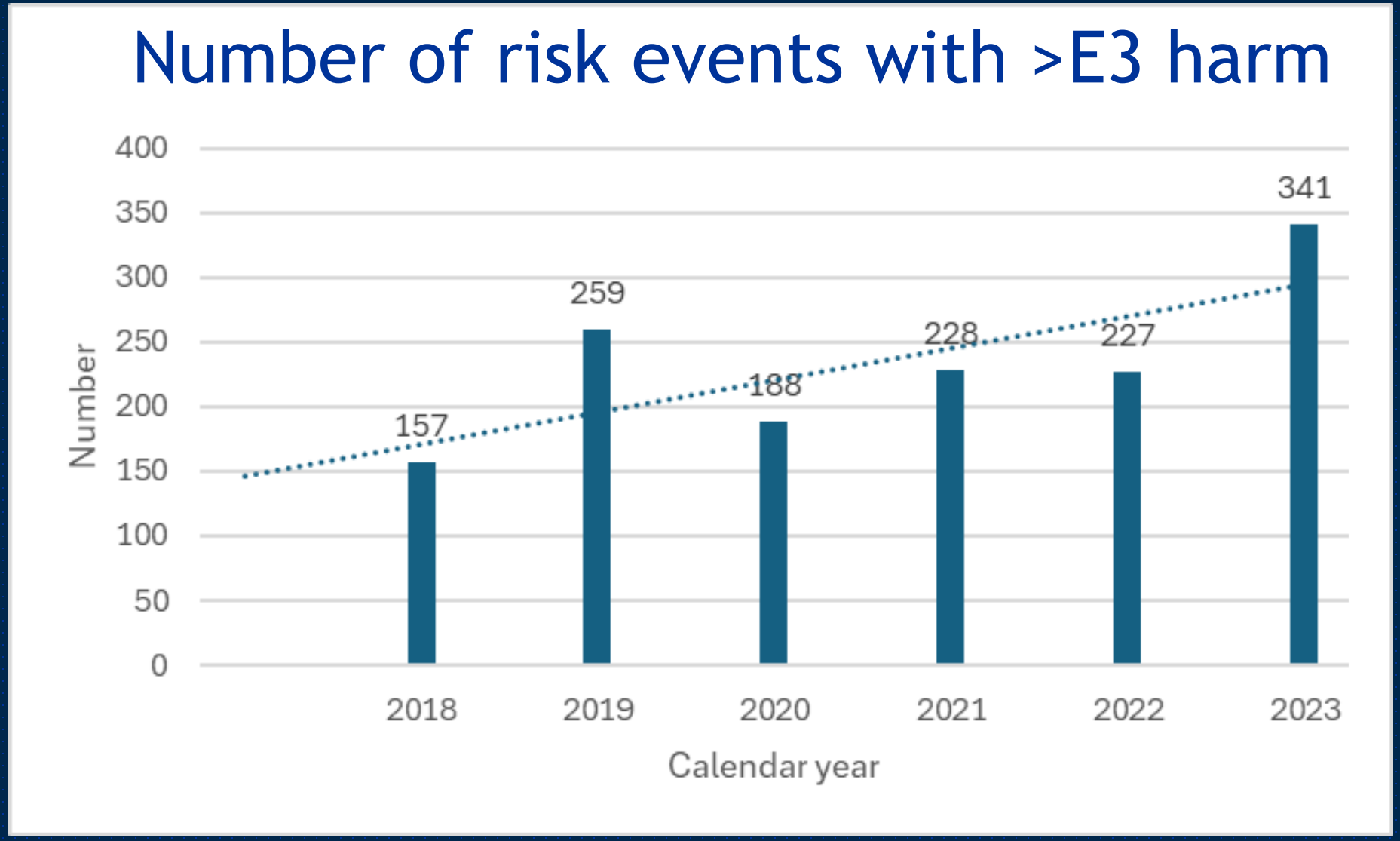
Number of risk events with >E3 harm



- Number of risk events with >E3 harm also showed the same trend

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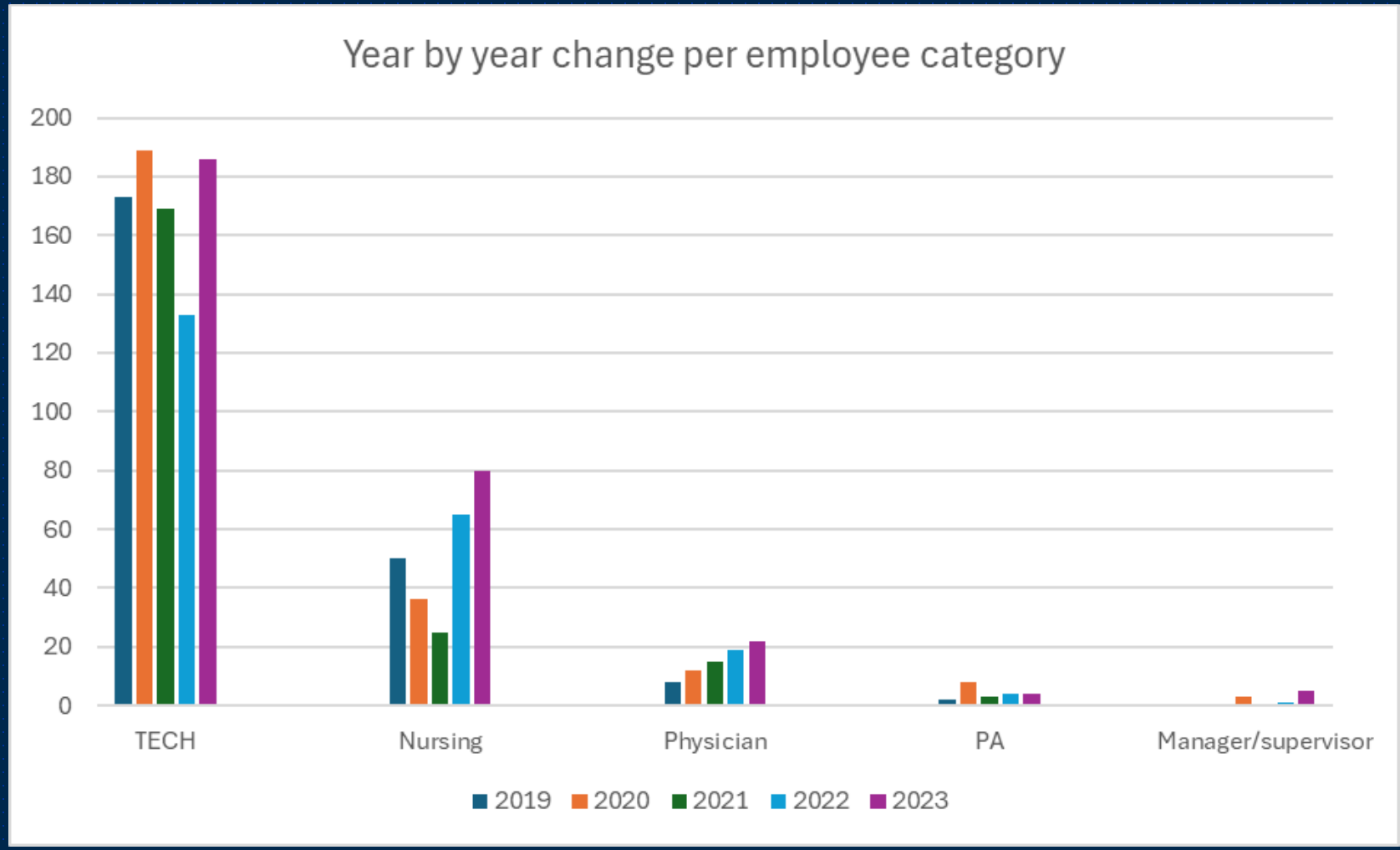
- *Technologists were responsible for the majority of filed risk reports*

- There was a trend with overall increase in risk event reporting by nursing and physicians. This could imply increased awareness about the process amongst these groups after HRO training.



