

Death by Medicine

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Death by Medicine

By Gary Null, PhD; Carolyn Dean MD, ND; Martin Feldman, MD; Debora Rasio, MD; and Dorothy Smith, PhD

Natural medicine is under siege, as pharmaceutical company lobbyists urge lawmakers to deprive Americans of the benefits of dietary supplements. Drug-company front groups have launched slanderous media campaigns to discredit the value of healthy lifestyles. The FDA continues to interfere with those who offer natural products that compete with prescription drugs.

These attacks against natural medicine obscure a lethal problem that until now was buried in thousands of pages of scientific text. In response to these baseless challenges to natural medicine, the Nutrition Institute of America commissioned an independent review of the quality of "government-approved" medicine. The startling findings from this meticulous study indicate that conventional medicine is "the leading cause of death" in the United States .

The Nutrition Institute of America is a nonprofit organization that has sponsored independent research for the past 30 years. To support its bold claim that conventional medicine is America 's number-one killer, the Nutritional Institute of America mandated that every "count" in this "indictment" of US medicine be validated by published, peer-reviewed scientific studies.

What you are about to read is a stunning compilation of facts that documents that those who seek to abolish consumer access to natural therapies are misleading the public. Over 700,000 Americans die each year at the hands of government-sanctioned medicine, while the FDA and other government agencies pretend to protect the public by harassing those who offer safe alternatives.

A definitive review of medical peer-reviewed journals and government health statistics shows that American medicine frequently causes more harm than good.

Each year approximately 2.2 million US hospital patients experience

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adverse drug reactions (ADRs) to prescribed medications.(1) In 1995, Dr. Richard Besser of the federal Centers for Disease Control and Prevention (CDC) estimated the number of unnecessary antibiotics prescribed annually for viral infections to be 20 million; in 2003, Dr. Besser spoke in terms of tens of millions of unnecessary antibiotics prescribed annually.(2, 2a) Approximately 7.5 million unnecessary medical and surgical procedures are performed annually in the US,(3) while approximately 8.9 million Americans are hospitalized unnecessarily.(4)

As shown in the following table, the estimated total number of iatrogenic deaths—that is, deaths induced inadvertently by a physician or surgeon or by medical treatment or diagnostic procedures—in the US annually is 783,936. It is evident that the American medical system is itself the leading cause of death and injury in the US . By comparison, approximately 699,697 Americans died of heart in 2001, while 553,251 died of cancer.(5)

Table 1: Estimated Annual Mortality and Economic Cost of Medical Intervention

Condition	Deaths	Cost	Author
Adverse Drug Reactions	106,000	\$12 billion	Lazarou(1), Suh (49)
Medical error	98,000	\$2 billion	IOM(6)
Bedsore	115,000	\$55 billion	Xakellis(7), Barczak (8)
Infection	88,000	\$5 billion	Weinstein(9), MMWR (10)
Malnutrition	108,800	-----	Nurses Coalition(11)

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Outpatients
199,000
\$77 billion
Starfield(12), Weingart(112)

Unnecessary Procedures
37,136
\$122 billion
HCUP(3,13)

Surgery–Related
32,000
\$9 billion
AHRQ(85)

Total 783,936
\$282 billion

Using Leape's 1997 medical and drug error rate of 3 million(14) multiplied by the 14% fatality rate he used in 1994(16) produces an annual death rate of 420,000 for drug errors and medical errors combined. Using this number instead of Lazorou's 106,000 drug errors and the Institute of Medicine 's (IOM) estimated 98,000 annual medical errors would add another 216,000 deaths, for a total of 999,936 deaths annually.

Table 2: Estimated Annual Mortality and Economic Cost of Medical Intervention

Condition	Deaths	Cost	Author
ADR/med error	420,000	\$200 billion	Leape(14)
Bedsore	115,000	\$55 billion	Xakellis(7), Barczak (8)
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32,000

\$9 billion

AHRQ(85)

Total 999,936

The enumerating of unnecessary medical events is very important in our analysis. Any invasive, unnecessary medical procedure must be considered as part of the larger iatrogenic picture. Unfortunately, cause and effect go unmonitored. The figures on unnecessary events represent people who are thrust into a dangerous health care system. Each of these 16.4 million lives is being affected in ways that could have fatal consequences. Simply entering a hospital could result in the following:

In 16.4 million people, a 2.1% chance (affecting 186,000) of a serious adverse drug reaction(1)

In 16.4 million people, a 5–6% chance (affecting 489,500) of acquiring a nosocomial infection(9)

In 16.4 million people, a 4–36% chance (affecting 1.78 million) of having an iatrogenic injury (medical error and adverse drug reactions). (16)

In 16.4 million people, a 17% chance (affecting 1.3 million) of a procedure error.(40)

These statistics represent a one–year time span. Working with the most conservative figures from our statistics, we project the following 10–year death rates.

Table 3: Estimated 10–Year Death Rates from Medical Intervention

Condition	10–Year Deaths	Author
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Adverse Drug Reaction	1.06 million (1)	
Medical error		

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0.98 million (6)
Bedsores 1.15 million (7,8)
Nosocomial Infection 0.88 million (9,10)
Malnutrition 1.09 million (11)
Outpatients 1.99 million (12, 112)
Unnecessary Procedures 371,360 (3,13)
Surgery-related 320,000 (85)
Total 7,841,360

Our estimated 10-year total of 7.8 million iatrogenic deaths is more than all the casualties from all the wars fought by the US throughout its entire history.

Our projected figures for unnecessary medical events occurring over a 10-year period also are dramatic.

Table 4: Estimated 10-Year Unnecessary Medical Events

Unnecessary Events
10-year Number Iatrogenic Events
Hospitalization 89 million(4) 17 million
Procedures 75 million(3) 15 million
Total 164 million

These figures show that an estimated 164 million people—more than half of the total US population—receive unneeded medical treatment over the course of a decade.

INTRODUCTION

Never before have the complete statistics on the multiple causes of iatrogenesis been combined in one article. Medical science amasses tens of thousands of papers annually, each representing a tiny fragment of the whole picture. To look at only one piece and try to understand the benefits and risks is like standing an inch away from an elephant and trying to describe everything about it. You have to step back to see the big picture, as we have done here. Each specialty, each division of medicine keeps its own records and data on morbidity and mortality. We have now completed the painstaking work of reviewing thousands of studies and putting pieces of the puzzle together.

Is American Medicine Working?

