

**UNIVERSITY OF MINNESOTA
GRADUATE MEDICAL
EDUCATION**

**2011-2012
FELLOWSHIP GOALS AND
OBJECTIVES**

**Department of
Pediatrics
Gastroenterology
Fellowship Program**

PROGRAM GOALS AND OBJECTIVES

The overriding goal of the Pediatric Gastroenterology Fellowship program is to provide excellent training in the practice and science of Gastroenterology and in Gastroenterology-related research skills through mentored relationships involving progressive independence for the fellow. The following specific components contribute to this goal.

- 1) Identify the fellow's individual short- and long-term professional goals and interests.
- 2) Provide effective training, feedback, and support for the trainee.
- 3) Provide a structured learning experience that will enable the trainee to:
 - a) Develop clinical and intellectual expertise in and experience with the diagnosis and management of Gastroenterology in the inpatient and outpatient setting.
 - b) Develop an independent, thoughtful, organized, and flexible approach to the evaluation of patients with a range of symptoms and signs that suggest the presence of a Gastroenterology.
 - c) Develop and enhance life-long learning skills that allow the trainee to adapt to the changing spectrum of Gastroenterology and their changing management, including changes in the health care system and associated technologies.
 - d) Learn the professional and interpersonal skills required for effective communication to the primary care team of conclusions and recommendations for diagnosis and patient management.
 - e) Assure that all professional interactions with patients and colleagues are performed with respect for self and others and with the highest ethical and intellectual standards.
 - f) Develop effective teaching skills for students, residents, and colleagues.
 - g) Recognize and respond to both psychosocial and economic factors that impact on patient care.
 - h) Develop expertise in the design, performance, analysis, and communication of scholarly activities, involving clinical, epidemiological, and/or basic science investigation.

The overall objectives of the Gastroenterology Fellowship are as follows.

With advice and support of faculty, the fellow should:

- 1) Define his/her individual goals, make these goals known to the Program Director in regular meetings, and assure that the program helps the fellow meet these goals successfully.
- 2) Perform consultation on a broad spectrum of hospitalized patients with Gastroenterology.
- 3) Evaluate a broad spectrum of outpatients with Gastroenterology.
- 4) With skilled and experienced senior staff, observe and develop effective consultative skills for the efficient evaluation of patients referred for Gastroenterology consultation, learning how to communicate with referring physicians and other

- members of the healthcare team, and coordinating responsibilities and information with the patient's primary care physician in order to ensure uninterrupted patient care.
- 5) Learn to speak and write effectively by regularly giving well-planned lectures and discussions to colleagues and by writing manuscripts for publication.
 - 6) Develop an independent research program with the guidance and support of one or more faculty members. Perform and complete the project, and present and publish results in peer-review journals.
 - 7) Seek and respond effectively to feedback and advice.
 - 8) Provide feedback regarding the fellowship program and the faculty members.

CLINICAL GOALS AND OBJECTIVES

In accordance with the program requirements outlined by the ABP, the overall goals and objectives for all clinical rotations are listed below. Specific goals are based on the programs provided by the institution and the expertise of the faculty.

A. OVERALL FELLOWSHIP GOALS AND OBJECTIVES FOR CLINICAL GASTROENTEROLOGY IN PEDIATRICS

1. **Goals:** The common goal of each clinical rotation is for the fellow to develop special competence in the management of pediatric gastroenterology patients, emphasizing the fundamentals of clinical diagnosis and management of all problems seen throughout the continuum of development from neonatal through early adulthood, including longitudinal follow-up. Fellows should obtain an advanced understanding of normal and pathologic gastrointestinal physiology and hepatology, as well as procedural skills, for diagnosis and management of organ-specific disease in children. In addition, fellows will understand the nutritional needs of children throughout the lifespan, disorders of nutrition, and master management of nutritional support in many different diseases.
2. **Objectives:** Following completion of the clinical rotations the fellow should be able to:
Demonstrate competency in patient care by being able to:
 - ◆ Completely conduct inpatient work – teaching rounds in the manner of a staff gastroenterologist for both primary patients and consults
 - ◆ Perform and record an accurate and thorough hospital admission assessment and develop appropriate initial plans and convey this information to the patient and/or parents
 - ◆ Perform and record accurate and thorough outpatient consults and develop appropriate initial plans with the parent and inform the referring physician.
 - ◆ Perform the following gastrointestinal procedures including but not limited to – endoscopy, sigmoidoscopy, colonoscopy and polypectomy, liver biopsy, paracentesis, percutaneous endoscopic gastrostomy, and therapy to stop GI bleeding.
 - ◆ Maintain procedure logs for personal and mentor review.
 - ◆ Provide appropriate nutritional support, both enteral and parenteral, including demonstrating an understanding of breast-feeding and lactation.
 - ◆ Demonstrate proficiency in patient care for emergent and critical GI problems, such as GI bleeding, liver failure, acute abdomen, hepatic encephalopathy including coma, hepato-renal and hepato pulmonary syndromes pre and post operative care in liver transplantation, chronic GI problems, such as inflammatory bowel disease, management of short bowel syndrome and congenital anomalies or inherited disorders of the GI tract, diagnosis of graft vs. host disease, and common outpatient GI problems, such as the etiology and treatment of nausea, vomiting, constipation and malnutrition.
 - ◆ Provide appropriate management of patients with chronic gastrointestinal diseases.

- ◆ Have complete knowledge of functional disorders including evaluation and management.

