

Suicidal link for gun owners

A California study finds that rates of suicide by firearm or any other method jump sharply among handgun buyers within a week of their purchase and for at least the next 6 years. This pattern emerged most strongly among women who bought handguns, reports a group led by psychiatric epidemiologist Garen J. Wintemute of the University of California, Davis.

Controversy surrounds questions of whether handgun ownership boosts the likelihood of either killing oneself or of being murdered. The new study, published in the Nov. 18 *NEW ENGLAND JOURNAL OF MEDICINE*, supports earlier evidence linking gun access to elevated suicide rates (SN: 8/15/92, p. 102). However, it did not determine whether the people who took their own lives did so with the handguns they bought.

Wintemute's group compared the death rate for all 238,292 handgun buyers in California in 1991 with that for the entire adult population of the state. The study period for handgun buyers began with the date of purchase, after a 15-day waiting period and background check, and continued through 1996.

For those who had bought a handgun, suicide was the leading cause of death in the following year, accounting for nearly one out of four deaths overall and one out of two deaths of women ages 21 to 44. The mortality rate of gun purchasers greatly exceeded that of the general population in the first week after the purchasers procured a firearm. Handgun purchasers continued to exhibit an elevated suicide rate over the next 6 years.

Still, in the year after their purchases, handgun buyers accounted for only 10 percent of people who committed suicide with a firearm and smaller proportions thereafter.

Women gun buyers also had a greater likelihood of being shot to death by another person than women in the general population did. Some women may buy handguns for protection from violent husbands or boyfriends, who then murder them with their own or another's weapon, the scientists theorize. Other research has shown that suicide rates rise among women in abusive relationships, they add.

In contrast, gun-related homicides occurred less often among male gun purchasers than among men in the population at large. These handgun buyers came from predominantly affluent, and thus safer, households, perhaps partly explaining this finding, Wintemute's group contends. This result didn't hold for women gun purchasers.

A variety of factors, including depression and a penchant for acting impulsively, contribute to suicide, comment psychiatrist Mark L. Rosenberg of the Collaborative Center for Child Well-Being in Decatur, Ga., and his colleagues in an editorial in the same journal issue. However, the new data suggest that people who are considering suicide may purchase a firearm to carry out the intention, they say. —B.B.

Pathways of sound

Several investigations have suggested that the brain's visual system contains two separate neural pathways, each originating in primary visual centers at the back of the head and taking its own route to the frontal lobe. Researchers say that a "what" pathway discerns the identity of objects, while a "where" pathway locates objects in space.

A comparable setup exists for addressing the what and where of sounds, according to a study in the December *NATURE NEUROSCIENCE*. Two distinct neural pathways run from auditory brain tissue near the ears to the frontal-lobe locales favored by the two visual pathways, report Elizabeth M. Romanski of Yale University School of Medicine and her coworkers.

Romanski's team used microscopic electrodes to find the starting points for each acoustic pathway in four rhesus monkeys. By injecting different stains into brain slices, they traced the pathways' routes. —B.B.

Compound reverses diabetes damage

Over their lifetimes, about 60 percent of people with diabetes suffer nerve damage, which typically results in numbness or tingling in the feet or hands. Less commonly, similar nerve damage may undermine the body's control of blood pressure, cause incontinence or impotence, or trigger bouts of diarrhea or constipation.

A new study in diabetic rats suggests that this second type of diabetes-induced nerve damage can be reversed with doses of an insulinlike growth factor called IGF-I.

In both people and rats with diabetes, the branching extensions of nerve cells swell up, blocking normal communication between cells, says Robert E. Schmidt of Washington University School of Medicine in St. Louis. Giving diabetic rats daily injections of IGF-I for 8 weeks almost completely reversed this process, he and his colleagues report in the November *AMERICAN JOURNAL OF PATHOLOGY*.

Compared with 11 untreated counterparts, 8 rats treated with IGF-I had only 14 percent as many swollen nerve endings among nerve cells in the abdomen. In fact, the team reports, nerve dysfunction was no more apparent in the treated rats than in seven rats without diabetes.

It isn't clear exactly how IGF-I works, Schmidt says. Earlier research established that humans and rats with diabetes have lower than normal concentrations of IGF-I in their blood. He speculates that diabetes prevents nerve cells from developing properly and that IGF-I plays a role in restoring normal growth. The compound doesn't stop diabetes, since the IGF-I injections didn't help animals control their blood sugar concentrations.

"Although precise control of blood sugar levels would eliminate the development of nerve damage in diabetics, this is often difficult to achieve," Schmidt says. "The hope is that these findings might help prevent diabetic nerve complications even in people who can't control their diabetes well." —D.C.

Pregnancy poses risk for mutation carriers

As a rule, women who have never been pregnant are more likely to develop breast cancer than are women who have had several children. Among women with mutations predisposing them to breast cancer, however, those who develop the disease before they turn 40 are slightly more likely than the others to have had children, according to a new study.

As many as 80 to 90 percent of women carrying mutations in the *BRCA1* or *BRCA2* genes develop breast cancer. Steven A. Narod of the University of Toronto and his colleagues studied 472 women with one of these two mutations. Half developed breast cancer before age 40; half did not. Among the group with cancer, 73 percent had had at least one full-term pregnancy. By comparison, only 62 percent of women who had not developed the disease had borne a child.

The more times a woman had given birth, the more likely she was to develop breast cancer at a relatively young age, he and his team report in the Nov. 27 *LANCET*. This risk didn't diminish over time after pregnancy, Narod says.

However, in a separate study of about 200 women with mutated *BRCA1* or *BRCA2* genes, his team found that motherhood was equally common among women who developed breast cancer after 40 and those who didn't have cancer.

During pregnancy and just after birth, hormones trigger a woman's breast cells to divide rapidly and to differentiate into tissues that can provide milk. Researchers believe that normally functioning *BRCA1* and *BRCA2* genes hold this process in check, preventing dividing cells from becoming cancerous.

"To advise carriers of *BRCA1* and *BRCA2* mutations that early pregnancy may protect them against breast cancer is therefore inappropriate," Narod concludes. —D.C.