Behavior

Prescription-law side effect

Laws forged from good intentions sometimes yield unintended consequences. Consider legislation enacted in New York in 1989 requiring triplicate prescription forms for benzodiazepines, a class of tranquilizers that includes Valium. The intent was to monitor how physicians dispense these mood-altering drugs, as well as to set restrictions on refills and prescription amounts. The law, which has inspired consideration of similar bills in other states, stemmed from concerns over indiscriminate prescribing of benzodiazepines, resale of the tranquilizers on the street for illicit use and a potential for benzodiazepine addiction in longtime users.

Data on prescription practices show that although the New York law heralded a sharp drop in benzodiazepine prescriptions, it also preceded marked increases in prescriptions for other sedatives that are more addictive, less effective in quelling anxiety, and more dangerous when taken in an overdose, according to a report in the Nov. 6 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

The researchers, led by internist Michael Weintraub of the University of Rochester (N.Y.) School of Medicine and Dentistry, charted prescription trends in the year before and after the New York law took effect. They obtained their data from three sources: an annual national audit of prescriptions filled by retail pharmacies; prescriptions handled in New York by the state-funded Medicaid program; and Blue Cross/Blue Shield reimbursements for medications in the Rochester area.

All three sources revealed large decreases in benzodiazepine prescriptions after the triplicate regulations took effect, accompanied by significant jumps in prescriptions for a variety of other sedatives, such as barbiturates. Prescriptions for alternative drugs did not fully replace the drop in benzodiazepine prescriptions, Weintraub's team asserts.

Although questions regarding benzodiazepine abuse and addiction persist, the New York law has not reduced money spent on psychoactive medications and may have created more problems than it solved, the researchers conclude.

Antipsychotic risks for the elderly

Tardive dyskinesia (TD), a potentially debilitating movement disorder that can accompany the use of antipsychotic drugs (SN: 5/11/91, p.293), annually afflicts nearly one in three elderly people taking such medication, according to a report in the Nov. 6 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. This represents about six times the annual rate of new TD cases observed among younger people taking antipsychotics, the researchers note.

Psychiatrist Bruce L. Saltz of Long Island Jewish Medical Center in Glen Oaks, N.Y., and his co-workers tracked 160 patients, aged 57 years and older, who started antipsychotic treatment for the first time at six geriatric facilities or nursing homes in the New York City area. Follow-ups lasted an average of nine months. None of the participants suffered from neurological disorders that produce abnormal movements.

All TD cases appeared within 11 months of usually intermittent drug treatment, the investigators report. Individuals with mood disorders — such as severe depression — that included psychotic symptoms proved most vulnerable to TD.

Antipsychotic drugs decrease the availability of the neurotransmitter dopamine in the brain. Saltz's team proposes that brain cells that process dopamine may naturally decrease in number and function as a person grows old, rendering the elderly more susceptible to TD as antipsychotic drugs further diminish dopamine supplies.

"Although almost all our TD cases were mild, some can be severe, even debilitating, and there is no way to predict who will develop the more severe forms," the researchers conclude.

Computers

Privacy versus database statistics

Many institutions, from businesses and government agencies to hospitals and colleges, maintain large databases containing confidential information concerning employees, customers, patients or students. The same databases often serve as the sources of statistics that enable regulatory bodies and other groups or individuals to track trends and monitor problems. In such cases, institutions generally release these files only after omitting the names and identifying numbers of the individuals involved.

Nonetheless, the remaining file information sometimes contains enough clues to permit someone to single out a specific individual's record. For example, if a worker happens to know something about another individual, such as college attended, degree and graduation year, or uses public knowledge, it would not be difficult to search the truncated personnel files to find a record containing matching information and, with a high probability, learn this individual's salary or medical history. Thus, authorized database users can glean information to which they are not entitled.

"The problem of providing security [in such databases] has attracted much attention in recent years," say Kasinath C. Vemulapalli and Elizabeth A. Unger of Kansas State University in Manhattan. "This problem is greatly complicated by the possibility that a legitimate user could [make] many different 'legal' queries and infer confidential information from them."

In a paper published in the Proceedings of the 14th National Computer Security Conference, held last month in Washington, D.C., Unger and Vemulapalli propose several schemes that may improve the security of such databases. Their approach involves slightly modifying, or perturbing, the data that a user compiling statistics receives in response to requests for information. Such schemes, in effect, introduce "noise" into the output data without changing the stored values or unduly affecting the statistics themselves.

In one technique, for example, the computer in response to a query calculates the average value of a certain attribute, such as salary, multiplies this average by a small fraction, then goes through all the records available and randomly adds the calculated product to a record, subtracts the product from a record or leaves the record unchanged before reporting the query results to the user. Such a scheme lowers the probability that a user can infer the exact value of an individual's salary or some other attribute, the researchers say.

Weeding out risky passwords

Most computer users have at one time or another gone through the ritual of choosing a password to identify themselves as legitimate users of a computer system. But to the horror of security experts, many individuals choose "weak" passwords that are often embarrassingly easy to guess, making even the best-managed computer systems vulnerable to attack. One way to prevent users from selecting such passwords requires comparing a user's choice with a list of unacceptable words or sequences of characters. But even a modestly sized dictionary of prohibited password choices takes up a lot of memory in a computer.

The answer, says computer scientist Eugene H. Spafford of Purdue University in West Lafayette, Ind., is to store the prohibited words in a form that occupies much less computer memory than a conventional dictionary. His OPUS project (Obvious Password Utility System) represents an ingenious attempt to develop an effective mechanism for converting words into compact sequences of bits so that checking a password against the dictionary takes roughly the same amount of time no matter how many words make up the dictionary.