

Antibiotic Resistance Sounds an Alarm

by Professor Sheikh Nesaruddin Ahmed and Dr Zulfiqar Ahmed Amin

PEOPLE suffer from disease mostly due to association of some micro organisms. Amongst these micro organisms, bacteria are the number one for disease procedure. To prevent or restrict growth of bacteria, antibiotics were invented. Before invention of antibiotics, death from different disease were several folds than today, which reflects association of bacteria in disease production and great contribution of antibiotics to reducing mortality and morbidity rates worldwide.

Now-a-days, it is a concern of all doctors in private practice or hospital level for treating bacterial infection mostly because of bacterial resistance to antibiotic. That implies bacterial which were originally sensitive to an antibiotic have become resistant to it so that they grow even when it is present. Resistance can most easily be demonstrated in the laboratory by culture sensitivity test but it may also be seen clinically because the drug has little or no effect on the infection. Bacteria reproduce rapidly and their genetic material may alter slightly with each new generation, producing new and accidental mutation. Some of these changes enable them to survive better. When antibiotics are given, the more sensitive bacterial are rapidly eliminated. Strains that become genetically resistant to a particular antibiotic are likely to become more numerous than those which are sensitive. There are two categories of drug resistant mechanisms.

A. Drug tolerance occurs when the bacterial change their structure or function so that they are less vulnerable to an antibiotic.

B. Drug Destroying bacteria have adapted in a way that reduces and antibiotic's effectiveness. Some resistant strains produce an enzyme that inactivates the antibiotic — for example, certain bacteria produce beta-lactamase which destroys some kinds of penicillin.

Many examples of drug resistance are faced by the doctors and public health workers now-a-days in all are as of health practice, in most of the

developing and under developed nations in the world, causing difficulty in disease elimination and suffering of patients to buy expensive and unavailable antimicrobials. Where resistance develops, it can be difficult to treat bacteria.

and affordable to linger the disease procedure and has put an extra burden of expenditure on the patient. A recent study in Pakistan reveals a horrifying increase in the resistance of streptococcal pneumonia to antibiotic which produces

increased sensitivity. Prevalence of cotrimoxazole resistance has also been found among 5 Pneumonia isolates in Saudi Arabia (65 per cent) and Spain (52-67 per cent). Cotrimoxazole is recommended for ARI programme because of its low cost compared with Procaine penicillin and oral penicillin. Over 500 isolates from 11 countries were tested with 11 antibiotics for antimicrobial resistance of H influenza. The countries included Argentina, Bangladesh, Brazil, Kenya, Pakistan, Papua New Guinea, Philippines and Thailand. This study was supported by the Board of Science and Technology for International development (BOSTID) in collaboration with the US National Academy of Science. It showed 6% of H influenza strains were resistant to ampicillin and/or penicillin.

For the purpose of this article, another study was carried out in Dhaka Medical College Hospital in surgical wards 10 cases of abscess in different parts of body culture yielding Staphylococcus Aureus as the causative organism were examined in this study. Out of these patients under study, 7 were resistant to ampicillin, 5 to Cloxacillin, 5 to Amoxycillin, 6 to Tetracycline, 3 Doxacycline, 3 to Cephalosin, 4 to Cotrimoxazole, 2 to Gentamycin, only 2 groups of antibiotics were fully sensitive in this study group and these were Nalidixic acid, ciprofloxacin.

Antibiotic are often prescribed unnecessarily by poorly informed doctors. People may buy antibiotic from pharmacists and other drug sellers without prescriptions and use them when they are neither necessary nor likely to be effective. It is easy to buy any kind of drugs without a prescription from private pharmacies. The red warning on drug packages which reads 'SOLD UNDER MEDICAL PRESCRIPTION' seems to be little more than a decoration. Even when an antibiotic is appropriate, people may not understand why a full course is needed to complete the cure. They may be tempted to take less of the drug if it is cheaper for them to buy less or to save

