KIDNEY DISEASES & ANABOLIC STEROIDS
Proper functioning of the kidneys is essential for the body to maintain homeostasis. The multifunctional kidneys are affected when other systems break down; conversely, kidney dysfunction affects other systems. Many kidney disorders can be detected by urinalysis (Figure 1).

### Diabetes Mellitus

Diabetes mellitus is caused by inadequate secretion of insulin from islet cells in the pancreas. Without insulin, blood sugar levels tend to rise. The cells of the proximal tubule are supplied with enough ATP to reabsorb 0.1% blood sugar, but in diabetes mellitus much higher blood sugar concentrations are found. The excess sugar remains in the nephron. This excess sugar provides an osmotic pressure that opposes the osmotic pressure created by other solutes that have been actively transported out of the nephron. Water remains in the nephron and is lost with the urine. Individuals with diabetes mellitus void large volumes of urine, which explains why they are often thirsty. The water lost with the excreted sugar must be replenished.

### Diabetes Insipidus

The destruction of the ADH-producing cells of the hypothalamus or the destruction of the nerve tracts leading from the hypothalamus to the pituitary gland can cause diabetes insipidus. Without ADH to regulate water reabsorption, urine output increases dramatically. In extreme cases, as much as 20 L of dilute urine can be produced each day, creating a strong thirst response. A person with diabetes insipidus must drink large quantities of water to replace what he or she has not been able to reabsorb.

### Bright’s Disease

Named after Richard Bright, a 19th-century English physician, Bright’s disease is also called nephritis. Nephritis is not a single disease but a broad description of many diseases characterized by inflammation of the nephrons. One type of nephritis affects the kidneys.
What Are They?
Ever wondered how those bulky weight lifters got so big? While some may have gotten their muscles through a strict regimen of weightlifting and diet, others may have gotten that way through the illegal use of anabolic-androgenic steroids. "Anabolic" refers to a steroid's ability to help build muscle and "androgenic" refers to their role in promoting the development of male sexual characteristics. Other types of steroids, like cortisol, estrogen, and progesterone, do not build muscle, are not anabolic, and therefore do not have the same harmful effects.

Anabolic-androgenic steroids are usually synthetic substances similar to the male sex hormone testosterone. They do have legitimate medical uses. Sometimes doctors prescribe them to help people with certain kinds of anemia and men who don't produce enough testosterone on their own. But doctors never prescribe anabolic steroids to young, healthy people to help them build muscles. Without a prescription from a doctor, anabolic steroids are illegal.

There are many different anabolic-androgenic steroids. Here's a list of some of the most common ones taken today: Andro, oxandrin, dianabol, winstrol, decadurabolin, and equipoise.

What Are the Common Street Names?
Slang words for steroids are hard to find. Most people just say steroids. On the street, steroids may be called "roids" or "juice." The scientific name for this class of drugs is anabolic-androgenic steroids. But even scientists shorten it to anabolic steroids.

How Are They Used?
Some steroid users pop pills. Others use hypodermic needles to inject steroids directly into muscles. When users take drugs without regard for their legality or their adverse health effects they are called "abusers." Steroid abusers have been known to take doses 10 to 100 times higher than the amount prescribed by a doctor for medical reasons.

What Is the Scope of Steroid Abuse?
Most teens are smart and stay away from steroids. As part of a 2009 NIDA-funded study, teens were asked if they ever tried steroids—even once. Only 1.3 percent of 8th- and 10th-graders and 2.2 percent of 12th-graders ever tried steroids. Abuse is also well known to occur in a number of professional sports, including fields such as bodybuilding and baseball.

What Are the Effects?
A major health consequence from abusing anabolic steroids can include prematurely stunted growth through early skeletal maturation and accelerated puberty changes. This means that teens risk remaining short for the remainder of their lives if they take anabolic steroids before they stop growing. Other effects include jaundice (yellowish coloring of skin, tissues, and body fluids), fluid retention, high blood pressure, increases in LDL (bad cholesterol), decreases in HDL (good cholesterol), severe acne, trembling, and in very rare cases liver and kidney tumors. In addition, there are some gender-specific side effects:

- for guys—shrinking of the testicles, reduced sperm count, infertility, baldness, development of breasts, increased risk for prostate cancer.
- for girls—growth of facial hair, male-pattern baldness, changes in or cessation of the menstrual cycle, enlargement of the clitoris, and a permanently deepened voice.
Every time he passed a mirror, Craig flexed his muscles. He wanted to look "insanely big—like an action figure." "When I walked into a room, I wanted heads to turn," he says. People did notice Craig's 225-pound, 5-foot 9-inch frame. But what they didn't see was the physical damage and psychological turmoil going on inside. The story behind the bulk was five years of steroid abuse and a struggle with muscle dysmorphia, a condition in which a person has a distorted image of his or her body. Men with this condition think that they look small and weak, even if they are large and muscular.

Illegal and Grim

It all started when Craig was 18. Before a trip to Walt Disney World in Orlando, Florida, he was feeling overweight. He wanted to look good with his shirt off, so he resolved to get fit. A student at a Massachusetts community college, he started going to a nearby gym. Running on the treadmill, he slimmed down fast, losing 20 pounds in a month.

But lean wasn't Craig's ideal. "My whole priority was, I wanted people to say, That guy's huge." He lifted weights and experimented with steroidal supplements, also marketed as dietary supplements. By converting into anabolic steroids once inside the body, these drugs were thought to help build muscle. Despite potential risks and unclear effectiveness, many of these products could be bought legally without a prescription until 2004 when it became illegal to purchase them over the counter. But what Craig was looking for couldn't be bought in a store. So he turned to anabolic steroids, drugs derived from the male sex hormone testosterone.

Under a doctor's supervision, anabolic steroids have some legitimate medical uses, as do corticosteroids, a different type of steroid used to reduce swelling. But to use steroids as Craig did, for muscle-building in a healthy body, is illegal. This didn't stop him. Neither did the many grim potential side effects.

Craig thought he knew exactly what he was getting into. And like 2 percent of high school seniors (according to a 2009 NIDA-funded study) and an estimated hundreds of thousands of adults, he took steroids anyway.

Heart Problems

Craig's appearance was that important to him. "The scale was my enemy. Every pound meant so much to me," he says. Craig constantly compared himself to others. He drove his friends and family crazy asking, "Is that guy bigger than me? What about that guy?"

He never had complete satisfaction. "Some days, I'd be arrogant, wearing shorts to show off my quads. Other days, I'd be a disaster. On a non-lifting day, I'd have to wear big, baggy clothes."

Craig's steroid use escalated over time. He had begun by taking oral steroids (pills) exclusively. But when he heard that injectable steroids were more effective, he overcame a fear of needles. At his worst, he was injecting three to four times a day and taking 10 pills on top of that.

The drugs took their toll. Craig's hair fell out; acne popped up all over his back; his face swelled. Then, something even more serious happened: He started having chest pains.

Craig was having heart problems of the emotional sort, too. "I don't even remember how much of a jerk I was," he says.

New Priorities

There was a lot of screaming and yelling at home, and ultimately, the end of his marriage and a custody battle over his 1-year-old son, Jake. Craig's wife said that Craig, then 25, couldn't see their child until he passed a drug test. That was the moment when everything changed for Craig. He knew he had to quit.

On Father's Day of that year, Craig went cold turkey. He knew he needed help, so his parents found him a psychiatrist, who treated him through the better part of a year. Today, Craig's priorities have changed. He still wants to be a head-turner, but for a different reason. "Now I'd rather be walking into a room with my son [who is now 2] and have people thinking, Wow, he's the greatest dad in the world."