THE INFLUENZA EPIDEMIC OF 1918

J. B. Howell introduced me to the PBS video *Influenza 1918* (1). Some facts: In 1918 World War I ended in Europe, women obtained voting rights for the first time in the USA, airline service began in the USA, Babe Ruth led the Boston Red Sox to a World Series championship, and the flu epidemic began. The first death occurred in Boston and from there the epidemic moved west and south following the railroad lines. Before it was over the epidemic had killed 600,000 Americans—the largest percent of whom were aged 20 to 30 years—and 30 million people worldwide. It killed more soldiers in World War I than did bullets or swords. Indeed, the epidemic killed more Americans than all of the wars in the 20th century combined. Soldiers carried the flu from one military base to another. One case of coughing became 10,000 cases. In October 1918 alone, nearly 200,000 persons died in the USA.

HEALTH AND MONEY

We all know that a huge gap exists between the rich and the poor in our world, but the size of that gap is not well appreciated. The World Bank's *World Development Report* recently provided an illustration dividing the world's population into fifths arranged by income (1). The top fifth possess 83% of the world's income! In contrast, the poorest fifth possess 1.4% of the world's income; the next poorest fifth, 1.9%; and the middle fifth, only 2.3% of the world's income. In other words, the poorest 60% of the world's population are almost equally poor. The second richest fifth contains 12% of the world's income. And the gap between the rich and the poor is widening. In 1960 the income of the wealthiest fifth was 30 times greater than that of the poorest fifth; today, it is >80 times greater. Debt is the main explanation for the widening gap. On average, the 40 heaviest indebted poor countries owe more than twice what they earn in a year from exports. Africa spends twice as much repaying debt as it does on health care! Some organizations are now campaigning to cancel Third World debt. If the United Kingdom were to cancel the repayments that it currently receives from the 52 poorest countries, it would cost each British taxpayer $3 US a year. To cancel all debts would cost creditor nations $20 US per person per year.

BIRTHRATE IN THE PHILIPPINES

The Philippines, a staunchly Catholic country, has the highest population growth rate in the region despite being one of the first to implement a population control policy in the 1970s.
The growth rate currently is 2.3% per year compared with India, which is 1.9%; Indonesia, 1.5%; China, 1.3%; and Thailand, 0.9% (2). All efforts at population control in the Philippines have been thwarted by the influential Catholic church. Last year the archbishop of Manila said that condoms were “evil” and “fit only for animals.” Also, family planning is usually available only for 6-month periods and abortion is illegal. But the number of abortions is increasing, and some politicians have suggested making abortion punishable by death. Population growth targets were not met by the previous administration, and the current president, Joseph Estrada—who has at least 11 children by 4 different women—has yet to tackle the population issue despite his electoral pledges to wipe out poverty. Of a population of 74 million, 22 million Filipinos are malnourished, including nearly 4 million children aged 1 to 5 years, and nearly 11,000 children die each year in the Philippines from malnutrition. As pleasurable as it is, sex can be devastating to some societies.

MALARIA AND TOBACCO AND WHO’S RESPONSE

According to the 1999 World Health Organization Report, about 1 million people in the world die each year from malaria, most of them sub-Saharan African children (3). And malaria may be a cause, not just a consequence, of underdevelopment because it hits hardest during times of planting and harvesting. The report also calls for action on smoking, proposing a worldwide ban on all tobacco advertising and promotion, sustained tax increases on cigarettes, wider access to tobacco substitutes, increased public health information on smoking, and the establishment of tobacco-controlled coalitions. As many as 1 in 2 long-term smokers die from their habit.

SMOKING AND HIP FRACTURE

Cornuz and colleagues (4) from Boston, Massachusetts, studied 116,229 female nurses aged 34 to 59 years at baseline in 1980 and followed them for 12 years. Hip fracture was 30% more common among the smokers than the nonsmokers, and the risk of hip fracture increased with greater cigarette consumption. There was no apparent benefit from quitting smoking until 10 years after cessation. After 10 years, former smokers had a reduced risk of hip fractures.

INJURIES AND DEATHS FROM FALLS IN PERSONS AGED 50 YEARS OR OLDER

Fall-induced injuries and deaths among older adults are major public health problems, especially in developed societies that have aging populations. About one third of persons $\geq$65 years of age living in the community and more than half of those living in institutions fall every year, and about half of those who fall do so repeatedly. Both the incidence of falls and the severity of complications increase with age. Not all falls of older persons, of course, are injurious and life threatening, but about 5% of them result in a fracture, and other serious injuries occur in 5% to 10% of falls. Injury is the fifth leading cause of death in older adults, and most of these fatal injuries are related to falls. In the USA, falls, occurring primarily among older adults, were the second leading cause of deaths due to unintentional
injuries in 1994.

Kannus and colleagues (5) obtained data on fall-induced injuries from the National Hospital Discharge Register of Finland for all persons aged >=50 years admitted to Finnish hospitals for primary treatment of a first fall-induced injury or death. For the 25-year period of 1970 to 1995, the number of fall-induced injuries increased from 5622 in 1970 to 21,574 in 1995, a 284% increase, and the rate increased from 494/100,000 persons to 1398/100,000, a 183% increase. The increase occurred in both men and women. Moreover, the number of deaths due to falls in the overall population increased from 441 in 1971 to 793 in 1995, an 80% increase, and the rate increased from 38/100,000 in 1971 to 51/100,000 in 1995, a 34% increase. Thus, in a well-defined white population, the number of older persons with fall-induced injuries is increasing at a rate that cannot be explained simply by aging changes. More preventive measures need to be adopted to control the increasing burden of these injuries.

