



Careers in Pediatric Hematology/Oncology

**Prepared by
The American Society of Pediatric Hematology/Oncology**

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ABOUT ASPHO

The American Society of Pediatric Hematology/Oncology (ASPHO) is dedicated to the professional development and interest of subspecialists advancing the care of children, adolescents, and young adults with blood disorders and cancer. ASPHO is a multidisciplinary organization that promotes research, education, treatment, and professional practice on behalf of member practitioners, fellows, faculty, investigators, advanced practice providers, administrators and other professionals in the pediatric hematology/oncology field.

ACKNOWLEDGEMENTS

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Training Requirements

- 4 years of medical school
- 3 years of pediatric residency
- 3 years of hematology/oncology fellowship
 - 1st year is purely clinical (inpatient and outpatient clinical work as well as laboratory medicine)
 - 2nd and 3rd years are predominantly research based (basic science, clinical research, other academic pursuits such as quality improvement and patient safety, medical education, equity science, implementation science, and more)

Potential Additional Expertise Training

- A 4th year of training is becoming more commonplace for further research exploration or sub- specialization (Bone Marrow Transplantation, Neuro-Oncology, Late Effects and Survivorship, Palliative Care, Hemostasis/Thrombosis, Transfusion Medicine)
- Individuals are now considering complementary advanced degrees including but not limited to a Master's in Public Health, Master's in Medical Education, Master's in Science.



Clinical Activity – What types of medical disorders we see

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| Hematology | <ul style="list-style-type: none"> • Red cell disorders (Anemias, Hemoglobinopathies (Sickle cell anemia, thalassemia), Enzymopathies (G6PD, PK deficiency) • White cell disorders (Neutropenia, Lymphopenia, Leukocytosis) • Platelet disorders (ITP, Thrombocytosis, inherited disorders of platelet function) • Hemophilia, Von Willebrand Disease and other bleeding disorders • Thrombosis • Bone marrow failure syndromes |
| Oncology | <ul style="list-style-type: none"> • Leukemia (ALL, AML, CML, JMML) and Lymphomas (Hodgkin’s and various non-Hodgkin’s) • Solid Tumors (Neuroblastoma, Ewing sarcoma, Wilms Tumor, Osteosarcoma, Retinoblastoma, Rhabdomyosarcoma, Hepatoblastoma) • Neuro-oncology (Medulloblastoma, astrocytoma, gliomas) • Survivorship • Palliative Care |
| Bone Marrow Transplantation and Cellular therapy | <ul style="list-style-type: none"> • Indications can include: malignant and non-malignant conditions; both hematologic and non-hematologic Cellular therapy such as CAR-T cell therapy • Immunotherapy |
| Transfusion and Laboratory Medicine | <ul style="list-style-type: none"> • Hematopathology • Blood bank • Apheresis and/or Therapeutic Plasma Exchange |
| Continuity Clinic | <ul style="list-style-type: none"> • Includes care of those with both chronic conditions and acute conditions • Includes diagnostic work-ups and long term continuity • Preparation for transition of care to adulthood for chronic conditions |

Academic/Scholarly Activity – What we do to advance the field

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| Scholarly Activity | <ul style="list-style-type: none"> • Basic Laboratory • Clinical research • Translational Research • Quality Improvement • Medical Education Scholarship • Health Equity Research • Clinical Informatics • Implementation Science • MPH or Master of Science in Clinical Investigation |
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Other Opportunities for Professional Growth

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| Teaching residents/medical students | <ul style="list-style-type: none"> • Formal lectures • Teaching on rounds or while doing consults • Conference attendance |
| Advocate for children with rare, chronic diseases | National Society Involvement: e.g. ASPHO, ASH, ASCO, PBMT, HTRS |
| Community involvement | <ul style="list-style-type: none"> • Local support systems involvement such as local cancer organizations or rare disease chapters • Camp for patients with oncologic or hematologic diseases |

PHO Subspecialist Testimonies

Second Year Peds Hem/Onc fellow who did a General Pediatrics residency in the Bronx and planned to be a general pediatrician. She was inspired by Hem/Onc attendings at her residency program who were: “medically aggressive, evidence-based, smart, available and loyal to their patients.”

Senior Peds Hem/Onc fellow: “I was diagnosed with Non-Hodgkin Lymphoma at 13 years of age, underwent treatment and became interested in helping others as my Oncologist helped me.”

