

ACGME Program Requirements for Graduate Medical Education in Medical Biochemical Genetics

One-year Common Program Requirements are in BOLD

Effective: July 1, 2007

Introduction

Int.A. Residency and fellowship programs are essential dimensions of the transformation of the medical student to the independent practitioner along the continuum of medical education. They are physically, emotionally, and intellectually demanding, and require longitudinally-concentrated effort on the part of the resident or fellow.

The specialty education of physicians to practice independently is experiential, and necessarily occurs within the context of the health care delivery system. Developing the skills, knowledge, and attitudes leading to proficiency in all the domains of clinical competency requires the resident and fellow physician to assume personal responsibility for the care of individual patients. For the resident and fellow, the essential learning activity is interaction with patients under the guidance and supervision of faculty members who give value, context, and meaning to those interactions. As residents and fellows gain experience and demonstrate growth in their ability to care for patients, they assume roles that permit them to exercise those skills with greater independence. This concept—graded and progressive responsibility—is one of the core tenets of American graduate medical education. Supervision in the setting of graduate medical education has the goals of assuring the provision of safe and effective care to the individual patient; assuring each resident's and fellow's development of the skills, knowledge, and attitudes required to enter the unsupervised practice of medicine; and establishing a foundation for continued professional growth.

Int.B. Description of the Specialty

Int.B.1. Medical biochemical geneticists are physicians who provide comprehensive diagnostic, management, and genetic counseling services for patients with inborn errors of metabolism. They focus on the treatment of genetic disorders of intermediary metabolism, lysosomal storage diseases, disorders of energy metabolism, and related disorders.

Int.B.2. Medical biochemical geneticists are able to:

Int.B.2.a) diagnose and provide acute management of inborn errors of metabolism;

Int.B.2.b) provide long term management, including nutritional recommendations for chronic management of inborn errors of metabolism;

- Int.B.2.c) provide genetic counseling, including assessment of mode of inheritance, recurrence risk, and information about natural history of disease;
- Int.B.2.d) use their knowledge of heterogeneity, variability and natural history of inborn errors of metabolism in patient-care decision making;
- Int.B.2.e) elicit and interpret individual and family medical histories;
- Int.B.2.f) order and interpret specialized laboratory testing; and,
- Int.B.2.g) interact with other health-care professionals, especially nutritionists, in the provision of services for patients with genetic disorders of intermediary metabolism.

Int.C. Scope of Education

- Int.C.1. Accredited graduate medical education programs in medical biochemical genetics must provide the formal instruction and appropriate clinical experience necessary for fellows to develop the knowledge, skills, and attitudes essential to good clinical practice in the acute and chronic care of inborn errors of metabolism.
- Int.C.2. Programs must provide:
 - Int.C.2.a) structured education, including formal coursework in the basic sciences and clinical areas pertinent to biochemical genetics, including advanced approaches to the diagnosis and treatment of inborn errors of metabolism, long term nutritional management, molecular diagnosis, theory and practice of enzyme replacement therapy, and newborn screening;
 - Int.C.2.b) mentored clinical education in the practice of biochemical genetics in both outpatient and inpatient settings;
 - Int.C.2.c) advanced instruction in the interpretation of biochemical laboratory test results;
 - Int.C.2.d) basic instruction in medical biochemical genetic laboratory testing; and,
 - Int.C.2.e) basic instruction in clinical research.
- Int.C.3. The program must possess a well-organized and effective curriculum, both didactic and clinical. The curriculum must also provide fellows with direct experience in progressive responsibility for patient management. The fellowship must be organized to provide a well-structured, integrated, and progressive educational experience in medical biochemical genetics. Fellows must have the opportunity to develop the abilities to diagnose IEM, counsel patients, and manage the broad range of clinical problems

that are encompassed by biochemical genetics. As medical biochemical genetics increasingly involves diagnosis and/or long-term management of adults, fellows must be competent to work with patients of all ages.

Int.D. Program Length

Int.D.1. Medical biochemical genetics programs are accredited to provide one year of graduate medical education. Physicians who have completed a residency in medical genetics accredited by the Accreditation Council for Graduate Medical Education (ACGME) are eligible for appointment to a one-year medical biochemical genetics fellowship.

