

# ACGME Program Requirements for Graduate Medical Education in Pulmonary Critical Care

*Common Program Requirements are in BOLD*

*Effective: July 1, 2007*

## I. Institutions

### I.A. Sponsoring Institution

**One sponsoring institution must assume the 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 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. The sponsoring institution must:
- I.A.1.a) demonstrate a commitment to education and research sufficient to support the fellowship program;
  - I.A.1.b) establish the internal medicine subspecialty fellowship within a department of internal medicine or an administrative unit whose primary mission is the advancement of internal medicine education and patient care;
  - I.A.1.c) provide fellow compensation and benefits, faculty, facilities, and resources for education, clinical care, and research required for accreditation;
  - I.A.1.d) ensure that adequate salary support is provided to the program director for the administrative activities of the internal medicine subspecialty program. The program director must not be required to generate clinical or other income to provide this administrative support. It is suggested that this support be 25-50% of the program director's salary, depending on the size of the program. (See Section III.A.4.f)); and,
  - I.A.1.e) notify the Review Committee within 60 days of changes in institutional governance, affiliation, or resources that affect the educational program.
- I.A.2. Graduate education in the subspecialties of internal medicine requires a major commitment to education by the sponsoring institution. Evidence of such a commitment includes each of the following:
- I.A.2.a) The minimum number of fellowship positions supported by the institution in each training program must not be less than the

number of accredited training years in the program.

- I.A.2.b) The institution must ensure significant research in each subspecialty for which it sponsors a training program.

## **I.B. Participating Sites**

Participating sites include both the primary training site and other training sites. The primary training site is defined as the health-care facility that provides the required training resources, should be the location of the program director's major activity, the location where the fellow spends the majority of their clinical training time, and the primary location of the core program in internal medicine.

- 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).**

- I.B.3. The Review Committee must give prior approval for participation by any site providing three months or more of training in a 12 or 24 month program, or six months or more of training in a 36 month program.

- I.B.4. Assignments at participating sites must be of sufficient length to ensure a quality educational experience and should provide sufficient opportunity for continuity of care. Although the number of participating sites may vary with the various specialties' needs, all participating sites must demonstrate the ability to promote the program goals and educational and peer activities. Exceptions must be justified and prior-approved by the Review Committee.

## **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.2.** 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.3.** Qualifications of the program director must include:
- II.A.3.a)** requisite specialty expertise and documented educational and administrative experience acceptable to the Review Committee;
  - II.A.3.b)** current certification in the subspecialty by the American Board of Internal Medicine, or specialty qualifications acceptable to the Review Committee; and,
  - II.A.3.c)** current medical licensure and appropriate medical staff appointment.
  - II.A.3.d)** at least five years of participation as an active faculty member in an ACGME-accredited internal medicine subspecialty fellowship program.
- II.A.4.** 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.4.a)** oversee and ensure the quality of didactic and clinical education in all sites that participate in the program;
  - II.A.4.b)** approve a local director at each participating site who is accountable for fellow education;
  - II.A.4.c)** approve the selection of program faculty as appropriate;
  - II.A.4.d)** evaluate program faculty and approve the continued participation of program faculty based on evaluation;
  - II.A.4.e)** monitor fellow supervision at all participating sites;
  - II.A.4.f)** prepare and submit all information requested by the ACGME, including but not limited to the program information forms and annual program fellow updates to the ADS, and ensure that the information submitted is accurate and complete;

- II.A.4.g)** provide each fellow with documented semiannual evaluation of performance with feedback;
- II.A.4.h)** ensure compliance with grievance and due process procedures, as set forth in the Institutional Requirements and implemented by the sponsoring institution;
- II.A.4.i)** provide verification of fellowship education for all fellows, including those who leave the program prior to completion;
- II.A.4.j)** implement policies and procedures consistent with the institutional and program requirements for fellow duty hours and the working environment, including moonlighting, and, to that end, must:
  - II.A.4.j).(1)** distribute these policies and procedures to the fellows and faculty;
  - II.A.4.j).(2)** monitor fellow duty hours, according to sponsoring institutional policies, with a frequency sufficient to ensure compliance with ACGME requirements;
  - II.A.4.j).(3)** adjust schedules as necessary to mitigate excessive service demands and/or fatigue; and,
  - II.A.4.j).(4)** if applicable, monitor the demands of at-home call and adjust schedules as necessary to mitigate excessive service demands and/or fatigue.
- II.A.4.k)** monitor the need for and ensure the provision of back up support systems when patient care responsibilities are unusually difficult or prolonged;
- II.A.4.l)** comply with the sponsoring institution's written policies and procedures, including those specified in compliance with the Institutional Requirements, for selection, evaluation and promotion of fellows, disciplinary action, and supervision of fellows;
- II.A.4.m)** be familiar with and comply with ACGME and Review Committee policies and procedures as outlined in the ACGME Manual of Policies and Procedures;
- II.A.4.n)** obtain review and approval of the sponsoring institution's GMCC/DIO before submitting to the ACGME information or requests for the following:
  - II.A.4.n).(1)** all applications for ACGME accreditation of new programs;

- II.A.4.n).(2) **changes in fellow complement;**
- II.A.4.n).(3) **major changes in program structure or length of training;**
- II.A.4.n).(4) **progress reports requested by the Review Committee;**
- II.A.4.n).(5) **responses to all proposed adverse actions;**
- II.A.4.n).(6) **requests for increases or any change to fellow duty hours;**
- II.A.4.n).(7) **voluntary withdrawals of ACGME-accredited programs;**
- II.A.4.n).(8) **requests for appeal of an adverse action;**
- II.A.4.n).(9) **appeal presentations to a Board of Appeal or the ACGME; and,**
- II.A.4.n).(10) **proposals to ACGME for approval of innovative educational approaches.**
  
- II.A.4.o) **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.4.o).(1) **program citations, and/or**
  - II.A.4.o).(2) **request for changes in the program that would have significant impact, including financial, on the program or institution.**
  
- II.A.4.p) seek the prior approval of the Review Committee for any changes in the program that may significantly alter the educational experience of the fellows.
  
