



Special Article

Skills and Requirements of a Transplant Hepatologist: Board Certification of the Italian Association for the Study of the Liver (AISF)

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ABSTRACT

Liver transplantation has indeed evolved from an experimental procedure in the early 1980s to the most effective treatment for patients with advanced liver cirrhosis and for selected patients with hepatocellular carcinoma and fulminant hepatic failure. In this new scenario, the transplant hepatologist plays a crucial clinical role, with essential duties and skills to manage the complexities encountered in waitlisted patients or transplant recipients. The clinical tasks of the transplant hepatologist include the management of patients with end-stage liver disease who are candidates for liver transplantation and/or on the waiting list, as well as the care of transplant recipients, in both the in- and outpatient setting. Starting in 2013, the Italian Association of the Study of the Liver, with the endorsement of the National Transplant Centre, will be offering a formal certification process for transplant hepatologists, implemented in accordance to *Union Européenne des Médecins Spécialistes*–European Board of Transplant Medicine procedures.

The Special Article outlines the requirements for board certification of the Italian Association for the Study of the Liver transplant hepatologist.

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1. Introduction

The discipline of hepatology has undergone a dramatic evolution over the past 3 decades, moving from a predominantly basic research-oriented discipline to a highly specialized clinical practice [1]. While effective treatment and prevention are now available for many types of liver diseases, complications of cirrhosis can be definitively solved only by liver transplantation [2]. Liver transplantation has indeed evolved from an experimental procedure in the early 80s into the most effective treatment for patients with advanced liver cirrhosis and for selected patients with hepatocellular carcinoma and fulminant hepatic failure. As a result, a continuously growing number of patients are referred to liver transplant centres for evaluation as well as pre and post-transplant care [3].

In this new scenario, the transplant hepatologist has emerged as a crucial clinical figure, whose duties and skills are essential to manage the complexities encountered in waitlisted patients or transplant recipients. Accordingly, an increasing number of liver transplant programmes throughout the world now include a team of transplant hepatologists, headed by a Medical Director, that shares the responsibilities and decisions related to the management of the programme with surgeons and other specialists.

2. Expertise of the transplant hepatologist

Clinical tasks of a transplant hepatologist include the management of patients with end-stage liver disease who are candidates for liver transplantation and/or on the waiting list, as well as the care of transplant recipients, in both the specifically dedicated outpatient clinic as well as the hospitalized patient settings. He/she should be able to provide care in various clinical environments, possibly within a multidisciplinary transplant team.

A strong background in hepatobiliary anatomy and liver pathophysiology, as well as knowledge of immunology, pathology and infectious diseases are needed, in order to prevent, recognize and

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Table 1
Selected skills required of a transplant hepatologist.

Selected skills
Knowledge of hepatic pathophysiology
Knowledge of hepatobiliary anatomy
Prevention of complications of liver cirrhosis
Treatment of complication of liver cirrhosis
Management of patients with severe end stage liver disease
Management of patients with hepatic tumours
Evaluation of prognostic factors in acute liver failure
Indication to liver transplantation in acute and chronic liver disease
Management of candidate for liver transplant while on the waiting list
Assignment of priority for liver transplantation on the waiting list
Care of patients in the early and long-term after liver transplantation
Prevention and treatment of medical complications after liver transplantation
Prevention and treatment of the recurrence of the primary liver disease (HCV, HBV, HCC, alcohol)
Knowledge of immunosuppression therapy and side effects

treat infections and rejection episodes, and identify the risks of over-immunosuppression after transplantation [4].

Management of patients before and after transplant requires considerable expertise (Table 1). The pre-transplant set of skills includes the ability to understand and treat the complications of liver diseases that may eventually lead to systemic abnormalities [4]. Accordingly, the transplant hepatologist should be able to prevent, diagnose and manage complications such as portal hypertension, variceal bleeding, ascites, hepatorenal syndrome, hepatopulmonary syndrome and portopulmonary hypertension, hepatic encephalopathy, and malnutrition [5]. An equally important skill is the capacity to recognize and manage the co-morbidities that affect other organs and systems.

