



Center for Adherence Promotion and Self-Management

T32 Fellowship Opportunities: Overview

The primary goal of our postdoctoral fellowship training programs is to train psychologists to assume leadership roles in research, clinical care, and training concerning the management of pediatric chronic illness, especially in the promotion of treatment adherence in children, adolescents, and their families.

Need and Rationale

Advances in modern medical treatment have resulted in improved clinical outcomes and quality of life for children with a wide range of chronic physical and behavioral conditions. However, the clinical benefits of medical treatment can be enhanced by more effective management, especially by an increased focus on treatment adherence promotion. Treatment nonadherence occurs frequently and has a negative impact on symptom control, healthcare utilization, costs of care, the patient / physician relationship, and long-term health outcomes, including quality of life of children with chronic physical and mental conditions.

Although the clinical significance of treatment nonadherence is well recognized, the science and practice related to treatment nonadherence are in early phases of development. There are important gaps in scientific knowledge in such critical areas as 1) processes that relate to nonadherence, 2) factors that promote positive adherence and self-management, and 3) interventions that are most effective in preventing nonadherence and/or containing the impact of clinically significant problems with treatment nonadherence. Moreover little is known about the most effective strategies

and/or psychological intervention to promote adherence to treatment in medical comprehensive care.

One important reason for the gap in scientific and clinical knowledge is the absence of training programs that have been designed to train psychologists to utilize state-of-the-art methods of research and clinical care that advance scientific understanding and clinical outcomes related to chronic illness management including adherence to medical treatment. Our fellowships have been designed to address this gap in training by providing systematic training in the specialized knowledge and skills related to the management of pediatric chronic illness and treatment adherence in an interdisciplinary research context in a major medical center. Fellows will be trained to assume faculty positions in academic pediatric healthcare settings and departments of psychology and lead research and/or clinical service programs in chronic illness management.

Setting and Structure of the Program

This new postdoctoral fellowship is one of the fellowship programs of the Division of Behavioral Medicine and Clinical Psychology at Cincinnati Children's Hospital Medical Center (CCHMC). The fellowship program is housed in the Center for Adherence Treatment Promotion and Self-Management, that has been established (7/1/07) to address the unmet scientific, clinical, and training needs related to treatment adherence.

The first of its kind in U.S., the Adherence Center includes six full time faculty and a program coordinator. Faculty were recruited to the Center based on their interest and expertise in research and clinical care related to treatment adherence. Center faculty work closely with pediatric colleagues in a wide range of pediatric subspecialties at CCHMC and with faculty and graduate students from the University of Cincinnati, Xavier, and Northern Kentucky University.

Mentoring Philosophy

Based on our experiences as mentors, our faculty have developed and implemented a philosophy of mentoring that we all share. Our mentorship is based on our commitment to facilitating our fellows' individual career goals and career development in any way we can. Toward this end, we are dedicated to helping our fellows discover and develop their considerable talents and skills over the course of their fellowship and to secure a job that best fits their needs and interests. Our focus is on helping fellows develop in areas pertinent to career success including but not limited to research, clinical skills, professional development, and fostering independence. Our model of mentoring does not rely on fellows to fulfill day to day responsibilities in

individual labs or research projects (research assistants who are funded by grants have this role). Rather, fellows collaborate with us to maximize the training and career development value of each and every one of their experiences.

Training programs are highly individualized. Based on dialogue with Center faculty, fellows' training programs are tailored to their individual interests' and career development needs with respect to the balance of research and clinical care as well as specific content areas of focus. Fellows are expected to take initiative for their individual projects and training program in the context of close and collegial mentorship from faculty.

Research

Fellows participate in a range of adherence related research programs that reflect funded and unfunded research conducted by Center faculty. These research programs encompass a wide range of chronic conditions such as type 1 diabetes, pediatric cancer, inflammatory bowel disease, epilepsy, ADHD, sickle cell disease, renal, liver, and stem cell transplantation, etc. (links to Faculty Labs and fellowship research opportunities).

Fellows will participate actively in research using established data sets and help to facilitate and develop new research projects. Fellows will also have ample opportunities to learn new state-of-the-art methods of intervention to promote adherence, methods of measurement, and novel statistical techniques that will help expand current research knowledge. Based on their initiative and research experience, fellows will have opportunities to participate as first and collaborating authors in manuscripts.

Content areas of faculty research include the following areas:

1. Risk factors (e.g., impact of depression on treatment adherence)
2. Measurement of treatment adherence based on multiple methods such as self-report, electronic monitoring, and serum assay
3. Influences on the trajectory of self-management and adherence during early adolescence
4. The relationship between nonadherence and health outcomes
5. Intervention studies: (e.g., application family-centered problem solving, cognitive and behavioral therapy, and motivational interviewing to promote adherence among children and adolescents in a range of chronic conditions)

Clinical Care

Adherence Center Clinical Service

The Adherence Center's clinical service is the first in the country to incorporate research with clinical care aimed at improving treatment adherence among patients and families coping with a pediatric illness. The use of a "real world" context for the delivery of care enables the Center to develop effectiveness-based research, thereby providing valuable information about the utility of evidence-based interventions across various pediatric conditions. Goals for the Center's service include not only improving patient biopsychosocial outcomes, but the dissemination of clinic-based data as a means of increasing synergy between medical and psychology professionals engaged in pediatric care.

