Facts and ideas from anywhere

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DRUG COMPANIES UNDER FIRE

During my 32 years at the National Institutes of Health (NIH) in Bethesda, Maryland, I had very little contact with representatives of the pharmaceutical industry. Pharmaceutical representatives infrequently wandered into NIH's laboratories. When lovastatin arrived on the scene in 1987, my invitations to speak increased because of my interest in the cholesterol issue.

Now, most visiting professorships in various medical centers are underwritten by grants from the pharmaceutical industry.

The number of new drugs produced by the pharmaceutical industry has increased incredibly during the past 20 years, and the amount of money these companies put into research and development is enormous and continues to increase. It costs about \$500 million to develop a new drug and get it approved by the Food and Drug Administration (FDA). Although I have no stocks in these companies, I have generally been a major supporter of the pharmaceutical industry. If the pharmaceutical industry didn't come up with new drugs, no one else would. Nevertheless, this industry is not perfect and is under fire.

In 1999, prescription drugs accounted for 44% of the 6.6% increase in health care costs that year: hospital inpatient costs increased 0.6%, hospital outpatient costs increased 8.4%, costs for physician services increased 5.2%, and prescription drug costs increased 18.4% (1). In the past 12 months, the 10 largest pharmaceutical companies in the USA had collective sales of \$179 billion and collective gross profits (excess of sales over manufacturing costs) of \$121 billion. It's that \$121 billion that is in play if the industry becomes subject to price controls, threatening both marketing and research and development budgets (collectively \$20.5 billion) and pretax income (\$40 billion).

Price discrimination

The pharmaceutical industry practices price discrimination, which makes economic sense for a product that has a huge fixed cost (namely, research and development) and a small marginal cost (the cost of pill making) (2). The industry may charge full price to prosperous customers to cover the research and development and then get whatever it can from poorer customers. It's also good relations. If AIDS-fighting proteases cost \$14,000 a year in the USA, but something close to manufacturing costs—namely \$2000 a year—in Africa, that could be seen as a humanitarian gesture. But, at some point, uninsured, unprosperous

patients in the USA want to receive the humanitarian rate. Once lifesaving drugs become available at lower costs to the world's poorest people or to those aged 65 and over in the USA, many ask why a uniformly low price cannot be made available for everyone. Then come price controls. There goes the research and development budget. There go new drugs.

Drug reimportation

The high cost of prescription drugs has allowed the drug reimportation bill, known as the Medicine Equity and Drug Safety Act of 2000, to receive support in the House and Senate from previously propharmaceutical representatives and senators (2). Drug companies, of course, dislike the reimportation bill, which essentially amounts to price controls. The pharmaceutical industry argues, among other things, that consumers won't really save that much, given the costs of repackaging the pills from blister packs to vials and the extra US health inspectors who will have to examine the imported medicine. The real objection almost certainly is the prodigious threat to profits. A 3-month supply (180 pills) of tamoxifen costs \$298 in the USA but only \$26 in Canada; Eli Lilly's Prozac retails for \$115 for 45 capsules in the USA and \$35 for the same amount in Canada.

Patent protection and compulsory licensing

Another blow may come to the US pharmaceutical industry in 2001. In March 2001, Congress will hold hearings on whether to reduce the length of patent protection from 20 years to maybe 10 years (2). Spearheading this effort in the USA will be the American consumer groups and health maintenance organizations (HMOs) that will insist (true or not) that prescription drugs are a major culprit in driving up health care costs. Financially battered HMOs, however, will probably band together and insist on sharp discounts from listed retail prices.

Another problem for the pharmaceutical industry is something called compulsory licensing (2). This allows a foreign government to take away the exclusivity of a product when the health or safety of a nation is at risk. Under compulsory licensing, a generic manufacturer is allowed to produce a drug discovered by a US pharmaceutical company in exchange for a licensing fee. Those fees vary from deal to deal, but they never compensate for the costs of being undersold by a generic. Compulsory licensing would have a drastic impact on US pharmaceutical companies and their ability to develop new drugs, including those from the human genome system.

