

# Hormonal Stimulation Protocols for Ovarian Stimulation in Cancer Patients

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## DESCRIPTION

Cancer treatments such as chemotherapy and radiation are often life-saving but can have major impacts on fertility. For many cancer patients such as those diagnosed at a young age or those who wish to start a family in the future, preserving fertility before undergoing treatment is an important consideration. Cancer treatments involving radiation or chemotherapy can impair reproductive organs and reduce fertility. In women, treatments can damage the ovaries and diminish the number and quality of eggs. In men, chemotherapy and radiation can affect sperm production and quality. For this, fertility preservation techniques provide a way to safeguard reproductive potential for future use.

### Fertility preservation options for women

Oocyte cryopreservation is one of the most widely used techniques for preserving female fertility. This method involves stimulating the ovaries to produce multiple eggs, retrieving the eggs through a minor surgical procedure, and then freezing them for future use. This technique is ideal for women who are expected to undergo treatments that may impact their fertility but wish to postpone childbearing until after their cancer treatment. Embryo cryopreservation involves a similar process to egg freezing but includes fertilizing the eggs with sperm before freezing. This method requires a partner or sperm donor. The embryos are created *in vitro*, evaluated for quality, and then frozen. Embryo cryopreservation is considered more reliable than egg freezing in terms of success rates but requires the presence of sperm for fertilization. Ovarian tissue cryopreservation involves removing and freezing ovarian tissue before cancer treatment begins. This tissue can be re-implanted after treatment, with the hope that it will resume normal ovarian function and produce eggs. This technique is less established compared to egg or embryo freezing but is a promising option for preadolescent girls or women who cannot delay treatment for ovarian stimulation.

### Fertility preservation options for men

Sperm cryopreservation is the most common fertility preser-

vation technique for men. This process involves collecting and freezing sperm before cancer treatment begins. The frozen sperm can later be used for artificial insemination or *In Vitro* Fertilization (IVF) when the patient is ready to start a family. This method is highly effective and has well-established success rates. For men who are unable to provide a sperm sample before treatment or who have azoospermia (no sperm in the ejaculate), Testicular Sperm Extraction (TESE) can be an option. TESE involves surgically extracting sperm directly from the testicular tissue. This sperm can then be frozen and used for future fertility treatments. TESE is often used in conjunction with IVF to achieve successful pregnancies. Similar to ovarian tissue cryopreservation, testicular tissue cryopreservation involves removing and freezing testicular tissue. This method is particularly useful for preadolescent boys who are unable to produce sperm samples. The frozen tissue can be re-implanted or used in research to extract viable sperm in the future. Research into fertility preservation is ongoing, with promising advancements on the horizon.

## CONCLUSION

Ovarian suppression involves using medication to temporarily shut down ovarian function during cancer treatment, potentially reducing the risk of ovarian damage. While this technique is still experimental and less commonly used, it provides a potential approach to preserving fertility by protecting the ovaries from the harmful effects of chemotherapy. Techniques such as *in vitro* gametogenesis, where stem cells are used to create eggs or sperm, and improved ovarian and testicular tissue cryopreservation methods provide hope for future fertility options. Fertility preservation is a vital consideration for cancer patients facing treatments that may affect their reproductive health. With various techniques available ranging from oocyte and sperm cryopreservation to ovarian and testicular tissue preservation patients have options to safeguard their fertility. Early consultation with a fertility specialist is essential to explore these options and make informed decisions based on individual circumstances and treatment plans.

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