

A woman's face is shown in profile on the left, holding a clear plastic water bottle. The background is a dense array of colorful fiber optic cables in shades of green, blue, and purple, creating a vibrant, grid-like pattern. The overall image has a futuristic, high-tech aesthetic.

In recent years there has been an explosion of energy drinks with high levels of caffeine—a drug with greater risks than many realize.

THE ENERGY DRINK EPIDEMIC

BY THOMAS J. BOUD, MD

“**D**octor Boud, your patient Mrs. Jones (name has been changed) is in the emergency room with a double pelvic fracture,” reported my nurse Jamie. My concern grew as I remembered treating Mrs. Jones for the past several years for her severe osteoporosis. Given her age, the length of the healing process, her current health problems, and potential complications, a pelvic fracture was serious indeed.

As I reviewed her medical chart, a long sequence of events flooded my mind. Mrs. Jones was one of my favorite elderly patients;

I had been caring for her for many years. I was treating her for several serious conditions, including an irregular heart condition and insomnia, and I was treating her with aggressive therapy for severe osteoporosis.

In addition, I had repeatedly tried to convince her to eliminate one particular habit that I knew was making her condition worse, a habit that often is not taken seriously and that can have an enormous impact on one's health. This habit involves the abuse of a drug to which most people give little thought, even though it is now the most commonly abused drug on the planet. What was her habit? Excessive cola consumption. The drug? Caffeine.

One must keep in mind, of course, that from a medical point of view there are certain appropriate uses for caffeine. For example, doctors will sometimes prescribe caffeine for use in neonatal care. In addition, used in moderation, caffeine may not pose significant health risks. It was the resulting side effects from overuse of the drug that gave me such concern in Mrs. Jones's case.

I found the situation terribly saddening. Mrs. Jones loved serving in Church callings and had given energetic and dedicated spiritual assistance to others for many years. She had recently served wonderfully and faithfully as her ward Relief Society president. However, her double pelvic fracture not only prevented her from actively serving but in her case was life threatening. I could not help thinking about her high caffeine intake—six or seven colas every day—and how likely it was that this chemical had contributed to her current health problems, including dehydration, an irregular heart condition, insomnia, and osteoporosis, each of which

increased the seriousness of the situation.

The Rise of Caffeine Abuse

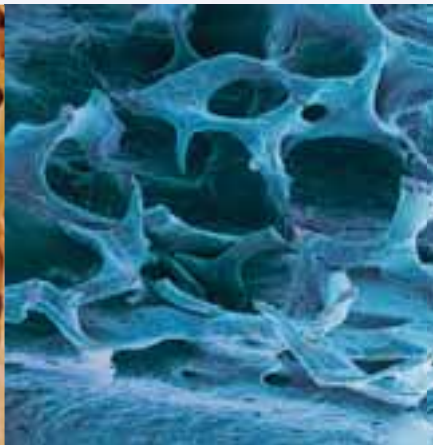
Although Mrs. Jones's condition represents an extreme, the reality is that doctors are seeing more and more patients with caffeine-related symptoms

and medical conditions. This situation has been made worse by the exploding use of heavily caffeinated beverages known collectively as “energy drinks.”

The numbers are staggering. In 2006 alone, approximately 500 new brands of energy drinks were introduced into the market. In addition, 7.6 million young people have reported having used energy drinks, and consumption has more than doubled in the past three years. The energy drink industry has ballooned into a \$3 billion-a-year enterprise.¹ The companies that produce energy drinks use aggressive marketing techniques directed toward youth and college-age consumers, yet little data on the health hazards of these beverages has been publicized. This means that many people are drinking energy drinks with a poor understanding of the potential



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Seen through a microscope, healthy bones are strong but porous (left image).

Bones with osteoporosis are brittle and fragile from loss of tissue (right image).

Regular Cola
41 mg Caffeine

Tea, Brewed
47 mg Caffeine

Coffee, Instant
57 mg Caffeine

Coffee, Brewed
107.5 mg Caffeine

500 mg

400 mg

300 mg

200 mg

100 mg

0 mg

physical and medical side effects of the caffeine contained in the beverages they consume.