- II.A.4.q) be responsible for monitoring fellow stress, including mental or emotional conditions inhibiting performance or learning, and drug- or alcohol-related dysfunction. Both the program director and faculty should be sensitive to the need for timely provision of confidential counseling and psychological support services to fellows. Situations that demand excessive service or that consistently produce undesirable stress on fellows must be evaluated and modified.
  
- II.A.4.r) dedicate an average of 20 hours per week of his or her professional effort to the internal medicine subspecialty educational program, with sufficient time for administration of the program, and receive institutional support for that administrative time.

- II.A.4.s) participate in academic societies and in educational programs designed to enhance his or her educational and administrative skills.
- II.A.4.t) implement a program of continuous quality improvement in medical education for the faculty, especially as it pertains to the teaching and evaluation of the ACGME Competencies (as outlined in Section IV of this document).
- II.A.4.u) be located at the principal clinical training site.

**II.B. Faculty**

**II.B.1. At each participating site, there must be a sufficient number of faculty with documented qualifications to instruct and supervise all fellows at that location.**

**The faculty must:**

**II.B.1.a) devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities; and to demonstrate a strong interest in the education of fellows; and,**

**II.B.1.b) administer and maintain an educational environment conducive to educating fellows in each of the ACGME competency areas.**

**II.B.2. The physician faculty must have current certification in the subspecialty by the American Board of Internal Medicine, or possess qualifications judged to be acceptable by the Review Committee.**

**II.B.3. The physician faculty must possess current medical licensure and appropriate medical staff appointment.**

II.B.3.a) The physician faculty must meet professional standards of ethical behavior.

**II.B.4. The nonphysician faculty must have appropriate qualifications in their field and hold appropriate institutional appointments.**

**II.B.5. The faculty must establish and maintain an environment of inquiry and scholarship with an active research component.**

**II.B.5.a) The faculty must regularly participate in organized clinical discussions, rounds, journal clubs, and conferences.**

**II.B.5.b) Some members of the faculty should also demonstrate scholarship by one or more of the following:**

- II.B.5.b).(1) **peer-reviewed funding;**
- II.B.5.b).(2) **publication of original research or review articles in peer-reviewed journals or chapters in textbooks;**
- II.B.5.b).(3) **publication or presentation of case reports or clinical series at local, regional, or national professional and scientific society meetings; or,**
- II.B.5.b).(4) **participation in national committees or educational organizations.**
- II.B.5.c) **Faculty should encourage and support fellows in scholarly activities.**
- II.B.5.d) The majority of faculty must be involved in scholarship as defined in II.B.5.b.(1), (2), or (3) above.
- II.B.5.e) The majority of key clinical faculty must demonstrate evidence of productivity in the scholarship as defined in II.B.5.b.(1), or (2) above.
- II.B.5.f) At least one faculty member must be active in the scholarship defined in II.B.5.b.(1) above.

**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 the program.**

II.C.1. Key Clinical Faculty

In addition to the program director, each program must have two key clinical faculty. Key clinical faculty are attending physicians who dedicate, on average, 10 hours per week throughout the year to the training program. For programs with more than five fellows enrolled during the accredited portion of the training program, a ratio of key clinical faculty to fellows of at least 1:1.5 must be maintained. (N.B.: The required number of key clinical faculty may vary by subspecialty.)

II.C.1.a) Qualifications:

The key clinical faculty must:

- II.C.1.a).(1) be active clinicians with broad knowledge of, experience with, and commitment to the internal medicine subspecialty as a discipline, and
- II.C.1.a).(2) have current certification in the subspecialty by the American Board of Internal Medicine or possess

qualifications judged by the Review Committee to be acceptable.

II.C.1.b) Responsibilities for the key clinical faculty include:

In addition to the responsibilities of all individual faculty, the key clinical faculty with the program director, are responsible for the planning, implementation, monitoring and evaluation of the fellows' clinical and research training.

II.C.2. All clinical faculty members should participate in prescribed faculty development programs designed to enhance the effectiveness of their teaching.

## 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. Fellows must have clinical experiences in efficient, effective ambulatory and inpatient care settings.

II.D.1.a) Space and equipment

There must be space and equipment for the educational program, including meeting rooms, classrooms, examination rooms, computers, visual and other educational aids, and work/study space.

II.D.1.b) Facilities

II.D.1.b).(1) Fellows must have lounge and food facilities during assigned duty hours.

II.D.1.b).(2) When fellows are assigned night duty in the hospital or called in from home, they must be provided with on-call facilities that are convenient and that afford privacy, safety, and a restful environment with a secure space for their belongings.

II.D.2. Medical Records

Clinical records that document both inpatient and ambulatory care must be readily available at all times. (See Institutional Requirements, Section II.D.3.d))

II.D.3. Patient Population

II.D.3.a) The inpatient and ambulatory care population must provide experience with patients whose illnesses are encompassed by,

and help to define, the subspecialty.

II.D.3.b) There must be patients of both sexes, with a broad age range, including geriatric patients.

II.D.3.c) A sufficient number of patients must be available to ensure adequate inpatient and ambulatory experience for each subspecialty fellow.

II.D.4. Death Reviews and Autopsies

II.D.4.a) All deaths of patients who received care by fellows must be reviewed and autopsies performed whenever possible.

