

Fertility and Other Considerations When Treating Cancer in Adolescents and Young Adults

When young people are diagnosed with cancer, proton therapy helps preserve what matters.

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Tumors that affect adolescents and young adults ages 15 to 39, often referred to as AYA cancers, tend to be different than those that affect adults.

Cancers that older adults get are often associated with lifestyle factors such as smoking, alcohol consumption and sun exposure. Except for cancers that are associated with inherited risk or gene mutations, researchers are not sure what causes most tumors affecting young people. They appear to arise spontaneously.

While the tools used for treating cancer in younger patients — surgery, chemotherapy, radiation and immunotherapy — are the same ones used to treat all patients with cancer, there are some special considerations when it comes to tumors in young people.

What is fertility preservation?

“One major consideration is fertility preservation,” said [Lisa Ni, MD](#), who treats children and adults with brain and central nervous system cancers at Fred Hutch Cancer Center – Proton Therapy. “These patients are at a stage of life when having the option to have children is still incredibly important. So, when we develop a treatment plan, we want to use techniques, including proton therapy, that can avoid impacting hormones and reproductive organs as much as possible.”

Fertility can be impacted by chemotherapy, radiation therapy or surgery. And it’s not just tumors that occur in the reproductive organs themselves that can affect fertility, but brain and head-and-neck cancer treatment as well.

Radiation to these areas can impact hormone-producing organs – including the hypothalamus, pituitary gland, thyroid and parathyroid glands. Hormones are a necessary element of reproduction.

“It’s imperative that we are involved early in the multi-disciplinary discussion prior to the start of any therapy to weigh in on anticipated risks and to allow for informed decision making as patients explore the different options available,” said radiation oncologist [Stephanie Schaub, MD](#), who treats children and adults with sarcoma.

“Proton therapy is a crucial tool in preserving fertility, because we’re able to avoid delivering radiation to the healthy tissue responsible for fertility, be it hormone-producing or reproductive organs,” said [Ralph Ermoian, MD](#), who sees childhood and adolescent brain tumor patients at the proton therapy facility. “Even with hormone replacement therapy after treatment, for young women especially, there can still be fertility issues. When we plan ahead with the surgeon and are able to relocate an ovary out of the path of radiation, we can minimize harm even more. These treatment decisions are best made at places with more experts at the table, such as at Fred Hutch and Seattle Children’s Hospital.”

Patients are often referred specifically to Fred Hutch – Proton Therapy to have the discussion about fertility preservation, said Layne Chapple, ARNP, who also sees young patients at the proton therapy facility.

“Conversations about hormones and fertility are important to this population,” Chapple said. “It’s much more immediately relevant to them than to young children or older adults, however, we discuss fertility preservation even with very young children and their caregivers, because even though they may not think of it at the time, the decisions they make at the time of treatment will affect them in the future.”

Can proton radiation reduce long-term side effects?

Another consideration that plays a larger role in young people is mitigating the risk of long-term side effects.

“For many of the AYA cancers we treat, there is hope or even the expectation for a cure,” Ermoian said. “When a patient has a long life ahead of them, causing the fewest side effects is especially important. Side effects from radiation therapy could include cardiac, lung or kidney disease later in life, as well as tumors caused by treatment. So, the option to use proton therapy to minimize that risk is important. We want to prevent long-term medical issues and the burden they create as much as possible for those patients with decades of their lives ahead of them.”

Many tumors caused by treatment begin to arise seven to 15 years after treatment, but Fred Hutch has data from patients who had total body irradiation 30-plus years ago that shows they have an increased risk of cancer.

Because this risk extends decades into the future, reducing it as much as possible for today’s young patients is critical.

What are the emotional impacts of AYA cancers?

“Young people are just hitting their stride in life, and a cancer diagnosis can feel like they are being thrust back into the dependency of their childhood,” Chapple said. “They may need more emotional help, or more resources to address their unique needs. Many of the questions our AYA patients ask during their consults revolve around how their life goals will be affected, how their physical function may be affected, whether they can still go to school or college or even return to their career.”

The providers who treat AYA cancer patients recommend that young people be seen at Fred Hutch’s [Survivorship Clinic](#) following their treatment.

“The experts there will provide them with advice about what to expect, including side effects, and how often they will need follow-up screening,” Ni said. “They can also refer patients to social workers, mental health providers and nutrition experts. These resources will help patients do better in the long run.”

Resources for AYA patients with cancer

As with all patients dealing with cancer, it’s also important to consider environmental risks and reduce them as much as possible.

These include exposure to sun or smoking, alcohol consumption and unhealthy dietary choices but can also include work exposures such as radon gas or certain chemicals.

After surviving cancer, patients often want to maximize their health and wellbeing going forward. The Survivorship Clinic can help with that, as well.

Other useful resources include Fred Hutch’s healthy eating website, [Cook for Your Life](#), [nutritional counseling](#) and information on [sexual health](#) after cancer.

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