





SPECIAL REPORT

COVID-19 has changed the way we think about training future pediatric hematologists/oncologists

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Abstract

COVID-19 has upended medical practice and education, but has also catalyzed enhancements in the field. Early on, a local group of researchers united to investigate the impact of the pandemic on pediatric hematology oncology (PHO). From this group, a regional educational series was established, "virtual-Symposium of Pediatric Hematology/Oncology of New York" (v-SYMPHONY). The implementation of these endeavors while PHO fellowship applications are declining has highlighted our perceptions that education, mentoring, and career expectations are not keeping up with the needs of current trainees. We describe our regional experience joining together to further education and research, and reflect on the current landscape of PHO training and workforce.

KEYWORDS

COVID-19, pediatric hematology oncology fellowship training

1 | INTRODUCTION

The COVID-19 pandemic has created unprecedented challenges across medicine. Sequential waves of infection have drastically altered our health care systems, clinical practices, and research programs.¹⁻³

We have watched our pediatric hematology oncology (PHO) fellows redeploy to COVID-19 units, capsizing their fellowship rotations. Clinical learning has been altered by social distancing, inpatient and outpatient restrictions, and the increased use of telemedicine. In some instances, the need for "COVID beds" closed PHO centers entirely, sending patients off to other institutions. Research activities were put on hold: labs closed, mice sacrificed, human subjects unavailable for study participation. Importantly for our fellows, social connectedness with peers and mentors has been disrupted. Remarkably, this extreme

Abbreviations: CT, Connecticut; IRB, institutional review board; NJ, New Jersey; NY, New York; PHO, pediatric hematology oncology; v-SYMPHONY, virtual-Symposium of Pediatric Hematology/Oncology of New York.

adversity generated innovation and collaboration in PHO research and education within the New York (NY)/New Jersey (NJ)/Connecticut (CT) tristate region, an early United States pandemic epicenter, making this group of authors hopeful for future training possibilities and job satisfaction among our fellows. However, when we learned that 43/176 (24%) of PHO fellowship positions went unfilled,⁴ affecting 32/72 programs nationwide (44%) for the 2021–2022 academic year, we were compelled to reflect upon the current state of our discipline and our regional experience during the pandemic.

These alarming results reflect a worsening trend within our field. PHO fellowship slots have doubled over recent decades, while applicant numbers have decreased.^{5,6} The roots of this trend are multifactorial. A recent analysis found that hematology/oncology is among the pediatric subspecialties where fellowship results in a loss in lifetime earning potential compared to general pediatrics.⁷ Currently, PHO fellows complete 1 year of clinical immersion, which is traditionally followed by 2 years of bench research. Historically, this was a time for fellows to develop their “niche” and hopefully, gain a competitive edge in a job market whose promotions value individual achievement as measured by grantsmanship and first author papers. However, traditional early career jobs are less available due to increased competition for research funding, increases in advanced practice providers, and overall decreases in medical reimbursements.⁶ Despite this, fellows continue to focus their second and third years of fellowship in bench or clinical research. For many, this may be their first research experience. Basic and clinical research has become far more complex, making it increasingly complicated to develop a meaningful research foundation and product during this timeframe.⁸ Also, research opportunities at their home institution might not align with their career aspirations, necessitating additional years of research at another institution to establish their niche. Some fellows seek further clinical training in a specific area of PHO, with increasing numbers of fellows opting to pursue additional years of subspecialty training.⁶ All of this has led to a shift in the fellow experience and may contribute to the declining numbers of applicants each year.

In addition, these perturbations have taken a toll on wellness, with nearly 40% of both PHO faculty and fellows self-reporting high levels of burnout.^{9,10} Alarming, 20% of PHO faculty overall and up to 36% of those with high levels of burnout report that they would not choose the same career again.⁹ Beyond job satisfaction, the grave effects of burnout on patient outcomes have been described.^{11–16} These challenges combined with a global pandemic, where society is facing its own mortality,^{17,18} may be influencing career decisions while examining work/life balance. As we contemplated the reasons why our field is struggling to attract applicants, we describe here how our regional experience collaborating during COVID may provide beneficial insights for guiding the future of PHO training on a larger scale.

