

Model Programs Take Aim At HIV Rates in Indonesia

BALI, INDONESIA—Tuti Parwati has just spent a grueling day meeting with international public health officials, reviewing the latest results from random tests for HIV among members of high-risk groups, tending to AIDS patients, and preparing a speech for top members of the Indonesian government. Now, after sunset, she's talking with construction workers at a camp in Denpasar, the largest city in Bali. A slight, well-dressed woman in her forties, Parwati may look out of place in these surroundings. But she's comfortable delivering her message, which pulls no punches: The workers must practice safe sex to avoid catching AIDS.

Parwati, an infectious diseases researcher who chairs the department of tropical and infectious diseases at Sanglah Hospital in Denpasar, is on the front lines in Indonesia's battle against AIDS. It's a critical battle in the global campaign against the disease: Indonesia's population of 184 million is the fourth largest in the world, and if the disease takes off here it could be devastating. "An epidemic of HIV in Indonesia would have a major impact throughout the Pacific Rim," says Paul De Lay, a physician and technical adviser to the U.S. Agency for International Development's (USAID's) international AIDS-prevention program.

The Indonesian government, backed by international public health organizations and aid agencies, is mounting an aggressive campaign against the disease, monitoring rates of infection and trying to change deep-seated public attitudes through education campaigns and outreach programs like Parwati's. It has one major advantage: So far, the disease has not established much of a beachhead here. By January this year, only 51 AIDS cases had been reported throughout Indonesia, and the number of people infected by HIV is estimated to be between 20,000 and 40,000. But the warning signs are clear. The number of new cases is doubling every 6 months, and the course of the epidemic mirrors that of several years ago in nearby Thailand.

Indeed, Thailand's free-flowing sex industry, which has produced an estimated 300,000 to 500,000 cases of HIV infection, provides a grim warning of what could happen to Indonesia if the anti-AIDS campaign doesn't alter the course of the epidemic. "Indonesia and Thailand have the same risk factors except one," says Don Douglas, who spent 7 years in Thailand working for PATH, a private aid organization based in Seattle.

"Thailand had a large pool of low-income drug users. Here, drug use is rare."

The response of most Asian nations to AIDS may seem slow to Western governments, which have battled the disease for more than a decade. As recently as 6 years ago, says Parwati, many Indonesian officials still thought AIDS was nothing more than a

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Uphill fight. Tuti Parwati campaigns to keep Indonesia's present low rates of infection from soaring.

problem affecting tourists. Her own epiphany came in 1987, when the government sent her and several other physicians and nurses to Australia to study the disease. After visiting AIDS patients in a Sydney hospital, Parwati made a promise to herself "to spread information on how to prevent AIDS to everybody as soon as possible, as loudly as possible, and to tell people AIDS is coming and there is no cure."

At that time there was no organized effort to combat the disease on Bali, an island of 3 million and Indonesia's leading resort location. Parwati decided that any public education campaign needed better data on those most at risk, so she devised a system to analyze random blood samples to track the infection's spread on Bali. Working with public health officials from USAID, she targeted her efforts at those in the direct path of the disease—male and female sex workers, students in tourist academies, and employees in the tourism industry.

Similar tracking efforts have now been launched in 12 of Indonesia's 27 provinces, and these feed regular reports of new HIV-positive cases to the government. Suriadi Gunawan, a U.S.-trained physician who directs Indonesia's Communicable Disease Research Center in Jakarta, says his agency has strengthened its testing laboratories and is beginning to track the spread of HIV and

other sexually transmitted diseases in 15 major cities.

With help from USAID and the World Health Organization (WHO), Indonesian officials are also learning more about the behavior of high-risk groups and setting up education efforts. The ministries of religious affairs and education, for example, are looking for ways to incorporate HIV education programs into the curriculum.