Second Year Peds Hem/Onc fellow who went to medical school to be a small-town pediatrician who only sees outpatients. However, during her 3rd year of medical school, she realized that she enjoyed the acuity of the hospital setting. She thought that Pediatric Hem/Onc gave her the “best of both worlds” - continuity of care as well as the opportunity to take care of hospitalized patients. She also states that “Pediatric Hematology/Oncology requires you to be a good general pediatrician because the diseases we treat and medications that we use affect all organ systems.”

Mid-Career Peds Hem/Onc Physician: “I wanted to practice at a smaller institution/clinical practice.... as a “generalist” - I can go from an extremely difficult, challenging, emotionally draining patient in one room to a straightforward patient, with an easy diagnosis and treatment in the next.... I get to treat a wide variety of patients – oncology, sickle cell, hemophilia/vWD, thrombosis patients, all types of anemias and platelet disorders. I am just as excited to learn about new therapies and diagnostic tools as I was when I left fellowship.”

Late Career Peds Hem/Onc Physician: “Academic medicine has always had a great appeal to me because of the opportunity to help not only patient/families directly, but also patients/families I will never meet through innovation.”

Early Career Peds Hem/Onc Physician: “[My] favorite part of my job is my amazing patients and their families. While I enter their lives at a very scary time, it is in an honor and a joy to take them through the journey and see them thriving months to years later. Even when the outcome isn’t as we planned, I have moments with the patients and families that are unique, wonderful, and memorable. To be let into their

world at these vulnerable times and to be trusted with the care of themselves/their child is such a gift.”

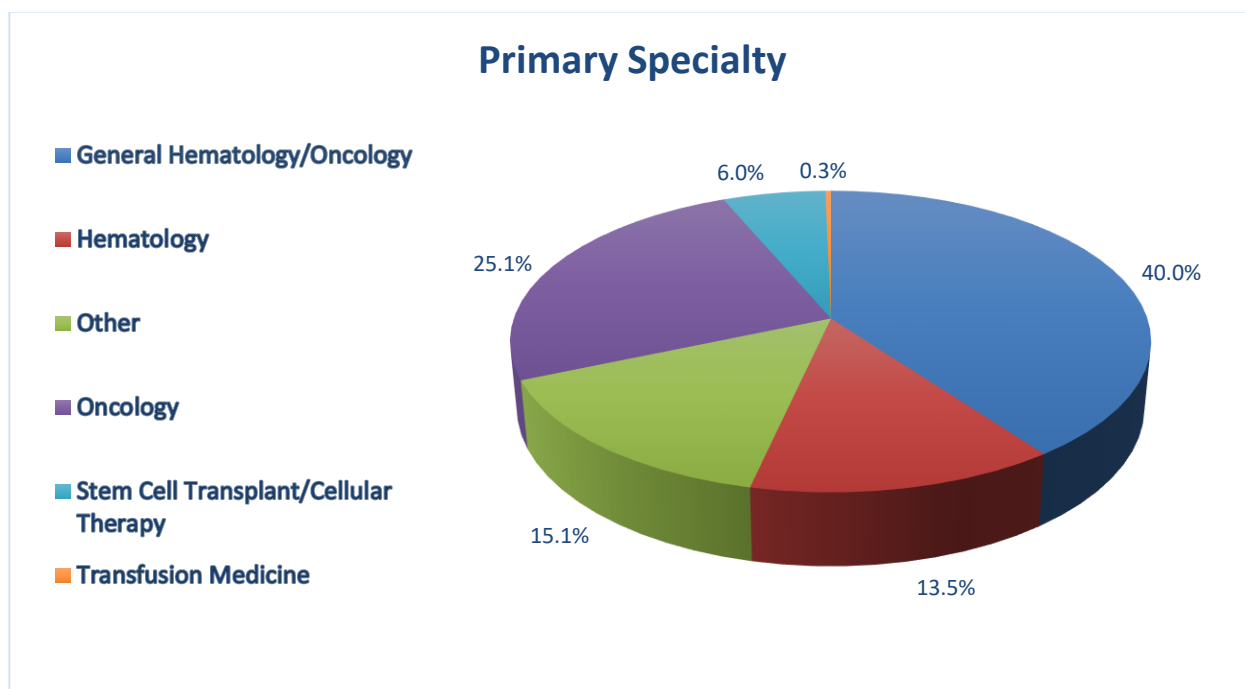
Mid-Career Peds Hem/Onc Physician: “I not only envisioned an academic career in pediatric hematology-oncology from earlier on in my medical training, but I also spent an enormous amount of personal resources to achieve it. For me, becoming a certified pediatric hematologist-oncologist involved migrating from Uganda to England, and then to the USA where I had to repeat a pediatrics residency before joining a pediatric-hematology oncology fellowship program. It took me twelve years from graduating from medical school to graduate from fellowship!”