Int.D.2. The 12 months of medical biochemical genetics education must include 11 months of broad-based, clinically-oriented medical biochemical genetics activities and one month of activities in a medical biochemical genetics diagnostic laboratory.

I. Institutions

I.A. Sponsoring Institution

One sponsoring institution must assume ultimate responsibility for the program, as described in the Institutional Requirements, and this responsibility extends to fellow assignments at all participating sites.

The sponsoring institution and the program must ensure that the program director has sufficient protected time and financial support for his or her educational and administrative responsibilities to the program.

I.A.1. Institutions sponsoring medical biochemical genetics programs should also sponsor ACGME-accredited programs in medical genetics, pediatrics, and internal medicine.

I.B. Participating Sites

I.B.1. **There must be a program letter of agreement (PLA) between the program and each participating site providing a required assignment. The PLA must be renewed at least every five years.**

The PLA should:

I.B.1.a) **identify the faculty who will assume both educational and supervisory responsibilities for fellows;**

I.B.1.b) **specify their responsibilities for teaching, supervision, and formal evaluation of fellows, as specified later in this document;**

I.B.1.c) **specify the duration and content of the educational experience; and,**

I.B.1.d) state the policies and procedures that will govern fellow education during the assignment.

I.B.2. The program director must submit any additions or deletions of participating sites routinely providing an educational experience, required for all fellows, of one month full time equivalent (FTE) or more through the Accreditation Council for Graduate Medical Education (ACGME) Accreditation Data System (ADS).

II. Program Personnel and Resources

II.A. Program Director

II.A.1. There must be a single program director with authority and accountability for the operation of the program. The sponsoring institution's GMEC must approve a change in program director. After approval, the program director must submit this change to the ACGME via the ADS.

II.A.1.a) Sponsoring institutions must develop and implement policies and procedures to ensure continuity when the program director departs, is on sabbatical, or is unable to meet his or her duties for any other reason.

II.A.1.b) The program director should continue in his or her position for a length of time adequate to maintain continuity of leadership and program stability.

II.A.2. Qualifications of the program director must include:

II.A.2.a) requisite specialty expertise and documented educational and administrative experience acceptable to the Review Committee;

II.A.2.b) current certification in the subspecialty by the American Board of Medical Genetics, or specialty qualifications that are judged to be acceptable by the Review Committee; and,

II.A.2.c) current medical licensure and appropriate medical staff appointment.

II.A.3. The program director must administer and maintain an educational environment conducive to educating the fellows in each of the ACGME competency areas. The program director must:

II.A.3.a) prepare and submit all information required and requested by the ACGME;

II.A.3.b) be familiar with and oversee compliance with ACGME and Review Committee policies and procedures as outlined in the ACGME Manual of Policies and Procedures;

- II.A.3.c) obtain review and approval of the sponsoring institution's GMEC/DIO before submitting to the ACGME information or requests for the following:**
- II.A.3.c).(1) all applications for ACGME accreditation of new programs;**
 - II.A.3.c).(2) changes in fellow complement;**
 - II.A.3.c).(3) major changes in program structure or length of training;**
 - II.A.3.c).(4) progress reports requested by the Review Committee;**
 - II.A.3.c).(5) responses to all proposed adverse actions;**
 - II.A.3.c).(6) requests for increases or any change to fellow duty hours;**
 - II.A.3.c).(7) voluntary withdrawals of ACGME-accredited programs;**
 - II.A.3.c).(8) requests for appeal of an adverse action; and,**
 - II.A.3.c).(9) appeal presentations to a Board of Appeal or the ACGME.**
- II.A.3.d) obtain DIO review and co-signature on all program information forms, as well as any correspondence or document submitted to the ACGME that addresses:**
- II.A.3.d).(1) program citations; and,**
 - II.A.3.d).(2) request for changes in the program that would have significant impact, including financial, on the program or institution.**
- II.A.3.e) along with the faculty, organize clinical teaching conferences for the fellows.**
- II.A.3.e).(1) Attendance by the fellows and the faculty members must be documented.**
 - II.A.3.e).(2) These conferences must be distinct from the basic science lectures and didactic sessions.**
 - II.A.3.e).(3) Clinical teaching conferences may include formal didactic sessions on clinical laboratory topics, medical genetics rounds, journal clubs, and follow-up conferences for metabolic clinics.**

