Gastroenterology Fellowship Program

Curriculum and the Core Competencies

I. Introduction

The objectives of the Department of Internal Medicine and the Division of Gastroenterology at The University of Pennsylvania are to prepare gastroenterology fellows for the independent clinical and/or investigative practice of gastroenterology and hepatology. The goals of the gastroenterology fellowship program are predicated on the 6 core competencies as mandated by the Accreditation Council for Graduate Medical Education (ACGME). This document will address the core curriculum in gastroenterology and hepatology towards satisfying the core competencies of ACGME. Additional details may be found throughout this handbook. The fellow is also encouraged to explore the University of Pennsylvania Health System (UPHS), Department of Internal Medicine, and the Division of Gastroenterology web sites. Additionally, the ACGME web site is a useful source of information for fellows in training. By the end of the gastroenterology fellowship, fellows will be able to:

- Understand current diagnostic approaches in the fields gastroenterology hepatology, and pancreaticobiliary diseases.
- Understand current therapeutic approaches in the fields of gastroenterology, hepatology, and pancreaticobiliary diseases.
- Understand the physiology, pathophysiology, and pathobiology of diseases relevant to gastroenterology, hepatology, and pancreaticobiliary diseases.
- Understand the importance of a multidisciplinary approach through integration of surgery, radiology, pathology, and nutrition into management of patients with gastrointestinal, pancreaticobiliary, and hepatic diseases.

II. Overview of the Gastroenterology Core Curriculum

The Gastroenterology Core Curriculum (Core Curriculum) was developed by the American Association for the Study of Liver Diseases (AASLD), American College of Gastroenterology (ACG), American Gastroenterological Association (AGA) Institute, and American Society for Gastrointestinal Endoscopy (ASGE). The Core Curriculum represents the four societies’ opinion about standards for training in gastroenterology, hepatology, and pancreaticobiliary diseases. Over
time, the curriculum will evolve as new knowledge, techniques, and technologies develop. The fellow is encouraged to read the Core Curriculum available on the AGA web site for additional details about fellowship training and its relationship to the core competencies.

This document will address relevant topics in gastroenterology, hepatology, and pancreaticobiliary diseases and how they pertain to the ACGME-mandated core competencies. Information pertinent to each year of gastroenterology fellowship training will be given. Furthermore, training relevant to the year of fellowship and its relationship to the core competencies will be emphasized. In addition to core training in gastroenterology, hepatology, and pancreaticobiliary diseases, instruction from the departments of pathology, radiology, and surgery will be provided. Not every subsection of the Gastroenterology Core Curriculum is covered in this document (e.g. cellular and molecular physiology, geriatric gastroenterology, pediatric gastroenterology, surgery, and women’s health in digestive diseases). The fellow is encouraged to read the entire document for complete information. Clinical practice and research in gastroenterology is based upon the highest principles of ethics, humanism, and professionalism. These principles will be emphasized throughout this document and elsewhere in the fellowship manual. Fellows will also be encouraged to maintain excellence in patient care, scholarship, and commitment to life-long learning.

III. Overview of Training in Gastroenterology

Gastroenterology fellows will develop a broad knowledge base, formulate differential diagnoses based upon thorough clinical assessment, understand the indications and contraindications of diagnostic and therapeutic procedures, develop requisite skill in performing procedures pertinent to gastroenterology and hepatology, and appreciate the humanistic and ethical tenets of internal medicine and the practice of gastroenterology and hepatology. The physiologic and pathophysiologic principles pertinent to gastroenterology and hepatology will be emphasized. Teaching faculty within the Division of Gastroenterology of The University of Pennsylvania will provide adequate supervision of fellows and impart thoughtful, cost-conscious approaches to the use of technology in addition to training in clinical medicine and research. Moreover, fellows will appreciate the importance of scholarly activity and develop the necessary skills to perform this activity during the 3 year program of training. The Penn program offers many options for training in research including but not limited to basic science and Master’s in Clinical Epidemiology (MSCE) tracks through NIH-funded T-32 training grants. See other portions of this manual and the Division of gastroenterology web site for additional details. Dr. Anil Rustgi, Division Chief of Gastroenterology and Dr. Jonathan Katz, Associate GI fellowship program
A. General Approach to Training

1. Prerequisites
All Penn gastroenterology fellows must have completed a 3 year residency in internal medicine accredited by ACGME. Additionally, fellows must have performed at the superior level prior to beginning fellowship.

2. Training Institutions
Training in gastroenterology at Penn occurs at The Hospital of the University of Pennsylvania (HUP), Penn Presbyterian Medical Center (PPMC), The Philadelphia VA Medical Center (PVAMC) and The Perelman Center for Advanced Medicine (CAM). These facilities have internal medicine and gastroenterology programs accredited by ACGME and are affiliated with The University of Pennsylvania School of Medicine. Penn is committed to education through provision of financial resources adequate to support appropriate compensation for faculty and trainees and sufficient space with modern equipment to accomplish this goal. Moreover, Penn will provide adequate clinical support services on a 24-hour basis, foster peer interaction among specialty and subspecialty trainees, and sponsor meaningful basic and clinical biomedical research.

3. Educational Program
The Penn GI fellowship program will provide an intellectual environment to acquire knowledge, skills, clinical judgment, and professional values essential to the practice of gastroenterology and hepatology. The Penn program stresses the role of gastroenterologists as consultants and the need to establish skills necessary to communicate effectively with other professionals. Not only must trainees develop skills relevant to clinical medicine, they will also develop a scholarly aptitude through participation in basic or clinical research through NIH training grants or other means of financial support. Furthermore, Penn encourages fellows to present their work at national meetings and publish their findings in peer-reviewed journals.

4. Duration of Training
The Penn gastroenterology fellowship program is 3 years in duration and will include a minimum of 18 months of clinical training. Fellows will gain an appreciation of the natural history of gastrointestinal, pancreaticobiliary, and hepatic diseases as well as the benefits and limits of different approaches to
care. As fellows progress through the Penn program, they will gain increasing responsibility with less faculty supervision such that by the completion of training they will be able to serve as independent practitioners in the field.

5. Duty Hours

The Penn GI program complies with ACGME-mandated duty hour limits. Please refer to other portions of the gastroenterology program manual and the ACGME and UPHS web sites for additional information.

6. Levels of Training

The Penn program requires a minimum of 3 years of training. A minimum of 18 months will be devoted to clinical care in inpatient and outpatient settings at HUP, PPMC, PVAMC, and CAM. Additionally, all fellows are required to attend the weekly outpatient continuity clinic throughout their fellowship training. Additional details about training in acid-peptic diseases, biliary tract disorders, pancreatic diseases, endoscopy, ethics, medical economics and systems-based practice, geriatric gastroenterology, pathology, hepatology, inflammation and enteric infectious diseases, malignancy, motility disorders, nutrition, radiology, research, surgery, and women’s health may be found in this document and the Gastroenterology Core Curriculum through the AGA web site.

ASGE states that certification of competency in basic endoscopy cannot be considered before minimum threshold levels are met. Competence can only be obtained through substantial skill and experience.

All fellows enrolled in the Penn GI program must participate in at least 3 to 6 months of basic or clinical research. Fellows receiving funding through NIH-sponsored T-32 training grants will be required to participate in more intense research training. Additional information about research requirements may be found throughout other portions of this manual, the NIH and ACGME web sites, and/or Drs. Rustgi and Katz. All fellows will be required to attend an array of didactic conferences and other educational experiences as mandated by ACGME.

Beyond the 18 month required clinical rotations and the 3 to 6 month minimum research requirement, all fellows will be required to complete 12 additional months of training. These 12 additional months may be devoted to additional research and/or clinical experiences.

Level 2 training at Penn is enhanced clinical training specifically designed for gastroenterologists who wish to provide services in geriatrics, nutrition, advanced endoscopy, motility, pancreaticobiliary diseases, and hepatology. Level 2 training may either be incorporated into the 3 year curriculum or require an additional year beyond the traditional GI fellowship depending upon the program chosen.
For Penn fellows preparing for a career in research, an intensive investigative experience is provided with the recognition that such training may need to be continued beyond the traditional 3 year fellowship. Fellows enrolled in the basic science or MSCE tracks will be required to do coursework in addition to their laboratory experiences depending upon the program. This work includes but is not limited to epidemiology, biostatistics, research methodology, outcomes and effectiveness research, decision analysis, cell biology, molecular genetics, and ethics under the supervision of qualified research mentors. Please refer to the Division of Gastroenterology web site for the current list of Penn faculty and their research interests. The research experience will emphasize ethics, humanism, professionalism, and the importance of the scientific method based upon independent and critical thinking.