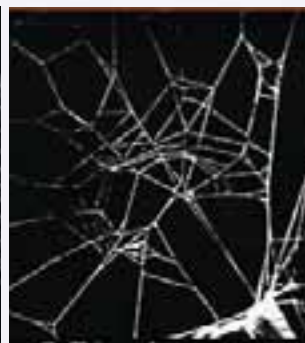
Not all caffeinated drinks are created equal; the quantity of caffeine varies greatly from product to product. To put this into perspective, consider that most cola soft drinks have from 22 to 55 milligrams (mg) of caffeine, compared to a common cup of tea that varies from 26 to 47 mg. Coffee may have from 57 mg for a cup of instant to 180 mg for a cup of brewed. By comparison, energy drinks may have from 80 to 500 mg of caffeine in one can.² Companies compete to market the product that provides the biggest jolt. To do this, manufacturers combine caffeine with other substances such as alcohol in order to intensify its effects. These beverages often come in large containers and are frequently loaded with calorie-heavy sugars.

The Effects of Caffeine Abuse

What are the consequences of high caffeine consumption? First and foremost, caffeine is a central nervous system stimulant that can lead to addiction. Both as a doctor and as a member of the Church, I recognize the physical, mental, and spiritual dangers of any addictive



Webs created by a caffeine-free spider on left and a caffeinated spider on the right.



substance. Any addictive behavior, whatever the source, can lead to a loss of spiritual health and freedom.

President James E. Faust (1920–2007) said, “Some addictions can control us to the point where they take away our God-given agency. One of Satan’s great tools is to find ways to control us. Consequently, we should abstain from anything that would keep us from fulfilling the Lord’s purposes for us, whereby the blessings of eternity may hang in jeopardy. . . . Any kind of addiction inflicts a terrible price in pain and suffering, and it can even affect us spiritually.”³

I have treated a number of caffeine-related medical conditions. Milder conditions include jitteriness, agitation, insomnia, difficulty concentrating, and rapid heart rate. Use of caffeine can lead to a decrease in cerebral blood flow in adults and could increase the chance of compromising long-term

growth in infants.⁴ Caffeine can also precipitate other conditions that can lead to further problems. Here’s an example: Using caffeine on a long-term basis to compensate for tiredness resulting from life-style choices results not only in sleep deprivation but also in physiological stress. These in turn can lead to an increased level of certain hormones that

Weak Energy Drink
120 mg Caffeine

Average Energy Drink
220 mg Caffeine

Extreme Energy Drink
500+ mg Caffeine

CAFFEINE CONTENT IN COMMON BEVERAGES

Source: www.energyfiend.com/the-caffeine-database

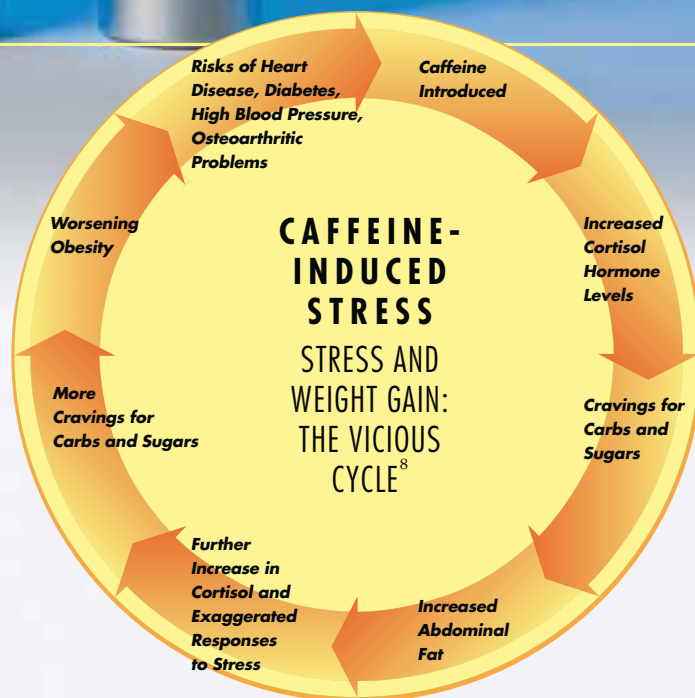
While most sodas can be purchased in 12-ounce cans, energy drinks are sold in a variety of volumes, many of which are greater than 12 ounces. The orange line depicts the amount of caffeine in various beverages per 12 ounces. The yellow line depicts the total amount of caffeine in each can or bottle as it is normally sold.

