

## COMMONWEALTH PHARMACEUTICAL ASSOCIATION

# The global effects of the AIDS pandemic and suggestions on how to control it

*Our coverage of the eighth Commonwealth Pharmaceutical Association conference, which took place from 14 to 17 August in Ocho Rios, Jamaica, concludes this week. Graeme Smith reports*

The HIV/AIDS pandemic continues to have a devastating effect in the world's developing countries, Dr Yitades Gebre, senior medical officer at Jamaica's Ministry of Health, told the conference at a special AIDS/HIV session. He said that factors driving the pandemic include unequal socioeconomic development and high population mobility, a high level of poverty and unemployment, and widespread injectable drug use and needle sharing.



*Yitades Gebre: there is a need for general HIV/AIDS education among populations*

Also having an effect on AIDS prevalence are early sexual initiation and a lack of knowledge among adolescents living in developing countries, and sexual behavioural factors, which can be economic, social, biological or cultural. For example, women may first have sexual intercourse or a first marriage at a young age, sometimes as young as 10 years old. There is often a large age gap between spouses; in some countries it is not unusual for a 45-year-old man to have a 12-year-old wife. A general lack of male circumcision and the presence of other sexually transmitted infections, such as gonorrhoea and other viruses, also tend to increase HIV transmission, he said.

Dr Gebre went on to describe the impact that HIV/AIDS is having. There is a demographic impact. Life expectancy is falling. Some 68 million people will have died by 2020 in the 45 most affected countries. An impact on households arises in terms of family dissolution, loss of income, and poverty when one or other of the spouses dies. In particular the death of a mother reduces the family unit's security whereas the death of a father will reduce income.

There is an impact on health services in that there is a direct increase in medical costs and public health expenditure.

Education is also affected because there is a decline in school enrolment (as low as 20 per cent in South Africa) and teachers are dying.

In the workplace, there is a loss of a percentage of the workforce owing to the morbidity and mortality caused by HIV/AIDS, causing growth in gross domestic product to decline. For instance, there has been a 2 to 4 per cent decline in GDP in Africa, said Dr Gebre.

He told the conference that estimates at the end of 2002 showed that the number of

people worldwide living with HIV/AIDS is 42 million. There were five million new infections and 3.1 million deaths in 2002. In those aged under 15 years the respective figures have been shown to be 3.2 million, 800,000 and 610,000.

For women, the figures are 19.2 million, two million and 1.2 million. The highest number of people living with HIV/AIDS is 29.4

million in sub-Saharan Africa, where there were 3.5 million new infections and 2.4 million deaths.

Overall, there were about 14,000 new HIV infections a day worldwide in 2002. Of those, more than 95 per cent were in developing countries, 2,000 were in children and about 12,000 were in people aged between 15 and 49 years. Of these, almost 50 per cent were in women and about 50 per cent were in 15- to 24-year-olds. Other alarming statistics are that 72 per cent of the global HIV infection is present in 10 per cent of the world's population, 80 per cent of infected women are in Africa and adults in southern Africa are 30 times more likely to acquire HIV than adults in Brazil or India. The pandemic is like a fast-moving train, Dr Gebre said; it appears that nothing can stop it.

There is a need, he said, for support and access to information about prevention and focused prevention programmes as well as general educational efforts among populations, especially the young. Political leadership and action are required, he concluded.

## A multi-sectoral approach to the AIDS pandemic is necessary

Dr Joseph Amuzu, chief programme officer for health at the Commonwealth Secretariat in London, said, during a special session on HIV/AIDS, that a multi-sectoral approach is necessary if the disease is ever to be combated. Such an approach requires the participation of all sectors, including governments, non-governmental organisations, businesses, and communities and people living with the disease. It should involve all levels — international, pan-Commonwealth, regional, national and local communities — in addressing the causes and impact of the pandemic.

However, to be successful such an approach requires political will, leadership and co-ordination to develop and sustain new partnerships and ways of working, and to strengthen the capacity of all sectors to make an effective contribution.

