



# Development of a Competency-Based Transplant Hepatology Fellowship

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## Abstract

**Purpose:** The Accreditation Council for Graduate Medical Education (ACGME) next accreditation system (NAS) provides incentive for medical educators to understand and implement competency-based medical education (CBME) training and assessment in their programs. Noting decreasing enrollees for the American Board of Internal Medicine (ABIM) Transplant Hepatology (TH) exam, workforce concerns in TH, and questionnaire data from Gastroenterology (GI) fellows and Program Directors (PDs), we developed an ABIM-approved one-year competency-based TH pilot program.

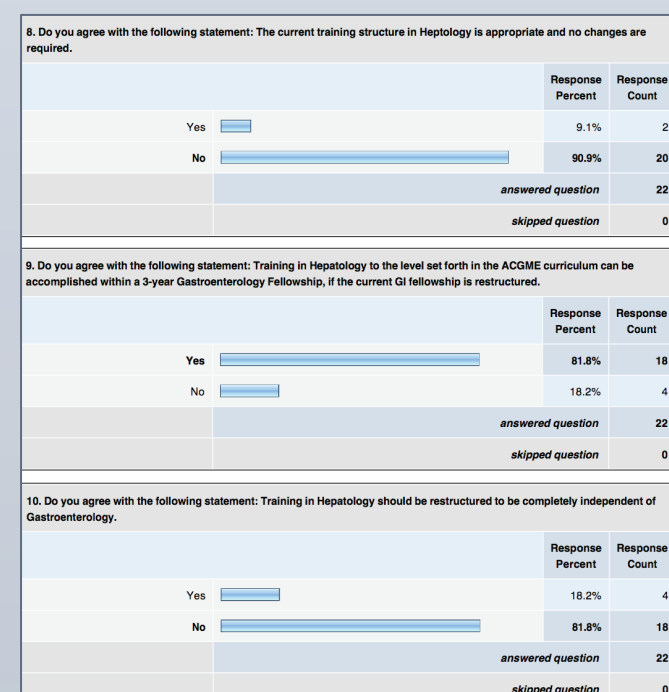
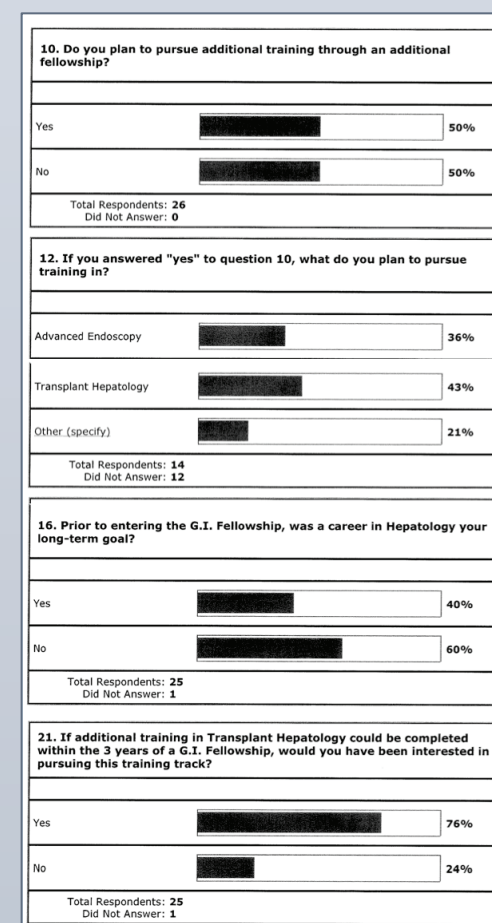
**Methods/Results:** Responding to a Multi-society Task Force on GI Training recommendation that Board Certification in TH be abandoned in favor of a “Focused Recognition” model and survey results suggesting that training duration had a detrimental effect on retaining trainees’ interest in TH careers, a competency-based three year combined GI/TH program was proposed, followed by participation in an ABIM workshop exploring CBME program development. The authors then participated in an ABIM “just-in-time” faculty development session.

Our pilot employs a hybrid design of the ABIM/ACGME milestones model<sup>1</sup> and the entrustable professional activities model (EPA) of ten Cate<sup>2</sup>. Our 14 EPAs include management of disorders frequently seen at a referral liver center. The pilot utilizes a one-year time frame, is approved for ten years and will start enrolling trainees in July 2012. Any institution with an ACGME-approved TH program is eligible to participate. Trainees must be certified as competent (using traditional methods) in GI as a prerequisite to enrollment. Faculty development will be available at national meetings and participating institutions. Outcomes measures include trainee achievement of level 4 or 5 entrustability for EPAs, TH Board Examination pass rate, Care Transition Measure instrument (CTM-3) scores, trainees’ participation in continuous maintenance of certification activities, hospital readmission rates and hospital CAHPS scores.

