

pricing-system that offers domestic patients lower prices. Non-resident Indian medical tourists are charged the same as any others from abroad.

Still, even these lower prices are too high for the vast majority of India's 1.1 billion population. The CII group, which also has an ethical code for member hospitals, is establishing a regulatory framework for its own members, raising questions about how effective such self-imposed rules can be.

CII lawyers are also drawing up a standard contract to ensure that any litigation, arising from treatment, is dealt with in Indian courts. Currently, neither medical tourists nor Indian patients can take their cases to Indian courts. Their only recourse is India's State and National Consumer Disputes Redressal Commissions, which have a huge backlog.

"Any litigation launched against an Indian hospital will expose the poor system of justice that exists here," said Dr Mohan Thomas, medical director of the Cosmetic Surgery Institute in Mumbai and Chairman of CII's Healthcare Committee.

But while helping to strengthen medical tourism, the Indian government is coming under increasing pressure to use these foreign exchange revenues to benefit the ailing and under-resourced public health system.

The private sector hospitals argue that trickle-down payments for hotels and other services will improve the economy as a whole. But public health advocates say that, unless the Indian government actually allocates more of its revenues to public health systems, the impact will be negligible.

"The government has not examined how our patients will benefit [from medical tourism] or whether they will lose out," Dr Nilima Kshirsagar, dean of one of Mumbai's largest public hospitals, the King Edward Memorial, told the *Bulletin*. "The need to benefit Indian patients is the main goal, and medical tourism cannot be at their cost."

Prime Minister Manmohan Singh recently acknowledged the need improve public health care: "There are many parts of our country where public-sector intervention in health is absolutely essential to carry conviction with our people and to improve the quality of delivery of services."

As the medical tourism sector grows, however, little is known about the impact this is having on its health workforce. Private hospitals argue that medical tourism reverses the brain drain and that health workers, who are migrating to economies where salaries are higher and career opportunities more attractive, will stay in India if they can work in the medical tourism sector.

There are fears, however, that medical tourism could worsen the internal brain drain and lure professionals from the public sector and rural areas to take jobs in urban centres.

"Although there are no ready figures that can be cited from studies, initial observations suggest that medical tourism dampens external migration but worsens internal migration," said Dr Manuel Dayrit, director of WHO's Human Resources for Health department.

"It remains to be seen how significant these effects are going to be. But in either case, it does not augur well for the health care of patients who depend largely on the public sector for their services as the end result does not contribute to the retention of well-qualified professionals in the public sector services," Dayrit said.

Dayrit disagreed with medical tourism proponents, who argue that some revenues from medical tourism will find their way into public coffers to help retain staff in the public sector. "Unless national laws or regulations are set up so that these revenues are taxed explicitly and channelled to the public sector to augment salaries, the likelihood of this happening is very slim," he said. ■

Rupa Chinai and Rahul Goswami,
Mumbai

Navy labs play public health role

A United States network of laboratories, initially created to protect the health of US service personnel by doing local research and disease surveillance, has become a major public health presence in the developing countries where it operates.

When bird flu was first detected in Egypt in February 2006, it was a US naval laboratory that confirmed the samples received from Egypt's government laboratory were of the H5N1 sub-type, before forwarding them to the US Centers for Disease Control and Prevention (CDC) for further confirmation.

"Keeping sailors, soldiers, airmen and marines healthy and out of hospital" is still the United States' Naval Medical Research Units' (NAMRU) primary and original mission, according to Andrew Stegall, public relations officer at NAMRU-3 in Egypt. But,

over the years, NAMRU's work has become part of the public health systems of the developing countries where it is based.

Since NAMRU was founded in the 1940s, it has become the largest overseas military medical research facility in the world and emerged as an important foreign policy vehicle of the United States.

US naval personnel and scientists at these centres in Egypt, Ghana, Indonesia and Peru collaborate with local research groups, particularly in the areas of vaccine development, disease surveillance and vector control for tropical diseases. They also train local

scientists to do more research relating to public health problems.

NAMRU's research often involves local children because their immune systems are the best approximate to those of US military personnel and anyone who has not developed immunity to local diseases.

"We are most interested in how Egyptian children react to diseases because they are seeing the region's diseases for the first time. Human body immune systems have memories, and children's systems aren't fully developed to their habitat," Captain Robert Frenck, Jr was quoted as saying in *All Hands*, the US navy magazine in February 2004.

Andrew Stegall, public relations officer at NAMRU-3 in Egypt, said it was mutually beneficial because they share their findings with the local authorities: "This gives the country a start process of developing their own capability of surveillance and treatment".

