TRAINER'S MANUAL: TRAINING THE TRAINERS TO HIV CARE AND TREATMENT

Training of Health Service Providers of the Gabonese Defense and Security Forces in the Comprehensive Care of People Living with HIV and AIDS, Trainer's Manual, was developed by Medical Care Development International (MCDI) and the Gabonese Military AIDS Control Program (PMLS) with technical support and validation from the National Program for the Control of Sexually Transmitted Infections and HIV/AIDS, through a grant from the U.S. Department of Defense (DHAPP) as part of the "DHAPP HIV/AIDS Prevention, Care and Treatment Project Specific to the Defense and Security Forces of Gabon".

Abbreviations and Acronyms

Drugs and families of antiretrovirals

ABCAbacavir
ATVAtazanavir
DRVDaru**navir**
DTGDolut**egravir**
EFVEfavir**enz**
IFFusion **Inhibitors**
NNRTIs Non-nucleoside reverse transcriptase inhibitors
NNRTIs Nucleoside reverse transcriptase **inhibitors**
nRTTIs Nucleoside reverse transcriptase inhibitors
PI Protease inhibitors or anti Proteases
PI/rProtease inhibitor boosted with ritonavir
ITBIIintegrase-mediated strand transfer **inhibitors** (Integrase inhibitor)
LPV/RTV Lopinavir/ritonavir
NVPNevirapine
RLGAlteg**ravir**
RTVRito**navir**
3TC Lami**vudine**
TDFTeno**fovir**
T20 Enfuv**irtide**
ZDVZidovudine (AZT)

Other terms:

BSEBlood Exposure Accident
ARV Antiretroviral
CHWCommunity Health Worker
CDTC Tuberculosis Diagnostic and Treatment **Centre**
CHUL Centre Hospitalo-Universitaire de Libreville
CNTS Centre National de Transfusion Sanguine
CPKCréatinine Phospho-Kinase
CTC Tuberculosis Treatment Center
CTAC Ambulatory Treatment **Center**
Cytotoxic T Lymphocytes (**CTLL**)
CTXCotrimoxazole
CVCharge Viral
DHAPPDefense HIV/AIDS Prevention Program
DBSDried Blood Spot
ELISATitration with an enzyme-linked immunoabsorbent
FOSA Health Training
FDSG Forces de Défense et de Sécurité du Gabon
HIAA Hospital of Instruction of the Armies of Akanda
HIAOBOHôpital d'Instruction des Armées Omar Bongo Ondimba
IASInternational AIDS Society

IDRIntradermoreaction
INHIsoniazide
Opportunistic **Infection**
STI Sexually Transmitted **Infection**
MCDI Medical Care Development
International **MSM Ministry** of Health
WHO World Health Organization

UNAIDSJoint United Nations **Programme** on HIV/AIDS **PNLT**
National Tuberculosis Control Programme **PMTCT Prevention** of
Mother-to-Child Transmission of HIV
PCRP Polymerase Chain Reaction
PHAPerson living with HIV
SASemaines d'Aménorrhée
AIDS Acquired Immunodeficiency Syndrome
IRIS Immune Restoration **Syndrome** **EPT**
Extra Pulmonary **Tuberculosis**
MTCT Mother to Child Transmission
TMP Trimethoprim
TPITreventive **treatment** with Isioniaside
UNICEUnited Nations Children's **Fund**
HIVHuman Immunodeficiency **Virus**
VPIExercised by an intimate partner

Table of Contents

Foreword

According to data released in July 2020 by UNAIDS and WHO, the number of new HIV infections decreased by 39% between 2000 and 2019. The number of HIV-related deaths fell by 51% over the same period, and antiretroviral treatment has saved some 15 million lives. However, global targets for 2020 will not be met. Over the past two years, the annual number of new HIV infections has plateaued at 1.7 million, and there has been only a slight decline in the number of HIV/AIDS-related deaths, from 730,000 in 2018 to 690,000 in 2019. Despite the remarkable strides made in the fight against the HIV/AIDS epidemic, Africa remains the most affected region, with more than two-thirds of people living with HIV (25.7 million in 2019). In this region, HIV infection continues to be prevalent in the general population, but there are increasing numbers of new infections in key groups *(Source: HIV/AIDS, WHO, July 2020, https://www.who.int/fr/news-room/fact-sheets/detail/hiv-aids)*.