II.D.4.b) Fellows must receive autopsy reports after autopsies are completed on their patients.

II.D.5. Support Services

II.D.5.a) Administrative support must include adequate secretarial and administrative staff and technology to support the program director.

II.D.5.b) Inpatient clinical support services must be available on a 24-hour basis to meet reasonable and expected demands, including intravenous services, phlebotomy services, messenger/transporter services, and laboratory and radiologic information retrieval systems that allow prompt access to results.

II.D.5.c) Consultations from other clinical services in the hospital must be available in a timely manner. All consultations should be performed by or under the supervision of a qualified specialist.

**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 Appointment**

**III.A. Eligibility Criteria**

**The program director must comply with the criteria for fellow eligibility as specified in the Institutional Requirements.**

**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.C. Fellow Transfer**

**III.C.1. Before accepting a fellow who is transferring from another program, the program director must obtain written or electronic verification of previous educational experiences and a summative competency-based performance evaluation of the transferring fellow.**

**III.C.2. A program director must provide timely verification of fellowship education and summative performance evaluations for fellows who leave the program prior to completion.**

**III.D. Appointment of Fellows and Other Students**

**The presence of other learners (including, but not limited to, residents from other specialties, subspecialty fellows, PhD students, and nurse practitioners) in the program must not interfere with the appointed fellows' education. The program director must report the presence of other learners to the DIO and GMEC in accordance with sponsoring institution guidelines.**

**III.E. Fellows responsibilities and professional relationships**

**Fellows must have clearly defined written lines of responsibility for all clinical experiences.**

**III.F. When averaged over any five-year period, a minimum of 75% of fellows in each subspecialty training program must be graduates of an ACGME accredited internal medicine training program. Non-ACGME internal medicine trained fellows must have at least three years of internal medicine training prior to starting fellowship. Prior to appointment, the program director must inform non-ACGME trained applicants in writing of the ABIM policies and procedures that may affect the fellow's eligibility for ABIM certification. (N.B.: Fellows in the subspecialty of geriatric medicine may be graduates of an ACGME-accredited family medicine training program.)**

**IV. Educational Program**

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

**IV.A.1. Overall educational goals for the program, which the program must distribute to fellows and faculty annually;**

**IV.A.2. Competency-based goals and objectives for each assignment at each educational level, which the program must distribute to fellows and faculty annually, in either written or electronic form. These should be reviewed by the fellow at the start of each rotation;**

**IV.A.2.a) for each rotation or major learning experience, the written goals and objectives:**

IV.A.2.a).(1) should include the educational purpose; teaching methods; the mix of diseases, patient characteristics, and types of clinical encounters, procedures, and services; reading lists, pathological material, and other educational resources to be used; and the method for evaluation of fellows' competence;

IV.A.2.a).(2) must define the level of fellows' supervision by faculty members in all patient-care activities; and,

IV.A.2.a).(3) should be reviewed and revised at least every three years by faculty members and fellows' to keep the goals and objectives current and relevant.

**IV.A.3. Regularly scheduled didactic sessions; and,**

**IV.A.4. Delineation of fellow responsibilities for patient care, progressive responsibility for patient management, and supervision of fellows over the continuum of the program.**

**IV.A.5. ACGME Competencies**

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

**IV.A.5.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.5.a).(1) are expected to learn the practice of health promotion, disease prevention, diagnosis, care, and treatment of men and women from adolescence to old age, during health and all stages of illness.

**IV.A.5.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.5.b).(1) are expected to learn the scientific method of problem solving, evidence-based decision making, a commitment to lifelong learning, and an attitude of caring that is derived from humanistic and professional values.

**IV.A.5.c) 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:**

- IV.A.5.c).(1) identify strengths, deficiencies, and limits in one's knowledge and expertise;**
- IV.A.5.c).(2) set learning and improvement goals;**
- IV.A.5.c).(3) identify and perform appropriate learning activities;**
- IV.A.5.c).(4) systematically analyze practice, using quality improvement methods, and implement changes with the goal of practice improvement;**
- IV.A.5.c).(5) incorporate formative evaluation feedback into daily practice;**
- IV.A.5.c).(6) locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems;**
- IV.A.5.c).(7) use information technology to optimize learning; and,**
- IV.A.5.c).(8) participate in the education of patients, families, students, fellows and other health professionals.**

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

**IV.A.5.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.5.e).(1)**

**compassion, integrity, and respect for others;**

**IV.A.5.e).(2)**

**responsiveness to patient needs that supersedes self-interest;**

**IV.A.5.e).(3)**

**respect for patient privacy and autonomy;**

**IV.A.5.e).(4)**

**accountability to patients, society and the profession; and,**

**IV.A.5.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.5.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.5.f).(1)**

**work effectively in various health care delivery settings and systems relevant to their clinical specialty;**

**IV.A.5.f).(2)**

**coordinate patient care within the health care system relevant to their clinical specialty;**

**IV.A.5.f).(3)**

**incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate;**

**IV.A.5.f).(4)**

**advocate for quality patient care and optimal patient care systems;**

**IV.A.5.f).(5)**

**work in interprofessional teams to enhance patient safety and improve patient care quality; and,**

**IV.A.5.f).(6)**

**participate in identifying system errors and implementing potential systems solutions.**

**IV.B. Fellows' Scholarly Activities**

**IV.B.1. The curriculum must advance fellows' knowledge of the basic principles of research, including how such research is conducted, evaluated, explained to patients, and applied to patient care.**

**IV.B.2. Fellows should participate in scholarly activity.**

IV.B.2.a) Participation in an active research program is an essential component for fellows enrolled in subspecialty fellowship training programs of 24 months or greater duration.