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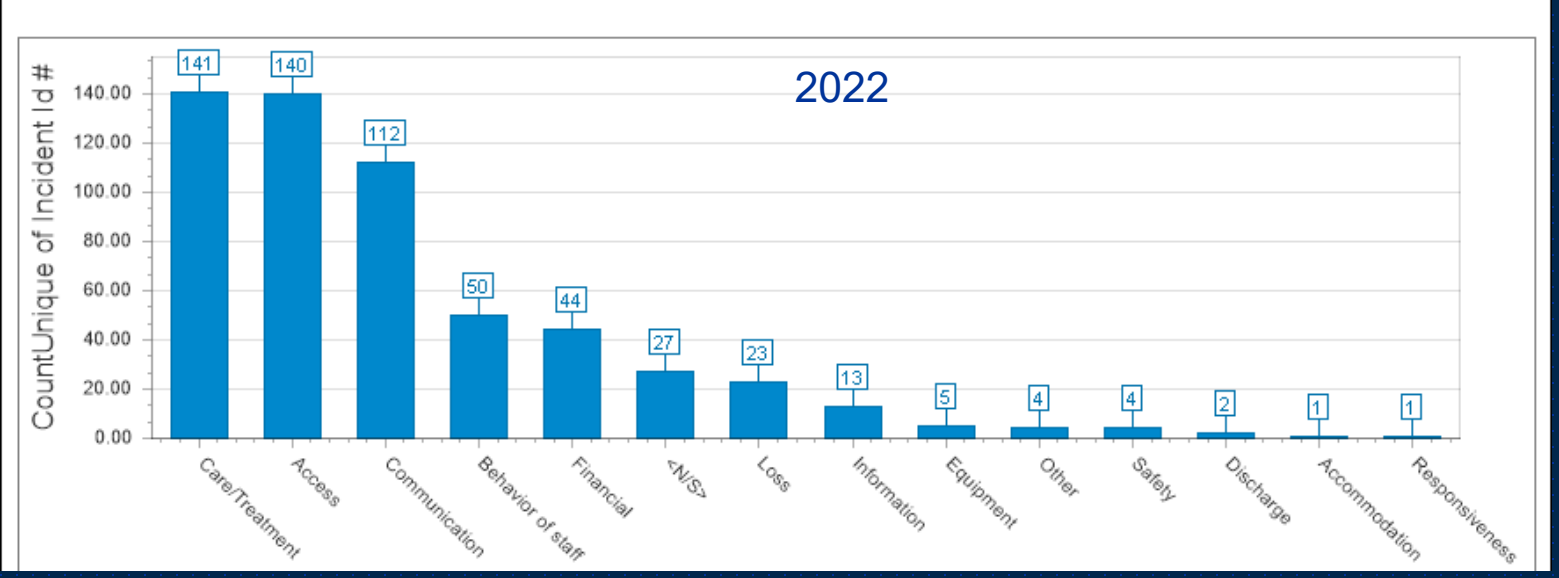

- Focused analysis of the types of risk events reported demonstrated the top three reasons were : -
  - *Care/treatment*
  - *Access issues*
  - *Communication failure*

Specific interventions which have resulted from analysis of risk reporting in some of these domains include:

Care/treatment- Several measures are initiated with few examples as follows:
- Reduction in wrong line placement in Interventional Radiology using various measures after Root cause analysis.
- Radiology procedural peer learning conference initiated at departmental level, apart from diagnostic peer learning conferences at divisional subspecialty level

Improved access
-MR enterography and MR cord compression for ED patients: This became possible by reducing the protocols and generalizing the MR protocol to more than one scanner making it easier to schedule more cases.

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Action items

- Data for action items was only available after 2021 and showed an increase in actionable items from 2022 to 2023.

Type of review	CY 2022	CY2023
Local review	4	23
Apparent cause analysis	0	3
Multidisciplinary review	2	2

- Establishing a Program Manager for Radiology Safety in 2021 was critical for formalizing this process which was previously done on an ad hoc basis

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DISCUSSION

- The year over year increase in risk reports can be attributed to the HRO training that emphasizes the nonjudgmental/nonpunitive nature of the process

- The HRO principle that the reviews should focus on identifying system gaps and not individual errors could be a factor encouraging more physicians and nurses to file reports year after year at our institution

- Creating clear categories and subcategories for risk reports facilitated identification of systemic issues and creation of action plans for addressing them

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Thank you for your time!

- *ashoks@med.umich.edu for all comments and suggestions*

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