

Interventional Pulmonary Fellowship Training: End of the Beginning

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ABSTRACT

Interventional pulmonology (IP) fellowship training has undergone increased popularity and growth. The Accreditation Council of Graduate Medical Education recently recognized IP medicine as a new subspecialty, which leads to new challenges and opportunities for a young subspecialty. Although the specialty-specific requirements are in progress, IP fellowship programs must plan ahead for the known common program requirements and anticipated accreditation process. The educational leadership in IP must identify and execute solutions to sustain continued excellence. This includes transitioning to a new regulatory environment with issues of funding new fellowships, keeping up to date with training/assessment of new procedures, and shaping the future through recruitment of talent to lead the young subspecialty.

Keywords:

interventional pulmonary fellowship; American Council of Graduate Medical Education

Dedicated interventional pulmonology (IP) fellowship training in the United States requires a minimum of 12 months of additional training after a pulmonary and critical care medicine fellowship. Training focuses on the diagnosis and management of central airway obstruction, lung cancer, pleural diseases, and specialized procedural training in various airway and pleural procedures. Within the last decade (Figure 1),

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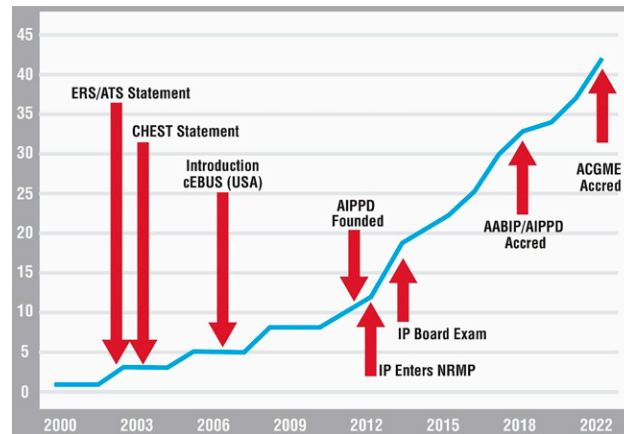


Figure 1. Trends of interventional pulmonology fellowship programs, 2000–2022. AABIP = Association of Bronchology and Interventional Pulmonology; Accred = accredited; ACGME = Accreditation Council of Graduate Medical Education; AIPPD = Association of Interventional Pulmonary Program Directors; ATS = American Thoracic Society; cEBUS = curvilinear endobronchial ultrasound; CHEST = The American College of Chest Physicians; ERS = European Respiratory Society; IP = interventional pulmonology; NRMP = National Residency Match Program.

IP fellowship training has increased in popularity because of standardization of fellowship training and demand for training in new procedures that are not commonly available in pulmonary fellowships (1). This tremendous growth was also fueled by advancements in biomedical technology introducing electromagnetic navigation, robotics, unidirectional valves, and updated pleural procedures.

The first formal IP fellowship training program in North America opened in 1996. The nidus for IP training was born in part out of constraints for adequate procedural training in the face of an expanding body of knowledge and procedures during a fixed duration of adult pulmonary medicine fellowship (2, 3). Since then, there has been a multisociety effort by various organizations involved with pulmonary diseases to standardize and optimize training. This included a centralized fellowship application system, National Residency Match Program participation, and a fellowship program accreditation process based on a multisociety training standard. In 2012, the Association of Interventional Pulmonary Program Directors (AIPPD) was founded, serving to establish a consortium

of IP educators dedicated to optimizing IP training nationwide, and in 2013, the American Association for Bronchology and Interventional Pulmonology developed the first IP board certification examination. Most recently, IP was recognized by the Accreditation Council of Graduate Medical Education (ACGME) as a new subspecialty. Although there has been substantial growth and organization, issues behind funding source, summative assessments, and structure remain and will only become amplified as IP is absorbed as an ACGME subspecialty. As the subspecialty IP training demand has escalated, the various IP societies sought out accreditation by a professional organization, ACGME. Although there are many medical educators in the IP community, developing regulatory policies and compliance became challenging with an increasing number of programs and adjusting policies to changing times (i.e., coronavirus disease pandemic, new fellowship programs, probation of programs). Although a standardized curriculum was published in anticipation of an ACGME application, enforcing consistent compliance among colleagues was awkward (1, 4).

