Chapter 3
Training Trainees: Creating a Better Workforce to Support Transition Care

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Importance of Teaching Healthcare Transition

Advances in recent decades have allowed children with chronic disorders to survive much longer than previously, often reaching adulthood. Patients with traditional pediatric diseases, who in prior years may have remained under the care of pediatric teams until end of life, now need to transition care to adult providers. Increasing recognition of the importance of the healthcare transition process, as well as the pitfalls, has led various medical organizations to issue formal recommendations. Most notably, a clinical report issued by the American Academy of Pediatrics (AAP), American Academy of Family Physicians (AAFP), and American College of Physicians (ACP) has undergone multiple iterations in its quest to delineate the need for healthcare transition programs and the recommended processes [1–3].

Despite several decades of attention being paid to this process of transition, progress has been slow, and implementation has remained low. Reasons cited for low rates of transitional programs are varied, including lack of comfort with or training in congenital and childhood disorders, lack of time or reimbursement, uncertainty regarding roles and responsibilities, difficulty navigating systems issues and

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transition coordination, addressing psychosocial needs and patient maturation, and mediating family involvement [4–6]. Despite transition guidelines being available almost two decades ago, these issues continue to be mentioned by practicing physicians [1, 7]. Based on how long transition guidelines have existed, one would think that training programs would have well-established transition curriculums and therefore newer graduates would be better equipped to tackle these challenges. However, the review of medical education does not corroborate this assumption. In fact, very few residents and fellows report confidence in performing transition care, and a majority report no education about the transition process [8, 9].

Importance of Teaching Healthcare Transition Specific to Pulmonology

Like many other fields, pulmonology must also prepare for healthcare transition, but the implementation of programs and education has not kept pace with the need. The adoption of comprehensive transition protocols remains inadequate, even in areas such as cystic fibrosis, which has been leading the field of pulmonology in terms of healthcare transition [7]. It follows that care transition programs and protocols are even less established for other pulmonary disorders. Of accredited pediatric pulmonary programs in the United States, 78.1% do not use a standardized transition process, and 41.4% have no transition process at all [10]. This is not for lack of need, as there are currently 24.8 million children aged 12–17 years requiring transition care in the United States, and over 6 million of these children have special health care needs, many with pulmonary disorders or respiratory technology dependence [11]. Meanwhile, there are less than 1200 pediatric pulmonologists and 15,000 adult physicians currently certified in pulmonary or pulmonary and critical care medicine [12, 13].

This shortage of pediatric pulmonologists and the projected shortage of adult pulmonologists in the coming years is due to a combination of an aging workforce but also aging pediatric patients preparing to “graduate” to adult medical care, since 90% of children with chronic conditions now survive into adulthood [14]. This current cohort of physicians cannot meet the needs of our adolescent and young adult pulmonary patients preparing for healthcare transition unless a concerted effort is made focusing on improved training. Because, if we continue to build transition clinics and transition protocols without adequately addressing the pipeline of health professionals, who will be responsible for the implementation and utilization of these resources? Therefore, there is an urgent need to develop a transition curriculum for our pulmonary training programs, so we can focus on the current fellows who will soon be emerging as a critical portion of this workforce.

While the AAP, AAFP, and ACP recognize this importance of preparing physicians in transition care, the goals set forth are for all physicians providing care for

children and young adults with special medical needs. There is no separate set of goals for trainees or for training program leadership. The AAP, AAFP, and ACP recommend physicians to (1) understand the rationale for transition from child-oriented to adult-oriented health care, (2) have the knowledge and skills to facilitate transition, and (3) know if, how, and when transfer of care is indicated [1, 2]. In order for practicing physicians to achieve these goals, healthcare transition education should begin in medical school and continue throughout post-graduate training and beyond [5, 6].

Education in congenital and childhood-onset conditions has been shown to be a critical factor in the comfort of internists accepting care of young adults with special medical needs [6]. Furthermore, adult physicians who were exposed to the process of transitioning health care during residency training were more likely to feel comfortable accepting new young adults as patients [5]. Despite this, the Accreditation Council for Graduate Medical Education (ACGME) Next Accreditation System common program requirements for residency programs and fellowship programs do not address the transition process of young adults [15, 16]. However, the updated ACGME Program Requirements for Graduate Medical Education in Pediatric Pulmonology has recently incorporated this initiative, adding that "fellows must be able to facilitate the transition of patients with pulmonary disorders from pediatrics to adult health care settings" [17]. No similar updates have been made to the Program Requirements for Adult Pulmonary Disease or Pulmonary Disease and Critical Care Medicine [18, 19].

