

Heart findings support hormonal therapy

A woman's chance of developing heart disease rises after "the change of life" — perhaps because the ovaries produce much less of the sex hormone estrogen. It is well-known that estrogen-replacement therapy lowers a woman's risk of getting heart disease. Yet, studies also reveal a dark side of estrogen therapy: It boosts the chances of developing a type of uterine cancer.

To weaken that risk, some doctors advise postmenopausal women to combine estrogen with progestin, a progesterone-like drug that blocks the proliferation of cells in the uterus. Trouble is, some evidence indicates the addition of progestin

cancels estrogen's heart benefits.

A controversial study now offers some heartening news: Researcher Aaron R. Folsom says that postmenopausal women taking estrogen plus progestin may reap even greater cardiovascular benefits than women taking estrogen by itself. Yet, Trudy L. Bush, an epidemiologist at the Johns Hopkins University in Baltimore, warns against jumping to such a conclusion: "I think it's premature to say that estrogen plus progestin is better than estrogen alone."

Folsom, who is at the University of Minnesota School of Public Health in Minneapolis, and his colleagues conducted an observational study of postmenopausal women. The researchers noted that 853 women were using estrogen; 173 were taking estrogen and progestin; and 3,932 were not using any hormones.

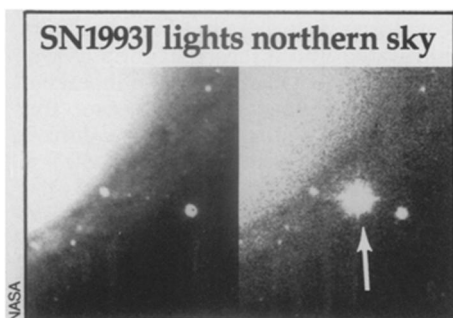
In the April 15 *NEW ENGLAND JOURNAL OF MEDICINE*, the team reports that postmenopausal women following either of the hormone-replacement regimens show a better cardiovascular profile than those taking no such medication. Women who took estrogen alone or estrogen plus progestin had higher blood concentrations of high-density lipoproteins (HDL), molecules that help remove cholesterol

from the body and play a role in preventing heart disease. Hormone users also had lower blood concentrations of low-density lipoproteins, which contribute to the fatty buildup in artery walls.

At the same time, the researchers suggest that women using estrogen together with progestin gained a slight cardiovascular edge over the estrogen-only group. For example, women taking both hormones had lower blood concentrations of a clotting factor called Factor VII. Less clotting factor in the bloodstream may help reduce the risk of a heart attack, Folsom says. In addition, women on the combined regimen had lower blood concentrations of triglycerides, a fat that can boost the risk of heart disease.

The study design contains some built-in flaws, Folsom notes. For example, doctors may be more likely to prescribe hormone therapy to healthy women. Thus the study results may in part be due to an unforeseen selection bias, he says.

Nonetheless, endocrinologist Kathryn A. Martin, at the Massachusetts General Hospital in Boston, is reassured by the finding that the two drugs taken together seem to protect against heart disease. "I think we're on the right track by adding progestin," she says. Researchers still need to conduct a randomized trial that compares both hormone-replacement regimens, she adds. —K.A. Fackelmann



Nothing brightens the night sky — or an astronomer's workday — like a supernova, the death of a massive star. On March 28, amateur astronomer Francisco García Díez of Lugo, Spain, discovered a supernova, designated SN1993J, in the galaxy M81. After confirming the finding, astronomers turned a battery of orbiting and ground-based instruments toward SN1993J (arrow), which lies about 12 million light-years from Earth in the constellation Ursa Major.

Though not visible without a telescope, SN1993J is the brightest supernova to appear above the northern hemisphere in decades. A review of previously obtained images of M81 shows that SN1993J was once a red supergiant. After exhausting its nuclear fuel, the star collapsed and exploded. Now, as the ensuing shock wave moves outward, it plows through gas cast off by the star in past centuries. This gas crackles with energetic X-rays bearing information about SN1993J's chemical composition and evolution.

García discovered the supernova around the same time that astronomers activated Japan's new Advanced Satellite for Cosmology and Astrophysics (ASCA). "It's astonishing that we've been this lucky," says George R. Ricker of the Massachusetts Institute of Technology, who helped design one of ASCA's X-ray detectors. Using ASCA and other satellites, astronomers will monitor changes in SN1993J's emissions and perhaps detect the ultradense neutron star that may lie hidden at its center.

Feds' R&D goals change, no dollar gains

President Clinton sent his first completed budget proposal to Congress late last week. Overall, the \$1.52 trillion federal spending blueprint includes essentially no increase for research and development (R&D) in fiscal year (FY) 1994, which begins Oct. 1.

"When the heavy focus must be on deficit reduction, there is no one [and] no program that fully escapes," explained Presidential Science Adviser John H. Gibbons at an April 8 press briefing.

The President's spending plan constitutes anything but a rubber stamp of the past two administrations' research agendas. For instance, Clinton would have several agencies — notably the Department of Energy (DOE) — dramatically pare long-standing science and engineering efforts to finance new initiatives.

This major tailoring of the nation's spending plan may help explain why Clinton delivered his proposed budget to Congress some four to eight weeks later than customary (even after accounting for a change in administrations). Moreover, many details of that budget proposal remain sketchy. For instance, even early this week Gibbons could not issue budget details for the five major inter-agency research efforts organized under the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET), which he chairs. These pro-

grams investigate such important interdisciplinary problems as climate change, advanced computing, and advanced materials processing.

Under the President's budget, total federal R&D spending would increase \$2.03 billion, or 3 percent, next year — to nearly \$75.6 billion. This increase disappears, however, if one subtracts the 3.1 percent inflation rate that the Office of Management and Budget (OMB) now projects for FY 1994 (see chart).

Indeed, when OMB tallies final, inflation-adjusted R&D outlays for FY 1993, they will probably show a *decline* of 2 percent from FY 1992, according to a March 17 report by the Congressional Research Service. (Percent changes for all subsequent FY 1994 figures have been adjusted to reflect OMB's inflation estimate.)

In recent weeks, Clinton has described basic research and several technology initiatives as fundamental to his administration's plans to increase U.S. competitiveness in the global marketplace and to create new jobs. In the 1,478-page budget document released last week, Clinton cites increased partnerships between federal researchers and industry as the cornerstone of this proposed compact between science and the economy.

"We have been wonderful in America at creating Nobel prize winners," says Com-