GENETICS OF ALCOHOLISM

Schuckit (6) from San Diego, California, reviewed recent research on the importance of genetic influences on alcohol abuse and dependence. The contribution of genetic influence to alcoholism is supported by the 3- to 4-fold higher prevalence of alcoholism in first-degree relatives of alcoholics, a rate that increases another 2-fold in identical twins of alcoholics. Studies reveal that the increased risk remains strong for children of alcoholics adopted and raised by nonalcoholics. The genetic influences appear to be in large part separate from a generic predisposition toward dependence on other drugs.

The intensity of response to most drugs has genetic components. Many alcoholics, for example, report an ability to consume large amounts of alcohol with relatively little effect from early in their drinking careers. Identical twins are more similar on level of response than are fraternal twin pairs, and level of response is also genetically influenced in animals. A lower level of response (or a need for higher levels of alcohol to produce an effect) is associated with high levels of alcohol intake in some murine lines. Relatively low intensities of reaction to alcohol have been found in about 40% of the children of alcoholics compared with <10% of controls. A low level of response at age 20 years predicted alcoholism by age 35 years, thus explaining most of the relation between family history and alcohol abuse and dependence. No specific gene has been identified as responsible for this relatively low intensity of response to alcohol. Thus, our genes appear to play a role in maybe half of us in determining whether or not we drink certain liquids and how much of them we consume.

CESAREAN SECTION FOR PREVENTION OF HIV IN INFANTS OF MOTHERS WITH HIV

Recently I learned that cesarean sections are performed in approximately 70% of deliveries in some private hospitals in Mexico. (In the USA it is 20%.) A major reason for the high frequency is that insurance companies in Mexico pay the physicians for performing a cesarean section but do not pay for a normal vaginal delivery. I noted recent studies
comparing elective cesarean section delivery versus vaginal delivery in preventing HIV in
the newborn infant of mothers with confirmed HIV infection (7, 8). Three (2%) of 170
infants born to women assigned cesarean-section delivery were infected compared with 21
(10%) of 200 infants born to women assigned to vaginal delivery. These findings provide
evidence that elective cesarean-section delivery significantly lowers the risk of mother-to-
child transmission of HIV infection without significantly increasing risk of complications
for the mother.

POLICE SUICIDE

Suicide rates are most frequent among dentists, physicians, entrepreneurs, and police
officers, in that order. Fields and Jones (9) reviewed the suicide rate in the nation's 10
largest police departments and found that suicide is among the most serious problems facing
law enforcement today. Most police departments in the USA lose more officers to suicide
than to violence in the course of their jobs—a total of about 300 officers dying by suicide a
year. If a jumbo jet with 300 people went down every year, the Federal Aviation
Administration would make some prompt changes.

The nation's largest police organization, the Fraternal Order of Police, studied suicides
among 38,800 of its 270,000 members in 1995 and found a suicide rate of 22/100,000
officers. The national rate in contrast is 12/100,000 people according to the Centers for
Disease Control and Prevention. The USA Today survey included the nation's largest law
enforcement agencies and found equally disturbing numbers. In New York City, for
example, 36 officers have been killed in violent confrontations with suspects while on the
job since 1985; during the same period, 87 officers have taken their own lives, a suicide rate
of 15/100,000. In Los Angeles, 11 officers have been slain on duty since 1989; 20 have
killed themselves, yielding a suicide rate of 21/100,000. In Chicago, 12 officers have been
slain while on duty since 1990; 22 have killed themselves, a rate of 18/100,000 officers.
The Federal Bureau of Investigation, which would be the third largest police agency in the
country if it were a police department, has lost 4 special agents in the line of duty since
1993; 18 special agents have killed themselves during that period, a rate of 26/100,000. The
US Customs Service lost 7 agents to suicide in 1998 alone, a rate of 45/100,000; none were
slain that year in the line of duty.

Suicide has been a chronic problem among law enforcement officers for years, a silent killer
largely hidden from public view by a police culture that jealously guards its image of
strength. Its causes are widespread, ranging from the stresses of a job that requires split-
second decisions with life-and-death consequences to the normal human struggles with
family, career, alcoholism, and depression that can be exacerbated by the isolation from
society many law enforcement officers feel.

In many police departments an officer who is known to have contemplated suicide or who is
depressed finds it next to impossible to progress through the ranks. Because of the negative
effect it can have on their careers, officers are extremely reluctant to identify others who
need help and will go to great lengths to hide the fact that somebody needs help rather than
help the person get it. The stress that often leads an officer to commit suicide is at least
partially the result of unrealistically high expectations of being a successful cop. If a police officer drops a gun during a bank robbery or misspeaks during a trial, that is a bit different from a carpenter dropping a hammer. Officers have to always be in control, and they learn early that they have to always be right.

Many police departments are reluctant to discuss the subject of suicide, and it is difficult to get an accurate tally of suicides because many departments do not keep official statistics. Some believe that incidences, such as officers accidentally killing themselves when cleaning their guns, may actually be efforts to mask suicides.

Because those who commit suicide are not killed in the line of duty, they are not given an official departmental funeral. Their families also are not entitled to various benefits such as the $144,000 each family of an officer slain in the line of duty receives from the Justice Department. Many relatives of suicide victims also lament that they are suddenly ignored by their loved one's colleagues, unceremoniously banished from the law enforcement fraternity.