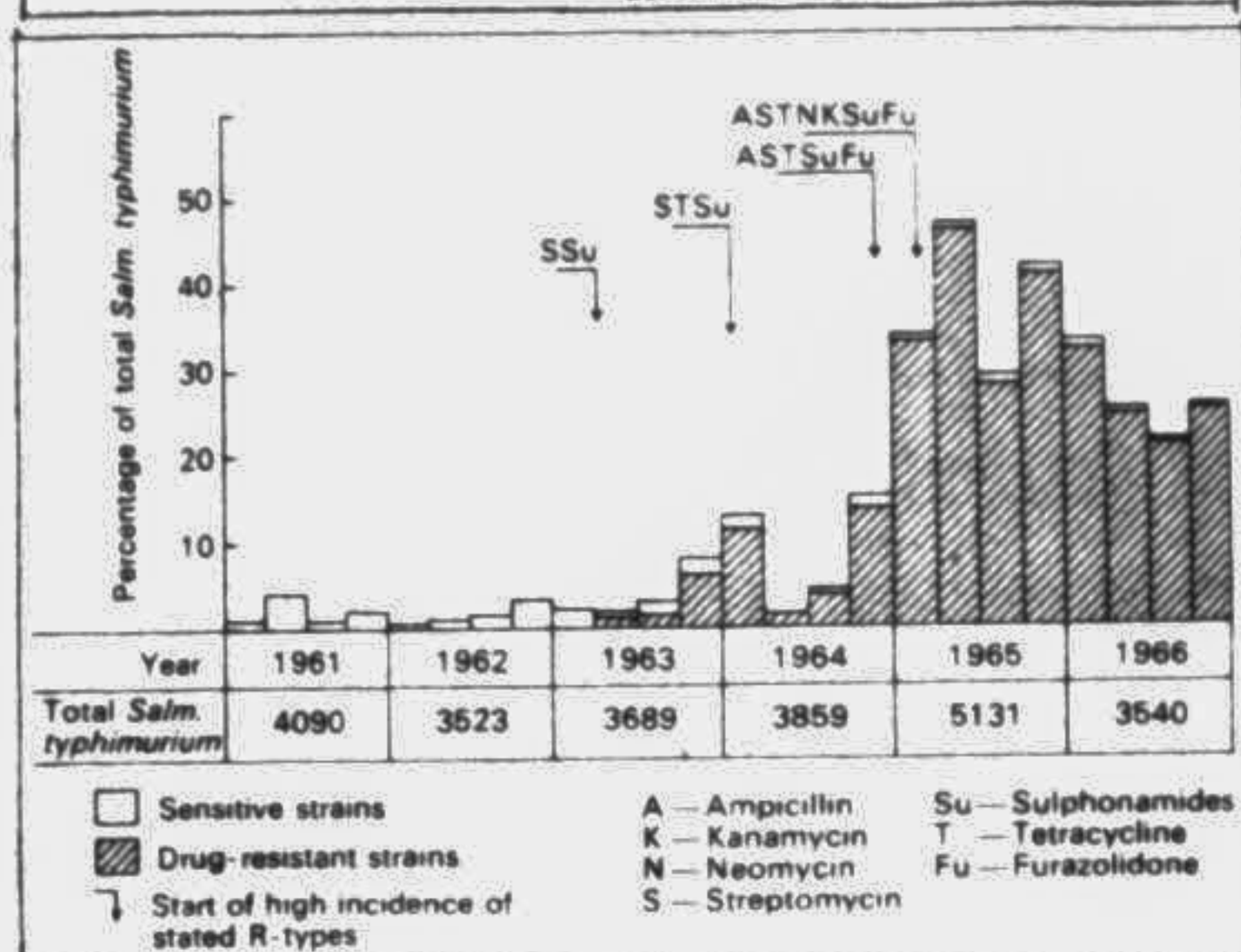
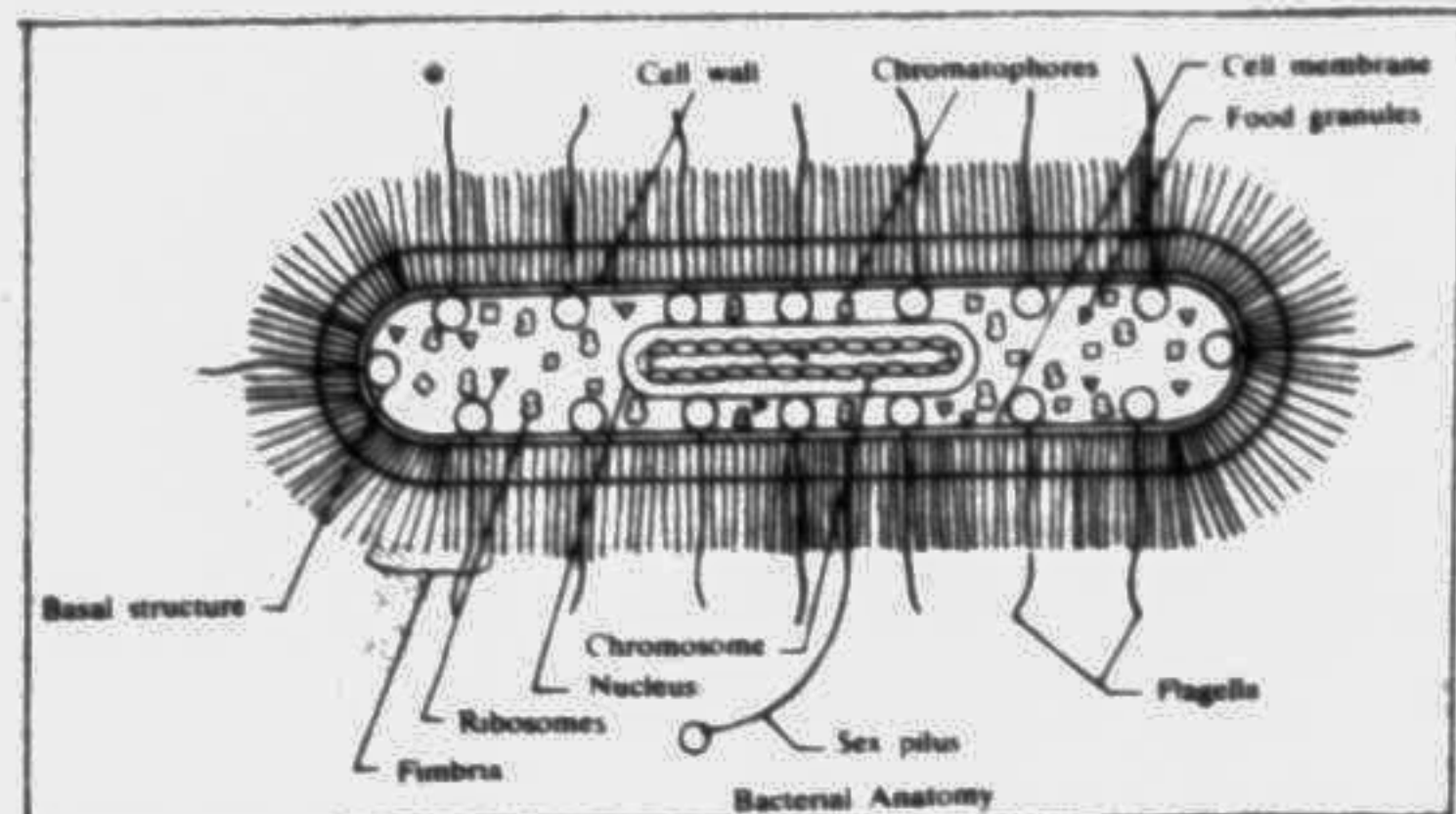
some of the course for the next occasion. Many people, both literate and illiterate, simply refuse to take the advice of doctors for prescription to save the money and consult with compounder for medicine. The compounders understand the psychology of this group of patients and give drugs which only relieves the symptoms of the disease but cannot cure it. Some compounders give incomplete course of antibiotic for convenience of patient and buy at a cheap cost. Such over prescribing and misuse of antibiotics contribute to the growing problems of resistance.