B. Program Faculty

1. Program Director
Dr. Thomas Faust is the Penn GI fellowship program director. He is ABIM-certified in internal medicine and gastroenterology, recertified in gastroenterology, and certified in transplant hepatology. Dr. Faust is based at HUP. Dr. Faust is responsible for coordinating all activities of the fellowship program as mandated by ACGME. Dr. Katz is the Associate Program director. He works with Dr. Faust to coordinate clinical activities and oversees research projects in collaboration with Dr. Rustgi.

2. Faculty
The Penn GI fellowship program provides the requisite number of key teaching faculty as mandated by ACGME. They are ABIM-certified in internal medicine and gastroenterology. In addition to gastroenterology faculty, the Penn program has the requisite number of key teaching faculty in hepatology and advanced endoscopy. Moreover, the program has the required number of additional full and part time faculty to ensure adequate supervision of trainees and coverage of all programmatic components. Fellows will be adequately supervised by Penn faculty at all times. All key faculty devote at least 10 hours per week when averaged over 1 year to teaching, research, administration, and/or critical evaluation of performance, progress, and competence of Penn gastroenterology fellows. All key faculty serve as role models by active participation in the clinical practice of gastroenterology, continuing medical education, regional and national scientific societies, research activities, and presentation and publication of scientific studies and scholarly reviews. Faculty are evaluate at required intervals as mandated by ACGME. The fellow is encourage to review additional information about gastroenterology fellowship program requirements on the ACGME web site.
C. Environment for Training in Gastroenterology

1. Relationship to Training in Internal Medicine
GI fellows will maintain their skills in internal medicine and develop lines of communication with medicine residents and faculty. Fellows will be expected to coordinate care with appropriate internal medicine personnel and to participate in educating medicine interns and residents.

2. Relationship to Other Disciplines
Gastroenterology fellows will be expected to coordinate care of patients and to participate in the education of other medical and ancillary personnel throughout UPHS. Additionally, they must develop skills in systems-based practice and lead multidisciplinary teams within the health system.

3. Facilities and Resources
There will be a sufficient number of new and return patients with gastrointestinal, pancreaticobiliary, and hepatic diseases to ensure adequate inpatient and outpatient experiences. Men, women, and geriatric patients will be followed by fellows and faculty within the Division of Gastroenterology. Moreover, diverse ethnic, cultural, and socioeconomic groups will be represented. Qualified key faculty will supervise fellows in cognitive and procedural components of gastroenterology in inpatient and outpatient settings. CAM will be used for outpatient continuity clinic and for procedures relevant to gastroenterology and hepatology. Fully equipped procedure units at HUP, PPMC, PVAMC, and CAM will include state-of-the-art diagnostic and therapeutic equipment. Computers are available throughout UPHS that provide fellows access to medical literature, internet searches, procedural results, and data bases. The procedure units throughout UPHS have equipment to perform gastrointestinal function testing. Full service emergency, diagnostic and therapeutic radiology, pathology, general and hepatobiliary surgical, and oncology departments are available throughout the health system. Additionally, fully-staffed medical and surgical intensive care units are available to treat patients with a wide variety of gastrointestinal, pancreaticobiliary, and hepatic disorders. Access to medical literature through hard copy and internet searches in available throughout UPHS. Adequate administrative support for the fellowship program including but not limited to financial support for the GI fellowship program coordinators, assistants, computers for administrative purposes is available.
D. Specific Program Content

1. Patient Care
All GI fellows enrolled in the Penn program will be required to complete 18 months of clinical training. Fellows will gain intense exposure to cognitive and procedural components of gastroenterology and hepatology during inpatient and outpatient rotations. At least 5 months of this clinical training will be devoted to hepatology training. All fellows must perform procedures that surpass the minimum standards as addressed elsewhere in this handbook, the ACGME and ABIM web sites, and the Gastroenterology Core Curriculum. Moreover, fellows will develop requisite skills thorough supervision to become component consultants in the fields of gastroenterology and hepatology.

For fellows pursuing careers in clinical care, 18 months of additional training will be required. Likewise, a minimum of 6 months of basic or clinical research or other scholarly activity will be mandated for fellows pursuing this pathway. Additional exposure to general gastroenterology, inflammatory bowel diseases, GI motility, GI oncology, nutrition, hepatology, transplant hepatology, and pancreaticobiliary is available.

Level 1 and 2 training will require different skills. Specific information relevant to these requirements may be found in this manual or in the Gastroenterology Core Curriculum. Fellows who complete level 2 training will be able to serve as consultants to gastroenterologists, hepatologists, and other appropriate medical personnel.

All trainees, with faculty supervision, will spend at least ½ day per week throughout the 3 year fellowship in an ambulatory continuity clinic experience at CAM, PPMC, and/or PVAMC. A variety of new and return patients with gastrointestinal, pancreaticobiliary, and hepatic diseases will be provided. The schedules are set such that patients recognize trainees as their primary caregivers. All fellows will attend the same clinic for a minimum of 6 months that satisfy continuity clinic requirements as mandated by ACGME and recommended by the Gastroenterology Core Curriculum.

2. Conferences and other Non-Patient Care Activities
All trainees throughout the 3 year program at Penn will develop a scholarly approach to education in gastroenterology and hepatology. Sources of instruction include but are not limited to textbooks, monographs, scientific literature, and syllabi. Fellows will be required to attend journal clubs, gastroenterology and hepatology conferences, pathology conferences, clinical case conferences, gastroenterology grand rounds, and core curriculum conferences. Moreover, fellows will be encouraged to attend postgraduate and ABIM-board review courses, and annual scientific meetings including but not limited to Digestive
Disease Week (DDW) of the AGA, the AASLD, ACG, and/or ASGE. Please refer to other portions of this handbook for specific information about conferences and seminars. Penn expects that all fellows will participate in planning several of these conferences.

Journal club, pathology conference, clinical case conference, GI grand rounds, and core curriculum conferences are held weekly. Fellows are encouraged to review this manual and visit the Division of Gastroenterology web site for details about timing and content of other conferences and seminars. Multidisciplinary conferences with radiology, general surgery, hepatobiliary and transplant surgery, pathology, and oncology are ongoing and GI fellows are encouraged to attend when able. Most of these conferences occur weekly.

Fellows will be expected to participate in quality assurance and continuous quality improvement initiatives within the Division of Gastroenterology and UPHS. These experiences will satisfy systems-based criteria mandated by ACGME.

As outlined in this handbook, fellows will be expected to participate in scholarly activity. They will develop skills in study design, decision analysis, effectiveness and outcomes research, statistics, epidemiology and other skills necessary to conduct and evaluate clinical evaluation. Specific requirements must be met depending upon whether the fellow chooses the clinical educator, basic science, or MSCE tracks.

3. Teaching Experience
All GI fellows will participate in educating medical students, interns, residents, junior trainees in gastroenterology, and other health care personnel. Additionally, fellows will participate in conferences and seminars as outlined in this manual and on the Division of Gastroenterology web site.
E. Evaluation of Trainees

The formal evaluation of GI fellows is mandated by ACGME. Furthermore, objective documentation is required for credentialing fellows applying for staff privileges after graduation from the program. At Penn, methods are set in place to evaluate trainee competence thorough written documentation and oral feedback to all trainees. As per ACGME, all fellows will receive timely feedback during their 3 years of training. Formative and summative evaluations are completed for all fellows enrolled in the Penn program. Each of the core competencies will be addressed below and the methods of assessment at Penn are highlighted by bullet points. Different components of the Penn program may be found in other portions of this manual and the Division of Gastroenterology web site. Trainees are encouraged to review additional details in the Gastroenterology Core Curriculum.

1. Patient Care

All fellows must provide patient care that is appropriate, effective, and compassionate. This includes but is not limited to a complete history and physical examination. An appropriate assessment and treatment plan should be formulated. Moreover, fellows will be required to present their assessments in a coherent fashion as consultants to other services.