There is no particular profile of the officer who will attempt suicide. He or she may be just a few years out of the academy or at the end of a career, and personal crises run the gamut. Divorce and the breakup of relationships are common problems. But those who kill themselves also may be suffering from stagnated careers, be under investigation for alleged misconduct, or drink alcohol heavily. Throw the ever-present firearm into the cauldron and the mix is deadly. Having the means readily available to commit suicide is important. The suicide rate among British police officers who do not carry guns is much lower than in the USA. And it is not just having the means. It is the intimate familiarity and comfort with a gun.

Experts on this subject say an officer who may be contemplating suicide often lacks energy or motivation, becomes withdrawn, and may actually talk about suicide. Troubled officers also sometimes become accident prone or targets of numerous citizen complaints. Officers are often isolated, distrustful of anyone outside law enforcement, and the hostility they sometimes bring home after a day of dealing with antagonistic situations can erode the one solid safety net the officers have, namely their family. It is difficult to go from an almost combat situation to home life.

At any rate, a number of the larger police departments are now increasing the number of police psychologists they have in the department, and many departments have counselors available for everything from marital problems to alcohol abuse to depression. Nevertheless, only about 1% of the officers who need help seek counseling.

**SUICIDES IN JAPAN**

The Health and Welfare Ministry of Japan reported in May that 27,102 Japanese committed suicide in the first 10 months of 1998 (10). The number soared by >60% in teenagers, who tend to internalize their anger and frustration. Young people in Japan also face diminishing employment prospects because many companies are cutting recruitment. The suicide rate in
Japan is 17/100,000 people, one of the highest rates in the world.

**LITTLETON, COLORADO, AND GUNS**

On April 20, 1999, in Littleton, 2 heavily armed students, one aged 17 and the other aged 18, killed 12 students and 1 teacher at Columbine High School (11, 12). Many victims were shot at point-blank range. After shooting the others, the 2 killers took their own lives.

Littleton has 40,000 people and is 93% white. The median household income is approximately $45,000, 25% higher than the national average. Its Columbine High School, 1 of 3 in the city, has 1800 students in grades 9 through 12 and is a sports powerhouse. Its students score higher than the national norms in the SAT and ACT college aptitude examinations.

Since that day, there has been much debate about making the gun laws more stringent. I am not a gun person, and I tend to believe that it is more dangerous to possess a gun than to not possess one. When the Second Amendment to the Constitution was instituted in 1780, the entire US population was <5 million and the people were more homogenous than today. Now the USA contains 272 million people and is probably the most heterogeneous society in the world. The USA now has 67 greater metropolitan areas with >1 million inhabitants. Other than Australia, the USA is the only country in the world that allows its citizens to purchase guns virtually at will. Despite the preachings of the National Rifle Association, it is the gun that kills. If there were no guns there would be no bullets and no triggers to pull. These Littleton teenagers had semiautomatic assault weapons! Surely we could start by getting rid of them. Nonhuman animals kill to survive. Some human animals kill, it seems, just for fun.

**INMATES**

At the end of 1985, the number of inmates in US prisons was just under 750,000. By June 30, 1998, that number had more than doubled to 1.8 million, and the USA may soon surpass Russia as the country with the highest rate of incarceration (13). Today in the USA there are 668 inmates for every 100,000 US residents, and in Russia that number is 685 for every 100,000 Russians. The increased number of inmates has been helped by increased drug prosecutions and a general get-tough policy on all classes of offenders.

*Prisons* generally hold convicted criminals sentenced to terms >1 year whereas *jails* typically keep those awaiting trial and those sentenced to <=12 months. Although the federal prison population is increasing more rapidly than the state prison and local jail numbers, state prisons still hold 1.1 million inmates and dwarf the federal prison population of slightly <120,000. Local jails held just under 600,000 inmates as of June 30, 1998.

The incarceration rates in some states are much higher than in others. The incarceration rates (sentenced prisoners per 100,000 state residents) are highest in Louisiana (709), Texas (700), Oklahoma (629), Mississippi (547), and South Carolina (543). The 5 lowest incarceration rates are in Minnesota (117), Maine (121), North Dakota (126), Vermont
There are a lot more guns in the 5 states with the highest incarceration rates than in the 5 states with the lowest rates. Whether this fact makes a difference is unclear.

**TRUCKS, TRUCKS, TRUCKS**

Although fatal road accidents are down, those involving heavy trucks are not, and they produce about 5000 road fatalities yearly (14). About a decade ago, industry produced 130,000 new trucks a year; now that number is up to 220,000 heavy trucks annually. Indeed, the number of miles traveled by trucks has increased 25% in the past 4 years, and that mileage could increase 15% this year alone. Large trucks were involved in fatal crashes at a rate of 2.5 for every 100 million miles traveled in 1997, the most recent year for which full statistics are available. That is down by more than half from 20 years earlier when the rate was 5.4 for each 100 million miles. (In comparison, the rate for cars in that period fell to 1.9 from 3.5.) But truck miles traveled more than doubled in that period to 191 billion miles from 95 billion miles, so the absolute number of fatalities did not change much. In 1997, heavy truck accidents produced 5400 fatalities, of whom nearly all were in a car, van, pickup, or light vehicle, not in a heavy truck.

