

Doctors aim to save fertility of kids with cancer

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In this photo taken Jan. 19, 2011, nine-year-old Dylan Hanlon laughs while playing a game on a portable computer at home in Holiday, Fla. Dylan is currently undergoing chemotherapy for Ewing's sarcoma. (AP Photo/Chris O'Meara)

(AP) -- The treatment beating back 9-year-old Dylan Hanlon's cancer may also be destroying his chances of fathering his own children when he grows up.

Upset that doctors didn't make that risk clear, his mother, Christine, tracked down an experiment that just might salvage Dylan's future fertility. Between chemo sessions, the pair flew hundreds of miles from their Florida home to try it.

Many of the cancer treatments that can save patients' lives also may cost

their ability to have babies later in life. Young adults have options - bank some sperm, freeze embryos or eggs. Children diagnosed before puberty don't.

With [childhood cancer](#) survival reaching 80 percent, there's a growing need to find ways to preserve these youngsters' fertility - and patients like Dylan are on the front edge of research that's banking testicular cells and ovarian tissue to try.

"There are viable options, and they are on the doorstep," says Dr. Kyle Orwig of the University of Pittsburgh. He leads the study Dylan joined to store the [stem cells](#) boys harbor that later on will produce their sperm. The idea is to eventually transplant the cells back.

It may sound odd to discuss fertility issues still decades away even as parents agonize over whether a child will live or die.

Yet it can be hopeful: "We expect they'll live that long," says Dr. Teresa Woodruff of Northwestern University's Oncofertility Consortium, who works with girls' ovarian tissue. "If we protect their fertility now as a 9-year-old, we hope ... that tissue we've guarded can be used" when they're grown.

Researchers say several dozen boys and girls, including some babies, so far are part of these early-stage experiments at a handful of medical centers.

And while there are no guarantees, Dylan's mother rests easier knowing "that I'm doing all I can do" for his future.

About 10 percent of the 1.5 million people diagnosed with cancer last year were younger than 45, more than 15,000 of them under 20. Woodruff says perhaps half of younger patients risk either some

immediate fertility damage, or for girls the prospect of menopause in their 20s or 30s. It depends on the type of cancer and treatment. Numerous forms of chemotherapy, high-dose body-wide radiation, radiation aimed at the pelvis and some surgeries can leave patients unable to procreate.

Even young adults too often aren't told in time about fertility preservation options, despite guidelines issued in 2006 urging doctors to discuss them upfront.

Where does that leave the youngest patients? Boys don't produce sperm before [puberty](#), ruling out sperm banking. Girls are born with all the eggs they'll ever have but those are in an immature state, so egg-freezing isn't an option.

Enter the new research.

In Holiday, Fla., a lump in Dylan Hanlon's chest turned out to be Ewing's sarcoma, a rare cancer, fortunately caught early. The prescribed nine months of chemotherapy began in September, turning fourth grade into home-schooling. Dylan has struggled with side effects and infections during every-other-week hospitalizations for the chemo. But it seems to be working; his mother was told the prognosis is good.

Then in December, Christine Hanlon stumbled across information from the patient advocacy group Fertile Hope that revealed Dylan's chemo bears a high risk of infertility. She began hunting options. The first study she found accepts only the newly diagnosed.

An only child, Dylan "loves babies. He told me one day he was going to have 10 kids," Hanlon says. Learning the risk late "broke my heart. ... He might have lost an opportunity."

Finally she tracked down Orwig, who oversees a multi-hospital program called Fertility Preservation in Pittsburgh that offers services to men, women, boys and girls.

Orwig and other researchers have restored fertility in a range of male animals - mice, rats, pigs, dogs - by storing and reimplanting sperm-producing stem cells.

Testing the technique in boys requires biopsy-style removal of a small amount of testicular tissue. No one knows how many stem cells are floating among the millions of other cells frozen from that sample, or how many are necessary. But Orwig says the more tissue collected, the better.

Dylan joked, "So Ma, I'll be a guinea pig?" Hanlon says he easily agreed.

Most of his sample was frozen, for Dylan's later use if he wants it. The rest went to Orwig's lab for research - and two weeks later came the good news that Dylan's tissue indeed harbored stem cells despite a few months of chemo.

Key to this approach will be multiplying stored stem cells so that many more can be injected back, adds Dr. Jill Ginsberg of Children's Hospital of Philadelphia, who has banked cells from more than 25 boys in her own study. Her research partner at the University of Pennsylvania is working on that step.

Girls pose a different challenge.

Some young women have had strips of their ovaries removed and frozen before cancer treatment, and then transplanted back a few years later. It's considered experimental even for adults, with 13 births reported worldwide so far, says Northwestern's Woodruff.

Now researchers are banking the same tissue from girls. It requires laparoscopic surgery. Storing enough isn't the issue: Egg follicles are progressively lost through life, so a girl harbors more than even a 20-something, Woodruff says. A bigger unknown is how long they can be frozen.

Also, there's a possibility cancer cells could lurk in frozen tissue. So Woodruff is going the next step, researching ways to force those stored follicles to ripen into pure eggs in a lab dish.

However the different experiments pan out, Hanlon says more families should be told about them: "Doctors should have this information, have it there to give to the parents. Let the parents decide."

More information:

<http://www.myoncofertility.org>

<http://www.fertilehope.org>

University of Pittsburgh cancer fertility program:

<http://www.mwrf.org/220>

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