

# Challenges in Communication from Referring Clinicians to Pathologists in the Electronic Health Record Era

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## Abstract

We report on the role played by electronic health record inbox messages (EHRmsg) in a safety event involving pathology. Evolving socio-cultural norms led to the coopting of EHRmsg for alternate use and oversight of a clinician to pathologist request. We retrospectively examined EHR inbox messages to pathologists over a 3 month block. 36 messages from 22 pathologists were assessed. 26 pertained to patient care including requests for report corrections and additional testing. 88% of requests had gone unaddressed. Clinicians assumed that pathologists used EHRmsg as clinical care team members, however, pathologists rarely did. Communication gaps exist between primary clinicians and pathologists in the EHR era and they have potential to result in patient harm. Different sociocultural norms and practice patterns between specialties underlie some of the breakdowns. Health information technology implementation needs to proactively look for new sociotechnical failure modes to avoid patient harm from communication lapses.

**Keywords:** Communication, electronic health record, pathology

## INTRODUCTION

Communication functionality was an integral requirement of the electronic health record (EHR) to optimize safe transitioning of patients and failsafe transmittal of referral, medication and test requests, and test results.<sup>[1,2]</sup> Inbox messaging systems were built-in to facilitate interphysician patient care communications. How this system would affect communication patterns with surgical pathologists was not anticipated. We present our results from a hypothesis-generating inquiry into a sentinel event. We suggest that Electronic health record inbox messages (EHRmsg) has emerged as an unexpected clinician to pathologist communication modality in the EHR. We discuss its potential to become an error-prone communication modality for missed information and consequent patient harm.

### Report of a sentinel event

A 42-year-old patient expressed concern that she had had an unconsented oophorectomy because her pathology report erroneously stated her procedure as bilateral salpingo-oophorectomy. The clinician complained about the lack of response of the pathologist to repeated requests for report

correction. Inquiry into the incident revealed that the request had been submitted through the EHR communication functionality to the pathologist, who was unaware of the existence of this system in the EHR. The pathologist, in turn, was distressed to find additional unanswered communications in her EHRmsg inbox.

This report presents the results of a preliminary hypothesis generating inquiry that was conducted to determine if a structured intervention was warranted to address this issue.

## METHODS

Pathologists at three institutions were queried by e-mail about EHRmsg use from July to October 2015. Respondents participated in brief semi-structured informal interviews by two members of the departmental quality improvement team using a simple set of questions [Table 1]. The results of the

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study were shared with pathologists at completion.

Respondents were asked to provide messages from the prior 3 months block for content analyses, if they felt comfortable. Requests were analyzed for content, appropriateness of request to the clinical situation, and whether the request was acted upon. Time-to-response was inferred abductively, by assessing if appropriate report modification, or if a requested test was issued after the request was made using chart reviews. A subset of clinicians who had sent messages through EHRmsg to pathologists were queried regarding their expectations of EHRmsg use by pathologists. Formal qualitative research methodology was not utilized. This inquiry received a waiver of the Institutional Review Board as a quality improvement activity.

## RESULTS

The institutions used the same EHR vendor (EPIC systems corporation, Verona, WI, USA). The EHRmsg facility was “inactivated” for pathologists at one of the institutions. It was not clear when, how, or why this decision was made, and pathologists there were excluded from this inquiry. The two remaining sister institutions were part of a single health-care system where pathologists could send and receive EHRmsg, and there was no departmental policy surrounding the use of EHRmsg. These two institutions used Copath as their EPIC-interfacing Anatomic Pathology Laboratory Information System (APLIS). Copath is further supported and enhanced by a highly specialized homegrown system with pathology-specific intradepartmental functionality. This portal allows for access to operative and radiology reports from the EHR but not to the EHRmsg facility. This system provides a high level of functionality and support for the complex functioning of the department including specimen tracking, intraoperative written communications, and quality improvement functions in the department.