Now the question is how we can prevent this resistance to antibiotic. The simple answer is the correct use of antibiotics.

1. Antibiotics should never be used unless they are needed. Resistance becomes more likely when the bacteria are given greater exposure to them.

2. Antibiotics should always be taken in right dose and for the recommended length of time. Stopping taking the drug early helps resistance to develop and symptoms may return because the bacteria are able to grow again.

Now the question lies how we can implement it. To prevent further antibiotic resistance, everybody concerned with public health must be conscious about it. Doctors should do what they are supposed to do. Patients should never take any antibiotic without prescription. None should take the risk of prescribing antibiotics without sound knowledge of pharmacology and therapeutics. As Socio-economic status of most of the Third World nations cannot fund for adequate health policy and health facilities. So private pharmacies are often the only option for those seeking treatment. Considering this, WHO has recommended that first level health workers be trained to diagnose disease, to treat it appropriately with antibiotics if required and refer severe cases. It would be both available and affordable for the patients and thereby we can get rid of this alarming situation of antibiotic resistance.



rial infections — particularly with the drug which are available and affordable. We cannot always be sure that new, equally effective drugs will become available. When they do, they are usually expensive.

Studies have been carried out in different countries on antibiotic resistance. Information from the studies has given an alarming sign to all to how many strains of bacteria either drug-tolerant or drug destroying which have caused to change rationally used antibiotics for a particular bacteria. So it has become obligatory to replace some other regimens not so available

pneumonia. From 1986 to 1989 researchers examined blood taken from 167 children with acute lower respiratory tract infection that contained S. pneumoniae. More than 20 strains or serotypes were isolated, identified and tested for their sensitivity to a range of antimicrobials. Laboratory test showed that over 95% of the isolates had decreased sensitivity to penicillin. Over the four years, nearly half of the isolates were fully resistant to cotrimoxazole, the drug of choice for acute respiratory tract infection (ARI) programme in Pakistan and most of the remainder had de-

Cambodia Encounters New Enemy

by Ian Steele

CAMBODIA is on the brink of a new war which cannot be fought with conventional weapons.

Just hours after the United Nations' Special Representative for Cambodia (Yasushi Akashi) took up residence in Phnom Penh recently, the World Health Organisation (WHO) announced a new threat to those involved in the peace process.

Their enemy is an extremely serious form of malaria which is resistant to the usual drug treatments. And WHO warns that many thousands of lives are immediately at risk.

The resistant strain of malaria is caused by the Plasmodium falciparum mosquito, which causes life threatening complications such as kidney failure or brain infection.

One irony of the peace process in Cambodia this year is that freedom is likely to be a key agent in the transmission of malaria. At greatest risk are the estimated 360,000 Cambodian refugees who began their journey home from Thailand last March.

But also at considerable risk are the 26,000 civilian and military personnel who have been sent by the United Nations to help guarantee their safety during Cambodia's transition to peace and security through free and fair elections.

WHO experts have warned of a severe shortage of pharmaceuticals in Cambodia, including stocks of quinine plus tetracycline, the main emergency treatment for malaria. Intravenous quinine dihydrochloride, quinine sulphate tablets and mefloquine are also in short supply.

"Resistance appears to be developing to most treatments," said Dr Jean-Paul Menu, WHO's Special Health Envoy in Cambodia. "In a typical clinic, a month's supply of pharmaceuticals runs out in a week. Private traders, not physicians, are selling whatever supplies they can obtain." United Nations peace-keeping forces have been in-

structed to take multiple precautions against malarial mosquitoes. They have been told to use insect repellents, to wear long-sleeved clothing, and to sleep under bed-nets which have been impregnated with insecticide.

The development of resistant of the malaria parasite in all parts of Cambodia outside Phnom Penh, has been promoted by limited supplies of pharmaceuticals and difficulties establishing health care in areas affected by two decades of military action.

known pharmaceuticals. Migration has spread resistance from the border area westward, and peace in Cambodia now appears likely to carry it back.

