Workforce Issues in Hepatology: What Is Needed?

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Over the past several years, it has become increasingly apparent that there are insufficient numbers of physicians trained in hepatology (general, advanced, or transplant) to meet the needs that have evolved. In the 1980s, hepatology was often considered an esoteric discipline that was largely limited to basic research investigation. One needs only to look at the presentations given at the annual meetings of the American Association for the Study of Liver Diseases (AASLD) back then to confirm that was the case. Over the past 25 years, this situation has changed.

The need for clinicians with expertise in hepatology has evolved as a result of several recent discoveries and developments. For example, the hepatitis C virus was discovered in 1989, followed soon thereafter by the U.S. Food and Drug Administration's approval of alpha-interferon for the treatment of hepatitis C.[1,2] Hepatitis C treatment has gradually evolved to the point where currently about 60% of adherent patients are now successfully treated with available antiviral therapy using pegylated interferon and ribavirin.[3] Hepatitis C treatment is poised to advance further with the introduction of protease inhibitors and/or other small molecules that will further improve the success of therapy. Additionally, it is estimated that fewer than 50% of infected patients have been identified and fewer than 25% have been treated, so the need for practitioners to care for patients with hepatitis C will continue to expand. Increasing numbers of immigrants to the United States who arrive from areas of the world where hepatitis B is endemic has increased the number of patients needing increasingly more complicated antiviral therapy directed against hepatitis B. The therapeutic armamentarium for treatment of hepatitis B continues to expand with six approved therapies at present; further, the indications for treatment are constantly undergoing revision.[4,5] Many patients with hepatitis B eligible for treatment in the United States have not been identified or treated. In addition, the obesity epidemic worldwide carries with it an increased number of patients with nonalcoholic fatty liver disease, many of whom are expected to progress to advanced liver disease, liver failure, and the need for liver transplantation.[6] As these large populations of persons with chronic liver disease age, the frequency of complications of chronic liver disease is rising. The incidence of hepatocellular cancer continues to increase yearly.[7] Prior to 1990, fewer than 2500 patients per year received liver transplants. However, over the last 15 years, transplant centers have proliferated throughout the country and liver transplantation has steadily grown so that in 2006, more than 6500 individuals received a liver transplant in the United States. Finally, the practice of clinical hepatology has often been limited to academic medical centers, but increasingly, hepatologists have achieved success in multispecialty group practices often associated with large groups of gastroenterologists. Thus, for all these reasons—treatment of hepatitis C and B, fatty liver disease, liver cancer, and liver transplantation—it is predicted that an ever increasing number of hepatologists will be needed.

In the mid to late 1990s, the AASLD leadership recognized the need for the discipline of hepatology to grow and to become a distinct entity independent of gastroenterology. At that time, it was not tenable to advocate for "hepatology" to become a distinct subspecialty; however, it was considered that "transplant hepatology" might be identified as a distinct sub-subspecialty of gastroenterology-trained physicians. Accordingly, the AASLD commissioned a workforce study by the Lewin Group (a consulting firm near Washington, DC) in 1999 to determine whether advanced/transplant hepatology was considered a distinct discipline within gastroenterology. Gastroenterologists certified by the American Board of Internal Medicine (ABIM) were queried by the Lewin Group by means of an extensive questionnaire. The principal findings of the workforce study were that advanced/transplant hepatology was indeed considered a distinct discipline, with its own body of cognitive expertise over and above that provided by hepatology training in a standard gastroenterology training program. Further, it was determined that most referrals for liver transplantation

Abbreviations: AASLD, American Association for the Study of Liver Diseases; ABIM, American Board of Internal Medicine; ABP, American Board of Pediatrics; AGA, American Gastroenterological Association; UNOS, United Network for Organ Sharing.