Exciting opportunities for fellows are available to participate in the development of this service include the provision of evidence-based interventions to patients and families at-risk for, or having established difficulties with adherence to medical treatment. Fellows will work closely with the clinical service director, Dr. Sandra Cortina, as well as medical practitioners to develop appropriate clinical "action plans" for intervention. Patient referrals will represent a variety of pediatric conditions, including but not limited to: kidney disease, organ transplant, asthma, GI conditions, cancer, and cystic fibrosis. Referrals may also include needle phobia, pill swallowing phobia, and coping with a new diagnosis.

Fellows will learn individual and family based methods of empirically supported interventions (e.g. problem solving, motivational interviewing) for children and adolescents with problems with treatment adherence: they will also have the opportunity to learn methods of integrating clinical care and research including single subject design and case series, and to prepare and publish manuscripts based on this research.

Fellows in the Center of Adherence will participate in and facilitate a new clinical service has been developed to manage adherence problems that are referred from a range of specialties at Cincinnati Children's from inpatient and outpatient settings. Fellows will work under faculty supervision and learn specialized strategies concerning clinical assessment and interventions that facilitate the management of challenging problems of treatment nonadherence encountered in a wide range of conditions. The Center's clinical programs are being evaluated in the context of a new research program that will evaluate the clinical outcomes of interventions designed to managing challenging nonadherence problems.

Fellows will obtain experience and manage evaluation of psychological interventions to manage treatment nonadherence in the context of clinical practice. They will have unique opportunities to learn how to integrate research and practice and participate in scholarly publications related to case studies and series. Fellows will also participate in comprehensive clinical care and research programs that have been established by Center faculty such as the New Onset Seizure Disorder clinic.

Program Development

Fellows have an important opportunity to participate in planning and implementing of Center programs (e.g., new research programs and clinical care) and make significant contributions to program development with their ideas and initiative.

Teaching, Mentorship, and Consultation

Fellows will learn methods of providing consultation and educational sessions to medical and nursing staff that focus on the management of adherence problems and adherence promotion in clinical settings. In addition, fellows have opportunities to provide mentorship to psychology residents, graduate students and research assistants in the context of specific research and clinical care initiatives.

Didactic Seminars

Fellows will participate actively in a new series of didactic seminars that include a wide range of topics in professional development, presentations of ongoing research, ethics, treatment adherence and related topics, methods, measurement, and statistical analyses, preparation of research grants and writers' workshop seminars that focus on preparation of manuscripts and proposals ([link to seminar description](#)). The training program is also enriched by visiting faculty lecturers who have included Barbara Fiese, Michael Rapoff, and Bruce Bender, and Michael Harris.

Stipend and Benefits

Fellows will have space and a computer in the Center's offices in the new research "S" building at Cincinnati Children's. Fellows' stipend will be at the current (2013-2014) NIH levels for the first year \$39,264, and the second year \$41,364. Travel funds are available to present research findings at a scientific meeting. The T32 includes funds for research related experience and tuition. Healthcare benefits are available through Cincinnati Children's [link to BMCP description of fellowship program](#).

Application Process

Please email a letter describing how your interests, experience, and potential fit with the fellowship program, your CV, and at least three letters of recommendation from

research and clinical mentors to vicky.sanders@cchmc.org by **January 15, 2013**. Inquiries about the T32 should be made to the Program Director: Dennis Drotar (email: Dennis.Drotar@cchmc.org, Phone 513-636-3936). Inquires about specific lab-based programs can be directed to Kevin Hommel (email: Kevin.Hommel@cchmc.org, Phone: 513-803-0407) and Ahna Pai (Ahna.Pai@cchmc.org, Phone: 513-803-0406).

T32 Fellowship: Detailed Description: Program innovation, strengths, program faculty, training in clinical care and quality improvement, clinical service and outcomes research, leadership and career development and training in responsible conduct or research.

Key Strengths of the Fellowship

Research Training and Mentorship are Provided by an Experienced, Interdisciplinary Faculty

Fellows will receive individual and team mentoring from experienced scientists who are making important scientific contributions to behavioral science research concerning treatment adherence and chronic illness management, and biomedical research including genetics, biomarkers, pharmacology, statistical methods and research design, and health outcomes and QI research (see biosketches and Tables 2-4 for a description of faculty research). Fellows will join research teams that are currently conducting research and/or have developed established data sets in priority areas of adherence-related research.

Training Environment Provides Innovative Research Opportunities in Adherence Research with Diverse Pediatric Chronic Illness Populations

The training environment at CCHMC will provide fellows with a wide range of innovative research opportunities in adherence and chronic illness management research with diverse pediatric populations. Program faculty have a substantial portfolio of NIH-funded research in treatment adherence and related areas in innovative content areas that have a high scientific impact.

