



March Newsletter

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Advances in IVF



How these 6 major breakthroughs, advances overcame barriers to fertility

- Carmen Chai

In vitro fertilization (IVF), freezing eggs and embryos, and transplanting a single sperm precisely into an egg. The medical community has made major strides in the science of baby-making and reproductive health in just a few decades.

Dr. Robert Casper remembers opening the first IVF clinic at the University of Western Ontario in London, Ont.

It was 1984. Since then, the University of Toronto professor and Mount Sinai Hospital scientist watched fertility science continuously refine and improve.

“The whole field has been advancing tremendously quickly compared to a lot of other fields in obstetrics and gynecology. It was a very exciting place to be,” Casper told Global News.

He’s now scientific director at Trio IVF in Toronto.

In the 1970s and ’80s, treating fertility issues was rudimentary. If fallopian tubes were the problem, women were operated on. If ovulating was the culprit, doctors turned to only a handful of drugs.

“That’s all we had. We knew [IVF] would be a big development because we had nothing else of that proportion. It was very obvious this was something that would revolutionize fertility,” Dr. Al Yuzpe, who’s been working in the fertility field for the past 47 years, told Global News.

He also helped to open the fertility clinic at London Health Sciences – now he’s opened Olive Fertility in Vancouver.

The experts walked Global News through a series of breakthroughs that have overcome barriers to fertility.

IVF: The first IVF baby was born in 1978 in England. Louise Brown’s parents became the first couple to successfully undergo IVF, but scientists were working tirelessly across the United States, and Sweden, too, Casper said.

“It gave us another avenue for treatment,” Yuzpe explained. Suddenly, clinics opened up around the world.

The first IVF clinic in Canada opened in Quebec City, followed by Vancouver, Toronto and London, he said.

- How these 6 major breakthroughs, advances overcame barriers to fertility - Carmen Chai
- 7 fertility myths and misconceptions Canadian women need to know - Carmen Chai
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Personal Experiences with IVF as a Surrogate

www.surrogacycommunity.ca

IVF is the process in which doctors take eggs from the ovaries and mix them with sperm in a laboratory dish. Millions of babies have been born through IVF since then.

Tweaking and refining IVF: Since IVF took off, it's only gotten better. Keep in mind, IVF clinics started from scratch: they didn't have medication to control ovulation, so doctors had to collect women's urine every three hours. Once a surge in hormones was recorded, she'd book an egg retrieval about 24 hours later – even if it meant doctors were conducting the procedure at 2 a.m.

There was no ultrasound in those days, so doctors even did retrievals in the operating room with the help of a telescope and a needle through the abdominal walls.

Now doctors rely on an ultrasound probe linked to a screen with a grid that guides them to the ovaries.

“We get a lot more eggs because you can see them all,” Casper said. Medication brought the control into doctors' hands: they could decide when women would ovulate and could even boost how many eggs they release for retrieval.

ICSI: Intracytoplasmic Sperm Injection – more commonly known as ICSI – was a game-changer once the 1990s rolled around.

It was developed in Belgium – in this case, doctors could take sperm from men grappling with fertility issues, such as a low count or weak sperm, and inject a single sperm into an egg. Doctors would ensure the egg was fertilized – at the time, success rates were estimated at 50 to 80 per cent, Yuzpe said.

“This was the first treatment that really made a difference for men and fertility. It's still really the only treatment,” Yuzpe said. Keep in mind, about 40 per cent of fertility issues are linked to men.

Before ICSI, if men didn't have strong or enough sperm,

they had to rely on donor sperm.

Freezing eggs, sperm and embryos: Egg, sperm and embryo freezing received a major tune-up in the early 2000s.

Egg cells are the largest cells in the body – because of their size, freezing is a “real problem” because their water content leaves ice crystals that tamper with, and tear apart the cells inside.

Enter vitrification – in this process, scientists race through the period of ice crystal formation, turning the water into glass, not ice, Casper said.



Slow freezing takes about two hours to freeze an egg and the egg is cooled gradually. With vitrification, the temperature is reduced by about 1 C per minute until the egg is frozen. The temperature continues to drop to about -7 C. Then the egg is put in liquid nitrogen.