II.B. Faculty

- II.B.1. There must be a sufficient number of faculty with documented qualifications to instruct and supervise all fellows.**
- II.B.2. The faculty must devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities and demonstrate a strong interest in the education of fellows.**
- II.B.3. The physician faculty must have current certification in the subspecialty by the American Board of Medical Genetics, or possess qualifications acceptable to the Review Committee.**
- II.B.4. The physician faculty must possess current medical licensure and appropriate medical staff appointment.**
- II.B.5. Non-physician faculty members must have appropriate qualifications in their respective fields and hold appropriate institutional appointments.
- II.B.6. The faculty must establish and maintain an environment of inquiry and scholarship with an active research component.
- II.B.6.a) Faculty members must regularly participate in organized clinical discussions, rounds, journal clubs, and conferences.
- II.B.6.b) Some members of the faculty should also demonstrate scholarship by one or more of the following:
- II.B.6.b).(1) publication of original research or review articles in peer-reviewed journals, or chapters in textbooks;
- II.B.6.b).(2) publication or presentation of case reports or clinical series at local, regional, or national professional and scientific society meetings; or,
- II.B.6.b).(3) participation in national committees or educational organizations.
- II.B.6.c) Faculty members should encourage and support fellows in scholarly activities.

II.C. Other Program Personnel

The institution and the program must jointly ensure the availability of all necessary professional, technical, and clerical personnel for the effective administration of the program.

- II.C.1. Fellows must have regular opportunities to work with nurses and nutritionists who are involved in the provision of clinical metabolic disease services.

II.D. Resources

The institution and the program must jointly ensure the availability of adequate resources for fellow education, as defined in the specialty program requirements.

- II.D.1. Participating sites should have a medical biochemical genetics laboratory which provides an appropriate volume and variety of biochemical genetics-related services and has an adequate number of qualified staff members, which should include a laboratory director certified in biochemical genetics by the American Board of Medical Genetics.
- II.D.2. Participating sites must provide a sufficient number and variety of inpatients and outpatients to permit fellows to gain experience with the presentation, natural history, and chronic treatment of a wide range of inborn errors of metabolism.
- II.D.3. Adequate space and equipment must be available to meet the educational goals of the program. In addition to space for patient care activities, this requires meeting rooms, classrooms, office space, research facilities, and facilities for record storage and retrieval.
- II.D.4. Office and laboratory space must be provided for the fellows for both patient-care work and participation in scholarly activities.
- II.D.5. Fellows must have the opportunity to care for a number of patients sufficient to permit them to develop an understanding of the wide variety of inborn errors of metabolism. These patients must be seen in both outpatient and inpatient settings.

II.E. Medical Information Access

Fellows must have ready access to specialty-specific and other appropriate reference material in print or electronic format. Electronic medical literature databases with search capabilities should be available.

III. Fellow Appointments

III.A. Eligibility Criteria

Each fellow must successfully complete an ACGME-accredited specialty program and/or meet other eligibility criteria as specified by the Review Committee. The program must document that each fellow has met the eligibility criteria.

III.B. Number of Fellows

The program director may not appoint more fellows than approved by the Review Committee, unless otherwise stated in the specialty-specific requirements. The program's educational resources must be adequate to

support the number of fellows appointed to the program.

III.B.1. Programs must develop an active plan for recruitment of fellows. Innovative strategies for recruitment and retention of fellows should be implemented.