Cultural and Economic Influences on Pediatric Treatment Adherence Will Be Addressed

Children with chronic illness represent a wide range of cultural and economic backgrounds that can influence their adherence to medical treatment. Fellows will be trained in the social and economic context of pediatric chronic illness populations and the unique barriers to treatment adherence that reflect health care disparities under faculty with specific expertise in these areas (see C5.3). For example, adherence-related research with populations such as sickle cell disease, lupus, and asthma who are seen at CCHMC include a high percentage of minority children and adolescents who can benefit from tailored interventions that address cultural and economic barriers and health care disparities that disrupt treatment adherence. Fellows will develop knowledge and skills in adherence research with diverse populations including community participatory research and have opportunities to learn strategies of engaging and retaining minority families in research.

Training Emphasizes Collaborative Skills in Interdisciplinary Team Research

In accord with recommendations described for the NIH Roadmap Initiative, the proposed training program will emphasize the development of collaborative research skills necessary for team science through supervised experience and observation of mentors engaging in collaborative interdisciplinary research. Fellows will be members of interdisciplinary teams of experienced researchers throughout their fellowship and have opportunities to develop new interdisciplinary research.

Program Innovation

Our T32 training program provides systematic training in behavioral change interventions and comprehensive research methods that are uniquely focused on treatment adherence and chronic illness management with diverse chronic illness populations by nationally recognized mentors with NIH-funded research.

Specific training innovations involve the integration of biomedical, behavioral, biostatistics, and health services/outcomes research and are reflected in a comprehensive training curriculum and research opportunities. Research innovations include novel methods of adherence promotion interventions involving technology (telehealth, internet, cell phone) designed to enhance the power and duration of intervention effects and reach diverse populations who cannot easily access traditional clinic-based approaches.

Research training opportunities include:

- Design and evaluation of innovative and powerful interventions to promote and sustain treatment adherence and improve the health outcomes of children with a broad range of chronic conditions
- Application of valid intervention methods to promote adherence and enhance clinically relevant health outcomes in clinical management of children with pediatric chronic illness.
- Application of novel, state of the art advances in behavioral and biomedical science, pharmacology, and statistics to the measurement and analysis of treatment adherence data.
- Design and analysis of research concerning developmental influences, including risk and protective factors that impact treatment adherence and children's health outcomes (see individual faculty lab descriptions)

About Our Faculty

Faculty with expertise in four key areas (behavioral science including adherence center faculty, biomedical science, biostatistics/ measurement, and health services and outcomes) provide the foundation for the proposed training program curriculum and research training opportunities.

Dennis Drotar, PhD The immediate editor of the *Journal of Pediatric Psychology*, Drotar has had extensive experience in leading NIH-funded T32 research training programs. The primary focus of Drotar's current research programs is pediatric treatment adherence and chronic illness management. His NIH-funded research includes two R01s as PI: Self-Management and Treatment Adherence in Adolescents with Type 1 Diabetes (NIDDK) (with Dr. Dolan), and a Randomized Controlled Trial of Problem

Solving Intervention to Promote Adherence in Children and Adolescents with Cancer (NCI) (with Drs. Vinks and Perentesis). He also works closely with Sandy Cortina on evaluation of the clinical service.).

Kevin Hommel, PhD leads the Adherence Center's program of research on adherence to treatment in pediatric GI disease including inflammatory bowel disease (IBD) (with Dr. Denson) and eosinophilic disorders (with Dr. Rothenberg). His NIH-funded research focuses on innovative multimethod adherence measurement approaches and testing of behavioral interventions to promote adherence to treatment in IBD. A former winner of the Routh Early Career Research Award from the Society of Pediatric Psychology (SPP), Dr. Hommel is studying the innovative use of technologies (telehealth, virtual face to face) for delivering behavioral treatments to promote access to care and sustain intervention effects over time.

Avani Modi, PhD leads the Adherence Center's research and clinical care programs in pediatric epilepsy. Her NIH-funded research will describe the natural history of adherence in a unique prospective study of children with new onset epilepsy. A former winner of the Routh Early Career Research Award from SPP, Dr. Modi (with Drs. Glauser & Vinks) is studying pharmacokinetic models of drug exposure in pediatric epilepsy together with electronic monitoring of treatment adherence and impact on pediatric health outcomes including health-related quality of life.

Ahna Pai, PhD leads the Adherence Center's program in adherence to renal and stem cell transplants. She is conducting innovative research on the natural history of adherence and the identification of modifiable risk and protective factors for adherence transplant populations. Funded by a CCHMC Place Health Outcomes Research Award, she is also evaluating the measurement and impact of treatment adherence on provider management and health outcomes of children who have received renal transplants (with Drs. Goebel & Ittenbach).

Lori Crosby, PsyD, directs an NIH funded study of web-based interventions to promote adherence to treatment in sickle cell disease. Dr. Crosby co directs the Community Engagement Program of the CCTST and the Innovations Program and is nationally recognized for her work on enhancing the research participation of minority children with chronic conditions such as sickle cell disease.