“Now we vitrify everything and the survival rate is close to 90 per cent. Slow cooling was about 70 per cent,” Casper said.

Like birth control, vitrification changed the landscape for women. With the pill, they could stave off pregnancy. With vitrification, women could freeze eggs so that if they wanted to get pregnant later on in life, they had access to them.

Women dealing with cancer, chemotherapy or other conditions that would affect their reproductive health were granted access to vitrification. Now it's available to most women, the experts say.

“It became an issue for social reasons – women were delaying childbearing, they didn't have a male partner, or they wanted to preserve their fertility. Now they are able to freeze their eggs,” Yuzpe said.

IVF screening: In vitro fertilization reached another level of sophistication through screening and time-lapse photography. Now, doctors use techniques such as embryonic chromosomal screening and cell division



monitoring.

With screening, doctors can test embryos if patients carry hereditary diseases, such as cystic fibrosis or muscular dystrophy and choose the healthiest embryos for transfer.

Using time-lapse imaging, doctors can even watch the progression of embryos in the lab to decide which are healthiest for implantation.

Single embryo transfer: There's a reason why there are fewer twins and triplets born out of IVF – the technology behind it has improved so doctors can rely on single embryo transfers.

Doctors can use a frozen egg and frozen sperm, wait for five days to monitor the quality of the embryo. Before, they would only wait about two or three days after fertil-

ization, but this extra time matters.

“It completely eliminates the risk of twins. There's no more pressure to put more than one embryo back. Before if you weren't sure you'd put two or three back,” Casper said.

Through single embryo transfer, Casper says babies are born bigger, and with fewer complications.

What's next for fertility therapy? The latest frontier in fertility is carving out more space for people who cannot have babies through uterine transplants and even “three-person babies.”

These technologies aren't for the general population. The United Kingdom is the only country to allow three-person babies, for example.

In September, scientists said the world's first three-person baby was born. The child was at risk of inheriting DNA for Leigh syndrome, a severe neurological disorder that usually kills within a few years of birth.

The technique involved removing some of the mother's DNA from an egg, and leaving the disease-causing DNA behind. The healthy DNA was slipped into a donor's egg, which was then fertilized. As a result, the baby inherited DNA from both parents and the egg donor.





7 fertility myths and misconceptions Canadian women need to know

- Carmen Chai

The birth control pill saves your eggs. If a couple can't get pregnant, it's the woman's fault. Women can smoke right up until they're pregnant.

While these are common beliefs women have about fertility and baby making, none of them are true. And they're only a handful of the misconceptions floating around, according to experts.

“All the emphasis is on birth control and STDs but sex education almost completely neglected information around when people want to get pregnant and how that works. So much of it is whispered from friend to friend and mother to daughter, and that often creates a lot of misinformation,” according to Dr. Joshua Klein.

He's a reproductive endocrinologist who's been working in the fertility field for almost a decade. He's the chief clinical officer at Extend Fertility.

Too often, women only learn the truth about these common myths when they're grappling with fertility problems, according to Dr. Marjorie Dixon, founder of Anova Fertility and Reproductive Health.

“It's very disarming to be faced with infertility. We talk about how not to get pregnant, so no one ever thinks they'll have difficulty,” Dixon said.

She's also a reproductive health professor at the University of Toronto.

The experts listed seven common myths about baby making and reproductive health and the truth behind the misinformation.

Fertility misconception 1: 40 is the new 30

Ninety per cent of a woman's eggs in her ovaries are depleted by age 30. After age 40, 97 per cent of her eggs are gone and the remaining eggs may not be as healthy, leaving women at risk of miscarriage or genetic abnormalities in their babies.

These are figures most women aren't aware of. That's why Dixon suggests that women in the last five years or so of their 20s touch base with their family doctors so they know about their reproductive health and are informed about family planning in the upcoming years.

Fertility misconception 2: It's easy to get pregnant

Plenty of women put family planning on the backburner because they think it'll be easy to get pregnant when they're ready.

“It's a big shocker for couples who come in for a fertility assessment. They were on contraception and they meet the right person, they're at the right stage in their careers, and they go to have a baby and it's hard,”



according to Dr. Sony Sierra, a Women's College Hospital reproductive endocrinology and infertility specialist.