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Procedural skills including but not limited to upper and lower endoscopy and liver biopsy.
- Log book documentation and objective competency determinations of all endoscopic procedures and liver biopsies.

2. Medical Knowledge

GI fellows must demonstrate a core fund of knowledge in the physiology of the gastrointestinal tract and liver. Additionally, fellows must master the pathophysiology of gastrointestinal, pancreaticobiliary, and hepatic diseases. Exposure to other relevant disciplines including but not limited to medical imaging, clinical pharmacology, and surgery will occur during the 3 year program at Penn. Trainees will learn to understand the importance of evidence-based medicine in the practice of gastroenterology and hepatology.
• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient care through inpatient and outpatient electronic and paper record review.

3. Practice-based Learning and Improvement
GI fellows must be able to investigate, evaluate, and improve their patient care through analyzing and assimilating scientific evidence and their own experience in clinical care. Additionally, fellows will apply knowledge of statistical methods to critically appraise clinical studies. The use of information technology thorough a variety of methods at Penn to support fellow education will also be essential. As previously stated elsewhere, fellows will be required to educate medical students, other physicians, and ancillary personnel throughout UPHS.

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).

4. Interpersonal and Communication Skills
Gastroenterology fellows must demonstrate interpersonal and communication skills that result in effective exchange of information with patients, families, and other health care personnel. Information exchange will occur through verbal, paper, and electronic methods. Moreover, fellows must be able to demonstrate leadership as they progress through the 3 year fellowship.

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
5. Professionalism
Fellows must demonstrate an understanding and commitment to professionalism. This includes but is not limited to respect and compassion and integrity towards patients, their families, and other health care personnel. Ethical behavior must be demonstrated by fellows, and they must respond and become sensitive to diverse gender, ethnic, socioeconomic, and aging populations.

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.

6. Systems-based Practice
Trainees must develop an understanding and awareness of a systems-based practice to healthcare. Furthermore, they must appreciate the impact of their care on other professionals, the healthcare system, and society. They should be able to practice cost-effective care without compromising quality of care. Fellows must be able to coordinate care with other services throughout UPHS to improve patient outcomes.

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

F. Evaluation of Graduates
Dr. Faust, the program training director, will evaluate the performance of graduates from the Penn program on a regular basis. Methods of evaluation will include but are not limited to the following.

- Scores on ABIM Certification and Re-certification examinations.
G. Evaluation of Training Program and Faculty

The Penn GI fellowship program will be evaluated on a regular basis. Methods of evaluation include but are not limited to the following.

- Graduate surveys about the relevance of their education to their current clinical and research activities and whether modifications of the training program are warranted.
- Trainees will be required to evaluate Penn faculty and the training program at regular intervals as mandated by ACGME.
- The program director will meet with fellows and faculty to evaluate the gastroenterology curriculum and whether training objectives were met.

IV. Training in Acid-Peptic Diseases

Acid-peptic diseases are common disorders that must be mastered by fellows during their 3 year fellowship. Fellows must understand the importance of helicobacter pylori, non-steroidal anti-inflammatory drugs (NSAIDS), and acid hypersecretory states in the pathogenesis of these afflictions. Additionally, all trainees must understand the relevance of diagnostic and therapeutic medical imaging, endoscopy, and surgery when treating patients with acid-peptic diseases. Fellows must master cognitive and procedural skills pertinent to these disorders.

A. Goals of Training

During the 3 year fellowship program, gastroenterology fellows will gain an appreciation for the anatomy, physiology, and pathophysiology of the esophagus, stomach, and duodenum. Gastric acid secretion and indications for gastric analysis will be emphasized. Fellows will also gain an understanding of acid hypersecretory states and methods used to diagnose these conditions. Additionally, trainees will understand the relevance of hypochlorhydric and achlorhydric states in gastrointestinal disorders. Fellows will also gain an appreciation of other topics germane, but not limited to acid-peptic disorders such as Barrett's esophagus, helicobacter pylori, non-steroidal anti-inflammatory
medications (NSAIDS), antacids, histamine-2 receptor blockers, proton pump inhibitors, mucosal protective agents, prostaglandin analogues, prokinetic agents, antibiotics, and endoscopic and surgical treatments of acid-peptic diseases. Please refer to the Gastroenterology Core Curriculum for additional details.

Penn trainees will develop competence in the history and physical examination pertinent to acid-peptic diseases, diagnostic and therapeutic upper endoscopy, capsule endoscopy, pH and motility testing. As well, fellows will develop experience in interpreting plain films, barium studies, ultrasonography, computed tomography (CT), magnetic resonance (MR) imaging, angiography, and somatostatin receptor scintigraphy relevant to acid-peptic diseases.
B. Training Process

Key faculty will be instrumental in providing instruction pertinent to the topics above. With appropriate supervision, Penn fellows should be able to provide a rational differential diagnosis and treatment plan for patients with acid-peptic diseases. Furthermore, key faculty will be responsible for educating fellows about indications and contraindications of different diagnostic tests including but not limited to blood testing, medical imaging, and endoscopic studies.

Throughout the 3 year curriculum, fellows will become proficient in conscious sedation, elective and emergent upper diagnostic and therapeutic endoscopy, injection therapy, cautery, banding, clipping, biopsy, polypectomy, dilation of benign and malignant esophageal strictures, esophageal motility studies, pH testing, and interpretation of gastric acid secretory tests. As addressed above, key faculty within the divisions of gastroenterology and medical imaging will instruct fellows about the merits of plain films, barium studies, CT and MR imaging, angiography, and somatostatin receptor scintigraphy. As addressed elsewhere in this manuals, all fellows will be required to attend weekly pathology conference to discuss pathology pertinent to gastrointestinal, pancreaticobiliary, and hepatic disorders.

C. Timeline and Core Competencies

During the 3 year Penn GI curriculum, fellows will gain progressive responsibility in managing patients with acid-peptic disorders. All fellows will be required to meet the objectives above.

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
• Diagnostic and therapeutic upper endoscopy, pH and motility testing, medical imaging.
• Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.

Interpersonal and Communications Skills

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Direct observation of fellow communication through review of paper and electronic records.
Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

Second Year Fellows

Penn second year fellows will be required to meet the ACGME-mandated core competencies below. Second year fellows and key faculty will be responsible for educating first year fellows, medical students, medical housestaff, and ancillary personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic upper endoscopy, pH and motility testing, medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.
Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).

Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.

**Systems-based Practice**

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

**Third Year Fellows**

Penn third year fellows will be required to meet the ACGME-mandated core competencies below. Third year fellows and key faculty will be responsible for educating first and second year fellows, medical students, medical housestaff, and ancillary personnel. Third year fellows will have progressive cognitive and procedural responsibility when compared to first and second year fellows.

**Patient Care**

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic upper endoscopy, pH and motility testing, medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.
Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).

Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Quality improvement initiatives offered throughout UPHS.

V. Training in Biliary Tract and Pancreatic Diseases

Biliary tract diseases are common afflictions and are important sources of patient morbidity and mortality. Cognitive and procedural skills are important when evaluating patients with these conditions. Gastroenterology trainees will become proficient in the anatomy, physiology, pathophysiology, and clinical presentation of patients with biliary tract diseases. Additionally, familiarization with advancing technology is important to optimize patient outcomes. Fellows are encouraged to review the Gastroenterology Core Curriculum for additional information.

Like biliary tract disorders, pancreatic diseases are common and gastroenterologists are frequently called upon to provide care to patients with these disorders. Therefore, fellows must be well-trained in managing patients with benign and malignant pancreatic diseases. Fellow are encouraged to review the Gastroenterology Core Curriculum for additional information.