Sandra Cortina, PhD is the Director of the Adherence Center Clinical Service, which to our knowledge is the only program in the U.S. that provides comprehensive psychological assessment and intervention for children and adolescents with severe treatment adherence problems. She leads an innovative evaluation of the clinical effectiveness of this program that involves electronic monitoring of treatment adherence and has a CCHMC Place Outcomes Award to study the effect of provider-based adherence promotion in juvenile idiopathic arthritis.

Behavioral Science Faculty

Scott Powers, PhD is the Director of the Center for Clinical and Translational Research and the Center for Behavior and Nutrition Research and Training at CCHMC. He is a nationally recognized, NIH-funded researcher in the field of dietary adherence in young children with chronic illnesses, especially cystic fibrosis, Type 1 diabetes, and children at risk of obesity. He has an outstanding record of training fellows for leadership positions and is a recipient of the Mid Career Award (K24) in patient-oriented research from NIH.

Lori Stark, PhD, is the Director of the Division of BMCP. She has a national reputation for her research in behavioral intervention to improve dietary adherence in pediatric chronic disease, especially CF. She is funded by the National CF Foundation to conduct an innovative internet-based nutritional adherence intervention and NIH to study the

impact of early treatment of obesity in preschool children. Dr. Stark also has an outstanding track record as a mentor and has mentored many fellows who have gone on to successful research careers and currently holds a mid-career patient oriented research career development award (K24).

Jeff Epstein, PhD is the Director of the nationally recognized ADHD research and clinical care program at CCHMC. His NIH-funded research is studying the efficacy of interventions to promote provider adherence to national guidelines for treatment of ADHD. He directs the CCHMC ADHD collaborative, which trains physicians in more than 48 practices to implement AAP guidelines for the management of ADHD. An accomplished mentor, Dr. Epstein has a Mid Career Award K24 in patient oriented research.

Robert Ammerman, PhD, is the Research Director of Every Child Succeeds, which is a nationally recognized program that provides early prevention intervention via home visiting for first time at-risk mothers. Dr. Ammerman's innovative NIH-funded RCT is studying the impact of cognitive-behavioral intervention to reduce parental depression and the health and psychological impact on children at risk for child maltreatment. He is also testing the impact of motivational interviewing intervention to promote adherence to cognitive-behavioral therapy among high risk mothers.

Susmita Kashikar-Zuck, PhD, the Director of the BMCP Post Doctoral Fellowship Programs, is nationally recognized for her NIH-funded research on the health outcomes of adolescents with chronic fibromyalgia. A clinical psychologist with specialized training and experience in behavioral pain management for children and adolescents, she conducts randomized clinical trials and longitudinal studies focused on pediatric chronic pain and health outcomes such as pain-related disability, quality of life, and psychosocial functioning.

Margaret (Meg) Zeller, PhD leads a nationally recognized NIH-funded research program that studies the psychological outcomes and health related quality of life of children and adolescents who are obese and seeking treatment, including morbidly obese individuals who are candidates for bariatric surgery. She is also a Col on an NIDDK U01 research grant that is evaluating the risks and benefits of bariatric surgery.

Monica Mitchell, PhD is Director of the Community Engagement Program of the CCTST and also leads the Innovations Program, a community-hospital partnership that integrates research into programs that improve the health, educational and quality of life outcomes in underserved (often minority) children and families. Supported by one of the few NIH-funded comprehensive Sickle Cell Disease Centers in the U.S., Dr. Mitchell's primary area of research focuses on evaluating innovative web-based interventions to promote adherence to treatment among children and adolescents with sickle cell disease, which is an understudied population.

Biomedical Science Faculty: Overview

One of the important strengths of the proposed training program is the depth of biomedical research expertise of faculty collaborators in treatment adherence research. Faculty in biomedical science provide expertise in biological influences (e.g. biomarkers and disease progression, genetic influences, pharmacological treatment) that affect children's health outcomes. This group of faculty works very closely with behavioral science faculty and fellows in collaborative teams that conduct adherence-related research.

Many of the themes of biomedical faculty members' research are closely aligned and integrated with adherence research conducted by behavioral science faculty, which models interdisciplinary research collaboration for fellows. Topic areas include

biomarkers and pharmacological methods to identify adherence, disease course and clinical outcomes affected by nonadherence and genetic profiles to improve pharmacological treatment to reduce medication side effects thus improving adherence, etc.

Lee Denson, MD, is director of the IBD Center at CCHMC and the fellowship program in gastroenterology and nutrition. He leads a multi-center research program which is designed to discover underlying mechanisms and improve therapeutic approaches as it relates to pediatric patients with Inflammatory Bowel Disease (IBD). He collaborates with Dr. Hommel on studies of adherence in IBD.

