

ANALYZING EXTRA-ANALYTICAL ERRORS

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Clinical Laboratory's Mission

Enable the rapid and timely diagnosis, monitoring and/or treatment of patient conditions by healthcare providers

Providing the right test at the right time for the right reason (and hopefully the right cost)

Overview

1

- Define extra-analytical laboratory errors and identify those that are most commonly encountered

2

- Identify key interested parties in your institution to engage in the development of indicators and monitoring of extra-analytical errors

3

- Identify strategies for incorporating extra-analytical errors measurement into the laboratory's QI program

4

- Enhance communication of QI program between the laboratory and other healthcare professionals

Classification of Laboratory Errors

Extra-analytic errors: Errors that occur outside of the testing process

- Pre-pre-analytic
 - Errors that occur prior to the testing process
 - Test ordering, utilization
 - Duplication, wrong test, omitted test
- Pre-analytic
 - Errors that occur prior to the testing process
 - Patient variables
 - Specimen variables (collection, handling, processing)
- Analytic
 - Errors that occur during the testing process
 - Under the laboratory's control
 - Dependent on the specific test

Classification of Errors

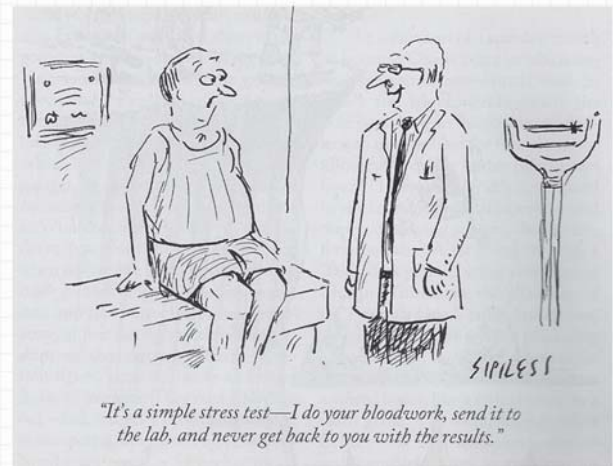
- Post-analytic
 - Errors that occur following completion of testing process
 - Recording, reporting
- Post-post-analytic
 - Errors that occur following completion of testing process
 - Report transmission
 - Filing
 - Interpretation
 - Response
 - Communication (patient, provider)



QUALITY INDICATORS



Doing the right test on the right patient at the right time for the right reason



Quality Indicators

- Tools that allow the laboratory to quantify specific laboratory services
- Objective measures to evaluate various aspects of laboratory processes
- Data is collected over time
- Compare against defined criterion
- Outcomes used to:
 - take corrective action
 - identify opportunities for process improvement

QI Program

- Select QI indicators for extra-analytic error tracking and monitoring. What are the errors that need to be addressed?
- Identify and engage interested parties to develop strategies for creating measures and gathering results
- Incorporate measures into current QI program
- Communicate measures outcomes to laboratory management and healthcare providers
- Identify opportunities for improvement

Diagnostic Errors

- Misdiagnosis, missed diagnosis, delayed diagnosis¹
 - PCP test ordering error: 12.9%²
 - Results not returned to clinician: 24.6%
 - Misfiling and poor chart availability: 17.6%
- Occur in 10-15% of cases³; contribute to 40-80,000 deaths in hospitals annually⁴

¹Graber, M. L. et al, "Diagnostic error in internal medicine," *Archives of Internal medicine*, vol. 165, July, 2005.

²Hickner J, Graham DG, Elder NC, et al. Testing practices: a study of the American Academy of Family Physicians National Research Network. *Qual Saf Health Care* 2008;17:194–200.

³Berner, E. S., & Graber, M. L. "Overconfidence as a cause of diagnostic error in medicine," *American Journal of Medicine*, vol. 121, 2008, 52-523.

⁴Newman-Toker DE. Measuring Diagnostic Errors in Primary Care - Invited Commentary. *JAMA Internal Medicine* 2013 February 25

Quality Indicators

- Failure to provide accurate and timely laboratory information for patient diagnosis/treatment
- Failure to communicate the laboratory information to the patient
- Efforts to identify and mitigate diagnostic errors have so far been limited and are unappreciated within the quality and patient safety programs.

Laboratory Test Utilization: How Can This Cause Harm?

- Over utilization
 - Ordering unnecessary or obsolete tests
 - Duplicate orders
- Under utilization
 - Failure to order indicated tests
- Inappropriate utilization
 - Inappropriate test ordered
 - Appropriate test is misapplied or misinterpreted
 - Appropriate test is ordered but delay occurs (results misfiled, ignored)
 - Appropriate test is ordered but results are inaccurate
 - Test result reporting error
 - False positives, false negatives



Epner PL, Gans JE, Graber ML. When diagnostic testing leads to harm: a new outcomes-based approach for laboratory medicine. *BMI Quality & Safety*. 2013 August 16.
Institute of Medicine: Crossing the quality chasm: a new health care system for the 21st century. Washington, DC: National Academy Press. 2001.
To Err is Human: Building a Safer Health System, National Academy Press; www.nap.edu



Effective Communication

Communication

- Lab management and staff
- Lab directors and lab management
- Laboratory and other departments (nursing, radiology, pharmacy)
- Laboratory, clinicians, patients



The Value of the Laboratory

- Collaboration between pathologists, laboratory professionals, other healthcare departments (e.g. Radiology, Pharmacy) and healthcare providers responsible for patients' treatment and care
- Value is a function of net outcomes (delivered benefit) minus delivered harm
- Value = Quality ÷ Cost
- Performance and outcome measures improve quality of patient care

What else?

- Ensure patient access to EHR
- Engage patients and their families in efforts to improve the diagnostic process
- Provide clinical decision support to improve test selection and interpretation
- Focus on operational efficiency AND clinical effectiveness