IV. Educational Program

IV.A. The curriculum must contain the following educational components:

IV.A.1. Skills and competencies the fellow will be able to demonstrate at the conclusion of the program. The program must distribute these skills and competencies to fellows and faculty annually, in either written or electronic form. These skills and competencies should be reviewed by the fellow at the start of each rotation;

IV.A.2. ACGME Competencies

The program must integrate the following ACGME competencies into the curriculum:

IV.A.2.a) 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:

IV.A.2.a).(1) will gather essential and accurate information about the patient using the following clinical skills:

IV.A.2.a).(1).(a) medical interviewing, including the taking and interpretation of a complete family history (including construction of a pedigree);

IV.A.2.a).(1).(b) physical examination; and,

IV.A.2.a).(1).(c) diagnostic studies, including the interpretation of laboratory data generated from biochemical and molecular genetic analyses.

IV.A.2.a).(2) will make informed decisions about diagnostic and therapeutic interventions based on patient and family information and preferences, up-to-date scientific evidence, and clinical judgment by:

IV.A.2.a).(2).(a) demonstrating effective and appropriate clinical problem-solving skills;

IV.A.2.a).(2).(b) understanding the limits of one's knowledge and expertise; and,

- IV.A.2.a).(2).(c) appropriate use of consultants and referrals.
- IV.A.2.a).(3) are to develop and carry out patient management plans including description of medication, dietary supplements, and other dietary plans;
- IV.A.2.a).(4) are to counsel and educate patients and their families;
- IV.A.2.a).(5) are to work with health care professionals, including those from other disciplines and especially a medical nutritionist, to provide patient-focused care; and,
- IV.A.2.a).(6) are to be given properly supervised responsibility for patient care commensurate with the fellow's ability to develop mature clinical judgment. This can be achieved only if the fellow is involved in the decision-making process and in the continuity of patient care. Fellows must be given the responsibility for direct patient care in all settings, including planning and management, both diagnostic and therapeutic, subject to review and approval by the attending physician.

IV.A.2.b)

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:

- IV.A.2.b).(1) are expected to learn the following about inborn errors of metabolism (IEM):
 - IV.A.2.b).(1).(a) the genetic basis of disease and their patterns of inheritance;
 - IV.A.2.b).(1).(b) the principles of diagnosis based on appropriate use of clinical laboratory testing;
 - IV.A.2.b).(1).(c) the molecular and metabolic mechanisms of disease;
 - IV.A.2.b).(1).(d) the rational principles of treatment based on knowledge of the mechanisms of disease:
 - IV.A.2.b).(1).(d).(i) management of acute metabolic crises;
 - IV.A.2.b).(1).(d).(ii) long term care with emphasis on reduction of metabolic injury and nutritional imbalances; and,
 - IV.A.2.b).(1).(d).(iii) enzyme replacement and organ transplant

therapies.

- IV.A.2.b).(1).(e) the genetic epidemiology of inborn errors of metabolism and the application of that knowledge to newborn screening;
- IV.A.2.b).(1).(f) principles of operation in clinical biochemical genetics diagnostic laboratories; and,
- IV.A.2.b).(1).(g) the limits of current knowledge about IEM and the general strategies for biomedical research on these disorders.
- IV.A.2.b).(2) will participate formally, through lectures or other didactic sessions, in the equivalent of a one-semester graduate level course in biochemical genetics, including but not limited to population and newborn screening, disorders of amino acid metabolism, disorders of fatty acid oxidation, mitochondrial disorders, lysosomal storage diseases and lipidoses, acute management of IEM, enzyme replacement therapy, galactosemia, glycogen storage diseases, peroxisomal disorders and other IEM. (An introductory medical genetics course for clinical genetics specialists does not satisfy this requirement);
- IV.A.2.b).(3) should have research seminars as part of the training experience, but these will not be considered an acceptable alternative to the basic science didactic component; and,
- IV.A.2.b).(4) must spend a minimum of four weeks in the laboratory so that they will be able to develop their abilities to understand an appropriate variety of laboratory methods. Fellows' education must include participation in the working conferences of laboratories as well as ongoing discussion of laboratory data during other clinical conferences. The medical biochemical genetics laboratory must be an integral component of each program.