The Cambodian border with Thailand is now potentially more hostile than it was at the height of armed conflict. Many young migrants have been drawn to the area by rich reserves of timber and gemstones even though the terrain has been heavily mined by various armed factions.

"Although the mines are



Dr Menu said that during this period, many people received unsupervised, partial treatments, which allowed the malaria parasite to survive and develop resistance. The victim got some relief but eventually became sick again. When the victim was bitten again, the resistant parasites were picked up and carried to a new victim who picked up a resistant strain.

If that person also received only partial treatment, then the cycle continued, with succeeding victims picking up increasingly resistant strains of malaria.

According to WHO, this vicious cycle has in fact been repeated again and again throughout the militarily disputed mountainous areas close to the border with Thailand, creating malaria parasites which are resistant to most

killing between two and four persons a day, malaria is killing very more," said Dr Menu.

WHO estimates that Cambodia has only 25 per cent of the pharmaceuticals it needs to mount an offensive against this new wave of malaria.

When United Nations peacekeepers are in malarious areas for prolonged periods, they will take regular doses of doxycycline, an antibiotic which has not been used or abused in the area.

There is, as yet, no hard evidence of parasite resistance to the drug, but the down side for those who take it, is that there has also been little experience with prolonged use of doxycycline, and the peacekeepers will have to be medically monitored for side effects.

— Depthnews Asia

Price of a Cuppa Could Banish Third World Bane

by Gamini Seneviratne

JIXIAN in northeast China was known as the Village of Idiots. Not any more. In 1978, 11 per cent of its people were cretins and 65 per cent had goiters (enlarged thyroid glands), caused by iodine deficiency in the diet.

That year, iodine-added salt was introduced. In 1979 all young women and children in Jixian were given iodized oil injections.

"Since then", reports the UN Children's Fund, "no cretins have been born. By 1986 the goiter rate had fallen to four per cent and improved health has helped bring about a sharp rise in the village's prosperity."

Elsewhere, too, similar interventions against the so-called Iodine Deficiency Disorders (IDD) have shown success. But the global picture remains bleak.

IDD include goiter, and, says the World Health Organisation (WHO), "a wide spectrum of mental and intellectual defects of varying degrees of severity, including

cretinism, paralysis and dead mutism, and can also cause stunted growth, miscarriages, stillbirths and infant deaths. The condition is the world's leading cause of preventable brain damage."

Human beings need only

Top nutritionists are meeting in Brussels in late April to discuss a cause of much disease — iodine deficiency. Lately the problem has returned in eastern Europe and the former Soviet Union. In the developing world it produces mental retardation. Yet, reports Gemini News service, the problem could be solved for the cost of a cup of tea per person a year.

tiny amounts of iodine and can get this in the daily diet. Usually there is enough in soil and water for animals and plants to take up and transfer to us.

In the valleys of mountain ranges like the Alps, Andes and the Himalayas, or in plains subject to heavy seasonal floods, however, this vital trace element is irretrievably leached out over time.

In such zones, often densely populated, if people have only

locally produced food, IDD are inevitable. WHO estimates that "more than a 1,000 million people live in such environments."

Iodine deficiency is a public health problem in 95 countries. Most, but not all, are in

this medium, all salt produced in the country must be iodized, must be all salt-processed foods. Nevertheless, alpine Switzerland must remain vigilant and WHO says "there are still some significant pockets of IDD in Europe."

A workshop about to be held in Brussels will bring together 100 scientists and national health administrators to discuss "Iodine deficiency in Europe: A Continuing Concern." The "concern" has become urgent since the event was planned.

Mounting evidence indicates a resurgence of IDD in eastern Europe and the former Soviet Union, where it was thought to be under tight control. Details of recent studies, led by Unicef and WHO, will be revealed in Brussels.

"What is clear", says nutritionist Dr Elisabeth Heising, at the WHO regional office for Europe, "is that we must live with iodization. Not just in bad times, as in the East now, but constantly, even in the West. The problem lurks just below the surface all the time."