The relatively higher frequency of heavy truck accidents compared with car-to-car accidents is believed to be related to fatigue of the driver. There are limits on how many hours a trucker can drive and how many he or she can be on duty, including loading time, but they are widely flouted, partly because drivers are paid by the mile. Be careful of the 18-wheelers because regulations are poorly observed, particularly with smaller companies, and there are 317,000 companies with 6 or fewer tractors and only 2800 companies with >100 tractors among the 500,000 or so registered trucking companies.

**SLEEP APNEA AND TRAFFIC ACCIDENTS**

Drowsiness and lack of concentration contribute to traffic accidents. Teran-Santos and colleagues (15) examined 102 drivers who received emergency treatment at hospitals in Burgos or Santander, Spain, after highway traffic accidents in 1995. Respiratory polygraphy was used to screen the patients for sleep apnea at home, and conventional polysomnography was used to confirm the diagnosis. The drivers who received emergency treatment at the hospitals were far more likely to have sleep apnea than the control population of patients randomly selected from primary health care centers and matched with the patients for age and sex. The relation between sleep apnea and traffic accidents remained significant after adjustment for many potential confounding factors, including alcohol consumption, age, body mass index (BMI), driving experience, sleep schedule, use of drugs causing drowsiness, and history of traffic accidents.

Sleep apnea is a common but underdiagnosed problem, with an estimated 80% of cases undiagnosed. Among working people between the ages of 30 and 60, 25% of men and 10% of women have more than 5 episodes of apnea or hypopnea per hour of sleep—a rate that has been associated with a high risk of traffic accidents. Although a precise estimate is not available, sleep apnea is most likely a factor in a substantial number of accidents. Treatment
decreases the risk of falling asleep while driving, improves performance on simulated driving tests, and decreases the number of accidents reported by people with sleep apnea.

Sleep apnea, of course, is not the only condition causing sleepiness that increases the risk of traffic accidents. Consumption of alcohol, sleep deprivation, working at night, driving between the house of midnight and 6:00 am or for long periods without a break, narcolepsy, and the use of sedating drugs all cause sleepiness and have been implicated in traffic accidents. The presence of any combination of these factors also substantially increases the risk of a traffic accident.

The message that it is dangerous and irresponsible to drive when one is sleepy should be emphasized in all driver-education courses and publicized by state regulatory agencies. In many states drivers with known but untreated sleep apnea who have an accident may be liable for negligence. Identifying people with sleep apnea and providing treatment and education may be a good way to prevent some accidents.

**VITAL SIGNS AND BODY WEIGHT AND HEIGHT**

In clinical presentations, blood pressure, heart rate, respiratory rate, and temperature are included as the vital signs. I have been surprised at times to hear a patient's story presented without mention of body weight or height. Some of the first things measured in a physician's office are body weight and height. Some case descriptions include the phrase “mildly obese” and “moderately obese.” I rarely know what those phrases mean.

The biggest health hazard in America is overweightness. Sixty percent of adults over age 18 years in the USA are overweight. Because there are approximately 170 million Americans over age 18, that amounts to at least 100 million people, and of that number 50% are obese, that is, >20% over ideal body weight. In recent years BMI (body weight in kilograms divided by height in meters squared) has been the most common measure of overweightness and obesity. I have found few physicians who know their own BMI. Good weights by some investigators are those considered to be a BMI <25; overweightness, BMI 25–30; and obesity, BMI >30. Class I obesity is considered BMI 30–35; class II, >35–40; and class III obesity, >40. The Department of Agriculture in 1995 defined healthy weights for men and women as BMI from 19 to 25 and overweightness as >27.3 in women and >27.8 in men. Although many of us do not think in terms of BMI, this measurement was originally proposed by Quetelet >150 years ago. It correlates more closely with body fat content than other anthropometric relations of height and weight and thus is the preferred measure in epidemiologic and population studies. Its advantages are ease of determination and the accuracy in measuring both height and weight. Its chief limitation is that BMI <25 correlates poorly with actual body fat content, but for BMI values >25, especially >30, it correlates better with the degrees of excessive fat and risk to health than do other measurements of overweightness.

If for some reason body weight and height cannot be measured, waist circumference alone, circumference of the waist divided by the circumference of the hips, and sagittal diameter (measured as the diameter from the abdomen to the back) have all been used in some
excellent studies showing the importance of central fat distribution and the risk of certain
diseases.

The single most important thing any individual can do to foster healthfulness is to maintain
an ideal body weight. If body weight is increased, the most healthful thing one can do is to
lose weight. In my view, physicians and medical personnel need to set the example or
otherwise we have no credibility in advising others to lose weight.

RELATION OF LEVEL OF FITNESS TO CARDIOVASCULAR MORTALITY

Recently I gave the Joseph B. Wolfe Memorial Lecture at the annual Scientific Sessions of
the American College of Sports Medicine and, of course, had to work into my presentation
some discussion on exercise and fitness. After studying a number of articles I have come to
realize the importance of fitness. One of the best articles on this subject was one written by
Pate and colleagues (16), representing views of the Centers for Disease Control and
Prevention and the American College of Sports Medicine. In this splendid article the
authors discuss, among other things, the relation between level of physical activity and
coronary artery disease mortality. They provide strong evidence that not only do fit persons
live longer than unfit persons, but the level of fitness or level of activity also is directly
proportional to cardiovascular mortality. Their conclusion was that every US adult should
accumulate at least 30 minutes of moderate-intensity physical activity on most, and
preferably all, days of the week. For some of us 30 minutes every day might be a bit
difficult, but I find that even 10 minutes of vigorous physical activity daily makes an
enormous difference in the way I feel and the amount of energy I have compared to days
when I neglect even those 10 minutes.