IV.A.2.c)

Practice-based Learning and Improvement

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

- IV.A.2.c).(1) systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement;**
- IV.A.2.c).(2) locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems;**

- IV.A.2.c).(3) identify strengths, deficiencies, and limits in one's knowledge and expertise;
- IV.A.2.c).(4) set learning and improvement goals;
- IV.A.2.c).(5) identify and perform appropriate learning activities;
- IV.A.2.c).(6) incorporate formative evaluation feedback into daily practice;
- IV.A.2.c).(7) use information technology to optimize learning;
- IV.A.2.c).(8) participate in the education of patients, families, students, residents and other health professionals;
- IV.A.2.c).(9) critically evaluate the published medical literature on IEM in books, journals, and public databases;
- IV.A.2.c).(10) appropriately use external consultation through professional associations;
- IV.A.2.c).(11) regularly review diagnostic and treatment guidelines; and,
- IV.A.2.c).(12) apply principles of clinical research on diagnosis, treatment, and outcomes.

IV.A.2.d)

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:

- IV.A.2.d).(1) communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds;
- IV.A.2.d).(2) communicate effectively with physicians, other health professionals, and health related agencies;
- IV.A.2.d).(3) work effectively as a member or leader of a health care team or other professional group;
- IV.A.2.d).(4) act in a consultative role to other physicians and health professionals;
- IV.A.2.d).(5) maintain comprehensive, timely, and legible medical records, if applicable;

- IV.A.2.d).(6) counsel families about the genetic basis of IEM, including availability of diagnostic, carrier, and pre-symptomatic genetic testing;
- IV.A.2.d).(7) teach caregivers about long term monitoring and treatment of IEM, with special emphasis on nutrition; and,
- IV.A.2.d).(8) teach patients and families about lifelong care of their condition, especially nutritional support and interventions.

IV.A.2.e)

Professionalism

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

Fellows are expected to demonstrate:

- IV.A.2.e).(1) compassion, integrity, and respect for others;
- IV.A.2.e).(2) responsiveness to patient needs that supersedes self-interest;
- IV.A.2.e).(3) respect for patient privacy and autonomy;
- IV.A.2.e).(4) accountability to patients, society and the profession; and,
- IV.A.2.e).(5) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

IV.A.2.f)

Systems-based Practice

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

Fellows are expected to:

- IV.A.2.f).(1) work effectively in various health care delivery settings and systems relevant to their clinical specialty;
- IV.A.2.f).(2) coordinate patient care within the health care system relevant to their clinical specialty;
- IV.A.2.f).(3) incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate;

- IV.A.2.f).(4) advocate for quality patient care and optimal patient care systems;
- IV.A.2.f).(5) work in interprofessional teams to enhance patient safety and improve patient care quality;
- IV.A.2.f).(6) participate in identifying system errors and implementing potential systems solutions;
- IV.A.2.f).(7) make use of state resources in newborn screening for IEM;
- IV.A.2.f).(8) make use of local, national, and international resources for specialized laboratory testing;
- IV.A.2.f).(9) establish medical insurance coverage for specialized formulas and nutritional supplements;
- IV.A.2.f).(10) oversee team management of patients through on-call responsibilities and sign-outs; and,
- IV.A.2.f).(11) oversee operation of a treatment team including nursing, nutrition and medical trainees.

IV.B. Fellows' Scholarly Activities

- IV.B.1. The curriculum must advance fellows' knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care.
- IV.B.2. Fellows should participate in scholarly activity.
- IV.B.3. The sponsoring institution and program should allocate adequate educational resources to facilitate fellow involvement in scholarly activities.

V. Evaluation

V.A. Fellow Evaluation

V.A.1. Formative Evaluation

- V.A.1.a) The faculty must evaluate fellow performance in a timely manner.**
- V.A.1.b) The program must:**
 - V.A.1.b).(1) provide objective assessments of competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice;**

