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FACULTY FOCUS

Judy Stern, Ph.D.: The accidental career

By Ames Eity

I n just before midnight on July 25, 1978, Louise Brown was born in a British hospital. The birth marked a biomedical milestone: doctors had harvested four eggs from Louise’s mother, Lesley Brown; fertilized them in a lab with sperm from Lesley’s husband, John; and implanted one of the resulting embryos in Lesley’s uterus. It was the first successful use of in vitro fertilization in humans.

At the time, Dr. Judy Stern was a Ph.D. candidate in zoology at the University of Tennessee at Knoxville. She was hard at work on her dissertation on reproduction in rabbits, which involved implanting embryos in the small animals. “I remember saying, sometime in the ‘70s, something to the effect of ‘They’ll never let humans,’” Stern recalls. “And that was just right before Louise Brown was born.”

Stern, the director of the Human Embryology and Andrology Lab at DHMC’s Fertility Center, remains amazed at the success of assisted reproduction. “It’s quite unbelievable that it works,” she says. She attributes the ability to freeze an embryo as “You stick it in a liquid nitrogen freezer at minus 196 degrees centigrade, and then you come back three years later and you thaw that embryo out.”

“Everyone thought it was a disaster,” she says. “I remember saying, sometime in the ‘70s, something to the effect of ‘They’ll never let humans’,” Stern recalls. “And that was just right before Louise Brown was born.”

Despite the evidence, Stern says it can be hard to convince patients that transferring fewer embryos is best.

G ood fertility treatment, Stern says, should maximize the possibility of a successful pregnancy while minimizing the risk of multiple births, but that’s not an easy balance to find. “You’re always in a bind between wanting to get a pregnancy at all, a delivery at all, and having high-order multiples,” she says. The problem with treatments that result in twins, triplets, or even greater numbers of infants is that both the babies and the mothers face higher risk factors.

Multiple births are associated with low birth weight, premature birth, a higher risk of infant disability or death, and higher rates of cesarean section.

Recently, Stern led an effort to assess the optimal number of embryos to transfer in women aged 38 and older, for whom IVF is less successful. The research has improved, providers have started to transfer fewer embryos in younger women, but practices hadn’t changed for older women.

With colleagues from SART, Stern studied data from thousands of IVF cycles to find out if transferring more embryos actually resulted in a higher success rate. They found that in 38-year-old women, transferring three embryos showed better results than transferring two embryos but that beyond the third success rate did not improve. For 39-year-old women, four embryos marked a similar limit. In women 40 and older, rates did increase with more than four embryos. As a result, the group concluded that transferring fewer embryos is the best policy. “Many patients see twins as a success,” she says. Stern points out that insurance companies usually do not cover IVF, giving patients a financial incentive to maximize their investment. “For a patient who’s paying out of pocket,” she says, “twins look really good, because then they can have their two kids and that’s—it they don’t have to come back.”

Professionals like Stern have a different outlook. “Twins is not a success,” she says. “A healthy singleton pregnancy is a success.”

Stern believes it will take more research to gather further improvements. Currently, providers examine the size and shape of embryos during the day and before fertilization to decide which look the most promising—a method that Stern describes as “very imperfect” but necessary.

“I think it’s not easy, however, to find funding for such research.” Since 1996, a congressional amendment attached every year to appropriations bills has barred the use of federal money for research that could result in human embryos. Stern says that the policy has upped the already high hurdles for funding such research.

Ronald Green: the director of the Dartmouth Ethics Institute and an expert on bioethics, shares Stern’s frustration. The current federal policy, he says, is something of a mixed message. It allows IVF to be used but bars research that potentially improves it. “You have a formal legal prohibition that makes support for a lot of the laboratory work on IVF impossible,” he says.

Despite the challenges posed by such constraints, Stern is glad that her career took the turn it did into the then-nascent field of IVF technology. “It’s been a very good thing for me to do,” she says. Over the past decade, she has shared the complexities of her work with Dartmouth undergraduates in a course on assisted reproduction that she co-teaches with Green and psychologist Catherine Cramer. “Judy Stern brings tremendous authority to the class, with her laboratory background and her clinical experience,” Green says. “She brings a sense of wonder at the very fact that IVF is possible. ‘When you think about it,’ she says, ‘it’s mind-boggling.’

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