

# Preserving childbirth options in female cancer patients



**Each year in the United States**, about 100,000 reproductive-age women are diagnosed with cancer. In addition to the distress of receiving a cancer diagnosis and anxiety over treatment and survival, these young women often grapple with the unsettling possibility that life-saving treatment may impair future fertility.

The field of oncofertility has experienced significant progress over the past decade in addressing the risk of cancer-treatment-related infertility and providing solutions to improve reproductive success. The Department of Obstetrics and Gynecology at UCLA includes a team dedicated to counseling reproductive-age patients facing imminent cancer treatment and devising a plan for fertility preservation.

Fertility preservation may also benefit women with other conditions, such as surgeries that may cause damage to the ovaries, risk of premature ovarian failure due to a chromosomal abnormality and genetic mutations that require oophorectomy to reduce the risk of cancer (such as BRCA mutations). Fertility preservation may also be requested by patients who have personal reasons for postponing pregnancy.

## Informing patients of their options

Reproductive-age women need to receive timely oncofertility counseling after receiving a diagnosis of cancer, says Zain Al-Safi, MD, a reproductive endocrinologist and assistant clinical professor.

“It’s important to counsel these women prior to treatment,” he says. “Research shows that informed decision-making reduces reproductive regret in these patients.”

Reproductive endocrinologists are sensitive to the patient’s desire to quickly address the threat of cancer and its treatment. Thus, oncofertility consultations are given the highest priority. All members of the patient’s medical team contribute to the decision on whether fertility preservation is possible and which method to pursue, Dr. Al-Safi says.

“It’s a team approach,” he says. “We communicate with the oncologist and the surgeon. I want to make sure they agree with the fertility preservation plan and if it is acceptable to slightly delay cancer treatment to allow for fertility preservation. With ovarian stimulation, we would expect increasing estrogen levels. We want to make sure that’s acceptable and would not affect the prognosis. Together, we agree on a treatment plan and proceed with it.”

## Need for early consultation

Oncofertility bridges the fields of oncology, surgery and reproductive endocrinology. In 2006, the American Society of Clinical Oncology recommended that newly diagnosed cancer patients of reproductive age receive counseling or a referral to an appropriate reproductive specialist to address the potential for cancer treatments to impact fertility. While survival rates for many types of cancers have increased over the past decade, various treatments, including surgery, chemotherapy and radiation, can impair or destroy a woman's ability to become pregnant.

An oncofertility consultation involves a history and physical exam and may include blood tests and an ultrasound examination to determine ovarian reserve. The risk of diminishing fertility with cancer treatment depends on the type of treatment as well as the patient's age and baseline ovarian reserve.

## Embryo and egg cryopreservation

The standard treatments for female fertility preservation are embryo cryopreservation and oocyte (egg) cryopreservation. Embryo cryopreservation is an established procedure with good clinical pregnancy success rates. The process involves stimulating the ovaries to prompt the growth of follicles and maturation of eggs that can be harvested and fertilized with a partner's sperm or donor sperm. The embryos are frozen for later use. The ovarian stimulation process typically takes about 10 days, followed by egg retrieval, which must be completed prior to cancer treatment.

Oocyte cryopreservation is no longer considered experimental, based on 2012 guidelines issued by the American Society for Reproductive Medicine (ASRM). Oocyte banking also involves hormonal stimulation to produce mature oocytes, which are then harvested and cryopreserved. This process, similar to embryo cryopreservation, delays cancer treatment by about 12 to 14 days from the time ovarian stimulation starts. Vitrification — rapid freezing to avoid the formation of ice crystals — has significantly enhanced the success of oocyte cryopreservation, although there is limited data on live birth rates in cancer survivors. In general, data suggest clinical pregnancy rates of 4 to 12 percent per each cryopreserved oocyte.

## Additional fertility preservation options

UCLA offers other fertility-sparing treatments, including:

- Shielding the pelvic region from ionizing radiation with a lead apron or physically moving the ovaries out of the pelvis through surgical techniques during pelvic radiation.
- Use of gonadotropin agonist injections to chemically down-regulate the ovaries prior to chemotherapy. This down-regulation may result in less damage to the organs.

Additionally, several other fertility-sparing techniques are under investigation, including in vitro maturation and tissue banking. In vitro maturation involves harvesting immature oocytes via ultrasound-guided aspiration without hormonal stimulation and maturing these oocytes in the lab. Tissue banking is a promising investigational technique that involves removal and cryopreservation of at least half of one ovary. Later, the tissue can be transplanted and hormonally stimulated with the goal of producing mature oocytes.

## Participating physicians

### Reproductive endocrinology and infertility — Westwood

#### **Daniel Dumesic, MD**

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#### **Zain Al-Safi, MD**

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