HIV INFECTIONS: PREVENTION AND CONTROL

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Introduction:

In June 1981, the first announcement of cases of Acquired Immunodeficiency disease (AIDS) was made in the United States of Amercia (U.S.A). The world was thus awakened to what is now generally accepted to be another epidemic among mankind, this century. Current estimates by WHO sources are that 10 - 20m are now infected.

In 1918, the influenza epidemic similarly broke out in the U.S.A. It was followed two months later by major epidemics in England, France and Spain which rapidly spread to the rest of the world. By the time it subsided in 1919, an estimated 1 million people had died in the U.S.A., 10 million in Inda and 30 million world wide. It was spread so widely in so short a time by advances in travel technology that had been achieved by that time - although such advances appear to be primitive by today's standards. A characteristic of that epidemic which also occurs in the present one of AIDS and which was present during the plague of 1347 was the negative attitude of the human society at the time to victims of the epidemic.

The English, then the French, even the Americans where the empidemic first broke out initially denied its existence, then each blamed the other for being responsible for starting and nurturning the infection and finally discriminated against the victims. Thus in france, influenza epidemic was called the plaque of the Spanish Lady while the English called it the French Disease.

These features: decimation of the population, fear and panic, scapegoatism, etc., had also been prominent features of the earlier great epidemic - The Bubonic plague. It struck Europe starting from Marseilles, France in 1348 after it allegedly arrived there from Asia - and by 1351 had spread it engulf all of Europe. By the time the first wave subsided, in 1351, it estimated that 25 million people, about one-third of the population of Europe had died. Recurrent waves of the epidemic kept the population low for the next 150 years.

Since no cure had been found and, unfortunately, many of the cleric-physicians who were expected to offer help, fell victims themselves thus discrediting medicine, scapegoats had to be found.

The Jews were a ready target and were blamed for causing the plague. Many truned away from the orthordox churches which were regarded as having failed to provide protection or help and instead founded alternative religious views. Traditional

medicine which had declined, again waxed stronger with its offer of relief with herbs, incantations, etc.

What people did not find out in time were that the bubonic plaque was caused by the baccilus typhus which was transmitted by a flae, a parasite of rats. If the infected rats were few and there was human over-crowding, the fleas would feed on humans and thus transmit the infection from one person to another.

The above summarizes human experiences of and responses to, some of the well known plaques as a prelude to our understanding or at least appreciationof some of the human responses to the current AIDS epidemic.

As we have seen above, before every epidemic succeeds i.e. takes root and spreads among humans, specific conditions must be satisfied. For instance, in the case of the bubonic plaque, the following conditions had to be satisfied for it to take root and spread:

(i) Poverty and over-grow ing.
(ii) Unhygienic living con ditions.
(iii) High rat population.
(iv) Presence of the fleas which carried the tyhus bacillus.

With respect to the HIV pandemic, epidemiological evidence suggests the following as necessary specific conditions which have promoted its establishment and spread. These are:

(i) Existence of the HIV virus
(ii) Existence of a closed, small, susceptible population - the homosexuals whose culture is characterised by sexual promiscuity and intravenous drug abusers who are promoted by all the social and political conditions which enhance the culture of I.V. drug abuse.
(iii) Available efficient, cheap and rapid systems of trans port:

This has enabled the rich every where to move about and those who individually are not so rich collectively, belong to rich nations can and are encouraged to travel around on holidays as tourists.

(iv) Sexual freedom

In the case of African countries, porverty which exists side by side with sexualfreedom linked to the collapse of traditional cultural values on the one hand and booming tourism on the other. The evidence from Afrcian countries in which the tourist industry is a major foreign exchange earner being the same countries inwhich the prevalence of HIV infection is very high, to my mind, suggests more than a causal coincidence of both events. This means that the high prevalence of HIV in these countries is linked in some way with the booming tourist industry.

(vi) Absence of effective treatment or vaccine to eliminate the virus and control is spread.

Thus, however, it has come about, once the HIV found a suitable environment among homosexuals and I.V. drug abusers, coupled with the existence of cheap, efficient and rapid means of transport, sexual freedom, well developed tourist industry and, in the case of African countries, rampant poverty, the stage was set for HIV to establish itself and spread as rapidly as it has done.

The Biology of HIV:

The human immunodeficiency virus (HIV) was first discovered and described by French virologists led by Luc Montagnier in 1983, a finding that was confirmed by the American, Robert Gallo in1984.