Adult pulmonary training programs are not required to provide their trainees with opportunities for pediatric exposure, despite other specialties offering a framework. For example, the training for sleep medicine, anesthesiology, radiology, and otorhinolaryngology requires pediatric rotations, and various surgical fields have pediatric rotations available, although these are variable depending on the training program. Within the primary care realm, family medicine and combined internal medicine-pediatrics (IM-Peds) programs are ideally suited for models of transition care training, but in fact IM-Peds is the only residency specialty that explicitly includes transition education in their ACGME program requirements [20, 21]. In spite of the available examples for how to incorporate transition education into training, adult pulmonary training program requirements are not alone in their oversight. Many specialties and subspecialties have common program requirements and milestones that allude to "transitions" that in fact are referring to handoffs between phases of care, such as inpatient to outpatient or vice versa [18, 19]. While some IM-Peds graduates do pursue pulmonary fellowship, this small number of individuals cannot fill the current void of physicians needed for pulmonary healthcare transition.

If our internal medicine and pediatric residents do not graduate feeling capable of executing healthcare transition, and our pulmonary fellowship training programs do not have a designated curriculum to address this need, we will continue to produce pulmonologists largely unprepared to care for this population. In fact, the field

of pulmonology currently has no existing guidelines or even literature about transition training. This marked disparity between the future need for pulmonologists trained in transition care and the current shortage of associated curriculum needs to be addressed.

Key Topics for a Transition Curriculum in Pulmonology

Curriculum development for healthcare transition should be multifaceted and build upon what has already been done in other specialties. A survey of medical professionals with expertise in healthcare transition identified five goals to guide designing transition curriculum for primary care residents [22]. These goals include the following: (1) understand transition from pediatric to adult health care, (2) understand key insurance and social service issues, (3) consider developmental and psychosocial issues, (4) address educational/vocational needs, and (5) improve healthcare systems [22]. However, these are not all encompassing and likely run the risk of leaving out key elements. A transition curriculum for pulmonary trainees should include both the medical knowledge about congenital and childhood disease entities and particulars about the transition process.

Disease Entities

In order to ensure adult providers welcoming young adults into their practice have the knowledge and expertise required, educational efforts must be made to address both diseases unique to childhood as well as the ones seen across the lifespan. Diseases that need to be addressed include cystic fibrosis, asthma, bronchopulmonary dysplasia, interstitial lung disease, lung transplantation, sleep disorders, neuromuscular disorders, and chronic respiratory insufficiency such as respiratory technology dependence (i.e., chronic ventilator use).

In addition to covering pathology, adult pulmonary training regarding transition care should also attend to variations in physiology. Pediatric care focuses on growth and development of their patients, whereas adult medicine attends primarily to senescence. This is a key variation in practice, as young adults are still growing and developing, even as they enter the world of adult medicine. For example, the continued growth of a young adult has implications for things such as the interpretation of pulmonary function tests.

While these topics of pathophysiology are addressed in pediatric pulmonary training programs, they will need to be added to or expanded upon in adult pulmonary training programs. The importance of educating about these diseases is evidenced by how often medical knowledge is cited as a barrier for healthcare transition implementation [5, 6, 23].

Process of Transition

However, knowing about these disease entities is not enough, because healthcare transitions are much more than medical knowledge. The process of transition must also be addressed. It is important to note the transition process includes actual transfer of care from pediatric to adult physicians, but transition is much more comprehensive and also more nuanced.

Transition encompasses the process of preparing and building skills to become an active participant in adult care, whereas transfer is the discrete time point when a patient is first seen in adult care. The National Center for Health Care Transition lays out Six Core Elements of Health Care Transition™, defined as (1) transition policy, (2) transition tracking and monitoring, (3) transition readiness, (4) transition planning, (5) transfer of care, and (6) transfer completion and ongoing care [24]. It will be imperative to teach both pediatric and adult trainees about the complete transition process, as well as how to incorporate these elements into their current and future practice. Pediatric pulmonologists should be competent in elements one through five and familiar with what ongoing adult care constitutes in order to best care for these patients and receive feedback on their processes. On the other hand, adult pulmonologists should be competent in all elements of transfer but still be familiar with earlier stages of transition and be able to participate in transition planning if their practice environment allows or requires their input.

