

## Overview: The Application of Radiology in Pediatric Oncology

The Division of Pediatric Hematology and Oncology works closely with pediatric radiologists to care for patients.

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The pediatric oncologists at MassGeneral Hospital for Children provide comprehensive care for children with all types of cancer. They rely on subspecialized pediatric radiologists to interpret imaging studies and help make clinical decisions at all stages of disease from initial diagnosis to long-term surveillance.

Examples of the role of pediatric radiology in the management of children with cancer include:

- **Initial diagnosis**

A six-month-old boy with a swollen belly undergoes an abdominal ultrasound that demonstrates a large mass with calcifications in his liver that accounts for the swelling. Images are consistent with diagnosis of hepatoblastoma.

- **Cancer staging and treatment planning**

A 14-year-old boy with Hodgkin's lymphoma undergoes full-body PET-CT imaging at the time of diagnosis, which reveals disease in his neck, mediastinum and spleen. After chemotherapy, he undergoes follow-up PET-CT imaging that shows complete response to treatment and no need for additional radiation therapy.

- **Surveillance imaging after treatment**

A 10-year-old girl with osteosarcoma is monitored after treatment with an annual chest CT scan performed using a low-dose technique to minimize radiation exposure. The protocol is customized to her size, weight and medical history.

- **Imaging young children without the need for sedation/anesthesia**

A four-year-old boy with a craniopharyngioma is monitored for tumor response during radiation treatment using a rapid brain MRI protocol that can be performed while he is awake without the need for sedation medications.

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— Howard Weinstein, MD

Chief, Pediatric Oncology, MassGeneral Hospital for Children

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- **Whole body screening MRI of children with genetic cancer predisposition syndromes**

A 15-year-old girl recently diagnosed with a genetic syndrome associated with an increased risk of developing paragangliomas undergoes a whole body MRI scan using a technique to look for tumors throughout her body. It can be performed in children who are awake without any ionizing radiation.

"We consider the pediatric radiologists integral members of our team," says Howard Weinstein, MD, chief of Pediatric Oncology at MassGeneral Hospital for Children. "We work with them to get the most complete information to resolve multiple questions and collaborate on many steps in diagnosis, staging and treating. They are vital to what we do."

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### FOR MORE INFORMATION

[massgeneralforchildren.org/cancer](http://massgeneralforchildren.org/cancer) | [massgeneralimaging.org/pediatric](http://massgeneralimaging.org/pediatric)