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## I. INTRODUCTION

A workshop on the Acquired Immune Deficiency Syndrome (AIDS) was held in Bangui, Central African Republic, from 22 to 25 October 1985. Representatives of nine Central African countries (Burundi, Cameroon, Central African Republic, Congo, Gabon, Rwanda, Tanzania, Uganda, Zaire) took part in this workshop. Dr Fakhry Assaad, Director of the Division of Communicable Diseases, welcomed the participants on behalf of the Director-General of WHO and the WHO Regional Director for Africa. The Right Honourable Minister of Health and Social Affairs of the Central African Republic welcomed the participants on behalf of President A. Kolingba.

Both official speakers reminded participants that AIDS had recently appeared in the countries of Central Africa and was increasing rapidly in some of them.

The workshop, which was the first meeting of African countries on AIDS, had been convened to confront this situation and to review the experience of the affected countries. Its objectives were:

1. to review the situation in the participating countries;
2. to identify the clinical, epidemiological and biological features of AIDS in Africa;
3. to formulate recommendations for surveillance, prevention and control of AIDS in Africa.

## II. CLINICAL ASPECTS

Good clinical definition of AIDS is of great importance in Africa, where adequate laboratory facilities are often lacking, to enable medical practitioners to arrive at a diagnosis with maximum precision.

The definition must be simple, universally applicable and usable by all health service personnel.

The symptoms exhibited by patients in Central Africa include:

1. Four clinical signs that are invariably or almost invariably present, termed major symptoms:

significant weight loss exceeding 10% of body weight (100% of cases);

considerable asthenia (100% of cases);

chronic diarrhoea with no apparent cause lasting for more than one month (80% of cases);

prolonged or intermittent and recurring fever (70% of cases)

Given that these symptoms are not specific, they will not be recognized as suggestive of AIDS until other possible causes have been ruled out.

On the other hand, generalized Kaposi's sarcoma in its non-classical form is sufficient for the diagnosis of AIDS. The occurrence of cryptococcal meningitis is also sufficient for the diagnosis of AIDS.

2. Other symptoms known as minor symptoms are less frequent but are often associated in a significant manner with the preceding symptoms. These are:

respiratory signs, in particular a cough persisting for more than one month;

muco-cutaneous signs, in particular:

generalized pruritic dermatosis;

relapsing herpes zoster;

oropharyngeal candidiasis;

chronic and relapsing ulcerative herpes infection;

generalized adenopathy;

tuberculosis is often associated with LAV/HTLV-III virus infection.

Without field verification, it is difficult to establish a purely clinical definition of AIDS that is simple, exhaustive and specific. Nevertheless, it is suggested that the following be adopted as a definition of AIDS in adults in Africa:

THE PRESENCE, IN A PATIENT NOT EXHIBITING PRONOUNCED MALNUTRITION OR CANCER OR THERAPEUTIC (or congenital) IMMUNOSUPPRESSION, OF:

- AT LEAST THREE OF THE FOUR MAJOR SYMPTOMS
- ASSOCIATED WITH ONE OF THE MINOR SYMPTOMS.

It is also of prime importance to develop a clinical definition of paediatric AIDS in Africa. The definition adopted is:

In Africa, any child exhibiting at least two of the three following clinical signs is suspected of having AIDS:

1. significant weight loss or slowing of height and weight gain;
2. diarrhoea lasting for more than a month;
3. protracted or intermittently recurring fever.

Two or three of these symptoms must be associated with at least two of the following signs:

1. generalized adenopathy of unknown etiology;  
oropharyngeal candidiasis;  
mild but repeated infections (earache, sore throat, etc.);
4. a persistent cough of unknown etiology;  
generalized dermatosis;
6. suspected AIDS in the mother.

Given that special clinical features of AIDS and some differential diagnoses may emerge in each country, it appears necessary to carry out a separate pilot study in each country to evaluate the clinical picture. This pilot study should confirm or invalidate the clinical definition put forward above for AIDS in the adult and in the child.