HIV belongs to the family of retroviruses (RNA viruses). Its structure has been fully worked out as has its pathophysiologic mechanisms. Its target cell is the CD4 + T- lymphocyte which circulates in our blood system. It is also present in lymph nodes, other lympoid aggregates, on monocytes, some supporting cells of neurones. It has been suggested that some endothelidal cells may carry the CD4 receptor.

The CD4 + cell co-ordinates the immune system in the body. The function of this system is to defend the body against invasion by bacterial, viral, or parasitic organisms and to maintain surveillance against development of malignant cell clones. When it is destroyed, this co-ordinating role is compromised, the surveillance fails hence the person becomes susceptible to all types of infections (opportunistic infections) and develops different types of cancers. In the case of infections, it is found that the person now develops diseases as a result of infections with organisms which normally are harmless commensals like atypical mycobacterial organisms, e.g. those which cause disease in animals (M. bovis) or birds (M. avium interacellulore) but normally are not associated with mycobacterial diseases of man.

Routes of Transmission of HIV:

HIV has been isolated from the following body fluids of infected persons (listed in desending order of virus concentration/ unit vial): semen, blood and vaginal secretions. Very low concentrations normally in trace amounts are found in breast milk, saliva, tears, urine. The commonest modes of transmission is believed, on present evidence , to be through sex, infected blood and from infected mother to child either in utero or at birth. A few reports of infection through breast milk have been made. HIV 1 & 2 have been described, the former is more pathogenic, the latter is said to occur more frequently in West Africa. There are suggestions that HIV - 3 and perhaps more also exist.

Characteristics of the Infection:

After innoculation, there is a rapid phase of viraemia which lasts for a few (2 - 6) weeks. By the end of 3 - 6 months, the body usually develops antibodies to it, these are only useful as diagnostic tool and do not offer any protection to the individual unlike measles, small pox viruses, etc. The viraemic phase passes into the latent phase; the latter it is suggested may last for 7 - 15 years. All through this persiod, the carrier remains healthy but infectious. From long term follow-up studies of carriers in different countries results show that 5% of carriers develop AIDS or other HIV-related diseases annually. It is, in my view, wiser for planning purposes to assume that all carriers will eventually develop HIV-related diseases including AIDS. These clinical changes following infection are for descriptive purposes classified into groups:

Group 1: - Phase of acute infection described earlier.
Group II: - phase of asymptomatic infection.
Group III: - patient develops gener alised lymphadeno phathy which persists (PGL)
Group IV:- Patient develops dis eases which are further defined as -
(a) AIDS RELATED Complex or constitutional disease.
(b) Primary neurological disease
(c) Secondary infections disease.
(d) Secondary cancers.
(e) Other conditions

Features such as development of rola condidiasis, having leukopolakia, herpes zorter, etc., indicate disease progression. Similarly, defined laboratory markets such as raised ESR, anaemias, lymphopeania, neutropaenia or thrombocytopaenia, raised B2-microglobulin, etc. indicate either clinical deterioration in an established case, or progress from one group to another as listed above.

world-wide:

The WHO requires and requests each country to send returns of numbers of cases seen from time to time. This does not include numbers of careiers. The latest returns, by continents, show the following figures:

	Number	% Now	% (31/08/89)
Africa	31,146	17.5	15.7
America	119,662	67.2	68.9
Asia	411	0.2	0.23
Europe	25,219	14.2	13.9
Oceania	1,525	0.9	0.9
Total =	177.963	100	

Returns from eleven African Countries constitute 91% of the African total burden of AIDS cases. It is seen that if we add the limitation of under-reporting, these countries form the AIDS belt. It will also be seen that, at least ten of the eleven countries also have develop extensive tourist industry as a major foreign exchange earner.

In the West African region, Ghana, Cote 'd' Ivore and Senegal appear to have the biggest problems now, while Nigeria has the least burden with respect to AIDS. In our own case, is this the true situation? A recent newspaper report quoting official Federal Ministry of Health sources indicate that our numbers have increased .

NIGERIA

At a recent meeting of Screening Centres with the Honourable Minister of Health Prof. O. Ransome - Kuti, the returns showed that our number of seropositives has increased to 174 (from 71 in March 1989) out of a total of 49, 642 blood samples tested giving a seroposit rate of 0.35% for both HIV 1 and HIV 2. The number of AIDS cases had increased. What is disturbing are: (1) that the rate of increase is very steep and secondly that the rate of increase of HIV - Is even steepter. It should be noted that until recently, HIV -2 was not detected in any of our samples tested.

