

Caffeine

Caffeine is the world's most popular psychoactive substance, a potent adenosine receptor antagonist that stimulates the central nervous system and heart, increases gastric acid production, and induces diuresis.

The average daily caffeine consumption is about 200-250 mg—about two cups of coffee. Moderate caffeine consumption has never conclusively been shown to pose a health risk for women or their fetuses or nursing infants. Caffeine has never been linked to any teratogenic syndrome, and only if a lactating mother consumes large amounts (300-500 mg/day) is a nursing baby apt to show any ill effects (usually fussiness or sleeplessness).

Postmenopausal women should be cautioned about consuming too much caffeine. A 2001 study concluded that the consumption of 18 ounces of coffee per day (about 500 mg) accelerated bone loss. Women with the *tt* genetic variant of the vitamin D receptor appeared to be at greatest risk, but the authors did note that calcium supplementation could offset the deleterious effect of caffeine (*Am. J. Clin. Nutr.* 74[5]:694-700, 2001).

Breast tenderness is purported to be worsened by caffeine intake but most studies have failed to corroborate this.

Caffeine isn't all bad, and may even be beneficial in some respects. Users are less drowsy and less tired. Newly published research indicates that moderate consumption in adults at risk for developing liver disease decreased that risk by 69%; gallstone risk decreases by 40%. A recent study concluded that people who drank up to six cups of coffee per day decreased their risk of developing type 2 diabetes by almost 60% (*Ann. Intern. Med.* 140[1]:1-8, 2004).

Still, no one would recommend coffee drinking as a disease preventive, and enough evidence exists to urge women—especially those who are pregnant and lactating—to moderate their daily intake to no more than 300 mg. That's the equivalent of about three 8-ounce cups of coffee or two cups of coffee and a couple of soft drinks.

Most experts say that it's unnecessary for pregnant or nursing women to eliminate caffeine from their diet. But women who are regularly consuming more than 300 mg/day should cut back.

Reducing caffeine intake

Going cold turkey is likely to result in a persistent, throbbing headache as blood vessels expand under the influence of the previously suppressed adenosine. (Conversely, caffeine is an effective ingredient in headache medicines because of its ability to constrict blood vessels).

It's better to reduce caffeine intake gradually. Most caffeine-containing beverages have decaffeinated or caffeine-free counterparts. Patients can dilute their caffeinated drinks with the decaffeinated with a 3:1 ratio,

and increasing over several days until they are drinking only de-caffeinated.

Naturally decaffeinated or water processed coffees are likely to still contain approximately 5%-10% of their original caffeine content.

Although beverages are the main source of caffeine for most people, the chemical is present in other foods as well. A serving of fat-free coffee yogurt may have close to twice as much caffeine as a cup of coffee. Caffeine is also found in chocolate; the bittersweet variety has more caffeine than does milk chocolate. Several over-the-counter pain medications contain caffeine. Make sure your patients know how to check the label before buying any headache medicine.

Drug interactions

The Food and Drug Administration warns that caffeine should be eliminated—or at least limited—by patients who are taking the following medications:

- Histamine blockers for gastric conditions because of the potential for additional stomach irritation.
- Antianxiety drugs because of possible excitability, nervousness, and hyperactivity, as well as diminished efficacy of the medication.
- MAO inhibitors because of increased blood pressure and an exacerbation of the most serious adverse event associated with these drugs—a rapid, potentially fatal increase in blood pressure.
- Oral bronchodilators because these drugs in combination with caffeine stimulate the central nervous system.
- Quinolones because these drugs taken with caffeine-containing drinks may increase caffeine levels, leading to excitability and nervousness.

—Michele G. Sullivan

(Sources: Dr. Suzanne Trupin, *University of Illinois at Urbana-Champaign*; Dr. Michael Shelby, *National Toxicology Program, Center for the Evaluation of Risks to*

Drink or food	Caffeine content
Cola and other "energy" drinks	12-60 mg/300 l can
Bottled iced tea	15-25 mg/300 ml bottle
Brewed tea (non-herbal)	20-50 mg/cup
Mate (South American tea)	30-60 mg/cup
Decaffeinated coffee	4-8 mg/cup
Instant coffee	40-140 mg/cup
Brewed coffee	60-200 mg/cup
Chocolate	5-35 mg/50 g bar

Human Reproduction; the Food and Drug Administration).

Drinking Coffee During Pregnancy Raises Childhood Leukemia Risk Up To 70 Percent: Caffeine May Alter DNA In Fetus Cells

... According to a recent study published in the American Journal of Obstetrics & Gynecology, drinking more than two cups of coffee a day during pregnancy increases an unborn baby's risk of childhood leukemia by 60 percent. More than that, and the risk rises to over 70 percent.

Caffeine is known to pass back and forth across the placenta, meaning the unborn baby will come in contact with caffeine consumed by the mother. While an expectant mother's body can handle amounts of caffeine, the baby cannot. This is because the baby's metabolism is still maturing, says the American Pregnancy Association. Therefore, it cannot fully metabolize the caffeine. Moreover, any amount of caffeine can also trigger changes in the baby's sleep pattern or normal movement pattern in the later stages of pregnancy, since coffee is a stimulant.

Researchers believe caffeine can act as a "DNA inhibitor or a carcinogen metabolism inhibitor," possibly altering the DNA of a fetus's cells, which can make an unborn baby susceptible to childhood leukemia...

To explore the association between coffee consumption and the incidence of childhood leukemia, a team of researchers did a meta-analysis of more than 20

existing studies that have observed childhood acute lymphoblastic leukemia (ALL) and acute myeloid leukemia (AML), with respect to maternal coffee consumption during pregnancy. The studies only observed coffee consumption but did not take into account the size of the coffees consumed or how it was prepared. Non-coffee caffeine consumption was not taken into account either. The researchers did not control for alcohol consumption in any of the pregnancies.

The findings revealed childhood leukemia risk rose to 60 percent when mothers drank more than two cups of coffee a day. Those who had four or more cups a day increased their child's risk of leukemia by 72 percent. "These are robust findings of an association between drinking coffee in pregnancy at relatively low levels and a measured increase in leukemia in your offspring," Henshaw said.

The incidence of childhood leukemia has increased in recent decades, accounting for almost one out of three cancers, with 15,780 children and adolescents ages 0 to 19 years will be diagnosed with cancer this year. Henshaw suggests the increase in childhood leukemia rates is not genetic, since they do not change on that type of time scale, as it takes tens of thousands

of years to change their genetic profile. He hints at some environmental factor, and there can be more than one of them...

Tory MP Andrew Percy, who sits on the Commons Health Select Committee said: "If there are robust findings which show an association between drinking coffee during pregnancy and leukemia, then it makes sense that guidance be issued to women so they can make an informed choice about whether to drink coffee when expecting," the Daily Mail reported.

While the study still warrants further investigation, it's better to err on the side of caution. During pregnancy, the less caffeine you consume, the better. Moderate levels of caffeine have not been found to have a negative effect on pregnancy. Moderate consumption of caffeine varies from 150 to 300 milligrams a day, according to the American Pregnancy Association. It's best to talk to your health care provider to decide what the healthiest choice is for you and your baby.

—Lizette Borrelli

Source: Fan D, Cheng J, Hong Sm et al. Maternal coffee consumption during pregnancy and risk of childhood acute leukemia: a metaanalysis. American Journal of Obstetrics & Gynecology. 2014.