A number of studies have shown that the more we weigh the sooner we die! Until relatively
recently I have thought that leanness was more important than fitness and have stated that
the nonexercising vegetarian is healthier than the meat-eating exerciser. Although there are
not data to prove or disprove this thesis, investigators at the Cooper Clinic here in Dallas
have provided some very useful data on the importance of fitness in any weight category.
Lee and colleagues (17) have followed 21,856 men aged 30 to 83 years who had a complete
preventive medical examination, including a maximal treadmill exercise test and body
composition assessment. During the 18-year period of the study (1971–1989) there were
427 deaths (144 from cardiovascular disease, 143 from cancer, and 140 from other
conditions) during an average of 8.1 years of follow-up. After adjustment for age,
examination year, cigarette smoking, and alcohol intake, they observed that men with a
BMI of 19 to <25 who were unfit had 2.3 times the risk of all-cause mortality compared
with fit men in the same BMI group. Unfit men with a BMI of 25 to <27.8 also had a
greater risk of all-cause mortality than did fit men in the same BMI group. Fit but
overweight men (BMI >=27.8) had a similar rate of all-cause mortality as physically fit men
of normal weight (BMI 19–<25) and a lower risk of all-cause mortality than unfit and
normal weight men. Fit men of normal weight had the lowest cardiovascular mortality,
while unfit and overweight men had the highest cardiovascular mortality. Unfit men had
substantially higher cardiovascular mortality than fit men in each BMI group.
Several observations may explain these findings. Of the variables analyzed, the unfit in each of the 3 weight categories had higher blood pressures, serum total cholesterol levels, serum triglyceride levels, and blood glucose levels than the unfit in each of the 3 BMI categories, and the men with the higher BMIs, irrespective of being fit or unfit, had a higher frequency of these risk factors than the men of lower BMI categories. Thus, unfit men have higher all-cause and cardiovascular mortality than fit men. The health benefits of normal weights are greatest in men who have moderate or high levels of cardiorespiratory fitness. Since studying this article, I have gotten back to more regular use of my NordicTrack, stationary bicycle, and rowing machine.

**DEPRESSION, ERECTILE DYSFUNCTION, AND CARDIOVASCULAR DISEASE**

On June 4, 1999, I served as one of the moderators of a course entitled “Sexual activity and cardiac risk” held in Princeton, New Jersey. I certainly learned more information at the conference than I brought to the conference. The speakers included cardiologists, psychiatrists, and internists.

I had not realized the close connection between major depression and erectile dysfunction. Major depression occurs in about 10% of adults without coronary artery disease and in at least 20% of patients with coronary disease. Some investigators have estimated the latter to be as high as 40%. Depression is 2 times more common in those with erectile dysfunction as in those without erectile dysfunction. The predictors of depression are the same as the predictors of erectile dysfunction, including sedentary lifestyle, coronary artery disease, older age, physical inactivity, systemic hypertension, and diabetes mellitus. Exercise is the best preventer of erectile dysfunction. One speaker did a Medline search and found 65,000 references to coronary artery disease, 10,000 references to sexual dysfunction, and only 26 references with an overlap between the two. Approximately 50% of patients after acute myocardial infarction have either depression, panic disorder, or generalized anxiety disorder. Erectile dysfunction was observed in at least 40% of patients having thallium stress tests in the outpatient department in one institution.

Acute myocardial infarction or sudden coronary death within 2 hours of sexual intercourse is of course a very rare but dramatic event. Sexual activity increases the risk of acute myocardial infarction by 2.5 times compared with baseline risk, but the baseline risk is so low—approximately 1/million/hour—that the absolute risk of coition-induced acute myocardial infarction amounts to a little over 1% per year even among patients with symptomatic myocardial ischemia. The low absolute risk reflects the low frequency of sexual activity. Moreover, for most individuals the physical exertion associated with sexual intercourse is modest. Only among patients with angina pectoris does the heart rate during sexual activity exceed that during moderate customary physical activity.

Established trigger mechanisms for acute cardiac events include the early hours of the day (diurnal variation), exercise, anger, and sexual activity. Together these may account for as many as 50% of acute myocardial infarcts, of which approximately 1% overall are attributable to sexual activity. Exercise testing may be useful in stratifying the risk of acute coronary events among patients with symptomatic myocardial ischemia. Patients able to
achieve a peak exercise workload of 5 or more METS (multiple of resting energy expenditure) can generally tolerate sexual activity that imposes a physical workload of only 3 to 4 METS and only for >2 minutes following orgasm. Among older individuals, the physical workload of sexual activity is even less.

Although sexual activity may be a short-term trigger to coronary events, it is a long-term protector from these events. Roman Catholic priests have a higher frequency of cardiovascular disease than similar-aged nonpriests. Early cessation of sexual activity in men increases cardiovascular death rates. Sexual activity in men aged 60 to 94 increases survival. Sexually frigid women have an increased mortality. After coronary events, the best ways to keep sexual activity from being a trigger to another cardiac event are being physically fit, taking aspirin, and taking a beta-blocker.

