

Laboratory Errors in Context

A recent article in *Readers Digest* raised alarms about errors in medical diagnoses, specifically about errors in medical tests. By coincidence, an expert on laboratory had answered a question on this topic and provided a balanced view for a patient. We reprint the exchange here.

Question: What advice would you give to a patient regarding laboratory testing in general and laboratory errors specifically?

Respondent: Michael Astion, MD, PhD, Editor-in-Chief, *Laboratory Errors and Patient Safety*, Director of Reference, Laboratory Services, Department of Laboratory Medicine, University of Washington

Answer: I would let them know that there is no laboratory errors crisis, and there is a tremendous likelihood that their laboratory testing experience will proceed successfully. Clinical laboratories occasionally make errors, and they try to direct quality improvement efforts at the errors they perceive as most likely to affect patient care. Occasionally, stories appear in the newspaper about a laboratory error that seriously harmed a patient. These stories are exceptions rather than the rule. The media are fear-mongers that emphasize these stories because they are sensational. "Patient harmed by laboratory error" is a better story than "Ten millionth patient diagnosed with myocardial infarction with the help of a common laboratory test".

If you are very sick, laboratory testing is likely to play an important role in your diagnosis and care. Some tests virtually define your disease. You can't have hepatitis C without a positive test for hepatitis C. However, if you are in generally good health and develop a common ambulatory complaint such as headache, backache, neck ache, fatigue, temporomandibular joint pain, and many others, laboratory testing may play a minor role, or no role at all. What is the lab test for headache? There is none.

From a patient's perspective, there are only a few laboratory errors

worth worrying about. Therefore, my advice to the patient scheduled for laboratory testing is as follows:

- Know what tests are being ordered and why.
- Make sure your name and other identifying information are on the blood tube (or other container) that holds your specimen.
- Make sure that a care provider follows up with you on your result. Do not assume that no news from your care provider is good news. The test may have been forgotten.
- Follow your care providers' instructions regarding preparation for the test. If they tell you not to eat for 8 hours, don't eat for 8 hours. A Big Mac is not a clear liquid, even if you let it sit out for awhile and add lots of special sauce.

Reprinted, with permission, from the September/October 2006 issue of *Laboratory Errors and Patient Safety*.

How to Measure Creatinine

The resurgence of interest in creatinine assays reminded an old editor here of a treasured book on urologic disorders. The excerpt below describes a method to measure creatinine in urine. With the help of sophisticated calculations, the result may be useful for estimating a patient's age, sex, and weight.

Measurement of Creatinine in Urine.

Reagents.

- Chloride of zinc solution: pure zinc oxide is dissolved in pure HCl, and the solution is evaporated on a water bath (until no free HCl is present) to a thick sirup. This is dissolved in a strong alcohol, and the solution diluted until it has a specific gravity of 1.200.
- Milk of lime, which is stirred up before using.
- Diluted chloride of calcium solution.

Mode of Procedure. We render 200 c.c. of urine alkaline with milk of lime and add diluted chloride of calcium

solution as long as a precipitate forms. After two hours, we filter and wash the residue, then quickly evaporate the wash-water and filtrate on a water bath to a thick sirup. While it is yet warm, 50 c.c. of 95 per cent. alcohol are added to the mixture, and the same is transferred to a beaker-glass—washing the dish with a little alcohol—and allowed to stand for eight hours. Then the mixture is filtered through a small filter and the residue washed with more alcohol. The united filtrates are then evaporated down to 60 c.c. After cooling, ½ c.c. of the above-mentioned chloride of zinc solution is added and the mixture stirred briskly with a glass rod until turbidity occurs. It is then allowed to stand forty-eight hours in a cool place. We now collect the separated creatinine chloride of zinc on a small filter and weigh after washing (as by the described method for uric acid). In 100 parts of creatinine chloride of zinc are 62.44 parts of creatinine.

From "Analysis of the Urine: With Special Reference to the Diseases of the Genito-Urinary Organs, 3rd ed." by Karl Berthold Hofmann and Robert Ultzmann. New York: D. Appleton and Company, 1889 (pages 212–213).

Children's Hospital Boston Names First Chair of Laboratory Medicine

Dr. Nader Rifai, Professor of Pathology at Harvard Medical School and director of Clinical Chemistry at Children's Hospital Boston, has been named the Hospital's first Joseph Louis Gay-Lussac Chair of Laboratory Medicine. Named for the eminent 19th century French chemist, the Chair will support Dr. Rifai's research and educational activities in the field of clinical chemistry. It is awarded to Dr. Rifai in acknowledgement of his international leadership role in clinical chemistry, most notably in the field of laboratory assessment of cardiac risk factors. Dr. Rifai is the Associate Editor for manuscripts submitted in this area to *Clinical Chemistry*.

Meetings

“Quality in the Spotlight”, the 12th in a series of meetings on quality, will be held March 22nd and 23rd, 2007, in Antwerp, Belgium. Informa-

tion: Conference Center ‘t Elzenveld, Lange Gasthuisstraat 45, B-2000 Antwerp, Belgium. Website: <http://www.QualitySpotlight.com>. Registration: Dr. J.C. Libeer, Institute of Public Health, Brussels, Belgium; Tel: +32-

2-6425527; Fax: +32-2-6425645; e-mail: jean-claude.libeer@iph.fgov.be.

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