Lawrence Dolan, MD, is Director of the Division of Endocrinology at CCHMC. His NIH-funded research focuses on (1) the development and progression of cardiovascular disease in adolescents and young adults with diabetes; (2) natural history of obesity, insulin resistance, and diabetes. He works with Drs. Hood and Drotar on their studies of adherence, depression, and diabetes control in adolescents with Type 1 diabetes and in the Project Search study of health outcomes in adolescents with diabetes.

Marc Rothenberg, MD, PhD is Director of the Division of Allergy and Immunology. His NIH-funded research is focused on regulation of eosinophil in health and disease. He is also actively engaged in teaching and the co-director of the NICHD K12 grant at CCHMC, as well as the K12 component of the CTSA. He collaborates with Drs. Hommel and Cortina on research on adherence and health outcomes in eosinophilic disorders.

Tracy Glauser, MD, MS directs the Pediatric Epilepsy Center and has published on a wide range of topics related to diagnosis and pharmacological treatment of epilepsy. He is the PI on an NIH-funded multicenter study of pharmacotherapy for childhood absence epilepsy. He works closely with Dr. Modi and Dr. Vinks on studies of the natural history of adherence to medical treatment following a new diagnosis of epilepsy.

Sander Vinks, PhD, PharmD directs Pediatric Pharmacology and the NIH-funded Pediatric Pharmacology Research Unit (PPRU) at CCHMC. He is an NIH-funded expert on pharmacogenetic and pharmacokinetic modeling of medication treatments for a range of pediatric chronic conditions including epilepsy and cancer. He holds a mid-career mentored patient oriented career development award (K24) to develop novel technologies for pharmacokinetic and pharmacodynamic modeling and for training faculty and fellows in principles of clinical pharmacology. Dr. Vinks collaborates with Drs. Modi and Glauser in research on the measurement of treatment adherence in epilepsy and with Dr. Drotar on studies of adherence promotion in pediatric cancer.

Hermine Brunner, MD has spearheaded the development and validation of surrogate and biomarkers for children with cSLE illness, including measures of disease activity, damage and response to therapy. She has collaborated with Drs. Drotar and Cortina on the impact of text messaging and motivational interviewing to promote treatment adherence in adolescents and young adults with lupus.

Robert Kahn, MD, has NIH-funded research on health care disparities and environmental risk factors on health outcomes, especially in pediatric asthma, with Drs. Hershey and Drotar. His publications focus on the importance of income, education, and race in the etiology of health disparities and the other risk factors (e.g. parental depression and financial hardships).

Khurana Hershey, MD, PhD, director of the Asthma Research Program at CCHMC, is an internationally recognized leader in the field of asthma research, with a particular interest and expertise in personalized and predictive medicine. She collaborates actively with several faculty including Drs. Kahn, Drotar, and Kercsmar on studies of asthma and health outcomes.

Stella Davies, MD, PhD is director of the bone marrow transplantation program at CCHMC. Her NIH-funded research focuses on genetic polymorphism and cancer susceptibility, chemotherapy metabolism and response and novel blood and bone marrow treatment regimens. She works closely with Dr. Pai on studies of adherence to bone marrow transplantation.

John Perentesis, MD is director of the Oncology program at CCHMC. His NIH-funded research concerns novel cancer therapeutic and host factors and etiology of leukemia. He collaborates with Dr. Drotar on his RCT of problem solving intervention to promote treatment adherence in leukemia.

Jens Goebel, MD's research concerns the treatment and management of renal transplantation. He collaborates with Dr. Pai on her studies of parent and child allocation of responsibilities for treatment in renal transplant and adherence monitoring feedback to providers to enhance the management of renal transplantation.

Faculty with Expertise in Measurement, Methodology, and Biostatistics: Overview

Expertise in statistical methods and measurement is necessary to advance the validity of adherence measurement, prospective statistical modeling of the natural history of adherence and evaluation of the efficacy of interventions, including RCTs. For this reason, faculty and fellows' research on treatment adherence at CCHMC is conducted in close collaboration with faculty with experience and expertise in biostatistical methods and measurement.

Richard Ittenbach, PhD is an expert in clinical trials and measurement. He has conducted original research in bioethics, (e.g., the measurement of voluntariness). He is conducting research on the measurement of treatment adherence in randomized clinical trials and studies of the validity of adherence measurement in Type 1 diabetes using Rasch analysis and evaluating group-based trajectory models in adherence in collaboration with Drs. Drotar, Modi, Hommel, and Pai.

Joe Rausch, PhD, an expert in longitudinal and time series analyses, conducts research (in collaboration with Drs. Modi, Pai, and Hood) on the statistical modeling of depression and blood sugar control in adolescents with type 1 diabetes and models to analyze subgroups of children with different patterns of adherence in pediatric epilepsy. He is investigating novel applications of linear and nonlinear mixed-effects models for the analysis of longitudinal change on behavioral and medical outcomes. He is also working with Dr. Powers on a multisite RCT study of dietary adherence in preschoolers with CF.