The other established fact is that HIV has taking roots in this country unlike in the past when it was all imported. The rate of spread is expected to rise rapidly. These figures do not tell the whole story. It is believed that there is considerable under-reporting of cases because of political considerations in addition to the genuine reason that the people do not know. This latter situation can come about because there are no facilities and/or trained personnel to make the diagnosis.

On the African scene, the details are as summarised below:

Country	No	% African total
Uganda	7375	23.7
Kenya	5949	19.1
Tanzania	4158	13.1
Malawi	2586	8.3
Burondi	1975	6.3
Zambia	1892	6.1
Rwanda	1302	4.2
Congo	1250	4.0
Zimbabwe	761	2.4
Central African Republic	662	2.1
Zaire	335	1.1
South Africa	231	
Senegal	207	
Ghana	590	
Benin	36	
Cameroon	78	
Cote d' Ivorie	250	
Nigeria	15	

Control and Prevention Measures:

We already know that transmission of HIV is by exchange of infected body fludis between infected and unifected persons. THERE IS NO EVIDENCE that INFECTION IS CONTRACTRACTED BY CASUAL CONTACT. Established modes of transmission are (i) SEX, (ii) INFECTED BLOOD either by TRANSFUSION on via INFECTED NEEDLES during injection with unsterilized needles.

(iii) From infected mother to unborn child or at childbirth. AIDS can be halted immediately if we all decide on total sexual abstinence. If we cannot, then we must restrict or drastically curtail our activities. The least in this serties of measurers is to protect ourselves at least. It should be noted that this still carries considerable failure rate. The most important step that each of us must take therefore is to get correctly informed about AIDS - and apply the information to ourselves. Each must accept his/her responsibility in this respect.

What of Treatment:

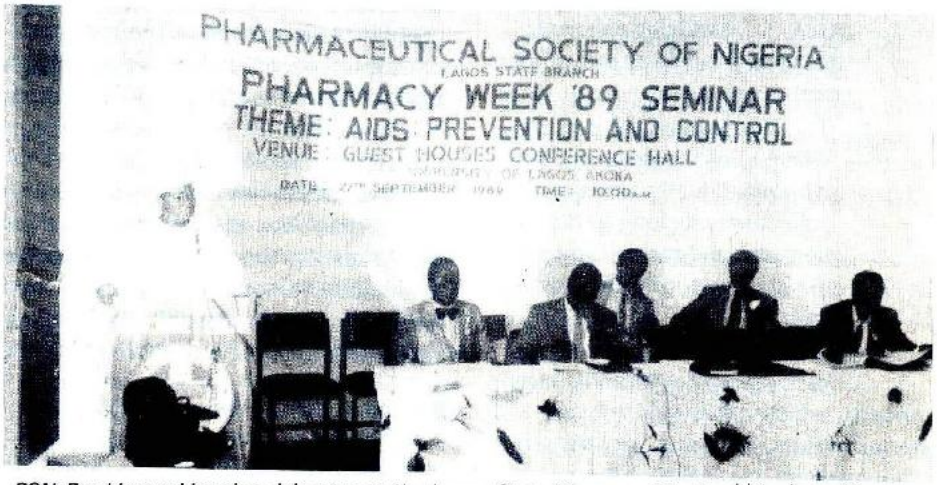
A large number of drugs are currently under investigation and several have gone into the phases I & II trials stages. As of now, Azidothymidine (AZT) is currently that drug of choice in the treatment of HIV per se. It inhibits incorporation of HIV into the CD4 + cell genome and thus stops infection of new CD4 + cells. It does NOT reverse or repair already damaged cells. It can thus be used prophylactically. AZT is a toxic drug. It is very expensive. However, when last we enquired about costs, the bill worked out at about N1,00.00/day for AZT alone!

Vaccine:

There are no vaccines that are currently available. Competent sources predict that a vaccine to prevent HIV infection is about 5 - 10 years away.