He went on to outline the steps to be taken in developing a multi-sectoral approach. First, structures, such as national AIDS commissions, need to be set up. Then



*Dr Joseph Amuzu: most countries have developed national HIV/AIDS policies and strategic frameworks*

an analysis needs to be undertaken to identify risk groups and areas where the disease is present. Such an analysis would pinpoint discrepancies, for example, areas of poor condom distribution, and identify gaps in order to inform the development of a strategic framework, which might take the form of a document stating missions and objectives. Following that, sectoral plans with clear programmes and activities need to be developed and

resources — money, equipment and people — need to be mobilised. When all that is in place, monitoring and evaluation should be carried out, said Dr Amuzu.

In setting up national AIDS commissions, government and legal backing are required. This gives recognition and accountability to the organisation. It is also important to ensure appropriate representation that includes people living with HIV/AIDS, representatives of non-governmental organisations, and especially women and young people, Dr Amuzu emphasised.

Some progress has been made, he said. Most countries have developed national HIV/AIDS policies and strategic frameworks, both of which emphasise overall co-ordination and establish an effective institutional mechanism to harmonise the activities of all stakeholders.

National AIDS commissions have been established in 19 countries with governmental and non-governmental representation. Such commissions are the highest policy-making bodies on HIV/AIDS and are supra-ministerial, ie, usually headed by presidents or vice-presidents. In addition, some 40 national strategic plans have been developed. The result is that HIV/AIDS is now firmly established on the national

development agendas of those countries, said Dr Amuzu.

He explained that national AIDS commissions collaborate with political and administrative units at district and community levels. They identify specific roles for all government sectors, including parliamentarians, civil bodies, non-governmental organisations, religious bodies and traditional rulers, the private sector and local communities themselves.

There are hopeful signs. National HIV/AIDS prevalence is falling in a number of countries. In Uganda, prevalence has fallen from 26 per cent in 1992, to 11 per cent in 2000 and 6 per cent in 2002. South Africa has seen a fall from 21 per cent in 1998 to 15

per cent in 2001, and Ethiopia has seen a similar drop from 24 per cent in 1995 to 15 per cent in 2001. National prevalence is as low as 3 to 5 per cent in some West African countries and condom use is increasing.

But there are still challenges to be faced, said Dr Amuzu. The AIDS death toll continues to rise and the impact of the deaths of these people has yet to be felt. The orphan crisis needs to be solved, and there is still a level of stigma and discrimination attached to HIV/AIDS such that many people feel unable to reveal their HIV status. There is a need to protect those who are uninfected while scaling up treatment and care programmes for those who are. Funding remains a huge issue.

## How to raise awareness of strategies available for the prevention of HIV transmission

Prevention of HIV transmission is an important part of any strategy to combat AIDS. Dahlia McDaniel, managing director of Charlie's Pharmacy and The Medicine Chest Ltd, Jamaica, outlined the key elements of such prevention during a special session on HIV/AIDS.

She explained that the aims of HIV prevention are to reduce the number of newly acquired infections, reduce the level of unsafe sex and other risky behaviour and to raise the awareness of available sexual health services.

Prevention might be achieved through public health communications exhorting the public to abstain from sexual activity, to delay sexual debut and to use safer sex methods. A way to achieve this is to provide effective sex and AIDS education, which should be introduced to schoolchildren early, before sexual activity takes place, and with the involvement of parents.

For adults, she said, there are five steps in prevention counselling. First, determine whether the lifestyle and behaviour of an individual or group of individuals is risky. Second, work with them so that they understand the risks. Third, help to identify the meaning that such, possibly risky, behaviours have for them. Fourth, help to identify and define the potential for behaviour change. Finally, work with individuals to achieve and sustain appropriate and chosen changes in behaviour.

She emphasised the need to foster a culture of positive sexual health so that clients feel no stigma, fear or embarrassment in seeking advice about HIV/AIDS. It is important that pharmacists, and all health workers coming into contact with people with HIV/AIDS, treat them with positive



*Dahlia McDaniel: there are five steps in HIV/AIDS prevention counselling*

regard. She said that health care workers who feel prejudice towards people with HIV/AIDS should seek personal counselling or refer such clients elsewhere.