The overall benefit of accreditation will be increased institutional resources for all programs and the standardization of training. The standardization of training will continue to contribute to the definition of the subspecialty and allow transparency of training for prospective fellowship applicants and employers. It is important to note that the specific program requirements are not yet available but are expected to be developed and released from the ACGME at the end of 2023. The formalization of training also gives resource support to training through protected time for fellowship directors, structure to continuously improve individual programs, access to a fellowship coordinator, and understood institutional regulations and oversight. In addition, ACGME accreditation offers further legitimization of a new subspecialty.

FUTURE CHALLENGES FOR THE IP EDUCATOR

The New Accreditation Environment

Historically, non-ACGME-accredited fellowship standards have been quite variable (5). Some centers may not require the same duty hour limitations or structural support as required of ACGME-accredited programs. Budgets for faculty salary support, coordinator assistance, and fellow salary may vary considerably. Administrative time and support for some program directors likewise may be limited, forcing them to take on fellowship responsibilities in addition to a busy clinical workload, whereas other programs may offer support similar to current ACGME-accredited specialty programs. In a recent unpublished survey of IP fellowship directors by the American Association for Bronchology and Interventional Pulmonology/AIPPD accreditations committee, approximately one-third of the

existing 42 IP fellowship programs still require fellows to be both a trainee and a practitioner who earn their salary and benefits. This is accomplished by performing nonfellowship clinical work, such as attending in the intensive care unit or long-term acute care hospital, seeing general pulmonary consults in the outpatient or inpatient settings, and reading pulmonary function test results at the completion of their training day. Most IP fellowships consist of one or two fellows in which call duties and extra-fellowship in-house hospital time may be considered excessive if scrutinized by regulatory bodies. The new accreditation environment may offer an opportunity to rectify these differences where they exist to provide necessary support for fellowship directors; however, these differences may present significant financial challenges because they occur in the current environment of capped Medicare and Medicaid services (Centers for Medicare and Medicaid Services) direct funding for new fellowships such as IP (6, 7). Funding for 1,000 new Centers for Medicare and Medicaid Services graduate medical education positions was included in the Consolidated Appropriations Act of 2021; however, the last increase was in 2000. It is likewise unlikely that the newly created independent practice option, outlined in the July 2022 ACGME Common Program Requirements (Fellowship), will be operative as a method to help meet the financial burden of fellow pay and benefits. It is specifically not intended to function as a financial engine and has not been an option incorporated into the accreditation standard of any other ACGME-accredited subspecialty fellowship. Other funding avenues exist that programs may choose to explore individually, however, if institutional funding is insufficient. Medical society-, industry-, and benefactor-funded endowments exist

as funding sources for a handful of existing IP fellowships. The AIPPD currently offers an annual grant reward for new or existing IP fellowship programs to offset the costs of a fellowship program, and business models available through the AIPPD illustrate how sponsoring an IP fellowship can become cost-neutral through increased efficiency and referrals.

Assessments and Learning Curves

Although most subspecialty programs use multiple metrics for competency-based training, IP has the added core requirements for multiple procedural skills. This may be akin to surgical fellowships or interventional cardiology in developing program requirements. Current guidelines for IP training programs require a minimum number of procedures per institution to gain accreditation through a non-ACGME multisociety accreditation process. This is to ensure sufficient institutional expertise and resources to provide the required procedural exposure to the IP fellow; however, it does not stipulate the number of procedures the fellow must complete or methods to objectively assess procedural competence (4). This seems contrary to the current philosophy of competency-based medical education in a time when validated assessment tools and learning curves already exist for some IP procedures (i.e., rigid bronchoscopy, navigation bronchoscopy, endobronchial ultrasound transbronchial needle aspiration) (8–10). A significant challenge will be how to transition requirements from a procedural volume model to perhaps some combination or standalone summative assessment tool(s). Given the paucity of validated assessment tools or published learning curves to achieve proficiency in IP procedures (Table 1), the development and validation of tools to accurately determine levels of competence remain a top priority for IP educators. As

an accrediting organization, the ACGME does not define clinical competence, and thus this responsibility will rely on IP educators. With this clearly at the forefront of issues that need to be addressed, IP society leadership and education committees should develop a task force whose mandate is to develop the tools needed to properly assess procedural competency and expertise across the spectrum of the core IP procedures. In addition to the development of assessment tools and learning curves, the task force would also be well positioned to develop implementation strategies because it would consist of experts and fellowship program directors in the field.