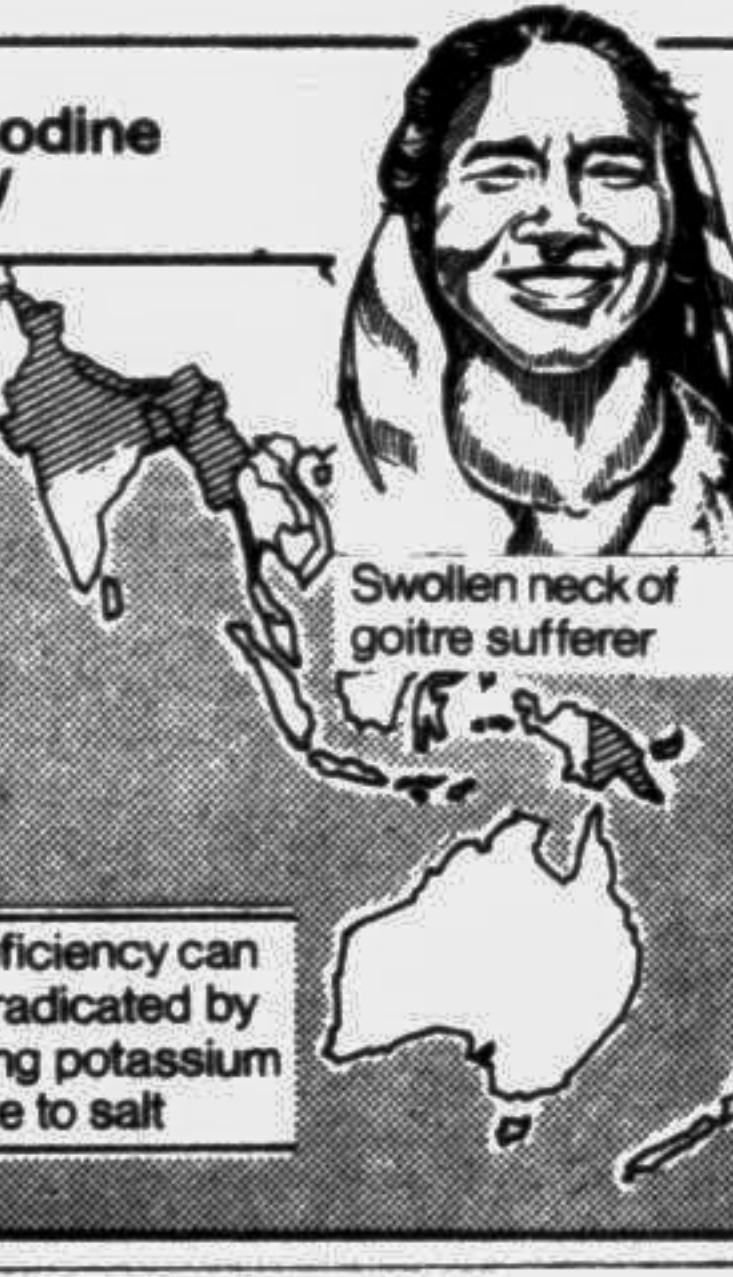
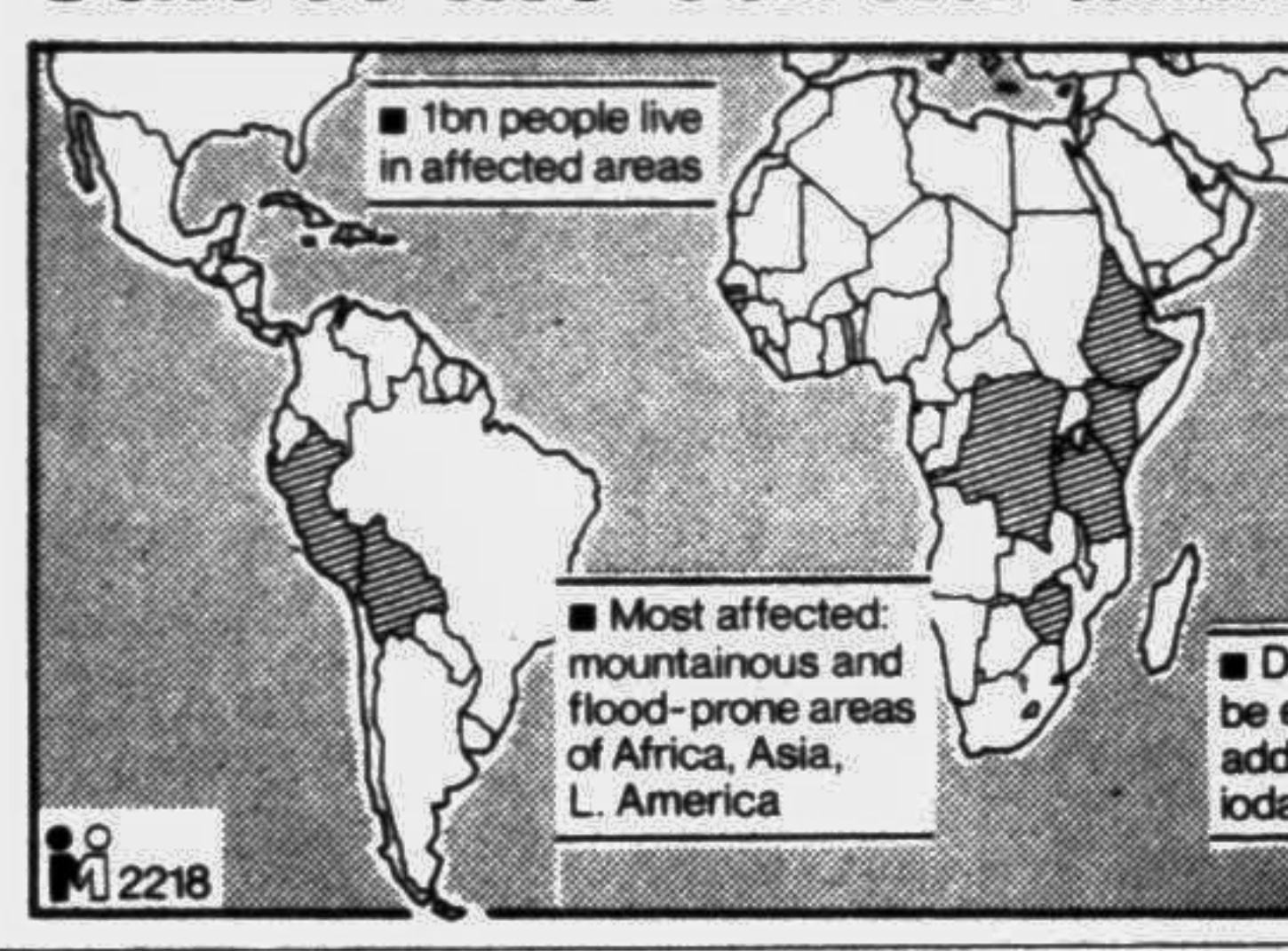
In the developing world it does more than work. Official estimates of iodine deficiency consequences are frightening — five million cretins, at least as many borderline cases, 35 million mentally retarded, over 200,000 stillbirths and over