Another prevention strategy involves rapid treatment of existing sexually transmitted infections, since the risk of HIV transmission increases significantly if the person has genital sores or ulcers. Sores and ulcers in an HIV-infected person facilitate release of the virus to uninfected people and inflammation

of the mucous membranes attracts large numbers of white blood cells. Ms McDaniel emphasised the importance of using condoms, both male and female versions, adding that pharmacists must be able to advise clients on how to use them correctly.

She told the conference that sexual transmission of HIV also occur among commercial sex workers, prisoners and rape vic-

tims and said that strategies should be developed to deal with these scenarios.

On the prevention of parenteral transmission of HIV, Ms McDaniel recommended needle exchange programmes for injectable drug users, sterilisation of injecting equipment, not sharing needles, and the development of outreach programmes to get information to intravenous drug users.

For non-illicit drug use situations, eg, blood transfusions, Ms McDaniel recommended blood screening and donor screening. Strategies include asking donors about risky behaviour, not paying blood donors and seeking blood donations from low-risk populations.

Turning to vertical transmission, whereby babies are infected by their HIV-positive mothers, she said that antiviral therapy should be administered to the mother to keep her viral load as low as possible. Therapy should be started at the 13th week of pregnancy in the form of azathioprine, 100mg every four hours while awake, until the day labour begins.

Concluding, Ms McDaniel said that general transmission of HIV could be reduced by implementing HIV voluntary counselling and testing procedures.

## How pharmacogenomics will affect the role of the pharmacist

The ultimate purpose of pharmacogenetic investigation is to obtain information that will enable the occurrence of a given trait in susceptible individuals to be avoided or to be safely and effectively managed, Dr Paul Singh, of the University of the West Indies, Jamaica, told the conference.

Such testing would enable health care professionals to pinpoint drug metabolism differences, which appear to result from the polymorphic expression of several hepatic drug metabolising enzymes, particularly those of the cytochrome P450 family. He

explained that polymorphism is variations in DNA at a single base that are found in at least 1 per cent of the population.

The polymorphic expression of drug-metabolising enzymes provides an explanation as to why some patients do not obtain the expected benefits from drug therapy but instead show exaggerated responses after taking a standard and "safe" dose. Polymorphic expression of the P450 enzymes divides the human population into poor metabolisers, who express dysfunctional or inactive enzymes, and extensive metabolisers, who express enzymes having normal

## Change is coming: embrace it

activity. CYP2D6 is a polymorphically expressed enzyme; it is responsible for the metabolism of 25 per cent of all known drugs, and is the enzyme that metabolises tricyclic antidepressants and selective serotonin reuptake inhibitors. The variability in the pharmacokinetic profile of these drugs makes it difficult to predict the clinical response of a given dose. However, pharmacogenetic testing could change all that, said Dr Singh.

He went on to outline the several expected benefits of pharmacogenomics. These include:

- More powerful and more specifically targeted medicines
- Better, safer drugs
- More accurate methods of determining appropriate drug dosages
- Advanced screening for disease
- Better vaccines
- Improvements in the drug discovery and approval processes

Pharmacogenomics might in the future also lead to a decrease in the overall cost of health care. This would arise, said Dr Singh, because of decreases in the number of adverse drug reactions, the number of failed drug trials, the time it takes for drug regulatory approval, the time patients are on medication, the number of medicines patients must take to find an effective therapy and the effects of a disease on the body through early detection.

All of this will change the role of the pharmacist. Dr Singh said that pharmacists may become more involved in helping to prescribe drugs. For example, in the future, a patient might visit a doctor and have his blood taken for genotypic testing. This would indicate what genes the person has for drug transporters, drug targets or drug elimination enzymes. Then, after the patient is diagnosed, a pharmacist could interpret the genetic results and advise on which drugs would be best for the patient's particular genes. Although this might look futuristic, to some extent it is already happening. One only has to think of trastuzumab, said Dr Singh.