A. Goals of Training

Trainees will be required to develop an understanding of basic embryology and anatomy of the biliary tract, hormonal and neural regulation of bile flow and gallbladder function, and physiology and pathophysiology of bile secretion. As well, fellows will be required to understand the epidemiology, etiology, clinical manifestations, complications, and treatment options for patients with gallstones as well as benign and malignant gallbladder and biliary tract diseases. Furthermore, fellows will develop an appreciation for ultrasonography, CT, MR, scintigraphy, and magnetic resonance cholangiopancreatography (MRCP) when evaluating patients with suspected gallbladder and biliary tract diseases. Finally, fellows will understand the importance of surgical consultation for patients with gallbladder and biliary tract diseases.
Fellows will be required to develop an understanding of basic embryology and anatomy of the pancreas, physiology of pancreatic enzyme secretion, pancreatic water and electrolyte transport, acute and chronic pancreatitis, pancreatic cancer, cystic fibrosis, and inherited pancreatic diseases. Trainees will be required to understand the importance of ultrasonography, endoscopic ultrasonography (EUS), CT, MR, and MRCP when evaluating patients with suspected pancreatic diseases. Moreover, fellows will appreciate the importance of surgery in managing patients with these disorders. Finally, trainees will learn how to use blood testing and pancreatic function tests when confronted with these patients.

B. Training Process

Key faculty will be instrumental in providing instruction pertinent to the topics above. With appropriate supervision, Penn fellows should be able to provide a rational differential diagnosis and treatment plan for patients with biliary tract and pancreatic diseases. Furthermore, key faculty will be responsible for educating fellows about indications and contraindications of different diagnostic tests including but not limited to blood testing, medical imaging, and endoscopic studies. Level 1 training will be accomplished during the 3-year gastroenterology fellowship curriculum. For fellows desiring additional training in biliary tract and pancreatic diseases, level 2 training will be required. Fellows are encouraged to review details about levels 1 and 2 training in the Gastroenterology Core Curriculum.

All fellows will be required to master the above during the 18 months of required clinical training through readings, participation in core curriculum and clinical case conferences, gastroenterology grand rounds, and journal clubs. Required and elective inpatient and outpatient clinical rotations will afford the fellow opportunity to manage these patients with the assistance of key clinical faculty.

Level 1 trainees with no plans to become advanced diagnostic and therapeutic endoscopists will have minimal exposure to biliary and pancreatic endoscopy. Nevertheless, fellows will be required to understand the indications, contraindications, limitations, and alternatives to advanced diagnostic and therapeutic procedures. A variety of didactic experiences will afford the fellow ample opportunity to understand the basics of managing patients with biliary tract and pancreatic diseases. Please refer to other portions of this manual and the Division of Gastroenterology web site for additional details. Moreover, fellows will be required to understand the benefits and limitations of medical, surgical, and radiologic options in managing these patients.

Level 2 trainees will acquire in-depth knowledge of the physiology, pathophysiology, clinical manifestations, diagnosis, and therapeutic approaches
to patients with complicated biliary tract and pancreatic diseases. Fellows will have completed 18 months of core clinical training. Depending upon the program, an additional year of training is usually required to complete the level 2 option. Advanced endoscopy fellows will receive training in a variety of diagnostic and therapeutic procedures under faculty supervision. Additionally, fellows will be required to pursue a scholarly project during level 2 training. Level 2 trainees will receive a more comprehensive education in biliary tract and pancreatic diseases when compared to level 1 fellows. Furthermore, trainees will be required to develop close working relationships with surgery, interventional radiology, pathology, nutritional support services, pain management services, medical oncology, and radiation oncology. Fellows are encouraged to review the Gastroenterology core curriculum for additional information.

All fellows will understand the cognitive and procedural components when managing patients with suspected biliary tract or pancreatic disorders. Moreover, trainees will become mindful of medical, surgical, and radiologic options available when managing these patients. Fellow will understand the merits and limits of endoscopic retrograde cholangiopancreatography (ERCP), EUS, and percutaneous cholangiography (PTC).

C. Timeline and Core Competencies

During the 3 year Penn GI curriculum, fellows will gain progressive responsibility in managing patients with biliary tract and pancreatic diseases. All fellows will be required to meet the objectives above.

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.
Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.

Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.
Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

Second Year Fellows

Penn second year fellows will be required to meet the ACGME-mandated core competencies below. Second year fellows and key faculty will be responsible for educating first year fellows, medical students, medical housestaff, and ancillary personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
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- Patient and staff surveys
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• Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
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Interpersonal and Communications Skills

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Systems-based Practice

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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Penn third year fellows will be required to meet the ACGME-mandated core competencies below. Third year fellows and key faculty will be responsible for educating first and second year fellows, medical students, medical housestaff, and ancillary personnel. Third year fellows will have progressive cognitive and procedural responsibility when compared to first and second year fellows.

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- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.
VI. Training in Endoscopy

In addition to cognitive skills, competent gastroenterologists must be fully trained in gastrointestinal endoscopy. Hence, a variety of procedures must be mastered during the 3 year curriculum. All GI fellows must learn the indications, contraindications, procedural aspects, and alternatives to standard diagnostic upper and lower endoscopy. Advanced procedural skills including but not limited to ERCP, EUS, endoscopic mucosal resection (EMR), and placement of enteral stents require additional training beyond the traditional 3 year curriculum. Please refer to the Gastroenterology Core Curriculum for additional information.

A. Goals of Training

All trainees will get supervised instruction in upper and lower diagnostic and therapeutic endoscopy. Endoscopy will supplement cognitive approaches to patient care. Decision making, technical proficiency, and patient management must be mastered during the fellowship program.

Fellows will understand appropriate recommendations for endoscopic procedures based upon indications, contraindications, risks, benefits, and alternatives depending upon the clinical scenario. Fellows, under faculty supervision, are expected to perform procedures safely and expeditiously. Additionally, all fellows will gain an understanding of the merits of capsule endoscopy as well as the risks and benefits of this technology.

Trainees will develop skills in diagnosing and managing patients with variceal and non-variceal upper gastrointestinal bleeding. Furthermore, fellows are expected to develop requisite skills in diagnosing and managing patients with lower gastrointestinal hemorrhage.

All fellows will acquire level 1 skills including but not limited to upper and lower diagnostic and therapeutic endoscopy during the 3 year curriculum. Trainees desiring advanced endoscopic skills through the level 2 pathway will be required to do additional training.

Level 2 training will require additional experience. Fellows who receive level 2 instruction will develop skills in, but not limited to ERCP with or without sphincterotomy, lithotripsy, stent placement, EUS, EMR, and endoscopic gastroesophageal reflux therapy. Advanced endoscopy fellows may also be asked to serve as instructors for junior trainees enrolled in the traditional 3 year curriculum. As with other fellows, advanced endoscopy fellows must pursue a scholarly project during their advanced training.

Endoscopic mentors at Penn are skilled clinicians, educators, researchers. Endoscopic instructors will address key methods to diagnostic and therapeutic
endoscopy in combination with cognitive approaches to care. Fellows will gain experience through hands-on training at the Penn Medicine Clinical Simulation Center and during inpatient and outpatient rotations at HUP, PPMC, PVAMC, and CAM. Faculty will work closely with trainees and provide appropriate feedback through verbal and written documentation.

Penn GI fellows will develop their endoscopic skills at the Penn Medicine Clinical Simulation Center, HUP, PPMC, PVAMC, and CAM. Clinical laboratory, medical imaging, and pathology services are also available throughout UPHS to enhance the educational experience. In order to provide necessary exposure to patients with life threatening gastrointestinal bleeding, adequate emergency room and intensive care unit services are available at UPHS. In order to perform safe endoscopy at Penn, additional services include but are not limited to well-trained endoscopists, nurses, and technicians. Moreover, all fellows will benefit from the use of well-maintained and functioning equipment and adequate areas for patient preparation, performance of procedures, and recovery.

All trainees will be exposed to a sufficient number of inpatients and outpatients to permit a varied endoscopic experience. Fellows will be required to meet thresholds of competence as set forth by ACGME and the Gastroenterology Core Curriculum. The required number of procedures represents the threshold number of procedures that must be performed before competency can be assessed. Fellows are expected to master both diagnostic and therapeutic endoscopy during the 3 year curriculum. During the 3 year program, fellows are expected to perform a minimum of 130 upper endoscopies, 25 endoscopies for management of non-variceal hemorrhage including 10 procedures for active bleeding, 20 endoscopies for management of variceal bleeding including 5 procedures for management of active bleeding, 20 esophageal dilations, 140 colonoscopies including 30 procedures with snare polypectomy and/or hemostasis, 15 percutaneous endoscopic gastrostomies, and 25 capsule endoscopies. The ACGME guidelines recommends performance of at least 20 liver biopsies. Please refer to ACGME guidelines and the Gastroenterology Core Curriculum for additional information.