Psychosocial Transition

How a patient with one of these pulmonary diseases progresses through the Six Core Elements of Health Care Transition™ is undoubtedly affected by the social environment. Consideration for the psychosocial component of transition that adolescents and young adults are experiencing is imperative. Entering adulthood, there are many shifting resources and responsibilities that patients must navigate, related to: care management, financial issues, support services, care coordination, and the psychological burden this all entails. For this reason, trainees should explicitly be taught what these psychosocial issues are (Fig. 3.1) and what resources are available.

Social Differences Between Pediatric and Adult Care

	Pediatric Care	Adult Care
Care monitoring	Per guardian(s)	Per patient
Finances and insurance	Per guardian(s)	Per patient
Support services	Readily available	Not as available
Care coordination	Visits and procedures coordinated	Not necessarily

Fig. 3.1 Psychosocial variations between pediatric and adult medical care

Often, care that was previously provided and monitored by parents or guardians is now being taken on by the adolescents and young adults, and they should be supported in this process. At the same time that they are taking over their own care, young adults also are often attempting to take charge of their own finances and insurance issues for the first time. Keep in mind this is being done while support services and insurance options are both shifting for these patients with complex chronic conditions.

Additional layers are added to this psychosocial transition if there are multiple providers or specialists involved, as asynchronous transfers can occur to multiple adult physicians. This can affect multidisciplinary clinics, multidisciplinary procedures, and care coordination. Pediatric patients often have excellent care coordination and support services through a patient-centered medical home, whereas adult patients' medical homes often include primary care physicians without the same level of coordination or available support services.

Each psychosocial aspect mentioned here can be daunting to adolescents and young adults, but ultimately the transitions they are navigating within health care are only some of the many social transitions occurring around this same time period, with changes in school, work, housing, and support systems also occurring. Healthcare transition curriculum should highlight these issues, ensure trainees are aware of the obstacles and accompanying psychological burden, and arm trainees with resources to help ease the process of transition for their patients.

Cultural Transitions

In addition to the psychosocial transitions patients are overcoming, they must also navigate the "cultural" shift between pediatric and adult care models. Patients and families often report that there are differences in personalities, communication styles, and approach to patient care between pediatric and adult teams. These factors are difficult to define and objectively measure yet are critically important to transitional medicine. We describe these differences as "cultural" (Fig. 3.2). The culture of pediatric pulmonology is different from that of adult pulmonology; therefore this transition between cultures should also be addressed in the educational curriculum regarding healthcare transition. Simply put, if patients are expected to navigate this cultural shift, they need to be aware of it. In turn, if providers are expected to educate patients about this cultural shift, they too need to be aware of it.

Cultural Differences Between Pediatric and Adult Care

Pediatric Pulmonology	Adult Pulmonology
Multi-disciplinary CHRONIC care	Multi-disciplinary ICU care
May serve as primary care provider	Generally not primary care provider
Often provides care most of childhood, with one primary disease process	Often treat pulmonary diseases diagnosed later in life, and in setting of other medical conditions

Fig. 3.2 Cultural variations between pediatric and adult medical care

Pediatric pulmonology optimizes multidisciplinary care for chronic conditions in the outpatient setting and even participates in multidisciplinary procedures (e.g., ENT and pulmonology coordinating for same-day procedures in patients with cystic fibrosis). On the other hand, adult pulmonology optimizes multidisciplinary care in the intensive care unit but perhaps less effectively in the outpatient setting.

Children with chronic illnesses often have one disease process, and as such pediatric pulmonologists may serve as primary care providers for some of their long-term patients, functioning as their medical home. Adult pulmonologists do not generally serve as primary care providers, as they often care for pulmonary diseases that are one of the many comorbidities affecting their patients. In that vein, adult pulmonologists coordinate with patient-centered medical homes but are often not the primary contributors. In addition, what constitutes multidisciplinary care teams and what capabilities they possess differ between institutions, so the format and availability of resources can also be expected to change during this transfer to adult care.

Communication

An important avenue to navigating these social and cultural changes during the process of healthcare transition is effective communication. This critical phase of health care is fraught with the potential for errors stemming from miscommunication or even a lack of communication. Patients and family members deserve preparation for this transition process, and this starts first with communication.

We have a duty to prepare patients for transition in general but also specifically prepare them for the ways communication in adult medicine differs from that in pediatric medicine. A family-centered approach is used in pediatrics, with communication going through the caregiver(s). Adult medicine has the opposite approach to communication, focusing instead on the patient and their autonomy, while placing family at the periphery. In addition, pediatrics utilizes a paternalistic approach to patient care, as opposed to adult medicine where shared decision-making is prioritized, and the patient-physician relationship is viewed as a partnership.