DEMENTIA AND ISOLATED SYSTOLIC HYPERTENSION

It is well established that lowering hypertensive blood pressures sharply reduces the frequency of strokes and aortic dissection. Forette and colleagues (18) in the Systolic Hypertension in Europe Trial asked if reducing systolic blood pressures in patients with isolated systolic hypertension reduced the frequency of dementia. They studied 2470 patients >=60 years of age who had systolic blood pressures of 160 to 219 mm Hg and diastolic blood pressures <95 mm Hg. Of the 1238 patients allocated to antihypertensive treatment after a median follow-up of 2 years, 11 new cases of dementia (8 Alzheimer and 3 mixed) occurred in the antihypertensive treatment group, the goal of which was to reduce systolic blood pressure >=20 mm Hg or to achieve systolic blood pressure <150 mm Hg. Among the 1238 patients receiving placebo during the same period, 21 new cases (15 Alzheimer, 4 mixed, and 2 vascular) occurred. Thus, antihypertensive treatment may lead to a reduction in the frequency of dementia.

ANEMIA IN PERSONS AGED >=85 years

Recently, Shirani and I summarized our experience studying hearts at necropsy in octogenarians, nonagenarians, and centenarians. Among the 490 cases analyzed, 391 were in their 80s, 93 were in their 90s, and 6 were >=100 (19). Well over 90% had been anemic during their last month of life. According to Wintrobe, the normal hematocrit in men is 47% ± 5% and in women, 42% ± 5%. In the above-mentioned study, anemia was defined as a hematocrit of <37% in women and <42% in men.

A recent study by Izaks and colleagues (20) from Leiden, the Netherlands, investigated the association between hemoglobin concentration and cause-specific mortality among 1016 community residents aged 85 years and older. The blood hemoglobin concentration was measured in 755 persons (74%). Anemia was defined as a hemoglobin concentration <7.5 mmol/L (120 g/L) in women and <8.1 mmol/L (130 g/L) in men. Compared with persons with a normal hemoglobin concentration, the mortality risk was 1.60 in women with anemia and 2.29 in men with anemia. In both sexes, the mortality risk increased with lower hemoglobin concentrations. Mortality from malignant and infectious diseases was higher in persons with anemia at baseline. These death rates were calculated up to 5 years after the
baseline blood hemoglobin level was measured. Thus, anemia is associated with an increased mortality risk in persons aged 85 years and older. The authors concluded that a low hemoglobin concentration in the very elderly signifies the presence of disease and is not due to aging itself.

**BETA-BLOCKERS, CALCULUM ANTAGONISTS, OR NITRATES FOR STABLE ANGINA PECTORIS**

It is estimated that >7 million persons in the USA have stable angina pectoris and that there are an estimated 350,000 new cases each year. To prevent anginal symptoms, beta-blockers, calcium antagonists, and long-acting nitrates or their combinations have been used. The choice of a first-line agent has been controversial. Heidenreich and colleagues (21) from Stanford, California, recently did a meta-analysis of 90 trials comparing 2 or 3 of the above agents for stable angina. Rates of cardiac death and acute myocardial infarction were not significantly different for treatment with beta-blockers versus calcium antagonists, but there were 0.31 fewer episodes of angina per week with beta-blockers than with calcium antagonists. Beta-blockers were discontinued because of adverse events less often than calcium antagonists. The differences between beta-blockers and calcium antagonists were most striking for nifedipine. Too few trials compared nitrates with calcium antagonists or beta-blockers to draw firm conclusions about relative efficacy. Thus, beta-blockers provide similar clinical outcomes and are associated with fewer adverse events than calcium antagonists in randomized trials of patients with stable angina pectoris.

**RELATION OF HOSPITAL VOLUME TO SURVIVAL AFTER ACUTE MYOCARDIAL INFARCTION**

Thiemann and colleagues (22) from Maryland studied the relation between the number of Medicare patients with acute myocardial infarction treated at each hospital in the study (hospital volume) and long-term survival among 98,898 Medicare patients (aged >=65 years). The patients in the quartile admitted to hospitals with the lowest volume were 17% more likely to die within 30 days after admission than patients in the quartile admitted to hospitals with the highest volume. The mortality rate at 1 year was 30% among the patients admitted to the lowest-volume hospitals compared with 27% among those admitted to the highest-volume hospitals. The availability of coronary angioplasty and coronary bypass surgery was not independently associated with overall mortality. Thus, patients with acute myocardial infarction admitted directly to hospitals that have more experience treating this condition as reflected by their case volume are more likely to survive than are patients admitted to low-volume hospitals. The closest hospital is not always the best!

**ACRONYMS OF CLINICAL TRIALS IN CARDIOLOGY**

Cheng (23) of Washington, D.C., recently published a 39-page article listing the 2300 acronyms for clinical trials in cardiology in 1998. In 1992, there were just over 200 acronyms of clinical trials in cardiology, so the increase has been 10-fold in just a 6-year period. It's simply dizzying to look at page after page of these acronyms.
THE MOST COMMON WORLDWIDE CANCERS

The most common fatal cancers worldwide as of 1990 on an age-standardized death rate/100,000 for men is lung (34), stomach (19), and liver (14); for women it is breast (13), lung (10), stomach (9), and liver (5) (24). The lung cancer rates are following the marketing of tobacco products around the world. As restrictions on tobacco advertising have tightened in western countries, lung cancer rates have declined, but in developing countries and in areas where women previously did not smoke, lung cancer is taking off. The highest lung cancer rates are in Eastern Europe and Russia in men, because they have had the highest smoking prevalence for the longest time. Rates have begun to fall in North America and in northern Europe, but are rising rapidly in southern Europe, Asia, and developing countries and among women. Meanwhile, stomach cancer rates have declined dramatically in recent years, reflecting less consumption of smoked and salted foods and greater consumption of fresh fruits and vegetables. In addition, better sanitation has reduced the incidence of childhood infection with Helicobacter pylori bacteria, which causes chronic inflammation of the stomach. Cervical cancer has become uncommon among women in wealthy countries, but it is still common in parts of Africa, South and Central America, and the Caribbean where human papillomavirus is common. Sadly, most of these cancers are preventable.