US health care spending reached \$1.6 trillion in 2003, representing 14% of the nation's gross national product.(15) Considering this enormous expenditure, we should have the best medicine in the world. We should be preventing and reversing disease, and doing minimal harm. Careful and objective review, however, shows we are doing the opposite. Because of the extraordinarily narrow, technologically driven context in which contemporary medicine examines the human

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condition, we are completely missing the larger picture.

Medicine is not taking into consideration the following critically important aspects of a healthy human organism: (a) stress and how it adversely affects the immune system and life processes; (b) insufficient exercise; (c) excessive caloric intake; (d) highly processed and denatured foods grown in denatured and chemically damaged soil; and (e) exposure to tens of thousands of environmental toxins. Instead of minimizing these disease-causing factors, we cause more illness through medical technology, diagnostic testing, overuse of medical and surgical procedures, and overuse of pharmaceutical drugs. The huge disservice of this therapeutic strategy is the result of little effort or money being spent on preventing disease.

Underreporting of Iatrogenic Events

As few as 5% and no more than 20% of iatrogenic acts are ever reported. (16,24,25,33,34) This implies that if medical errors were completely and accurately reported, we would have an annual iatrogenic death toll much higher than 783,936. In 1994, Leape said his figure of 180,000 medical mistakes resulting in death annually was equivalent to three jumbo-jet crashes every two days.(16) Our considerably higher figure is equivalent to six jumbo jets are falling out of the sky each day.

What we must deduce from this report is that medicine is in need of complete and total reform—from the curriculum in medical schools to protecting patients from excessive medical intervention. It is obvious that we cannot change anything if we are not honest about what needs to be changed. This report simply shows the degree to which change is required.

We are fully aware of what stands in the way of change: powerful pharmaceutical and medical technology companies, along with other powerful groups with enormous vested interests in the business of medicine. They fund medical research, support medical schools and hospitals, and advertise in medical journals. With deep pockets, they entice scientists and academics to support their efforts. Such funding can sway the balance of opinion from professional caution to uncritical acceptance of new therapies and drugs. You have only to look at the people who make up the hospital, medical, and government health advisory boards to see conflicts of interest. The public is mostly unaware of these interlocking interests.

For example, a 2003 study found that nearly half of medical school faculty who serve on institutional review boards (IRB) to advise on clinical trial research also serve as consultants to the pharmaceutical industry.(17) The study authors were concerned that such representation could cause potential conflicts of interest. A news release by Dr. Erik Campbell, the lead author, said, "Our previous research with faculty has shown us that ties to industry can affect scientific behavior, leading to such things as trade secrecy and delays in publishing research. It's possible that similar

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relationships with companies could affect IRB members' activities and attitudes."(18)

Medical Ethics and Conflict of Interest in Scientific Medicine

Jonathan Quick, director of essential drugs and medicines policy for the World Health Organization (WHO), wrote in a recent WHO bulletin: "If clinical trials become a commercial venture in which self-interest overrules public interest and desire overrules science, then the social contract which allows research on human subjects in return for medical advances is broken."(19)

As former editor of the New England Journal of Medicine, Dr. Marcia Angell struggled to bring greater attention to the problem of commercializing scientific research. In her outgoing editorial entitled "Is Academic Medicine for Sale?" Angell said that growing conflicts of interest are tainting science and called for stronger restrictions on pharmaceutical stock ownership and other financial incentives for researchers:(20) "When the boundaries between industry and academic medicine become as blurred as they are now, the business goals of industry influence the mission of medical schools in multiple ways." She did not discount the benefits of research but said a Faustian bargain now existed between medical schools and the pharmaceutical industry.

Angell left the New England Journal in June 2000. In June 2002, the New England Journal of Medicine announced that it would accept journalists who accept money from drug companies because it was too difficult to find ones who have no ties. Another former editor of the journal, Dr. Jerome Kassirer, said that was not the case and that plenty of researchers are available who do not work for drug companies. (21) According to an ABC news report, pharmaceutical companies spend over \$2 billion a year on over 314,000 events attended by doctors.

The ABC news report also noted that a survey of clinical trials revealed that when a drug company funds a study, there is a 90% chance that the drug will be perceived as effective whereas a non-drug-company-funded study will show favorable results only 50% of the time. It appears that money can't buy you love but it can buy any "scientific" result desired.

Cynthia Crossen, a staffer for the Wall Street Journal, in 1996 published *Tainted Truth: The Manipulation of Fact in America*, a book about the widespread practice of lying with statistics.(22) Commenting on the state of scientific research, she wrote: "The road to hell was paved with the flood of corporate research dollars that eagerly filled gaps left by slashed government research funding." Her data on financial involvement showed that in 1981 the drug industry "gave" \$292 million to colleges and universities for research. By 1991, this figure had risen to \$2.1 billion.

THE FIRST IATROGENIC STUDY

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Dr. Lucian L. Leape opened medicine's Pandora's box in his 1994 paper, "Error in Medicine," which appeared in the Journal of the American Medical Association (JAMA).⁽¹⁶⁾ He found that Schimmel reported in 1964 that 20% of hospital patients suffered iatrogenic injury, with a 20% fatality rate. In 1981 Steel reported that 36% of hospitalized patients experienced iatrogenesis with a 25% fatality rate, and adverse drug reactions were involved in 50% of the injuries. In 1991, Bedell reported that 64% of acute heart attacks in one hospital were preventable and were mostly due to adverse drug reactions.

Leape focused on the "Harvard Medical Practice Study" published in 1991, (16a) which found a 4% iatrogenic injury rate for patients, with a 14% fatality rate, in 1984 in New York State. From the 98,609 patients injured and the 14% fatality rate, he estimated that in the entire U.S. 180,000 people die each year partly as a result of iatrogenic injury.

Why Leape chose to use the much lower figure of 4% injury for his analysis remains in question. Using instead the average of the rates found in the three studies he cites (36%, 20%, and 4%) would have produced a 20% medical error rate. The number of iatrogenic deaths using an average rate of injury and his 14% fatality rate would be 1,189,576.

Leape acknowledged that the literature on medical errors is sparse and represents only the tip of the iceberg, noting that when errors are specifically sought out, reported rates are "distressingly high." He cited several autopsy studies with rates as high as 35–40% of missed diagnoses causing death. He also noted that an intensive care unit reported an average of 1.7 errors per day per patient, and 29% of those errors were potentially serious or fatal.

Leape calculated the error rate in the intensive care unit study. First, he found that each patient had an average of 178 "activities" (staff/procedure/medical interactions) a day, of which 1.7 were errors, which means a 1% failure rate. This may not seem like much, but Leape cited industry standards showing that in aviation, a 0.1% failure rate would mean two unsafe plane landings per day at Chicago's O'Hare International Airport; in the US Postal Service, a 0.1% failure rate would mean 16,000 pieces of lost mail every hour; and in the banking industry, a 0.1% failure rate would mean 32,000 bank checks deducted from the wrong bank account.

