

HIV drug resistance triggers strategic switch

Erika Check, Washington

High rates of drug resistance are causing infectious-disease experts to recommend that doctors change the way they use medications against HIV.

A study released on 16 July by Charles Boucher, a virologist at Utrecht University in the Netherlands, at a meeting in Paris of the International AIDS Society (IAS), found that 10% of Europeans newly infected with HIV carry a strain that is resistant to medication.

The study confirms warnings that HIV drug resistance is on the rise. Last August, for example, a team led by researchers from the University of San Diego found that the number of patients newly infected with HIV in North America who carried resistant virus had jumped from 3.4% in 1995–98 to 12.4% in 1999 and 2000 (S. J. Little *et al. N. Engl. J. Med.* **347**, 385–395; 2002).

The growth of resistance has profound implications for AIDS treatment globally, researchers say. On 14 July, the US Department of Health and Human Services released a set of updated guidelines for anti-retroviral treatments, cautiously recommending for the first time that doctors test for drug resistance in newly infected patients at the outset of treatment, to make sure that the drugs they prescribe will work.

A panel of experts convened by the IAS on 1 July published similar recommendations (M. S. Hirsch *et al. Clin. Infect. Dis.* **37**, 113–128; 2003). The IAS panel said that all



Nigerian AIDS patients benefit from drugs donated by Americans who have become resistant.

patients who have been infected for less than two years before beginning treatment should be tested for drug resistance. Virologists have found that drug-resistant forms of HIV can survive in patients for at least two years, and are still studying whether resistance can last longer than that.

Most doctors use drug-resistance tests only in HIV patients who have had several rounds of drug treatment and stopped responding. This is because the tests cost up

to \$800 per patient, and are sometimes difficult for clinicians to interpret.

But better tools are becoming available to interpret the tests, and as drug resistance becomes more common, testing will become more cost-effective. One analysis has found that testing costs no more than dosing patients with drugs to prevent infections when resistant strains of HIV are common (M. C. Weinstein *et al. Ann. Internal Med.* **134**, 440–450; 2001).

“If the prevalence of resistance is 10% or 12%, and you know that resistance can persist for some time, the case for early testing is much stronger,” says Dan Kuritzkes, director of AIDS Research at Brigham and Women’s Hospital in Boston, Massachusetts, and a member of the IAS panel.

The growing rate of resistance raises worries about the pace of drug discovery. This year, three new AIDS drugs were approved by the US Food and Drug Administration. So far, experts say, they have kept up with drug resistance. But the future is hard to predict.

“What we don’t know is whether resistance is still growing or whether it’s essentially plateauing,” says Anthony Fauci, director of the US National Institute of Allergy and Infectious Diseases.

Some health officials are calling for more detailed guidelines on which drugs to use in different patients — especially in poor countries, where treatment is not yet widespread. Observers say it will be difficult to get doctors in these countries to submit to such rules.

“If we’re going to implement these rules in Africa, we should also do it in Europe,” says IAS president Joep Lange. But even in rich countries, he says, doctors are used to prescribing drugs they are familiar with. “They don’t think there might be alternatives,” he says.

US budgets for physical endeavour

Geoff Brumfiel, Washington

Physical sciences in the United States could be set for their largest funding boost for years, as Congress adds money to the 2004 budget numbers proposed by President George W. Bush back in February.

Appropriations subcommittees in the House of Representatives have voted to give two major research agencies — the National Science Foundation (NSF) and the Office of Science at the Department of Energy (DOE) — increases of about 6.5% next year, taking their budgets to \$5.6 billion and \$3.5 billion, respectively. On 18 July, the full House endorsed the DOE increase.

Bush had proposed a rise of 3.2% for the NSF, which funds most non-biomedical university grants in the United States, and 1.4% for the DOE’s science office, which supports most physics research.

The increases are good news for fields that have lately been eclipsed by a doubling of funding at the National Institutes of Health, the main life-science agency. “I think

there is a recognition that the future of the country depends on the physical sciences,” says Michael Lubell, director of public affairs at the American Physical Society.

It remains to be seen whether the proposed increases will be agreed by the Senate this summer, or be in the final budget bills that both bodies are due to agree by 1 October. “We love the increases,” says Senator Pete Domenici (Republican, New Mexico), who chairs the Senate subcommittee responsible for the DOE. But he notes that the House bill gave money to research by cutting water management projects, which have considerable support on his committee.

And not every major agency supporting the physical sciences is faring so well in the current budget round. The House appropriators have offered NASA an increase of only 1.1%, to \$15.5 billion. Meanwhile the House has approved a 1% increase, and the Senate a 4.7% cut, in basic and applied research at the Department of Defense. ■