Demonstrate competency in medical knowledge. Pediatric Gastroenterology fellows will be expected to:

- ◆ Review pediatric gastroenterology, using the text Pediatric Gastrointestinal Disease (Walker W.A., Kleinman R.E., Sherman P.M. Schneider B.L., editors, B.C. Decker, Inc., c. 2007,) as a guide, presenting chapter summaries weekly to the housestaff and faculty, and discussing clinical questions raised by the review.
- ◆ Take and obtain a passing score on the annual in-service examination offered by the ABP each year.
- ◆ Attend all required conferences or review the teaching materials provided by the speaker (see conference list above).
- ◆ Attend the City-Wide GI conference. The fellow will present pediatric gastroenterology patients and an appropriate review of the diagnosis in rotation with the Internal Medicine Gastroenterology fellows.
- ◆ Attend as many of the optional conferences as appropriate.
- ◆ Read and discuss the literature regarding issues involving individual Pediatric Gastroenterology patients the fellow is caring for on the wards or as outpatients.
- ◆ Read the journal articles in preparation for Journal club.

After achieving the above, the pediatric GI fellow should be able to:

- ◆ Describe the clinical presentation, pathophysiology, genetics, epidemiology and evidence-based management of pediatric gastroenterology disorders.
- ◆ Demonstrate an investigational and analytical thinking approach to clinical situations.
- ◆ Provide the appropriate application of the above knowledge in established and evolving biomedical, clinical and cognate sciences to patient care.
- ◆ Know the indications, risks and benefits of various diagnostic procedures. Log each procedure performed as to indication, age, sedation, staff attending, extent of procedure done, complications and result including reviewing the actual pathology slides to compare to observations at procedures.

To demonstrate competency in interpersonal and communication skills the gastroenterology fellow will be expected to:

- ◆ Competently and compassionately discuss daily assessment and plan for gastroenterology patient with parents and appropriate relatives and decide when a family conference would be beneficial. Develop age- and developmentally-appropriate interaction with pediatric patients. Competently conduct family-based rounds on clinical wards, in conjunction with the pediatric nurses.
- ◆ Discuss liver transplantation with the parents of a potential patient including the potential role of living donor when appropriate.

- ◆ Create a therapeutic and ethically sound relationship with the family of each patient.
- ◆ Deal competently and compassionately with complications.
- ◆ Deal competently and compassionately when death is a real issue.
- ◆ Make sure the family understands what has been relayed to them.
- ◆ Interact with the staff (nurses, respiratory therapists, social workers, pharmacists, nutritionists, occupational therapists, laboratory technicians, etc) to provide an adequate exchange of information and facilitate safe and efficient patient care. Utilize information provided by all providers to develop care plans.
- ◆ Assist with discharge coordination and planning home management of gastroenterology patients.
- ◆ Assist in referring physician communication and medical records maintenance.
- ◆ Communicate with primary or referring physician.

To demonstrate competency in professionalism the gastroenterology fellow will be expected to:

- ◆ Carry out professional responsibilities
- ◆ Treat patients and healthcare workers with respect
- ◆ Complete training in HIPPA and demonstrate HIPPA compliance, including appropriate documentation of clinical care.
- ◆ Participate fully in all program requirements: clinical, educational and research.
- ◆ Adhere to accepted ethical principles.
- ◆ Demonstrate sensitivity and responsiveness to a diverse patient population, including culture, race and religion.
- ◆ Present oneself in a professional manner, both in dress and demeanor.
- ◆ Appropriately maintain the medical record.
- ◆ Submit the appropriate administrative paperwork to the fellowship coordinator in a timely fashion.

To demonstrate competency in practice-based learning the GI fellow will be expected to:

- ◆ Participate in practice-based learning and improvement that involves evaluation of the fellow's own individual patient care by presenting at:
 - Scheduled case review presentation (weekly while on the clinical service)
 - Morbidity and Mortality conferences ("3M") (minimum requirement of 1 presentation/year)
 - Journal club (minimum requirement of 2 presentations/year)
 - Citywide GI conference
- ◆ Have ability to appraise current literature related to patient care and discuss on rounds.
- ◆ Participate in quality improvement projects (for example, our division, including our fellow, participates in PIBDNet, a national QA/QI project in pediatric inflammatory bowel disease).
- ◆ Provide teaching rounds for students and healthcare professionals.
- ◆ Use information technology for access and management of medical information.

To demonstrate competency in systems based practice the GI fellow will be expected to:

- ◆ Advocate quality patient care.
- ◆ Use systems and resources to provide care of optimal value.

Lines of supervision and graded responsibilities

It is the responsibility of the PL-4 fellow to supervise the pediatric residents and medical students and to provide patient care under the direct supervision of the attending. Additional responsibilities will be added for the PL-5 and PL-6 fellow such that by the third year, the fellow will be expected to function at the level of a junior attending. To this end, on the inpatient service the fellow will:

- ◆ Act as the Attending Physician on the wards, and in the clinic (Direct supervision by the attending will be available, but will decrease with each successive PL year.).
- ◆ Supervise the pediatric resident on the clinical service, The fellow will report directly to the attending gastroenterologist. The attending gastroenterologist is responsible for providing appropriate supervision to the fellow.
- ◆ Conduct working and teaching rounds with the attending pediatric gastroenterologist daily.
 - The fellow is expected to be present no later than 8:00 a.m. daily to examine all new and unstable patients and adjust their care, if needed, before rounds begin. In addition, the fellow must make certain that all patients who will be discharged, sent to surgery or transferred before early afternoon are ready to go before rounds start.
 - Rounds will begin daily at 9:00 a.m.
 - During walking rounds, a didactic discussion of each patient's problems and management plans is conducted, emphasizing the appropriate use of laboratory and radiology procedures.
 - University of Minnesota Children's Hospital supports Family Centered Rounding. Teaching of house officers, families and nurses is extremely important during rounds. Rounds include examination of x-rays and "streamlining" of laboratory studies. Rounds are conducted in the patient rooms, at the bedside, with families in attendance.
 - The attending pediatric gastroenterologist will always be available to answer questions and assist the fellow when needed.
- ◆ Review admission notes and management plans for all patients admitted to the pediatric GI service. It is expected that this review will emphasize diagnosis and management plans, rather than being a repeat of the pediatric resident's note.
- ◆ Participate actively in family conferences.
- ◆ Review the discharge planning and chart for all patients prior to their discharge. The fellow must be certain that these documents are complete and accurate, that all abnormal laboratory and diagnostic findings have been noted and addressed, and that discharge plans have been completed. Assist the residents with the discharge letter. Every letter must be proof read/corrected by the fellow or attending gastroenterologist before mailing.
- ◆ Assist in parent education. This may take the form of informal bedside conversations or formal meetings with parents, other relatives and significant family support persons. Phone conversations may be required with out-of-town families. Communication should be made with EVERY family EVERY day by either the fellow or attending pediatric gastroenterologist.