In trying to determine why there are so many medical errors, Leape acknowledged the lack of reporting of medical errors. Medical errors occur in thousands of different locations and are perceived as isolated and unusual events. But the most important reason that the problem of medical errors is unrecognized and growing, according to Leape, is that doctors and nurses are unequipped to deal with human error because of the culture of medical training and practice. Doctors

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are taught that mistakes are unacceptable. Medical mistakes are therefore viewed as a failure of character and any error equals negligence. No one is taught what to do when medical errors do occur. Leape cites McIntyre and Popper, who said the "infallibility model" of medicine leads to intellectual dishonesty with a need to cover up mistakes rather than admit them. There are no Grand Rounds on medical errors, no sharing of failures among doctors, and no one to support them emotionally when their error harms a patient.

Leape hoped his paper would encourage medical practitioners "to fundamentally change the way they think about errors and why they occur." It has been almost a decade since this groundbreaking work, but the mistakes continue to soar.

In 1995, a JAMA report noted, "Over a million patients are injured in US hospitals each year, and approximately 280,000 die annually as a result of these injuries. Therefore, the iatrogenic death rate dwarfs the annual automobile accident mortality rate of 45,000 and accounts for more deaths than all other accidents combined."(23)

At a 1997 press conference, Leape released a nationwide poll on patient iatrogenesis conducted by the National Patient Safety Foundation (NPSF), which is sponsored by the American Medical Association (AMA). Leape is a founding member of NPSF. The survey found that more than 100 million Americans have been affected directly or indirectly by a medical mistake. Forty-two percent were affected directly and 84% personally knew of someone who had experienced a medical mistake.(14)

At this press conference, Leape updated his 1994 statistics, noting that as of 1997, medical errors in inpatient hospital settings nationwide could be as high as 3 million and could cost as much as \$200 billion. Leape used a 14% fatality rate to determine a medical error death rate of 180,000 in 1994.(16) In 1997, using Leape's base number of 3 million errors, the annual death rate could be as high as 420,000 for hospital inpatients alone.

ONLY A FRACTION OF MEDICAL ERRORS ARE REPORTED

In 1994, Leape said he was well aware that medical errors were not being reported.(16) A study conducted in two obstetrical units in the UK found that only about one-quarter of adverse incidents were ever reported, to protect staff, preserve reputations, or for fear of reprisals, including lawsuits.(24). An analysis by Wald and Shojania found that only 1.5% of all adverse events result in an incident report, and only 6% of adverse drug events are identified properly. The authors learned that the American College of Surgeons estimates that surgical incident reports routinely capture only 5–30% of adverse events. In one study, only 20% of surgical complications resulted in discussion at morbidity and mortality rounds.(25) From these studies, it appears that all the statistics gathered on medical errors may

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substantially underestimate the number of adverse drug and medical therapy incidents. They also suggest that our statistics concerning mortality resulting from medical errors may be in fact be conservative figures.

An article in *Psychiatric Times* (April 2000) outlines the stakes involved in reporting medical errors.(26) The authors found that the public is fearful of suffering a fatal medical error, and doctors are afraid they will be sued if they report an error. This brings up the obvious question: who is reporting medical errors? Usually it is the patient or the patient's surviving family. If no one notices the error, it is never reported. Janet Heinrich, an associate director at the U.S. General Accounting Office responsible for health financing and public health issues, testified before a House subcommittee hearing on medical errors that "the full magnitude of their threat to the American public is unknown" and "gathering valid and useful information about adverse events is extremely difficult." She acknowledged that the fear of being blamed, and the potential for legal liability, played key roles in the underreporting of errors. The *Psychiatric Times* noted that the AMA strongly opposes mandatory reporting of medical errors.(26) If doctors are not reporting, what about nurses? A survey of nurses found that they also fail to report medical mistakes for fear of retaliation.(27)

Standard medical pharmacology texts admit that relatively few doctors ever report adverse drug reactions to the FDA.(28) The reasons range from not knowing such a reporting system exists to fear of being sued. (29) Yet the public depends on this tremendously flawed system of voluntary reporting by doctors to know whether a drug or a medical intervention is harmful.

Pharmacology texts also will tell doctors how hard it is to separate drug side effects from disease symptoms. Treatment failure is most often attributed to the disease and not the drug or doctor. Doctors are warned, "Probably nowhere else in professional life are mistakes so easily hidden, even from ourselves."(30) It may be hard to accept, but it is not difficult to understand why only 1 in 20 side effects is reported to either hospital administrators or the FDA.(31, 31a)

If hospitals admitted to the actual number of errors for which they are responsible, which is about 20 times what is reported, they would come under intense scrutiny.(32) Jerry Phillips, associate director of the FDA's Office of Post Marketing Drug Risk Assessment, confirms this number. "In the broader area of adverse drug reaction data, the 250,000 reports received annually probably represent only 5% of the actual reactions that occur."(33) Dr. Jay Cohen, who has extensively researched adverse drug reactions, notes that because only 5% of adverse drug reactions are reported, there are in fact 5 million medication reactions each year.(34)

A 2003 survey is all the more distressing because there seems to be no

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improvement in error reporting, even with all the attention given to this topic. Dr. Dorothea Wild surveyed medical residents at a community hospital in Connecticut and found that only half were aware that the hospital had a medical error-reporting system, and that the vast majority did not use it at all. Dr. Wild says this does not bode well for the future. If doctors don't learn error reporting in their training, they will never use it. Wild adds that error reporting is the first step in locating the gaps in the medical system and fixing them. Not even that first step has been taken to date.(35)

PUBLIC SUGGESTIONS ON IATROGENESIS

In a telephone survey, 1,207 adults ranked the effectiveness of the following measures in reducing preventable medical errors that result in serious harm.(36) (Following each measure is the percentage of respondents who ranked the measure as "very effective.")

giving doctors more time to spend with patients (78%)
requiring hospitals to develop systems to avoid medical errors (74%)
better training of health professionals (73%)
using only doctors specially trained in intensive care medicine on intensive care units (73%)
requiring hospitals to report all serious medical errors to a state agency (71%)
increasing the number of hospital nurses (69%)
reducing the work hours of doctors in training to avoid fatigue (66%)
encouraging hospitals to voluntarily report serious medical errors to a state agency (62%).

