

Home Dialysis Benchmarks Workgroup

Peritoneal Dialysis (PD)

Medical Knowledge

Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social behavioral sciences, as well as the application of this knowledge to patient care.

Fellows must demonstrate knowledge of:

- The absolute and relative contraindications to PD
- The living space and other physical requirements needed to successfully perform PD
- The structure and function of the peritoneal membrane, including ultrafiltration, reabsorption, and solute transport characteristics
- The techniques, indications, contraindications, and complications of PD catheter placement
- Peritoneal dialysis prescription requirements, including composition of PD solutions, available modalities (CAPD/CCPD/NIPD/tidal PD), consideration of volume status, and importance of residual renal function
- Kt/V calculations and other important components of overall dialysis adequacy in PD patients
- Performance and interpretation of the peritoneal equilibration test (PET)
- The infectious and non-infectious complications specific to PD
- The appropriate use and interpretation of laboratory and imaging modalities in the evaluation and management with particular attention to what is unique to PD
- The clinical pharmacology and adverse effects of drugs used in the setting of PD

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 must demonstrate competence in:

- Providing education and support to advanced CKD patients about various dialysis modalities, including PD
- Acquiring a thorough H&P, identifying patient supports and living conditions, and assessing motivation to determine suitability for PD
- Determining adequacy of peritoneal dialysis for patients, including how and when to alter PD prescription based on:
 - Results of solute clearance studies including Kt/V, acid base balance, CKD-MBD, cardiovascular risk, and ultrafiltration concerns
- Determining how and when to perform PET, and discuss prescription changes required depending on results

Fellows must demonstrate competence in the evaluation and management of:

- Diagnostic and laboratory testing in the evaluation and management of PD patients
- Pre- and post-operative PD catheter-care complications including catheter inflow and outflow problems and related pain
- Infectious complications of PD, including exit site or tunnel infections, peritonitis, prophylaxis against infections
- Increased intrabdominal pressure (e.g. hernias, leaks, hydrothorax)
- Metabolic complications (e.g. hyperglycemia, hypertriglyceridemia, electrolyte & acid-base perturbations, mineral and bone disorders)
- Abnormal PD fluid appearance (e.g. hemoperitoneum, chyloperitoneum)
- Encapsulating peritoneal sclerosis
- Blood pressure abnormalities, including dietary restrictions, PD prescription, medications, and technical concerns
- Discontinuation of PD and transition to other therapies

Home Hemodialysis (HHD)

Medical Knowledge

Fellows must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social behavioral sciences, as well as the application of this knowledge to patient care.

Fellows must demonstrate knowledge of:

- The absolute and relative contraindications to HHD
- The Home Hemodialysis “home dialysis team” (patient and partner), their living space and psychosocial environment with comments on how one might problem solve so that HHD can be done safely when there is a desire to do home therapy but there is a relative contraindication
- The different hemodialysis platforms available for HHD, how the platforms differ and their implications for HHD prescription (such as frequency and duration of a treatment)
- The dialysis adequacy targets, considering the variability in treatment prescription (platform, frequency and length of treatment that are unique to HHD)
- The infectious and non-infectious complications specific to HHD
- The management of dialysis associated co-morbidities with particular attention to what is unique to HHD
 - Access issues, management of anemia, CKD-MBD, BP and volume control
- The clinical pharmacology and adverse effects of drugs used the setting of HHD
- The indications and considerations for change in modality, in-center respite care if needed

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 must demonstrate competence in:

- Providing education and support to advanced CKD patients about various dialysis modalities, including HHD
- Acquiring a thorough H&P, identify patient supports and living conditions, and assess motivation to determine suitability for HHD

Fellows must demonstrate competence in the evaluation and management of:

- Determining the patient's initial HHD prescription
- Understanding the results of adequacy testing, recognizing when it is suboptimal and how to appropriately adjust the prescription if suboptimal.
- Recognizing and managing blood pressure abnormalities and volume overload.
- Diagnostic and laboratory testing in the evaluation and management of HHD patients.
- Vascular access issue including choice of type used, and assessment of function
- Infection control issues including barriers, prevention, diagnosis and treatment of infection
- Metabolic complications (e.g. hyperglycemia, electrolyte and acid-base perturbations, CKD-MBD)
- The discontinuation of HHD either temporarily with in-center respite care or permanently by transfer to in-center dialysis or peritoneal dialysis

Home Dialysis (Combined Competencies)

Systems-based Practice

Fellows must demonstrate an awareness of and responsiveness to the larger context and system of healthcare, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Fellows are expected to:

- Facilitate timely placement of peritoneal dialysis catheter or facilitate timely placement of vascular access to allow for smooth transition to home dialysis
- Participate in the application of treatment algorithms and protocols for management of common clinical issues in the care of home dialysis patients
- Participate and identify the structure and training necessary for appropriate transfers of care and hospitalization of home dialysis patients
- Incorporate input from nursing, dietary, and social worker care partners in clinical management decisions
- Participate in monthly care and monitoring of the home dialysis patient
- Incorporate risk-benefit analysis and cost considerations in diagnostic and treatment decisions for home dialysis patients
 - Identify and address any eligibility, financial, cultural, or social barriers
- Exhibit familiarity with the emerging technologies to control and monitor treatments in real-time and offline