IV.B.2.a).(1) The program must ensure a meaningful, supervised research experience with appropriate protected time for each fellow—either in blocks or concurrent with clinical rotations—while maintaining the essential clinical experience.

IV.B.2.a).(2) Fellows must be advised and supervised by qualified faculty members in the conduct of research.

IV.B.2.a).(3) Fellows must learn the standards of ethical conduct of research, design and interpretation of research studies, responsible use of informed consent, research methodology, and interpretation of data.

IV.B.2.a).(4) The majority of fellows must demonstrate evidence of recent research productivity through:

IV.B.2.a).(4).(a) publication (manuscripts or abstracts) in peer-reviewed journals, or

IV.B.2.a).(4).(b) abstracts presented at national specialty meetings

(N.B.: Training programs in one-year critical care medicine and internal medicine-geriatric medicine are exempt from this requirement relative to research productivity by fellows.)

**IV.B.3. The sponsoring institution and program should allocate adequate educational resources to facilitate fellow involvement in scholarly activities.**

**IV.C. Definition and Scope of Specialty**

IV.C.1. Subspecialty training in internal medicine is a voluntary component in the continuum of the educational process; such training should take place after satisfactory completion of an accredited program in internal medicine.

- IV.C.2. To be eligible for accreditation, a subspecialty program must function as an integral part of an accredited residency program in internal medicine.
- IV.C.3. There must be a reporting relationship, to ensure compliance with the ACGME accreditation standards, from the program director of the subspecialty program to the program director of the parent internal medicine residency program.
- IV.C.4. The discipline must be one for which a certificate or a certificate of added qualifications is offered by the American Board of Internal Medicine. (For editorial purposes, the term subspecialty is used throughout the document for both types of training programs.)
- IV.C.5. Subspecialty programs must provide advanced training to allow the fellow to acquire competency in the subspecialty with sufficient expertise to act as a consultant.
- IV.D. Didactics
  - IV.D.1. Inpatient and Consultation Teaching
    - IV.D.1.a) Teaching and management rounds are usually combined in subspecialty training programs. These rounds must be patient-based sessions in which current cases are presented as a basis for discussion of such points as interpretation of clinical data, pathophysiology, differential diagnosis, specific management of the patient, the appropriate use of technology, the incorporation of evidence and patient values in clinical decision making, and disease prevention.
    - IV.D.1.b) The total teaching time spent in combined management and teaching rounds must exceed by a minimum of five hours per week the time required to supervise the care of patients.
  - IV.D.2. Conferences and Seminars
    - IV.D.2.a) Conferences must be conducted regularly as scheduled and must be attended by faculty and fellows. At a minimum, these must include:
      - IV.D.2.a).(1) at least one clinical conference weekly,
      - IV.D.2.a).(2) one literature review conference (journal club) monthly,
      - IV.D.2.a).(3) one research conference monthly; and,
      - IV.D.2.a).(4) at least one core curriculum conference weekly, when averaged over one year.
      - IV.D.2.a).(4).(a) The core curriculum conference series must include the basic sciences relevant to the subspecialty;

- IV.D.2.a).(4).(b) The core curriculum conference series must cover the major clinical topics in the subspecialty; and,
- IV.D.2.a).(4).(c) The core curriculum conference series must repeat often enough, or be made available for review on tape or electronically, to afford each fellow an opportunity to attend or review most of the core conference topics.
- IV.D.2.b) Fellows must participate in formal review of gross and microscopic pathological material from patients who have been under their care.
- IV.D.2.c) Fellows must participate in planning and in conducting conferences.
- IV.D.3. Interdisciplinary Topics
  - IV.D.3.a) Fellows should become proficient in the critical assessment of medical literature, medical informatics, clinical epidemiology, and biostatistics.
  - IV.D.3.b) Educational experiences should include instruction in the following: clinical ethics, medical genetics, quality assessment, quality improvement, patient safety, risk management, preventive medicine, pain management, end-of-life care, and physician impairment.
- IV.E. Clinical
  - IV.E.1. Ambulatory medicine
    - IV.E.1.a) There must be on-site faculty whose primary responsibilities must include the supervision and teaching of fellows.
    - IV.E.1.b) Fellows must be able to obtain appropriate and timely consultation from other specialties for their ambulatory patients.
    - IV.E.1.c) There should be services available from other health-care professionals such as nurses, social workers, language interpreters, and dietitians.
  - IV.E.2. Experience with continuity ambulatory patients
    - IV.E.2.a) Fellows must have a continuity ambulatory clinic experience a half day each week to develop a continuous healing relationship with patients for whom they provide subspecialty care. This continuity experience should expose fellows to the breadth and depth of the subspecialty. (N.B.: May vary by subspecialty.)

This may be accomplished by either:

- IV.E.2.a).(1) A single continuity clinic for the length of the accredited fellowship, or
- IV.E.2.a).(2) Blocks of at least six months duration for the length of the accredited fellowship.
- IV.E.2.b) Each fellow should, on average, be responsible for four to eight patients during each half day session.
- IV.E.2.c) Over the course of accredited training, each fellow's panel of patients must include at least 25% of patients from each gender.
- IV.E.2.d) Each fellow's clinical experiences with ambulatory patients must provide fellows the opportunity to observe and to learn the course of disease.
- IV.E.2.e) The continuing patient-care experience should not be interrupted by more than one month, excluding a fellow's vacation.
- IV.E.2.f) During the continuity experience, arrangements should be made to minimize interruptions of the experience by fellows' duties on inpatient and consultation services.
- IV.E.2.g) It is suggested that fellows should be informed of the status of their continuity patients when they are hospitalized so the fellow can make appropriate arrangements to maintain continuity of care.
- IV.E.3. Procedures
- IV.E.3.a) Fellows must develop a comprehensive understanding of indications, contraindications, limitations, complications, techniques, and interpretation of results of those diagnostic and therapeutic procedures integral to the discipline.
- IV.E.3.b) Fellows must acquire knowledge of and skill in educating patients about the rationale, technique, and complications of procedures and in obtaining procedure-specific informed consent.
- IV.E.3.c) Faculty supervision of procedures performed by each fellow must occur until proficiency has been acquired and documented by the program director.
- IV.E.3.d) Each program must:
- IV.E.3.d).(1) identify key procedures;
- IV.E.3.d).(2) define a standard for proficiency; and,
- IV.E.3.d).(3) document achievement of proficiency.