The pilot study could be carried out:

1. in the main hospital of each capital;
2. or in a particular region, should the number of AIDS cases diagnosed there seem considerable.

It should be noted that this pilot study must, of necessity, include serological tests for the detection of antibodies to LAV/HTLV-III.

The results of this pilot study should also permit assessment of a definition of another kind which is appended to this report. This second type of definition of AIDS is presented in the form of a table with a score for each of the above-mentioned symptoms.

#### Natural history of the clinical disease in Africa

Surveillance of 24 seropositive individuals revealed weight loss and adenopathy in 63% after one year, compared with only 11% in 27 seronegative controls. At the start of the study the 24 seropositive individuals were all asymptomatic.

The average duration of the clinical disease is 14 months, ranging from three months to four years. Forty-five per cent of the patients died within one year and 100% after four years.

#### Case management of AIDS patients in Africa

Management should be both physical and psychological. The utmost care should be taken to ensure that patients are treated compassionately.

Patients should be kept together where possible.

General measures of hygiene should be rigorously applied; bedclothes should be boiled and regularly cleaned; showers and toilets should be regularly disinfected with diluted household bleach water. Doctors and nurses should not wear masks or gloves when seeing patients, but gloves must be worn for cleansing natural orifices or wounds and scabs. It is recommended that the hands should be washed immediately after examining or cleansing the patient and disinfected with denatured alcohol (70%) or with household bleach water in a 1:10 dilution.

Wherever possible, disposable needles and syringes should be used; if not possible, needles and syringes should be cleaned, boiled, sterilized and kept exclusively for AIDS patients.

On leaving hospital the patient must be told not to donate blood, nor to receive injections in small dispensaries, and warned of the dangers of sexual relations. In case of death, the doctor should advise that the body be taken direct from the mortuary to the cemetery without being displayed in the home.

The respective proportions among LAV/HTLV-III-seropositive individuals of those who are mere asymptomatic carriers of the virus and of those who have AIDS have not yet been determined in Africa. The only way to obtain an answer is through prospective studies, which are already under way in some countries.

### III. ROLE OF THE LABORATORY

There is as yet no simple test for antigen detection. Isolation of the virus is not currently of practical importance in Africa, but could serve as a tool for research.

The only laboratory tests that it is important to establish and promote in Africa are serological tests for the detection of antibodies to LAV/HTLV-III. Because of the frequency of intercurrent infections in Africa, serological tests employing immunofluorescence would be difficult to interpret. The only reliable serological test at present available is ELISA (enzyme-linked immunosorbent assay).



The ELISA test must satisfy several conditions if it is to be carried out in Africa:

- it must be easy to perform;
- it must be stable under African climatic conditions;
- if possible, it should be capable of being interpreted directly without spectrophotometry;
- lastly, its cost should be in keeping with local resources.

Ideally, this serological test should be used in the following three situations:

1. for diagnosis: to confirm a diagnosis or a clinical supposition;
2. for prevention: its use in every blood bank would enable LAV/HTLV-III-seropositive blood to be identified and eliminated;
3. for epidemiological surveillance.

On first analysis:

- Routine use of this serological test for diagnostic purposes is not a priority. On the other hand, the pilot study to validate the clinical definition of AIDS in children and in adults in Africa must invariably include a serological test.

- The systematic screening of blood donations for antibodies to LAV/HTLV-III is a priority - this screening should be carried out in city and rural hospitals in each country. Although serological tests would appear to be readily organizable in the main hospitals of capital cities, there are practical problems in hospitals or diagnostic centres in rural districts. These practical problems must be taken into account in selecting the ELISA test - in particular, the lack of electricity in the countryside makes it essential to be able to read the result of the test with the naked eye with an acceptable margin of error.