- ◆ Assist in maintaining telephone contact with referring physicians, especially on newly admitted patients or those about to be discharged.
- ◆ Perform procedures as appropriate. All procedures must be appropriately documented in the chart. The fellow must also keep her/his own procedure log in RMS.
- ◆ Maintain good communication with the entire healthcare team, including nurse practitioners, respiratory therapists, discharge planners, social workers and the charge nurse.
- ◆ Organize intra- and inter-hospital transports of critically ill patients as indicated.

B. SPECIFIC GOALS AND OBJECTIVES FOR EACH FELLOWSHIP CLINICAL ROTATION

1. UMMC Pediatric Gastroenterology Clinical rotations (inpatient and outpatient)

In addition to the overall goals above, the specific **goals** for the University of Minnesota Medical Center (UMMC) Pediatric Gastroenterology rotation are to become proficient at providing care for patients across the full span of diseases and intensity of illness and coordinating the care provided by multiple subspecialty consultants.

Objectives: Pediatric Gastroenterology fellows are to become proficient in providing ongoing responsibility for the continuing care of patients with acute and chronic gastrointestinal problems and must have sufficient opportunities to provide consultation on a wide variety of patients to become familiar with the gastrointestinal manifestations of a broad spectrum of pediatric illnesses. These goals and objectives are met in this, the central rotation of the program, through inpatient and outpatient experiences at the University of Minnesota Children's Hospital and Clinics. This is the site of the fellow's continuity clinic, where the fellow will see new patients, return patients and follow-up patients from the clinical service. This clinical experience must involve the inpatient and outpatient management of patients with gastrointestinal and nutritional diseases and disorders, including but not limited to those listed below.

- ◆ Growth failure and malnutrition including an understanding of nutritional assessment and parenteral and enteral nutrition support.
- ◆ Malabsorption (celiac disease, cystic fibrosis, pancreatic insufficiency, etc)
- ◆ Gastrointestinal allergy
- ◆ Peptic ulcer disease, acid and bile reflux
- ◆ Jaundice
- ◆ Hepatobiliary disease
- ◆ Digestive tract anomalies
- ◆ Chronic inflammatory bowel disease.
- ◆ Functional bowel disorders
- ◆ Other gastrointestinal disorders, such as gastrointestinal infections; gastrointestinal problems in the immune-compromised host, including graft versus-host disease; motility disorders; infectious and metabolic liver diseases; and pancreatitis
- ◆ Gastrointestinal complications of eating disorders, such as bulimia, and anorexia.
- ◆ Complications of obesity and obesity management.

- ◆ Gastrointestinal problems occurring as complications of other diseases or procedures, for example, gastrointestinal complications of cystic fibrosis, cardiac disease, renal disease or bone marrow transplantation.
- ◆ Feeding and nutritional problems secondary to chronic disease

The fellow has the option of attending outpatient clinics in obesity, metabolic disease, and young adult clinic in inflammatory bowel disease (supervised by Internal Medicine), if these clinics meet his/her professional goals.

The fellow will:

Demonstrate competency in medical knowledge. Fellows will be expected to:

- ◆ Participate in resident education on the ward (Core lecture series/rounds/informal patient-initiated teaching)
- ◆ Attend Grand Rounds and 3M when GI or other appropriate topics are presented.

Demonstrate competency in interpersonal and communication skills by being able to:

- ◆ Effectively communicate with referring physicians to determine the need for transport of a patient;
- ◆ Competently and compassionately communicate with the parents of a patient being transported to provide education and information.
- ◆ Effectively communicate with consulting subspecialty faculty and coordinating the plan of care when multiple consultants are involved in the care of a patient.
- ◆ Effectively compile the care plan of multiple consultants and present the final assessment and plan for a patient to the extended family and, as appropriate, the child – both on a daily basis and in the form of a family conference.
- ◆ Interact with the staff (nurses, consulting physicians, social workers, pharmacists, nutritionists, occupational therapists, laboratory technicians, etc) to provide an adequate exchange of information and facilitate safe and efficient patient care.

Demonstrate competency in practice-based learning through

- ◆ Participation in development of diagnostic and treatment protocols with faculty
- ◆ Attendance at Journal Club

Demonstrate competency in Systems Based Practice (SBP) by

- ◆ Participation in 3M (Morbidity and Mortality) Conference
- ◆ Attendance at Endoscopy Complications Conference

2. Gastrointestinal Complications in the developmentally disabled patient

Goals: In addition to the overall goals above, the specific goal for the Gillette Clinic (one month in each of 3 years) is for the fellow to become proficient in diagnosing and managing GI and nutrition problems in children with cognitive impairment, developmental disability, and musculoskeletal disease. This is a comprehensive children's rehabilitation facility, serving children with physical and developmental disability.

Objectives: Following completion of the required Gillette Outpatient Clinic rotations the gastroenterology fellow will be expected to:

- ◆ Learn how to manage constipation in cognitively impaired children, and children with spinal cord lesions at varying levels (traumatic or congenital)
- ◆ Learn to provide appropriate nutrition and nutritional counseling across the lifespan in children with several levels of cognitive impairment and children with muscular-skeletal disabilities.
- ◆ Learn to evaluate and manage abdominal pain, gastrointestinal motility problems, feeding problems, and gastroesophageal reflux disease in children with neurodevelopment disorders or disabilities.
- ◆ Attend the outpatient pediatric gastroenterology clinic at Gillette weekly during the one month rotation per year with the Pediatric GI attending.