**B. Training Process**

Penn endoscopic training will take place in the framework of clinical problem solving in inpatient and outpatient settings. Skilled endoscopic mentors will be available at all times to provide instruction in diagnostic and therapeutic endoscopy. All trainees will be evaluated and they must keep procedure logs as mandated by ACGME. Furthermore, GI fellows will learn the indications, contraindications, and alternatives to upper and lower diagnostic and therapeutic endoscopy.
For level 1 training, all fellows will understand the indications, contraindications, and complications of diagnostic and therapeutic endoscopy. As required by ACGME, all fellows must complete at least 18 months of clinical training in gastroenterology and hepatology including but not limited to inpatient and outpatient consultations and diagnostic and therapeutic endoscopy as previously mentioned. In addition to routine upper and lower diagnostic and therapeutic endoscopy, trainees must understand the importance of capsule endoscopy as well as its limitations. Not only must trainees master the requisite endoscopic skills, they must also master the basics of conscious sedation and noninvasive patient monitoring devices. Fellows should meet the competency requirements as outlined above. Suggested objective performance criteria for the evaluation of level 1 procedures can be found in the Gastroenterology Core Curriculum.

For level 2 training, trainees will have completed the required 18 months of clinical training as mandated by ACGME. Moreover, they will have documented competence in procedures required of the level 1 curriculum. Trainees interested in the level 2 pathway, will be required to complete an additional 12 months of training. Fellows contemplating the level 2 pathway will receive instruction, and be evaluated by mentors who are nationally and internationally recognized as leaders in the field of advanced endoscopy. Additional details about diagnostic and therapeutic ERCP, EUS, and EMR may be found in the Gastroenterology Core Curriculum, the Division of Gastroenterology website, and from advanced endoscopy mentors at Penn. The required number of ERCP and EUS examinations may be found in the Gastroenterology Core Curriculum. As with procedures for level 1 training, the threshold number of procedures represents a minimum before competency can be assessed. Most trainees receiving level 2 training will generally require more procedures than the mandated minimum. As with level 1 procedures, a procedure log will be required to document procedures performed. Suggested objective performance criteria for the evaluation of level 2 procedures can be found in the Gastroenterology Core Curriculum.

C. Assessment of Competence

As with other portions of the curriculum, knowledge of endoscopy will be assessed as part of the overall evaluation of trainees in gastroenterology during and after fellowship as outlined in other portions of this manual.
D. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.

Interpersonal and Communications Skills

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Direct observation of fellow communication through review of paper and electronic records.

Professionalism

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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• Quality improvement initiatives offered throughout UPHS.

Second Year Fellows

Penn second year fellows will be required to meet the ACGME-mandated core competencies below. Second year fellows and key faculty will be responsible for educating first year fellows, medical students, medical housestaff, and ancillary
personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.

**Patient Care**

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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- Patient care through inpatient and outpatient electronic and paper record review.

**Practice-based Learning and Improvement**

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).
Interpersonal and Communications Skills

- *Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.*
- *Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.*
- *Patient and staff surveys*
- *Direct observation of fellow communication through review of paper and electronic records.*

Professionalism

- *Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.*
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Third Year Fellows

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Professionalism

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Systems-based Practice

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- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

VII. Training in Ethics and System-Based Practice

All GI fellows will be required to understand the practice of gastroenterology and hepatology in the broader context of the medical marketplace. Trainees are encouraged to review the Gastroenterology Core Curriculum for additional information. Fellows must also be able to integrate high quality care within the context of the healthcare system and be able to minimize medical errors and improving outcomes. During the 3 year gastroenterology curriculum, fellows will be exposed to ethical, economic, and systemic issues.
A. Goals of Training

During the 3 year fellowship, trainees will be required to understand the importance of unbiased information about different healthcare systems. UPHS and The University of Pennsylvania have many different resources to achieve this objective. Fellows are encouraged to review additional information about goals of training for this section in the Gastroenterology Core Curriculum. In addition to the practice of gastroenterology and hepatology, trainees must understand the importance of moral values and ethical principles when interacting with other professionals, patients, and their families.

B. Training Process

There are multiple ways for fellows to achieve this training within UPHS and The University of Pennsylvania. The Penn Center for Bioethics can also provide basic and advanced training in bioethics. Didactic lectures, quality assessment committees, and continuous quality improvement initiatives are available throughout UPHS to assist the fellow in meeting this requirement.

C. Assessment of Competence

Knowledge of ethics, economics, and system-based practice will be assessed as part of the global assessment during the 3 year curriculum.

D. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
VIII. Training in Hepatology

Hepatic disorders account for significant morbidity and mortality. Furthermore, a significant portion of the practice of gastroenterology is devoted to evaluating and treating patients with a variety of liver diseases. Hence, all trainees must receive sound training in managing inpatients and outpatients with acute and chronic liver diseases. Not only should fellows master skills in treating patients prior to liver transplantation, they must also be adept at evaluating and treating patients after transplantation. Trainees will develop skills in managing patients with gastrointestinal bleeding, bacterial infections, and a wide variety of hematological, pulmonary, renal, neurologic, and nutritional complications. The fellow is encouraged to review details about training in hepatology in the Gastroenterology Core Curriculum in addition to the information below.

A. Goals of Training

All fellows will develop competence in managing patients with acute and chronic liver diseases in inpatient and outpatient settings. The physiology, pathophysiology, and clinical manifestations of liver diseases will be emphasized. Level 1 training encompasses basic training that can be obtained during the traditional 3 year fellowship program. Level 2 training requires additional training over and above that found in the level 1 curriculum. Education in transplant hepatology is level 2 training and requires an additional year of training over and above the traditional 3 year curriculum. Didactic lectures, liver and hepatobiliary tumor conferences, selected readings, and clinical experience will be included in level 1 and 2 training. As discussed elsewhere in this manual and the Gastroenterology Core curriculum, all fellows pursuing level 1 training as part of the standard 3 year gastroenterology fellowship program will be required to participate in inpatient hepatology rotations at HUP and combined inpatient gastroenterology/hepatology rotations at PPMC and PVAMC. Moreover, fellows will be required to take a mandatory 6 month outpatient continuity clinic in hepatology in order to broaden their exposure to this field. Level 1 trainees will have limited exposure transplant patients. Level 2 training entails additional training in hepatology plus exposure to transplant hepatology. This training can only be achieved after completion of the 3 year GI fellowship.

Training in hepatology will require experience and competence in genetic markers of liver disease, immunology, virology, pathophysiology of liver injury, drug-induced liver injury, fulminant hepatic failure, portal hypertension and its complications, hepatocellular carcinoma, pregnancy-related liver disease, liver transplantation, medical imaging related to the hepatobiliary system, and
histology and pathology of the liver and biliary tract. Furthermore, fellows will develop expertise in assessing and managing inpatients and outpatients with viral, metabolic, and autoimmune hepatobiliary disorders. Experience in liver biopsy, diagnostic and therapeutic paracentesis, and endoscopic treatment of portal hypertensive complications will also be obtained during the 3 year fellowship.

**B. Training Process**

Penn currently has 6 full time clinical hepatology faculty with expertise in managing pre and post liver transplant patients. Additionally, the hepatology division has an active research program. Level 1 and 2 training will take place as an integral component to subspecialty training in gastroenterology. As previously mentioned, the level 2 curriculum currently requires an additional year of training over and above the traditional 3 year gastroenterology fellowship. As mentioned in this manual, the Gastroenterology Core Curriculum, and the ACGME website, all level 1 trainees enrolled in the gastroenterology program are required to spend 5 months of training devoted to hepatology. Ideally, training should be equally divided between inpatient and outpatient exposure. Penn fellows will also have the opportunity to participate in the assessment and management of pre and post liver transplant patients.

All fellows at Penn will be given the opportunity to pursue basic and clinical scholarly projects in hepatology and liver transplantation to suit their interests. Additional research exposure beyond the traditional 3 year curriculum may be desirable.

As discussed elsewhere in this manual, Penn offers many conferences, seminars, and journal clubs devoted to gastroenterology, pancreaticobiliary diseases, and hepatology. Liver, pathology, and multidisciplinary hepatobiliary tumor conferences are given weekly in addition to other conferences discussed elsewhere in this manual. Fellows will also be given the opportunity to teach medical housestaff and students about acute and chronic liver diseases.