HEPATITIS C AND BLOOD TRANSFUSIONS

Between 1988 and 1992, 300,000 Americans received blood transfusions contaminated by hepatitis C, a deadly virus that can reside in the bloodstream for years without symptoms (25). Most of those who received the bad blood have since died. But up to 100,000 are still alive and infectious, unwittingly able to spread the virus to lovers and strangers alike. A test made it possible to track down those victims in 1992, and a report by the Institute of Medicine in 1995 detailed the extent of the infection. The first coordinated effort to notify patients began in late March 1999 and won't be finished until at least 2001. The 100,000 persons who may still be traceable using old medical records represent just the tip of a much larger public health hazard. Nationwide, 4 million Americans carry hepatitis C virus (HCV), and most of them may not be identified and diagnosed until the infection becomes acute. And liver cancer, closely associated with HCV, has risen 71% since the late 1970s. It is estimated that up to 20% of all those with HCV—800,000 or more—were infected through sexual contact and not through illicit intravenous drug use. Tracking down blood recipients from 11 years ago based on data collected 7 years ago is a daunting chore, of course.

INCREASING HEPATOCELLULAR CANCER

El-Serag and Mason (26) from Albuquerque, New Mexico, determined the age-adjusted incidence of hepatocellular carcinoma in the USA from 1976 to 1995. The incidence of histologically proved hepatocellular carcinoma increased from 1.4/100,000 population for the period 1976 to 1980 to 2.4/100,000 for the period 1991 to 1995. Among black men, the incidence was 6.1/100,000 for the period 1991 to 1995, and among white men, it was
The major causes of hepatocellular cancer worldwide are known and preventable (27). Hepatitis B virus (HBV) and HCV exist only in humans, and transmission of the viruses can be interrupted by vaccination against HBV. No vaccine has been developed for HCV. The rise in hepatocellular carcinoma in the USA may continue for many years. There is a large pool of persons infected with HCV, HBV, or both, in whom the cancer is in the latency period. In addition, immigration from areas where hepatocellular carcinoma is endemic, such as Southeast Asia and parts of Africa where perinatal HBV infection and exposure to environmental carcinogens are common, is a factor. Cirrhosis is estimated to develop during the first 10 years after transfusion in at least 20% of patients with posttransfusion chronic HCV infection. Once cirrhosis is established, carcinoma develops at a rate of 1% to 4% per year, which means that after 20 years hepatocellular carcinoma will develop in 2% to 7% of all patients with chronic HCV infection. These projections are obviously important because approximately 4 million persons in the USA are infected with HCV. In contrast, the seroprevalence of HBV in the USA is low, with an estimated 1 million persons or 0.9% of blacks and 0.2% of whites harboring a silent HBV infection.

INCREASING RENAL CANCER

Malignant tumors of the kidney account for about 2% of cancer incidence and mortality in the USA, with nearly 30,000 new cases and 12,000 deaths estimated for 1998. More than 80% of renal cancers arise in the renal parenchyma and the remainder in the renal pelvis. Nearly all kidney cancers originating in the renal parenchyma are adenocarcinomas, whereas most renal pelvis cancers are transitional cell carcinomas. Recent clinical surveys have revealed that incidental detection of renal cell carcinomas is rising. Chow and colleagues (28) from the National Cancer Institute in Bethesda, Maryland, surveyed patients diagnosed as having kidney cancer from 1975 through 1995 in the 9 geographic areas covered by tumor registries in the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program. Renal cell cancer incident rates steadily increased between 1975 and 1995 by 2.3% annually among white men, 3.1% among white women, 3.9% among black men, and 4.3% among black women. In contrast, the incidence rate for renal pelvis cancer declined among white men and remained stable among white women and blacks. Kidney cancer mortality rates also increased during this period. The factors contributing to the rapidly increasing incidence of renal cell cancer in the USA, particularly among blacks, is unclear. Better diagnostic tools are not the explanation.

SYMPTOMATIC GASTROESOPHAGEAL REFLUX AND ESOPHAGEAL ADENOCARCINOMA

Lagergren and associates (29) from 3 cities in Sweden interviewed 189 patients with esophageal adenocarcinoma and 262 with adenocarcinoma of the cardia of the stomach. Among persons with recurrent symptoms of reflux, compared with persons without such symptoms, the odds ratios were 7.7 for esophageal adenocarcinoma and 2.0 for adenocarcinoma of the cardia. The more frequent, more severe, and longer lasting the symptoms of reflux, the greater the risk. Among persons with long-standing and severe
symptoms of reflux, the odds ratios were 44 for esophageal adenocarcinoma and 4 for adenocarcinoma of the cardia. The risk of esophageal squamous cell carcinoma was not associated with reflux. Thus, there is a strong and probably causal relation between gastroesophageal reflux and esophageal adenocarcinoma. The relation between reflux and adenocarcinoma of the gastric cardia is relatively weak.