Surprisingly, these efforts do not have to confront major religious taboos. Although Indonesia is often described as a Muslim country, significant segments of its population are Hindi, Buddhist, Protestant, and Catholic. Moreover, most of its Muslims do not follow the fundamentalist brand of Islam practiced in the Middle East—Indonesia has a stated policy of equality for women, for example, and few women cover themselves from head to toe.

But anti-AIDS programs do face deep-rooted conservatism on sex-related topics, as well as ignorance of the disease itself. The display or promotion of condoms is still considered unacceptable, for example. As a result, although more people are using condoms, say USAID officials, the current rate is still a dismally low 5%. And, in a telling example of the kind of irrational fear that is still

widespread, in January the Department of Immigration refused to allow retired basketball star Magic Johnson to visit Indonesia for a 1-day AIDS fund-raising event. "We are dealing with a lot of misinformation and prejudices," says Gunawan.

Parwati is trying to cut through that misinformation and prejudice with regular, face-to-face contact with members of high-risk groups. She has organized an outreach effort on Bali that sends case workers out on the streets every day and night, talking with people, distributing pamphlets and condoms, and organizing peer support groups. There's no substitute, she says, for a personal touch.

AIDS experts praise her close ties to the community that she is serving and the quality of her work. "Parwati's program is among the most innovative in the world," says Tom Coates, director of the Center for AIDS Prevention at the University of California, San Francisco. Coates is chairman of the steering committee for social and behavioral studies, one of four research units of WHO's Global Program on AIDS. "The idea of using existing social structures and convincing the leaders of those structures to get behind prevention efforts hasn't been done very much in other countries," he says. "And it's very hard to make HIV a priority when there's still such a low prevalence."

Parwati's program has become a model for

more than 30 communities across the country, each working with its own high-risk groups. They include construction workers, truckers who ferry cargo across many of Indonesia's 13,000 islands, low-income women whose husbands work away from home, oil workers, sailors, and people who work with Thai fishermen. Although that variety makes it harder for public health officials to reach a mass population with a single message, it may also slow the spread of the disease by segregating it in certain communities.

Indonesia's campaign will receive a big boost at the end of the year with the start of

a 5-year, \$40 million effort funded by the United States, Australia, and Germany. The United States, which is contributing almost half the total, lists Indonesia as one of 15 priority countries in stopping the spread of HIV. The money will be used to monitor infection rates, buy lab equipment, strengthen government health facilities, train health care workers, conduct national education programs, and develop more programs like Parwati's.

However, even with millions of dollars and a massive education program, Indonesia faces an uphill battle against AIDS. "We

need hundreds of Tuti Parwatis," says Douglas. "In terms of a large national education program that takes advantage of the mass media, we're years away."

Six years into the battle, Parwati says she's committed to the long haul. But she's careful not to exaggerate her chances of success. "We have to be optimistic," she says. "Because we've started early, we may at least slow the spread of AIDS."

—Jane E. Stevens

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SPACE SCIENCE

NASA Told Belt-Tightening Won't Work

Selling the children isn't an option for families on a tight budget. But at the National Aeronautics and Space Administration (NASA), some of the kids may have to go. A new analysis by the Congressional Budget Office (CBO) predicts that NASA's plans to cope with a flat or declining budget by making its operations "smaller, cheaper, and faster" is "unlikely to produce significant budget savings" over the next 5 years. Without more money, says CBO, NASA may be forced either to kill the space station and curtail the shuttle, or gut unmanned space science. And it appears that influential members of Congress are beginning to prepare themselves for the possibility of burying the station to save science.