**C. Assessment of Competence**

Knowledge of hepatology will be assessed as part of the overall evaluation during the 3 year gastroenterology fellowship.
D. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

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Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

Second Year Fellows

Penn second year fellows will be required to meet the ACGME-mandated core competencies below. Second year fellows and key faculty will be responsible for educating first year fellows, medical students, medical housestaff, and ancillary personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.
Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
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Practice-based Learning and Improvement

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Interpersonal and Communications Skills

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Practice-based Learning and Improvement

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- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

IX. Training in Inflammation and Enteric Infections

Penn GI fellows will be exposed to a variety of idiopathic inflammatory and enteric infectious diseases during their 3 year fellowship. Fellows are encouraged to review details about training in inflammatory bowel disease as well as enteric and pancreaticobiliary infections in the Gastroenterology Core Curriculum.

During the 3 year fellowship, Penn trainees are expected to master principles about acute and chronic viral, bacterial, fungal, and protozoal infections in immunocompetent and immunosuppressed patients. Additionally, fellows must understand the consequences of infection including but not limited to dyspepsia, peptic ulcer disease, diarrhea, malabsorption, gastrointestinal bleeding, and malnutrition. Fellows must understand principles of clinical assessment, diagnostic testing, and management of these patients.

Penn trainees will also gain intense exposure to patients with idiopathic inflammatory bowel diseases (IBD). Trainees must understand the importance of clinical examination, diagnostic testing, differential diagnosis, and treatment options for patients with acute disease with or without complications or for patients who are in remission.
A. Goals of Training for Infectious Diseases

Fellows should refer to the Gastroenterology Core Curriculum about specifics of infectious diseases. In addition to the above, trainees must understand the importance of mechanisms of mucosal inflammation and mucosal defense in immunocompetent and immunosuppressed patients. Moreover, the pathophysiology of diarrhea and malabsorption should be emphasized, as well as treatment options for patients who present with enteric infections. Fellows should become familiar with diagnostic tests including but not limited to stool culture, mucosal biopsy, antigen testing of stool, barium studies, ultrasound examinations, computed tomography, and cholangiopancreatography.

B. Training Process for Infectious Diseases

Fellows will be given intense exposure to immunocompetent and immunosuppressed inpatients and outpatients with enteric and pancreaticobiliary infectious diseases. Emphasis will be placed upon appropriate use of diagnostic tests and medications for patients who present with these conditions. During the 3 year curriculum, a variety of conferences and seminars will compliment clinical training in these disorders.

C. Goals of training for Idiopathic Inflammatory Bowel Disease

Fellows will be required to do a thorough history and physical examination, order appropriate diagnostic tests, and provide a rational treatment plan. Moreover, fellows should be able to formulate a complete differential diagnosis for patients who present with suspected IBD. Furthermore, trainees will appreciate the use of standard biochemical and hematologic tests, serologic assays, microbiologic analysis, endoscopic assessment, medical imaging, and pathologic analysis of specimens from patients with suspected IBD. Fellows should also be aware of the extraintestinal manifestations of IBD and be able to provide a sound assessment and treatment plan. Trainees will be required to understand the different medical and surgical options available to patients with either ulcerative colitis or Crohn’s disease who present with acute disease, remission, or neoplastic complications. Fellows are encouraged to review the Gastroenterology Core Curriculum for additional details about treatment goals. Additionally, fellows must understand the importance of enteral and parenteral nutrition in managing patients with IBD.
D. Training Process for Idiopathic Inflammatory Bowel Disease

Fellows are expected to become competent in managing inpatients and outpatients with IBD. Acute and chronic treatment, long-term follow up, and counseling of families will be important. Careful supervision under the guidance of key clinical faculty will be important.

E. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
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Medical Knowledge

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Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.

Interpersonal and Communications Skills

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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Systems-based Practice

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Second Year Fellows

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personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.

Patient Care

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Practice-based Learning and Improvement

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Patient Care

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- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
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Systems-based Practice

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• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Quality improvement initiatives offered throughout UPHS.

X. Training in Malignancy

Gastrointestinal, pancreaticobiliary, and hepatic malignancies account for significant morbidity and mortality. Consequently, all trainees must develop skills in assessing and managing patients with these disorders. Trainees must understand the importance of sporadic and inherited premalignant and malignant diseases. The fellow is encouraged to review the Gastroenterology Core Curriculum for additional information.
A. Goals of Training

Penn trainees will develop familiarity with cancer epidemiology, primary prevention, and screening for gastrointestinal, pancreaticobiliary, and hepatic neoplastic disorders. Additionally, fellows must understand the importance of clinical assessment, diagnostic testing, clinical genetics, as well as medical, endoscopic, and surgical therapeutic options for premalignant and malignant diseases. Fellows are encouraged to review the Gastroenterology Core Curriculum for further details. Advanced endoscopic techniques for managing gastrointestinal and pancreaticobiliary diseases will require at least 1 year of training (level 2 training) beyond the traditional 3 yr gastroenterology fellowship.

B. Training Process

Trainees must develop competence in cognitive and procedural gastroenterology pertaining to premalignant and malignant diseases. Fellows will have broad exposure to inpatients and outpatients with malignant diseases. Moreover, formal instruction about gastrointestinal, pancreaticobiliary, and hepatic neoplasms will be given as part of the traditional curriculum. A variety of multidisciplinary conferences are offered throughout UPHS to address difficult cases. Instruction includes but is not limited to screening and surveillance strategies, genetic testing, and novel approaches to diagnosis and treatment of premalignant and malignant diseases. Trainees must understand the importance of diagnostic and therapeutic endoscopy in combination with cognitive approaches to care of patients with premalignant and malignant gastrointestinal disorders. Moreover, fellows will be required to understand the relevance of medical imaging and pathologic assessment as they pertain to evaluation and management of these patients.

C. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient care through inpatient and outpatient electronic and paper record review.
• Patient and staff surveys
• Diagnostic and therapeutic endoscopy and medical imaging.
• Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

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• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.

Interpersonal and Communications Skills

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
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Professionalism

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Second Year Fellows

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**XI. Training in Motility and Functional Illnesses**

Functional bowel diseases and gastrointestinal motility disturbances account for a sizable portion of the academic and private practice of gastroenterology. Consequently, all fellows are required to understand the physiology of normal gastrointestinal motility and the pathophysiology of motility disorders and function bowel diseases. Trainees must also understand the relevance of the brain-gut axis and psychosocial factors that may play a role in these diseases. During the 3 year fellowship, fellows will gain experience in history and physical examination, diagnostic testing, and treatment options for patients with functional bowel diseases. As with other gastrointestinal diseases, a multidisciplinary approach to functional bowel diseases is frequently warranted to achieve successful outcomes. Fellows are encouraged to review the Gastroenterology Core Curriculum for additional details.

**A. Goals of Training**

Cognitive and procedural skills are required for complete assessment of patients with suspected motility and functional bowel disorders. As with other components of training, education in these disorders is subdivided into level 1 and 2 training. Fellows are encourage to review specifics about the different levels of training over and above that which is included in this manual. Level 1 training is required for all fellows enrolled in the traditional 3 year fellowship program. Level 2 training is required for those who desire to specialize in motility and functional bowel disorders.
Level 1 training encompasses inpatient and outpatient experiences in combination with formal cognitive and procedural training. Fellows will be expected to attend conferences, seminars, and journal clubs relevant to motility and functional bowel disorders. Level 1 trainees should understand the indications, contraindications, and alternatives to motility studies, pH assessment, gastric emptying studies, small bowel and colonic motility assessment, and anal manometry for patients with motility and functional bowel disorders.

Level 2 trainees should have completed at least 18 months of training in general gastroenterology and should complete at least an additional 18 months of training specific to motility and functional bowel disorders. This additional training will encompass inpatient and outpatient experiences, procedures relevant to this subspecialty and a scholarly experience. Level 2 fellows are expected to see a wider variety of patients with complex medical problems and to provide relevant recommendations about diagnostic testing and therapeutic options.

B. Training Process

Fellows are required to understand gastrointestinal physiology and pathophysiology relevant to motility and function bowel diseases. Additionally, trainees should understand psychosocial factors that may play important roles in these disorders.

