

What doctors wish patients knew about the impact of caffeine

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Many people can't imagine starting their day without a cup of coffee or tea. Consuming caffeine can even help people get through that afternoon slump. About 85% of adults consume 135 milligrams of caffeine daily in the U.S. This is equivalent to 12 ounces of coffee, which is the most common source of caffeine for adults.

Caffeine is a chemical stimulant that can be found naturally in coffee beans, tea leaves, cacao beans, guarana berries and yerba mate leaves and quickly boosts alertness and energy levels.

Caffeine can also be made synthetically and added to drinks, food, tablets and supplements. Yet while caffeine is often talked about for its negative effect on sleep and anxiety, it can offer some benefits too. Three physicians share what to know about caffeine.

The AMA's What Doctors Wish Patients Knew[™] series provides physicians with a platform to share what they want patients to understand about today's health care headlines.

In this installment, three AMA members shared what doctors wish patients knew about caffeine. They are:

- Nicole Clark, MD, a neurologist at St. Peter's Health Medical Group in Helena, Montana, and an AMA delegate for the Montana Medical Association.
- Stephen Devries, MD, a preventive cardiologist and executive director of the educational nonprofit Gaples Institute in Chicago.
- Shannon Kilgore, MD, a neurologist at the Veterans Affairs Health Care System in Palo Alto, California and Stanford University School of Medicine. She is also an AMA delegate for the American Academy of Neurology.

Pay attention to consumption

The amount of caffeine in brewed coffee “can vary greatly depending on the type of bean, the amount of grind, the size of the particles, the brew time and other factors pertaining to the source,” said Dr. Kilgore. “And then, of course, tea and soft drinks tend to have less caffeine.”

“Most people have safely under 400 milligrams a day, which is what the Food and Drug Administration considers safe,” she said.

“Of course, if you're getting jittery, it's too much caffeine,” said Dr. Clark. “But, in general, about two 8-ounce cups of coffee should be the limit because a cup of coffee has between 100 and 200 milligrams of caffeine.”

Try small, frequent doses

“One of the things that people don't realize is, if you think of it as a medicine, then the best way to use it is in small, frequent doses,” said Dr. Kilgore. “So, 20 milligrams to 100 milligrams at a time as opposed to the standard American mug of coffee.

“And then just getting it into your brain a small amount at a time,” she added, noting that “if you're home with the increase of telework and things like that it might be easy to just serve yourself a little bit at a time throughout the day.”

“Then, when you start to feel your mental performance lagging, take it a little bit more—up until 2 p.m.,” Dr. Kilgore said.

Caffeine may help depression

“In low doses, caffeine may help depression,” said Dr. Clark. The reason is because caffeine “stimulates dopamine, which is a chemical in your brain that plays a role in pleasure motivation and learning.”

Low levels of dopamine can make you feel tired, moody and unmotivated, among other symptoms, she said. But “having more dopamine helps patients with depression by improving their mood.”

How it is metabolized varies

“Caffeine is rapidly absorbed, typically within 45 minutes, and is metabolized in the liver at rates subject to significant genetic variability,” said Dr. Devries.

“It is highly metabolized with about 3% or less being excreted in the urine,” said Dr. Kilgore. “The half-life of the drug typically is around four to five hours, but it can range dramatically from as quickly as an hour and a half to as much as nine hours, depending on genetic factors and coadministration with other medications, including oral contraceptives, and smoking.

“Smokers have massively increased clearance, so they will keep it around for a shorter time,” she added, noting that “pregnancy gets greatly reduced metabolism, so women need to watch how much caffeine they’re drinking.”

With insomnia, limit caffeine

“Fortunately, typical intake of caffeine within the range of most coffee and tea drinkers has minimal risk, apart from perhaps difficulty sleeping for some,” Dr. Devries said.

“The obvious side effect is that it can cause insomnia because it is intentionally trying to keep someone awake,” said Dr. Kilgore. “In people who don’t regularly drink caffeine, they’re the most vulnerable to the insomnia component.”

“When people drink it regularly, they sort of learn what they can do, but in general it’s best not to drink after about 2 p.m.,” she said. “But some people will be able to drink it right before bed if they’re a chronic user, so it just depends on their own experience.”

Coffee and tea have health benefits

“Coffee and tea are true feel-good stories in nutrition—we like them, and they like us back,” said Dr. Devries. “Both coffee and tea are linked to a host of health benefits, including reduced risk of cardiovascular disease, lower risk of type 2 diabetes and improved longevity.

“Most of the benefits are noted with intake in the range of 2–5 cups per day,” he added, noting “the source of the benefits, beyond caffeine, are a wide range of biologically active polyphenols—chemicals with powerful antioxidant and anti-inflammatory properties.”