- V.A.1.b).(2) use multiple evaluators (e.g., faculty, peers, patients, self, and other professional staff); and,
- V.A.1.b).(3) provide each fellow with documented semiannual evaluation of performance with feedback.
- V.A.1.c) The evaluations of fellow performance must be accessible for review by the fellow, in accordance with institutional policy.
- V.A.2. **Summative Evaluation**
- The program director must provide a summative evaluation for each fellow upon completion of the program. This evaluation must become part of the fellow's permanent record maintained by the institution, and must be accessible for review by the fellow in accordance with institutional policy. This evaluation must:
- V.A.2.a) document the fellow's performance during the final period of education, and
- V.A.2.b) verify that the fellow has demonstrated sufficient competence to enter practice without direct supervision.
- V.B. **Faculty Evaluation**
- V.B.1. At least annually, the program must evaluate faculty performance as it relates to the educational program.
- V.B.2. These evaluations should include a review of the faculty's clinical teaching abilities, commitment to the educational program, clinical knowledge, professionalism, and scholarly activities.
- V.C. **Program Evaluation and Improvement**
- V.C.1. The program must document formal, systematic evaluation of the curriculum at least annually. The program must monitor and track each of the following areas:
- V.C.1.a) fellow performance, and,
- V.C.1.b) faculty development.
- V.C.2. If deficiencies are found, the program should prepare a written plan of action to document initiatives to improve performance in the areas listed in section V.C.1. The action plan should be reviewed and approved by the teaching faculty and documented in meeting minutes.
- VI. **Fellow Duty Hours in the Learning and Working Environment**

- VI.A. Professionalism, Personal Responsibility, and Patient Safety**
- VI.A.1. Programs and sponsoring institutions must educate fellows and faculty members concerning the professional responsibilities of physicians to appear for duty appropriately rested and fit to provide the services required by their patients.**
- VI.A.2. The program must be committed to and responsible for promoting patient safety and fellow well-being in a supportive educational environment.**
- VI.A.3. The program director must ensure that fellows are integrated and actively participate in interdisciplinary clinical quality improvement and patient safety programs.**
- VI.A.4. The learning objectives of the program must:**
- VI.A.4.a) be accomplished through an appropriate blend of supervised patient care responsibilities, clinical teaching, and didactic educational events; and,**
- VI.A.4.b) not be compromised by excessive reliance on fellows to fulfill non-physician service obligations.**
- VI.A.5. The program director and sponsoring institution must ensure a culture of professionalism that supports patient safety and personal responsibility. Fellows and faculty members must demonstrate an understanding and acceptance of their personal role in the following:**
- VI.A.5.a) assurance of the safety and welfare of patients entrusted to their care;**
- VI.A.5.b) provision of patient- and family-centered care;**
- VI.A.5.c) assurance of their fitness for duty;**
- VI.A.5.d) management of their time before, during, and after clinical assignments;**
- VI.A.5.e) recognition of impairment, including illness and fatigue, in themselves and in their peers;**
- VI.A.5.f) attention to lifelong learning;**
- VI.A.5.g) the monitoring of their patient care performance improvement indicators; and,**
- VI.A.5.h) honest and accurate reporting of duty hours, patient outcomes, and clinical experience data.**

VI.A.6. All fellows and faculty members must demonstrate responsiveness to patient needs that supersedes self-interest. Physicians must recognize that under certain circumstances, the best interests of the patient may be served by transitioning that patient's care to another qualified and rested provider.

VI.B. Transitions of Care

VI.B.1. Programs must design clinical assignments to minimize the number of transitions in patient care.

VI.B.2. Sponsoring institutions and programs must ensure and monitor effective, structured hand-over processes to facilitate both continuity of care and patient safety.

VI.B.3. Programs must ensure that fellows are competent in communicating with team members in the hand-over process.

VI.B.4. The sponsoring institution must ensure the availability of schedules that inform all members of the health care team of attending physicians and fellows currently responsible for each patient's care.

VI.C. Alertness Management/Fatigue Mitigation

VI.C.1. The program must:

VI.C.1.a) educate all faculty members and fellows to recognize the signs of fatigue and sleep deprivation;

VI.C.1.b) educate all faculty members and fellows in alertness management and fatigue mitigation processes; and,

VI.C.1.c) adopt fatigue mitigation processes to manage the potential negative effects of fatigue on patient care and learning, such as naps or back-up call schedules.

VI.C.2. Each program must have a process to ensure continuity of patient care in the event that a fellow may be unable to perform his/her patient care duties.

VI.C.3. The sponsoring institution must provide adequate sleep facilities and/or safe transportation options for fellows who may be too fatigued to safely return home.