Practice-based Learning and Improvement

Fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Fellows are expected to develop skills and habits to be able to meet the following goals:

- Identify competency gaps and engage in opportunities to achieve focused education and performance improvement, including prior patient experiences to benefit other patients, families, and providers. Issues specific to home dialysis for monitoring may include
 - Take-on rates for PD and HHD in the clinical practice and barriers for optimizing utilization of the therapies
 - Infection rates of facility
 - Transplantation rates
 - Adequacy measures
 - Transfer of PD and HHD patients to in-center hemodialysis, causes and trends for such transfers
- Utilize support tools to improve patient care (such as dialysis adequacy and volume management), access guidelines, and gain pharmacologic information at the point of care

Professionalism

Fellows must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

Fellows are expected to demonstrate that they can:

- Exhibit sensitivity to patient preferences and adjust dialysis prescription to fit the patient's lifestyle
- Appropriately refer patients for transplantation, other dialysis modalities, or other needed care
- Be able to work as a leader of the patient care team, comprised of the "home dialysis team" (patient and partner), the home dialysis nurse, the dietitian, and social worker

Interpersonal and Communication Skills

Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.

Fellows are expected to:

- Communicate with patient and other non-nephrology physicians regarding suitability for home dialysis
- Discuss with the patient lifestyle needs and expectations from home dialysis in order to ensure adherence and satisfaction with modality
- Be able to communicate with and educate patients, families and other providers (such as primary care providers and surgeons) about home dialysis:
 - Misconceptions, contraindications, demands
- Maintain ongoing communication and follow-up with kidney transplant specialist/program
- Engage in shared decision-making with patients and families regarding PD and the options for diagnosis and treatment.

- Communicate to the home dialysis team about expectations to achieve excellent outcomes for patients.

Curriculum Organization and Fellow Experiences

Exposure to a critical number of peritoneal and home hemodialysis patients and participation in active peritoneal and home hemodialysis programs are essential to achieving competency in the care of home dialysis patients. The critical number of patients will vary depending on the characteristics of the peritoneal and home hemodialysis programs and the practice setting.

Meeting the minimum training requirements that are multidisciplinary in nature may require partnering with another academic medical center or a community dialysis facility not affiliated with academic medical centers if the training environment does not include access to a multidisciplinary home dialysis program. The minimum clinical training requirements cannot be achieved by simply including home dialysis patients in the fellow's continuity clinic.

The key training elements include the following:

- Fellows must demonstrate active involvement in a multidisciplinary peritoneal and home hemodialysis program including the following activities:
 - Observation and participation in the initial peritoneal dialysis and home hemodialysis training of at least one new patient in each therapy
 - Observation and participation in the peritoneal dialysis training of a patient for cyclor therapy
 - Home visit to at least one PD and one HHD patient for evaluation of environmental safety
 - Observation and participation of a PET and adequacy collection and subsequent calculation
 - Observation and participation of adequacy review of a home hemodialysis patient
 - Attending a multi-disciplinary Quality Assurance/Performance Improvement meeting of the PD and Home HD program
- Fellows must follow PD and HHD patients during their fellowship.
 - Fellows should participate in the evaluation of PD and Home HD patients preferably during the monthly patient visits in a multidisciplinary clinic with the PD and HHD nurse.
 - This may be accomplished a focused 4 week rotation in the home dialysis program.
 - In addition, or alternatively, the fellow may follow a selection of PD and HHD patients over a one year period
- Participation in a chronic kidney disease education class focused on the dialysis choices.
- Fellows must actively participate in didactic sessions covering key content areas of medical knowledge.
 - Programs may choose to utilize non-institutional online tools or courses
 - Examples:
 - Dialysis Virtual Mentor (American Society of Nephrology) <http://www.asn-online.org/education/distancelearning/curricula/dialysis/>

- Peritoneal Dialysis Academy
(<http://www.uab.edu/medicine/nephrology/news-events/events/past-events/44-pd-academy-2012>)
- Peritoneal Dialysis Curriculum (NAC)
<http://ispd.org/NAC/education/pd-curriculum/>

Assessment and Determining Competency

The ACGME's next accreditation system (NAS) is an outcomes-based accreditation process, and training programs now must measure trainee competency in performing the essential tasks or milestones. Internal medicine subspecialty programs will implement the assessment of milestones in July of 2014. This document includes a competency based curriculum, curriculum organization and fellow experiences. Several of the goals are aspirational; not all programs have the resources to provide all the aspects of training described in this document. In the coming year, home dialysis milestones and assessment tools will be developed to help program directors determine nephrology fellow competency in home dialysis therapies. The majority of U.S. nephrology training programs have access to peritoneal dialysis programs staffed with experienced multidisciplinary teams and exposure to a sufficient number of peritoneal dialysis patients required to provide the curriculum, fellow experiences, and educational outcomes described in this document. However, home hemodialysis prevalence in the U.S. remains low and a significant number of U.S. nephrology training programs may not be able to provide the fellow experience and achieve the necessary educational outcomes to determine fellow competency. As home hemodialysis prevalence increases in the US, training programs may be able to provide the curriculum, fellow experiences, and educational outcomes described in this document over the next 3–5 years.