DRUG IATROGENESIS

Prescription drugs constitute the major treatment modality of scientific medicine. With the discovery of the "germ theory," medical scientists convinced the public that infectious organisms were the cause of illness. Finding the "cure" for these infections proved much harder than anyone imagined. From the beginning, chemical drugs promised much more than they delivered. But far beyond not working, the drugs also caused incalculable side effects. The drugs themselves, even when properly prescribed, have side effects that can be fatal, as Lazarou's study(1) showed. But human error can make the situation even worse.

Medication Errors

A survey of a 1992 national pharmacy database found a total of 429,827 medication errors from 1,081 hospitals. Medication errors occurred in 5.22% of patients admitted to these hospitals each year. The authors concluded that at least 90,895 patients annually were harmed by medication errors in the US as a whole.(37)

A 2002 study shows that 20% of hospital medications for patients had dosage errors. Nearly 40% of these errors were considered potentially

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harmful to the patient. In a typical 300–patient hospital, the number of errors per day was 40.(38)

Problems involving patients' medications were even higher the following year. The error rate intercepted by pharmacists in this study was 24%, making the potential minimum number of patients harmed by prescription drugs 417,908.(39)

Recent Adverse Drug Reactions

More–recent studies on adverse drug reactions show that the figures from 1994 published in Lazarou's 1998 JAMA article may be increasing. A 2003 study followed 400 patients after discharge from a tertiary care hospital setting (requiring highly specialized skills, technology, or support services). Seventy–six patients (19%) had adverse events. Adverse drug events were the most common, at 66% of all events. The next most common event was procedure–related injuries, at 17%.(40)

In a New England Journal of Medicine study, an alarming one in four patients suffered observable side effects from the more than 3.34 billion prescription drugs filled in 2002.(41) One of the doctors who produced the study was interviewed by Reuters and commented, "With these 10–minute appointments, it's hard for the doctor to get into whether the symptoms are bothering the patients."(42) William Tierney, who editorialized on the New England Journal study, said "... given the increasing number of powerful drugs available to care for the aging population, the problem will only get worse." The drugs with the worst record of side effects were selective serotonin reuptake inhibitors (SSRIs), nonsteroidal anti–inflammatory drugs (NSAIDs), and calcium–channel blockers. Reuters also reported that prior research has suggested that nearly 5% of hospital admissions (over 1 million per year) are the result of drug side effects. But most of the cases are not documented as such. The study found that one of the reasons for this failure is that in nearly two–thirds of the cases, doctors could not diagnose drug side effects or the side effects persisted because the doctor failed to heed the warning signs.

Medicating Our Feelings

Patients seeking a more joyful existence and relief from worry, stress, and anxiety often fall victim to the messages endlessly displayed on TV and billboards. Often, instead of gaining relief, they fall victim to the myriad iatrogenic side effects of antidepressant medication.

Moreover, a whole generation of antidepressant users has been created from young people growing up on Ritalin. Medicating youth and modifying their emotions must have some impact on how they learn to deal with their feelings. They learn to equate coping with drugs rather than with their inner resources. As adults, these medicated youth reach for alcohol, drugs, or even street drugs to cope. According to JAMA, "Ritalin acts much like cocaine."(43) Today's

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marketing of mood-modifying drugs such as Prozac and Zoloft (R) makes them not only socially acceptable but almost a necessity in today's stressful world.

Television Diagnosis

To reach the widest audience possible, drug companies are no longer just targeting medical doctors with their marketing of antidepressants. By 1995, drug companies had tripled the amount of money allotted to direct advertising of prescription drugs to consumers. The majority of this money is spent on seductive television ads. From 1996 to 2000, spending rose from \$791 million to nearly \$2.5 billion.(44) This \$2.5 billion represents only 15% of the total pharmaceutical advertising budget. While the drug companies maintain that direct-to-consumer advertising is educational, Dr. Sidney M. Wolfe of the Public Citizen Health Research Group in Washington, DC, argues that the public often is misinformed about these ads.(45) People want what they see on television and are told to go to their doctors for a prescription. Doctors in private practice either acquiesce to their patients' demands for these drugs or spend valuable time trying to talk patients out of unnecessary drugs. Dr. Wolfe remarks that one important study found that people mistakenly believe that the "FDA reviews all ads before they are released and allows only the safest and most effective drugs to be promoted directly to the public."(46)

How Do We Know Drugs Are Safe?

Another aspect of scientific medicine that the public takes for granted is the testing of new drugs. Drugs generally are tested on individuals who are fairly healthy and not on other medications that could interfere with findings. But when these new drugs are declared "safe" and enter the drug prescription books, they are naturally going to be used by people who are on a variety of other medications and have a lot of other health problems. Then a new phase of drug testing called "post-approval" comes into play, which is the documentation of side effects once drugs hit the market. In one very telling report, the federal government's General Accounting Office "found that of the 198 drugs approved by the FDA between 1976 and 1985... 102 (or 51.5%) had serious post-approval risks... the serious post-approval risks (included) heart failure, myocardial infarction, anaphylaxis, respiratory depression and arrest, seizures, kidney and liver failure, severe blood disorders, birth defects and fetal toxicity, and blindness."(47)

NBC Television's investigative show "Dateline" wondered if your doctor is moonlighting as a drug company representative. After a yearlong investigation, NBC reported that because doctors can legally prescribe any drug to any patient for any condition, drug companies heavily promote "off label" and frequently inappropriate and untested uses of these medications, even though these drugs are approved only for the specific indications for which they have been tested.(48)

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The leading causes of adverse drug reactions are antibiotics (17%), cardiovascular drugs (17%), chemotherapy (15%), and analgesics and anti-inflammatory agents (15%).(49)

Specific Drug Iatrogenesis: Antibiotics

According to William Agger, MD, director of microbiology and chief of infectious disease at Gundersen Lutheran Medical Center in La Crosse, WI, 30 million pounds of antibiotics are used in America each year. (50) Of this amount, 25 million pounds are used in animal husbandry, and 23 million pounds are used to try to prevent disease and the stress of shipping, as well as to promote growth. Only 2 million pounds are given for specific animal infections. Dr. Agger reminds us that low concentrations of antibiotics are measurable in many of our foods and in various waterways around the world, much of it seeping in from animal farms.