Adam Carle, PhD, has expertise in analyses of large data sets, including use of advanced statistical methods to study health care disparities, especially among children with special health care needs. His work employs latent variable models such as item response theory, confirmatory factor analysis, structural equation modeling and multilevel models to evaluate measures in different populations, including measurement models of treatment adherence and blood sugar control in type 1 diabetes (with Dr. Drotar).

Jennie Noll, PhD, is the Director of Research in the Division of BMCP. Her NIH-funded research focuses on the impact of child maltreatment on adolescent health outcomes. She leads the BMCP's Data Core and has been a pioneer in the development of new methods and technology to gather data from adolescents via web-based methods. She has expertise in longitudinal data analyses and web-based data collection with vulnerable high-risk populations.

Health Services, Outcomes, and Quality Improvement (QI) Research Faculty: Overview

One of the unique features of the research and environment at CCHMC is the depth of faculty expertise in research on health services, outcomes, and quality improvement (QI). These faculty work closely with medical and behavioral science researchers to develop and test the effectiveness of innovative adherence promotion efforts and their delivery to diverse populations in different clinical settings. Treatment adherence and chronic illness management have been recognized as a priority for QI efforts in chronic illness management programs at CCHMC. This provides an opportunity to test the generalizability of models of empirically supported adherence promotion in studies of comparative effectiveness in clinical care.

Peter Margolis, MD, PhD is a nationally recognized expert in QI research who directs research in the Anderson Center. Dr. Margolis has substantial experience in QI, epidemiologic, and primary care research, including the design and implementation of complex QI interventions, guideline development, randomized trials, and meta-analyses. He leads national efforts on the use of QI methods to translate knowledge into practice and policy and collaborates with Drs. Seid and Hommel on an NIH-funded study: Transforming Chronic Care by Optimizing Collaboration Networks.

Michael Seid, PhD is Director of Health Outcomes and Quality of Care Research in the Division of Pulmonary Medicine. His research focuses on measuring and improving pediatric health care quality and health-related quality of life for chronically ill children, the barriers to care faced by vulnerable populations, and policies, and programs to overcome these barriers. His NIH-funded research (with Drs Kercsmar & Drotar) includes a novel intervention combining motivational interviewing and problem solving with a cell phone reminder system for adolescents with asthma.

John Bucuvalas, MD is Director of the **Disease Specific Innovations and Outcomes Program (DSIOP)** at CCHMC, the goal of which is to improve care including treatment adherence outcomes for children with chronic health conditions. Dr. Bucuvalas also has specific expertise in health outcomes and treatment adherence in transplant hepatology. He is Co-I (along with Dr. Drotar) on a study designed to study the natural history and clinical outcomes of medical adherence in liver transplant recipients.

Carolyn Kercsmar, MD, MS, director of the Asthma Center at CCHMC, is highly experienced in providing clinical care to children and adolescents with asthma and conducting clinical research, largely focused on inner city populations in multicenter trials and networks (e.g., National Cooperative Inner City Asthma Study (NCICAS)). She collaborates with Dr. Drotar on a study of the efficacy of provider-based feedback concerning treatment adherence.

Bill Brinkman, MD. Dr. Brinkman's innovative NIH-funded research is studying collaborative parent-provider decision making as it affects sustained adherence to medication treatment in pediatric ADHD. He has found the quality of provider communication with parents concerning medication management has an important influence on adherence.

Specific Content Areas of Seminars

Adherence Center Seminar (Program Faculty and fellows) (weekly, year long seminar)

The Adherence Center seminar series familiarizes fellows with ongoing faculty research and stimulates fellow and faculty interchange concerning issues concerning the design and implementation of research in treatment adherence. The seminar includes

faculty from a broad range of pediatric specialties as well as faculty at UC. Topics include research presentations by faculty and trainees, journal club, and lectures from visiting professors, methods of adherence research, and key content areas such as cultural influences.

Other topics include behavioral theories of adherence promotion including the health belief model, theory of reasoned action, theory of planned behavior, transtheoretical model, social cognitive models; (e.g. self-regulation, decision making, motivational) and systems influences).

Biologic influences that are relevant to treatment adherence and health outcomes are considered in this seminar. These include new pharmacological treatments for chronic conditions, pharmacokinetic modeling, genetic influences on health outcomes that influence response to medication and side effects profiles, pharmacology including models of the pharmacological aspects of medications, including population pharmacokinetic modeling for specific medications, biomarkers of clinical outcomes, etc.

Relevant cultural and economic influences on adherence promotion methods and intervention, barriers to treatment adherence (e.g. cultural, language, economic, health literacy, and access to care), influences in patient and family decision making and the meaning of adherence, developing culturally sensitive approaches to interventions, reducing barriers to adherence promotion via technology, measurement bias, and health care disparities and recruitment and retention of diverse participants in adherence research and social, economic and cultural influences on adherence.

BMCP Psychology Research Group (PRG) Seminar (BMCP Program Faculty) (monthly)

Fellows will participate in the psychology research group (PRG), which provides constructive and substantive critique concerning faculty research grant proposals prior to submission. Proposals are assigned to two faculty and one fellow for review. Other faculty and trainees also provide critiques and proposals, are brought back for additional review and discussion of progress. The PRG has been in place for a number of years and has enhanced the success rate of BMCP faculty proposals to NIH (65% for the past year). Fellows learn skills in critique of research grants, observe the process of developing research grants, and the critical importance of advance planning and peer critique in developing successful proposals.