Some of the countries represented at the Workshop already have laboratories that have been conducting various ELISA-type tests for several months:

Central African Republic, Institut Pasteur (IP), Bangui;  
Zaire, Institut National de Recherche Bio-Médicale (INRB), Kinshasa;  
Gabon, Centre International de Recherches Médicales de Franceville (CIRMF).

These three laboratories could function as WHO reference centres. Their tasks would be:

1. to make a short pilot study of the ELISA test that will be available. It seems obvious that the test to be introduced in Africa must satisfy the requirements of sensitivity and specificity as laid down for other immunoenzyme tests for the detection of LAV/HTLV-III antibodies; the centres mentioned above should be able to verify rapidly that there are no problems inherent in testing of African sera;
2. to organize workshops for the rapid training of medical and laboratory staff;
3. to act as reference centres for the Western blot test, a technique designed for verifying ELISA test results.

#### IV. EPIDEMIOLOGICAL ASPECTS

Three problems have been mentioned as hindering the collection of information on AIDS in Africa:

1. Some countries have difficulty in obtaining the information.
2. The definition put forward for AIDS is not applicable in many countries.
3. Some countries do not acknowledge that they have AIDS cases.

Studies conducted in some African countries show that the modes of transmission of AIDS are "conventional", i.e. sexual, parenteral, and from mother to child. A study carried out in Zaire found no evidence of horizontal, non-sexual transmission between members of the same household. Transmission between heterosexual partners appears to be the most important route in Africa, even although the mechanisms of such transmission have as yet been little investigated.

##### Sexual transmission of AIDS

Heterosexual promiscuity (large number of partners) is the most important risk factor among adult AIDS patients in Africa. The grounds for this conclusion are as follows:

- The male/female ratio of AIDS patients is about 1:1.
- Incidence is highest among adults between the ages of 20 and 35.
- A high proportion of unmarried women are affected.
- Patients have many sexual partners.
- Seropositivity among the spouses of AIDS patients is high.

Between 80% and 90% of the cases in adults appear to be the result of sexual transmission.

##### Parenteral transmission

In Zaire, 9% of AIDS patients reported having been given a transfusion in the three years preceding the onset of their illness. This is a higher proportion than among well adults. In the same study the seropositivity rate was significantly greater among adults who had been given a transfusion during the previous 10 years than among those individuals who had not had a transfusion. The same applies to children; more than 50% of seropositive children had been given a transfusion or an injection, a significantly higher percentage than among seronegative children.

A considerable proportion of the population studied had been given at least one previous injection. There was a strong association between seropositivity to LAV/HTLV-III and the number of injections given. A survey in Kinshasa demonstrated that 23% of the individuals questioned believed that injections were the most effective form of treatment.

##### Establishment of an AIDS surveillance system

A national AIDS surveillance system is desirable in every African country. There are four necessary stages in the establishment of this system.

1. A preliminary survey. The aims of this survey are: (a) to confirm the existence of AIDS in the country; (b) to verify the reliability of the clinical definition and the laboratory tests as regards AIDS cases in the country; (c) systematically to collect clinical and epidemiological data for preparing a description appropriate to the country; (d) to carry out one or more serological and epidemiological surveys on the groups at high risk, such as prostitutes.

2. A basic surveillance system. The first thing to do is to draw up a list of data regarded as the essential minimum for the international surveillance of AIDS. The participants are of the opinion that the following are the essential data at this level: (a) age; (b) sex; (c) region, county or province of normal residence; (d) date of onset of the disease (month and year); (e) date of diagnosis (month and year); (f) case classification (clinical diagnosis or confirmed by laboratory). The officials of the country should decide on the methods to be employed, the locations and the geographical range of surveillance.