The transplant hepatologist should be fully trained in the following areas:

- (1) The diagnosis, staging and management of patients with liver tumours (especially hepatocellular carcinoma), while collaborating closely with radiologists, oncologists, and surgeons; special expertise is also required in the down-staging/bridging treatments of waitlisted patients.
- (2) The assessment and management of patients with viral hepatitis before and after liver transplantation, in terms of both prophylaxis and treatment of recurrent viral disease. In this regard, the complexity of drug–drug interactions between new anti-hepatitis C virus protease inhibitors and the majority of medications prescribed to transplant recipients requires specific clinical expertise.
- (3) The prioritization of patients on the waiting list, based on severity of liver disease, comorbidities, and presence of MELD exceptions (including hepatocellular carcinoma); recognition of the severity of acute liver failure and the need for liver transplantation in this setting.
- (4) Cooperation with transplant surgeons and other specialists to manage patients in the early post-operative period, thus contributing to the diagnosis and treatment of primary graft non-function, delayed graft dysfunction, infections, rejection, renal insufficiency, metabolic disturbances, and side effects of medications. Indeed, in many centres, including some Italian hospitals, after discharge from the Intensive Care Unit liver transplant recipients are transferred directly to the medical ward, where they are cared for by a multidisciplinary team composed of transplant hepatologists and surgeons.
- (5) Prevention of recurrence of the primary liver disease (such as hepatitis B and C) as well as alcohol abuse relapse; in case of

recurrence, treatment and management of long-term medical complications, such as renal failure, hyperlipidemia, diabetes, hypertension, and cardiovascular diseases, which often develop years after transplantation.

3. The professional role of the transplant hepatologist

In the US there has been a greater effort than elsewhere to define and standardize the roles and commitments of the transplant hepatologist. A survey recently performed among US liver-transplant programmes has shown how hepatologists and surgeons respond differently to the clinical needs of liver transplant candidates and recipients [3]. The average number of transplant hepatologists in each centre ranged from 0.5 to 6, while the number of liver transplantations performed per transplant hepatologist was greater than those per surgeon or per transplant coordinator. In almost 90% of the programmes, a transplant hepatologist was the primary responsible for the care of waitlisted patients hospitalized for complications of cirrhosis. Similarly, in 67% of the programmes, the transplant hepatologist was the physician in charge of patients admitted to the hospital for complications that developed more than 1 year after transplant [3]. Therefore, for the vast majority of patients, both pre and post-transplant hospital care are provided by transplant hepatologists.

In a review published more than 10 years ago, McCashland found that about 40% of US transplant centres expected the general practitioner to be the primary physician providing preventive medicine, vaccination, and management of hypertension, renal dysfunction and diabetes in transplant recipients. On the other hand, relatively few general practitioners felt comfortable caring for and managing the health care of long-term liver transplant survivors [6]. In other countries, including Italy, there is little information regarding the possible involvement of general practitioners in the management of liver transplant recipients. Current experience indicates that the majority of general practitioners feel unfamiliar with the care of these patients. Moreover, liver transplant recipients often report that their primary care physicians are hesitant to manage the immunosuppressive medications and the potential drug-to-drug interactions. Hence, in most cases, the transplant hepatologist takes upon him/herself the responsibility for the patients' overall care [3,6,7].

Because of the increasing volume of work required to manage all of the patient needs before and after liver transplantation (both as hospitalized and outpatients), the figure of the transplant hepatologist has become crucial, thus emerging as a key player in any modern and competitive transplant programme and requiring full dedication and highly specific expertise [7].

4. Training and certification of the transplant hepatologist in the United States and Europe

In the USA, the majority of transplant hepatologists complete an Internal Medicine residency as well as fellowship training, first in gastroenterology and then in hepatology. A Certificate of Additional Qualification (CAQ) in advanced hepatology can be obtained by passing an examination for board-certified gastroenterologists. As a result, physicians who enter training in transplant hepatology do so after completing 3–5 years of training in gastroenterology and hepatology [3].

The training required to become a transplant hepatologist is unique among the medical sub-specialties and is provided by a multi-disciplinary group that includes surgeons, senior transplant hepatologists, pathologists, anaesthetists, and others [4,8]. Attendance to multidisciplinary team meetings, courses or consensus conferences establishing recommendations and guidelines for

specific treatments, procedures and interventions, are examples of more advanced learning opportunities [9]. In 2006 the American Board of Internal Medicine offered the first certifying examination in transplant hepatology. Successful completion of the examination provides the candidate with the CAQ in transplant hepatology or “Board Certification” in transplant hepatology [1]. The United Network for Organ Sharing (UNOS) certification for transplant hepatology requires at least 1 year of specialized training in transplantation to be performed under the supervision of a qualified transplant physician and a liver transplant surgeon at an UNOS-approved transplant centre [4].