Agger contends that overuse of antibiotics results in food-borne infections resistant to antibiotics. Salmonella is found in 20% of ground meat, but the constant exposure of cattle to antibiotics has made 84% of salmonella resistant to at least one anti-salmonella antibiotic. Diseased animal food accounts for 80% of salmonellosis in humans, or 1.4 million cases per year. The conventional approach to countering this epidemic is to irradiate food to try to kill all organisms while continuing to use the antibiotics that created the problem in the first place. Approximately 20% of chickens are contaminated with *Campylobacter jejuni*, an organism that causes 2.4 million cases of illness annually. Fifty-four percent of these organisms are resistant to at least one anti-campylobacter antimicrobial agent.

Denmark banned growth-promoting antibiotics beginning in 1999, which cut their use by more than half within a year, from 453,200 to 195,800 pounds. A report from Scandinavia found that removing antibiotic growth promoters had no or minimal effect on food production costs. Agger warns that the current crowded, unsanitary methods of animal farming in the US support constant stress and infection, and are geared toward high antibiotic use.

In the US, over 3 million pounds of antibiotics are used every year on humans. With a population of 284 million Americans, this amount is enough to give every man, woman, and child 10 teaspoons of pure antibiotics per year. Agger says that exposure to a steady stream of antibiotics has altered pathogens such as *Streptococcus pneumoniae*, *Staphylococcus aureus*, and enterococci, to name a few.

Almost half of patients with upper respiratory tract infections in the U.S. still receive antibiotics from their doctor.(51) According to the CDC, 90% of upper respiratory infections are viral and should not be treated with antibiotics. In Germany, the prevalence of systemic

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antibiotic use in children aged 0–6 years was 42.9%.(52)

Data obtained from nine US health insurers on antibiotic use in 25,000 children from 1996 to 2000 found that rates of antibiotic use decreased. Antibiotic use in children aged three months to under 3 years decreased 24%, from 2.46 to 1.89 antibiotic prescriptions per patient per year. For children aged 3 to under 6 years, there was a 25% reduction from 1.47 to 1.09 antibiotic prescriptions per patient per year. And for children aged 6 to under 18 years, there was a 16% reduction from 0.85 to 0.69 antibiotic prescriptions per patient per year.(53) Despite these reductions, the data indicate that on average every child in America receives 1.22 antibiotic prescriptions annually.

Group A beta–hemolytic streptococci is the only common cause of sore throat that requires antibiotics, with penicillin and erythromycin the only recommended treatment. Ninety percent of sore–throat cases, however, are viral. Antibiotics were used in 73% of the estimated 6.7 million adult annual visits for sore throat in the US between 1989 and 1999. Furthermore, patients treated with antibiotics were prescribed non–recommended broad–spectrum antibiotics in 68% of visits. This period saw a significant increase in the use of newer, more expensive broad–spectrum antibiotics and a decrease in use of the recommended antibiotics penicillin and erythromycin.(54) Antibiotics being prescribed in 73% of sore–throat cases instead of the recommended 10% resulted in a total of 4.2 million unnecessary antibiotic prescriptions from 1989 to 1999.

The Problem with Antibiotics

In September 2003, the CDC re–launched a program started in 1995 called "Get Smart: Know When Antibiotics Work."(55) This \$1.6 million campaign is designed to educate patients about the overuse and inappropriate use of antibiotics. Most people involved with alternative medicine have known about the dangers of antibiotic overuse for decades. Finally the government is focusing on the problem, yet it is spending only a miniscule amount of money on an iatrogenic epidemic that is costing billions of dollars and thousands of lives. The CDC warns that 90% of upper respiratory infections, including children's ear infections, are viral and that antibiotics do not treat viral infection. More than 40% of about 50 million prescriptions for antibiotics written each year in physicians' offices are inappropriate.(2) Using antibiotics when not needed can lead to the development of deadly strains of bacteria that are resistant to drugs and cause more than 88,000 deaths due to hospital–acquired infections.(9) The CDC, however, seems to be blaming patients for misusing antibiotics even though they are available only by prescription from physicians. According to Dr. Richard Besser, head of "Get Smart": "Programs that have just targeted physicians have not worked. Direct–to–consumer advertising of drugs is to blame in some cases." Besser says the program "teaches patients and the general

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public that antibiotics are precious resources that must be used correctly if we want to have them around when we need them. Hopefully, as a result of this campaign, patients will feel more comfortable asking their doctors for the best care for their illnesses, rather than asking for antibiotics."(56)

What constitutes the "best care"? The CDC does not elaborate and ignores the latest research on the dozens of nutraceuticals that have been scientifically proven to treat viral infections and boost immune-system function. Will doctors recommend vitamin C, echinacea, elderberry, vitamin A, zinc, or homeopathic oscillococcinum? Probably not. The CDC's common-sense recommendations that most people follow anyway include getting proper rest, drinking plenty of fluids, and using a humidifier.

The pharmaceutical industry claims it supports limiting the use of antibiotics. The drug company Bayer sponsors a program called "Operation Clean Hands" through an organization called LIBRA.(57) The CDC also is involved in trying to minimize antibiotic resistance, but nowhere in its publications is there any reference to the role of nutraceuticals in boosting the immune system, nor to the thousands of journal articles that support this approach. This tunnel vision and refusal to recommend the available non-drug alternatives is unfortunate when the CDC is desperately trying to curb the overuse of antibiotics.

Drugs Pollute Our Water Supply

We have reached the point of saturation with prescription drugs. Every body of water tested contains measurable drug residues. The tons of antibiotics used in animal farming, which run off into the water table and surrounding bodies of water, are conferring antibiotic resistance to germs in sewage, and these germs also are found in our water supply. Flushed down our toilets are tons of drugs and drug metabolites that also find their way into our water supply. We have no way to know the long-term health consequences of ingesting a mixture of drugs and drug-breakdown products. These drugs represent another level of iatrogenic disease that we are unable to completely measure. (58-67)

Specific Drug Iatrogenesis: NSAIDs

It's not just the US that is plagued by iatrogenesis. A survey of more than 1,000 French general practitioners (GPs) tested their basic pharmacological knowledge and practice in prescribing NSAIDs, which rank first among commonly prescribed drugs for serious adverse reactions. The study results suggest that GPs do not have adequate knowledge of these drugs and are unable to effectively manage adverse reactions.(68)

A cross-sectional survey of 125 patients attending specialty pain

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clinics in South London found that possible iatrogenic factors such as "over–investigation, inappropriate information, and advice given to patients as well as misdiagnosis, over–treatment, and inappropriate prescription of medication were common."(69)

Specific Drug Iatrogenesis: Cancer Chemotherapy

In 1989, German biostatistician Ulrich Abel, PhD, wrote a monograph entitled "Chemotherapy of Advanced Epithelial Cancer." It was later published in shorter form in a peer–reviewed medical journal.(70) Abel presented a comprehensive analysis of clinical trials and publications representing over 3,000 articles examining the value of cytotoxic chemotherapy on advanced epithelial cancer. Epithelial cancer is the type of cancer with which we are most familiar, arising from epithelium found in the lining of body organs such as the breast, prostate, lung, stomach, and bowel. From these sites, cancer usually infiltrates adjacent tissue and spreads to the bone, liver, lung, or brain. With his exhaustive review, Abel concluded there is no direct evidence that chemotherapy prolongs survival in patients with advanced carcinoma; in small–cell lung cancer and perhaps ovarian cancer, the therapeutic benefit is only slight. According to Abel, "Many oncologists take it for granted that response to therapy prolongs survival, an opinion which is based on a fallacy and which is not supported by clinical studies."

