over an 18-month period. The most sensitive blood tests showed that 30 of the 33 AIDS vaccine recipients had developed gp160-specific antibodies after the third inoculation, given six months after the initial shot.

But the antibody response appears somewhat weak. And when the researchers used a different analytical method, they confirmed the presence of gp160 antibodies in only nine individuals. Disappointingly, antibody levels dropped steadily over the next year; only four recipients retained antibodies 18 months after the first injection, as measured by the most sensitive test.

Moreover, the mere presence of antibodies provides no guarantee that a person can fend off HIV. For evidence of that ability, scientists measured the antibodies' ability to "neutralize" HIV in test tubes. Only volunteers who received a fourth vaccine dose, given about 18 months into the study, showed even a hint of developing these neutralizing antibodies. By one measure, five of 24 did so, but by another measure, none did.

In a potentially worrisome finding anticipated by some researchers, blood taken from six vaccine recipients showed signs of "complement-mediated antibody-dependent enhancement." This poorly understood phenomenon, which may involve the production of "enhancing antibodies" in response to infection or inoculation, makes some viruses even more infectious than normal. In the case of HIV, the finding has appeared so far only in test tube experiments and may not have any clinical relevance. But it warrants careful study, the researchers conclude in the Jan. 15 ANNALS OF INTERNAL MEDICINE.

While the vaccine's ultimate usefulness remains unclear, the study goes a long way toward identifying and comparing the lab tests that may guide the evaluation of this and other AIDS vaccines, the researchers say. HIV's unpredictable and often long latency period has left scientists wondering how best to measure the value of candidate vaccines, especially when few recipients will likely encounter the virus during the relatively short course of a study.

Perhaps most important, scientists say, the study proves the possibility of recruiting appropriate volunteers for a scientifically informative AIDS vaccine trial. To do so, researchers had to screen out applicants deemed at high risk of acquiring AIDS outside the study, since development of disease would have confounded interpretation of laboratory tests. And they had to find healthy volunteers willing to develop antibodies that would falsely suggest HIV infection on later medical exams, such as those for insurance. To explain the presence of HIV antibodies, volunteers received cards verifying their participation in the trial.

— R. Weiss

New worries over non-aspirin analgesics

A 20-year study of factory workers in Switzerland links chronic use of phenacetin, a once-popular painkiller, to increased risks of high blood pressure, heart attacks and death from kidney disease, cancer and heart disease. Phenacetin — no longer available in many countries, including the United States — bears a strong chemical resemblance to acetaminophen, and some scientists say phenacetin's dangers hint at possible hidden risks for chronic users of its still-popular analgesic cousin.

In 1967, a team headed by Ulrich C. Dubach of the Medizinische Universitats-Poliklinik in Basel, Switzerland, began following 623 healthy female factory workers who regularly took phenacetin-based painkillers and 621 women who did not. The researchers had established that many factory workers, especially women, consumed large quantities of analgesics daily to dull work-related aches and pains.

Compared with phenacetin abstainers, the chronic phenacetin users went on to suffer 12.5 times more deaths from urologic or renal disease, 1.8 times more cancer deaths and 2.5 times more deaths from heart disease, the team reports in the Jan. 17 NEW ENGLAND JOURNAL OF MEDICINE. Phenacetin users, especially those taking high doses, also sustained roughly twice as many nonfatal heart attacks, strokes and heart failures.

In addition, the high-dose subgroup experienced a 2.5-fold increased risk of high blood pressure, compared with abstainers. Statistics indicate that this hypertension apparently accounted for "about half" of the nonfatal heart disease effects seen among the phenacetin users, says the study's biostatistician, Bernard Rosner of Harvard Medical School in Boston.

Phenacetin's makers pulled the drug from all U.S. products — including many popular over-the-counter remedies — when the FDA threatened in 1982 to ban the analgesic because of its link to kidney disease. In an editorial accompanying the new report, physician Paul D. Stolley says the Swiss data suggest that phenacetin's removal "is advisable in countries that still allow use of the drug." Dubach argues that phenacetin, like alcohol, "is not dangerous if you don't take it in large amounts."

Stolley, of the University of Pennsylvania School of Medicine in Philadelphia, contends the new findings should also raise a red flag on chronic use of acetaminophen. More than 130 FDA-approved drugs contain this related analgesic, including nonprescription products such as Tylenol, Anacin-3, Extra-Strength Excedrin and Comtrex. Acetaminophen's relationship to phenacetin raises a "fairly urgent" need to investigate its risks, both in animals and humans, Stolley says.

Epidemiologist Dale P. Sandler of the National Institute of Environmental Health Sciences in Research Triangle Park, N.C., echoes that concern. Sandler, who uncovered phenacetin-like renal disease in chronic acetaminophen users (SN: 5/13/89, p.294), says phenacetin and acetaminophen may not work in an identical fashion, but "we suspect that they will."

— J. Raloff

Quasar erupts with relativistic flair

On Nov. 13, 1989, a seemingly ordinary quasar erupted in a 3-minute explosion of energy equal to nearly a million years' worth of solar radiation.

The outburst left a telltale mark on X-ray data compiled by the Japanese Ginga satellite. After scrutinizing those data, astronomers have now concluded that this was the fastest eruption of an energetic quasar ever detected.

The blast temporarily boosted the energy output of quasar PKS 0558-504 by 67 percent along the line of sight to Earth, they reported this week at the American Astronomical Society meeting in Philadelphia. That intensity poses a puzzle. Standard theory holds that a quasar's brilliance stems from the radiation of accelerating hot gases as they fall into a massive black hole at the center of a galaxy. But the enormous jump in PKS 0558-504's luminosity, if it radiated equally in all directions, would create so much outward pressure that gravity's tug — even from a black hole — could not contain the matter, and the gases would stream away.

Ronald A. Remillard and Bruce Grossan of MIT, along with colleagues from Japan, propose an alternative explanation. They suggest that this quasar's overall X-ray outburst was less energetic than it appeared, confining itself to a single jet of radiation — like a flashlight that just happened to beam in the direction of Earth. Such a jet would become detectable if blobs of gas inside the quasar were moving toward Earth at speeds near that of light, Remillard says. The physical laws governing such relativistic motion dictate that the emission would appear to concentrate along the direction of motion and would seem to occur over a shortened time span. Remillard speculates that if other quasars radiate as jets pointing *away* from Earth, they may go undetected.

— R. Cowen