In Egypt, one field study in Abu Homos enrolled and followed children from their birth, in the Beheira region, to develop a vaccine for diarrhoea. Dr Ibrahim Adib, the lead researcher in the study, said: "They have a new and naive immune system and then we assess their reaction to different agents of infection, especially [those causing] diarrhoea when they are exposed for the first time". Diarrhoea is a major problem for the general population but also military personnel and other visitors to Egypt; the findings of such a study could also be useful for Egypt's valuable tourism sector.

Stegall said that public health has become a global mission for the United States, and NAMRU serves this mission by "facilitating individual governments to set up their infrastructure and improving public health".

Captain Bruce Boynton, commanding officer at NAMRU-3, said the research centre had become "an integral part of the total Egyptian public health structure", that it "played a supporting role" in implementing public health programmes and that it helped to train researchers to boost capacity in the country as a whole.

NAMRU-3, based in Cairo, is the largest of these naval medical research units and was initially set up as the US Typhus Commission in 1942 to avert an outbreak of the disease during the Second World War among dockworkers on the Suez Canal.

The Cairo-based unit's success spurred the Egyptian government to invite the United States Navy to continue collaborative studies on endemic tropical and sub-tropical diseases with Egyptian scientists. As a result, NAMRU-3 was established in 1946.

NAMRU-2 was set up in Jakarta, Indonesia, in collaboration with the Rockefeller Institute, during the Second World War to carry out research on infectious diseases that could affect US military personnel in Asia.

"The public health benefits to the host countries can be considerable", Stegall said. Recently NAMRU-3 helped to complete the National Egyptian Disease Surveillance System (NEDDS) computer software linking 56 national fever hospitals in Egypt with the district hospitals in order to record improve recording of disease incidence. Before the NEDDS system was established, disease reporting in Egypt was ineffective and fragmentary.



Egyptian laboratory technician working on some samples at NAMRU-3.

In collaboration with the Ministry of Health and Population, NAMRU-3 and other partners recently completed a mass-media safe-injection public health campaign designed to reduce hepatitis C infection in Egypt, which has one of the highest prevalences in the world.

Maintaining a beneficial and welcome presence throughout the world is also important to US foreign policy and NAMRU fulfils this role by acting as an ambassador, able to "send researchers to countries that other Americans may not have access to" Boynton said, by "maintaining close and long standing ties to the different governments in the region".

NAMRU-3 works closely with WHO's Regional Office for the Eastern Mediterranean (EMRO) and the naval laboratory can send its scientists on joint surveillance expeditions in countries where US citizens might not usually be allowed to go.

Kenya recently asked NAMRU-3 to investigate a Rift Valley fever outbreak. Within 48 hours, five NAMRU-3 scientists were dispatched to north-eastern Kenya, where the outbreak had occurred, equipped for on-the-spot analyses. As Matt Wiener, deputy head of the Enteric Program explained: "We are able to respond quicker than people in the United States and have all the necessary expertise in packaging reagents, setting-up laboratories and equipment in remote areas".

Serving US foreign policy, NAMRU's role is also one of a mediator that facilitates collaboration between governments and organizations Stegall

said, including with the US Agency for International Development (USAID), CDC and governments. NAMRU-3 is also a WHO collaborating centre for AIDS as well as emerging and re-emerging infectious diseases.

Boynton said that US foreign policy seeks to identify imminent diseases and epidemics worldwide to safeguard the health of troops and of the public. Before the bird flu outbreak in Egypt in February 2006, NAMRU-3 veterinarians and Egyptian government officials were continuously carrying out surveillance on the susceptibility of birds in Egypt to the disease. When the first H5N1 isolates were identified by the Public Health Laboratory at Egypt's Ministry of Agriculture, they were sent to NAMRU-3 for confirmation, before being forwarded to CDC for further validation.

"As soon as the ministry gets a positive sample for bird flu virus, they bring it to NAMRU to confirm the result and then we send it to CDC," said Boynton. "NAMRU plays an important role ... working on both humans and poultry for analysis and diagnoses of bird flu in Egypt".

Transfer of expertise by NAMRU-3 to Egyptian scientists, who make up over 80% of the NAMRU-3 staff, is a vital part of the exchange. Their joint work analysing these bird flu samples has been important both for Egypt and the international community. Boynton said: "It is in the world's interests to have these countries develop the expertise to have their own national flu centres". ■

May Meleigy, *Cairo*