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were from gastroenterologists rather than from primary care physicians. Other results of the workforce study were that approximately 90% of hepatologists either with or without expertise in transplant hepatology were practicing in academic medical centers. These individuals were representatively distributed throughout the United States, and most were within urban locations. Hepatologists with or without transplant expertise, on average, saw about 45 outpatients per week with a waiting time of about 6 $\frac{1}{2}$ weeks for an initial appointment. It was estimated that the change in waiting time over the previous year had significantly increased and that hepatologists with or without transplant expertise were increasingly seeing more patients with complicated liver disease. Finally, because most referrals came from gastroenterologists, it was expected that once referrals were made, hepatologists would continue to provide care for those patients without the patient being returned to the referring physician.

The study by the Lewin Group showed that the disorders seen by hepatologists were representative of liver disease in general and included patients with chronic viral hepatitis, metabolic and inherited liver disease, autoimmune liver disease, end-stage liver disease, and evaluation of liver masses. Relative to duration of care following transplant, most liver transplant patients were continuously followed by transplant hepatologists, and virtually every training program throughout the country had openings for hepatologists or transplant hepatologists. Thus, the summary of the workforce survey commissioned almost 10 years ago concluded that advanced/transplant hepatology was considered a distinct discipline and that there was a need for additional individuals trained in hepatology.

In 2000, with this information from the workforce survey firmly in place, the AASLD applied to the ABIM to consider a certifying examination in transplant hepatology. This application was prepared by a small task force that was chaired by Dr. Joseph Bloomer. The results of the workforce survey demonstrating that advanced/transplant hepatology was considered a distinct discipline by board-certified gastroenterologists was essential to the success of the application. Further, it was necessary to demonstrate that there was a distinct body of literature relative to the discipline (that is, numerous textbooks), that there were journals dedicated to the discipline (for example, *Liver Transplantation*), and that a curriculum to guide training had been developed jointly by members of the AASLD and the American Society of Transplantation.[8] Endorsement from the AASLD sister societies was provided by letters of support from the American Gastroenterological Association (AGA), the American Society for Gastrointestinal Endoscopy (ASGE), the American College of Gastroenterology (ACG), the American Society of Transplantation (AST), and the Society for Surgeons of the Alimentary Tract (SSAT); the United Network for Organ Sharing (UNOS) chose to remain neutral on the issue.

The application to the ABIM was reviewed, debated, and ultimately approved by the gastroenterology subspecialty board of the ABIM. It was then moved to the main Board of Directors of the ABIM. There was a lively debate and the decision for approval was granted, but it was not unanimous. Some members of the Board of Directors felt that further "division" of internal medicine was unnecessary. Others realized the importance of recognizing advanced/transplant hepatology as a distinct discipline. This concept was approved in June 2002. Following approval by the ABIM Board of Directors, the ABIM invited the American Board of Pediatrics (ABP) to participate in cosponsoring the certificate and in the development of a conjoint examination process. The North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition was supportive of a subspecialty certification process that would include pediatricians, recognizing that this was in the best interest of the care of children with liver disease. Subsequently, the Board of Directors of the ABP approved cosponsorship of the certificate, with the ABIM working as the administrative board to oversee the development of a core examination for all examinees plus two separate modules: one that would be for internists and one for pediatricians. Final approval by the American Board of Medical Specialties (ABMS), the organization that provides oversight for all medical specialty boards, was achieved in June 2003. Following this approval, the ABIM and ABP jointly established the Test and Policy Committee on Transplant Hepatology comprising eight internists and two pediatricians. The committee developed a test blueprint for a certification examination in adult and pediatric transplant hepatology and then questions were developed which were extensively revised, rewritten, and vetted with final selection of questions for the examination, which was ready by November 2006. The examination performed well. Of the 261 candidates who took the examination, 214 were ABIM-certified adult gastroenterologists and 47 were ABP-certified pediatric gastroenterologists. The overall pass rate for the examination was 87%; 88% of adult gastroenterologists passed and 83% of pediatric gastroenterologists passed. Score reliability and pass/fail reproducibility of the exam were within those values expected for a first exam. The feeling of the various stakeholders in this process was that the response to certification in transplant hepatology had been excellent and that individuals practicing as advanced/transplant hepatologists embraced the concept of

being "board certified". It is hoped that another large group of individuals will take the examination in November 2008. Training programs are currently being approved by the Accreditation Council for Graduate Medical Education to provide accredited training; ultimately, it is anticipated that there will be 40 to 50 approved programs. Thus, the concept of Transplant Hepatology as a distinct discipline is now established.

