Improving the Accuracy of Specimen Labeling

BOBBI DOCK

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.

Clin Lab Sci 2005;18(4):210

Bobbi Dock CLS(NCA) is at Children's Hospitals and Clinics of Minnesota Laboratory, St Paul MN.

Address for correspondence: Bobbi Dock CLS(NCA), Children's Hospitals and Clinics of Minnesota Laboratory, 345 North Smith Avenue, St Paul MN 55102. (651) 220-6553, (651) 220-5280 (fax). bobbi.dock@childrenshc.org

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

The peer-reviewed Clinical Practice Section seeks to publish case studies, reports, and articles that are immediately useful, are of a practical nature, or contain information that could lead to improvement in the quality of the clinical laboratory's contribution to patient care, including brief reviews of books, computer programs, audiovisual materials, or other materials of interest to readers. Direct all inquiries to Bernadette Rodak MS CLS(NCA), Clin Lab Sci Clinical Practice Editor, Clinical Laboratory Science Program, Indiana University, Fesler 409, 1120 South Avenue, Indianapolis IN 46202-5113. brodak@iupui.edu. 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.

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





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 excep-

 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.

tion 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.

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%,

CLINICAL PRACTICE

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.

REFERENCES

- 1. Garber C. Six Sigma. Its role in the clinical laboratory. Clin Chem News; April 2004:10-4.
- Nutting PA, Main DS, Fischer PM, and others. Toward optimal laboratory use. Problems in laboratory testing in primary care. JAMA 1996;275(8):635-9.
- 3. Plebani M, Carraro P. Mistakes in a stat laboratory: types and frequency. Clin Chem 1997;43(8 Pt 1):1348-51.
- 4. Woodhouse S, Burney B, Coste K. To err is human: improving patient safety through failure mode and effect analysis. Clin Leadersh Manag Rev 2004:18(1):32-6.
- 5. JCAHO 2004 Comprehensive accreditation manual for hospitals. The official handbook (CAMH)/Update2; May 2004: Chicago. p 182.

CLINICAL LABORATORY SCIENCE Distinguished Author Award Ballot

The Editors of *Clin Lab Sci* solicit your assistance in selecting the next recipient(s) of the *Clin Lab Sci* Distinguished Author Award. You are invited to participate in the selection process by completing this ballot and sending it to the editorial office no later than February 1, 2006. The award will be presented at the ASCLS annual meeting in July 2006.

ASCLS members, *Clin Lab Sci* readers, and *Clin Lab Sci* editors will choose the recipient(s) of the award. Nominations should be based on originality and quality of writing, relevance to the laboratory science profession, and integration of theory and application.

Please indicate your selection of the best article for 2005 from the four eligible issues of *Clin Lab Sci*, volume 18, issues 1 through 4. The nominated article can be from any section of the journal.

Title

Lead Author

Volume and Issue

Send this completed ballot to: CLS Editorial Office, IC Ink, 858 Saint Anne's Drive, Iowa City IA 52245