The global consensus is that by the end of 2020, 90% of people living with HIV will know their HIV status, 90% of people who know their HIV status will be on HIV treatment, and 90% of people on antiretroviral therapy will have an undetectable viral load. Despite continued progress in scaling up treatment coverage (more than 25 million people in need of ARVs received them in 2019), key global targets for 2020 will not be met. Greater efforts are needed to scale up ARV treatment, especially for children and adolescents. Indeed, only 53% of them were receiving antiretroviral treatment at the end of 2019, while coverage among adults was 67%. Thus, expanding access to treatment is at the heart of a new set of 2020 targets aimed at putting the world back on track to end the AIDS epidemic by 2030. As a prevention tool, HIV treatment should be considered an essential component of a combination of evidence-based approaches (called "combination prevention").

Gabon, with an estimated HIV prevalence of 4.1% in the general population and 5.8% among pregnant women (EDSG 2012), is still located among the high prevalence countries for HIV infection, with a generalized type of epidemic. The 2019 estimates reveal globally that, 51,000 (adults and children) people are living with HIV of which 26,100 or 51% are on ART. Regarding men in uniform, according to the SABERS Survey conducted in November 2018 among the Gabonese Defense and Security Forces (FDSG), HIV prevalence was 2.1%. There was no significant difference between genders, HIV prevalence among men was 2.1% and among women 2.2% (p=0.93). 96% of those tested HIV-positive in this study reported having ever been tested for HIV, and of these, only 42.3% reported ever knowing their HIV status. Of these 42.3% who reported knowing their HIV status, 81.8% reported currently taking antiretroviral therapy.

National progress in expanding HIV treatment masks disparities in access to life-saving treatment services. Indeed, comprehensive care for PLHIV remains limited to

specialized care centers such as the Outpatient Treatment Centers (CTA) and the medical departments of some hospitals and private clinics.

While many strategies are needed to close the chapter on the AIDS epidemic, one thing remains certain: it will be impossible to significantly reduce the number of new infections without bringing HIV treatment to all those who need it. HIV treatment is a unique tool in the AIDS response to prevent illness and death and to avoid new infections.

One of the strategic actions needed to achieve and maintain high antiretroviral treatment coverage is continuous capacity building of health care providers. In order to meet the global challenge of the three-plus-90 target, health care providers must integrate innovative strategic approaches such as case-mix screening, the health care provider card, and updated prevention, care, and treatment messages.

This manual is therefore designed to be a support and continuing education tool for all health professionals involved in the care and therapeutic management of PLWHIV with a view to continuing the extension of care to all health facilities (FOSA). It was developed on the basis of the national strategy, which takes into account WHO recommendations. It also takes into account innovative approaches that have proven to be effective, in order to reach the ultimate goal of ending the HIV epidemic by 2030.

It consists of 11 modules dealing with general information on HIV and AIDS, organization of care for PLWHA, management of co-infections, therapeutic management of adults and adolescents, side effects of antiretroviral drugs, prevention of mother-to-child transmission of HIV, pediatric management, HIV exposure accidents, inventory management and follow-up of HIV-infected patients.

This training of trainers is intended for health workers who already have a background in HIV prevention, care and treatment.

INTRODUCTION

1/ Presentation of the training

- **Objectives**

The overall goal of the ***Training of Trainers for the SDGF in the Care and Treatment of PLWHA*** is to equip health care professionals with the knowledge and skills required to provide quality comprehensive care to people living with HIV. It is the first step in a comprehensive framework for training care providers of the SRHR in HIV/AIDS care and treatment.
Specifically, this first training session aims to provide trainers involved in HIV/AIDS care and treatment with the information, skills, and practice they need to assess, plan, organize, and facilitate training for health care providers in the care of PLWHIV.

- **Skills and knowledge areas**

Implementing HIV/AIDS training requires that health care professionals have teaching skills that go beyond the simple ability to convey information. These skills are based on simple principles that allow for a logical progression from the analysis of participants' needs to the facilitation and evaluation of the training. Once the training has been completed, the writing of a training report is an important step in structuring the reflection on any adjustments that may be necessary to improve the training.
Thus, the *Training of Trainers in the Care and Treatment of PLWH* will enable health care professionals to acquire both technical and pedagogical skills. At the end of the program, they will be able to:

- Designing effective and motivating training activities;
- Select the appropriate tools and knowledge for the transmission of the acquisitions of to participants;
- Facilitate with ease and maintain the interest of participants during a training session;
- Comply with continuing professional development obligations.

- **Target audience**

This training is designed for health care providers and other members of the health care team who already have knowledge and experience in HIV prevention, care and treatment, including

- Physicians;
- Nurses;
- Midwives;
- Laboratory technicians;
- Pharmacists;
- Psychologists;
- Social workers;
- Prevention and treatment counselors (CHWs, peer educators, etc.);

- Staff in charge of monitoring and evaluation.

