Why do Infectious Disease Doctors Need to be Good at Clinical Microbiology?

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Modern medicine has led to dramatic changes in infectious diseases (ID) practice. During the past 2 decades, the role of infectious diseases and clinical microbiology services has changed considerably in both community and academic hospitals. The increased proportion of hospitalized patients with immunodeficiency, caused either by HIV, malignancies, chemotherapy, or transplantation and the increase in the number of elderly patients, has resulted in a dramatic increase in the number and severity of invasive infections. In the United States, from 1980 through 1992, infectious diseases rose from the fifth to the third leading cause of death, and were 58% increase.1 The need to assist in the diagnosis and management of these patients, as well as management of hospital infection control and bedside teaching, make the ID and clinical microbiology services in the present era face greater and changing challenges.

Microbiology laboratories are the first lines of defense for detection of new antibiotic resistance, emerging and reemerging infectious diseases, and outbreaks of various infections. In most hospitals all over the world, the laboratories are supervised by scientists and/or managers. Clinical microbiology laboratories in only 12 states of the United States require licensure medical microbiologists to direct laboratories engaged in the microbiological diagnosis of human disease (http://www.microbiologycert.org/abmm.asp).

The name “medical (clinical) microbiologist” seems to be controversial. They may be laboratory-based, or may be clinical-based. The American College of Microbiology, a component of the American Society for Microbiology’s Professional Practice Committee, is responsible for certification of microbiologists accreditation of postdoctoral training programs, and provides a diplomate of the American Board of Medical Microbiology (http://www.microbiologycert.org/abmm-eligibility.asp). For clinical-based, American Board of Pathology (in Medical Microbiology) is a subspecialty and provided by the American Board of Pathology (http://www.abpath.org/BofISubspecialtyCert.htm)

In Canada, the subspecialty training program in ID is accredited by the Royal College of Physicians and Surgeons of Canada as a two-year period of training. By combining the Infectious Disease training program with Medical Microbiology, a three year combined Infectious Diseases and Medical Microbiology fellowship is available. (http://umanitoba.ca/faculties/medicine/units/intmed/students/infectiousdiseases.html)

In the face of the 2009-2010 influenza pandemic, many physicians in Europe found that their traditional skills were not enough, as they coped with an influx of patients with influenza-like illness,
its bacterial complications, and all of the related infection-control issues. What they have learned from this event is that clinical microbiology and infectious diseases are specialties that carry the tradition, knowledge, and expertise necessary to handle the unexpected. In no other field of medicine is the unexpected, the "never heard of", and "never seen before" so commonplace as in infectious diseases and microbiology.\textsuperscript{2}

Modern infectious diseases need infectious disease specialists, medical microbiologists and others to solve complicated problems. The relationship between the two closely linked specialties of medical microbiology and infectious disease has not always been uniformly good. There is an overlap of the activities of clinical microbiologists and infectious disease physicians both in the laboratory and in the clinic. Integration of the two services as seen in some institutions is thought to be the most successful way to improve the relationship and optimize the efficiency of the service as in some countries of the European Union. With collaboration of a few organizations that embrace and represent infection professionals across national boundaries in Europe (the European Society for Clinical Microbiology and Infectious Diseases, the Union of European Medical Specialties and the European Centre of Disease Prevention and Control), sections for medical microbiology and infectious diseases leading to specialist accreditation for medical practice with the European Union are provided. According to the UEMS Section of Medical Microbiology, the main tasks include provision of advice on diagnosis, treatment, prevention of infection, providing a scientific basis for laboratory diagnosis, undertaking management responsibilities within clinical microbiology laboratories, taking charge of infection control, implementation of antibiotic policy, generation of surveillance data, participation in training of residents and infection-control practitioners, and the undertaking of research and development activities in clinical microbiology.\textsuperscript{2} Recently a joint training program was established in the United Kingdom and has proved to be extremely popular and successful. It involves trainees following the curricula of ID and medical microbiology/virology. They achieve appropriate competencies in both specialties (http://www.rcpath.org/training-education).