Seminar on Advanced Statistics (Rausch and Peugh)

Dr. Rausch organizes a seminar that focuses on strategies of advanced statistical methods for prospective study designs. Content and examples of a wide range of statistical methods are presented along with an illustration of data from ongoing studies of BMCP faculty or fellows: e.g., mixed linear models, group based latent trajectory modeling, and times series analyses. Specialized data workshops presented by visiting faculty have also been offered in topics such as structural equation modeling, qualitative data analysis, social network analyses, and analysis of large data sets.

Training in Clinical Care and Quality Improvement (QI)

Clinical experiences are invaluable in helping fellows learn to develop practice-relevant clinical applications of research in treatment adherence in comprehensive chronic illness management. Clinical training experiences will be tailored to individual fellows' professional discipline and training needs. For example, psychology fellows will typically learn specialized skills in psychological assessment and empirically supported

psychological interventions (e.g. family-centered intervention, cognitive-behavioral therapy) for the management of adherence problems. Physicians will learn principles of intervention and communication skills with families that will facilitate adherence promotion in ongoing medical management of pediatric chronic illness including challenging patients who are nonadherent to treatment. Clinical and QI experiences are available in the following areas:

Adherence Center Clinical Service and Outcomes Research Program

The Adherence Center at CCHMC has developed the first program in the U.S. that is focused on diagnosis and treatment of clinically significant problems in treatment adherence and chronic illness management. Children and adolescents with a range of chronic conditions are referred by health care providers to this service when their treatment adherence interferes with medical management and causes symptoms or serious complications (e.g. rejection of organ transplant). Fellows gain experience with assessment and empirically supported intervention methods (e.g. behavioral therapy, cognitive behavioral approaches, motivational interviewing, and behavioral family systems therapy). The Adherence Center's Clinical Service is closely integrated with an evaluation of the effectiveness of intervention with objective measurement of adherence via electronic monitoring.

New Onset Seizure Clinic

Fellows will gain experience with providing comprehensive assessment and treatment planning for children with chronic illness in the context of a multidisciplinary team that specializes in the diagnosis and treatment of children with seizures. The team (physicians, nurses, psychologists, and social work) combines state of the art clinical care and research to implement individualized treatment plans. Fellows provide assessments of epilepsy patients' psychosocial status including risk for nonadherence, make suggestions for management, and conduct adherence promotion interventions.

Comprehensive Adherence Promotion in Subspecialty Based Clinical Care

MD Fellows will obtain clinical training in comprehensive adherence promotion based on interventions developed by faculty. For example, fellows will learn skills in anticipatory guidance and adherence assessment, including helping families problem solve barriers to adherence and manage severe nonadherence through intensive medical and psychosocial follow-up.

Quality Improvement Initiatives

One of the innovative features of the proposed program is the opportunity for all fellows to participate in CCHMC QI initiatives and relevant research opportunities. Over the last 10 years, CCHMC has developed nationally recognized QI initiatives including patient safety and chronic illness care. The CCHMC strategic plan 2015 includes a proactive emphasis on measuring and improving health outcomes for high impact chronic diseases and complex disorders. Training providers to help families in the management of chronic conditions is an important goal of the strategic plan. Adherence Center faculty (Cortina and Drotar) are collaborating on an initiative that will test individualize provider based self-management and adherence promotion in high risk, high need patients with chronic illness. Fellows can participate to learn QI strategies relevant to adherence.

Health Services and Quality Improvement Seminar

The Anderson Center for Health Systems Excellence sponsors a monthly seminar that features the work of faculty, fellows, and at CCHMC and visiting lecturers who are experts in health services research. Fellows will present their research at these seminars.

Leadership and Career Development

Fellows in the proposed program all have strong potential to be leaders in the field of adherence and chronic illness management and will be trained in leadership and career development skills to help them achieve their full potential.

Training in Teaching and Research Mentorship: (Program Faculty)

We anticipate that fellows will have important roles as teachers and mentors in their future careers and will implement an innovative program for supervised training in teaching and mentorship. Each fellow will develop a teaching and mentorship plan that will include developing a teaching portfolio of lectures and curriculum in content areas that are relevant to their career development (e.g. treatment adherence in specific pediatric chronic illnesses). They will give lectures to relevant groups (e.g. pediatric and clinical psychology residents) and will be given feedback on the content and style of their teaching.

Seminar on Career Development (Program Faculty)

One of the unique aspects of the fellows' training in career development and leadership is participation in a seminar in mentorship for the faculty of the Adherence Center that is convened by the program director. These seminars are led by faculty who present a challenging mentorship career development issue (e.g. difficult challenge in interdisciplinary collaboration). Fellows participate in providing critique, observing faculty dialogue and obtaining feedback on specific professional career development challenges of primary interest to them.