- **Adaptation of the training**

This training program is generic, not specific to security and defense forces health facilities. It was designed with the idea of being adapted later to the
context of the structures and ~~health~~ professionals who need it.
The recommendations that make up the technical content of this program are based primarily on national HIV prevention policies and the national strategy for the care of PLWHA. The latter is based on the WHO international guidelines.
They also take into account the latest scientific advances and innovative approaches that have proven their effectiveness.

- **Components of this training**

The training materials include a trainer's manual, a participant's manual, PowerPoint slides, checklists, sample monitoring and evaluation tools, visual aids, and discussion points.

Trainer's Manual
The trainer's manual is composed of 11 modules, each of which consists of training sessions of varying lengths. To ensure the success of each training session, you are given the expected duration, the required materials, the necessary preparation in advance, detailed instructions on how to conduct the session, and advice on the scenarios or role plays you are considering. This manual can be used as a guide for conducting training sessions.
Before conducting the training, read the entire manual, including the introduction, descriptions of all sessions, clinical and role-play ~~scenarios~~, job aids, and monitoring and evaluation tools. Note all required preparations in advance. For example, for some sessions, you may need to prepare a few extra slides or, with the help of a colleague, plan a role play and rehearse it in advance.

Participant's Manual
The Participant's Manual includes 11 modules, each with learning objectives, all the content that will be presented (in slides), ~~scenarios~~, role plays, and instructions for pair and small group activities. Participants will use it throughout the training. In some sessions, however, they will close it to watch an interactive presentation by the trainer. In other sessions, they will keep their workbook open to read the content or follow the instructions of an activity. Participants will be able to keep their manuals after the training is over. Please review the entire participant handbook before conducting the training.

Presentation slides
The slides present the learning objectives for each module, the content, the ~~scenarios~~ used, instructions for pair and small group activities, and announcements for breaks and lunch. Use these slides in conjunction with the trainer's manual. The trainer's manual lists all of the slides for each session and in some cases, the key points to highlight for each slide. Please review all slides before conducting the training.

Posters

It is recommended that each health center represented at the training receive posters presenting the HIV testing and treatment decision algorithms according to the level of their interventions. These include:

- The algorithm for HIV testing in adults and children ≥ 18 months (at the intermediate);
- The algorithm for HIV testing in adults and children ≥ 18 months (peripheral level);
- The algorithm for HIV testing in pregnant and lactating women (at the peripheral);
- The algorithm for early diagnosis and management of the child of an HIV-positive mother ;
- Antiretroviral therapy (ART) in HIV-infected adults and adolescents;
- The national protocol for antiretroviral treatment in pregnant and lactating women HIV-infected;
- Protect yourself from HIV exposure accidents.

It is important that the posters that are distributed during the training are based on the the most updated and validated standards at the national level.

Checklists and monitoring and evaluation tools

- **Training schedule**

The *Training of Trainers on the Care and Treatment of PLWHA* was designed in 11 modules, to be delivered face-to-face over a total of 5 days.
These modules, which follow the presentation plan of the "Guide for the Care of People Living with HIV in Gabon", will be presented one after the other.

Day 1	
8:00-8:30 a.m.	Welcome of the participants
8:30-10:30 a.m.	**Official opening** - Administrative formalities - Presentation of the participants/trainers - Presentation of the objectives - Pre-test
10:30-10:45 a.m.	Coffee break
10:45 a.m.-12:00 p.m.	**Module 1. General information on HIV/AIDS** - Definition and modes of transmission - Biological diagnosis of HIV - Screening Services - Index cases - National HIV Screening Algorithm
12:00-1:00 p.m.	**Module 2. HIV Prevention** – Combined prevention – Identification of priority populations and vulnerable groups in the military context
1:00-2:00 p.m.	Lunch break

2:00-3:00 p.m.	**Module 3. Organization and principles of care (PEC) for PLHIV** - Definition and principles of comprehensive ECP - Practical organization of care and treatment - Organization of care for PLWHA in Gabon
3:00-3:15 p.m.	Afternoon break
3:15-4:30 p.m.	**Module 4. Psychological care and social support for PLWHIV** – Reasons for providing psychological and social support to PLWHA – Qualities required for psychological care – HIV Counseling and Testing – Therapeutic education (ETP) – Adherence consultations – Group therapy or discussion groups – Social Assessment – The home visit