In an analysis of 14,005 Infectious disease consultations over a 5-year period of a general hospital provided supportive data. Yinnon AM\textsuperscript{3} found that new ID consultation was given at a rate of 6.0 consultations per 100 hospitalized patients. During the study period, expenditure on antimicrobials per admission steadily decreased, from $44 in 1995 to $30 in 1999, a 35% reduction. O'Neill E\textsuperscript{4} demonstrated that consultation with a laboratory-based clinical microbiology service, delivered in collaboration with intensive care medicine, can ensure a very high degree of compliance with treatment modifications. The high level of acceptance of this service may be related to the fact that care is delivered by medically qualified clinical microbiologists. Informal consultations are a frequent occurrence in the practice of infectious diseases and medical microbiology. Physicians use this sort of consultation to select an appropriate treatment plan and obtain medical information. In the integrated model, the clinical microbiologist has a pivotal role in all aspects of "infection". The system in operation in hospitals, as in much of Europe, improves antimicrobial stewardship and optimizes patient care.\textsuperscript{1,5-8}

The movement of new clinical education in Thailand is well developed with clinical pharmacy. All pharmacy faculties in Thailand have recently
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expanded to a 6-year doctor of pharmacy curriculum, and post Pharm D graduated, Board Certified Pharmacotherapy Training Program, as well as training pharmacy residencies and fellowships in a 4-year program that specializes residency training in internal medicine, pediatrics, nutrition support, oncology, infectious diseases, cardiology, renal diseases, critical care and clinical pharmacist competency. Unlike clinical pharmacy, microbiology itself is sciences containing various subjects of microorganisms. Medical (clinical) microbiology is one of them. It is not a professional subject like nurses and pharmacist. In nearly all hospitals in Thailand, the microbiology laboratories were run by medical technicians (B.Sc.). Some laboratories in university hospitals, large government hospitals and a few private hospitals are supervised by a number of M.Sc. or Ph.D. in microbiology and microbiology experience medical doctors (M.D.). They informally act as medical microbiology consultants. However, medically qualified clinical microbiologists who have undergone postgraduate training in general internal medicine and have then undertaken 5 years of training about all aspects of infection diagnosis, prevention, and therapy in developed countries has not been established.

We used to have the "Thai Society for Microbiology" but I have never heard about the society for a long time. Microbiology-related groups are the Virology Association (Thailand), Thai Medical Mycology Forum (TMMF) and Clinical Microbiology Society (Thailand). Each group is confined to their field. I hope that in the future, they may consolidate and reconsider a suitable organization.

As far as I know ID fellows have to attend full time clinical microbiology for 2 months and laboratory round intervention during 3 years of resident training program. Thai Board of Infectious Diseases is one of the subspecialties of internal medicine. ID doctors seem to understand clinical microbiology enough for their career, but the complicity of infectious disease problems and the power of developed countries may push up medically qualified clinical microbiologists in Thailand. I hope that the Infectious Disease Association of Thailand (IDAT), a well known professional society has evaluated this problem. Most of ID doctors and medical microbiology scientists are members of IDAT for a long time. Now, it's the right time to think about both types of the members. I propose to IDAT that integration of the close two specialties, infectious diseases and clinical microbiology is economically beneficial for our country. In addition most reports about the benefit of clinical consultants either clinical microbiologists or clinical pharmacists is measured by the decreasing of hospital expense but not the patient's expense. We have to think about how much a patient has to pay for consultants in a complicated infectious disease episode in a private hospital? On the other hand, when a relationship problem between a patient and a ID doctor occurs, who will face to the course of justice, only ID doctors or all consultants?

Finally, current infectious disease physicians have to face difficult clinical and professional challenges. You need to be good at clinical microbiology. You need to move forward together with clinical microbiology scientists (B.Sc., M.Sc., Ph.D., and microbiology experienced M.D.) in the ways that benefit your patients and your country. How to be good at clinical microbiology? You have to realize that you are facing living things that have high survival power. They can adapt themselves in every way and every time. Therefore, not only knowledge and skill but also diligence and awareness of abnormalities should always be in your mind.
References