Over a decade after Abel's exhaustive review of chemotherapy, there seems no decrease in its use for advanced carcinoma. For example, when conventional chemotherapy and radiation have not worked to prevent metastases in breast cancer, high–dose chemotherapy (HDC) along with stem–cell transplant (SCT) is the treatment of choice. In March 2000, however, results from the largest multi–center randomized controlled trial conducted thus far showed that, compared to a prolonged course of monthly conventional–dose chemotherapy, HDC and SCT were of no benefit, (71) with even a slightly lower survival rate for the HDC/SCT group. Serious adverse effects occurred more often in the HDC group than the standard–dose group. One treatment–related death (within 100 days of therapy) was recorded in the HDC group, but none was recorded in the conventional chemotherapy group. The women in this trial were highly selected as having the best chance to respond.

Unfortunately, no all–encompassing follow–up study such as Dr. Abel's exists to indicate whether there has been any improvement in cancer–survival statistics since 1989. In fact, research should be conducted to determine whether chemotherapy itself is responsible for secondary cancers instead of progression of the original disease. We continue to question why well–researched alternative cancer treatments are not used.

Drug Companies Fined

Periodically, the FDA fines a drug manufacturer when its abuses are

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too glaring and impossible to cover up. In May 2002, The Washington Post reported that Schering–Plough Corp., the maker of Claritin, was to pay a \$500 million dollar fine to the FDA for quality–control problems at four of its factories.(72) The indictment came after the Public Citizen Health Research Group, led by Dr. Sidney Wolfe, called for a criminal investigation of Schering–Plough, charging that the company distributed albuterol asthma inhalers even though it knew the units were missing the active ingredient.

The FDA tabulated infractions involving 125 products, or 90% of the drugs made by Schering–Plough since 1998. Besides paying the fine, the company was forced to halt the manufacture of 73 drugs or suffer another \$175 million fine. Schering–Plough's news releases told another story, assuring consumers that they should still feel confident in the company's products.

This large settlement served as a warning to the drug industry about maintaining strict manufacturing practices and has given the FDA more clout in dealing with drug company compliance. According to The Washington Post article, a federal appeals court ruled in 1999 that the FDA could seize the profits of companies that violate "good manufacturing practices." Since that time, Abbott Laboratories has paid a \$100 million fine for failing to meet quality standards in the production of medical test kits, while Wyeth Laboratories paid \$30 million in 2000 to settle accusations of poor manufacturing practices.

UNNECESSARY SURGICAL PROCEDURES

In 1974, 2.4 million unnecessary surgeries were performed, resulting in 11,900 deaths at a cost of \$3.9 billion.(73,74) In 2001, 7.5 million unnecessary surgical procedures were performed, resulting in 37,136 deaths at a cost of \$122 billion (using 1974 dollars).(3)

It is very difficult to obtain accurate statistics when studying unnecessary surgery. In 1989, Leape wrote that perhaps 30% of controversial surgeries—which include cesarean section, tonsillectomy, appendectomy, hysterectomy, gastrectomy for obesity, breast implants, and elective breast implants(74)— are unnecessary. In 1974, the Congressional Committee on Interstate and Foreign Commerce held hearings on unnecessary surgery. It found that 17.6% of recommendations for surgery were not confirmed by a second opinion. The House Subcommittee on Oversight and Investigations extrapolated these figures and estimated that, on a nationwide basis, there were 2.4 million unnecessary surgeries performed annually, resulting in 11,900 deaths at an annual cost of \$3.9 billion.(73)

According to the Healthcare Cost and Utilization Project within the Agency for Healthcare Research and Quality(13), in 2001 the 50 most common medical and surgical procedures were performed approximately 41.8 million times in the US. Using the 1974 House Subcommittee on

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Oversight and Investigations' figure of 17.6% as the percentage of unnecessary surgical procedures, and extrapolating from the death rate in 1974, produces nearly 7.5 million (7,489,718) unnecessary procedures and a death rate of 37,136, at a cost of \$122 billion (using 1974 dollars).

In 1995, researchers conducted a similar analysis of back surgery procedures, using the 1974 "unnecessary surgery percentage" of 17.6. Testifying before the Department of Veterans Affairs, they estimated that of the 250,000 back surgeries performed annually in the US at a hospital cost of \$11,000 per patient, the total number of unnecessary back surgeries approaches 44,000, costing as much as \$484 million. (75)

Like prescription drug use driven by television advertising, unnecessary surgeries are escalating. Media-driven surgery such as gastric bypass for obesity "modeled" by Hollywood celebrities seduces obese people to think this route is safe and sexy. Unnecessary surgeries have even been marketed on the Internet.(76) A study in Spain declares that 20–25% of total surgical practice represents unnecessary operations.(77)

According to data from the National Center for Health Statistics for 1979 to 1984, the total number of surgical procedures increased 9% while the number of surgeons grew 20%. The study notes that the large increase in the number of surgeons was not accompanied by a parallel increase in the number of surgeries performed, and expressed concern about an excess of surgeons to handle the surgical caseload.(78)

From 1983 to 1994, however, the incidence of the 10 most commonly performed surgical procedures jumped 38%, to 7,929,000 from 5,731,000 cases. By 1994, cataract surgery was the most common procedure with more than 2 million operations, followed by cesarean section (858,000 procedures) and inguinal hernia operations (689,000 procedures). Knee arthroscopy procedures increased 153% while prostate surgery declined 29%.(79)

The list of iatrogenic complications from surgery is as long as the list of procedures themselves. One study examined catheters that were inserted to deliver anesthetic into the epidural space around the spinal nerves for lower cesarean section, abdominal surgery, or prostate surgery. In some cases, non-sterile technique during catheter insertion resulted in serious infections, even leading to limb paralysis.(80)

In one review of the literature, the authors found "a significant rate of overutilization of coronary angiography, coronary artery surgery, cardiac pacemaker insertion, upper gastrointestinal endoscopies, carotid endarterectomies, back surgery, and pain-relieving

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procedures."(81)

A 1987 JAMA study found the following significant levels of inappropriate surgery: 17% of coronary angiography procedures, 32% of carotid endarterectomy procedures, and 17% of upper gastrointestinal tract endoscopy procedures.(82) Based on the Healthcare Cost and Utilization Project (HCUP) statistics provided by the government for 2001, 697,675 upper gastrointestinal endoscopies (usually entailing biopsy) were performed, as were 142,401 endarterectomies and 719,949 coronary angiographies.(13) Extrapolating the JAMA study's inappropriate surgery rates to 2001 produces 118,604 unnecessary endoscopy procedures, 45,568 unnecessary endarterectomies, and 122,391 unnecessary coronary angiographies. These are all forms of medical iatrogenesis.