Early Career Peds Hem/Onc Physician: “It is rewarding to be able to make a difference in the lives of patients daily and also have positive experiences with not only patients but also trainees and colleagues.”

Mid-Career Peds Hem/Onc Physician: “I love being in the thick of so many things – running to see a patient in my clinic after a busy morning.... writing policies or interpreting test results and taking calls from colleagues and friends about a difficult case or preparing a lecture.... I really enjoy the variety in my specialty. And I love sharing all this knowledge with learners of every kind.”

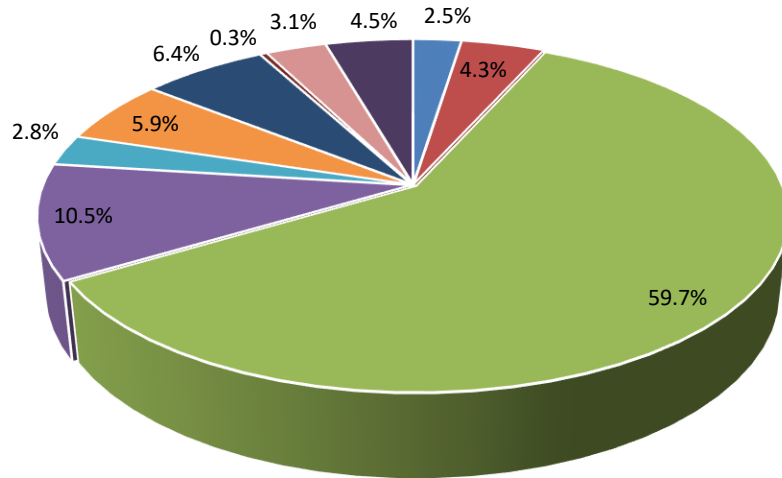
Mid-Career Peds Hem/Onc Physician: “This is my dream job! That I can care for children with cancer and be part of an incredible cancer center is a privilege. Then absolute cherry-on-top that I get to work in phase 1 trials and see exciting laboratory findings make it to the clinic in first-in-children trials and beyond.”

ASPHO Community



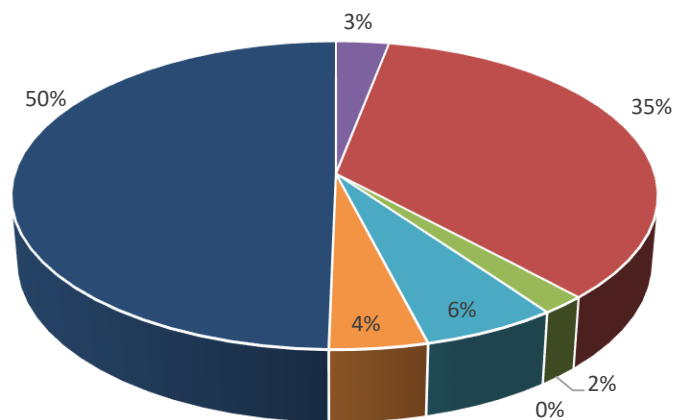
Primary Responsibility

- Administrative
- Basic Science Research
- Clinical
- Clinical Research
- Director of Clinical Services
- Division Director
- Other
- Teaching
- Training Director
- Translational Research



Work Setting

- Government/Military Practice
- Hospital Based/Employed
- Industry
- Non Profit Medical Group
- Other
- Private Practice Office
- University/Academic Practice