2 | RESEARCH COLLABORATION

At the onset of the pandemic, the importance of describing the experience of children with cancer and COVID was quickly recognized. In the

NY/NJ/CT region, three separate clinical studies were independently created,^{19–21} each anticipating the need for multi-institutional data due to the rarity of COVID-positive pediatric oncology patients. At first, battle lines were drawn, as each attempted to claim the research opportunity. However, considerable diplomatic effort, motivated by the gravity and urgency of the pandemic, ultimately led to a group of PHO researchers from different institutions to support all three research studies. Despite this support, formidable challenges existed on an institutional level. Nothing was uniform about the different institutional review boards (IRB) processes: ranging from different criteria for “expedited” designation, to decision timelines, to data use agreement requirements. Some institutions balked at the idea of sharing “their” data. Leadership support at the individual institutions wavered, asking “what’s in it for us?” seeking financial compensation or authorship priority as criteria for participation. Everyone was short-staffed and stretched thin from the IRB staff, to clinical research associates (CRAs) and statisticians, to fellows and faculty. These barriers to performing research created significant stress, especially with the emphasis of publications on academic productivity and career development.⁹ Ultimately, the key to our success was identifying the unique characteristics among the individual studies, prioritizing fellow and junior attending leadership, and streamlining data collection in areas of overlap.

3 | EDUCATIONAL EFFORTS

These collaborative efforts led to the development of a regional PHO educational initiative. While medical education is governed by the American Board of Pediatrics and American College of Graduate Medical Education to ensure that core knowledge is presented uniformly to trainees, the application of medical education is still institution specific. Despite a common core of material, medical education tends to be organized at the institutional level, with each site creating in-house lecture series. With the arrival of COVID-19, in-person meetings were suspended, postponed, or transitioned to virtual meetings. In addition to altering education sessions, trainees were also isolated from peers and mentors not just institutionally but also regionally, nationally, and internationally as the ability to travel to conferences abruptly stopped. To overcome these challenges, the “virtual-Symposium of Pediatric Hematology/Oncology of New York” (v-SYMPHONY), a uniform regional collaborative educational series was established, bringing together clinicians from 20 disparate, and often competing, institutions.

The v-SYMPHONY didactic lectures are given by local disease experts from the participating institutions and are supplemented by fellow and junior faculty case presentations. The virtual lectures launched in September 2020 and weekly attendance averages 78 participants (range 62–105) from 20 institutions. Despite the proximity of eight fellowship programs within a 50-mile radius, no such collaborative effort had been previously attempted aside from a few quarterly symposia. Clinical case-oriented didactics last around 1 hour, but participants often linger on the call to continue the conversation with

additional clinical questions and cases to discuss. Lecturers have shared their presentations and email addresses with attendees allowing continued conversations beyond the weekly meeting. While the sessions are aimed at fellows, faculty have been benefiting as well. Multiple faculty participants have reached out to the organizers for the contact information of the expert lecturers to discuss difficult and complex cases and have invited the experts for joint tumor board meetings. While mentorship within institutions remains paramount, fellows benefit from additional interactions with, and mentorship from, experts at other institutions, especially those that specialize in rare diseases. Giving trainees and junior faculty the opportunity to present cases has provided them visibility and has supported engagement in regional mentoring relationships.