Caffeine can help with exercise

“It actually can help exercise as well,” said Dr. Kilgore. “It’s shown to improve endurance and speed as well as just having a decreased perception of fatigue.”

By using caffeine in different forms, “people might be able to maintain exercise longer in a session,” she said, noting that “athletes often will take it intentionally before they exercise.”

Some people may feel anxious

“There are concerns about increasing anxiety for some people,” said Dr. Clark. This is “because caffeine is a stimulant and it stimulates some of the chemicals in your brain, speeding everything up.”

“Even in moderate amounts it can cause jitteriness and anxiety,” said Dr. Kilgore, noting that caffeine “can also increase respiratory rate, heart rate and blood pressure, which is most often fine in normal people, but if they have a light health condition it should be under consideration.”

Brewing method affects cholesterol

“Interestingly, brewing method does matter,” said Dr. Devries, noting that “unfiltered coffee made with a French press or Turkish style and, to a lesser extent, espresso, are associated with a small but significant increase in LDL cholesterol that does not occur with filtered coffee.

“The reason is that filtered coffee removes much of the cafestol, a compound naturally found in coffee that raises blood cholesterol levels,” he added.

There can be withdrawals

“The most common concern about coffee is that it has a withdrawal syndrome,” said Dr. Kilgore. When this occurs, “people feel like they need to keep using it, even if they don’t need it that particular day for its intended benefit of increasing alertness; and that withdrawal effect can happen as soon as 12 hours after the last coffee in people who use it regularly.

“It can last up to one to two days if intentionally stopped after prolonged use,” she added, noting that “some effects can last even up to nine or 10 days with headache, nervousness and fatigue.”

Too much may lead to headaches

“If you consume too much caffeine, it can also cause headaches,” said Dr. Clark. This is often in addition to feeling “nervous and anxious.”

But caffeine can also “sometimes help headaches,” she said, noting that “for some people, it can actually treat their headaches or migraines.”

“Caffeine can also be used medically to treat headache because it improves the absorption of other analgesics,” said Dr. Kilgore. “It actually causes vasoconstriction. That by itself can also make the headache go away. So, it can cause headaches, and it can also help.”

Weight gain may be decreased

“Caffeine can actually decrease weight gain—not necessarily cause weight loss,” said Dr. Kilgore. “It increases your base metabolic rate and can suppress appetite a bit, which is useful if someone's thinking of trying to be careful about their weight.”

“The important thing, of course, is that in the United States so much of our coffee has all this added cream and sugar, which adds to weight gain,” she said. “So that really only pertains to black coffee, which has two calories a cup. “Because it can make you feel less hungry and reduce cravings, but then for people who always have sugar in their coffee it probably increases cravings because of the sugar,” Dr. Kilgore added.

Decaf is not free of caffeine

“Decaffeinated coffee has only slightly lower levels of polyphenols than regular coffee,” Dr. Devries said. “Because of the preservation of high polyphenol levels, the association of decaffeinated coffee intake with improved longevity remains.”

It is important to point out that “decaffeinated coffee isn't zero caffeine, but certainly much less,” said Dr. Kilgore. “A lot of people think it's without caffeine, but it's not. It's about 2 to 15 milligrams, so certainly far less than caffeinated.

“But even if you went to decaf, you would probably have some withdrawal symptoms if you don't withdraw judiciously,” she added.

Try to avoid energy drinks

“The more serious risks of caffeine are mostly related to heavy consumption from use in energy drinks and in supplement form,” said Dr. Devries. “Anxiety and unsafe behaviors—especially in adolescents—are associated with energy drink use.

“High blood pressure, palpitations and arrhythmias are other possible risks with high intake of supplemental caffeine,” he added.

Don’t cut caffeine right away

“It’s important to know how much you’re drinking in the first place, so really be honest with yourself about how much you’re drinking and keep track of it for a few days,” said Dr. Kilgore. “This will allow you to get a true sense of how much caffeine you’re consuming.”

If you need to reduce the amount of caffeine you are consuming, “slowly decrease your intake,” said Dr. Clark. This means you can “do half caffeinated or you can mix in some decaffeinated beverages in sodas and coffee.”

“Don’t cut out caffeine completely all of a sudden because then you may experience some bad withdrawal syndromes,” she said. “If you need help with how to decrease your intake or you’re getting headaches when you’re trying to go off caffeine, talk to your doctor.”

Decrease intake if pregnant

For people who are pregnant, “you should decrease your intake of caffeine,” said Dr. Clark. This is because “the caffeine does go to the baby and can speed up the baby’s heart rate.”

Additionally, “the baby can become dependent on caffeine and have withdrawals when the baby is born,” she said. That’s why “you should dramatically limit your caffeine intake when pregnant.” The American College of Obstetrics and Gynecology recommends that those who are pregnant limit caffeine intake to less than 200 milligrams per day.