Level 1 trainees will have adequate inpatient and outpatient experiences in treating patients with motility and functional bowel diseases. All trainees are required to assess indications and contraindications for tests outlined above and to make rational therapeutic recommendations under the guidance of qualified experts in motility disorders.

As outlined above, level 2 trainees will be required to complete additional training over and above that of the traditional 3 year GI fellowship curriculum. Guidelines for the threshold number of proctored studies as set forth in the Gastroenterology Core Curriculum for level 2 trainees includes the following: standard esophageal motility (50), gastric and small bowel motility studies (25), scintigraphic measurement of gastric emptying (25), colonic motility studies (20), anorectal motility studies (30), anal sphincter biofeedback training (10), and colonic transit studies with radiopaque markers or scintigraphy (20). All trainings should document performance of the requisite number of procedures under faculty supervision.
C. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

Second Year Fellows

Penn second year fellows will be required to meet the ACGME-mandated core competencies below. Second year fellows and key faculty will be responsible for educating first year fellows, medical students, medical housestaff, and ancillary personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.
Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy, and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).
Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

Third Year Fellows

Penn third year fellows will be required to meet the ACGME-mandated core competencies below. Third year fellows and key faculty will be responsible for educating first and second year fellows, medical students, medical housestaff, and ancillary personnel. Third year fellows will have progressive cognitive and procedural responsibility when compared to first and second year fellows.
Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).

Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• **Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.**
• **Patient and staff surveys**
• **Direct observation of fellow communication through review of paper and electronic records.**

**Professionalism**

• **Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.**
• **Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.**
• **Patient and staff surveys**
• **Formal instruction through the Penn Center for Bioethics.**

**Systems-based Practice**

• **Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.**
• **Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.**
• **Quality improvement initiatives offered throughout UPHS.**

**XII. Training in Nutrition**

All fellows must understand the importance of nutrition, digestion, and absorption as they pertain to normal function of the gastrointestinal tract. Likewise, trainees must understand the consequences of malnutrition, maldigestion, and malabsorption as they relate to gastrointestinal, pancreaticobiliary, and hepatic disorders. In order to understand the nuances of enteral and parenteral nutrition, trainees must understand the importance of fluid balance and energy requirements as well as macronutrient and micronutrient metabolism. Not only should gastroenterologists know consequences that can arise from protein and calorie depletion, they must also appreciate problems that can arise from nutrient
excess, metabolic syndrome, and obesity. Fellows are encouraged to review the Gastroenterology Core Curriculum for additional information.

**A. Goals of Training**

As with other subspecialties of gastroenterology, training in nutrition is subdivided into level 1 and 2 training. All trainees enrolled in the traditional 3 year fellowship are required to master principles outlined for level 1 training. Level 2 training requires additional experience and is designed for trainees with special interests in clinical nutrition.

All level 1 trainees are required to master basic nutritional principles, nutritional assessment through a complete history and physical examination and laboratory tests, and principles of malnutrition. Moreover, fellows should understand the effects of stress on nutritional status, specific disease states, methods of enteral and parenteral nutritional support, and the use of percutaneous endoscopy gastrostomy (PEG) and percutaneous endoscopic jejunostomy (PEJ) in managing patients with nutritional disorders. Furthermore, trainees must comprehend the indications and contraindications of PEG and PEJ insertion and be able to insert the requisite number of tubes as outlined elsewhere in this manual and the Gastroenterology Core Curriculum. Trainees must recognize the importance of obesity and its pathogenesis, clinical manifestations, diagnosis, and treatment options.

Level 2 trainees are required to master all principles of level 1 training. Additionally, trainees must develop requisite skills for managing complex inpatients and outpatients with a variety of gastrointestinal, pancreaticobiliary, and hepatic disorders. Moreover, level 2 fellows must be able to assess energy expenditure and body composition, understand the importance of nutritional support services and outpatient weight management programs, and orchestrate home enteral and parenteral nutrition support services. Finally, level 2 trainees must realize the role of liver transplantation or combined liver-small bowel transplantation for patients with nutritional diseases refractory to less aggressive forms of therapy.

**B. Training Process**

For level 1 training, all fellows should participate actively in managing a variety of inpatients and outpatients with gastrointestinal, pancreaticobiliary, and hepatic diseases under the guidance of key clinical faculty. Fellows will be required to master cognitive components to nutritional assessment and management as well as procedural aspects as outlined above. This clinical training should be buttressed by a variety of conferences and seminars including but not limited to journal clubs, clinical case conferences, GI grand rounds, and nutrition support
conferences. Trainees will be given the opportunity to work closely with dieticians, pharmacists, physicians with expertise in nutritional assessment and management, and other ancillary personnel.

Level 2 training requires 12 months of formal training in clinical nutrition and research that may be obtained either as a separate 1 year fellowship or as additional experience integrated into the final year of the traditional gastroenterology fellowship. Additionally, level 2 trainees should spend 6 months on clinical inpatient and outpatient nutrition support services.

C. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.

Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.
Second Year Fellows

Penn second year fellows will be required to meet the ACGME-mandated core competencies below. Second year fellows and key faculty will be responsible for educating first year fellows, medical students, medical housestaff, and ancillary personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy, and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).

Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
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Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.
Third Year Fellows

Penn third year fellows will be required to meet the ACGME-mandated core competencies below. Third year fellows and key faculty will be responsible for educating first and second year fellows, medical students, medical housestaff, and ancillary personnel. Third year fellows will have progressive cognitive and procedural responsibility when compared to first and second year fellows.

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
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Interpersonal and Communications Skills

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Direct observation of fellow communication through review of paper and electronic records.

Professionalism

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Quality improvement initiatives offered throughout UPHS.
XIII. Training in Pathology

All fellows will be compelled to understand the important of gross and microscopic pathology when managing patients with gastrointestinal, pancreaticobiliary, and hepatic diseases. Trainees are encouraged to review the Gastroenterology Core Curriculum for additional details.

A. Goals of Training

During the 3 year fellowship, fellows will gain an understanding of normal and abnormal gross and microscopic pathology. Moreover, trainees must appreciate the importance of clinical information in combination with pathologic assessment when making medical decisions. Fellows will work closely with pathology attending physicians and pathology fellows at least once weekly to review material relevant to gastroenterology and hepatology.

B. Training Process

As part of the 3 year curriculum, all fellows will be required to attend the weekly pathology conference to discuss pertinent pathology relevant to gastrointestinal, pancreaticobiliary, and hepatic diseases. Penn also offers a variety of other multidisciplinary conferences to enhance the trainee’s education.

C. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.
Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.

Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
- Direct observation of fellow communication through review of paper and electronic records.

Professionalism

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient and staff surveys
• Formal instruction through the Penn Center for Bioethics.

Systems-based Practice

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Quality improvement initiatives offered throughout UPHS.

Second Year Fellows

Penn second year fellows will be required to meet the ACGME-mandated core competencies below. Second year fellows and key faculty will be responsible for educating first year fellows, medical students, medical housestaff, and ancillary personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.

Patient Care

• Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient care through inpatient and outpatient electronic and paper record review.
• Patient and staff surveys
• Diagnostic and therapeutic endoscopy, and medical imaging.
• Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).

Interpersonal and Communications Skills

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Direct observation of fellow communication through review of paper and electronic records.

Professionalism

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Formal instruction through the Penn Center for Bioethics.
Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

Third Year Fellows

Penn third year fellows will be required to meet the ACGME-mandated core competencies below. Third year fellows and key faculty will be responsible for educating first and second year fellows, medical students, medical housestaff, and ancillary personnel. Third year fellows will have progressive cognitive and procedural responsibility when compared to first and second year fellows.

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).

Interpersonal and Communications Skills

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Direct observation of fellow communication through review of paper and electronic records.

Professionalism

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Formal instruction through the Penn Center for Bioethics.
Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Quality improvement initiatives offered throughout UPHS.

XIV. Training in Radiology

All trainees must become familiar with medical imaging as an adjunct to assessment and management of patients with gastrointestinal, pancreaticobiliary, and hepatic diseases. In addition to the use of routine medical imaging, fellows will be required to use fluoroscopy with certain endoscopic procedures. Fellows should review the Gastroenterology Core Curriculum for further details.