There's a 25 per cent chance of conceiving each month if a couple is under 35 and having sex two to three times a week. Within about 12 months of trying, 85 per cent of couples will go on to conceive, she said.

After 12 months, if it hasn't happened, the chances of pregnancy start to decrease. By about 18 to 20 months, success rates go from 20 per cent to five per cent.

Fertility misconception 3: It's always the woman's fault

The experts agree: they often see women at appointments alone and rarely do their partners join them.

"The traditional notion is the onus is on the woman and it's still an issue. Men don't come to initial consultations or they're reluctant to participate until absolutely necessary," Klein said.

The reality? Forty to 45 per cent of the time, it's a male factor that's contributing to troubles with getting pregnant. They could have a low sperm count, a blockage when they ejaculate, or a history of injuries or surgical procedures that affect their testicles, Dixon said.

Fertility misconception 4: It's OK to drink caffeine and smoke right up until pregnancy

When should women give up their vices if they're hoping to have a healthy pregnancy? Turns out, they shouldn't wait until they're expectant moms.

The experts tell their clients to give up smoking as soon as they start working with them – the toxins in cigarettes can affect the fluid eggs are basted in. Women who smoke in their 20s, statistically speaking, have lower egg supply in their 30s and 40s compared to their non-smoking peers.

Dixon tells women to limit their caffeine intake to about one small coffee a day – or 40 milligrams. This helps with blood flow to the ovaries and pelvis.

"If you're going to go through all these measures to conceive, you want to optimize your body for fertility," she said.

You don't have to give up alcohol while trying to conceive. Abstaining won't help or hurt your chances.

Fertility misconception 5: The pill is tampering with my fertility now

The trio of experts hears handfuls of myths when it comes to birth control — the pill doesn't release eggs so they're saved, or the pill confuses the body into stopping the release of eggs even after usage stops, for example.

"Women shouldn't worry about going on the pill," Klein said. It won't "mess you up" like people suggest it does.

"Within two to three months of stopping birth control, the medication fully metabolizes and clears out of the system. It should have no affect on women's reproductive health," he said.

Eggs aren't spared when you're on the pill, either. There's a natural destruction process for eggs in the ovaries and the programmed cell death accelerates as we get older. It doesn't matter if you release the egg or not.

Fertility misconception 6: Celebrities used IVF in their 40s and 50s so it'll work for me, too

Hollywood handed women an excuse to delay pregnancy then rely on IVF and other fertility treatments as their saving grace, the experts say.

"The reality is in a fundamental way, this isn't true at all. The likelihood of success is bound to a woman's age," Klein said.

"IVF is not employed as a worst case scenario — it's the best tool to conceive when women are younger and

have enough eggs because a lot of it is a statistical game," Dixon said.

Fifty to 60 per cent of women in their 20s and 30s who take on an infertility evaluation respond successfully to treatment, such as insemination, IVF, or timed intercourse.

Less than one per cent of women conceive after age 45. Klein said that by age 43, fertility treatment success rates are about five per cent despite great advances in IVF.