3. Routine surveillance. Once some experience of basic surveillance has been gained, it is advisable to analyse the data collected and to compile an epidemiological profile and draw up a definitive strategy for routine surveillance. It is recommended that thought be given to the usefulness of conducting serological surveys in addition to clinical surveillance. Such surveys could be extremely valuable, but they must be carefully prepared and must have clearly defined objectives and rigorous methodology to avoid the squandering of resources. When one or more seroprevalence surveys have been analysed, and taking into account the existing epidemiological situation, it will be possible to determine the usefulness of sero-incidence studies.

4. Evaluation of the surveillance system. Ongoing evaluation of the surveillance system should be instituted. In addition, a formal evaluation of the surveillance system should be made when it has been in operation for about one year. One of the principal tasks would be to evaluate the role that the data collected can play in the country's AIDS prevention strategies.

## V. PREVENTION

Since there is no perfect and complete cure for AIDS, and since there is at present no vaccine, prevention is essentially based on health education and information.

This type of prevention is needed both for countries that are facing an epidemic situation and for those that are experiencing only isolated cases. The conditions under which AIDS is spread vary in relation to local characteristics, which is why any strategy must be designed and adjusted in the light of the epidemiological data collected.

Consequently, the first objective is to set up national systems to collect information on this disease. It is extremely important, both in order to gauge how the epidemiological situation between neighbouring countries is developing, and in order to permit international cooperation to function, to exchange information obtained locally. The health education strategy is based on knowledge of the ways in which the disease is transmitted. Research carried out in the countries of central Africa shows that the AIDS epidemic is connected with three main modes of transmission: sexual, parenteral and vertical (mother to child).

### 1. Sexual transmission

In Africa, transmission appears to occur equally readily from man to woman or from woman to man. Homosexuality is a lesser mode of transmission of AIDS. As for all other sexually transmitted diseases (STDs), a reduction in the number of partners reduces the risk of exposure. Condoms (sheaths) may help to reduce the risk, although the degree of safety they provide has not been demonstrated.

### 2. Parenteral transmission

#### (a) Blood transfusion

In countries where the prevalence of antibodies to LAV/HTLV-III is extremely high, any blood transfusion a priori constitutes a major risk. The decision to prescribe transfusion must be taken with extreme care. It is now well established that a single blood transfusion is scarcely ever indicated in the adult. If all transfusions are to be made safer, proper blood banks must be set up and developed.

(b) Injections and scarifications

Epidemiological data show that non-sterile injections are responsible for a large proportion of AIDS cases in children. Health education should make it possible to ban unnecessary injections and to improve hygiene practices (sterilization). Methods of disinfection effective against the LAV/HTLV-III virus must be fully familiar to medical and allied health personnel. Diluted household bleach water, boiling, and alcohol are simple, relatively cheap and effective means.

3 Transmission from mother to child

About half the cases of AIDS in children in central Africa are connected with transmission of the virus during the perinatal period. Seropositive women must be aware that if they become pregnant they run a high risk of giving birth to a child infected with the LAV/HTLV-III virus. All measures aimed at restricting reproduction in seropositive women must be encouraged.

Health education - content and means

Health education must enable three objectives to be attained:

- to inform the public about the disease;
- to make known the ways in which it is transmitted and the ways of guarding against it;
- to defuse panic situations and allay unjustified fears.

This information may be disseminated in various ways:

through the mass media (press, radio, television): professional media personnel should have the necessary technical knowledge to avoid spreading information that is incomplete, inaccurate, or liable to cause panic;

more specialized information channels:

teaching establishments could incorporate information on AIDS into the sex education or hygiene curriculum;

risk groups: in central Africa the main group concerned is the group at risk for STDs in general (people who customarily have a variety of sexual partners);

STD clinics;

sociocultural associations.

The role of health professionals

Good training for health professionals is one of the main means of combating AIDS. The object of this training will be:

- to familiarize them with the rules of hygiene they must observe in their work;
- to update their knowledge periodically, so that the patients in their charge receive the best possible care;
- to enable them to play a leading role in health education of the public.