**Conclusions:** In an effort to respond to workforce needs while meeting ACGME NAS requirements, we developed a CBME-based one year program in TH. We anticipate that both GI and TH training can be completed in three years and that the lessons learned from the early implementation of our CBME-based program will be generalizable to other areas of Graduate Medical Education.

## Objective

The experience of program directors around the country and a decreasing number of enrollees for the ABIM Transplant Hepatology Board exam led to exploration of potential barriers to this career path. As exemplified by the responses below, GI fellow interest in Transplant Hepatology is high, but the additional year of training tends to discourage pursuit of the subspecialty. TH program directors agreed that a decreased period of training could still result in suitable training of candidates



## Methods (1)

Designed in consultation with and approved by the American Board of Internal Medicine (ABIM), Our pilot employs a hybrid design of the ABIM/ACGME milestones model<sup>1</sup> and the entrustable professional activities model (EPA) of ten Cate<sup>2</sup>. The use of milestones insures that training meets ACGME competencies. Our milestones grid for the Patient Care competency is illustrated below.

ACGME Competency	Developmental Milestones Informing ACGME Competencies	Time (months)	Assessment Methods/Tools
2. Patient Care	Core Hepatology in common with GI Training Obtain historical data, perform physical exam, Understand standard testing, and analyze the results Determine the appropriate time for referral for liver transplantation Manage non-complex liver disorders Investigate, diagnose, treat new onset liver disorders, of all levels of clinical severity Manage ongoing (i.e. chronic) liver disorders Provide care to liver patients in ambulatory and in-patient settings, and manage the transition between the two sites of practice Interpret liver biopsy	6	• Mini-CEX • Chart stimulated recall • Trainee chart audit (HCV PIM) • EPAs
		6	
		12	
		12	
		12	
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		12	
		12	
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		12	
Demonstrate competency in advanced hepatology clinical skills and reasoning	Integrate management of liver disorders in complex patients in a multidisciplinary model. Management of advanced liver disease prior to liver transplantation Management of liver transplant patients in the peri-operative period Care of the post-liver transplant recipient, including immunosuppressive management Management of allograft failure Management of acute liver failure in the non-transplanted patient Palliative and end-of-life care in patients with liver failure	12	• Mini-CEX • Chart stimulated recall • Trainee chart audit (HCV PIM) • EPAs
		12	
		12	
		12	

The concept of entrustable professional activities (EPAs) provides a framework for assessment that can be conducted in the course of clinical practice. Our 14 EPAs include management of disorders frequently seen at a referral liver center. Examples of our EPAs for the management of portal hypertensive hemorrhage and compensated cirrhosis are illustrated below. Scoring of EPAs is based on a five point scale, with a score of 4 indicative of competence.

Competency	Assessment Method(s)	Evaluator(s)
Patient Care	EPAs, Mini-CEX, Chart-stimulated recall, Trainee chart audit (HCV PIM)	Self, Faculty Competency Committee
Interpersonal Communication Skills	Multisource Feedback, CTM-3	Faculty, Transplant Coordinators, Social Workers, Endoscopy Nurses, Competency Committee
Professionalism	Multisource Feedback	Faculty, Transplant Coordinators, Social Workers, Endoscopy Nurses, Competency Committee
Systems Based Practice	Multisource Feedback	Faculty, Transplant Coordinators, Social Workers, Endoscopy Nurses, Competency Committee
Practice Based Learning and Improvement	Multisource Feedback CTM-3 HCV PIM	Faculty, Competency Committee
Medical Knowledge	Training In-service examination, Mini-CEX	Faculty, Competency Committee

Level	Proficiency
1	Has knowledge
2	May act under full supervision
3	May act under moderate supervision
4	May act independently
5	May act as supervisor

## Methods (2)

The expected timeline to achieve the “statement of awarded responsibility (STAR) for each of the 14 EPAs in our pilot training program is illustrated below:

	3 Months	6 Months	9 Months	12 Months
Liver Biopsy		✓		*
Paracentesis		✓		*
Medical and endoscopic management of a portal hypertensive bleeding		✓		*
Evaluation and management of elevated liver enzymes and jaundice		✓		*
Evaluation and management of acute hepatitis		✓		*
Evaluation and management of chronic hepatitis			✓	*
Management of alcoholic liver disease including acute alcoholic hepatitis			✓	*
Evaluation and management of NAFLD		✓		*
Evaluation and management of cholestatic, inherited and metabolic liver disease		✓		*
Evaluation and management of liver mass		✓		*
Management of compensated cirrhosis		✓		*
Evaluation and management of decompensated cirrhosis, including evaluation for DDLT and LDLT and management of patients listed for liver transplantation			✓	*
Evaluation and management of acute liver failure			✓	*
Management of the early and long-term post-transplant patient			✓	*

## Outcome Measures

We chose a variety of outcomes measures to assess the progress of trainees and reproducibility across institutions. Use of these instruments required a manageable amount of faculty development, which will be provided both by ABIM and AASLD

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Medical Knowledge	Training In-service examination, Mini-CEX	Faculty, Competency Committee

## Example of Measurement Instruments

**The 3-Item Care Transitions Measure (CTM-3)**  
The first statement is about when you were in the hospital...  
1. The hospital staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left the hospital.  
The next statement is about when you were preparing to leave the hospital...  
2. When I left the hospital, I had a good understanding of the things I was responsible for.  
The third statement is about when you were preparing to leave the hospital...  
3. The hospital staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left the hospital.

**Hepatitis C PIM Chart Questions**  
14. Are you the best usual source of care for the patient? (1) Yes (2) No (3) Unsure  
15. Discharge Testing  
16. Are results of testing for hepatitis and HCV antibody documented in the medical record? (1) Yes (2) No  
17. Are results of quantitative HCV RNA testing documented in the medical record? (1) Yes (2) No  
18. Guidelines Used  
19. Are results of therapy documented in the medical record? (1) Yes (2) No  
20. Activity Status (specify)  
21. Follow-up (specify)  
22. Is a discussion of the potential advantages/disadvantages of treatment-based treatment documented in the medical record? (1) Yes (2) No  
23. Has the patient received Hepatitis C antiviral treatment? (1) Yes (2) No  
24. Was the most recent course of therapy given by this practice or another practice? (1) This practice (2) Another practice  
25. For patients whose most recent course of therapy was given by another practice, what was the response to the therapy? (1) Sustained response (2) Non-response (3) Not documented  
26. Tests and Assessments  
27. Tests and Assessments  
28. Was TSP being done before treatment? (1) Yes (2) No

## Structure of the Fellowship

Although the specific structure of any given pilot program participant will depend on the institution, our design stipulates that each program have a Competence Committee, consisting of the Program Director and at least two other Transplant hepatology faculty, which meets quarterly and reviews the assessments listed in the table below. Committee feedback and action are to be provided to the trainee in a timely fashion.

Transplant hepatology pilot project timeline	1	2	3	4	5	6	7	8	9	10	11	12
End of rotation assessment	x	x	x	x	x	x	x	x	x	x	x	x
CTM3			x						x			
Chart stimulated recall			x						x			
HCV PIM (5 charts)			x						x			
Competency Committee meeting			x		x				x			x
• Review of multisource feedback			x		x				x			x
• Review of liver biopsy checklist			x		x				x			x
• Review of mini-CEX			x		x				x			x
Semiannual documentation					x							x
In-training examination												x

## Conclusions

The Transplant Hepatology Pilot Program, designed using the assessment methods of Competency Based Medical Education, will allow more robust and reproducible training of future transplant hepatologists. We anticipate that the potential for reduced training time will increase the number of candidates for TH training and eventual TH Board Certification. Our hope is that our experience will provide valuable information for medical educators in other specialty areas.

## References

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- <sup>2</sup>ten Cate O, Scheele F. Competency-based postgraduate training: can we bridge the gap between theory and clinical practice? Acad Med. 2007 Jun;82(6):542-7.

## Financial Conflict of Interest

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John Lake: Zymogenetics: Advisory Committees or Review Panels; Vital Therapies: Advisory Committees or Review Panels; HepaHope: Advisory Committees or Review Panels; Novartis: Consulting; Gore: Advisory Committees or Review Panels; GE Healthcare: Consulting; BMS: Consulting; Novartis: Grant/Research Support; Essai: Grant/Research Support; Icaria: Grant/Research Support; BMS: Grant/Research Support