## V. Evaluation

### V.A. Fellow

#### V.A.1. Formative Evaluation

**V.A.1.a) The faculty must evaluate fellow performance in a timely manner during each rotation or similar educational assignment, and document this evaluation at completion of the assignment.**

V.A.1.a).(1) The faculty must discuss this evaluation with the fellow at the completion of the assignment.

**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);**

**V.A.1.b).(3) document progressive fellow performance improvement appropriate to educational level; and,**

**V.A.1.b).(4) provide each fellow with documented semiannual evaluation of performance with feedback.**

V.A.1.b).(4).(a) This includes formal evaluations of knowledge, skills, and professional growth of fellows and required counseling by the program director.

**V.A.1.c) The evaluations of fellow performance must be accessible for review by the fellow, in accordance with institutional policy.**

V.A.1.d) Permanent records of both the evaluation and counseling sessions (and any others that occur) for each fellow must be maintained in the fellow's file and must be accessible to the fellow and other authorized personnel.

V.A.1.d).(1) The record of evaluation should document the fellow's achievement of the competencies using appropriate evaluation methods.

V.A.1.d).(2) The record of evaluation should document that records were maintained by documentation logbook or by an equivalent method to demonstrate that fellows have achieved competence in the performance of invasive

procedures. These records must state the indications and complications, and include the names of the supervising physicians. Such records must be of sufficient detail to permit use in future credentialing.

V.A.1.d).(3) The record of evaluation should document that fellows were evaluated in writing and their performance reviewed with them verbally on completion of each rotation period.

V.A.1.d).(4) The record of evaluation should document that fellows were evaluated in writing and their performance in continuity clinic reviewed with them verbally on at least a semiannual basis.

## **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.A.2.b).(1) The program director must also prepare annually a written summative evaluation of the clinical competence of each fellow. (N.B.: This summative evaluation is in addition to the completion of the ABIM tracking form.)

V.A.2.b).(2) The summative evaluation must stipulate the degree to which the fellow has achieved the level of performance expected in each Competency (i.e., patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice).

## **V.B. Faculty**

**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.B.3. This evaluation must include at least annual written confidential evaluations by fellows.**

- V.B.4. Provision must be made for fellows to confidentially provide written evaluations of each teaching attending at the end of a rotation, and for the evaluations to be reviewed annually with faculty.
- V.B.5. Fellows should evaluate the faculty's effectiveness as teachers; fellows must also evaluate the effectiveness of rotation or assignment in achieving the goals and objectives identified in the curriculum for that rotation or assignment.
- V.B.6. The fellows must have the opportunity to assess formally the effectiveness of ambulatory teaching on an ongoing basis.
- V.B.7. The results of the evaluations must be used for faculty-member counseling and for selecting faculty members for specific teaching assignments.

**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;**

**V.C.1.b) faculty development;**

**V.C.1.c) graduate performance, including performance of program graduates on the certification examination; and,**

**V.C.1.c).(1)** At least 80% of those eligible to take an ABIM subspecialty certifying examination upon completion of their training for the most recent five year period must have taken an ABIM subspecialty certifying examination. (Note: Five-year rolling pass rate for first time takers of the ABIM certifying examination will be examined at each program review).

**V.C.1.d) program quality. Specifically:**

**V.C.1.d).(1)** **Fellows and faculty must have the opportunity to evaluate the program confidentially and in writing at least annually, and**

**V.C.1.d).(2)** **The program must use the results of fellows' assessments of the program together with other program evaluation results to improve the program.**

**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. Principles**

**VI.A.1. The program must be committed to and be responsible for promoting patient safety and fellow well-being and to providing a supportive educational environment.**

**VI.A.2. The learning objectives of the program must not be compromised by excessive reliance on fellows to fulfill service obligations.**

**VI.A.3. Didactic and clinical education must have priority in the allotment of fellows' time and energy.**

**VI.A.4. Duty hour assignments must recognize that faculty and fellows collectively have responsibility for the safety and welfare of patients.**

**VI.B. Supervision of Fellows**

**The program must ensure that qualified faculty provide appropriate supervision of fellows in patient care activities.**

**VI.C. Fatigue**

**Faculty and fellows must be educated to recognize the signs of fatigue and sleep deprivation and must adopt and apply policies to prevent and counteract its potential negative effects on patient care and learning.**

**VI.D. Duty Hours (the terms in this section are defined in the ACGME Glossary and apply to all programs)**

**Duty hours are defined as all clinical and academic activities related to the program; i.e., patient care (both inpatient and outpatient), administrative duties relative to patient care, the provision for transfer of patient care, time spent in-house during call activities, and scheduled activities, such as conferences. Duty hours do not include reading and preparation time spent away from the duty site.**

**VI.D.1. Duty hours must be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.**

**VI.D.2. Fellows must be provided with one day in seven free from all educational and clinical responsibilities, averaged over a four-week period, inclusive of call.**

**VI.D.3. Adequate time for rest and personal activities must be provided. This should consist of a 10-hour time period provided between all duty duty periods and after in-house call.**

**VI.E. On-Call Activities**

**VI.E.1. In-house call must occur no more frequently than every third night, averaged over a four-week period.**

VI.E.1.a) Internal Medicine residency programs are not allowed to average in-house call over a four-week period.

