humans. The institute is funded in part by the chemical industry.

Cancer isn't the only problem with gemfibrozil. The fine print in the 1994 PDR indicates that middle-aged men with heart disease who took the drug actually increased their risk of dying, both from another heart attack and from all causes.

That evidence, along with the potential threat of cancer, has spurred Public Citizen to call for a ban on gemfibrozil. The group's book, *Worst Pills, Best Pills II* (1993), advises consumers not to use Lopid. "There is no proof that gemfibrozil has any health benefit," the book says. Instead, authors Sidney M. Wolfe and Rose-Ellen Hope suggest alternative ways to lower cholesterol concentrations in the blood, such as exercise and a diet low in saturated fat.

In contrast to the fibric acid durgs, the statin drugs have seen their reputation enhanced in recent months. In the Nov. 16, 1995 NEW ENGLAND JOURNAL OF MEDICINE, James Shepherd at the University of Glasgow and his colleagues report that pravastatin (Pravachol) reduced the risks of experiencing and dying from a heart attack in middle-aged men with high cholesterol concentrations. The results of this trial suggest that there are "massive benefits" to the use of a cholesterol-lowering drug like the statins, Cleeman says.

Newman and Hulley concede that the statins offer advantages to a narrow group of people at high risk of heart disease. For middle-aged men who cannot lower their cholesterol with diet or exercise, such drugs may be lifesavers, they say.

However, they are concerned about the cancer-causing potential of the drugs for most people in their twenties and thirties. Cancers take many years to develop; a person popping such pills every day for decades might run a cancer risk, they worry.

Moreover, cholesterol-lowering drugs have never been proved to benefit the very old, the very young, or women, they say.

Cleeman counters that women and the elderly are not different from middle-aged men when it comes to heart disease. "Based on what we know from trials to date . . . the prudent approach is to treat women and the elderly in the same fashion," he says. If a low-fat diet fails, they should then consider medication to lower their cholesterol, he adds.

Although most experts advise against the use of cholesterol-lowering drugs in children and young adults, there's one exception: those with a genetic predisposition to sky-high cholesterol. Without drug treatment, such young people face an extremely high risk of heart attack, Cleeman notes.

The federal government's drive to screen people age 20 and older for high cholesterol (see sidebar) may fuel the sales of cholesterol-lowering pills, Newman and Hulley argue. They say such programs turn healthy people into patients and spur the inappropriate use of drugs. Many people have no symptoms of heart disease but have a cholesterol reading that puts them in a "risk" category. Newman and Hulley are concerned that for millions of people, the potential cancer risk of the medication overshadows any heart benefits.

Cleeman counters by saying that asymptomatic people with high cholesterol concentrations are indeed at risk.

"It's not appropriate from a public health point of view to throw up one's hands and say, Gosh, who knows what might happen in 40 years? We do know what will happen on the cardiovascular death side," he says.

Newman and Hulley are quick to agree that there are no data proving conclusively that the statin or fibric acid drugs cause human cancer. However, they contend that further study is needed before ruling out the cancer threat. "The best thing that could happen is that this is a false alarm," Hulley says. □

Technology

Safer water for poorer nations

In the world's developing nations, more than 400 children die every hour from diseases such as cholera, typhoid fever, dysentery, and hepatitis, which they contract by drinking contaminated water.

To stem this threat, Ashok J. Gadgil, a physicist at the Lawrence Berkeley (Calif.) National Laboratory, and his colleagues have built a simple device that uses ultraviolet light to rid water of pathogens. The tabletop system takes in water from a well or hand pump, for example, bathes it with ultraviolet radiation from a mercury-vapor lamp, and sends it out free of germs. Ultraviolet light has the "highest germicidal efficiency" at a wavelength of 254 nanometers, he says.

The current model can disinfect 15 gallons per minute at a cost of 2 cents per metric ton of water. It weighs 15 pounds, costs $300, draws only 40 watts of power supplied by solar cells, and can run unsupervised in remote locations.

Serving a community of 1,000 in the developing world, one unit could prevent 15 infant deaths and 150 cases of stunted growth during its service life of 15 years, Gadgil estimates.

Virtual crash-test dummy

Automobile manufacturers seeking to build safer cars have traditionally relied on one procedure for safety-testing their new models: Build 'em and crash 'em.

Such tests involve placing humanlike models—known as crash-test dummies—behind the wheel and in the passenger seats of a vehicle, then propelling it into a brick wall. Scientists gather data on potential injuries from sensors in the dummies.

William O. Wray, an aerospace engineer at the Los Alamos (N.M.) National Laboratory, and his colleagues are now designing a computer system to simulate crash tests.

"We're developing a human body model for use in crashworthiness calculations," he says. Simulations are less expensive than crash tests and can be performed earlier in the design process, considerations that he expects will prove attractive to auto manufacturers.

"The goal is to identify areas of the body that might be injured," Wray adds. Auto designers would first run a model of the entire human body in a simulated crash to get a sense of where injuries might occur. A second round would focus on detailed models of the head, spine, or other area of the body to observe subtle damage. Wray believes the simulations would enable automobile companies to fine-tune new designs, making cars safer for people of different body types and sizes.

The computerized crashes could also reduce design-to-production time by 3 months, Wray estimates. "We think the number of crashed vehicles can be cut by 15 to 20 percent," he says. "There will still be crash tests, but the better the computer models are, the fewer cars you have to destroy." Each crash tests costs roughly $750,000.

Computerized wheelchair lessens sores

People confined to wheelchairs often develop pressure sores because of poor blood circulation.

A research team led by A. Keith Miller at Sandia National Laboratory in Albuquerque has designed a specially contoured wheelchair to lessen this problem. The new Generic Total Contact Seat, to be manufactured by Numotech of Sun Valley, Calif., contains four air bladders that inflate periodically, redistributing the person's weight.