What are we to do in this age of HIV infection? It is here and is spreading rapidly. There are no vaccines to prevent us from controling it. Its diseases cannot be cured, they can only be slowed down to survival of about 2 - 3 years at crippling costs which most cannot afford. It is known that it is spread mainly through sexual indiscipline. This we can individually take action by decidng today and implement the decision to adopt discipline in our sex life. It is know that HIV can be and is sometimes acquired through infected blood at transusion or by injection with unsteril ized needles. We can and should reduce our demands for injections. Those who are not qualified to administer injections should not engage in it. I believe that government is taking action to improve the safety of blood transfusion. This effort should be stepped up.

In the final analysis, the responsibility to contract or not to contract HIV infection is an individual one.



PSN President addressing delegates at the Lagos State Pharmacy Week. Listening with rapt attention are Dr. Desalu, Prof. Essien, Prof. Ogunlana and Mr. Adeleke.

The Case Against Generic Substitution

Each time a doctor prescribes a brand name product developed by the research-based pharmaceutical industry, he makes a contribution towards the development of new and better medicines. Provided, of course, the pharmacist fills the prescription as indicated. Should, however, the pharmacist choose not to dispense the specialty prescribed by the doctor, but to substitute a cheaper generic version of the product, the contribution to research is lost.

Innovative companies currently devote some 15% of their turnover to Research and Development (R & D). Optimal sales levels at reasonable prices are required to provide the return necessary to recoup past research investment and to fund future R & D. Generic substitution is therefore damaging to the research potential of the pharmaceutical industry. It is also a threat to doctors and patients.

Patient-doctor-company relationship

Doctors know their patients histories, disease conditions, idiosyncrasies, economic and social status. They are, and must remain, the sole arbiters of medication for the people they care for. Therefore, doctors must retain their freedom to prescribe effectively.

"The mere fact that two drug preparations contain the same amount of active ingredient (s) does not assure that they will perform equally after administration."(1)

Patients, habitually , have confidence in their doctor and in the medicines he prescribes for them. The physician, in turn, trusts the research laboratory whose products he knows and has used successfully. He is aware of the R & D efforts of company. He has studiedthe scientific and medical data and followed the results of the clinical trials. May be he is contributing to the innovative company's post-marketing surveillance programmes. No such relationship can develop between doctors and manufacturers of copy-products.

The patient-doctor-company relationship is upset each time generic substitution takes place. Leaving to one side the laborious debate on bioavailability and therapeutic equivalence, it is alarming to note that there are case report of patients with epilepsy, diabetes, cardiac disease and hyperactivity who have had problems after a switch from one version of a drug to another. In cases where patients resumed taking the original drug, their condition was again controlled.

"The main advantages of prescribing drugs with brand names are that they define precisely and reproducibly not only the active ingredients, but also the exact formulation, the supporting data, the manufacturer and the legal responsibility."(2)

The pharmacist a victim

There is a fourth potential victim of generic substitution: the substituting pharmarcist himself. In anumber of countries, substitution is against the law. But, in the those parts of the world where substitution is allowed pharmacists should be aware of their exposure to potential liability for injuries caused to patients by the act of substitution. One way of protecting all parties concerned would be for doctors to write, one each and every prescription of a brand same product: DAW or "dispense as written.".

"Different preparations of a drug, whether branded or generic, often differ in shape, size, colour or taste. These differences may matter to patients, particularly the elderly, who identify their medicines by their appearance. For such patients, continued prescribing by the same brand name (or supply from he same sourc) is desirable."(3)

There may, however, be worse to come: pharmaceutical substitution (the dispensing of a pharmaceutical alternate, e.g. a different self, ester or dosage form of the same substance) and therapeutic substitution (the dispensing of a product containing a different substance, albeit of the same pharmacological and/or therapeutic class).

Is this what the future holds for us? Would doctors be required only examine and diagnose? Would others be authorised to decide on medication and treatment? The patient's well-being would inevitably become secondary to more mundane concerns such as cheap drug policies or individual profits.

References

(1) Ueda C. T., Essentials of Bi oavailability and Bioequivalence. Concepts in Clinical Pharmacol ogy. Feb. 1983.

(2) Cruickshank J. M., The cases for and against prescribing generic Drugs: don't take innovative re search-based pharmaceutical companies for granted. Br. Med., 1988; 297, 1598.

(3) Drug and therapeutic Bulletin.

Calling all PSN State Branches.

For better information, communication and equal representation in the Nigerian Journal of pharmacy, the National Secretariat requires all state secretaries to furnish it with information on their activities for the year 1990.

Signed
National Secretary