In Europe, some transplant hepatologists pursue both internal medicine and hepatology training without a background in gastroenterology or experience in gastrointestinal endoscopy [4]. The European Union of Medical Specialists, UEMS (*Union Européenne des Médecins Spécialistes*), which includes the European Board of Transplant Medicine (EBTM) under the Division of Transplantation, has recently developed a procedure to certify the activity of transplant medicine specialists. So far, EBTM has organized 2 examination sessions, the first of which was held in Glasgow in 2011 and the second in Bucharest in 2012.

To achieve transplant hepatologist certification, a candidate must first undergo a selection process. To be eligible for the examination, the candidate must provide 2 letters of support from 2 outstanding and well-recognized heads of Liver Transplant Units or Transplant Departments in Europe. Moreover, her/his *curriculum vitae* must demonstrate adequate training in the field of liver diseases and, additionally, the range of skills, as listed in the log-book, must fulfil the requirements. The eligible candidate must then pass 2 examinations: the first on the general principles of organ transplantation (including core information on immunology, immunosuppression, complications of organ transplantation, organ donation rates, outcomes following organ transplantation, history of transplantation, ethics, legal aspects, management and organization of liver transplant centres, etc.); the second focusing on specific transplanted organs (liver, intestine, heart and lung, kidney and pancreas). During the EBTM examination, experts in transplant hepatology, holding a UEMS Honorary Diploma, verify the candidate’s ability to practice evidence-based medicine and work in a multidisciplinary environment, as well as ascertain his/her full understanding of the medical, legal, and ethical issues related to organ donation and transplantation, and his/her participation in trial audits and journal reviews. Candidates should also be capable of recording and retrieving information from electronic databases, and be fully versed in the organization of inpatient and outpatient liver transplant units.

5. Introducing the position of the transplant hepatologist in Italy

In Italy, there are currently 23 active liver transplant centres, with more than 1000 liver transplants performed every year overall, constituting one of the largest volumes of activity in Europe [10]. Patient and graft survival rates are comparable with those reported in the European Liver Transplant Registry (ELTR). A recent paper from the ELTR database reported a 3-year patient survival of 78% in patients transplanted for cirrhosis between 2000 and 2004 and a 5-year survival of 72% in those transplanted between 1995 and 1999 [11]. However, there is considerable heterogeneity in the volume of activity of different transplant centres, as well as in the management of the waiting list, patient prioritization policies, organ allocation, and organization of the health care services. Notably, with the exception of a few Master courses in transplantation medicine, until now there has been no formal academic

teaching of transplant hepatology for the training required to obtain the title of transplant hepatologist. The introduction of the figure of the transplant hepatologist, together with the full recognition of his/her specific expertise, is therefore advocated. For this purpose, starting from 2013, the Italian Association of the Study of the Liver (AISF), with the endorsement of the National Transplant Centre (CNT), is offering a certification process for transplant hepatologists, which has been implemented in accordance with the UEMS-EBTM procedures. All documents regarding the AISF certification process are available on the website www.webaisf.org.

AISF strongly feels that the time has come for health care institutions and organizations, hospitals, and medical scientific societies active in the field of liver transplantation (hepatology, gastroenterology, internal medicine, infectious diseases, organ procurement) to recognize the role of the transplant hepatologist in Italy. Accordingly, specific training programmes leading to the obtainment of this title must be implemented and should receive institutional endorsement.

AISF supports the belief that the responsibilities in patient management and organization of the transplant programme should be equally balanced between transplant surgeons and transplant hepatologists in relation to their respective roles. A complete and functional Liver Transplant Department should be the result of a close interaction between the Surgery Unit, headed by a Surgical Director, and the Gastroenterology or Internal Medicine Unit (with specific expertise in hepatology), headed by a Medical Director. Accordingly, the transplant hepatologist should be present in the Medical Unit of each Liver Transplant Department.

AISF believes that the transplant hepatologist certification will lead to a significant advancement in the quality of the global care offered to patients with end-stage liver disease and recipients of liver transplantation. AISF also supports the concept that a constant improvement of patient care should be achieved by promoting basic and clinical research in the field of liver transplantation. Finally, the transplant hepatologist certification will be an important credential for employment and career advancement of hepatologists involved in liver transplantation.

Conflict of interest statement

None.

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