3. Pediatric Gastroenterology procedures

Procedures are integral to the practice of this subspecialty. A major goal of this fellowship is that fellows demonstrate competency in all procedures. While it is recognized that an individual fellow may demonstrate extraordinary competency early in the fellowship or find procedures difficult to master, it is expected that the average fellow will achieve competence by performing procedures during their clinical rotations (for list of procedures and expected numbers, see Appendix B).

Objectives:

- ◆ Utilize the Endoscopy Simulation Center to meet established division objectives
- ◆ Understanding the indications, contraindications, risks, benefits, diagnostic and therapeutic alternatives to each procedure
- ◆ Learning the appropriate preparations for each procedure (e.g., bowel preparation for colonoscopy, preoperative antibiotic use in patients with cardiac lesions, etc.),
- ◆ Safe and effective performance of sedation,
- ◆ Understanding the standards for cleaning and maintenance of equipment.

Although fellows can attain an adequate number of procedures to achieve competency at the University of Minnesota Children's Hospital, we have supplemented their training to include a procedure rotation at either Hennepin County Medical Center Division of Internal Medicine Gastroenterology or through the adult Gastroenterology Division at UMMC. Fellows receive supplemental training in colonoscopy and polypectomy. The gastroenterologists (Internal Medicine) at HCMC teach colonoscopy on adult patients, allowing our subspecialty residents to perform a larger number of these procedures than they could in the pediatric population alone.

The training at HCMC or UMMC is one half-day a week until the fellow has completed 100 colonoscopies at that site. With the approximately 100 pediatric colonoscopies performed at the University of Minnesota Children's Hospital, this allows the fellow to complete 200 colonoscopies in his/her fellowship. The choice of this number was based on the results of a study by *Cass et al, demonstrating the number of colonoscopies necessary to achieve competence in Internal Medicine Gastroenterology fellows. No

similar evidence-based information exists for pediatric fellows, hence our use of the Internal Medicine guidelines. Most fellows will complete this number of procedures in 9 months of the weekly procedure time, however, some may need more time.

*Cass OW, Freeman ML, Peine CJ, Zera RT, Onstad GR. Objective evaluation of endoscopy skills during training. *Ann Intern Med* 1993;118(1):40-4.

LEARNING OBJECTIVES FOR EACH YEAR OF FELLOWSHIP

These objectives are based on the guidelines for the Pediatric Gastroenterology Board exam, found at www.abp.com, with modifications based on our experience with our fellowship.

Learning objective for the first year fellow (PL-4)

At the completion of the first year rotations, the fellow should be able to:

1. Evaluate and manage common pediatric gastroenterology and hepatobiliary signs and symptoms, related to the following:
 - a. abdominal pain
 - b. vomiting
 - c. acute and chronic diarrhea
 - d. constipation and encopresis
 - e. hematemesis
 - f. rectal bleeding
 - g. failure to thrive
 - h. feeding and swallowing difficulties
 - i. abdominal masses
 - j. jaundice
 - k. abnormal liver tests
 - l. coagulopathy
 - m. abnormal pancreatic tests
 - n. pancreatitis
2. Perform a competent gastroenterology and hepatology history and physical examination
3. Prepare accurate inpatient progress and outpatient clinic notes
4. Dictate outpatient clinic notes in a timely fashion
5. Describe indications for the following procedures
 - a. esophagogastroduodenoscopy (upper endoscopy)
 - b. flexible sigmoidoscopy and colonoscopy
 - c. endoscopic retrograde pancreato-cholangiography (ERCP)
 - d. esophageal pH monitoring
 - e. esophageal and anorectal manometry
 - f. rectal suction biopsy
 - g. liver biopsy
 - h. paracentesis
 - i. pancreatic stimulation test
 - j. breath hydrogen analysis
 - k. placement of percutaneous endoscopic gastrostomy tube

- l. removal of foreign bodies from esophagus and gastrointestinal tract
 - m. dilation of esophagus
 - n. percutaneous cholangiogram
6. Describe indications for the following ancillary studies
 - a. gastric emptying study
 - b. barium swallow
 - c. upper gastrointestinal contrast study, barium enema
 - d. abdominal ultrasound
 - e. abdominal computerized tomography and magnetic resonance imaging
 - f. magnetic resonance cholangiopancreatography (MRCP)
 - g. hepatic scintigraphy
 7. Diagnose and treat diseases of the upper gastrointestinal tract including gastroesophageal reflux disease, acid peptic disease and dysmotility syndromes
 8. Identify complications related to diseases of the upper gastrointestinal tract and hepatobiliary system
 9. Diagnose and treat infections of the digestive and biliary tract
 10. Diagnose and manage celiac disease and other malabsorption syndromes
 11. Diagnose and treat disorders of the lower gastrointestinal tract including acute and chronic colitis, polyps, and Hirschsprung's disease
 12. Diagnose and treat inflammatory bowel disease (IBD)
 13. Recognize medical and surgical complications of IBD and manage with appropriate consultants
 14. Identify complications related to diseases of the lower gastrointestinal tract
 15. Describe indications for enteral and parenteral nutrition
 16. Establish and maintain patients on enteral and parenteral nutrition.
 17. Identify and treat complications related to enteral and parenteral nutrition
 18. Diagnose and manage acute and chronic liver failure and its complications
 19. Describe indications for intestinal transplantation
 20. Describe indications for liver transplantation
 21. Evaluate and manage uncomplicated patients after liver transplantation
 22. Understand and manage immunosuppression after liver transplantation
 23. Identify and manage (with appropriate consultants) chronic complications after liver transplant including hypertension, renal dysfunction, chronic allograft rejection and lymphoproliferative disorder
 24. Manage acute and chronic pancreatitis
 25. Perform/interpret selected procedures with proficiency, including sedation as indicated:
 - a. esophagogastroduodenoscopy (upper endoscopy)
 - b. flexible sigmoidoscopy and colonoscopy
 - c. prolonged esophageal pH monitoring and interpretation
 - d. esophageal and anorectal manometry
 - e. breath hydrogen analysis
 - f. placement of percutaneous gastrostomy tube
 - g. removal of foreign bodies from esophagus and gastrointestinal tract
 - h. dilation of esophagus
 - i. pancreatic stimulation test