Of 35 clinically active surgical pathologists invited to participate, 22 responded. Five senior pathologists (median years in practice 33 years) did not maintain active EHR privileges but rather depended on trainees or the APLIS to support their clinical care needs. Of the remaining 17 pathologists (77%; median years in practice 22 years) who

maintained access to the EHR, 12 (71%; median years in practice 33 years) were unaware of the EHRmsg facility. Only five junior faculties (29%; median years in practice 5 years) used EHRmsg, primarily in response to clinician communications. All pathologists had weekly service rotation schedules with maximal off-service blocks of 4 weeks; none checked EHRmsg when off service. Three pathologists (18%) checked EHRmsg daily when on service.

The total number of messages in individual mailboxes ranged between 0 and 40, with a total of 123 unanswered messages for 12 pathologists. The oldest unanswered message was more than 24 months old. The total number of communications over this period could not be recorded, as five faculty members who actively used EHRmsg discarded messages after attending to them. These pathologists reported receiving 4–10 communications a month through EHRmsg with increasing traffic over the years in their inbox and a shift to primarily using the modality to respond to inquiries. Three pathologists reported to using the modality to communicate significant (but noncritical findings) through EHRmsg to clinicians.

Seven pathologists provided 36 messages from a 3-month period for review. Twenty-six (72%) messages requested corrections to existing pathology reports, additional tests, or diagnostic clarification [Table 2]. Twenty-three (88%) appeared to have gone unanswered. Of 13 requests for additional testing, 7 were determined to be reasonable by the receiving pathologists. In four requests, ancillary tests were initiated at the time of this study. Subsequent information (1) or death (2) obviated the need for the additional testing in the remaining three instances. Of note, two requests were misdirected to a nonprimary pathologist, without a copy to the primary. Reporting errors highlighted by clinicians were corrected in four cases. Responses to nonclinical care questions could not be assessed, although it is likely that these were addressed through other communication modalities (e.g., tumor board discussions). Patient harm could not be fully assessed; however, results were delayed (2–4 weeks) in the four cases where tests were activated based on this inquiry.

The results of this process review were communicated back to the participating pathologists. Pathologists with inactive EHR accounts were hesitant to activate their accounts, indicating that “clinicians know how to reach me through regular e-mail or phone.” EHR-active pathologists expressed concern about setting precedent for EHRmsg as a viable communication modality, as this would require their checking the EHR with regularity.

Brief interviews with select clinicians (6) who had sent EHRmsg to pathologists expressed surprise at EHRmsg nonuse by pathologists. They suggested that pathologists should use EHRmsg, as “this is what we do with other clinicians.” However, they also indicated that they were invariably able to communicate with pathologists in other ways when they needed it.

**Table 1: Questions used for informal interviews**

1. Are you aware of EHRmsg facility for communication by clinicians? (yes/no/do not use EHR)
2. If yes
  - a. How many msgs do you have in your inbox? (please provide copies)
  - b. How often do you check EMRmsg. (estimate)
  - c. Do you use it to communicate to clinicians or just to respond to questions?
  - d. Do you check EHRmsg when not on service?
  - e. Any other comments?
3. If no, please check for a number of messages if any, provide copies of messages if acceptable?

EHR: Electronic health records, EMR: Electronic medical record

**Table 2: Breakdown of 36 electronic health record communication messages assessed for content**

EHRmsg content	Number of messages (corrected before/after intervention)	Example
Listed procedure or specimen is incorrect	4 (2/2)	“The report states that the patient had ovaries removed. Ovaries were not removed on patient”
Corrections to clinical history	2 (0/2)	“Please correct history on report. Patient has had a mucosal melanoma not a carcinoma”
Incorrect diagnosis/probable typographical error	1 (1/0)	“No appendicitis with periappendicitis and abscess formation”
Requests for additional studies/requests to review prior material	13 (0/4)**	“Patient has a family history of” “Please order microsatellite instability studies” “Could you please request slides from for comparison to”
Request for additional detail/clarification to diagnosis	6 (NA)	“Why is there necrosis? could this represent a lymphoma?”
Miscellaneous	10	Adding case to tumor board list; checking again on previous question; thank you messages