MEDICAL AND SURGICAL PROCEDURES

It is instructive to know the mortality rates associated with various medical and surgical procedures. Although we must sign release forms when we undergo any procedure, many of us are in denial about the true risks involved; because medical and surgical procedures are so commonplace, they often are seen as both necessary and safe. Unfortunately, allopathic medicine itself is a leading cause of death, as well as the most expensive way to die.

Perhaps the words "health care" confer the illusion that medicine is about health. Allopathic medicine is not a purveyor of health care but of disease care. The HCUP figures are instructive,(13) but the computer program that calculates annual mortality statistics for all US hospital discharges is only as good as the codes entered into the system. In email correspondence, HCUP indicated that the mortality rates for each procedure indicated only that someone undergoing that procedure died either from the procedure or from some other cause.

Thus there is no way of knowing exactly how many people die from a particular procedure. While codes for "poisoning & toxic effects of drugs" and "complications of treatment" do exist, the mortality figures registered in these categories are very low and do not correlate with what is known from research such as the 1998 JAMA study(1) that estimated an average of 106,000 prescription medication deaths per year. No codes exist for adverse drug side effects, surgical mishaps, or other types of medical error. Until such codes exist, the true mortality rates tied to of medical error will remain buried in the general statistics.

AN HONEST LOOK AT US HEALTH CARE

In 1978, the US Office of Technology Assessment (OTA) reported: "Only 10–20% of all procedures currently used in medical practice have been shown to be efficacious by controlled trial."(83) In 1995, the OTA compared medical technology in eight countries (Australia , Canada, France, Germany, the Netherlands, Sweden, the UK, and the US) and

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again noted that few medical procedures in the US have been subjected to clinical trial. It also reported that US infant mortality was high and life expectancy low compared to other developed countries.(84)

Although almost 10 years old, much of what was written in the OTA report holds true today. The report blames the high cost of American medicine on the medical free-enterprise system and failure to create a national health care policy. It attributes the government's failure to control health care costs to market incentives and profit motives inherent in the current financing and organization of health care, which includes such interests as private health insurers, hospital systems, physicians, and the drug and medical-device industries. "Health Care Technology and Its Assessment in Eight Countries" is the last report prepared by the OTA, which was disbanded in 1995. It also is perhaps the US government's last honest, detailed examination of the nation's health care system. An appendix summarizing this 60-page report follows this article.

SURGICAL ERRORS FINALLY REPORTED

An October 2003 JAMA study from the US government's Agency for Healthcare Research and Quality (AHRQ) documented 32,000 mostly surgery-related deaths costing \$9 billion and accounting for 2.4 million extra hospital days in 2000.(85) Data from 20% of the nation's hospitals were analyzed for 18 different surgical complications, including postoperative infections, foreign objects left in wounds, surgical wounds reopening, and post-operative bleeding.

In a press release accompanying the study, AHRQ director Carolyn M. Clancy, MD, noted: "This study gives us the first direct evidence that medical injuries pose a real threat to the American public and increase the costs of health care."(86) According to the study's authors, "The findings greatly underestimate the problem, since many other complications happen that are not listed in hospital administrative data." They added: "The message here is that medical injuries can have a devastating impact on the health care system. We need more research to identify why these injuries occur and find ways to prevent them from happening." The study authors said that improved medical practices, including an emphasis on better hand washing, might help reduce morbidity and mortality rates. In an accompanying JAMA editorial, health-risk researcher Dr. Saul Weingart of Harvard's Beth Israel-Deaconess Medical Center wrote, "Given their staggering magnitude, these estimates are clearly sobering."(87)

UNNECESSARY X-RAYS

When x-rays were discovered, no one knew the long-term effects of ionizing radiation. In the 1950s, monthly fluoroscopic exams at the doctor's office were routine, and you could even walk into most shoe stores and see x-rays of your foot bones. We still do not know the ultimate outcome of our initial fascination with x-rays.

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In those days, it was common practice to x-ray pregnant women to measure their pelvises and make a diagnosis of twins. Finally, a study of 700,000 children born between 1947 and 1964 in 37 major maternity hospitals compared the children of mothers who had received pelvic x-rays during pregnancy to those of mothers who did not. It found that cancer mortality was 40% higher among children whose mothers had been x-rayed.(88)

In present-day medicine, coronary angiography is an invasive surgical procedure that involves snaking a tube through a blood vessel in the groin up to the heart. To obtain useful information, X-rays are taken almost continuously, with minimum dosages ranging from 460 to 1,580 mrem. The minimum radiation from a routine chest x-ray is 2 mrem. X-ray radiation accumulates in the body, and ionizing radiation used in X-ray procedures has been shown to cause gene mutation. The health impact of this high level of radiation is unknown, and often obscured in statistical jargon such as, "The risk for lifetime fatal cancer due to radiation exposure is estimated to be 4 in one million per 1,000 mrem."(89)

Dr. John Gofman has studied the effects of radiation on human health for 45 years. A medical doctor with a PhD in nuclear and physical chemistry, Gofman worked on the Manhattan Project, discovered uranium-233, and was the first person to isolate plutonium. In five scientifically documented books, Gofman provides strong evidence that medical technology—specifically x-rays, CT scans, and mammography and fluoroscopy devices—are a contributing factor to 75% of new cancers. In a nearly 700-page report updated in 2000, "Radiation from Medical Procedures in the Pathogenesis of Cancer and Ischemic Heart Disease: Dose-Response Studies with Physicians per 100,000 Population,"(90) Gofman shows that as the number of physicians increases in a geographical area along with an increase in the number of x-ray diagnostic tests performed, the rate of cancer and ischemic heart disease also increases. Gofman elaborates that it is not x-rays alone that cause the damage but a combination of health risk factors that include poor diet, smoking, abortions, and the use of birth control pills. Dr. Gofman predicts that ionizing radiation will be responsible for 100 million premature deaths over the next decade.