26. Recognize and treat complications of the common pediatric gastroenterology procedures (see number 5, above) with appropriate consultation.
27. Be available for possible involvement with rare patients e.g. foreign body removal, GI bleeding etc even when not officially on call.
28. Manage high-risk transports in conjunction with an attending physician
29. Identify area of academic interest and research mentor
30. Initiate preliminary research activity and formalize research plan
31. Identify a Scholarship Oversight Committee (in conjunction with the program director)

Learning Objectives for the Second Year Fellow (PL-5)

Scholarly activities are emphasized during the second and third years of training. The research plan is formalized and work towards its completion is begun in the second year. To optimize this phase of the training, the clinical duties of the fellow are limited during this period of time. At the completion of this year, the fellow should be able to:

1. Meet all of the learning objectives for the first year and second year fellow
2. Present research findings at local meetings including Department of Pediatric Fellows' Research Symposium
3. Explore intramural and extramural research funding in consultation with research mentor

Learning Objectives for the Third Year Fellow (PL-6)

At the completion of the third year of fellowship, the fellow should be able to:

1. Meet all of the learning objectives for the first and second year fellow
2. Diagnose and manage patients with severe complicated gastrointestinal, hepatic disorders and pancreatic disorders, including growth failure, inflammatory bowel disease, post-liver transplant, and acute and chronic pancreatitis
3. Proficiently complete the following specialized therapeutic procedures:
 - a. banding and sclerosis of esophageal varices
 - b. heater probe and injection of ulcer or vascular malformation
 - c. polypectomy
 - d. percutaneous endoscopic gastrostomy tube placement
 - e. removal of foreign bodies from the gastrointestinal tract
4. Complete research project including submission of abstract and/or manuscript or research progress report
5. Apply for continued research funding, depending on individual goals

C. GOALS AND OBJECTIVES FOR SCHOLARLY ACTIVITY ROTATION AND INDIVIDUAL LEARNING PLAN

The research years of the Pediatric Gastroenterology Fellowship at University of Minnesota Medical Center are designed to teach the fundamentals required to facilitate a career in academic medicine.

Goals:

- ◆ To gain the capacity to conceive, formulate and carry out an independent clinical or basic science research project in the field of gastroenterology, which will serve as a basis for a career as an academic pediatric gastroenterologist; or participate in a project of substantive scholarly exploration.
- ◆ To learn the essentials of proper data collection and analysis, including the proper use of statistical methodology.
- ◆ To learn to write medical literature coherently in order to facilitate communication of scientific information.
- ◆ To be able to present original research in an open forum (Department of Pediatrics Fellows' Research Symposium, NASPGHAN, AASLD, AGA, PAS, or regional meetings).
- ◆ To understand the fundamentals of grant applications and administration.

Objectives:

By the end of training, the fellow will have demonstrated competency in scholarly activity by:

- ◆ Completing the Pediatric Core Curriculum For Subspecialty Residents requirements
- ◆ Submitting original abstracts to The Department of Pediatrics Annual Fellows' Research Symposium and an appropriate national meeting
- ◆ Generating a specific written scholarly activity work product approved by the individual's Scholarship Oversight Committee. Examples include, but are not limited to:
 - A peer-reviewed publication in which the fellow played a substantial role
 - An in-depth manuscript describing a completed project
 - A thesis or dissertation written in connection with the pursuit of an advanced degree
 - A progress report for projects of exceptional complexity, such as a multi-year clinical trial

Guidelines for expectations of progress for fellows during research rotation

Year 1

A research project should be formalized with the mentor. Specific questions should be identified, hypotheses formulated, the protocol written, Human or Animal Subjects Committee approval obtained, pertinent techniques learned and initial trials started. Fellows will be asked to write a case-report with the help of a faculty mentor as an introduction to literature review and scientific writing.

Year 2

The research project should be well underway with analysis of preliminary data completed and possible secondary projects developed, based on the initial findings. Preliminary data should be presented at a Research Conference and/or a national meeting (for example the NASPGHAN annual meeting). Local grant applications should be started with the mentor's guidance.

Year 3

The original research project should be nearing completion, with secondary projects underway as indicated. One quality abstract, excluding case presentation abstracts should be submitted for presentation at a national meeting (for example the NASPGHAN annual meeting) by the end of the third year, with one or two first-author papers sent to major refereed journals. During the third year, a grant application may be submitted to a major funding agency.

Mechanisms for Guidance

Because the Division of Pediatric Gastroenterology is committed to the excellence of our fellows, the following mechanisms for guidance for the research fellow have been put in place:

- ◆ Semi-annual advisory session with the program director, including review of evaluations, personal goals and objectives, and progress in the program.
- ◆ The fellow chooses their own research mentor based on specific research interests. Fellows are not assigned to research laboratories, but encouraged to interview faculty members with similar interests and then develop a research plan with the individual who agrees to be their mentor. The research mentor will also serve as the chair of the Scholarship Oversight Committee for the fellow and will report to the fellowship director.
- ◆ Scholarship Oversight Committee (see below).
- ◆ Sponsored tutorials on statistical analysis, grant-writing, study design, etc., in addition to programs integrated on common themes by the Department of Pediatrics—the Pediatric Core Curriculum for Subspecialty Residents.

