



Brief Report

Pathology trainees rarely report safety incidents: A review of 13,722 safety reports and a call to action

Cynthia K. Harris, MD^a, Yigu Chen, MPH, PMP^b, Benjamin Yarsky, MASc^c, Richard L. Haspel, MD, PhD^d, Yael K. Heher, MD, MPH, FRCP(C)^{a,*}

^a Department of Pathology, Massachusetts General Hospital and Harvard Medical School, Boston MA, USA

^b Memorial Sloan Kettering Cancer Center, Weill Cornell Medicine, New York NY, USA

^c Division of Quality and Performance Improvement, Children's Hospital of Los Angeles, Los Angeles, CA, USA

^d Department of Pathology, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA

A B S T R A C T

Reporting and understanding patient safety incidents is a cornerstone of improving patient care quality and safety. The Accreditation Council for Graduate Medical Education specifically mandates that physician trainee education include participation in the recognition, reporting, and root cause analysis of patient safety incidents. Studies on safety event reporting, however, have consistently shown that attending physicians submit few safety reports, and trainees submit even fewer. We undertook a study to assess the rate at which pathology trainees report patient safety events relative to the rates at which trainees in other medical specialties do. We performed a retrospective analysis of 13,722 safety reports submitted to our medium-sized Academic Medical Center's incident reporting system. We then analyzed those reported by trainees (residents and fellows), and then further drilled down on the subset of trainee-reported safety events reported by pathology trainees. Despite accounting for over 5% of all types of trainees at the enterprise level, pathology trainees accounted for only 0.5% of all trainee safety reports. Our findings represent a call to action for pathology training programs to engage their residents and fellows in quality and safety initiatives, to understand and remove barriers to safety event reporting for vulnerable populations such as trainees, and to empower trainees to confidently report safety risks as valued frontline care providers.

Keywords: Safety events, Safety reports, Incident reports, Medical errors, Patient safety, Graduate medical education, Quality and safety

In 1999, the Institute of Medicine (IOM, now National Academy of Medicine/NAM) published *To Err is Human: Building a Safer Health System*.¹ One of the IOM/NAM's central messages was that reporting safety events is the foundation for understanding systemic risk and improving patient safety.² In keeping with the safety advancements made in other high-risk industries such as aviation, the IOM/NAM report specifically recommended that healthcare organizations improve the reporting of patient safety events by submitting "incident reports" or "safety reports."³ Analysis of the large amounts of data garnered from safety reports over the years has identified a troubling trend: very few safety reports are submitted by physicians.⁴ In a study of 92,547 adverse event reports across 26 hospitals, physicians (both attendings and trainees) submitted only 1.4% of these reports.⁵ Further analysis of those safety reports reveals an even more troubling trend: physician trainees—front-line workers uniquely situated to identify safety events, near-misses, and unsafe work conditions—are even less likely to report safety events than attending physicians.^{6,7} In one study, safety reports filed by resident physicians constituted <1% of all safety reports hospital-wide.⁸

The Accreditation Council for Graduate Medical Education (ACGME) has attempted to combat the low reporting of safety incidents by trainees by making patient safety a focus in the Clinical Learning Environment

Review (CLER).⁹ Within the broad category of patient safety, the ACGME has specifically identified trainee participation in safety reporting as a key educational priority.¹⁰ To promote such participation, the ACGME mandates, as part of their Common Program Requirement Milestones, trainee participation in safety event recognition, reporting, and root cause analysis.¹¹ Despite these coordinated national efforts, trainees continue to report less than their attending physician counterparts.^{8,10,12}

While some studies have looked at trainee reporting rates for safety events across specialties,¹³ others have focused specifically on trainee reporting in individual subspecialties.^{12,14,15} The safety reporting rate among pathology trainees has not been previously reported. Pathology residency has quality and safety principles built into training by way of exposure to the complex regulatory landscape of laboratory management (accreditation by the Association for the Advancement of Blood and Biotherapies (AABB), College of American Pathologists (CAP), and The Joint Commission, amongst others). The Clinical Pathology and laboratory communities, even more than Anatomic Pathology, have long prioritized quality control and error reduction.¹⁶ It is not known, however, whether by virtue of exposure to these concepts and to the culture of laboratory medicine, pathology trainees would be more or less likely than their clinical colleagues to report safety events affecting patient care.

* Corresponding author. Department of Pathology, WRN501, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114, USA.