Coincident with the development of recognition of transplant hepatology as a distinct discipline, many practitioners have reconsidered whether hepatology itself should be recognized as distinct from gastroenterology. In most communities around the country, practicing gastroenterologists do not feel comfortable caring for patients with complications of liver disease, in part because of the many other demands on their schedules. Needless to say, care of the routine hepatology patient has been and will continue to be within the purview of the practicing gastroenterologist, but it is viewed by some that the time has come for hepatology to be recognized as a distinct subspecialty with the development of training programs to allow physicians to pursue this discipline directly after training in internal medicine. For many individuals who practice hepatology presently, there is no need for prior training in gastroenterology. Similarly, for those who practice gastroenterology presently, many are not interested in caring for patients with acute or chronic liver disease. This topic was discussed in some detail at the AASLD plenary session at the Digestive Disease Week meeting in May 2007, where a panel discussion including Dr. Nicholas LaRusso, the current President of the AGA Institute, Dr. Emmett Keefe, then the Chair of the Gastroenterology Policy and Test Writing Committee of the ABIM, and I discussed numerous issues and answered questions posed by the audience. Some individuals in our professional community are opposed to further division of gastroenterology whereas many readily embrace the proposal and feel that it is an acceptance of what we are already doing at present. Within this lively debate about the pros and cons of such a shift, it was clearly recognized that shortening the training path to ultimate certification was indeed a desirable goal. This issue of shortening training has been one discussed by the ABIM and by medical educators at several different levels.

Proposals for training in hepatology after undergoing training in internal medicine have stressed that there will not be any required change in current gastroenterology fellowship training curricula, which will continue to include 30% of clinical time spent in training in general hepatology. Hepatology training would include all activities that are currently part of the transplant hepatology curriculum, including training leading to UNOS certification and ability to perform liver biopsies and paracentesis. Options for hepatology training that are being discussed include training for 1 year in general gastroenterology to learn basic endoscopy and to understand care of routine gastrointestinal problems. Then 1 or 2 years of specific training in hepatology would ensue with time available for clinical or basic research. Opportunities for advanced training in liver ultrasound and other techniques such as laparoscopy or portal pressure measurement could be included. This would provide comprehensive training in general clinical hepatology and in advanced/transplant hepatology. It would allow for hepatologists to do routine procedures on their patients. It would ultimately decrease the number of gastroenterology fellowship applicants currently unmatched in gastroenterology by directing the hepatology-oriented trainee to a different pathway from the outset. It would shorten the training by either 1 or 2 years from what is currently necessary, which includes 3 years of gastroenterology and 1 year of transplant hepatology after 3 years of internal medicine. Trainees could opt to be doubly board-certified in gastroenterology and hepatology, akin to being doubly board-certified in hematology and medical oncology.

At the 58th annual meeting of the AASLD in Boston, in November 2007, a Career Development Workshop was held, and many of these issues were discussed from the vantage point of the trainee interested in a career in hepatology. Many trainees have asked why it is necessary for them to do training in gastroenterology prior to learning hepatology if their expressed goals are to become a hepatologist. A change in training opportunities would obviate the need for this concern. Further, the AASLD sponsored a meeting on "Future Trends in the Science and Practice of Hepatology" in January 2008 where training issues were discussed. Also, a small task force made up of representatives of the AASLD, the AGA Institute, and the ABIM has been organized to tackle the concept and to determine how and whether it should move forward.

It must be recognized that it took 8 years from concept to a certifying exam in transplant hepatology. It may not take that long for hepatology after internal medicine but there are several steps along the way that appropriately lengthen the process. As a result, all angles and considerations of such a change will be thoroughly debated, vetted, and reviewed. Perhaps by 2015 (or sooner) trainees will be able to become hepatologists after internal medicine without the need to become a gastroenterologist first. We look forward to seeing how this process develops.

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