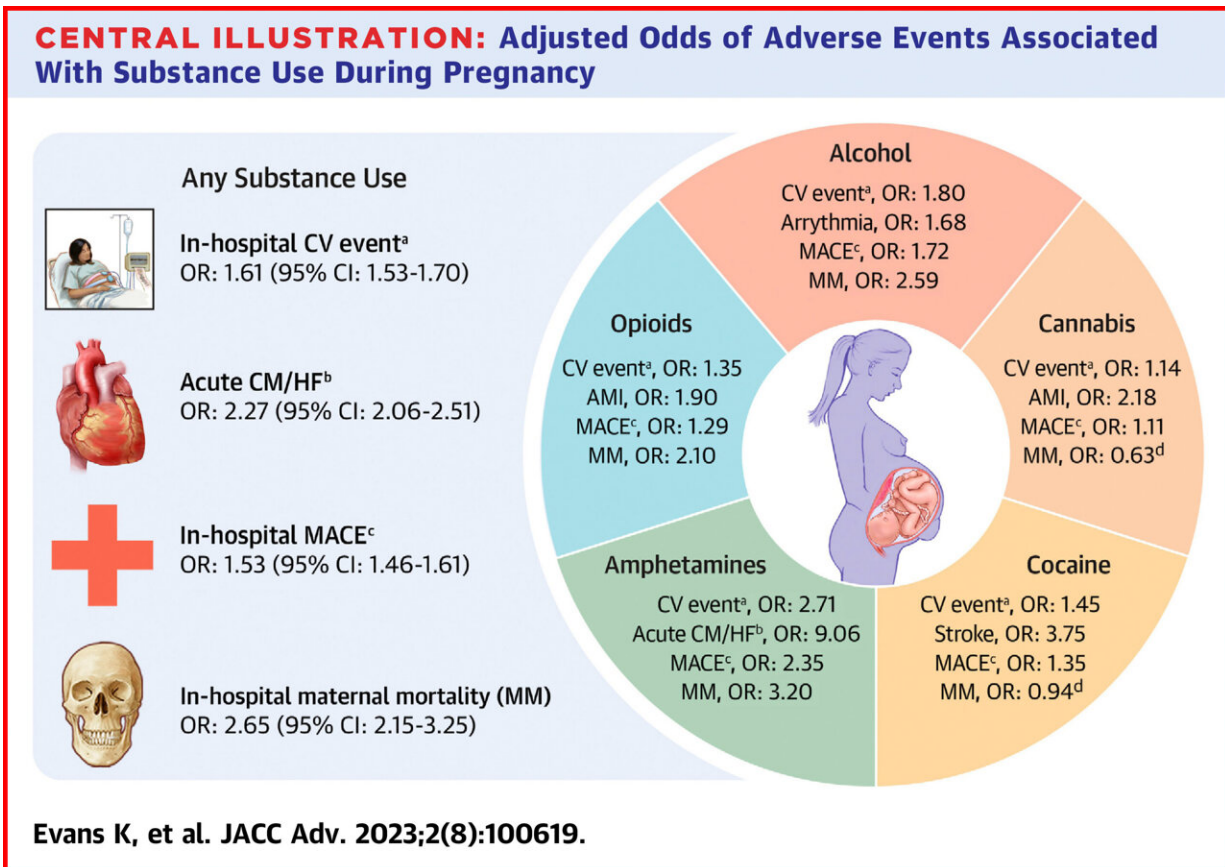


Substance abuse in pregnancy doubles cardiovascular risk: Study

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Credit: *JACC: Advances* (2023). DOI: 10.1016/j.jacadv.2023.100619

Pregnant women with a history of substance abuse face a dramatically increased risk of death from heart attack and stroke during childbirth

when compared with women without history of substance abuse, a new Smidt Heart Institute study shows.

These findings are [published](#) in the *Journal of the American College of Cardiology: Advances (JACC: Advances)*.

"This telling research shows that [substance use](#) during pregnancy doubled cardiovascular events and [maternal mortality](#) during delivery," said Martha Gulati, MD, senior and corresponding author of the study and the associate director of the Barbra Streisand Women's Heart Center in the Department of Cardiology in the Smidt Heart Institute. "Substance abuse also doubled the risk of acute heart failure."

The substances studied in the research included cocaine, opioids, alcohol, amphetamine/methamphetamine and cannabis. Each substance carried a different amount of risk on expectant mothers:

- Amphetamine/methamphetamine had the greatest association with the development of acute heart failure (9 times greater risk), acute heart attack (7.5 times greater risk), cardiac arrest (7 times greater risk) and maternal mortality (3 times greater risk). These substances are known to increase [heart rate](#) and [blood pressure](#) and cause structural and electrical changes of the heart.
- Cocaine had the strongest association with stroke and was also found to be associated with arrhythmias, which are abnormal heart rhythms.
- Opioid use had the strongest association with infection of the heart valves—a disease known as endocarditis—which was not surprising given that these drugs are often injected into the bloodstream.
- Alcohol use was associated with the greatest risk for arrhythmias.
- Cannabis—the most commonly used substance—was not associated with maternal mortality. It was, however, associated

with a higher risk (twofold greater risk) of heart attack.

"Despite the widespread legalization of cannabis across the nation, many people are unfamiliar with the risks it can pose during pregnancy," said Gulati, also the director of Preventive Cardiology in the Smidt Heart Institute and the Anita Dann Friedman Endowed Chair in Women's Cardiovascular Medicine and Research. "Cannabis causes heart cell death and can also lead to severe cardiovascular events."

To decipher these results, study investigators reviewed data on delivery hospitalizations between 2004 and 2018, using the Nationwide Inpatient Sample database. A total of 60,014,368 delivery hospitalizations occurred during the time frame, with substance use complicating 955,531 deliveries, or 1.6%.

Of the 1.6% of substance-related deliveries, women experienced conditions including [heart attack](#), stroke, arrhythmia, endocarditis, acute cardiomyopathy, heart failure and cardiac arrest.

Investigators say these findings underscore an important public health issue.

"This study highlights the need for additional medical care for [pregnant women](#) with substance use," said Christine M. Albert, MD, MPH, chair of the Department of Cardiology in the Smidt Heart Institute and the Lee and Harold Kapelovitz Distinguished Chair in Cardiology.

Albert also suggests that [prenatal care](#) for women with a history of substance use should include a multidisciplinary cardio-obstetrics approach with high-risk pregnancy specialists and cardiologists to help identify and minimize adverse outcomes.

"For the well-being of pregnant women and their children, [substance](#)

[abuse](#) needs to be considered an [independent risk factor](#) for cardiovascular events in pregnancy," Albert said.

More information: Kari Evans et al, Substance Use in Pregnancy and its Association With Cardiovascular Events, *JACC: Advances* (2023).

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