E-mail address: yheher@mgh.harvard.edu (Y.K. Heher).

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An accurate understanding of error rates and safety event reporting in pathology has critical implications for healthcare delivery overall. Studies on error rates have shown that analytic errors in pathology are dramatically lower than in clinical medicine: medication errors and infection rates, for example, are >3000-fold more than the rate of analytic errors in pathology.^{16,17} When the entire testing phase is evaluated however, encompassing the pre-analytic, analytic, and post-analytic phases, the error rate in pathology rises substantially and becomes one of the most significant sources of medical errors in medicine.^{16,18} In 2018, ECRI Institute, a nonprofit organization dedicated to patient safety, quality, and cost-effective care, found in a review of 4355 safety reports in ambulatory care settings, 47% of safety reports involved diagnostic test issues.¹⁹ Of those 47%, 69% specifically involved “laboratory tests.” Worth noting as well is that most of the diagnostic testing incidents occurred in the pre-analytic phase (66%)—a number slightly lower than that found in other studies on pre-analytic errors in pathology (87%)²⁰—while 25% occurred in the post-analytic phase, and only 9% occurred in the analytic phase. These errors can have far-reaching implications as over 70% of all medical decisions are the direct result of one or more laboratory test results.²¹

Beth Israel Deaconess Medical Center (BIDMC), a Harvard Medical School affiliated hospital, has a structured procedure in place for reporting safety events. Following an incident affecting or potentially affecting (“near miss”) patient or employee safety, the involved staff member is encouraged to report the safety event via an institution-wide electronic safety event reporting system (RL Solutions).²² The submitted safety report describes the nature of the event, the circumstances surrounding the event, the individuals (employees and non-employees) involved, and the outcome of the event. Other details are added following a formal root cause analysis. RL Solutions incident reporting software is the hospital-sanctioned incident reporting system and is the institution’s preferred channel for reporting all safety concerns. Within the pathology department, an additional reporting outlet exists for laboratory safety events: a secure email distribution list (termed the “lab quality mailbox”) that pathology and non-pathology staff alike can email to report safety concerns to departmental leadership. The email server is intended to increase reporting of near-misses, non-harmful events, and unsafe conditions, rather than simply harmful events. While safety events can be reported anonymously or with some degree of anonymity via RL Solutions, no anonymity exists for emails sent to the lab quality mailbox

distribution list. Reports submitted through either channel are treated as confidential and investigated thoroughly.

To determine pathology trainees’ engagement in safety event reporting relative to their clinical colleagues, we examined the rate at which pathology trainees reported safety incidents relative to the overall rate of trainee reporting, across all specialties, at BIDMC. We performed a query to extract a full year (12-months) of all safety reports submitted at BIDMC using the RL Solutions incident reporting system. Using the categorical data built into each electronic incident report, we were able to isolate all safety incidents reported by trainees (both residents and fellows) across all specialties.

During the study period, 13,722 safety reports were filed across the institution. Of these, 400 (2.9%) reports were submitted by trainees (Fig. 1). While continued work should be done to encourage trainee reporting, it is worth taking a moment to reflect positively—at least, at the enterprise level—on a trainee-reporting rate that is three times higher than the trainee safety event reporting rate that has been documented in other earlier studies on the subject.⁸ Of those trainee-submitted 400 safety reports at BIDMC, only 2 reports were entered by pathology trainees (0.01% of total reports, 0.5% of trainee reports). On its own, this percentage is difficult to interpret, after all, pathology training programs are much smaller than those of internal medicine, for example. To adjust for program size, we next looked at the total number of trainees during the study period. BIDMC had an average of 679 trainees during the study period (the study period spanned two academic years), and 43 of them were pathology trainees. Pathology trainees therefore accounted for 6.3% of all trainees. Despite accounting for over 5% of all hospital trainees, pathology trainees accounted for only 0.5% of all trainee-issued safety reports. To further adjust for the effect of residency program size, we then compared the average number of incidents reported per trainee per year in pathology to the average number of incidents reported per trainee per year across all specialties. The all-specialty average was 0.295 cases per trainee per year. The average number of incidents reported by pathology trainees was 0.023 cases per trainee per year, representing a ten-fold lower rate of safety reporting by pathology trainees relative to all trainees. As noted previously in this report, studies suggest that errors in pathology may account for a third of all medical errors, yet pathology trainees report errors at one tenth the rate of trainees overall. This low rate of pathology trainee reporting is a proverbial “canary in the coal mine” with respect to pathology trainees’ engagement in patient safety. It

