Conceptualizing the aims of adaptive learning is easy: Developing and implementing an effective program, however, proves more challenging divorced from the deep pockets of the technology sector. Yet, while large scale efforts to profile learners and direct every aspect of their continuing education may not yet be feasible, CME/CE providers can introduce foundational elements that support personalized learning, providing returns for learners, providers and patients. Our IPF Formative Assessment™ demonstrated that adaptive learning can be scaled cost-effectively and still offer measurable returns on investment. These returns are realized by learners, for whom clear insight on their individualized needs informs where their educational time should be focused; for providers, who create a means to continually compile and analyze needs assessment data as well as demonstrate educational effectiveness and value to commercial supporters; and to patients, who realize improved outcomes through targeted clinical education.

Introduction

Fundamental to adaptive learning is the ability to leverage technology to create a learning environment where educational content is provided to service the unique needs of the learner. This type of pedagogy is critical to effectively improve outcomes for patients with idiopathic pulmonary fibrosis (IPF), where patients often experience symptoms for more than one year prior to receiving their diagnosis with considerable pulmonary impairment and a high burden of comorbid conditions. Even with advances in IPF management and despite ongoing education in this area, clinical competency and performance are subpar resulting in poor patient prognosis.

To achieve these endpoints—i.e., a scalable and replicable adaptive learning platform effective in overcoming the varied professional practice gaps unique to IPF—ACHL solicited insights from various stakeholders to develop the IPF Formative Assessment™. This testing-based platform offered learners real time insight on their knowledge and competency levels compared to those of their peers, and delineated learner expectations between what is required of specialists versus that of referring or supportive care clinicians. It also effectively combated the Dunning-Kruger effect by presenting each learner’s knowledge and competency gaps in the context of their self-reported confidence levels. In learners for whom high reported confidence levels are refuted by low educational performance, the effect is profound.

Methods

Each question within the IPF Formative Assessment™ was indexed to measure difficulty, breadth and depth and then aligned to corresponding learner profiles ranging from needs improvement to expert. For each question, we assigned an expected performance level for a clinician based on discipline, specialty or practice setting. Using this algorithm, as learners progress through the testing platform, a "learning roadmap" dynamically populates to highlight areas of learning need and compiles recommendations for supporting education to address that need. This supplemental education included CME/CE developed by a variety of providers and available in the public domain. To evolve the IPF Formative Assessment™ beyond simply a testing platform for profiling, we simultaneously promoted reinforcement and reflection by developing rationales for each question with links to supporting evidence and/or embedded micro presentations by expert faculty. Upon answering each question, learners are shown if they are correct or incorrect, as well as an explanation, their corresponding confidence assessment and provided evidence to support the correct answer as reinforcement or reflection.

Results

To improve patient outcomes, the educational design needed to simultaneously address deficiencies in disease knowledge, suboptimal timing to diagnosis and treatment, inconsistent guideline adherence (specifically failure to engage the multidisciplinary team) and inadequate shared decision making (performing precision medicine) considerate of these complex patients. An adaptive learning platform was chosen given opportunity to pinpoint and address areas of greatest learner need based on their primary area of focus within the compendium of care.

Conclusion

Traditional education has proven ineffective in improving patient outcomes, where diverse needs across varied specialties, disciplines and practice settings challenge CME/CE providers’ ability to design wide sweeping, responsive education aligned to varied clinical domains and acumen, let alone patient needs and expectations. Effective, adaptive learning must not only create pathways to target education but increase learner awareness about their individual shortcomings, defined by their knowledge deficits as well as their inability to translate knowledge to practice and interpret patient needs.