Improving patient safety by reducing human errors.

According to a study by Johns Hopkins, more than 250,000 people in the United States die every year because of medical mistakes, making it the third leading cause of death after heart disease and cancer.[1]

60–70% of the critical medical decisions made by physicians are based on laboratory test results[2], making accuracy of these results essential for patient safety. The accuracy and reliability of these results depend on the quality of each step in the laboratory testing workflow. Errors in any of these steps can negatively affect patient safety and have the potential to damage an institution's reputation, diminish confidence in their services, and increase total operating costs.

Pre-analytical errors account for up to 75% of laboratory errors.[3] Pre-analytical errors occur during sample collection, transportation, storage, or processing. A review of recent publications shows that 2.23% of samples collected for analysis suffer from a human pre-analytical error.

Table 1. Compilation of most common pre-analytical errors indicate errors occur in 2.23% of clinical samples analyzed in these studies.[4-7]

Peer Reviewed Study	Mis-labeled sample	Hemolysed	Wrong tube type	Inadequate volume	Clotted	Total errors	Total samples
Study 1[4]	289	95	149	136	102	771	135,808
Study 2[5]	203	607	N/A	36	N/A	846	96,358
Study 3[6]	222	222	43	149	79	715	329,582
Study 4[7]	49,802	16,460	16,038	14,772	7,175	104,247	4,220,518
TOTALS	50,516	17,384	16,230	15,093	7,356	106,579	4,782,266
% of Total Errors	47%	16%	15%	14%	7%	100%	
% of Total Samples	1.06%	0.36%	0.34%	0.32%	0.15%	2.23%	

Reducing laboratory errorswith automation

Automation improves the accuracy of laboratory tests by reducing human errors once the sample is received by the lab and by identifying errors occurring before the samples get there. Pre-analytical sample preparation automation and standardization helps reduce laboratory test errors and costs by automating the repetitive, error-prone, and bio-hazardous processes. Once a sample reaches the laboratory all processes can be automated and standardized from sample registration sample screening for analysis suitability, to setup for analysis, to the analysis itself. Errors including mis-labeled tubes, inadequate volume, incorrect tube type, and clotted or hemolyzed blood can all be identified and flagged as incorrect prior to analysis, reducing the chance of reporting incorrect results to a patient. Fully automated storage and retrieval of archived samples also reduce the potential for human errors.

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