Not only should we be preparing patients for transfer and the anticipated communication changes, but we need to communicate among healthcare teams. There are a lot of key players involved in a patient with chronic illness transitioning from pediatric to adult care, and preparation and communication are likely the best ways to minimize the risk of errors. Communication should occur between physician and patient, between physician and family members, between pediatric and adult providers, with consulting teams, and with multidisciplinary care team members to ensure aspects such as insurance, medications, and equipment are addressed. This web of communication can quickly become tangled, as shown here (Fig. 3.3), unless there is thoughtful and purposeful organization, such as can be delivered by a dedicated medical home who curates transfer packets with the pertinent medical information.

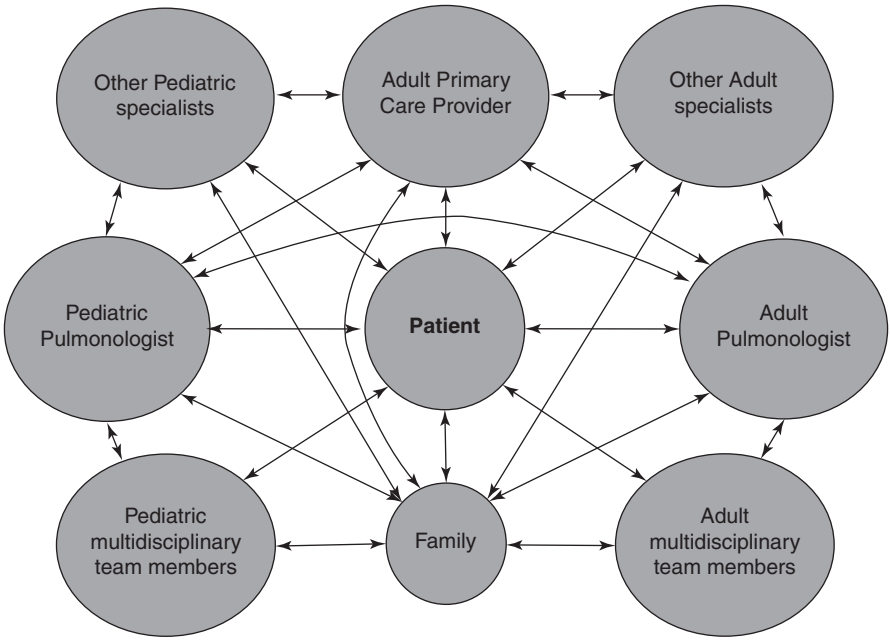

Fig. 3.3 The complexity of various active communication pathways during transition to adult care. Which pathways are emphasized or utilized most depend on the healthcare system

This degree of complexity in communication is not easy to manage, and the manner in which information is relayed varies according to healthcare system. Therefore, this is a learning opportunity for trainees. It is incumbent upon medical education training programs to be aware that the transition protocol and communication methods available at one institution do not apply to all healthcare systems, and trainees should be educated accordingly. Adult pulmonary trainees should be aware of what preparation and communication is expected in the earlier stages of transition, as this will enable them to emphasize and even clarify any confusion after the transfer to adult medicine occurs. Both adult and pediatric trainees should be educated about the nature of communication used by their counterparts, which could be leveraged on both sides to ease the shift from paternalistic conversations with caregivers to shared decision-making with young adults. In addition, if we teach patients how to be an equal partner in their care—starting in young adulthood—it makes it easier for them to become invested in the adult model of care.

Ultimately, this all is dependent upon communication. Without appropriate communication, knowledge of diseases and transition only does so much and cannot translate into improved patient care. Since it is clear that communication is convoluted during this period of transition, trainees should be given a holistic education about the transition process in order to prepare them for all variations they may encounter in practice.

Proposed Plan for Future Training

These transition topics provide a guideline for the content that needs to be included in a comprehensive curriculum for pulmonary trainees. In order to meet the needs of training programs and for the benefit of the aging pediatric population, a detailed framework should be developed. This framework should be detail-oriented enough to provide concrete direction but flexible enough to be feasible at all pulmonary training programs.

