

Novel tool informs women about elective egg freezing

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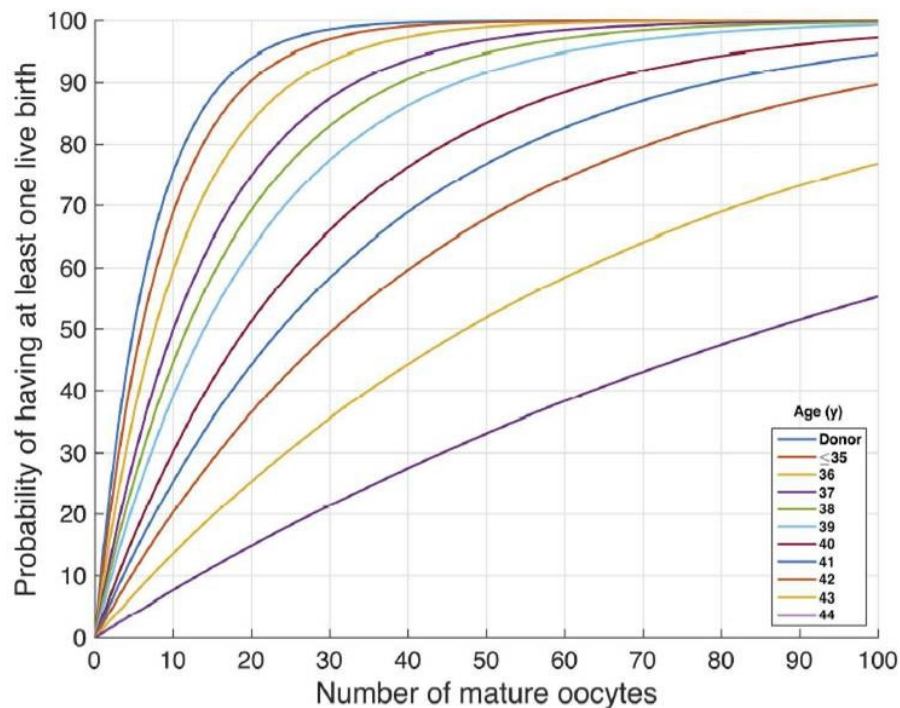


Figure 1: Live birth predictions by age and number of mature oocytes retrieved. Each curve shows the percent likelihood that a patient of a given age will have at least one live birth according to Equation 2, based on the number of mature oocytes retrieved and frozen.

Credit: *Human Reproduction*

The American Society for Reproductive Medicine lifted the experimental status for egg freezing in October 2012, and since then the

popularity of elective egg freezing has been on the rise. Although primarily intended for women whose fertility may be in jeopardy due to treatment for cancer or other illnesses, egg freezing has become an attractive option for women who are electively delaying childbearing for a variety of reasons. But, because this option is relatively new, and the majority of women who have frozen their eggs have not yet returned to use them, the likelihood of a frozen egg resulting in a healthy baby is largely unknown.

Furthermore, freezing eggs can be costly. While some of the largest tech companies have offered egg-freezing as a benefit, the majority of [women](#) face out-of-pocket costs that climb upward of \$6,000, excluding medications, for one [egg-freezing](#) cycle that, depending on personal characteristics, results in a variable number of eggs suitable for freezing. Also not known: how many frozen eggs are necessary to have a child in the future? What if the woman would like to have more than one child? These questions often leave a woman unsure of whether she should repeat a cycle in order to store more eggs and potentially increase her future chances of having a baby.

To address these issues, researchers led by Janis H. Fox, MD, an attending reproductive endocrinologist in the Center for Infertility and Reproductive Surgery at Brigham and Women's Hospital, have developed a novel, personalized model to guide the conversation between a woman and her physician. "We wanted to create a tool that is evidence-based in order to provide the best possible guidance for our patients, who are making big decisions about their lives, their families, and their finances," said Fox, who is also an assistant professor at Harvard Medical School and senior author of the paper describing this new model, published in *Human Reproduction* on February 6, 2017.

Using data from 520 healthy, fertile women undergoing IVF with ICSI for male-factor infertility, researchers developed a user-friendly

counseling tool that estimates the number of eggs a woman should freeze based on her age and the number of children she wants to have in the future. This model is the first to consider maternal age by individual year, and incorporate the likelihood that an embryo created with those eggs will have the normal number of chromosomes.

To create the model, researchers used data specific to the survival rates of thawed eggs, the percent of fertilized eggs that develop into healthy embryos and the number of healthy embryos needed to result in a live birth.

By way of an example, their model finds that a 35 year-old woman who freezes 10 eggs following her first cycle has a 69 percent chance of one live birth. If she undergoes a second cycle and now has 20 frozen eggs, her chances jump to 90 percent for one [live birth](#). With 30 eggs, the likelihood of success rises to 97 percent.

"Rather than explicitly telling women how many eggs they should freeze or how many cycles they should undergo, we believe that our model will help women make informed choices based on the data that is available, and on their family-building goals" said Randi H. Goldman, MD, a Reproductive Endocrinology fellow in the Center for Infertility and Reproductive Surgery at BWH and first author of the paper. "Each woman will come to her own decision about whether more [eggs](#) and additional cycles are beneficial, because it is a personal decision. Would they want to increase their chances by 5 percent, 15 percent? At what cost?"

Researchers are currently working to develop a digital version of the tool that they hope will be freely available to the public in the near future. They caution that the assumptions used to create the model, while data-driven, were based on outcomes from Brigham and Women's Hospital, and may vary by fertility center.

More information: R.H. Goldman et al, Predicting the likelihood of live birth for elective oocyte cryopreservation: a counseling tool for physicians and patients, *Human Reproduction* (2017). [DOI: 10.1093/humrep/dex008](https://doi.org/10.1093/humrep/dex008)

Provided by Brigham and Women's Hospital

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