

# Common infertility treatments may increase risks for pregnancy, vascular complications

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Women who conceive with assisted reproductive technology (infertility treatment) may be at increased risk for vascular and pregnancy-related complications, according to new research published today in a special Go Red for Women issue of the *Journal of the American Heart Association*, an open access, peer-reviewed journal of the American

Heart Association.

Assisted [reproductive technology](#), also known as ART, is the umbrella term for infertility treatments in which eggs or embryos are handled to improve the odds of [pregnancy](#). These treatments may involve administering medication to control timing of ovulation, as well as procedures such as in vitro fertilization (IVF) or intracytoplasmic sperm injection, during which a woman's eggs are surgically retrieved and fertilized in a laboratory before being implanted back into her uterus. According to 2019 statistics from the U.S. Centers for Disease Control and Prevention, the use of assisted reproductive technology has more than doubled during the past decade. More than 2% of infants born in the U.S. every year are conceived with assisted reproductive technology. Since 1978, ART has contributed to the birth of more than 5 million infants worldwide.

"Older [women](#) are increasingly turning to assisted reproductive technology. However, advancing maternal age—specifically being age 35 and older—increases the risk of having or developing conditions, such as chronic high blood pressure, that increase the risk of pregnancy complications," according to study author Pensée Wu, M.B.Ch.B., M.D., senior lecturer and honorary consultant obstetrician and subspecialist in Maternal Fetal Medicine at Keele University School of Medicine in Staffordshire, United Kingdom.

"Adverse pregnancy complications such as high blood pressure during pregnancy have now been established as [risk factors](#) for future cardiovascular disease," Wu said. "All of this has raised concerns about adverse pregnancy outcomes associated with assisted reproductive technology, yet studies on the topic are few and have inconsistent findings. A better understanding of the potential impact of assisted reproductive technology on women's risks for cardiovascular- and pregnancy-related outcomes will help inform women considering

assisted reproductive technology and is valuable after birth to develop cardiovascular risk reduction strategies."

For this study, researchers examined data from the U.S. National Inpatient Sample, which contains all hospital discharges between January 1, 2008, and December 31, 2016. They extracted records for all delivery admissions and specifically records that noted the use of assisted reproductive technology, as well as cardiovascular and pregnancy-related complications. The researchers also evaluated hospital costs, length of stay and more. The study included more than 106,000 deliveries conceived with assisted reproductive technology and more than 34,167,000 deliveries conceived without ART.

The analysis found:

- Women who conceived with assisted reproductive technology were older, at an average age of 35 years compared to 28 years for those who conceived without ART.
- Those who conceived with assisted reproductive technology also had more pre-existing health conditions, such as chronic hypertension, obesity and diabetes.
- Women with assisted reproductive technology-conceived pregnancies were more than 2.5 times more likely to suffer acute kidney damage, also known as acute kidney failure, and they were also found to have a 65% higher risk for arrhythmia (irregular heartbeat).
- Assisted reproductive technology-conceived pregnancy was associated with a 57% greater likelihood of placental abruption, a serious [complication](#) in which the placenta separates from the lining of the uterus; a 38% increased risk of Cesarean delivery; and a 26% higher risk for preterm birth.
- The increased risks were present even among the women having ART who did not have pre-existing cardiovascular risk factors.

- Hospital charges for women who conceived with assisted reproductive technology were an average \$18,705 compared to \$11,983 for those who conceived without ART.

"We were surprised that assisted reproductive technology was independently associated with these complications, as opposed to being associated with only the existence of pre-existing [health conditions](#) or only among [older women](#) undergoing [infertility treatment](#)," Wu said.

The study highlights the importance of counseling patients who are considering assisted reproductive technology about health and pregnancy, as well as postpartum-related risks.

"Especially patients with existing cardiovascular risk factors should be counseled about the potentially long-term cardiovascular implications and risks associated with ART," Wu said. "It's important for women to know that assisted reproductive technology carries a higher risk of pregnancy complications, which require close monitoring, particularly during delivery. Primary and specialist health care professionals should ensure these risks are communicated and strategies to mitigate them are discussed and implemented."

A study limitation is its retrospective nature, meaning it is an examination of data that was recorded for reasons other than research, therefore, there may be errors, such as misclassification or misdiagnosis.

"Future research should examine how optimizing cardiovascular risk prior to assisted reproductive technology impacts pregnancy complications and long-term cardiovascular health," Wu said.

**More information:** *Journal of the American Heart Association* (2022). [www.ahajournals.org/doi/10.1161/JAHA.121.022658](http://www.ahajournals.org/doi/10.1161/JAHA.121.022658)

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