Day 2	
8:00-8:30 a.m.	**Recap of D1**
8:30-10:30 a.m.	**Module 5. Management of opportunistic infections** - General information on opportunistic infections - Prophylaxis of opportunistic infections - Main opportunistic infections and their treatment - Exercises: clinical cases
10:30-10:45 a.m.	Coffee break
10:45 a.m.-1 p.m.	**Module 6. Management of major co-infections** -HIV-TB
1:00-2:00 p.m.	Lunch break
2:00-3:00 p.m.	**Module 6. Management of major co-infections (continued)** -Managing HIV infection in the context of the pandemic COVID
3:00-3:15 p.m.	Afternoon break
3:15-4:30 p.m.	**Module 6. Management of major co-infections (continued)** - HIV-Malaria - HIV and Hepatitis B and C
Day 3	
8:00-8:30 a.m.	**Recap of D2**
8:30-10:30 a.m.	**Module 7. Antiretroviral therapy (ART) in adults, adolescents, children and pregnant women** -General information on ART: principles of ART, classification of ARVs, mode of action of ARVs, conditions for starting ART
10:30-10:45 a.m.	Coffee break

10:45 a.m.-1 p.m.	**Module 7. Antiretroviral Therapy (ART) in Adults, Adolescents, Children and Pregnant Women (continued)** -Therapeutic protocols: in adults and adolescents, in women pregnant and lactating women, HIV-infected children, prophylaxis in infant exposed to HIV

1:00-2:00 p.m.	Lunch break
2:00-3:00 p.m.	**Module 7. Antiretroviral Therapy (ART) in Adults, Adolescents, Children and Pregnant Women (continued)** -Management of treatment failures
3:00-3:15 p.m.	Afternoon break
3:15-3:45 pm	**Module 7. Antiretroviral Therapy (ART) in Adults, Adolescents, Children and Pregnant Women (continued)** -Importance of biological markers
3:45-4:30 pm	**Module 8. Post-exposure prophylaxis**
Day 4	
8:00-8:30 a.m.	**Recap of J3**
8:30-10:30 a.m.	**Module 9. Follow-up of the PLWH** - Initial clinical assessment - Initial biological workup - Follow-up report - Side effects of ART - Vaccination of PLWHIV - Nutritional care for PLWHIV - Data entry and archives
10:30-10:45 a.m.	Coffee break
10:45 a.m.-1 p.m.	**Module 10: Supply and Inventory Management** - ARV supply and inventory management - Pharmacy management - Drug dispensing
1:00-2:00 p.m.	Lunch break
2:00-3:00 p.m.	**Module 11. Monitoring and evaluation of activities** - Definition of concepts - Indicators
3:00-3:15 p.m.	Afternoon break
3:15-4:30 p.m.	**Module 11. Monitoring and evaluation of activities** - Periodicity of monitoring and evaluation activities - Management tools for care centers

Day 5	
8:00-8:30 a.m.	**Recap of J4**
8:30-10:30 a.m.	- Post-test - Correction of the post test
10:30-10:45 a.m.	Coffee break
10:45 a.m.-1 p.m.	– Role playing – Practical exercises – Draft a schedule for the next 32 care providers in the SDGFs by specifying the different stakeholders
1:00-2:00 p.m.	Lunch break

2:00-4:30 p.m.	**Closing Ceremony** - Summary of the training - Presentation of pre and post test results - Delivery of certificates

OPENING CEREMONY

- **A word of welcome**
- **Official opening of the training by the PMLS**
- **Intervention of MCDI**
- **Presentation of the training program by MCDI**
- **Presentation of the workshop trainers**
- **Presentation of the rules to be respected to ensure the smooth running of the training days**

- Punctuality,
- Attendance;
- Mutual respect;
- Adherence to COVID19 prevention barrier actions;
- Use of cell phones during breaks only;
- Participation in training days in a constructive spirit;
- All participants are expected to contribute to the discussions;
- All questions are good to be asked etc.

- **Presentation of the participants (Trainer)**

The trainer asks each participant to introduce him/herself (full name), where he/she works, something about him/herself (interest, motivation) that he/she would like to share and what he/she expects from this training.

- **Training objectives and schedule (Trainer)**

- Develop a clear understanding of HIV/AIDS;
- Understand national standards for HIV testing and treatment HIV/AIDS;
- Understand innovative approaches in the fields of prevention, treatment and HIV/AIDS diagnosis, treatment and care;
- Understanding the management of HIV-TB co-infection;
- Understanding the role of strategic information in the response to the epidemic;
- Encourage the development of an ongoing support network among participants / providers to share success strategies and solve problems;
- Develop a network of trainers in HIV/AIDS care and treatment within the of the FDSG.

