The Pre- and Post-Analytical Phase: Your Job Doesn’t End with Signing out the Report!

In many circles clinical laboratory practice has evolved into a data-producing center with less connection with the medical practice communities being served.

In many metropolitan areas, several remotely located individual hospitals have merged under one system with central administration, and physicians and clinics have joined under various forms of managed care. Under these new constructs, laboratory testing is more and more being performed in centralized laboratories separated from primary care facilities.

In effect, “laboratory people” are performing tests on specimens received in referral from remote locations, so that test results are often issued with minimal direct contact with physicians and the patients being served. This new paradigm can be likened to the alienation of workers during the early days of the industrial revolution.

As Dr. Paul Schreckenberger has professed in many workshop presentations, we are not just “laboratory people”, but are physicians, doctoral scientists, chemists, hematologists, microbiologists and medical technologists key in the process of establishing a clinical diagnosis. Within this context has evolved a new challenge for “laboratory people”—to integrate the day-to-day analytic work with more proactive involvement in the pre-analytic and post-analytic interfaces with physicians and other members of the health care team.

In the pre-analytical arena, laboratory personnel must develop a better understanding of key clinical diseases that are related to specific laboratory test results. We in the laboratory must establish guidelines under the umbrella of “evidence-based medicine” to establish the best set of laboratory tests to affirm or discount a presumptive clinical diagnosis, and to provide guidelines for proper specimen collection to assure the highest quality of testing. Criteria must be established to flatly reject all specimens of poor quality.

The post-analytic mode of practice requires that interpretive comments be added to laboratory reports when appropriate to ensure that clinical practitioners fully understand the full potential of the test results. In specific, the “alerts” that are built into the reporting software of many microbiology organism identification systems are...
specifically directed to provide notification of test results that may require further action. For example, many bacterial species are known to possess intrinsic resistance to certain antibiotics that may be “induced” in-vivo if that drug is prescribed. Thus, even though the in-vitro antibiogram may indicate that a given isolate is “susceptible”, the physician must be alerted that this organism carries potential induced resistance and that the use of all antibiotics within a certain class should be avoided.

The issues of pre-analytic, analytic, and post-analytic phases of laboratory practice go beyond what can be addressed in a short expose such as this. However, I would encourage laboratory supervisors in each sub-specialty area to establish both in-laboratory and inter-disciplinary forums of discussion that focus more on the pre-analytic and post-analytic phases of laboratory practice. In-laboratory “alerts” can be established within each laboratory discipline to establish criteria for select test results that may require further study and action.

Implementing such pre-analytic and post-analytic practices not only opens up channels of communication with health care providers, often practicing in remote locations, but provide for establishing valuable guidelines to assure specimen quality that may impact on the accuracy of test results, and encourages the use of informative interpretive comments on laboratory reports that can significantly impact patient care.

“\textit{We are not just “laboratory people”, but are physicians, doctoral scientists, chemists, hematologists, microbiologists and medical technologists key in the process of establishing a clinical diagnosis.”}"

Elmer W. Koneman, M. D.
Breckenridge, Colorado
Professor Emeritus, University of Colorado School of Medicine

“We are not just “laboratory people”, but are physicians, doctoral scientists, chemists, hematologists, microbiologists and medical technologists key in the process of establishing a clinical diagnosis.”

Elmer W. Koneman, M. D.
Breckenridge, Colorado
Professor Emeritus, University of Colorado School of Medicine