Pharmacogenomics might also affect the drug development process in three ways. First, identification of genes and their protein products, which are potential drug targets, would facilitate the development of new drugs. Second, finding out the variations that people have of that gene would assist in the creation of drugs for each gene variation. Finally, pharmacogenomics would affect clinical trials' outcomes, because different ethnic groups would provide different trial results, Dr Singh concluded.



*Dr Paul Singh: genetic testing may allow drug metabolism differences to be pinpointed*

Pharmacists' ability to manage, cure and prevent diseases is at its highest, but the future will bring many challenges, said Dr Ann Breakenridge, assistant director of pharmacy services, Washington Hospital Centre, United States. For example, in the US, the birth-rate is increasing and lifespans are being extended. Currently, the number of Americans aged over 65 years is around 38 million, but by 2011 that figure is expected to increase to 80 million. Another challenge is the continuous discovery of new drugs coupled with patients becoming more educated due to the expansion of the internet, where much of the information is not necessarily as evidence-based as pharmacists would like. With larger populations, a further challenge for the pharmacist is that he or she is easily accessible and is often the first port of call for health advice.

Dr Breakenridge said that these challenges could be faced through use of patient-centred care (or pharmaceutical care) plans, automation and judicious use of pharmacy technicians.

Patient-centred care is outcomes oriented pharmacy practice, she explained. It is designed to promote health, prevent disease and assess, monitor, initiate and modify medicines' use to ensure that drug therapy regimens are safe and effective. The purpose of a patient-centred care plan is to assess the patient's therapeutic needs, prevent adverse reactions, develop patient-specific therapy, manage chronic disease and monitor follow-up care, and pharmacists must draw these up for their patients.

Automation is our friend, Dr Breakenridge said. For example, automated medicine distribution systems give pharmacists time to concentrate on patient-centred care. Other useful aspects of automation include telemedicine, remote pharmacy audio and video services, websites and bar code technology, which would expedite how pharmacists check things.

Pharmacy technicians will see their role develop hugely in the future because, as predicted by the American Society of Health-System Pharmacists in 2002, "the pharmacist of tomorrow will function by

reason of what he knows, increasing the efficiency and safety of drug therapy and working as a specialist in his own right". There is no room here for counting and pouring, she said. This will become the role of technicians and, eventually, automation. Technicians will also be more essential because of a general pharmacist workforce shortage and the fact that pharmacists will be spending more time in individualised pharmaceutical care.

Another area in which pharmacists are becoming involved in the US is collaborative drug therapy management. This is an agreement between a pharmacist and a prescriber to manage a patient's drug therapy under protocol. It is usually disease-specific and

pharmacists can initiate or modify drug therapy management, order laboratory tests, continue or discontinue drugs or devices, and undertake therapeutic drug monitoring with appropriate modification of dose, regimen, dosage form or route of administration.

Dr Breakenridge went on to say that change is coming, but it does not come easily. "The issue will be whether these changes occur begrudgingly as a reaction to external forces or they occur proactively as a result of professional leadership." Addressing conference participants, she declared: "We are the leaders in our profession. We need to embrace that change."

Earlier in her presentation, Dr Breakenridge emphasised that pharmacists are essential members of the health care team on account of their ability to work almost anywhere. Currently, their essential services include drug delivery and medication safety, patient education and advocacy, monitoring drug therapy, working with other members of the health care team and evaluating research and clinical studies. In the US at least, pharmacists are able to put these skills to use in many different practice settings, including community pharmacies, hospitals, long-term care facilities, the pharmaceutical industry, managed care and in government and regulatory departments. They could also work in academia, home care, hospices, the military, poisons control, public health, professional organisations and nuclear medicine.

She said that the American Pharmaceutical Association recognises five specialty practice areas: nuclear pharmacy, nutrition support, oncology, pharmacotherapy and psychiatric pharmacy. To be recognised as a specialist in any of these areas, pharmacists have to undertake specific study and must pass examinations.



*Dr Ann Breakenridge: the future is going to bring many challenges for pharmacists*

## Correction

### **HIV transmission**

The antiretroviral therapy recommended to prevent vertical transmission of HIV is zidovudine, not azathioprine (p273).