### Treatment

A distinction must be drawn between the treatment of opportunistic infections and Kaposi's sarcoma, and treatment directed against the etiological agent of AIDS.

The treatment of opportunistic infections is often very lengthy, with toxic effects, and relapsing infections are frequently noted. One of the drugs used to treat Kaposi's sarcoma is vinblastine, which has low toxicity; objective responses have been obtained in 25% of cases treated, and the disease appears to be stabilized in 50% of cases. Interferon Alfa has also been used, but toxic effects are often observed after lengthy treatment.

The object of antiviral treatment is to prevent the spread of the LAV/HTLV-III virus through the body. A number of viral replication inhibitors are under investigation in man (suramin, HPA23, ribavirin, foscarnet), but it has not so far been possible to demonstrate any clinical benefit from such treatment. It is already thought that this type of treatment will not suffice to restore cell-mediated immunity; for the future, consideration is being given to a combination of antiviral treatment and immunomodulators (interleukin 2, methisoprinol, etc.), or even bone marrow transplants.

### VI. RECOMMENDATIONS

1. The authorities in each country should appoint a working party of experts in clinical medicine, epidemiology, microbiology and public health which should institute a system for the collection of data on AIDS, an essential step for formulating and adapting a local control strategy.

2. In Africa, as in the United States of America and in Europe, sexual transmission is the main way in which AIDS is spread. In the absence of treatment or of a vaccine, health education aimed at changing sexual behaviour is an essential means of controlling AIDS.

3. Transmission of the LAV/HTLV-III virus by blood transfusion is another way in which the disease is spread in Central Africa. The organization of proper blood banks with facilities for clinical examination of the donor, laboratory tests on the blood products (especially LAV/HTLV-III serology) and the supply of blood to hospitals under good conditions is highly desirable. Only physicians should be authorized to prescribe transfusion, and should do so only in situations in which there is a real threat to the life of the patient.

4. Women of child-bearing age who are seropositive should be warned of the risk of giving birth to a child also infected by AIDS. The authorities concerned should suggest ways to them of avoiding having children.

5. The public must be warned of the risk of AIDS transmission, especially through injections or scarifications carried out with equipment that is not disinfected and is re-used, both in modern medicine and in traditional medicine.

6. The mass media should be urged to play a part in this health education. Media personnel could receive training for this role.

7. Use may be made of all channels to get this health education across to the general public or more specific groups:

teaching establishments, through hygiene curricula or sex education;

health centres for sexually transmitted diseases;

associations

8. The training of health personnel is an essential condition for the success of these programmes:

during their studies: by courses on AIDS;

after their studies: by continuing education.

9. The training of health personnel must include.

technical information on the disease and the various risk factors, in particular the risk associated with blood transfusion;

basic information on hygiene and disinfection with specific reference to AIDS;

the principles of health education and prevention.

#### Recommendations for WHO

1. WHO should provide technical assistance to countries wishing to set up a data collection system, especially regarding model notification forms.

2. WHO should amalgamate the data collected in the countries, using standard forms which state, at the very least, the number of cases recorded in each quarter, the age, sex and geographical origin of the patients, etc. These results will be collated sub-regionally rather than nationally, and then communicated to the States.

3. WHO should assist with the implementation of health education programmes by supplying models of information leaflets, audiovisual material and posters for use in the control of sexually transmitted diseases.

4. WHO should take part in the training of medical and allied health personnel by providing teaching materials (brochures, posters, video films) and by taking part in the organization of information meetings.

5. WHO should publish guidelines on the prevention and transmission of the disease among high-risk groups, professional groups including the medical profession, and the general public.

6. WHO is earnestly requested to disseminate information on AIDS in central Africa so as to enable Member States to take appropriate measures for the prevention and control of the disease.

7. WHO is requested to help disseminate a case definition that has a readily applicable clinical basis and permits a purely clinical diagnosis of AIDS both in children and in adults.

