Improving the Accuracy of Specimen Labeling

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Accurate specimen identification is a challenge in all hospitals. A mislabeled specimen can lead to devastating consequences for a patient. In an effort to decrease the risk of potential harm caused by labeling errors, Children's Hospitals and Clinics of Minnesota successfully implemented a Zero Tolerance Laboratory Specimen Labeling process. After months of studying, charting, networking, and communicating with all stakeholders the new process led to a 75% reduction in laboratory specimen labeling errors.

ABBREVIATIONS: FMEA = Failure Mode and Effects Analysis.

INDEX TERMS: specimen labeling.

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Over 70% of all information used by a clinician to diagnose and treat a patient comes from the laboratory.[1] Ensuring that specimens are correctly identified at the point of collection is essential for accurate diagnostic information. Patient and/or specimen misidentification can be serious, resulting in misdiagnosis and mistreatment.[2,3] A misidentification event creates multiple victims: the patient whose treatment was based on the provided results, the patient whose sample it actually was who may have gone untreated, and the healthcare workers who were directly involved with the patient or the specimen. There are also financial and emotional costs from this type of error. While the financial toll can be calculated, the emotional toll on the patients, their families, and healthcare workers who experience its impact is not easily quantifiable.

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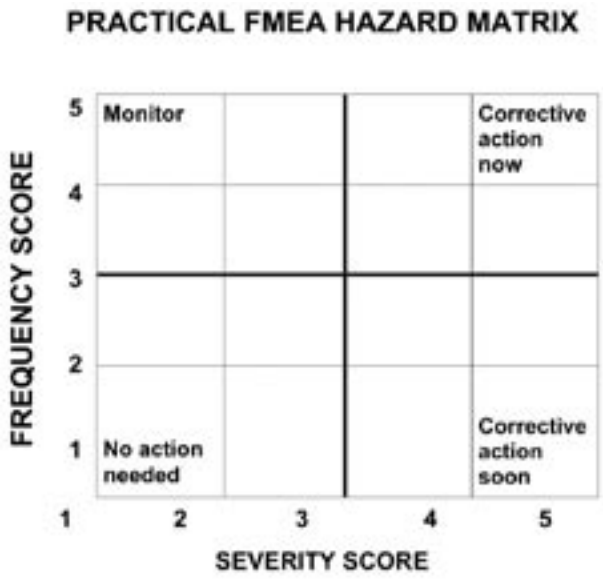
METHOD

In April 2003, a multidisciplinary team from Children's Hospitals and Clinics of Minnesota performed a Failure Mode and Effects Analysis (FMEA).[4] The team was composed of representatives from the following departments: the clinical laboratory, pathology, process improvement, nursing, and risk management. FMEA analysis identifies potential flaws *before* an error occurs through an intense scrutiny of a specific process, in this case, laboratory specimen labeling. Initially, the labeling process was observed, charted, and discussed and staff interviews were conducted. Data from these activities were used to construct a

Figure 1. Hazard matrix



A 5 x 5 matrix. Each hazard score represents a risk priority level. This matrix provides guidelines of whether actions should be taken for a particular risk factor.

hazard matrix showing the frequency and severity of an error at each step in the process between ordering a laboratory test and charting a result (Figure 1).