ASSOCIATION BETWEEN BODY WEIGHT AND CANCER OF THE ESOPHAGUS AND STOMACH

The incidence of esophageal and gastric cardia adenocarcinoma is increasing dramatically in the USA. Lagergren and colleagues (30) examined data of all Swedish residents who had been born in Sweden, were <80 years of age, and had lived in Sweden from 1995 through 1997. They studied all persons who developed new esophageal or cardia adenocarcinomas and persons who developed esophageal squamous cell carcinomas and were born on even dates during the 3-year period. The proportions of men among patients with esophageal adenocarcinoma, cardia adenocarcinoma, and esophageal squamous cell carcinoma were 87%, 85%, and 72%, respectively. The median ages for both sexes in the 4 groups were 69, 66, 67, and 68 years, respectively. A strong relation was found between BMI and esophageal adenocarcinoma. Persons in the highest BMI quartile had a 7 times more frequent occurrence of esophageal adenocarcinoma than persons in the lowest BMI quartile. Persons with a BMI >30 had a 16 times greater frequency of esophageal adenocarcinoma compared with persons with a BMI <22. The odds ratio for patients with cardia adenocarcinoma was 2.3 in those in the highest BMI quartile compared with those in the lowest BMI quartile and 4.3 among obese persons. Esophageal squamous cell carcinoma was not associated with BMI. Thus, the association between BMI and esophageal adenocarcinoma is strong, although the carcinogenic mechanism is unclear. This article provides another reason to keep our body weight down. Esophageal cancer is one of the worst cancers, and it looks like we all can do something to help prevent it.

MEDICAL MARIJUANA

On March 17, 1999, the prestigious Institute of Medicine issued a report of an 18-month study on marijuana commissioned by the White House, concluding that marijuana may indeed be useful for treating some patients with chronic pain from cancer and other diseases, as well as some patients with AIDS-related weight loss (31–33). And the Family Research Council has released a survey of voters, in which 60% say they believe the debate over medical marijuana has “fueled teen use.” The Institute of Medicine's report noted that questions about marijuana's role in increasing drug abuse “should not be a factor in evaluating therapeutic potential.” As medication, can marijuana do more good than harm? The answer, quite likely, is yes. Marijuana smoke is not healthy, but the report concluded that it can relieve pain, stimulate appetite, and reduce nausea. Other drugs do those things but not all at once and not by inhalation. Therefore, marijuana is especially useful for patients unable to keep other medicines down. Ideally, what is needed is a purified form of marijuana's active ingredients that can be inhaled in some measurable way. But that technology is not now available. Six western states have passed ballot measures approving its use, but federal law conflicts with those initiatives, and there are no research programs
currently examining the drug's effectiveness one way or the other. The Institute of Medicine proposes short-term clinical trials to test smoked marijuana's effectiveness.

The other camp believes that medical marijuana laws are not about relieving suffering but about decriminalizing pot and ultimately other illicit drugs. The worry by some is that legalizing smoked marijuana for medicinal purposes could boost the use of pot by teenagers. Apparently, 1 in 10 teenagers now regularly smokes marijuana, and since 1991 marijuana-related visits to emergency rooms have increased 360%. This issue is a long way from over.

**CENTENARIANS**

The number of centenarians in the world is exploding (34). By the year 2000, there may be 100,000 centenarians on planet Earth. Since 1960, the number of centenarians has increased at least 10-fold. I read somewhere that 10,000 people have to reach age 85 for 1 to reach age 100.

Intriguing findings are emerging. For example, the widely held belief that if you live long enough you will become demented is not true. About 30% of centenarians worldwide arrive at age 100 cognitively intact. In Sweden about 50% of centenarians manage activities of daily living with little, if any, assistance. In France, where there were 3853 centenarians in 1990, clinical examination of 700 of them found that nearly 60% were in good or very good health. About a third of the centenarians in Denmark are relatively independent and cognitively intact. The oldest recorded human longevity was that of the French woman Jeanne Clament who died in 1997 at age 122. Studies of French and Swedish centenarians have shown that they tend to be “calm, communicative, cheerful, optimistic, . . . more responsible, capable, easygoing and less prone to anxiety.”

**JAPAN'S COMING HEALTHFUL TOILET**

One of the Japanese electronic companies (Matsushita) has developed a high-tech model home, which it plans to put on the market by the year 2003 (35). Although the Japanese toilet is already famous for having elevated the humble water closet into a technological marvel that warms the buttocks while washing and blow-drying everything in between, the modern latrine is not only paperless, it is also made of bacteria-resistant materials. The new toilet also becomes an on-line health-monitoring system. Thanks to microchips and medical equipment installed with the plumbing, the intelligent toilet can measure the user's weight, fat content, and urine sugar. The toilet records data onto a graph and, if requested, sends it to the family doctor or life insurance company.

In the new future house, the bedroom contains an electrocardiometer, a blood sugar meter, a thermometer, a tonometer, and an electronic scoop. Readings from these devices are automatically stored in the home computer for personal reference, remote consultations with specialists, or looking up advice on exercise or diet via the Internet. The information can even be linked with the refrigerator and microwave oven to prepare healthy meals.
These developments, in part, are due to the fact that Japan has the fastest aging population in the world, with 1 in 4 people projected to be older than 65 by the year 2020. Worried that medical institutions will not be able to cope, the government is promoting care in the home and in the community. There are also signs of a growing awareness of health issues as Japan shifts from a production-oriented society to one in which individuals focus more on the quality of their lives. Even the traditional world of sumo is not immune. Recently, the sports authorities warned wrestlers that they were overweight and ordered them to pay greater attention to their health.

References


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