VI.D. Supervision of Fellows

VI.D.1. In the clinical learning environment, each patient must have an identifiable, appropriately-credentialed and privileged attending physician (or licensed independent practitioner as approved by each Review Committee) who is ultimately responsible for that patient's care.

Licensed independent practitioners who may have primary responsibility for patient care must be physicians.

- VI.D.1.a)** **This information should be available to fellows, faculty members, and patients.**
- VI.D.1.b)** **Fellows and faculty members should inform patients of their respective roles in each patient’s care.**
- VI.D.2.** **The program must demonstrate that the appropriate level of supervision is in place for all fellows who care for patients.**
- Supervision may be exercised through a variety of methods. Some activities require the physical presence of the supervising faculty member. For many aspects of patient care, the supervising physician may be a more advanced fellow. Other portions of care provided by the fellow can be adequately supervised by the immediate availability of the supervising faculty member or fellow physician, either in the institution, or by means of telephonic and/or electronic modalities. In some circumstances, supervision may include post-hoc review of fellow-delivered care with feedback as to the appropriateness of that care.**
- VI.D.3.** **Levels of Supervision**
- To ensure oversight of fellow supervision and graded authority and responsibility, the program must use the following classification of supervision:**
- VI.D.3.a)** **Direct Supervision – the supervising physician is physically present with the fellow and patient.**
- VI.D.3.b)** **Indirect Supervision:**
- VI.D.3.b).(1)** **with direct supervision immediately available – the supervising physician is physically within the hospital or other site of patient care, and is immediately available to provide Direct Supervision.**
- VI.D.3.b).(2)** **with direct supervision available – the supervising physician is not physically present within the hospital or other site of patient care, but is immediately available by means of telephonic and/or electronic modalities, and is available to provide Direct Supervision.**
- VI.D.3.c)** **Oversight – the supervising physician is available to provide review of procedures/encounters with feedback provided after care is delivered.**

VI.D.4. The privilege of progressive authority and responsibility, conditional independence, and a supervisory role in patient care delegated to each fellow must be assigned by the program director and faculty members.

VI.D.4.a) The program director must evaluate each fellow's abilities based on specific criteria. When available, evaluation should be guided by specific national standards-based criteria.

VI.D.4.b) Faculty members functioning as supervising physicians should delegate portions of care to fellows, based on the needs of the patient and the skills of the fellows.

VI.D.4.c) Fellows should serve in a supervisory role of residents or junior fellows in recognition of their progress toward independence, based on the needs of each patient and the skills of the individual fellow.

VI.D.5. Programs must set guidelines for circumstances and events in which fellows must communicate with appropriate supervising faculty members, such as the transfer of a patient to an intensive care unit, or end-of-life decisions.

VI.D.5.a) Each fellow must know the limits of his/her scope of authority, and the circumstances under which he/she is permitted to act with conditional independence.

VI.D.6. Faculty supervision assignments should be of sufficient duration to assess the knowledge and skills of each fellow and delegate to him/her the appropriate level of patient care authority and responsibility.

VI.E. Clinical Responsibilities

The clinical responsibilities for each fellow must be based on PGY-level, patient safety, fellow education, severity and complexity of patient illness/condition and available support services.

VI.E.1. The workload for a fellow at any level must be no more than four patients with a confirmed diagnosis of an inborn error of intermediary metabolism in an ICU setting, or six patients with a confirmed diagnosis of an inborn error of intermediary metabolism in a non-ICU setting.

VI.F. Teamwork

Fellows must care for patients in an environment that maximizes effective communication. This must include the opportunity to work as a member of effective interprofessional teams that are appropriate to the delivery of care in the specialty.

VI.G. Fellow Duty Hours

VI.G.1. Maximum Hours of Work per Week

Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities and all moonlighting.

VI.G.1.a) Duty Hour Exceptions

A Review Committee may grant exceptions for up to 10% or a maximum of 88 hours to individual programs based on a sound educational rationale.

VI.G.1.a).(1) In preparing a request for an exception the program director must follow the duty hour exception policy from the ACGME Manual on Policies and Procedures.