Pediatric Pulmonary Fellowship Transition Education

A model curriculum for pediatric pulmonary fellowship will include a variety of experiences that ideally will highlight all of the transition topics outlined above but also provide increased exposure to adult patients, adult pulmonary fellows and faculty, and the adult care model. Concepts of healthcare transition and adult care models should be integrated into didactics. Combined adult and pediatric transition case conferences, as well as appropriate clinical opportunities, should be made available to the fellows. Clinical experiences should include active participation in the healthcare transition process for a variety of patients, clinical exposure to a wide array of adult care models, and an optional elective in "Transitional Pulmonary Care." This multimodal approach (Fig. 3.4) increases the likelihood of a meaningful learning experience for each trainee and creates intentional educational interactions while maintaining an emphasis on experiential learning.

Adult Pulmonary Fellowship Transition Education

The model adult pulmonary fellowship curriculum would mirror the pediatric program to some degree. It would need to address healthcare transition topics, as well as increase exposure to adolescent patients, pediatric pulmonary fellows and faculty, and the pediatric care model. Like pediatric programs, the adult curriculum would include integrating concepts of healthcare transition and pediatric care models into didactics, creating combined adult and pediatric transition case conferences, and creating clinical opportunities for the fellows to experience pediatric and adolescent medicine.

However, the adult pulmonary curriculum would need to also incorporate common congenital and pediatric pulmonary diseases into their lecture curriculum, as medical knowledge in these topics is often cited as a source of discomfort or uncertainty for adult physicians [5, 6]. Clinical experiences for the adult pulmonary fellows would also need to entail inpatient and outpatient exposure to key transitional

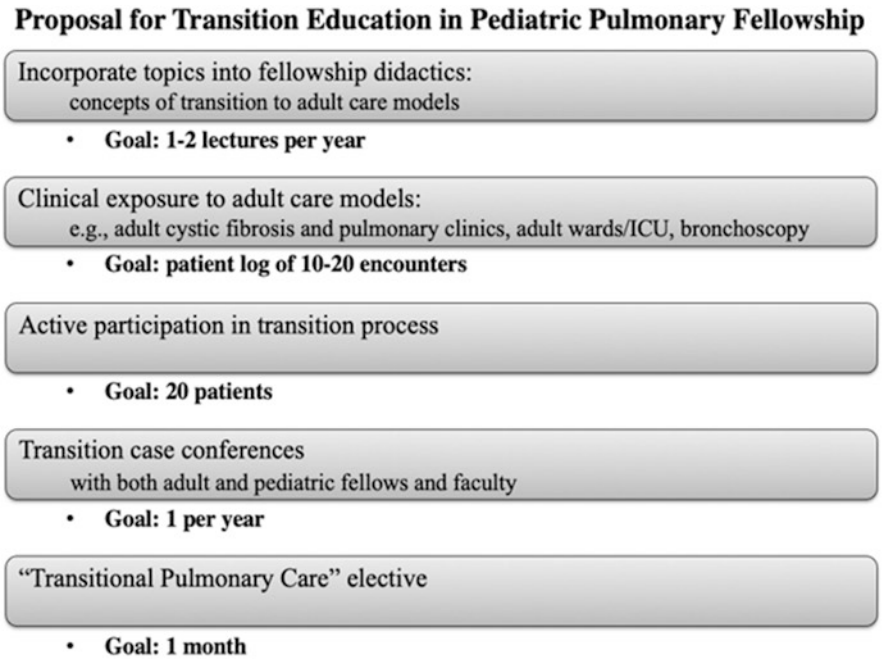

Fig. 3.4 Sample curriculum for pediatric pulmonary fellowship transition education

diseases. In addition, there should be opportunities to participate in the transition process itself, albeit what this consists of would depend upon individual site availability. This could range from simply making sample transition packets available for adult pulmonary trainees, or invitations to attend meetings or calls or workgroups, or ideally even a "Transitional Pulmonary Care" elective. The adult pulmonary curriculum also utilizes a multimodal approach (Fig. 3.5) but requires a more concerted effort to fill key knowledge gaps such as those in pediatric diseases and of the healthcare transition process.

Barriers

The barriers to creating and implementing educational curriculum such as these are multifactorial. First, we know that many institutions either lack an existing transition program or the quality is not adequate [3, 4, 7, 10]. It becomes difficult to educate fellows about ideal transition programs if you do not have one available to display. However, continuing a "top-down" approach to transition preparation, where you focus on building programs and policies but neglect to educate trainees, is also inadequate. Program development without simultaneously educating our graduating workforce guarantees insufficient preparation, because the trainees of