can lower one's metabolism. A lower metabolism leads to an increased craving of carbohydrates and sugars and often will result in weight gain. Ironically, many people use these drinks in order to lose weight, whereas just the opposite may occur. Many physicians believe that this process has contributed significantly to the current problem of obesity in the United States. Weight gain has a negative influence on the medical conditions of sleep apnea, diabetes, depression, and even cardiac and cerebrovascular disease.

As my experience with Mrs. Jones demonstrates, high caffeine intake can cause a number of other serious problems as well, such as elevated blood pressure, gastrointestinal disorders, and even osteoporosis. Other commonly known physiological effects of caffeine consumption include acid reflux, urinary incontinence, restless leg syndrome, tremors, irritable bowel syndrome, and atrial fibrillation. Research also indicates a close relationship between caffeine use and elevated cholesterol levels and, potentially, coronary heart disease.⁵

Despite its frequent use as a performance enhancer among high school and college athletes, caffeine can also cause agitation and even episodes of rage.⁶ Furthermore, chemically dependent athletes are at risk of disciplinary action from their athletic programs because many sports programs have banned caffeinated energy drinks as a form of cheating.

In addition to rage and agitation, other mood disorders negatively affected by caffeine include ADHD, premenstrual dysphoric disorder, anxiety, and even depression.



I have seen many patients whose depression has actually worsened after continued excessive caffeine intake. In addition, some of them have suffered severe rebound headaches and even required hospitalization for congestive heart failure. Unfortunately, there have also been deaths reported as a direct result of caffeine overdose.⁷

Caffeine Abuse and the Word of Wisdom

Now what does this mean for us as Latter-day Saints? While we are counseled against taking addictive substances or harmful drugs, the Word of Wisdom does not



THE BODY IS A TEMPLE

“The temple of God is holy, which temple ye are’ (1 Corinthians 3:17). May we keep our bodies—our temples—fit and clean, free from harmful substances which destroy our physical, mental, and spiritual well-being.”

President Thomas S. Monson, “True to the Faith,” *Ensign*, May 2006, 19.



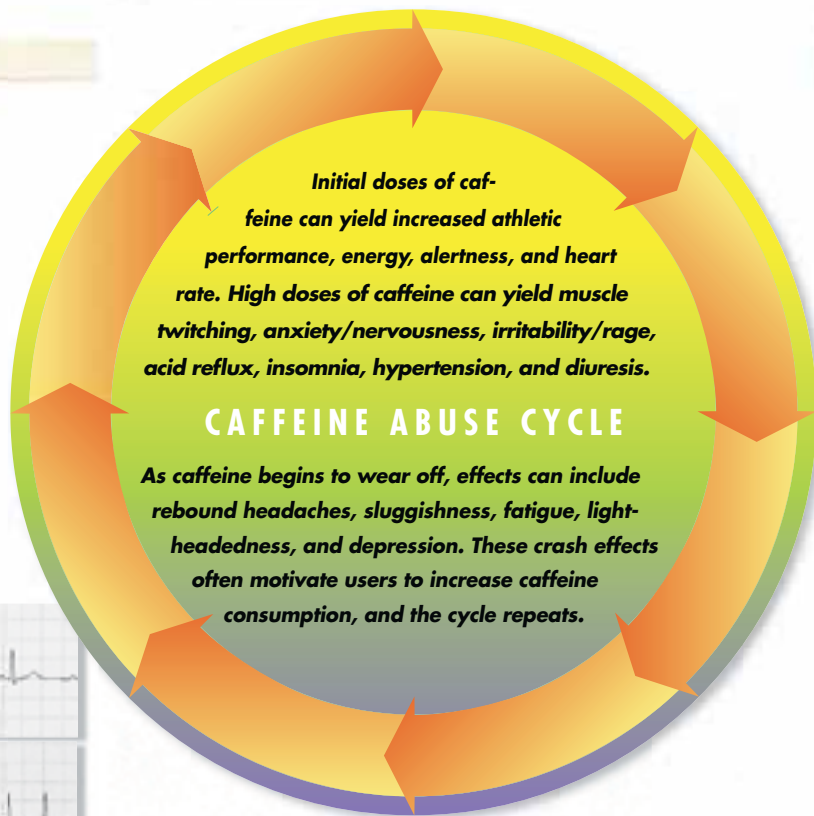
Top EKG represents a normal heart rate. The bottom EKG represents a heart rate after consuming caffeine.