RESULTS

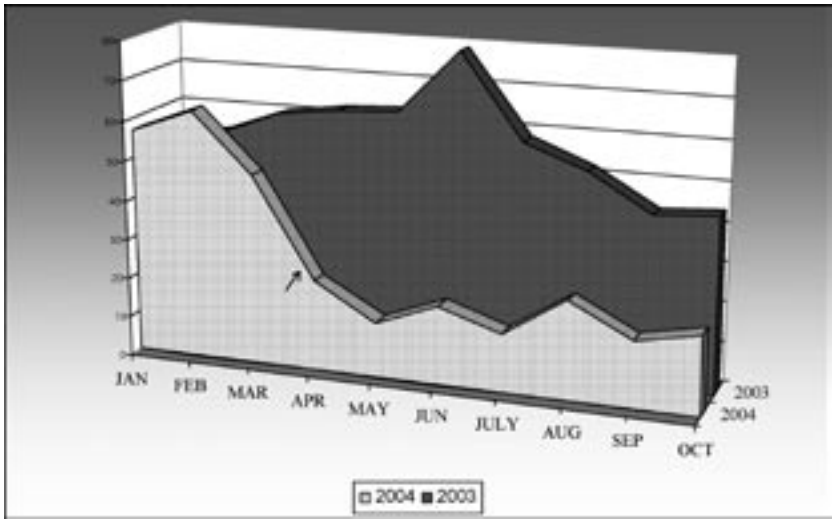
The pre-analytical labeling phase, with approximately two-thirds of the errors, was identified as the key focus area for improvement (Table 2). The FMEA team explored several ways to address specimens that could arrive in the laboratory either mislabeled or unlabeled. Many institutions have adopted an exception list of specimens that, if improperly labeled, can be relabeled and analyzed by the laboratory. The FMEA team considered this process and met with various physician groups to solicit feedback. There was no consensus regarding the proposed exception list. Therefore, that method was discarded and the decision was made that Children's Hospitals and Clinics of Minnesota Laboratory will accept only those patient specimens that meet the Joint Commission for Accreditation of Healthcare Organizations (JCAHO) standards for specimen labeling.[5] JCAHO standards specify two identifiers; Children's uses full patient name and medical record number as acceptable specimen labeling.

Table 1. Number of specimen errors at each stage in the process from ordering a test to charting a result

	Minneapolis	St. Paul	Aggregate
Pre-analytic	453 (70.6%)	488 (63.5%)	941 (66.7%)
Analytic	64 (10.0%)	83 (10.8%)	147 (10.4%)
Post-analytic	89 (13.9%)	106 (13.8%)	195 (13.8%)
Unknown	36 (5.6%)	92 (12.0%)	128 (9.1%)
Total reports	642	769	1,411

Data were obtained during June 2001 through April 2003, prior to implementation of the organizational policy.

Figure 2. Total number of mislabeled/unlabeled specimens arriving at the laboratory each month



The arrow denotes implementation of the Zero Tolerance policy in March 2004.

The FMEA team balanced safe patient care, practical solutions, policies for the staff, and a high level of patient, family, and physician satisfaction in arriving at this conclusion. The organizational policy on laboratory specimen labeling was approved and implemented on March 22, 2004. It is applicable to all laboratory specimens.

The policy does allow for challenging the rejection decision through a process involving the ordering clinician, the healthcare worker who collected and labeled the specimen, and the pathologist. The discussion can result in labeling or relabeling a specimen after it has arrived in the laboratory.

An effective communication strategy was part of the policy implementation process. The FMEA team utilized numerous internal publications to announce the new policy during the month prior to implementation. In addition, warning notices were given by laboratory personnel to staff in areas where mislabeling occurred during this phase.

The results of the new policy have been impressive. Figure 1 shows a 75% decrease in the number of mislabeled/unlabeled specimens received by the laboratory since the policy was implemented. Of the remaining 25%,

the majority were recollected and submitted for testing. Fewer than 40 specimens have been challenged and approved for testing to date, which is 25% of the total mislabeled or unlabeled submitted.

DISCUSSION

Awareness of the potential harm caused by mislabeled laboratory specimens and implementation of a rigorously developed organizational policy led to the success of the Zero Tolerance effort. "Any Is Too Many" is the motto chosen to illustrate our efforts to eliminate the occurrence of mislabeled or unlabeled laboratory specimens. This project is one of many efforts that Children's Hospitals and Clinics of Minnesota is pursuing through its patient safety agenda to ensure a culture of high reliability for patient safety via focused activities that support an attitude of safety.

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