**VI.E.2. Continuous on-site duty, including in-house call, must not exceed 24 consecutive hours. Fellows may remain on duty for up to six additional hours to participate in didactic activities, transfer care of patients, conduct outpatient clinics, and maintain continuity of medical and surgical care.**

**VI.E.3. No new patients may be accepted after 24 hours of continuous duty.**

VI.E.3.a) A new patient is defined as any patient to whom the fellow has not previously provided care.

**VI.E.4. At-home call (or pager call)**

**VI.E.4.a) The frequency of at-home call is not subject to the every-third-night, or 24+6 limitation. However at home-call must not be so frequent as to preclude rest and reasonable personal time for each fellow.**

**VI.E.4.b) Fellows taking at-home call must be provided with one day in day completely free from all educational and clinical responsibilities, averaged over a four-week period.**

**VI.E.4.c) When fellows are called into the hospital from home, the hours fellows spend in-house are counted toward the 80-hour limit.**

**VI.F. Moonlighting**

**VI.F.1. Moonlighting must not interfere with the ability of the fellow to achieve the goals and objectives of the educational program.**

**VI.F.2. Internal moonlighting must be considered part of the 80-hour weekly limit on duty hours.**

**VI.G. Duty Hours 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. 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.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.a) The Review Committee for Internal Medicine will not consider requests for exceptions to the limit to 80 hours per week, averaged over a four-week period.

VI.H. Service Versus Education

A sponsoring institution must not place excessive reliance on residents to meet the service needs of the participating training sites.

VI.H.1. Fellows must not be required to provide routine intravenous, phlebotomy, or messenger/transporter services.

VI.H.2. Fellows' service responsibilities must be limited to patients for whom the teaching service has diagnostic and therapeutic responsibility

VI.H.3. The admission and continuing care of patients by fellows must be limited to those patients on the teaching service.

VI.I. Grievance Procedures and Due Process

VI.I.1. In the event of an adverse annual evaluation, a fellow must be offered an opportunity to address a judgment of academic deficiencies or misconduct before a formally constituted clinical competence committee.

VI.I.2. There must be a written policy that ensures that academic due process is provided.

**VII. Experimentation and Innovation**

**Requests for experimentation or innovative projects that may deviate from the institutional, common and specialty specific program requirements must be approved in advance by the Review Committee. In preparing requests, the program director must follow Procedures for Approving Proposals for Experimentation or Innovative Projects located in the ACGME Manual on Policies and Procedures. Once a Review Committee approves a project, the sponsoring institution and program are jointly responsible for the quality of education offered to fellows for the duration of such a project.**

VII.A. Performance Improvement Process

VII.A.1. The program should identify and participate in at least one ongoing performance improvement activity which relates to the competencies.

VII.A.2. The performance improvement activities must involve both fellows and faculty in planning and implementing.

VII.A.3. The performance improvement activities should result in measurable improvements in patient care or residency education.

## VIII. Educational Program

VIII.A. A combined subspecialty educational program in pulmonary disease and critical care medicine must be organized to provide training and supervised experience at a level sufficient for the fellow to acquire the competency of a specialist in both disciplines.

VIII.B. The combined training program must be 3 years in duration and all of the educational experiences and program content explicitly required for a training program in each area must be present in the combined program.

VIII.C. It is suggested that a program be structured to provide 24 months of clinical training. The program must, however, provide 18 months of clinical training which includes:

VIII.C.1. at least 9 months of meaningful patient care responsibility for inpatients and outpatients with a wide variety of pulmonary disease. There should be an educational emphasis on pulmonary physiology and its correlation with clinical disorders;

VIII.C.2. at least 9 months of clinical training in critical care medicine of which

VIII.C.2.a) at least 6 months must be devoted to the care of critically ill medical patients (ie, MICU/CICU or equivalent), and

VIII.C.2.b) at least 3 months must be devoted to the care of critically ill non-medical patients (ie, SICU, Burn Unit, Transplant Unit, Neurointensive Care, or equivalent.) This experience should consist of at least one month of direct patient care activity, with the remainder being fulfilled with either consultative activities or with direct care of such patients.

VIII.C.3. Fellows must have a continuity care clinic experience throughout the length of the training program.

VIII.C.3.a) In programs with fewer than 24 months of required clinical experience, an additional ambulatory experience of one half-day per week must be provided for fellows for six months, such as longitudinal experiences in cystic fibrosis, interstitial lung disease, etc. This ambulatory experience. must not occur during the 18 months of clinical training.

VIII.C.3.b) Fellows may be excused from their continuity care clinic experience while on critical care rotations.

VIII.C.4. Regardless of the required clinical experience in the training program, the total required intensive care unit experiences must not exceed 15 months in the 3 years of training.

IX. Faculty

- IX.A. The program director and the critical care teaching staff must have primary responsibility for the admission, treatment, and discharge of all patients on the critical care teaching service.
- IX.B. The critical care clinical teaching faculty at the primary training site must include each of the following:
- IX.B.1. A training program must be under the direction of an internist who is Board-certified in pulmonary disease and/or critical care medicine. If the program director does not have appropriate credentials in both specialties, an appropriately-credentialed and full-time key clinical faculty member must be identified as responsible for the education program in the second specific area.
- IX.B.2. There must be a minimum of six key clinical faculty, including the program director. At least three of these key clinical faculty members must be certified in pulmonary disease (or possess equivalent qualifications), and at least three must be certified in critical care medicine.
- IX.B.3. In programs with an approved fellow complement of more than nine fellows, a ratio of key clinical faculty to fellows of at least 1:1.5 must be maintained. Fifty percent (50%) of the key clinical faculty must be certified in each discipline.
- IX.B.4. There must clinical faculty members certified by the American Board of Internal Medicine (ABIM) in the subspecialties of nephrology, gastroenterology, cardiology, infectious disease, hematology, oncology and geriatric medicine who participate in the educational program.
- IX.C. Faculty from several related disciplines such as general surgery, thoracic surgery, urology, orthopedic surgery, obstetrics-gynecology, neurology, neurosurgery, emergency medicine, anesthesiology, cardiovascular surgery, and vascular surgery must be available to participate in the training program.