ACGME CORE COMPETENCIES

In accordance with the ACGME's long-term effort to emphasize educational outcome assessment in fellowship programs, our program has incorporated the 6 core competencies into the overall program and fellow evaluation process. This includes incorporating the core competencies into our web based evaluation tool along with other methodologies.

The ability to demonstrate educational outcomes as the achievement of competency-based learning objectives provides evidence of preparing competent physicians who can meet the health care needs of the public. Educational assessment is intended to:

- Assess fellows' attainment of competency-based objectives
- Facilitate continuous improvement of the educational experience
- Facilitate continuous improvement of fellow performance
- Facilitate continuous improvement of fellowship program performance

The 6 core areas for monitoring fellow competency are:

PATIENT CARE

Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Fellows are expected to:

- communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families
- gather essential and accurate information about their patients
- make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence, and clinical judgment
- develop and carry out patient management plans
- counsel and educate patients and their families
- use information technology to support patient care decisions and patient education
- perform competently all medical and invasive procedures considered essential for the area of practice
- provide health care services aimed at preventing health problems or maintaining health
- work with health care professionals, including those from other disciplines, to provide patient-focused care

MEDICAL KNOWLEDGE

Fellows must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care. Fellows are expected to:

- demonstrate an investigatory and analytic thinking approach to clinical situations
- know and apply the basic and clinically supportive sciences which are appropriate to their discipline

PRACTICE-BASED LEARNING AND IMPROVEMENT

Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. Fellows are expected to:

- analyze practice experience and perform practice-based improvement activities using a systematic methodology
- locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems
- obtain and use information about their own population of patients and the larger population from which their patients are drawn
- apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness
- use information technology to manage information, access on-line medical information; and support their own education
- facilitate the learning of students and other health care professionals

INTERPERSONAL AND COMMUNICATION SKILLS

Fellows must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patients families, and professional associates. Fellows are expected to:

- create and sustain a therapeutic and ethically sound relationship with patients
- use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills
- work effectively with others as a member or leader of a health care team or other professional group

PROFESSIONALISM

Fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. Fellows are expected to:

- demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development
- demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices
- demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities

SYSTEMS-BASED PRACTICE

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value. Fellows are expected to:

- understand how their patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice
- know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources
- practice cost-effective health care and resource allocation that does not compromise quality of care
- advocate for quality patient care and assist patients in dealing with system complexities
- know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performance

DUTY HOURS AND ON-CALL REQUIREMENTS

Please refer to the Pediatric Program Policy Manual for Duty Hour information. All on-call requirements will be in compliance with ACGME policy.

CURRICULUM

The Pediatric Gastroenterology fellowship program consists of the following components as outlined by the Program Requirements for Education developed by the American Board of Pediatrics (ABP) and ACGME Resident Review Committee (RRC) for Pediatric Gastroenterology: A minimum of twelve months of clinical training is required with the

remainder of the three years of training being spent in a scholarly research project. Fellows in the program have the option of obtaining a Master's Degree in Clinical Research from the School of Public Health for those who chose a career in clinical research. Didactic training, including coursework, is also available to enhance the education of those choosing a career in basic science research.

Clinical Training

The **clinical curriculum** is flexible based on the needs and goals of individual fellows but includes time for a high degree of direct patient contact responsibility on the wards and in clinics. It provides PL-4/5/6 fellows graded supervisory responsibility for the PL-1/2/3 residents and medical students. One year will consist of predominately clinical activities and the other two years are primarily for scholarly activity. The fellow will spend six months of the first year on the inpatient service, which includes formal training in GI procedures. The clinical fellow functions as a junior staff person in the supervision of the hour-to-hour care of critically ill patients. In addition, fellows have six months of inpatient clinical experience during the second and third years combined. During the third year of clinical service, the fellow is expected to function fully as an attending gastroenterologist. The fellow's continuity clinic is sited in the Pediatric Gastroenterology Clinic during all three years of the fellowship to achieve competence in outpatient Pediatric Gastroenterology.

Inpatient Training

Pediatric GI Fellow Rotation Schedule

FIRST YEAR BLOCK DIAGRAM

Month	July	August	Sept.	October	Nov	Dec	Jan	Feb	March	April	May	June
Experience or rotations	Service 100% (C) Hosp (1)	Service 100% (C) Hosp(1)	MS Program 15% (C) 85% (R) Hosp (1)	MS Program 15% (C) 85% (R) Hosp (1)	MS Program 15% (C) 85% (R) Hosp (1)	MS Program 15% (C) 85% (R) Hosp (1)	Service 100% (C) Hosp (1)	Service 100% (C) Hosp (1)	Service 100% (C) Hosp (1)	Service 100% (C) Hosp (1)	Research 30% (C) 70(R) Hosp (1)	Research 30% (C) 70(R) Hosp (1) Gillette(3)
Duty Hours	65/20 H	65/20 H	60/20 H	60/20 H	60/20 H	60/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H

H=home call, alternate weekend only. Fellow receives 4 weeks of vacation per year.

SECOND YEAR BLOCK DIAGRAM

Month	July	August	Sept.	October	Nov	Dec	Jan	Feb	March	April	May	June
Experience or rotations	Service 100% (C) Hosp (1) SE *(2)	Service 100% (C) Hosp (1) SE *(2)	Service 100% (C) Hosp (1) SE *(2)	Service 100% (C) Hosp (1) SE *(2)	Research 30% (C) 70(R) Hosp (1) SE* (2)	Research 30% (C) 70(R) Hosp (1)	MS Program 15% (C) 85% (R) Hosp (1)	MS Program 15% (C) 85% (R) Hosp (1)	MS Program 15% (C) 85% (R) Hosp (1)	MS Program 15% (C) 85% (R) Hosp (1)	MS Program 15% (C) 85% (R) Hosp (1)	Research 30% (C) 70% (R) Hosp (1) Gillette(3)
Duty Hours	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	60/20 H	60/20 H	60/20 H	60/20 H	60/20 H	65/20 H

H=home call, alternate weekend only; * when fellow completes 100 colonoscopies at HCMC/UMMC no further rotation is required. 4 weeks of vacation per year.