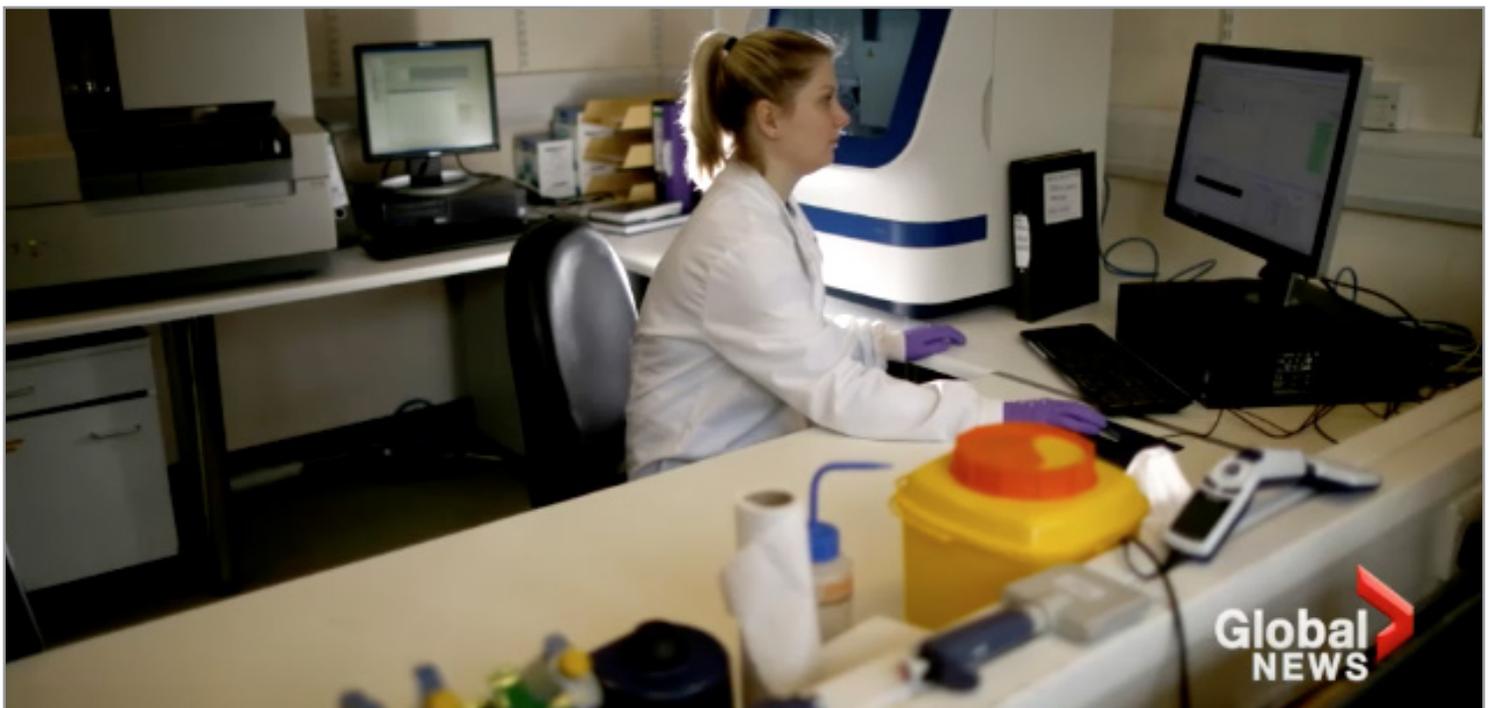
Fertility misconception 7: IVF = twins or triplets

"Octomom" Nadya Suleman's story scared women into thinking fertility treatments equate to twins, triplets or more babies in a single pregnancy.

Her pregnancy is an anomaly, though. IVF has been refined over the past few decades — while multiple pregnancies may have been a concern before, the risk has been tamed, Dixon said.

"IVF gives us the best control, if any, because we decide how many embryos we use and we've contrived how we make our patients pregnant," she said.

Since the 1990s, embryo transfer guidelines have changed reducing multiple pregnancies by more than 70 per cent, Klein said.





IVF Nurses Corner

- Melanie Mitchell, RN

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Fertility Misconceptions

You feel great, definitely don't look your age and.... you're planning to conceive.

Surprise surprise.... don't be shocked when you see your reproductive endocrinologist and your diagnostic work up indicates the following: an elevated follicle stimulating hormone (FSH), your anti Mullerian hormone blood test indicates it's appropriate for your age and your antral follicle count is minimal at best.

No matter how young you look and feel... your ovarian reserve is the true indicator of your reproductive age and what your journey that lies ahead might look like.

The reality is that once women reach the age of 35; reproductive abilities rapidly

decrease which increases the risk of miscarriage or genetic abnormalities in their babies. Making that goal more difficult of having a healthy full-term baby in your arms.

We are exposed daily to media announcements regarding older celebrities and their pregnancies; giving us all false hope, as it is not usually disclosed how difficult their journey may have been. Giving us the false belief that there is still hope for us, that we still have time. Truth be told, the biological clock does exist and it begins to tick loudly after the age of 35.

For more information of the diagnostic work up to assess your reproductive capabilities; feel free to reach out to yourivfnurse@gmail.com