Many countries ignore product patents. I was in India a couple of years ago and learned that a number of Indian pharmaceutical companies produce many of the statin drugs, totally

ignoring patent rights. Many of these Third World countries have signed the World Trade Organization's Trade-Related Aspects of Intellectual Property Rights agreement, which requires them to reinstate product patents by 2005. By then, however, the noose around the drug companies—public interest groups, the elderly, politicians, and HMOs—can only draw tighter. One World Health Organization executive put it this way: "Either the prices give or the patent system will have to give." It looks as if the pharmaceutical industry, which does indeed enjoy huge profits (19% in the year 2000), may end up being punished for its remarkable performance. And that means there will be fewer new drugs in the future.

Drug samples

In some quarters, there is growing opposition to giving free drug samples to physicians (3, 4). A small but growing number of hospitals, clinics, and other health care organizations in the USA are banning free samples of brand-name prescription drugs or limiting what samples physicians can accept from drug companies. Physicians, of course, have long used free drug samples to let patients try new treatments or to start patients on medications quickly while they are waiting for prescriptions to be filled. But now, physicians, administrators, and pharmacists at hospitals in several cities say they cannot control the increasing amount of free medicines provided by pharmaceutical representatives. Health care administrators assert that the samples help inflate their drug costs because the drug companies tend to give out samples of the newest brand-name drugs, which usually are the most expensive ones. The companies rarely give away samples of lower-cost generic drugs. If the sample medicine works for the patient, the administrators say physicians then will prescribe the higher-cost drug, even though a generic drug may work just as well.

Like consumer advertising, the handouts of sample-sized medicines are a growing part of drug companies' marketing budgets (3, 4). Last year, drug companies gave physicians free pills worth more than \$7.2 billion at their retail price, almost 10% more than the year before. By comparison, the companies spent \$1.8 billion—one quarter as much—on consumer advertisements. And the value of free samples continues to rise, up another 8.4% in the first half of 2000 compared with the comparable period a year earlier. The actual costs of the free samples to the companies, however, is much less than their retail price because the expense of making the pills—the raw materials and factory costs—is often 20% to 30% of their sales price. Some physicians and pharmacists say that there is an increased risk that a physician could give a patient a sample of pills that is later recalled by its manufacturer, and then they would have no way of notifying that person. Unlike prescriptions, where there are 2 people—a physician and a pharmacist—to serve as safety checks, samples are passed directly from physician to patient.

Many hospitals that are limiting drug samples also say that they became concerned that they would be cited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) for not properly controlling the samples. The commission surveys each hospital every 3 years and decides whether it meets the group's standard for accreditation. JCAHO has increased its emphasis on medication safety in the past 2 years. And

the commission's surveyors have been making sure that hospitals properly control drug samples. Many physicians, however, have complained bitterly as the clinics' cabinets of drug samples have been emptied. They say that they often depend on the samples to help patients who lack insurance coverage and cannot afford the expensive new drugs. One HMO recently barred pharmaceutical representatives from visiting its 450 doctors and handing out free samples.

I have learned a lot from pharmaceutical representatives and have benefited from receiving drug samples, so I am against eliminating these activities. The pharmaceutical companies argue that free samples play an essential role in the health care system. They allow physicians to learn about the benefits of new drugs recently introduced to the market, and they allow patients to evaluate a drug's benefit before spending money on a full prescription. There have been no definitive studies, however, on whether drug samples influence physicians to write prescriptions for those sample medicines.

Sales representatives' knowledge of prescriber habits

The pharmaceutical industry has considerable knowledge of physicians' prescribing habits (3, 4). Whenever a pharmaceutical representative walks into a physician's office, he or she knows precisely which drugs that physician has prescribed recently. With the advent of sophisticated computer technology, over the past 10 years the pharmaceutical manufacturers have compiled resumes on the prescribing patterns of the nation's health care professionals, many of whom have no idea that their decisions are open to commercial scrutiny. These prescriber profiles are the centerpiece of an effort by drug makers to sway physicians' prescribing habits. To create them, pharmaceutical marketers have bought information from pharmacies, the federal government, and the American Medical Association (AMA). These profiles do not contain patient names, but they do offer drug companies a window into one half of the physician-patient relationship. They also raise important public policy questions, both about the privacy of physicians' prescribing decisions and how much commercial pressure influences them. The major policy question is to what extent health care prescribing practices are influenced by commercial concerns. That question is now front and center in the political debate.