VI.G.1.a).(2) Prior to submitting the request to the Review Committee, the program director must obtain approval of the institution's GMEC and DIO.

VI.G.2. Moonlighting

VI.G.2.a) Moonlighting must not interfere with the ability of the fellow to achieve the goals and objectives of the educational program.

VI.G.2.b) Time spent by fellows in Internal and External Moonlighting (as defined in the ACGME Glossary of Terms) must be counted towards the 80-hour Maximum Weekly Hour Limit.

VI.G.3. Mandatory Time Free of Duty

Fellows must be scheduled for a minimum of one day free of duty every week (when averaged over four weeks). At-home call cannot be assigned on these free days.

VI.G.4. Maximum Duty Period Length

Duty periods of fellows may be scheduled to a maximum of 24 hours of continuous duty in the hospital. Programs must encourage fellows to use alertness management strategies in the context of patient care responsibilities. Strategic napping, especially after 16 hours of continuous duty and between the hours of 10:00 p.m. and 8:00 a.m., is strongly suggested.

VI.G.4.a) It is essential for patient safety and fellow education that effective transitions in care occur. Fellows may be allowed to remain on-site in order to accomplish these tasks; however, this period of time must be no longer than an additional four hours.

- VI.G.4.b)** Fellows must not be assigned additional clinical responsibilities after 24 hours of continuous in-house duty.
- VI.G.4.c)** In unusual circumstances, fellows, on their own initiative, may remain beyond their scheduled period of duty to continue to provide care to a single patient. Justifications for such extensions of duty are limited to reasons of required continuity for a severely ill or unstable patient, academic importance of the events transpiring, or humanistic attention to the needs of a patient or family.
- VI.G.4.c).(1)** Under those circumstances, the fellow must:
- VI.G.4.c).(1).(a)** appropriately hand over the care of all other patients to the team responsible for their continuing care; and,
- VI.G.4.c).(1).(b)** document the reasons for remaining to care for the patient in question and submit that documentation in every circumstance to the program director.
- VI.G.4.c).(2)** The program director must review each submission of additional service, and track both individual fellow and program-wide episodes of additional duty.
- VI.G.5.** **Minimum Time Off between Scheduled Duty Periods**
- VI.G.5.a)** Fellows must be prepared to enter the unsupervised practice of medicine and care for patients over irregular or extended periods.
- Medical biochemical genetics fellows are considered to be in the final years of education.
- VI.G.5.a).(1)** This preparation must occur within the context of the 80-hour, maximum duty period length, and one-day-off-in-seven standards. While it is desirable that fellows have eight hours free of duty between scheduled duty periods, there may be circumstances when these fellows must stay on duty to care for their patients or return to the hospital with fewer than eight hours free of duty.
- VI.G.5.a).(1).(a)** Circumstances of return-to-hospital activities with fewer than eight hours away from the hospital by fellows must be monitored by the program director.
- VI.G.5.a).(1).(b)** The Review Committee defines such

circumstances as: required continuity of care for a severely ill or unstable patient, or a complex patient with whom the fellow has been involved; events of exceptional educational value; or, humanistic attention to the needs of a patient or family.

VI.G.6. Maximum Frequency of In-House Night Float

Fellows must not be scheduled for more than six consecutive nights of night float.

VI.G.6.a) Fellows must not be assigned night float duties.

VI.G.7. Maximum In-House On-Call Frequency

Fellows must be scheduled for in-house call no more frequently than every-third-night (when averaged over a four-week period).

VI.G.8. At-Home Call

VI.G.8.a) Time spent in the hospital by fellows on at-home call must count towards the 80-hour maximum weekly hour limit. The frequency of at-home call is not subject to the every-third-night limitation, but must satisfy the requirement for one-day-in-seven free of duty, when averaged over four weeks.

VI.G.8.a).(1) At-home call must not be so frequent or taxing as to preclude rest or reasonable personal time for each fellow.

VI.G.8.b) Fellows are permitted to return to the hospital while on at-home call to care for new or established patients. Each episode of this type of care, while it must be included in the 80-hour weekly maximum, will not initiate a new “off-duty period”.

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