THIRD YEAR BLOCK DIAGRAM

Month	July	August	Sept.	October	Nov	Dec	Jan	Feb	March	April	May	June
Experience or rotations	Research 15 % (C) 85 % (R) Hosp (1)	Service 100% (C) Hosp (1)	Research 30% (C) 70% (R) Hosp (1) SE *(2)	Research 30% (C) 70% (R) Hosp (1) Gillette(3)	Research 30% (C) 70% (R) Hosp (1) SE *(2)	Research 15 % (C) 85 % (R) Hosp (1)	Service 100% (C) Hosp (1)	Research 30% (C) 70% (R) Hosp (1) SE *(2)	Research 30% (C) 70% (R) Hosp (1) SE *(2)	Research 15 % (C) 85 % (R) Hosp (1)	Research 30% (C) 70(R) Hosp (1)	Research 15 % (C) 85 % (R) Hosp (1)
Duty Hours	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H	65/20 H

H=home call, alternate weekend only; * SE (Supplement Endoscopy) when fellow completes 100 colonoscopies at UMMC no further rotation is required. 4 weeks of vacation per year.

KEY: MS Program – Masters in Clinical Research Program

Total number of clinical months: 12

Total number of research months: 24

Ambulatory Clinical Experiences:

- Fellows participate in ½ day of continuity clinic (at hospital 1) per week in all months throughout training.
- Fellows participate in ½ day each week of outpatient clinic at Gillette Children’s Hospital (one month in each year of training).
- Fellows participate in ½ day each week of endoscopy clinic at UMMC for 5 months in FL2.
- Fellows participate in ½ day each week of endoscopy clinic at UMMC for 4 months in FL3.

SCHEDULING

Once the final rotation schedule is published and distributed at the beginning of the year, changes **will not** be permitted except under the following circumstances:

- Individual fellows may work out trades that are mutually acceptable. These must be approved by the Pediatric Gastroenterology Fellowship Program Director and a form completed and submitted to the Pediatric Gastroenterology Fellowship Coordinator **two (2) months** prior to the beginning of a rotation. Such trades must not compromise the educational value of any individual schedule. Once again, the trade is not considered final until the switch form is completed, signed, and you have received the final approval copy.
- Occasionally, changes in the schedule may become necessary because of sickness or family emergency. Such changes will be made without compromising the established curriculum of the Pediatric Gastroenterology Fellowship Program.

Research

The **research component** of our fellowship training consists of 24 months of scholarly activity. As per the ABP, “all fellows will be expected to engage in projects in which they develop hypotheses or in projects of substantive scholarly exploration and analysis that require critical thinking. Areas in which scholarly activity may be pursued include, but are not limited to: basic, clinical or translational biomedicine; health services; quality improvement; bioethics; education; and public policy.” Traditional clinical or basic research or other scholarly activities are facilitated by the mentors in Pediatric Gastroenterology or other related subspecialties. Pediatric Gastroenterologists and subspecialists in other pediatric divisions supervise these studies and are instrumental in developing individual projects with appropriate specific curriculum (e.g., laboratory meetings, journal clubs, and coursework). Fellows, depending on their interest and career plans, may choose either the Clinical Research Track or the Basic Laboratory Research Track.

The following provides a list of Pediatric Gastroenterology faculty members who are willing to serve as mentors with a description of their research interests.

POTENTIAL RESEARCH MENTORS FOR THE DIVISION OF PEDIATRIC GASTROENTEROLOGY

Harvey L. Sharp, M.D.

Dr. Sharp’s research has included molecular biologic studies on human diseased livers vs. normal human livers. He has also done research on isolation of liver cells for studies concerning cross talking between the various hepatic cells with the mouse as an animal model. Dr. Sharp has participated in national studies on liver transplant utilizing data from SPLIT database which is obtained from major Pediatric Liver Transplant Centers. He also has a number of clinical studies in progress or ready for a fellow to initiate.

Glenn R. Gourley, M.D.

Dr. Gourley’s research laboratory focuses on studies on proteomics in various gastrointestinal diseases. He has an ongoing, well-funded laboratory project examining progression of fibrosis in Hepatitis C and its effect on prognosis utilizing proteomics. In addition he is has projects on unconjugated hyperbilirubinemia and inflammatory bowel disease.

Sarah Jane Schwarzenberg, M.D.

Dr. Schwarzenberg recently showed that obese adolescent girls experience increased prevalence of significant urinary incontinence. She is expanding that observation, examining the factors that contribute to urinary incontinence in obese adolescent girls. She is working with the current fellow to determine the benefits and risks associated with G-tube feedings in cystic fibrosis, in particular, the impact on pulmonary function. They will use the extensive CF database at UMMC.

Nissa Erickson, M.D.

Dr. Erickson's previous laboratory research was focused on the role of apoptosis in the development of extrahepatic biliary atresia in an RRV mouse model. Since joining our group this spring, she is now planning a clinical project to evaluate oxygen regulation of intrapulmonary shunts in hepatopulmonary syndrome. Other research interests include the effect of enteral fish oil supplementation in cholestatic liver disease, and pediatric liver transplantation outcomes.

Boris Sudel, M.D.

Dr. Sudel's past research interests included epidemiological and diagnostic characteristics of celiac disease in children with Down syndrome; pathophysiology and clinical aspects of cyclic vomiting syndrome as well as other functional GI disorders. Currently Dr. Sudel is concentrating his efforts to establish a pediatric inflammatory bowel disease center at UMN. Our center, through his efforts, is one of a dozen other centers around the country participating in the development of pediatric inflammatory bowel disease database (PIBDNet) This effort includes the Center for Health Care Quality at Cincinnati Children's Hospital Medical Center and the National Program Office for Quality in Pediatric Subspecialty Care. This project will focus on developing and testing specific changes in the care of children with inflammatory bowel disease. His interests include participation in therapeutic trials using cutting edge pharmaceutical and biological agents for inflammatory bowel disease in children as well as newest diagnostic modalities.