Seminars in Career Development in CCHMC Fellowship Program (Faculty and Fellows)

Fellows in the proposed program will have a full range of didactic and interdisciplinary group activities that are part of the CCHMC fellowship training activities. These include the following: Topics have included mentoring, preparing a CV, delivering a job talk, interviewing and negotiating for a job position, clinical and basic science research resources, giving effective presentations, and mentoring.

Supervised Training in Preparing and Giving Scientific Research Presentations

Fellows will have experience in preparing and giving scientific presentations under the supervision of faculty in the Adherence Center, Health Services, and QI Seminars. Faculty will help fellow prepare presentations and provide critique.

Scientific Presentations at Relevant Professional Societies

Fellows will present at scientific meetings that reflect the content areas of their research. These experiences will put them in touch with peers and prominent researchers in content areas of their research. These meetings can include Society of Behavioral Medicine, the National Conference on Child Health psychology, the Society

for Developmental and Behavioral Pediatrics, Society for Pediatric Research, and the American Psychological Association and scientific specialty meetings such as the American Diabetes Association. Fellows will be trained in the preparation of scientific presentations by individual mentors and rehearsals with feedback from peers and faculty. Current fellows have had submissions selected for platform presentations and have won awards. For example, a former fellow, Michele Herzer and current fellow Marisa Hilliard have received meritorious trainee awards for their presentations at meetings of the Society for Behavioral Medicine (2010-2011).

Participation in Activities of Scientific Professional Societies

Fellows will participate and obtain mentored experience in activities at professional societies that reflect their research interests. For example, the Behavioral Research In Diabetes Group Exchange (BRIDGE) was founded 25 years ago by a group of behavioral researchers who were interested in discussing research ideas, and dilemmas with their colleagues (including fellows) in an informal and supportive setting. BRIDGE members are primarily behavioral scientists and their trainees, but the membership of 150 US and international researchers also includes a number of endocrinologists, dieticians, and nurse practitioners who focus on behavioral research in diabetes. Fellows will participate in BRIDGE meetings and obtain feedback about their research from experienced investigators.

Adherence Center Visiting Lecture Series (annually)

The Adherence Center sponsors a lecture series which invites leading scholars in the field of adherence research to give lectures and interact with students and fellows on an informal basis. Visiting lecturers have included Bruce Bender, PhD, Barbara Fiese, PhD, Michael Rapoff, PhD, and Michael Harris, PhD., John Urquhart, MD, and Bernard Vrijens, PhD.

Training in the Responsible Conduct of Research

Research with children, adolescents, and families in treatment adherence and chronic illness management raise special challenges related to informed consent, adherence monitoring, and reporting of non-adherence that occur in the broader ethical context of psychological and behavioral research with children and their families. Fellows will receive comprehensive training in the following areas

Experiential Training/Mentorship in Responsible Conduct of Research

Fellows will receive experiential training in the conduct of research throughout the course of their program in the context of individual mentoring and research supervision. Fellows' research mentors will provide direct guidance in the ethical conduct of research including informed consent procedures, research review procedures, data collection, management and analysis, and authorship and peer review, mentor/mentee relationships, and collaborative research.

Seminar on Research Ethics with Pediatric Populations (Program Faculty)

Fellows will receive didactic training in research ethics with pediatric populations in a seminar that will cover the following: (1) general ethical issues in psychological and pediatric research; (2) special ethical issues with pediatric populations; (3) ethics of investigator behavior; (4) ethics of interdisciplinary research collaboration; (5) ethics of adherence and chronic illness management research; and, (6) research on pediatric ethics. Experienced investigators will provide data and experiences concerning

presentations of ethical issues (including cultural issues anticipated and unanticipated) that they encountered in their research with pediatric populations and how they managed these issues. Presentations focus on ethical questions posed by research with vulnerable populations, ethics of informed consent in pediatric psychopharmacology trials, ethics of data analysis, whistle blowing, conflict of interest, data sharing and ownership, confidentiality, assent, informed consent, protection of the rights of minors, ethics of research collaboration, regulatory issues and HIPAA.

Seminar in Ethics in Research and Scientific Integrity

Topics include (among others) conflict of interest, mentorship, publication practices, authorship and peer review, research misconduct, and intellectual property.

Outcomes and Required Experiences in Research Ethics

- **Fellows' Presentations of Research Ethics Challenges**

Fellows will prepare a presentation of a research ethics challenge based on their experience and/or research literature under faculty mentorship that will be discussed in the Adherence Center seminar.

- **IRB Certification and Observation**

Fellows will be required to achieve certification for responsible conduct of research, which involves completing a comprehensive examination (CITI training). Finally, fellows will be guest attendees at 4-6 CCHMC IRB meetings to observe the IRB process first hand. This will give them sufficient time to observe discussion on different types of studies, while also observing the process of revision, resubmission, and ultimate approval.

- **Preparation of IRB Proposals**

Fellows will prepare proposals for the IRB based on their research under faculty mentorship