4 | IMPACT ON WELL-BEING

The weekly v-SYMPHONY lectures offer the opportunity to see and reconnect with familiar faces on the screen, offering reprieve from social isolation. We anticipate that this will have a significant social impact on the well-being of participants. Participants have commented on how much they are enjoying the lectures, that they look forward to subsequent lectures and topics, and emphasize their appreciation of fellow involvement and opportunities for career guidance from these sessions. Furthermore, informal conversations that stem from these lectures are likely to boost wellness and resilience,^{22,23} and potentially enhance learning by mitigating “Zoom fatigue.”²² Participants have the ability to develop personal learning networks within this regional community, which have the potential to further facilitate learning, mentorship and collaborations, as well as improve career satisfaction.²⁴ Future development of a regional mentorship initiative, in areas not available at one’s own institution, can arise from these meetings and support a stronger interconnected workforce.²⁵ While existing young investigator mentoring programs offered through our national and international societies have demonstrated success,^{26,27} these programs connect investigators across the country. We foresee that the development of a local mentoring network, currently in the brainstorming stage, will allow trainees and junior faculty to collaborate across institutions on a variety of academic projects. This type of regional initiative may help broaden fellows’ clinical knowledge beyond the diagnoses seen at their home institution and introduce them to different research methodologies.²⁸ However, such an endeavor will require significant institutional support and planning, as well as input from fellows. We have begun soliciting this input from both fellowship program directors as well as fellows to help ensure our goals are attainable, while also meeting the needs of local programs and trainees. The hope is that this local mentoring network, given the geographic proximity, will improve the frequency of interactions and promote multi-institutional collaborative scholarly productivity.

5 | ACADEMIC PRODUCTIVITY

Continued scholarly collaborations focusing on opportunities for fellows and junior attendings have resulted in multi-institutional publications.^{19,20,29} Ironically, in a field where consortium treatment studies are the norm, regional collaborations remain relatively uncommon. A major goal of this group is to create opportunities for PHO fellows to conduct multi-institutional scholarly projects that otherwise could not be accomplished at individual institutions. We seek to streamline the institutional research review process to facilitate minimizing overlap in study-specific content, distributing leadership and support roles, maximizing institutional “cross-talk” and mentorship. We hope this will foster opportunities for fellows while providing additional avenues for collaboration and career growth in a field struggling to attract a new generation of providers.

6 | IMPLICATIONS FOR FUTURE TRAINEES

In a time of quarantine and isolation, we have fostered a collaborative regional community that resulted in enhanced education and research initiatives. We believe this experience speaks in part to what potential applicants may find lacking in our field. The obstacles we have faced during the pandemic within the microcosm of our region also hold true nationally. PHO staff are troubled by a lack of community, academic competition with over-reliance on individual academic success, and bureaucratic regulatory systems that make inter-institutional research challenging. Nevertheless, we believe that a model that values collaboration can become a sustainable model for the future.

To ensure the success of the lecture series, we have used real-time feedback to optimize the v-SYMPHONY experience for participants (e.g., we have altered the timing of the weekly lectures to better accommodate participants). Moving forward, we have plans for a 1.5–2-year rotating curriculum, which will afford fellows the opportunity to engage with each topic more than once during their training. While fellows have an abundance of required educational activities as part of their routine fellowship curricula, v-SYMPHONY offers an optional learning experience. Our opt-in approach aligns with Knowles’ Andragogy and Adult Learning Principles³⁰ for self-directed learning, internal motivation, and relevance to enhance participant learning. Thus far, we continue to attract a consistent number of participants, reinforcing our approach as a sustainable model going forward. While v-SYMPHONY continues to run in its first year, we are actively planning programmatic changes and enhancements. All lectures have been recorded and we are building a website to distribute the series. We will distribute end-of-the-year evaluations to assist with improving the curriculum, and we are currently developing a regional career day to provide practical job search guidance, such as CV and cover letter advice, as well as presenting the variety of clinical, academic, and scholarly paths represented in our field.

While born out of necessity, these initiatives foster autonomous motivation³¹ and enhance wellness and education. With a deliberate shift from individual achievement to a model of success based on collaboration and a sense of community, we believe that we can affect a positive change on education, scholarship, career development, and wellness within our field. While ours is a region rich with PHO programs, this can be adapted and implemented elsewhere to improve connectivity, collaboration, and community. We hope that by concentrating on these areas, we can redefine the expectations for a successful career, experience a boost in morale, and shift the perception of our field to help strengthen our workforce in the future.

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