Pharmaceutical sales representatives have been a staple of American medicine for decades. Their courtship of physicians is intensive and expensive, and their largess runs the gamut, from trinkets like prescription pads and pens to staff lunches at hospitals and medical offices and occasionally free weekends at resorts. Prescriber profiles play a significant role in the courtship. Pharmaceutical marketers say they use the reports to help determine which physicians should be offered certain perks. And the perks themselves worry ethics officials at the AMA, who are trying to discourage physicians from accepting them, even as the association's business side sells information that facilitates the gifts.

Feeling out physicians is not new, but detailed prescriber profiles have been available only since the early 1990s, when most pharmacies adopted computer systems to process insurance claims. Through the profiles, a drug company can identify the highest and lowest prescribers of a particular medicine in a single

ZIP code, county, state, or the entire country. When pharmacists sell records of prescription drug sales, they do not show names of patients or, in some cases, their physicians. But those records are typically coded with identification numbers issued by the Drug Enforcement Administration (DEA) to physicians for the purpose of tracking controlled substances. The government sells a list of the numbers, with the corresponding names attached, for fees that can run up to \$10,200 a month, depending on how widely the list will be distributed.

The AMA, meanwhile, sells the rights to what it calls its "physician master file" to dozens of pharmaceutical companies, as well as IMS Health and other market research concerns. Though only about 40% of US physicians are dues-paying members of the AMA, the database has detailed personal and professional information, including DEA number, on all physicians practicing in the USA. Pharmaceutical marketers consider "the master file" the gold standard for reference information about physicians. Combined with the records of pharmacy sales, the file helps create portraits of individual physicians and their specialties and interests. The AMA has maintained the master file for nearly 100 years and has licensed it for >50. There are some restrictions. The roster, for example, cannot be sold to tobacco companies and cannot be used to deceive physicians or the public. The sale of the master file brings about \$20 million in annual income to the AMA, but its charge to individual companies is not public information. One major element in the AMA database is not available to others, namely the medical education number that the AMA assigns to new medical students to track them throughout their careers. Most physicians do not even know they have a medical education number. This number, which enables computers to sort through the huge AMA master file, is the "core element in the database of tracking physicians."

To heighten physicians' awareness about the ethics of accepting gifts from pharmaceutical companies, including dinners, the AMA is beginning an educational campaign. In addition, *The Journal of the American Medical Association* devoted the bulk of its November 1, 2000, issue to conflict of interest in medicine, including an essay entitled "Financial indigestion." That question centers on the effects of pharmaceutical company gifts on physicians' professional behavior. Some prominent physicians say the AMA needs to address its own role as a seller of information that helps drug marketers select which physicians to target.

The impact of marketing on drug costs

With the price of prescription drugs high on the national agenda, the impact of marketing on the cost of pharmaceuticals is an issue (3, 4). While the public discussion has focused largely on the recent trend towards advertising directly to the public, the industry still spends most of its money wooing physicians. Overall spending on pharmaceutical promotion increased >10% in 1999 to \$13.9 billion from \$12.4 billion in 1998. Of that amount, 87% or \$12 billion was aimed at physicians and the small group of nurse practitioners and physician assistants who can also prescribe some medications. About 1 million persons in the USA have medication-prescribing rights. It is estimated that the pharmaceutical companies collectively spend \$8000 to \$13,000 a year per physician in the USA. The pharmaceutical

industry has the best market research system of any industry in the world.

Closing thoughts

I have mixed views about drug costs and about physician-pharmaceutical relationships. Some of my good friends are in the pharmaceutical industry. My father (1878–1941), who was the first cardiologist in the South, saw numerous other physicians and preachers as patients in his practice, and they were not charged and neither were their families. Thus, my father had to charge more to patients capable of paying to make up for those patients who paid little or nothing, and, therefore, he too practiced price discrimination. The pharmaceutical companies maintain a similar practice. A huge percentage of the costs for medical education in the USA now is underwritten by the pharmaceutical industry. The honoraria and expenses of visiting professors at Baylor are often underwritten by the pharmaceutical industry. I have attended numerous medical meetings sponsored by one or more pharmaceutical companies, and most have been of excellent quality. I have learned much from pharmaceutical representatives whose jobs are to sell, but that selling also provides education. The advertisements in medical journals are provided mainly by the pharmaceutical companies, and if the ads were not there the costs of the journals would be so exorbitant that few physicians could afford to subscribe to them. And the new, innovative drugs play a major role in keeping patients out of hospitals, and hospital costs are by far the most expensive part of medical care.