X. Facilities and Resources

In addition to the facilities and resources outlined in the Program Requirements for Fellowship Education in the Subspecialties of Internal Medicine, each of the following must be present at the primary training site:

X.A. Diagnostic Laboratory Services

A supporting laboratory available to provide complete and prompt laboratory evaluation.

- X.B.           Imaging
  - X.B.1.           timely bedside imaging services available to patients in the critical care units;
  - X.B.2.           ventilation Perfusion Scan; and
  - X.B.3.           helical CT Scan.
- X.C.           Surgery and Pathology
  - X.C.1.           an active open heart surgery program;
  - X.C.2.           an accredited residency program in general surgery;
  - X.C.3.           pathology services, including exfoliative cytology; and
  - X.C.4.           Thoracic Surgery service.
- X.D.           Other Facilities, Resources, or Support Services
  - X.D.1.           In order to provide opportunities for peer interaction in the care of critically ill patients, the primary training site should sponsor at least three accredited subspecialty programs from the following disciplines: cardiovascular disease, gastroenterology, infectious diseases, nephrology, or pulmonary disease.
  - X.D.2.           An active emergency service must be available
  - X.D.3.           The critical care unit(s) must be located in a designated area within the hospital, and must be constructed and designed specifically for the care of critically ill patients.
  - X.D.4.           Whether operating in separate locations or in combined facilities, the program must provide the equivalent of a medical intensive care unit (MICU), a surgical intensive care unit (SICU), and a coronary intensive care unit (CICU).
  - X.D.5.           The MICU must be at the primary training site, and should be the focus of a teaching service in which the program director in critical care medicine is responsible for the educational program.
  - X.D.6.           Facilities must be adequate to care for patients with acute myocardial infarction, severe trauma, shock, recent open heart surgery, recent major thoracic or abdominal surgery, and severe neurologic and neurosurgical conditions.
  - X.D.7.           There must be a pulmonary function testing laboratory.
  - X.D.8.           There must be a bronchoscopy suite, including appropriate space and staffing for pulmonary procedures.

- X.D.9. Postoperative care and respiratory care services must be available.
- X.D.10. Diagnostic Laboratory for Sleep Disorders (N.B.: These may be located at institutions other than the primary training site.)
- X.D.11. Nutritional support services must be available.
- X.D.12. A sufficient number of knowledgeable personnel and the necessary equipment to care for critically ill patients must be available. Personnel must include specially-trained nurses and technicians who are skilled in critical care instrumentation, respiratory function, and laboratory medicine.
- X.D.13. There should be a close liaison with other services, including pediatrics, radiology, pathology, microbiology, laboratory medicine, occupational medicine, immunology, physical medicine, rehabilitation, otolaryngology, and anesthesiology services.

X.E. Patient Population

- X.E.1. With respect to pulmonary disease, the fellows must be given opportunities to assume continuing responsibility for both acutely and chronically ill patients in order to learn both the natural history of pulmonary disease as well as the effectiveness of therapeutic programs.
- X.E.2. With respect to critical care medicine, in units to which a fellow is assigned, an average census of at least five patients per fellow is required.
- X.E.3. Because critical care medicine is multidisciplinary in nature, the program must provide opportunities to manage adult patients with a wide variety of serious illnesses and injuries requiring treatment in a critical care setting.
- X.E.4. The program must provide additional clinical experience with other critically ill patients, which may include surgical, shock/trauma, and neurologic/neurosurgical intensive care units; pediatric intensive care unit; burn unit; dialysis unit; anesthesia service; cardiac catheterization laboratory; high-risk pregnancy intensive care unit; and transplant unit.

XI. Specific Program Content

XI.A. Clinical Experience

- XI.A.1. Fellows must have formal instruction, clinical experience, and must demonstrate competence in the prevention, evaluation and management of both inpatients and outpatients with the following:
  - XI.A.1.a) obstructive lung diseases, including asthma, bronchitis, emphysema, bronchiectasis;

- XI.A.1.b) pulmonary malignancy - primary and metastatic;
- XI.A.1.c) pulmonary infections, including tuberculous, fungal, and those in the immunocompromised host (e.g., human immunodeficiency virus-related infections);
- XI.A.1.d) diffuse interstitial lung disease;
- XI.A.1.e) pulmonary embolism and pulmonary embolic disease;
- XI.A.1.f) pulmonary vascular disease, including primary and secondary pulmonary hypertension and the vasculitis and pulmonary hemorrhage syndromes;
- XI.A.1.g) occupational and environmental lung diseases;
- XI.A.1.h) iatrogenic respiratory diseases, including drug-induced disease;
- XI.A.1.i) acute lung injury, including radiation, inhalation, and trauma;
- XI.A.1.j) management of circulatory failure;
- XI.A.1.k) pulmonary manifestations of systemic diseases, including collagen vascular disease and diseases that are primary in other organs;
- XI.A.1.l) respiratory failure, including the acute respiratory distress syndrome, acute and chronic respiratory failure in obstructive lung diseases, and neuromuscular respiratory drive disorders;
- XI.A.1.m) disorders of the pleura and the mediastinum;
- XI.A.1.n) sleep disorders, including the recognition and differential diagnosis of common sleep symptoms, the effects of sleep on pulmonary diseases and treatments, the utility and interpretation of cardiopulmonary monitoring, critical review of polysomnographic reports, and management of sleep-disordered breathing; and
- XI.A.1.o) perioperative management of critically ill patients.
- XI.A.2. Fellows must have formal instruction, clinical experience, and must demonstrate competence in the evaluation and management of patients with:
  - XI.A.2.a) circulatory disorders;
  - XI.A.2.b) shock syndromes;
  - XI.A.2.c) cardiovascular diseases;
  - XI.A.2.d) sepsis and sepsis syndrome;