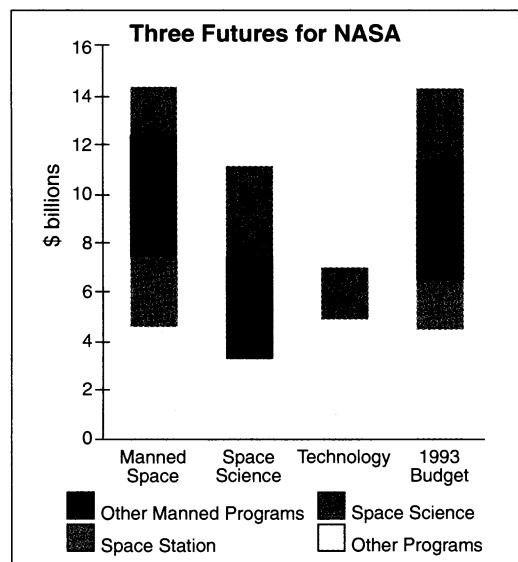
Over the last decade, CBO finds, "an expectation of future growth...permeated the agency's planning," leaving such expensive legacies as the space station, the Hubble Space Telescope, the Cassini mission to Saturn and the Earth Observing System (EOS). But since 1991 NASA's budget has been essentially flat, and next year, for the first time since 1974, the president has proposed spending less—\$14.3 billion instead of the current \$14.55 billion. Without a rising budget, CBO says, the large and expensive projects NASA began in the last decade are taking up an increasing share of its budget. "The attempt to fit a program that was projected to cost more than \$20 billion a year into an annual budget of \$14 billion risks delay, mission failure, and the loss of anticipated benefits," CBO warns.

One problem, according to CBO, is the high fixed costs of most of NASA's programs. For example, CBO finds that dropping two of the eight space shuttle flights scheduled each year would reduce operating costs by only 3%. Likewise, the cancellation last year of the Comet Rendezvous Asteroid Flyby, part of a dual mission with Cassini initially projected to cost \$3.7 billion, saved

NASA only \$700 million because it still plans to build and launch the spacecraft to go to Saturn.

A second problem is the cost of maintaining its expensive space hardware. Operating the Hubble telescope consumes nearly half of NASA's \$562 million space science operations budget. And the \$8 billion EOS project to monitor environmental changes may cost as much as \$500 million a year for operations and data analysis.

What should NASA do to cope with such a dismal financial future? CBO offers three choices: a program at current levels that places greater emphasis on manned space flight but cuts space science by more than \$1 billion; an \$11 billion option that adds \$1 billion to space science but kills the space station and relegates manned space flight to scientific purposes; or a \$7 billion program, without the station and with less science, that emphasizes technology and missions with commercial potential (see table). The two options with smaller budgets reflect, CBO



Tough choices. CBO report offers NASA three painful ways to spend its money.

says, "the national emphasis on deficit reduction and the prospect of fewer benefits."

Not surprisingly, NASA doesn't like any of these scenarios. The CBO report sacrifices "both balance and boldness," says Administrator Daniel Goldin, and "takes a defeatist approach [that] sends a chilling message to any government agency that dares reinvent itself." But Congress seems to be taking the report seriously. Representative George Brown (D-CA), the chairman of the House science committee that commissioned the report and a major backer of the station to this point, says Congress may need to address "whether it is wise[r] in the long run to terminate the space station and focus our resources more sharply on a narrower set of space goals." In particular, he says he would not support major reductions in space science to accommodate the space station.

A staunch supporter of the space station in the Senate is also readying for battle. In an interview last week with *Science*, Senator Barbara Mikulski (D-MD), chairman of the NASA appropriation committee, said she would fight for enough funding for NASA to avoid the sort of triage the CBO report recommends. If forced to choose a CBO option, she said she would pick the second, which focuses on space science, but she hopes to find enough money to fund the space station, too.

There are even signs that White House officials may not be willing to fight for every last dollar for NASA at the expense of other programs. Last week, presidential science adviser John Gibbons told the House appropriations subcommittee that funds NASA and the National Science Foundation (NSF) that he would favor NSF over NASA if the subcommittee didn't have enough money to fully fund both agencies. Noting that U.S. spending on fundamental research "is significantly lower, as a percentage of GDP [gross domestic product] than in other industrial nations," Gibbons said, "I would rather look harder at NASA than to try to find the funds [you need] within NSF's budget."

—Christopher Anderson