Individuals outside the division of Pediatric Gastroenterology have served as mentors for our fellows or young faculty in the past. The following are individuals who have expressed interest in being paired with a pediatric gastroenterology fellow; the rich research environment of the University of Minnesota has many opportunities for fellows interested in areas not being researched by our own faculty. The Program Director will assist the fellow in contacting a mentor appropriate to their area of interest.

Michael K. Georgieff, M.D. in Pediatrics

Dr. Georgieff is an established investigator in neonatal nutrition and metabolism and neurodevelopment. He has a joint appointment in Pediatrics and the Institute of Child Development and is a member of the Neuroscience Graduate Faculty. Dr. Georgieff is the Co-Director of the Center for Neurobehavioral Development at the University of Minnesota. He directs the Neonatal Nutrition Support Service and the NICU Follow-up Clinic at the University site. His research is on the impact of early nutrition on developmental follow-up of infants. Specifically, he studies the cellular and molecular mechanisms of placental iron transport and the neurological sequelae of perinatal iron deficiency. He is supported by grants from the NIH (NICHD and NINDS).

Clifford Steer, M.D. in Internal Medicine, Division of Gastroenterology

Dr. Steer is a research professor in Internal Medicine Gastroenterology and supported by NIH. He does basic research in his laboratory on gene therapy of inherited disorders and role of ursodeoxycholic acid in cell apoptosis

Chester Whitley, M.D., Ph.D. in Pediatrics

Toward gene therapy, Dr. Whitley uses molecular genetic techniques to study mucopolysaccharidosis (MPS) storage diseases, a group of lethal genetic disorders. Recent work has automated DNA sequencing for mutation analysis for molecular genetic diagnosis. The results are providing predictive testing and aid in the interpretation of outcomes for children treated by bone marrow transplantation. Such clinical trials of marrow transplantation have defined the extent of metabolic correction and have provided rationale to investigate gene therapy. Current studies in Dr. Whitley's laboratory are evaluating retroviral-mediated gene transfer in hematopoietic cells and reversal of the disease process in vitro thus providing the impetus to initiate clinical trials of gene therapy.

Scott Selleck, M.D., Ph.D., Professor and Director, The Developmental Biology Center;
Martin Lenz Harrison Land Grant Chair in Pediatrics

Dr. Selleck's research involves the role of proteoglycans in growth factor and morphogen signaling. Heparan sulfate proteoglycans are abundant molecules of both the cell surface and the extracellular matrix. Using genetic approaches in the fruitfly *Drosophila*, he have shown that heparan sulfate proteoglycans control both cellular responses to growth factors, and their distributions in the matrix during tissue patterning. Recent work has explored the functions of heparan sulfate proteoglycans in vascular development in the zebrafish, with potential identification of new anti-angiogenic agents.

John R. Lake, M.D. Professor of Surgery and Medicine, and the Director of the Liver Transplant Program at the University of Minnesota, Minneapolis. He is also the Executive Medical Director for Solid Organ Transplantation at the University of Minnesota Medical Center

Dr. Lake's research interests include post-transplant hepatitis C, predictors of outcomes following liver transplantation and the development of new immunosuppressive agents. He has authored more than 170 articles and 20 reviews in peer-reviewed journals and more than 25 book chapters. He is currently a deputy editor for the American Journal of Transplantation, Hepatology, Liver Transplantation and Transplantation Proceedings.

Martin L. Freeman, M.D. is a Professor of Medicine at the University of Minnesota Medical School

Dr. Freeman's current practice involves ERCP and the management of complex pancreatic and biliary disease. He is actively involved in running an advanced endoscopy training program, and is co-director of the Minnesota Pancreas and Liver Center. His research interests include various aspects of ERCP, most notably ERCP complications on which he conducted a multicenter study that was published in the *New England Journal of Medicine* in 1996. Dr. Freeman has also worked actively in the areas of pancreatic stent placement for prevention of post-ERCP pancreatitis, optimal strategies for stenting hilar malignant obstruction, treatment of Sphincter of Oddi dysfunction, endoscopic therapy of pancreatitis and pancreatic stones, and endoscopic

therapy of gastrointestinal bleeding.

Clinical Research Track

The clinical track involves completion of a Master's Degree in Clinical Research (see Appendix A for more details). The University of Minnesota Medical School, in conjunction with the School of Public Health, has established an innovative Master's Degree program in the education and training of individuals in the conceptualization, design and implementation of clinical research. This program is designed to be compatible with a clinical fellowship training program.

38 credits are required over a three-year period, with the following course content:

- Fundamentals of Clinical Research (3 credits)
- Ethics (1 credit) (includes IRB certification)
- Biostatistics I (4 credits)
- Biostatistics II (4 credits)
- Epidemiology (4 credits)
- Epidemiology Methods (2 credits)
- Human Genetics (4)
- Clinical Trials (3 credits)
- Grant Writing (2 credits)
- Research Seminar (2 credits)
- Master's Thesis (10 credits) (fellowship research project)

Basic Laboratory Research Track

Each fellow who chooses the basic laboratory track will enroll in appropriate advanced basic science courses to assist them in learning and applying fundamental laboratory based disciplines. Formal courses, in addition to basic discipline courses, will include, but not be limited to:

- Ethics (1 credit) (includes training in animal and human subject protection)
- Biostatistics I (4 credits)
- Biostatistics II (4 credits)
- Human Genetics (4)
- Grant Writing (2 credits)

Laboratory space will be provided for each fellow within the space allotted to the faculty mentor. It is expected that the fellow will become an integral part of that laboratory team, and that the major portion of the fellow's instruction will occur in that setting. Regularly scheduled laboratory research meetings and seminars will be required.