A. Goals of Training

Penn GI fellows will become familiar with the following imaging techniques including but not limited to upper and lower GI barium studies, computed tomography (CT), CT angiography, magnetic resonance (MR) imaging, magnetic resonance cholangiopancreatography (MRCP), MR angiography, interventional radiology (IR), ultrasonography, nuclear medicine scanning, and positron emission tomography (PET). Trainees should understand the indications, contraindications, and alternatives to diagnostic and therapeutic medical imaging when evaluating patients with suspected gastrointestinal, pancreaticobiliary, or hepatic diseases.

B. Training Process

During the GI fellowship, all trainees will be expected to collaborate with physicians, fellows, and other ancillary personnel within the Department of Medical Imaging as necessary during evaluation of inpatients and outpatients with suspected gastrointestinal or liver diseases. Moreover, fellows will be required to attend a variety of multidisciplinary conferences during their 3 year fellowship including but not limited to journal clubs, clinical case conference, GI grand rounds, liver conference, and hepatobiliary tumor conference. Furthermore, fellows are required to spend 1 month of their 3rd year rotating
through medical imaging. This rotation will offer fellows intense exposure to plain film, ultrasonography, barium studies, CT, MR, and IR.

C. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• **Interpersonal and Communications Skills**

- *Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.*
- *Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.*
- *Patient and staff surveys*
- *Direct observation of fellow communication through review of paper and electronic records.*

**Professionalism**

- *Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.*
- *Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.*
- *Patient and staff surveys*
- *Formal instruction through the Penn Center for Bioethics.*

**Systems-based Practice**

- *Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.*
- *Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.*
- *Quality improvement initiatives offered throughout UPHS.*

**Second Year Fellows**

Penn second year fellows will be required to meet the ACGME-mandated core competencies below. Second year fellows and key faculty will be responsible for educating first year fellows, medical students, medical housestaff, and ancillary personnel. Second year fellows will have progressive cognitive and procedural responsibility when compared to first year fellows.
Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
- Patient and staff surveys
- Diagnostic and therapeutic endoscopy, and medical imaging.
- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.

Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Patient care through inpatient and outpatient electronic and paper record review.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Formal coursework through the Penn Center for Clinical Epidemiology and Biostatistics (CCEB).

Interpersonal and Communications Skills

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient and staff surveys
• Direct observation of fellow communication through review of paper and electronic records.

Professionalism

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Systems-based Practice

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• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Quality improvement initiatives offered throughout UPHS.

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Penn third year fellows will be required to meet the ACGME-mandated core competencies below. Third year fellows and key faculty will be responsible for educating first and second year fellows, medical students, medical housestaff, and ancillary personnel. Third year fellows will have progressive cognitive and procedural responsibility when compared to first and second year fellows.
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- Log book documentation and objective competency determinations of all endoscopic procedures.

Medical Knowledge

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Practice-based Learning and Improvement

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Quality improvement initiatives offered throughout UPHS.

XV. Training in Research

All Penn trainees will be required to do scholarly work during their fellowship training. Specific details can be found on the ACGME web site, the Gastroenterology Core Curriculum, and from Drs. Anil Rustgi, Division Chief of Gastroenterology and Jonathan Katz, Associate Program Director for the GI fellowship program. Requirements differ depending upon the fellowship track chosen (e.g. clinical educator, basic science, or MSCE). For those interested in research careers, additional training over and above that necessary to meet ACGME guidelines would be required. Prior to completion of fellowship training,
all trainees are expected to publish their work in a peer-reviewed journal and or present their studies at a national meeting.

**A. Goals of Training**

Trainees enrolled in the basic science pathway are required to follow the guidelines set forth by their NIH-funded training grants. Addition information can be obtained from Drs. Rustgi and Katz as well as other portions of this manual. Fellows will be required to understand basic principles of physiology and pathophysiology relevant to the organs of interest. Additionally, fellows must develop appropriate skill sets pertaining to laboratory protocols, formulating research questions and hypotheses, and developing a sound study design. Fellows will be given the opportunity to work closely with CCEB during their research studies. Additional instruction will include but is not limited to critical analysis of the scientific literature, scientific writing, preparation of research proposals for funding and evaluation by institutional review boards.

Trainees enrolled in the MSCE pathway are required to follow the guidelines set forth by their NIH-funded training grants. As above, addition information can be obtained from Drs. Rustgi and Katz as well as other portions of this manual. Fellows will be required to understand basic principles of physiology and pathophysiology relevant to the organs of interest. Additionally, fellows must develop appropriate skill sets pertaining to laboratory protocols, formulating research questions and hypotheses, and developing a sound study design. Fellows will be given the opportunity to work closely with CCEB during their research studies. Additional instruction will include but is not limited to critical analysis of the scientific literature, scientific writing, preparation of research proposals for funding and evaluation by institutional review boards.

**B. Training Process**

An overview of the training process will be presented here. Fellows are encouraged to review additional information in the Gastroenterology Core Curriculum and collaborate with Drs. Rustgi and Katz. The Division of Gastroenterology at Penn as well as other departments within UPHS and The University of Pennsylvania offer ample resources for research training. All fellows will work closely with mentors who have established track records in the fellow's chosen field of interest.

All fellows will be given a structured curriculum that complements their research interests. Trainees are encouraged to review the Gastroenterology Core Curriculum for additional information. All trainees will be given sufficient protected time to meet the rigors of basic or clinical research. Moreover, this protected time
must meet the requirements set forth by the specific training grants. Penn fellows who receive training in either basic science or MSCE research are supported by T32 NIH-supported training grants. Second and third year fellows are required to spend at least 75% of their time based on a typical 40 hour work week on research-related work. Penn expects that fellows will spend more than the minimum time required to satisfy NIH requirements. This research time must be added to the mandatory 18 months of clinical time mandated by ACGME, of which 5 months is devoted to hepatology. As per ACGME requirements, the 18 months of clinical time need not be continuous; however, 9 to 12 months must be continuous. The remaining 6 to 9 months may include continuity clinic, endoscopy time, and other clinically-oriented activities. Trainees involved in rigorous research training must spend at least 18 months of time devoted to scholarly work. Most trainees aspiring to be research scientists generally will spend more than the 18 month minimum standard.

Penn has ample facilities to carry out the mission of basic and clinical scientific investigation. Fellows are encouraged to peruse the University of Pennsylvania website or contact Drs. Rustgi and Katz for additional information. In addition to laboratory space, a variety of research seminars, conferences, and journal clubs are available to enhance the trainee’s education.

Fellows will be given information about a variety of funding opportunities. Trainees are encouraged to consult the Gastroenterology Core Curriculum, the NIH training website, and to discuss funding from Drs. Rustgi and Katz. Fellows in the traditional 3 year GI fellowship program are supported by T32 NIH-supported training grants. A variety of NIH Research Career Awards are available and fellows should evaluate these opportunities. Fellows are encouraged to review the Gastroenterology Core Curriculum for other funding opportunities (AASLD, ACG, AGA, and ASGE).

C. Timeline and Core Competencies

First year fellows

Patient Care

- Direct observation by qualified teaching faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
- Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
- Patient care through inpatient and outpatient electronic and paper record review.
• Patient and staff surveys
• Diagnostic and therapeutic endoscopy and medical imaging.
• Log book documentation and objective competency determinations of all endoscopic procedures.
• Patient care as it pertains to the rigors and ethical requirements of research.

Medical Knowledge

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Patient care through inpatient and outpatient electronic and paper record review.
• Medical knowledge as it pertains to the rigors of basic and clinical scientific investigation.

Practice-based Learning and Improvement

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
• Patient care through inpatient and outpatient electronic and paper record review.
• Formal evaluation through verbal and written feedback from faculty, nurses, other allied health personnel, and patients who come into contact with Penn fellows.
• Feedback as it pertains to basic and clinical scientific investigation.

Interpersonal and Communications Skills

• Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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Professionalism

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- Patient and staff surveys
- Formal instruction through the Penn Center for Bioethics.
- Professionalism as it pertains to the rigors of basic and clinical scientific investigation.

Systems-based Practice

- Direct observation by qualified key faculty during work and teaching rounds, assessment of history and physical examinations, assessment of procedural competence, and participation in conferences and seminars.
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- Quality improvement initiatives offered throughout UPHS.
- Systems-based practice as it pertains to the rigors of basic and clinical scientific investigation.

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References

