

Study shows greater impact of chemotherapy on fertility

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Current estimates of the impact of chemotherapy on women's reproductive health are too low, according to a University of California, San Francisco (UCSF) study. The researchers say their analysis of the age-specific, long-term effects of chemotherapy provides new insights that will help patients and clinicians make more informed decisions about future reproductive options, such as egg harvesting.

Previous studies largely have focused on amenorrhea, or the lack of menstruation shortly after treatment, as the primary reproductive side effect of [chemotherapy](#). In this analysis, the researchers also focused on longer-term, age-specific outcomes associated with chemotherapy, including infertility and [early menopause](#). They also noted that the younger a woman is when diagnosed with cancer, the more likely she will experience early menopause.

"We found chemotherapy essentially narrows a woman's reproductive window by causing a range of damage to the ovaries, even if her menses resume after chemotherapy," said Mitchell Rosen, MD, senior author and assistant professor in the UCSF Department of Obstetrics, Gynecology and Reproductive Sciences.

Many of the women who responded to the survey had been told that as long as their periods came back, they would have no negative impact from treatment, he said.

"We currently make recommendations on preserving fertility based on

limited data. These new findings, which also take into account [cancer type](#) and age, hopefully will enable us to offer more strategic and personalized counseling," said Rosen, who also is director of the UCSF Fertility Preservation Center.

The study is available online in the journal *Cancer*.

The researchers used the California Cancer Registry, a statewide population-based cancer surveillance system, to ask women about their reproductive history before and after cancer treatment. Survey questions addressed acute ovarian failure (cessation of menses after treatment), early menopause (menopause before 45 years old), and infertility (failed conception).

A total of 1,041 women diagnosed with one of five targeted cancers between the ages of 18 and 40 years old responded, and 620 reported having been treated with only chemotherapy. The five cancer types – leukemia, Hodgkin's disease, non-Hodgkin lymphoma, breast cancer and gastrointestinal cancers – were chosen because they are common non-gynecologic cancer groups that can be treated with systemic chemotherapy.

Key findings include:

- The percentage of women reporting acute ovarian failure was 8 percent, 10 percent, 9 percent and 5 percent for Hodgkin's disease, non-Hodgkin lymphoma, breast cancer, and gastrointestinal cancers respectively. Acute ovarian failure increased significantly with age at diagnosis.
- In women without acute ovarian failure, the incidence of infertility increased significantly with age at diagnosis. For instance, the proportion of infertile women with Hodgkin's

disease was 18 percent at 20 years old and 57 percent at 35 years old.

- The estimated probability of early menopause increased significantly with younger age at diagnosis. For example, using age as a predictor of early menopause in non-Hodgkin lymphoma, 56 percent of women 20 years old at diagnosis may experience menopause early, compared to 16 percent of those who were 35 years old at diagnosis.

Approximately 120,000 women younger than age 50 develop cancer each year in the United States, according to statistics from the 2006 Surveillance, Epidemiology, and End Results (SEER), and several studies show that loss of reproductive potential after cancer treatment can negatively impact quality of life in young survivors.

While 7 percent of women across the United States report 12-month infertility according to the researchers, the rates of infertility in young cancer patients are unknown.

"We noted proportions of infertility among cancer survivors that appear considerably higher than those in the general United States population," said Joseph Letourneau, MD, the study's lead author. Letourneau was a medical student under Rosen when the research was conducted and now works as a resident physician in obstetrics and gynecology at the University of North Carolina. "When counseling patients, focusing solely on short-term outcomes like loss of menses may give [women](#) unrealistically low assessments of their risks, since they could experience infertility or early menopause years to decades after treatment."

Rosen said that more research is needed since the retrospective study did not include specific patient characteristics such as genetics or variations in individual [cancer](#) treatments.

"Our analysis adds one more piece to the puzzle," he said. "Doctors will continue to need to use their gestalt and understanding of a patient's life to provide the best guidance."

More information: [onlinelibrary.wiley.com/doi/10 ...
1002/cncr.26403/full](https://onlinelibrary.wiley.com/doi/10.1002/cncr.26403/full)

Provided by University of California, San Francisco

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