Examples of “A Month in the Life” for Various Career Tracks*

**clinical service time requirements vary by program and type of grant funding*

Basic Science/Translational Research Faculty

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| Week 1 | Inpatient Oncology hospital service for the week |
| Week 2 | Lab time performing experiments, weekly lab meeting, once monthly journal club, time writing papers and grants, one half day oncology clinic |
| Week 3 | Lab time performing experiments, research meeting with the clinical team, weekly lab meeting, one half day clinic for phase 1 research studies |
| Week 4 | Lab time performing experiments, one half day clinic for phase 1 research studies, weekly lab meeting, |

Inpatient and Consult Hematology/Oncology hospital service attending ~5 weeks/year (includes overnight and weekend call)

Clinician Educator Faculty (with Hematology Focus)

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| Week 1 | Hematology/Oncology outpatient clinic for the whole week -> precept fellows, medical students, NPs, see primary oncology patients, once monthly hospital committee participation |
| Week 2 | Hematology Consult hospital service, one half day subspecialized hematology-specific continuity clinic, once monthly divisional team meeting |
| Week 3 | Hematology Inpatient hospital service, one half day subspecialized hematology-specific continuity clinic |
| Week 4 | Administrative time for program building and education opportunities with the medical school, once monthly clinical team meetings, available for outpatient infusion center urgent needs during the day, one half day subspecialized hematology-specific continuity clinic |
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Inpatient and Consult Hematology/Oncology attending ~10 weeks/year (includes overnight and weekend call)

Q&A about Careers in Pediatric Hematology-Oncology

How many Pediatric Hematology/Oncology specialists work in the United States? What is the current market for these specialists? Will more Hematology/Oncology specialists be needed in the future?

Over 4,000 Pediatric Hematology/Oncology specialists have been certified by the American Board of Pediatrics since the first sub-board examination was administered in 1974. An estimated 2,929 board-certified Pediatric Hematology/Oncology specialists (compared to over 56,000 general pediatricians) currently practice in the United States, most on medical school faculties or based in hospitals.

The need for physicians trained to diagnose and treat children with cancer and hematologic disorders remains strong. Unfortunately, the incidence of virtually all of these diseases (sickle cell disease, hemophilia, childhood cancer) is not decreasing, and some are even becoming more common. Moreover, the diagnostic and treatment strategies, although more effective, are increasingly sophisticated, requiring specialized physicians to care for these children.

Is Hematology/Oncology depressing?

You will find that those in our field may see hematology/oncology care differently than the outside world. While cancer remains the leading cause of death from disease in children younger than 15 years old, survival rates for most childhood cancers have increased; almost all children are now treated with curative intent and in most cases treatments are successful. Cure rates for all childhood cancers are approximately 75%, and most centers have “off therapy” programs to follow these children. Death rates for other diseases that pediatric oncologists-hematologists treat (e.g., hemophilia, sickle cell disease, thalassemia) have declined dramatically, so many children with hematologic disorders are expected to have a nearly normal lifespan.

There will continue to be patients that are treated by our field that face life altering and life-threatening challenges – some of which are insurmountable by the tools we have in our toolbox. This is often the drive that motivates those in our field to advance the care we can provide. In addition, pediatric Hematology/Oncology specialists now practice as part of multidisciplinary teams, with the whole team providing care and comfort to dying children and their families. This gives us a chance to debrief with others caring for these patients as well as lean on the specialties of various fields. Many find it rewarding to care for patients with complex diseases and to provide long-term care for patients during treatment and after therapy. The emerging field of palliative care provides extensive support and resources for dying patients, families, physicians, and the treatment team.

What is the lifestyle of a Pediatric Hematology/Oncology specialist?

Personal time and family life are important for every person. Despite the hard work, most Pediatric Hematology/Oncology specialists are able to design their career so that their professional life is well balanced with leisure and family time. However, virtually all work more than 40 hours a week, so those considering a Pediatric Hematology/Oncology career should be prepared to work hard during training and thereafter. Refer to the ‘day in the life’ section to learn about what your time might be spent doing depending on what type of position you have as a peds hem/onc specialist. Know that some of the work is flexible in timing – which may be different than other subspecialties which are limited to hours ‘on the clock’ or physically spent in the hospital.

What about income?

Pediatric Hematology/Oncology specialists generally earn salaries similar to those of other pediatric subspecialists. Salaries in private practice are often somewhat higher than in the academic arena, although less so than in previous years. However, most employment opportunities for Pediatric Hematology/Oncology specialists offer a comfortable lifestyle and are successful at attaining work/ life balance.