PHENYLPROPANOLAMINE, COLD REMEDIES, AND APPETITE SUPPRESSANTS

A Yale University study, which will appear in the December 21, 2000, issue of *The New England Journal of Medicine*, found that phenylpropanolamine (PPA) increased stroke risk in some users, mainly young women (5–7). The study spurred the FDA on November 6, 2000, to advise customers to avoid the over-the-counter cold remedies and appetite suppressants containing PPA. According to the FDA, Americans consume 4.5 billion doses a year of nonprescription PPA, and its ingestion might be responsible for 200 to 500 hemorrhagic strokes each year in US adults <50 years of age. PPA apparently is an ingredient in about 400 prescription and nonprescription drugs. Certain formulations of Alka-Seltzer, Dimetapp, Robitussin, Contac, and Triaminic use PPA, as do many generic cold remedies, some prescription decongestants, and some products for children. Acutrim and Dexatrim, both appetite suppressants, also contain the ingredient. The FDA asked the 100 manufacturers of all PPA products to stop marketing them voluntarily while regulators draft new rules that would effectively ban the ingredient. The request sent drug store and pharmaceutical executives scrambling to respond, and it is not immediately clear whether all will comply.

The Consumer Healthcare Products Association (CHPA), a drug industry trade group that paid \$5 million to Yale to conduct the study, has disavowed it, saying that the findings are flawed. CHPA members continue to stand by the safety of PPA-containing products when used according to label directions. To enact a permanent ban, the FDA must issue a new regulation governing over-the-counter products and seek public comment.

It must also initiate separate proceedings to remove the ingredient from prescription drugs. Because these moves take months, the FDA decided to issue an immediate warning to customers.

PPA, which is similar in structure to amphetamine, has been on the market for >50 years. Safety concerns about PPA first emerged in the early 1980s, when the FDA began receiving reports that some people taking the chemical had hemorrhagic stroke. In 1990, a senator and a congressman held hearings about the ingredient, and the following year the FDA held a public meeting to examine the risks. The Yale study grew out of that meeting. Had the drug industry not agreed to conduct it, the FDA regulators would likely have removed PPA from the market as early as 1994, the same year it issued a regulation for cold products that do not contain it.

An advisory board to the FDA reviewed the Yale study on October 19, 2000, and concluded that PPA could no longer be "generally recognized as safe and effective," which is the agency's standard for over-the-counter products. The panel did not consider whether the ingredient should be permitted in prescription drugs.

Also to appear in the December 21, 2000, *New England Journal of Medicine* will be a study of the risks of ephedra, an ingredient in natural appetite suppressants that are classified as dietary supplements and therefore escape FDA regulation. The article will review reports of 140 people who had serious side effects, including stroke and seizures, after taking ephedra products: 10 died and 18 were permanently disabled. Some public health experts fear that if PPA is removed from over-the-counter weight loss drugs, consumers will turn to ephedra. It looks to me like PPA will be removed from all medications in the near future. Otherwise, the lawyers will have a field day.

REDUCING MEDICAL ERRORS ESSENTIAL FOR HOSPITAL SURVIVAL

Sixty of the country's largest companies announced plans in November 2000 to push hospitals to reduce medical errors (8). Members of the Leapfrog Group, which includes General Motors, General Electric, AT&T, Boeing, and IBM, said they would encourage their employees to use hospitals where physicians order prescription drugs and medical services on computerized systems that reject dangerous mistakes. Only 7% of the 4800 hospitals in the USA have these systems, which cost \$1 million or more to install. Hospitals will also be expected to hire intensivists to supervise intensive care units. Patients with cancer and other major diseases will be directed to hospitals with high success rates for those conditions. The employers group was formed in 1999 after the study by the Institute of Medicine of the National Academy of Sciences announced that there were too many preventable mistakes in hospitals each year. The 60 companies in the group insure a total of 20 million people. Improving patient safety is a major mission of the Baylor Health Care System.