In his book, "Preventing Breast Cancer," Dr. Gofman notes that breast cancer is the leading cause of death among American women between the ages of 44 and 55. Because breast tissue is highly sensitive to radiation, mammograms can cause cancer. The danger can be heightened other factors including a woman's genetic makeup, preexisting benign breast disease, artificial menopause, obesity, and hormonal imbalance. (91)

Even x-rays for back pain can lead someone into crippling surgery. Dr. John E. Sarno, a well-known New York orthopedic surgeon, found that there is not necessarily any association between back pain and spinal x-ray abnormality. He cites studies of normal people without a trace

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of back pain whose x-rays indicate spinal abnormalities and of people with back pain whose spines appear to be normal on x-ray.(92) People who happen to have back pain and show an abnormality on x-ray may be treated surgically, sometimes with no change in back pain, worsening of back pain, or even permanent disability. Moreover, doctors often order x-rays as protection against malpractice claims, to give the impression of leaving no stone unturned. It appears that doctors are putting their own fears before the interests of their patients.

UNNECESSARY HOSPITALIZATION

Nearly 9 million (8,925,033) people were hospitalized unnecessarily in 2001.(4) In a study of inappropriate hospitalization, two doctors reviewed 1,132 medical records. They concluded that 23% of all admissions were inappropriate and an additional 17% could have been handled in outpatient clinics. Thirty-four percent of all hospital days were deemed inappropriate and could have been avoided.(93) The rate of inappropriate hospital admissions in 1990 was 23.5%.(94) In 1999, another study also found an inappropriate admissions rate of 24%, indicating a consistent pattern from 1986 to 1999.(95) The HCUP database indicates that the total number of patient discharges from US hospitals in 2001 was 37,187,641,(13) meaning that almost 9 million people were exposed to unnecessary medical intervention in hospitals and therefore represent almost 9 million potential iatrogenic episodes. (4)

WOMEN'S EXPERIENCE IN MEDICINE

Dr. Martin Charcot (1825–1893) was world-renowned, the most celebrated doctor of his time. He practiced in the Paris hospital La Salpetriere. He became an expert in hysteria, diagnosing an average of 10 hysterical women each day, transforming them into "iatrogenic monsters" and turning simple "neurosis" into hysteria.(96) The number of women diagnosed with hysteria and hospitalized rose from 1% in 1841 to 17% in 1883. Hysteria is derived from the Latin "hystera" meaning uterus. According to Dr. Adriane Fugh-Berman, US medicine has a tradition of excessive medical and surgical interventions on women. Only 100 years ago, male doctors believed that female psychological imbalance originated in the uterus. When surgery to remove the uterus was perfected, it became the "cure" for mental instability, effecting a physical and psychological castration. Fugh-Berman notes that US doctors eventually disabused themselves of that notion but have continued to treat women very differently than they treat men.(97) She cites the following statistics:

Thousands of prophylactic mastectomies are performed annually.
One-third of US women have had a hysterectomy before menopause.
Women are prescribed drugs more frequently than are men.
Women are given potent drugs for disease prevent the possibility of significant undiscovered toxicities.
Health Care Technology Assessment
Failure to evaluate technology was a focus of a 1978 report from OTA

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with examples of many common medical practices supported by limited published data (10–20%).

In 1978, Congress created the National Center for Health Care Technology (NCHCT) to advise Medicare and Medicaid.

With an annual budget of \$4 million, NCHCT published three broad assessments of high–priority technologies and made about 75 coverage recommendations to Medicare.

Congress disbanded NCHCT in 1981. The medical profession opposed it from the beginning. The AMA testified before Congress in 1981 that "clinical policy analysis and judgments are better made—and are being responsibly made—within the medical profession. Assessing risks and costs, as well as benefits, has been central to the exercise of good medical judgment for decades."

The medical device lobby also opposed government oversight by NCHCT. Examples of Lack of Proper Management of HealthCare

Treatments for Coronary Artery Disease

Since the early 1970s, the number of coronary artery bypass surgeries (CABGS) has risen rapidly without government regulation or clinical trials.

Angioplasty for single vessel disease was introduced in 1978. The first published trial of angioplasty versus medical treatment was done in 1992.

Angioplasty did not reduce the number of CABGS, as was promoted. Both procedures increase in number every year as the patient population grows older and sicker.

Rates of use are higher in white patients and private insurance patients, and vary greatly by geographic region, suggesting that use of these procedures is based on non–clinical factors.

As of 1995, the NIH consensus program had not assessed CABGS since 1980 and had never assessed angioplasty.

RAND researchers evaluated CABGS in New York in 1990. They reviewed 1,300 procedures and found 2% were inappropriate, 90% were appropriate, and 7% were uncertain. For 1,300 angioplasties, 4% were inappropriate and 38% uncertain. Using RAND methodologies, a panel of British physicians rated twice as many procedures "inappropriate" as did a US panel rating the same clinical cases. The New York numbers are in question because New York State limits the number of surgery centers, and the per–capita supply of cardiac surgeons in New York is about one–half of the national average.

The estimated five–year cost is \$33,000 for angioplasty and \$40,000 for CABGS. Angioplasty did not lower costs, due to its high failure rates.

Computed Tomography (CT)

The first CT scanner in the US was installed at the Mayo Clinic in 1973. By 1992, the number of operational CT scanners in the US had grown to 6,060. By comparison, in 1993 there were 216 CT units in Canada .

There is little information available on how CT scans improve or affect patient outcomes

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In some institutions, up to 90% of scans performed were negative. Approval by the FDA was not required for CT scanners, nor was any evidence of safety or efficacy.

Magnetic Resonance Imaging (MRI)

MRIs were introduced in Great Britain in 1978 and in the US in 1980. By 1988, there were 1,230 units and by 1992 between 2,800 and 3,000. A definitive review published in 1994 found less than 30 studies of 5,000 that were prospective comparisons of diagnostic accuracy or therapeutic choice.

The American College of Physicians assessed MRI studies and rated 13 of 17 trials as "weak," i.e., lacking data concerning therapeutic impact or patient outcomes.

The OTA concluded: "It is evident that hospitals, physician-entrepreneurs, and medical device manufacturers have approached MRI and CT as commodities with high-profit potential, and decision-making on the acquisition and use of these procedures has been highly influence