With new technology and procedures constantly in the pipeline, questions regarding how to develop education policies and requirements arise. Part of this issue requires systems to ensure that faculty are competent in novel procedures before teaching their fellows. Often, new medical devices become commercially available without competency metrics or programs to develop competency. A stronger advocacy and partnership with industry to develop competency metrics and/or simulation through early access and as new procedures are developed will be needed; otherwise, larger regulatory agencies (i.e., the Food and Drug Administration) may need to intervene and mandate more specific guidelines for training in new procedures. For example, many IP procedures do not have high-fidelity simulators and develop competency metrics years after initial availability. Early procedural experts become familiar with a new technology through an early clinical trial; however, they may not be medical educators or may not have an interest in programming or competency metrics. Part of the more immediate solution may be the use of clinical competency committees

Table 1. Minimum institutional volumes necessary for accreditation of an interventional pulmonology fellowship program

Procedure Type	Requisite Annual Institutional Case Volume	Validated Assessment Tool
Demonstration of competence is mandatory for IP fellows		
Rigid bronchoscopy	50	RIGID-TASC (19)
Endobronchial stenting	20	
Thoracoscopy	20	LAT (10)
Bronchoscopic navigation	20	LEAP (20, 21)
Endobronchial ablation	50	
Endobronchial ultrasound	100	EBUS-STAT (22)
Image-guided thoracostomy tube placement	20	
Tunneled pleural catheter placement	20	
Training to competence may be offered during IP fellowship		
Percutaneous dilational tracheostomy	20	
Percutaneous endoscopic gastrostomy	20	
Bronchial thermoplasty	6	
Endobronchial management of bronchopleural fistula	5	
Endoscopic ultrasound	30	
Transtracheal oxygen catheter	5	
Image-guided percutaneous needle biopsy	5	LEAP (20)

Definition of abbreviations: EBUS = endobronchial ultrasound; IP = interventional pulmonology; LAT = local anesthetic; LEAP = learning electromagnetic navigational bronchoscopy and percutaneous thoracic needle biopsy; RIGID-TASC = rigid bronchoscopy tool for assessment of skills and competence. If graduates are to be certified as competent in these procedures during IP training, the minimum institutional volumes must be available to assure sufficient opportunity for hands-on training. Adapted by permission from Reference 4.

(CCC), which have been adopted by the ACGME as part of a comprehensive evaluation process; however, the structure and process remain ambiguous for smaller programs with potentially only two faculty members (11, 12). Although membership of no less than three members has been suggested (13), the addition of faculty with additional and varied expertise, such as

surgical colleagues, nurses, other program directors, and so forth, could be leveraged to supplement and expand the viewpoints of the membership. Alternatively, many IP programs may already be participating regularly in chest tumor boards. The multidisciplinary tumor board members may be able to participate, and specialties such as radiation/medical oncology,

palliative care, and thoracic surgery may have overlapping curricula and provide valuable external viewpoints. For programs that do not participate in such a program, this may be an opportunity to have fellows and faculty develop this relationship outside of their specialty. Some of these specialties may also have a common issue with small fellowships and may have an opportunity to join their CCC in exchange for joining ours. Regardless of specialty, members would have to be educated on programmatic goals and curriculum.

Recruitment of Future IP Physicians

Diversity, equity, and inclusion (DEI) have been recognized as a challenge in IP. Although there has been an increase in female IP fellows (15-fold increase from 2010 to 2020), there remains an overall lack of diversity (14). This may be in part because the IP fellowship comes at postgraduate year 7 or 8 (prior chief residency year). Recruitment for future applicants comes in only after a preselection of medicine residency, then pulmonary/critical care fellowship, leaving a select pool of pulmonary and critical care medicine graduates and those motivated for an additional year of training. This is similar to long pathways in surgical fellowships that may struggle with DEI (15, 16). This is important because numerous studies have reported that promoting DEI leads to higher patient satisfaction, better health outcomes, and increased resident wellness

in surgery (17, 18). Perhaps a more effective, albeit long-term, plan is to expose and inspire communities through the appeal of a specialty such as IP for young students who may be considering a career in medicine. This can be accomplished, for example, through participation at the undergraduate level in observership and summer internship programs.

Balancing the wellness of fellows and faculty after a long duration of training with intensive clinical duties will be addressed in part with the ACGME; however, new approaches from within our field will be needed to develop specialty-specific solutions. Areas that need immediate attention and solution include faculty development/research, wellness, health policy, and recognizing physician burnout, which are increasingly relevant for current and future IP leaders and educators.

Recruiting talent into our subspecialty by recognizing those with an interest in these areas can improve the subspecialty.

CONCLUSION

The major changes in IP fellowship training have created new opportunities and resources to improve the subspecialty; however, this will take the efforts of more educators and leaders from various demographics.

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