8. The Workshop would like WHO to publish this definition in a format suitable for the countries concerned, emphasizing that it is a provisional, initial definition. At a later stage the Workshop would like WHO to organize joint analysis of the data already collected by African countries that have carried out surveys on AIDS, and thereafter to supplement these data by other studies aimed at increasing the specificity and sensitivity of the clinical definition. At this stage, should the predictive value of the clinical definition be found to be greater than 90%, the terminology could be modified to meet the needs of surveillance. Should the predictive value be lower, the Workshop is emphatic that each country should continue a programme of testing a sample of clinical cases and confirming them in the laboratory. The goal of producing a highly sensitive, specific, practical, reliable, reproducible and uniform definition must be attained through research carried out by clinical practitioners and national health services, with the assistance of WHO for the coordination and joint analysis of the research.

9. Similarly, WHO is requested to communicate any improvement or modification of this definition as results are obtained by the various collaborating clinical services.

10. There is a need for laboratory criteria in addition to the clinical definition. Clinical cases that satisfy the laboratory criteria will be regarded as "confirmed cases". All African countries will be requested to notify WHO every three months of the number of AIDS cases classified as "clinical" cases and "confirmed" cases.

11. The Workshop requests WHO to promote extremely simple serological tests for detecting antibodies to LAV/HTLV-III. Given the lack of such tests at the present time, WHO is urged to recommend the detection of antibodies to LAV/HTLV-III by the ELISA test. WHO is requested to promote the ELISA test not as a routine test for the diagnosis of AIDS, but as a test for the routine screening of all blood donations for antibodies to LAV/HTLV-III. WHO is requested to encourage national programmes for the application of such a measure in all Member States.

12. WHO is requested to set up reference centres where tests can be carried out to confirm the results of the ELISA test. Another task of these reference centres would be to organize training workshops for laboratory staff of any country requesting such training.

13. WHO could assist national officials by: (1) sending experts in epidemiology and laboratory work; (2) supplying laboratory equipment and materials for the establishment of a centre to perform serological tests for the LAV/HTLV-III; (3) preparing standard clinical and epidemiological record forms for data gathering during this initial study.

14. The Workshop would like WHO to be able to assist every country in analysing surveillance data, by providing microcomputers with a special programme for data recording and analysis.

15. WHO should name a panel of experts in the epidemiology and laboratory diagnosis of AIDS for consultation and to visit interested countries.

16. The Workshop would like WHO to establish an additional form which each country can use for national surveillance, and to which countries would be encouraged to add specific information of national interest. WHO experts in epidemiology can cooperate with national working groups in the choice of surveillance strategies. The surveillance of AIDS can serve as an excellent example for the training of epidemiologists and other public health officials. WHO experts could help to establish strategies for the laboratory confirmation of cases.

TABLE

CLINICAL DIAGNOSIS OF AIDS

Exclusion criteria

1. Pronounced malnutrition
2. Cancer
3. Immunosuppressive treatment

Inclusion criteria with the corresponding scores

| <u>Important signs</u>  | <u>Score</u> |
|---|--------------|
| Weight loss exceeding 10% of body weight                      | 4            |
| Protracted asthenia   | 4            |
| <u>Very frequent signs</u>                                    |              |
| Continuous or repeated attacks of fever for more than a month | 3            |
| Diarrhoea lasting for more than a month                       | 3            |
| <u>Other signs</u>  |              |
| Cough   | 2            |
| Pneumopathy   | 2            |
| Oropharyngeal candidiasis                                     | 4            |
| Chronic or relapsing cutaneous herpes                         | 4            |
| Generalized pruritic dermatosis                               | 4            |
| Herpes zoster (relapsing)                                     | 4            |
| Generalized adenopathy  | 2            |
| Neurological signs  | 2            |
| Generalized Kaposi's sarcoma                                  | 12           |

THE DIAGNOSIS OF AIDS IS ESTABLISHED WHEN THE SCORE IS 12 OR MORE