Improving Training in Laboratory Medicine

In this issue of Clinical Chemistry, we publish a proposal for curriculum content of residency training in laboratory medicine and for evaluation of resident competency (1). The proposal was developed by the Academy of Clinical Laboratory Physicians and Scientists (ACLPS) and covers residency training in all areas of laboratory medicine. Why have we chosen to publish this curriculum? Why did we publish the entire document, rather than just the portion related to clinical chemistry? Why is the curriculum important to the readers of Clinical Chemistry—particularly PhD and MD laboratory directors?

In a broad sense, the first reason for publishing the document is that it represents a comprehensive, well-written template for curriculum content for training of residents in laboratory medicine. Because Clinical Chemistry is a leading journal in laboratory medicine, we know that many of those individuals who are responsible for training pathology residents are among our readers and are members of AACC, which publishes the journal.

Now is an important time to address the curriculum of residency programs. As the authors of the curriculum document clearly state in their introduction, the field of laboratory medicine and training in pathology have changed dramatically since the last consensus recommendations were published in 1995 (2). At that time, routine molecular diagnostics was just beginning, the clinical use of pharmacogenomics was only being hinted at, proteomics consisted of 2-dimensional gels and serum protein electrophoresis, point-of-care testing was primarily portable glucose meters, and electronic medical records existed only in the VA system. Simultaneous to this explosion of knowledge and technology, the length of residency training in pathology was decreased by 1 year for both combined anatomic pathology/clinical pathology (AP/CP) training and straight AP or straight CP training. Thus, those who train pathology residents are faced with teaching more content in less time.

Why publish the entire document? Clinical chemists are often responsible for training residents not only in chemical pathology and toxicology, but also for at least some of the training in point-of-care testing, molecular diagnostics (including identity assessment and molecular microbiology), laboratory management, informatics, hematology, and hemostasis/thrombosis. We speculate that the vast majority of teaching about the tools that laboratories use to ensure that reported values are correct—Levy-Jennings plots, Westgard rules, Bull algorithms, autoverification rules, and so forth—is done by clinical chemists regardless of the subdiscipline in which residents use the tools. To teach these tools effectively, it is useful to be aware of the material that residents are learning in all laboratory areas. Many academic clinical chemists are branching into molecular diagnostics and proteomics, as evidenced by the numbers of these types of papers published in this Journal and presented at AACC meetings and programs. It is these “clinical chemists” who will likely do much of the residency teaching in these evolving areas of laboratory medicine. Thus, we believe that readers, many of whom are also ACLPS members, will benefit from availability of the full document and that publishing it this way was a better alternative than publishing just the section on clinical chemistry.

Why is the curriculum important to the readers of Clinical Chemistry—particularly PhD and MD laboratory directors? When clinical chemists review their own resident teaching curricula, this template should be extraordinarily helpful to help identify what we are missing from our individual curricula and to understand what CP residents must learn in other subdisciplines. Laboratory medicine is an incredibly diverse field of practice, and there is much to cover to build a foundation for a successful career. The ACLPS document provides a concise reminder of these facts. We must include in our teaching that which is essential in the limited amount of time available. Regardless of the subdiscipline in which a specialized instructor teaches, seeing the whole picture is important to understand what residents are being expected to learn during residency.

In addition to being useful for designing a modern residency curriculum, this document should, we feel, be useful for those readers who also offer postdoctoral training in laboratory medicine subdisciplines for PhD laboratory scientists. Training programs that are accredited by the Commission for Accreditation in Clinical Chemistry can greatly benefit from reviewing this curriculum and instituting those areas of competency that are relevant to a career as a PhD laboratory director. Similarly, training programs accredited by the American Society of Microbiology Committee on Postgraduate Educational Programs can likely benefit from the relevant sections on microbiology-related subdisciplines. Indeed, these accrediting bodies may wish to consider using this curriculum as a template for defining their curricula. This approach seems almost mandatory as most of these programs, both in clinical chemistry and related areas, are closely intertwined with the CP residency programs at their institutions.

Finally, we would like to address the Point/Counterpoint also published in this issue by Luning Prak et al. (3) and by two of the authors of the ACLPS curriculum (4). We appreciate the dialog, which at first glance may seem like two camps disagreeing on how CP training should be approached. We believe that both points of view are correct. The ACLPS document is a template and as such will be molded by different programs to reflect the areas of research and specialization that each institution feels are its strengths. Many programs do not offer training solely in CP (straight CP training). In fact, most focus on providing a combined training program in clinical and anatomic pathology (AP/CP training), a program that has been appropriate for residents heading into careers in community-based practice. The comments by Luning
Prak et al. (3) reflect views from a program with a long history of straight-CP training and a track record of training clinical pathologists for successful careers in basic and translational research in laboratory medicine. Such programs, although a minority of all pathology residencies, are extraordinarily important to the field of laboratory medicine. Programs such as that at Penn, and those at the institutions of many of the ACLPS curriculum authors, make important contributions to scientific advancement of all areas of laboratory medicine and train many of the faculty for the future; they need to continue doing so. CP residents, particularly those pursuing an academic career, are attracted to certain training programs because of the strength of a program in a specialty area. The uniqueness of these academic CP programs should not be lost, and publication of a template in no way means that it will be. Nevertheless, no matter how specialized clinical pathologists become during and after their residency, they will still need to understand acid-base metabolism and the associated laboratory tests if they are to converse with clinicians and provide consulting services.

Wells and Smith (4) properly point out that a general minimal curriculum is not a blueprint and is meant to be flexible. The core knowledge and skills presented in the curriculum will be particularly useful to those combined AP/CP programs in which it is no secret that laboratory medicine often gets “short shrift”. Both residents and instructors in these programs will be able to identify areas in their residency programs that may be missing. With respect to evaluation of competency that the authors of the Point/Counterpoint discuss, many feel that evaluating CP residents with the Accreditation Council for Graduate Medical Education (ACGME) evaluation format can seem like placing a square peg into a round hole. The ACLPS proposal (1) provides one approach to making the evaluation more useful to the resident, whereas Luning Prak et al. (3) provide another. Neither can be considered wrong, and we should all strive to enhance the required ACGME evaluation to provide the greatest benefit to residents so that they know their own strengths and weaknesses after their CP rotations. Two excellent examples are provided here for those of us who train residents.

The goal of ACLPS, the AACC, the Penn authors, and indeed all of us in laboratory medicine is to “improve healthcare through laboratory medicine”. We believe that this curriculum is a step toward that goal, and thus we are pleased to have the opportunity to publish the curriculum in *Clinical Chemistry*. We applaud the ACLPS members who developed this as well as those who wish to use it as a starting point for discussions of how to continually improve residents’ experiences in laboratory medicine.

**References**


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