What are some of the career choices for a Pediatric Hematology/Oncology specialist?

Though widely varied, the most common pathway after completing a fellowship is a position as an instructor or assistant professor of pediatrics in an academic Pediatric Hematology/Oncology division. Primary duties, which vary from day to day and are often unpredictable (one reason it is so interesting), are diagnosing and caring for children with blood diseases and cancer; teaching medical students, residents, fellows, and other healthcare professionals; and conducting clinical research through case studies and clinical trials. Most teaching activities are performed one-on-one in the clinic or at the bedside, rather than as didactic lectures in the classroom (although pediatric hematology-oncology specialists give many of those, so good public speaking skills are important). Most pediatric hematology-oncology specialists are part of a team of physicians, advanced practice providers (nurse practitioners and physician assistants), nurses, case managers, social workers, and other healthcare professionals in an academic group practice.

A small but important subset of pediatric hematology-oncology specialists, after completing their standard fellowship training, devote their time to laboratory-based duties, which sometimes follows or includes obtaining a doctoral degree. This research is usually performed in basic science laboratories. These individuals usually spend the majority of their time working in a basic or translational research area of pediatric hematology-oncology. A smaller but important percentage of their time is devoted to the clinical duties outlined above. Because determining the causes of these diseases and discovering improved treatments rest in better understanding of the fundamental biology of cancer and the blood, it is logical that some individuals in the specialty engage in laboratory research. Having protected time for research time almost always requires grant support to provide salary support.

Other researchers focus on clinical investigation. These individuals often receive extended training in epidemiology, biostatistics, and protocol design, and some obtain a Master of Public Health, Master of Science in Clinical Investigation, or research certificate training program. They conduct studies to better understand the cause and nature of disease and to develop improved treatment strategies through randomized clinical trials or health services research—an exciting pathway for many young Pediatric Hematology/Oncology specialists.

Also for consideration are a range of opportunities which may be appealing to some pediatric hematology/oncologists. These are administrative leadership roles such as division chiefs, department chairs, and deans, while some may wish to pursue medical education and become Fellowship Program Directors or other roles within the university. Of note, increasingly, divisions without academic centers require some faculty member support in doing quality improvement and patient safety work – which can be a niche that you can acquire some skills in. Being a part of an academic institution can also include scholarly work that touch on various parts of the medical field that are not directly linked to your own patient care as a peds hem/onc doc such as healthy equity scholarship, faculty development, undergraduate medical education, and other systems-based healthcare improvement work. Depending on the location, others may pursue the private practice of Pediatric Hematology/Oncology or are employed by pharmaceutical and biotechnology firms and serve in a myriad of roles.

In addition, opportunities exist for the pediatric hematology-oncology specialist to travel and participate in exciting scientific meetings, to network, and become friends with colleagues from around the world. Community and volunteer activities with patient support groups, research associations, and disease foundations often provide additional reward. A common community experience is a summer medical disease focused camping experience, such as camps specifically designed to serve children with cancer.

Is it possible to further subspecialize in some aspect of hematology or oncology after receiving general training?

Many pediatric hematology-oncology specialists care for patients with diverse diseases- both hematologic and oncologic and see patients from both arenas. However, others, especially those on larger medical school faculties or for whom research constitutes a significant portion of their duties, focus on the field in which they develop special expertise. Many individuals emphasize clinical oncology, and some narrow their expertise specifically to solid tumors or to a specific type of tumor (e.g., neuroblastoma, bone tumors). Others primarily care for patients with acute leukemia, neuro-oncology (brain tumors), cancer pharmacology, or development of experimental agents. Some Pediatric Hematology/Oncology specialists devote most or all of their time to diagnosing and caring for the hematopoietic stem cell transplant patient and conducting clinical, translational, or laboratory research in transplantation. Some individuals primarily care for nonmalignant hematology patients and become experts in sickle cell disease, hemophilia, thrombotic disorders, or quantitative or qualitative disorders of neutrophils. Hematologists who do not deal with oncology generally practice at larger academic medical centers unlike the more delineated hematology board certification from oncology board certification that is present in the internal medicine world. As pediatric hematology and oncology therapies become more complex, subspecialists that have a research focus may develop parallel clinical programs to bring phase 1 developmental therapeutics to the bedside, start immunotherapy programs or gene therapy programs.