- XI.A.2.e) hypertensive emergencies;
- XI.A.2.f) acute and chronic respiratory failure;
- XI.A.2.g) acute metabolic disturbances, including overdosages and intoxication syndromes;
- XI.A.2.h) multi-organ system failure;
- XI.A.2.i) electrolyte and acid-base disorders;
- XI.A.2.j) metabolic, nutritional, and endocrine effects of critical illness; and
- XI.A.2.k) hematologic and coagulation disorders associated with critical illness.
  
- XI.A.3. Fellows must have formal instruction, clinical experience, and must demonstrate competence in:
  - XI.A.3.a) management of the immunosuppressed patient;
  - XI.A.3.b) management of anaphylaxis and acute allergic reactions;
  - XI.A.3.c) hemodynamic and ventilatory support of patients with organ system damage in the post operative period;
  - XI.A.3.d) the use of paralytic agents and sedative and analgesic drugs;
  - XI.A.3.e) detection and prevention of iatrogenic and nosocomial problems in critical care medicine;
  - XI.A.3.f) psychosocial and emotional effects of critical illness on patients and their families; and
  - XI.A.3.g) Management of end of life issues and palliative care.
  
- XI.A.4. Fellows must have formal instruction and clinical experience in the evaluation and management of patients:
  - XI.A.4.a) with genetic and developmental disorders of the respiratory system, including cystic fibrosis;
  - XI.A.4.b) in pulmonary rehabilitation;
  - XI.A.4.c) with trauma;
  - XI.A.4.d) with neurosurgical emergencies;
  - XI.A.4.e) with disorders of the cardiovascular, respiratory, renal, gastrointestinal, genitourinary, neurologic, endocrine, hematologic,

- musculoskeletal, and immune systems as well as of infectious diseases;
- XI.A.4.f) with critical obstetric and gynecologic disorders; and
- XI.A.4.g) after discharge from the critical care unit.
- XI.B. Technical and Other Skills
- XI.B.1. The program must be structured to permit all fellows to develop the requisite procedural and technical skills, including the ability to interpret data derived from various bedside devices commonly employed to monitor patients. Fellows must have formal instruction, clinical experience, and must demonstrate competence in the following:
- XI.B.1.a) airway management;
- XI.B.1.b) the use of a variety of positive pressure ventilatory modes, including:
- XI.B.1.b).(1) initiation, maintenance, and weaning of ventilatory support;
- XI.B.1.b).(2) respiratory care techniques; and
- XI.B.1.b).(3) withdrawal of mechanical ventilatory support.
- XI.B.1.c) the use of reservoir masks and continuous positive airway pressure masks for delivery of supplemental oxygen, humidifiers, nebulizers, and incentive spirometry;
- XI.B.1.d) flexible fiber-optic bronchoscopy procedures (a minimum of 50 such procedures);
- XI.B.1.e) management of pneumothorax (needle insertion and drainage system);
- XI.B.1.f) pulmonary function tests to assess respiratory mechanics and gas exchange, including spirometry, flow volume studies, lung volumes, diffusing capacity, arterial blood gas analysis, and exercise studies;
- XI.B.1.g) diagnostic and therapeutic procedures, including thoracentesis, endotracheal intubation, and related procedures;
- XI.B.1.h) the examination and interpretation of sputum, bronchopulmonary secretions, pleural fluid;
- XI.B.1.i) chest tubes and drainage systems;
- XI.B.1.j) insertion of arterial, central venous, and pulmonary artery balloon flotation catheters;

- XI.B.1.k) emergency cardioversion;
- XI.B.1.l) interpretation of intracranial pressure monitoring;
- XI.B.1.m) operation of bedside hemodynamic monitoring systems;
- XI.B.1.n) nutritional support; and
- XI.B.1.o) quality improvement activities in the intensive care unit.
- XI.B.2. Fellows must have formal instruction and clinical experience in performing the following:
  - XI.B.2.a) emergency cardioversion;
  - XI.B.2.b) inhalation challenge studies;
  - XI.B.2.c) thoracostomy tube insertion and drainage; and
  - XI.B.2.d) the examination and interpretation of lung tissue for infectious agents, cytology, and histopathology.
- XI.C. Formal Instruction
 

The training program must provide formal instruction for the fellows to acquire knowledge of the following content areas:

  - XI.C.1. imaging techniques commonly employed in the evaluation of patients with critical illness and/or pulmonary disorders;
  - XI.C.2. monitoring and supervising special services, including:
    - XI.C.2.a) respiratory care units;
    - XI.C.2.b) pulmonary function laboratories, including quality control, quality assurance, and proficiency standards; and
    - XI.C.2.c) respiratory care techniques and services.
  - XI.C.3. the basic sciences, with particular emphasis on
    - XI.C.3.a) genetics and molecular biology as they relate to pulmonary diseases;
    - XI.C.3.b) developmental biology;
    - XI.C.3.c) pulmonary physiology and pathophysiology in systemic diseases; and