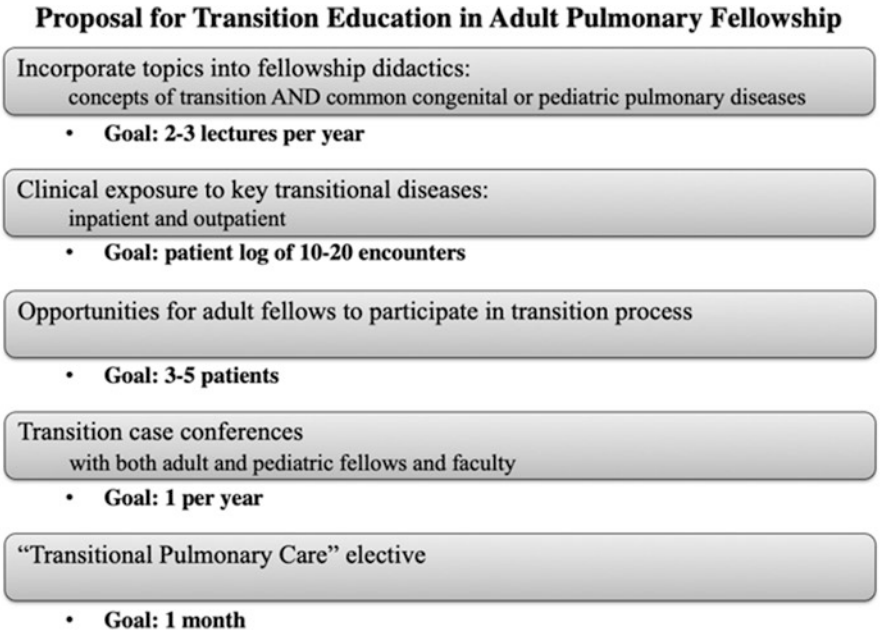

Fig. 3.5 Sample curriculum for adult pulmonary fellowship transition education

today are the attendings of tomorrow as well as the medical directors and administrators in the coming years. We should be implementing and fine-tuning transition programs but also staffing these programs with physicians adequately trained in transition health care.

Furthermore, it follows that if there is a lack of quality existing transition programs, there will likely be a shortage of faculty who are qualified to teach and model transition care. There is a great need for adult and pediatric faculty and trainees who are invested in the transition process. Passionate leadership is needed to ensure educators have the resources to build curricula. Passionate educators are needed to dedicate their time and expertise to developing the curricula. Passionate program leadership is needed to locate opportunities in which to place these burgeoning curricula. Last but not least, passionate trainees are needed who see the value in learning transition processes, because adult learning theory informs that learning is optimized when the material is viewed as relevant and immediately applicable [25]. Part of the hurdle for these educators and program leadership will include time and resource management: in lieu of adding additional tasks to training programs, strategic planning can morph current encounters or educational experiences into the deliberate practice of healthcare transition.

The last broad category of barriers to implementing healthcare transition curriculum includes geographical and institutional factors. Like all big changes, there should be institutional buy-in from program leadership, department leadership, and

even hospital leadership. Plus, not all training programs have close affiliation with an adult or pediatric counterpart and therefore would need to intentionally seek out these transition training opportunities.

Practical Strategies

The first practical strategy for implementing transition training is to simply have a plan. Articulating a transition training plan may be the initial step to garnering interest and buy-in from all pertinent parties. In addition, programs may need to recruit local experts with knowledge and interest in transition care. Often these local experts can be found in the fields of adolescent medicine, combined internal medicine-pediatrics, and family medicine, but expertise can be garnered in a variety of places.

Another key tactic to leverage for success is to use cystic fibrosis transition programs as models. These programs are the only current pulmonary transition protocols and as such should be used as a framework for developing and optimizing transition programs and transition curriculum.

Areas Requiring Future Attention

In order to properly implement a healthcare transition curriculum such as this, fellowship program leadership will need support. There is a role for professional societies or accrediting bodies to take on this charge, by developing education materials and setting expectations. The first step—ACGME incorporating healthcare transition into pediatric pulmonary program requirements—has occurred, but momentum must continue [17]. Another future challenge will be to develop ways of measuring the success of transition training. Being able to monitor curricular changes and measure their effects will be paramount to long-term success and iterative continual improvement.

Conclusion

As an increasing number of children with congenital or childhood-onset pulmonary diseases reach adulthood and transition to adult care, our pulmonary workforce needs to be prepared. Concerted effort needs to be made to ensure this preparation occurs. In addition to the transition protocols and continuing medical education that is already in place, it is time to develop a healthcare transition educational curriculum for our training programs. The way to ensure future success in transition programs is to begin empowering our trainees with the knowledge and skills necessary for success.

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