

# Training program of interventional pulmonology fellowships: USA

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**Abstract:** Interventional pulmonary (IP) is an emerging subspecialty of pulmonary medicine which focuses on procedures of the airway, lung, and pleura. As the number of advance procedures increases with the growth of this field, additional formal training is required to offer the full complement of techniques. IP fellowship is a dedicated 12 months fellowship in the United States which occurs after pulmonary/critical care fellowship. There have been several recent milestones in this field which include validated exams based on didactic knowledge and structural organization of fellowship organizations.

**Keywords:** Interventional pulmonary (IP); fellowship; education

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## Introduction

Interventional pulmonary (IP) is an emerging subspecialty of pulmonary medicine. Dedicated IP training in the United States requires a minimum of one additional year of training after traditional pulmonary and critical care 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. As a result of growth in technology, the field of IP continues to expand to diagnose and treat a wide range of pulmonary diseases.

Prior to an IP fellowship, trainees would have graduated from an internal medicine residency and then pulmonary/critical care fellowship. The first dedicated US IP fellowship started in 1998 from the Lahey Clinic (Burlington, MA, USA). Prior to this training in IP relied on traveling abroad to Europe and/or piece meal training from various other specialists such as thoracic/ENT surgeons (1). Training opportunities were extremely rare and required self-sacrifice/initiative.

In the United States, residency and specialty fellowship

training is funded/accredited by the Accreditation Council of Graduate Medical Education (ACGME). Currently there are over 25 US IP fellowship programs which have not been adopted by the ACGME. However, many new specialties begin with unaccredited fellowship training and reach a critical mass leading to ACGME adoption (2,3). In 2012, IP was recognized and joined the National Residency Match Program signifying standardization in the US IP community (4). There are several professional societies which have been the main advocated for formalized IP training in North America: American Association of Bronchology and Interventional Pulmonology (AABIP), Association of Interventional Pulmonary Fellowship Directors (AIPPD), and American College Chest Physicians (ACCP).

## Knowledge based training

All medical specialties distinguish their field by a unique body of knowledge which is different from its parent specialty such as pulmonary medicine from internal medicine. IP has gone beyond unique procedural skills and

has now also demonstrated a unique body of knowledge. A core body of subject matters has been identified as a suggested guideline for a curriculum for IP fellowships (5). The curriculum was divided into (I) procedural specific skills and (II) disease specific knowledge. The guideline has helped defined common knowledge areas required for competency in IP. It also provided a blue print for further metric evaluations.

As a part of formalized fellowships the measurement of knowledge is accomplished using various exams. An in-service exam is commonly performed to measure the progress of a trainee against their peers and correlation to board examination scores. The goal of IP in-service exam was specifically to: (I) develop an assessment tool for knowledge related to IP; (II) standardize didactic knowledge requirements; and (III) allow fellowship directors the opportunity to assess their current IP training curriculum. As a part of its validation, score results were also compared to board certified and eligible pulmonary specialists (6). There was a significant and step wise increase in scores based on exposure to IP training representing a distinct body of knowledge within IP from its parent specialty.

The AABIP has recently developed an IP board certification examination. The examination is a computer based multiple choice question examination based on core knowledge subjects. As with all other medical specialties, the IP board examination seeks to distinguish competency in part via understanding of medical science related to IP which again goes beyond just procedural skills.

### Procedural skills

IP is a procedural based specialty and thus training requires competency in various thoracic procedures. Currently, there are some procedures that are being performed by some general pulmonologist primarily in the field of advance diagnostic (i.e., EBUS, ENB). However, these advance procedures are not the standard or requirement for general pulmonary fellowship training in the United States. Training acquisition for general pulmonologist in some procedures may be accomplished in multiple manners including: fellowship rotation with IP service at their fellowship institution, attending weekend course with high fidelity training models (cadaver, animals), observation/sabbatical training at high volume centers (7). Currently, there is no standard requirement for procedures in most IP training and may be left to the individual confidence level of the self-learned practitioners. In the United States,

credentialing to perform advance procedures is normally at the discretion of hospital credentialing boards which vary depending on geographic/institutional practices and may consist of physicians in other specialties and/or non-physicians. This leaves tremendous variability from center to center in the US regarding credentialing process/requirements.

The ATS/ACCP/ERS have already issued consensus documents on measuring competency based on number of procedures performed (8,9). The procedural based numbers is based on learning curve studies showing improvement and mastery with additional procedures and expert opinion. The criticisms of a pure numerical number of procedures performed have been criticized for lack of standardization in measuring competency prior to performing solo on patients (10). The ACCP has already advocated a change from volume-based certification system to a standardized skill acquisition and knowledge-based competency for learning adult bronchoscopy (11). Current trend to determine competency has begun to use validated competency metrics using tools such as structured simulation tests (11).

### Growth and demand

As an unaccredited fellowship program, the growth of IP fellowships has more than tripled in a span of 5 years. This growth has been spurred both by an interest to practice IP and labor demand for IP physicians. The demand for IP fellowship trained physicians has been increasing, with the expansion of new fellowship programs occurring annually (12).

While pulmonary fellowships may have given exposure to IP, the time restriction may limit opportunities for training. A recent change in US postgraduate education is the mandated limited work hours for residents/fellows which may impact the opportunities for learning advance procedural skills in addition to satisfying current requirements in time span of general pulmonary fellowship (13). This has been demonstrated by general pulmonary fellowship programs straining to provide procedural volume for basic bronchoscopy diagnostic procedures (14). In contrast, IP fellowship programs have been able to demonstrate advance procedural volumes well above published recommendations for competency (15).

### Future

The expected progression of training in IP will likely see a further increase in the number of fellowship programs

with a more even geographic distribution. Currently, there is an effort for a joint society guideline for accreditation of existing and new training programs in the US (16).

In addition to increasing training opportunities, standardization of curriculum and competency assessment will likely continue to be a fabric of US IP training. The use of simulation tools will likely be a part of training future IP practitioners.

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### Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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