SCIENTIFIC PUBLISHING MERGERS AND COSTS OF MEDICAL JOURNALS

Worldwide, there are 1240 mainstream medical journals tracked by the Institute for Scientific Information (ISI) (9). Of this number, 262 (21%) are published by Reed Elsevier, and 162 (13%) are published by Harcourt General. In October 2000,

Reed Elsevier announced that it is buying Harcourt for \$4.5 billion. Therefore, it will then publish 424 medical journals (34%), including 134 of the 500 most cited biomedical journals tracked by the ISI. Reed Elsevier is the publisher of such well-known titles as *Lancet*, *The American Journal of Cardiology*, *The American Journal of Medicine*, and *The Journal of the American College of Cardiology*.

In the past 2 years, the number of major biomedical publishers has shrunk from 13 to 8. The merger of Reed Elsevier and Harcourt would reduce that to 7. Consolidation usually allows commercial publishers to increase subscription prices far faster than the rate of inflation. In the past 2 years, research libraries have trimmed subscriptions by 6% while spending 170% more on titles. Prices of Elsevier's new titles jumped by an average of 27% within a few years after its purchase of Pergamon Press in 1991. Similarly, prices of Lippincott's titles purchased by Kluwer the same year jumped by 30% over the same period. Because the planned union of Reed Elsevier and Harcourt may have severe repercussions for medical libraries, the merger will probably be fought by the Association of Research Libraries in Washington, DC, which represents 121 of the largest research collections in North America (9, 10).

GLOBAL EPIDEMIC OF OBESITY

In the USA, nearly 60% of our population is overweight, and half of those people are obese (11). These figures are twice what they were in 1960. Similarly, the number of obese people has doubled in most countries in the past 20 years. In some countries, such as China and India, even modest weight gains are increasing the risk of diabetes mellitus, stroke, and systemic hypertension. Both the Chinese and Indians as well as Hispanics seem to be supersensitive to the impact of weight gain. Although the average body weight has increased in China, it is still one of the world's lowest. Nevertheless, 14% of men and 17% of women in China are overweight; 2% of the men and 6% of the women are obese. In Central Europe, the obesity rates also are climbing. In Romania, nearly 40% of men and 33% of women are overweight (>15 pounds over ideal weight), and 21% of men and 27% of women are obese. Similar rates are present in Russia and the Czech Republic. In some Pacific Islands the problem is greater than anywhere else in the world. In urban Samoa, 58% of the men and 77% of the women are obese (>30 pounds over ideal body weight). They are extremely sedentary and surrounded by cheap imported food.

The USA and Britain have contributed to the obesity epidemic with big portion sizes, huge amounts of meat and fat, and fast food. A worldwide decrease in the level of physical activity is also playing a role. We can learn some lessons from other countries. Scandinavian law forbids television advertising of foods to children. Finland specifies standards for school meals. We need more bicycle paths and sidewalks. Buildings need to be designed so that people can easily find and use the stairs and not always rely on elevators or escalators.

THE ATKINS DIET AGAIN

Dr. Robert C. Atkins, a cardiologist, first published his diet in 1972. He states that he has no idea why some people who abide by his diet lose weight. At the annual meeting of the North

American Association for the Study of Obesity, which took place in Long Beach, California, in November 2000, several studies using the Atkins diet were presented (12). One study from Cooperstown, New York, involved 9 men and 9 women, each at least 30 pounds over a healthy weight. During the several days before starting the Atkins diet, each consumed approximately 2500 calories a day, and during the most restrictive phase of the Atkins diet they consumed just over 1400 calories a day. At the end of 2 weeks, they each lost an average of 8 pounds. After the 2-week period, the dieters ate an average of 1500 calories a day and lost an additional 3 pounds in 2 weeks. Dieters in both phases of the Atkins diet severely cut back on carbohydrates (by >90%), but the actual amount of fat and protein they ate was pretty much the same as they were eating before being placed on the Atkins diet. Thus, the Atkins diet worked simply by decreasing the number of calories per day by approximately 1000. A great deal of water is also lost during those first 2 weeks on the Atkins diet. The investigators in Cooperstown did not recommend the Atkins diet to the participants after this initial study.