specifically prohibit caffeine. However, I believe that if we follow the spirit of the Word of Wisdom, we will be very careful about what we consume, particularly any substance that can have a negative impact on our bodies. This is true regarding any drug, substance, or even food that may be damaging to one’s health. This includes caffeine. Think of all the problems that excessive caffeine use causes that could be avoided by following this counsel. Had my patient Mrs. Jones avoided caffeine or at least used it in moderation, she likely would have fared much better.

Of course, not everyone who drinks caffeine will have a negative health consequence. However, both the quality and the quantity of life can be affected by the misuse of caffeine. Fortunately, the Word of Wisdom provides a guide to help strengthen and protect both our bodies and our minds and keep them healthy so that we can function at our greatest potential and be available for the Lord’s service. Note some of the glorious blessings promised for those who follow its counsel:

“All saints who remember to keep and do these sayings, walking in obedience to the commandments, shall receive health in their navel and marrow to their bones;

“And shall find wisdom and great treasures of knowledge, even hidden treasures;



“And shall run and not be weary, and shall walk and not faint. “And I, the Lord, give unto them a promise, that the destroying angel shall pass by them, as the children of Israel, and not slay them” (D&C 89:18–21).

How marvelous these promises are, that we may walk and not faint and run and not be weary and that the destroying angel will pass us by! Great spiritual treasures are available to those who actively seek to keep the Lord’s commandments. Even when faced with overcoming an addictive tendency such as caffeine abuse, we can improve. It may take great effort, but we can do it. The power of the Atonement can give us the strength to overcome these challenges, and the Holy Ghost will be our support and our guide. In addition, our minds and hearts will be invigorated, our bodies will be healthier and stronger, and we will find a wealth of hidden treasures that will provide greater peace in our lives. ■

Dr. Boud works in family medicine at a primary care facility and volunteers for the Church as a consulting physician in the Missionary Medical Department.

NOTES

1. See Sharon Worcester, “Energy Drink Trends Alarm Some; No Data Back Safety,” *Family Practice News*, Feb. 1, 2007, 1.
2. See www.energyfiend.com/the-caffeine-database.
3. James E. Faust, “The Power to Change,” *Liahona* and *Ensign*, Nov. 2007, 123–24.
4. David K. Stevenson, “On the Caffeination of Prematurity,” *The New England Journal of Medicine*, Nov. 8, 2007, 1967–68.
5. See Clifford J. Stratton, “Caffeine—the Subtle Addiction,” *Ensign*, June 1988, 60–61.
6. See Worcester, “Energy Drink Trends Alarm Some,” 45.
7. See Sarah Kerrigan and Tania Lindsey, “Fatal Caffeine Overdose: Two Case Reports,” *Forensic Science International*, Oct. 4, 2005, 67–69.
8. James O’Keefe, MD, and Joan O’Keefe, RD, *The Forever Young Diet & Lifestyle*, 2006, 233.