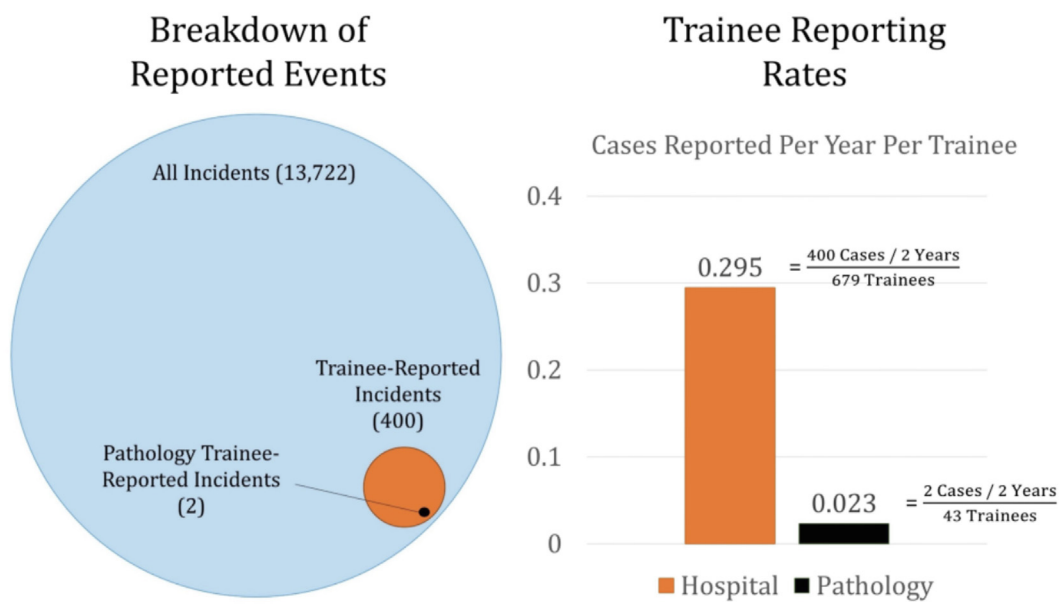


Fig. 1. Formally reported patient safety events over a 2-year study period broken down by all trainee reporters versus pathology trainee reporters (left) and trainee reporting rates for pathology versus all trainees adjusted for program size (right).

should be noted that this was the reporting rate among pathology trainees who already received annual presentations on the importance of safety reporting and how to submit a safety report, suggesting that compelling efforts may be needed to increase trainee engagement.

There were several limitations to this study. We looked at the rate of pathology trainee reporting relative to all-specialty trainee reporting at a single institution. We did not look at pathology trainee reporting relative to pathology faculty and staff reporting. We also did not look at the number of pathology safety incidents relative to the total number of safety incidents across the institution. We did not look at any reports that might have been submitted using the email distribution list ("lab quality mailbox" (LQM)). We chose to look specifically at the differential between pathology trainees and all other trainees and since no equivalent tool to the LQM existed for other specialties, we did not include those data. Future studies analyzing the types of events reported by trainees and their preferred method of reporting may help identify barriers to engaging them in this important work. Although we did not look at barriers to trainee reporting in this study, other studies have reported fear of retaliation, lack of time/onerous reporting systems, and lack of familiarity with the safety reporting system as commonly cited barriers to reporting by trainees.^{7,23}

Regardless of these limitations, our findings serve as a call to action to better engage residents and fellows in quality and safety initiatives, to educate them on the important role they play in detecting and reporting safety risk as valued frontline care providers, and to empower them to speak up. This finding merits further attention by pathology training program directors, educators, and quality and safety experts. The root causes of this low rate of reporting by pathology trainees are unknown and should be investigated further. Studies have shown, however, that increased trainee exposure to quality and safety concepts, even in the form of simulation, increases the rate of trainee willingness to report safety events.²⁴ Pathology education and quality and safety leaders would be well-advised to examine interventions made in other specialties to increase trainee reporting and modify those interventions for pathology training programs. The goals of this effort are worthwhile: to improve pathology trainee participation in safety event reporting, and therefore to improve Safety Culture, improve patient care, engage and involve trainees in care redesign, and comply with ACGME-mandated regulations on patient safety education.

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Declaration of competing interest

The authors have no conflicts of interest to disclose.

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