In another study from the Veterans Affairs Medical Center in Durham, North Carolina (Duke), 41 overweight people followed the Atkins diet for 6 months and lost an average of 10% of their initial body weight. Some lowered their serum cholesterol levels, and in others the levels went up.

Another study involved the National Weight Control Registry, which analyzed the diets of 2681 members who had maintained at least a 30-pound weight loss for at least 1 year. These investigators found that <1% had followed a diet similar to the Atkins program. Most followed high-carbohydrate, low-fat diets. Although the Atkins diet has made Dr. Atkins very rich, it is not a long-term healthy diet, and cows and pigs and chickens and turkeys are very much against it.

STEP COUNTERS AND PEDOMETERS

Walking is America's favorite form of exercise! Walking is the most civilized and civilizing exercise because it is most conducive to thinking. Walking, as George F. Will wrote years ago, is the wine of life, good for body and soul, as many notable souls have known. Henry Adams described his boyhood home in Quincy, Massachusetts, as "but 2 hours' walk from Beacon Hill." Young Samuel Johnson frequently walked the muddy road between Lichfield and Birmingham and back, 32 miles. William Wordsworth's perambulations through the Lake District made literary history. Jonathan Swift frequently walked 30 miles, recording his thoughts and observations in the "Journal to Stella." Bertrand Russell would walk 40 miles, rendering himself too weary to talk, an agreeable result. Charles Dickens was a promiscuous walker through London, by day and at night "to still his beating heart." He had 10 children at home, so solitary walks were particularly charming to him. Dickens' novels are a pedestrian's novels, capturing the texture of life at a walker's pace. Immanuel Kant's daily walk through Königsberg was a categorical imperative and so regular that the local burghers set their clocks by him.

When I was a medical resident at The Johns Hopkins Hospital in the early 1960s, I often wore a pedometer. During that year I averaged 6 miles of walking a day. By the late 1960s, when running a laboratory at NIH, I was down to an average of 5 miles

daily, and then in the 1970s, to 4 miles daily. Recently, I purchased a Digi-Walker (New Lifestyles, 5900 Larson Avenue, Kansas City, Missouri 64133), which counts steps, miles, and calories. During the first 49 days I wore the Digi-Walker, I averaged 8448 steps (1 mile = 2000 steps) each day, or 4.2 miles.

As healthy as walking is, it cannot challenge "push-aways from the table" as a means to lose weight, but it is essential for maintaining ideal body weight once that has been achieved. Each mile walked or ran burns 100 calories. We have to burn 3500 calories, however, to lose 1 pound! That means that we must walk (or run) 35 miles to lose 1 pound! Walking 5 miles daily (10,000 steps) adds up to 35 miles for the week, and that prevents a 1-pound weight gain.

KILLING ONE TO SAVE ANOTHER

On November 6, 2000, British surgeons did an operation to separate conjoined twin girls that killed one baby to give her sister a chance of a longer life (13, 14). The girls, identified publicly as "Mary" and "Jodie," were born in Manchester, United Kingdom, on August 8, 2000. They were joined at the lower abdomen and had a common aorta. The physicians concluded that if the girls were not separated, both would die within months. They reasoned that Jodie could have a normal life, but Mary could not survive once they were separated. Preceding the operation was a long court struggle with the issue of whether the surgery would amount to intentionally killing Mary, whose heart and lungs could not sustain life. It was concluded that Mary was incapable of independent existence and therefore was designated for death. The question before the court was this: "Are you entitled to kill one person to save another?" The court's decision essentially came down to the issue of self-defense—the right of the stronger twin to be released from a sister who would eventually kill them both. The incidence of conjoined twins is about 1 in every 100,000 live births.