\*\*In 3, the need was obviated by additional testing done at institution/patient death. EHRmsg: Electronic health record inbox message; NA: Not available (could not be assessed as written communications were not issued)

## DISCUSSION

Communication breakdowns in EHR for imaging, laboratory, and pathology domains contribute significantly to adverse events.<sup>[3-5]</sup> Therefore, much efforts have gone into ensuring reliable transmission, delivery, and receipt of informational test results in the EHR.<sup>[6]</sup> EHRs have been less robust in facilitating interpersonal, adaptive communication that is intrinsic to patient management and that often happens in iterative cycles between care providers to refine and formulate an accurate final diagnosis.<sup>[7,8]</sup> The EHRmsg function offers potential for secure, less disruptive, asynchronous, interpersonal, nonverbal, nonurgent, patient care communication<sup>[9]</sup> and has become an increasingly used modality for dialog among interdisciplinary clinical care providers. Reports to date have not studied clinician–surgical pathologist communication through EHRmsg. Our report suggests that clinicians assume that surgical pathologists, as members of the clinical care team, have similar access and utilization practices as other team members, especially given that pathology results deposit into EHRmsg inbox. However, anatomic pathologists depend more on highly specialized, often independent APLIS for their functioning, making EHRmsg inbox communications to them susceptible to oversight with potential for patient harm. Only 77% of the pathologists in our study maintained access to EHR and only 29% of those used EHRmsg. EHRmsg users were younger (time in practice 5 years vs. 33 years for nonusers), perhaps reflecting generational differences in preferences and comfort with technology.

Interestingly, one of the institutions approached for participation in this study had EHRmsg access inactivated for pathologists. We were unable to determine how or why this policy was instituted. However, we imagine that this determination was made based on inquiry into pathologist behavior, and practices at the time EHR was launched in the system. It is reasonable to assume that a member of the departmental leadership assessed that pathologists did not need this facility activated for them.

This report documents the development of a new socio-technical purpose by users of a EHR facility that was not originally envisioned by the designers and has resulted in a safety risk. Pathologists at our institution were given limited access and training on the EHR based on assumptions of use and practice among pathologists at the time of launch of the EHR. However, evolving sociocultural norms of clinicians led to the co-opting of EHRmsg for an alternative use, a phenomenon documented by other investigators.<sup>[10,11]</sup> Clinicians initiated EHRmsg to communicate with pathologists, bypassing traditional methods of communication. Some pathologists, in turn, started using EHRmsg for secure communication of significant findings, likely bolstering clinician perception of EHRmsg as a viable and acceptable communication modality for patient care requests. However, this practice needs to be studied further, as EHRmsg was not developed for this purpose and does not offer features of a closed-loop communication system. Use is variable and sporadic in different settings (subspecialties, ambulatory, vs. in-house), making EHRmsg particularly susceptible to inadvertent neglect.

Our preliminary communication highlights the development of an alternate use of the EHRmsg facility with implications for pathology departments. Such findings may also be applicable to other departments, such as radiology, with similar roles in patient care and patterns of EHR access. Many unknowns remain, and accuracy, precision, and generalizability of inferences cannot be assessed from this report. However, it does bring to attention the need for socio-technical-cultural analyses that cross departmental boundaries when health information technology is introduced. Monitoring of unread e-mails, social networks, and patterns of communication within the EHR may help identify possible risk-prone areas. These may suggest on the need for alteration of EHR privileges and access within systems. At our institution, we are working with our information technology team to devise a strategy where pathologists are sent a daily e-mail alerting them to the presence of a message in their EHRmsg. Discussion is also ongoing as to whether policies and education are warranted with respect to various communication modalities.

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## Conflicts of interest

There are no conflicts of interest.

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