100,100 neo-natal deaths each year.

The saddest thing," says the director of Unicef's regional office in Europe, Dr Samir Bishara, "is that IDD is very easily eradicated."

Iodized oil, by injections or capsules, can mitigate or cure the condition. Prevention is demonstrably possible by supplementing items of diet, including sugar, flour and water. Salt is preferred because almost everybody takes some in roughly the same amounts.

Salt of the earth: Tackling iodine deficiency



"Unlike with so many diseases," says Basta, "the technology is available and proven, and it's inexpensive."

Basil Hetzel, a former executive director of the International Council for Control of Iodine Deficiency Disorders, has calculated the cost at the price of a cup of tea per person per year.

Campaigns in developing countries founded because of a lack of a conviction and commitment, Basta says.

"Things were very quiet for some years, but there has been a renewal since the second half of the 1980s."

There are IDD-control programmes in 60 countries of Asia, Africa and the Americas, with international community help.

Unicef, WHO and others hope new evidence of the efficacy of iodine fortification and the dangers of relaxing vigilance will ginger up activities worldwide and end these preventable diseases.

— Gemini News

The Other Side of Coca

by Abraham Lama



ITS name has been tarnished by abuse of the refined product in North America, but the coca plant that grows in Peru and Bolivia is a vital part of the everyday lives of the Andean people.

Coca leaves have for the past 4,000 years formed an important part of the indigenous culture and traditional rituals of Andean Indians.

"Despite the harassment it has been subjected to in recent years, coca is still part of the native culture," says Fernando Cabieses, director of the National Institute for Traditional Medicine here.

Coca's conversion into cocaine is a foreign process that has put the crop at risk as rich countries demand a stop to its cultivation.

Leaders of the Andean countries Bolivia, Colombia, Ecuador, Peru, and Venezuela met their US and Mexican colleagues in the US city of San Antonio, Texas, recently to thresh out strategies to eradicate coca cultivation. Local historians fear US

pressure will prompt their leaders to eventually eliminate all coca crops, including those used by indigenous groups for traditional purposes.

"People have fought the use of coca before in the name of modern science and hygiene," says Cabieses. "But those who seek to eradicate coca will rob the Andean natives of their cultural identity and force them to adapt to modern times and foreign cultures."

Peruvian historian Maria Rostowski says coca leaves placed in small bags were found among pre-Hispanic mummies who were supposed to chew them during their trip to heaven. Etched designs in ancestral Mochica ceramic vases show a ritual gathering where people are seen to be chewing coca as the priest calls on the gods.

"In the Andean culture, coca is a symbol of social identity and solidarity which differentiates native Indians from foreigners," says Enrique Mayer, head of anthropological research in the Mexico-based Inter-American Indigenous Institute.

tion is an attempt to undermine the very basis of the Andean culture and break the solidarity and defences of an oppressed minority group to pave the way for massive Westernisation," he warns.

Baldomeo Caceres, a social psychologist who defends traditional coca cultivation, says: "It is clear that foreigners are pressuring us to get rid of coca

and replace it with other crops. But can we replace it with others that will keep our people's cultural identity? What will happen to its traditional users?"

Medical surgeon Marta Rondon points out that aside from being a cultural symbol, coca is also "an important Peruvian contribution to Western science," since coca is used by doctors as a local anaesthesia and nerve stimulant.

In his book History of the

New World, Jesuit historian Bernabe Cobo, who came to Peru soon after Spanish explorer Francisco Pizarro, wrote that only Inca kings and their families could eat coca leaves, which were also used in ancestral sacrifices to the gods.

He seemed to have been overwhelmed by the healing powers of coca and admitted using it to cure toothache upon the recommendation of a native dentist.

Coca leaves cured indigestion, asthma and nausea, Cobo wrote. "The powder, when mixed with salt and egg whites, speeds up the healing

of fractured bones and wounds," he said. Indigenous Peruvians still chew coca to extract the juice from the leaves to overcome hunger, fatigue and the cold. The nutritional value of coca has been recognised by international researchers.

In a report published in 1984, US researcher Gary Lobb noted that coca is an important source of vitamins for native Amerindians. He said 100 gms of coca juice very day would be equivalent

lent to the daily requirements of vitamins B1, B2 and C.

The stimulating and energising qualities of coca were also known and used in 19th-century Europe. In Paris, coca was used in processing the famous Mariani wine from 1860 onwards. Connoisseurs of the Mariani wine include French sculptor Rodin, actress Sarah Bernhardt and Pope Leo XIII, who all signed the winery's keepsake album and praised its excellent wine.

In Lima, a more modest testimony to coca's usefulness is given by 91-year-old Serafina Rojas, who came to the city six years ago to escape political violence in the rural areas.

"I chew coca because it is good for me. When I don't do it, I become weak, sleepy and lazy," she says. "I have been chewing it since I was a child and have not suffered from any sickness at all."

— IPS