STATINS AND ALZHEIMER'S DISEASE

The November 1, 2000, issue of *Lancet* contained an article by Jick and colleagues (15). They examined records of >60,000 patients culled from a database of >3 million residents of the United Kingdom treated by general practitioners there. The patients ranged in age from 50 to 89 years and were tracked for 6 years ending January 1, 1998. The final analysis was based on 284 people who were diagnosed with dementia during that time and another 1080 who served as controls. Among these patients, those who were taking statin drugs were as much as 70% less likely to have been diagnosed with dementia than those whose high cholesterol was treated with other medicines and those who weren't diagnosed with high cholesterol. Another study involving simvastatin is also nearing completion in Britain. It examines whether the drug affects cognitive function. Thus, there may be another reason to take statin drugs other than lowering cholesterol and diminishing clotting tendencies.

MEDICAL EMERGENCIES ON COMMERCIAL AIRLINERS

In the 1980s, there were approximately 10 deaths each year on US commercial airline carriers, and in the 1990s there were approximately 100 deaths each year (16). There are several reasons for this increase. More people are flying today than in the

1980s, and more of them have medical illnesses than before. Deaths are becoming common enough that some airlines have procedures for discreetly moving the body of a passenger who dies during a flight. But by putting better emergency equipment on airliners and making physicians on the ground available to help in a crisis, some airlines are saving more lives than ever before. The Federal Aviation Administration is considering mandatory defibrillators and advanced medical kits on commercial airliners. American Airlines was the first US carrier to put defibrillators and other advanced medical gear on its planes. The airline has saved 11 lives since 1997 and boasts a 38% survival rate for people who have cardiac arrest on its airplanes.

The most common emergencies during flights on US commercial carriers are fainting (22%), cardiac problems (12%), gastrointestinal problems (12%), seizure/stroke (11%), and respiratory problems (11%). The chance of a physician being present on any US carrier flight is 37%, and the chance of a registered nurse's being present is 21%. Thus, help may be several feet away.

CHICKENS CONSUMED

In 1990, each person in the USA consumed an average of 63 lbs of chicken; in 2000, it was 81 lbs (17). Since an average adult chicken weighs 5.24 lbs, the average American in 2000 ate 15.46 chickens (18)!

BIG-GAME HUNTING

I am not a hunter or a gun owner, so I know little about this arena. A recent article in *Forbes*, however, caught my attention (19). Big-game hunting is increasing. In 1970, there were 7.8 million big-game hunters in the USA; in 1996, the number had reached 11.3 million, a 31% increase. The membership of Safari Club International, one of the world's largest and most influential hunting clubs, has risen 135% in 10 years. In 1999, the Safari Club ran 316 hunts, up 37% from 2 years before.

And the prey base is increasing as the predator animals (people) increase. At the beginning of the 20th century, for example, there were an estimated 500,000 white-tailed deer roaming US forests; today there are 19 million. In 1975 there were an estimated 500,000 North American elk in the USA; today, 1.2 million. In 1900 there were an estimated 20,000 North American white sheep in the USA; today, 200,000. In 1920 there were an estimated 25,000 pronghorn antelope in the USA; today, 1 million. In 1973 there were an estimated 1.3 million wild turkeys in the USA; today, 4.5 million. In 1980 there were an estimated 750,000 moose in the USA; today, 1 million. At least there is very little fat between the muscle fibers in these free-ranging animals.

PRESIDENTIAL CANDIDATES

George W. Bush is 54 years old, stands 71 inches tall, and weighs 192 pounds. His blood pressure is 104/80 mm Hg; heart rate, 38 beats per minute; total cholesterol, 176 mg/dL; and running

pace, 7.5 minutes per mile. Albert A. Gore is 52 years old, stands 73 inches tall, and weighs 195 pounds. His blood pressure is 110/68 mm Hg; heart rate, 58 beats per minute; total cholesterol, 231 mg/dL; and running pace, 9 minutes per mile (20).

VOTE COUNTING AND MEDICAL RESEARCH

A fundamental principle of clinical research is that the methods of studying patients must be the same for all subjects included in a study. The results of a study cannot be considered accurate if some patients are studied by one method and others are studied by another method. The same principle should also be followed in elections. If some votes are counted electronically and others by hand, the results of the election cannot be considered accurate.

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