- **Pre-test (Trainer) 30-min.**

The trainer should explain that the importance of the pre-test is not to assess their knowledge, but to identify areas that need strengthening and to measure the impact of the training (post-test).
The tests must be printed and distributed. The duration of the test should not exceed 30 minutes. The test is the same for both the pre and post test.

HIV CARE AND TREATMENT TRAINING: PARTICIPANT TESTING

PART A

1. HIV prevalence in Gabon according to the 2012 Demographic and Health Survey (DHS) is:

2. All are modes of HIV transmission except which one?
a. during unprotected sex
b. during a contaminated blood transfusion
c. when exchanging needles with an HIV-positive person
d. during the exchange of saliva or sweat from an HIV-positive person
e. from mother to child during pregnancy
f. from mother to child during delivery
g. from mother to child during breastfeeding.

3. HIV post-test counseling
a. is optional for the submission of a negative HIV serology result
b. is mandatory in case of positive serology only
c. is mandatory regardless of the result

4. What is PMTCT?
a. Prevention of Transmission of Disease to Children
b. Prevention and Treatment of Disease in Children
c. Prevention of Mother-to-Child Transmission of HIV
d. Therapeutic Prevention from Mother to Child

5. A negative HIV test result can be returned
a. After the realization of Determine alone
b. After the realization of Determine and Bioline
c. After the realization of Bioline (or Genie III) alone
d. After the realization of the Alere COMBO alone

6. When is cotrimoxazole (CTX) prophylaxis of OIs recommended?
?
a. HIV+ patient at WHO stage 3 or 4, regardless of CD4 count
b. Symptomatic HIV+ patient at WHO stage 2, when CD4 count cannot be determined
c. HIV+ patient with CD4 count < 500/mm3
d. HIV+ pregnant woman

e. Any HIV+ subject

7. What dosage of CTX should be used in adults for primary prevention of OIs?
a. 960 mg morning and evening
b. 480 mg morning and evening
c. 960 mg once daily
d. 480 mg once a day
e. 480mg 2 pcs once a day

8. Regarding the pregnant woman infected with HIV and malaria, what is the right proposition?
a. Malaria is no more serious than in an HIV-negative pregnant woman
b. Prophylaxis withCTX960mg/treatment with sulfadoxinepyrimethamine can be combined
c. Treatment of a malaria attack requires higher and prolonged doses.
d. Parasitemia is lower than in an HIV-negative pregnant woman,

9. Two of the following ARVs belong to the NRTI class. Which two?
a. AZT
b. 3TC
c. EFV
d. DTG
e. ATV/r
f. LPV/r

10. What is the main side effect of AZT?
a. Allergic skin reaction
b. Anemia
c. Peripheral nerve damage

11. Which of these options would you prefer to prescribe as first-line ARV treatment for HIV infection?
a. AZT + 3TC + NVP
b. AZT + 3TC + EFV
c. TDF + 3TC + DTG
d. TDF + 3TC + LPV/r
e. ABC + 3TC + NVP
f. TDF + FTC + EFV

12. In case of failure of a first ARV treatment withTDF+ 3TC + DTG, which of these 3 second-line treatments would you suggest?
a. AZT + 3TC + EFV
b. AZT + 3TC + LPV/r
c. TDF + ABC + lopinavir/r
d. ABC+3TC+ LPV/r

13. What does the "first in, first out" rule mean?
a. The most recently stored medications should be dispensed first.

b. Medications with the shortest expiration dates should be shelved ahead of medications with longer preemption dates and dispensed first.
c. Only one person at a time should have access to the pharmacy when dispensing a medication

14. What is the purpose of calculating monthly drug consumption?
a. To verify that all patients being monitored have picked up their treatment;
b. To verify that the quantities of drugs dispensed were in accordance with the prescriptions;
c. Anticipate the replenishment of medications.

15. To be sure a patient understands how to take their medication:
a. It is helpful to have him read the prescription
b. You have to ask him to take them in front of you
c. He must be able to explain how to take them after your explanations
d. He or she must be able to explain how to take them after reading the prescription

16. Which of these qualities are essential to good coaching?
a. Confidentiality
b. Pity
c. Tolerance
d. Self-control

17. Compliance is:
a. Being on ARVs
b. Respecting your doctor
c. Make a point of coming in regularly to observe the behavior of other patients
d. Always take your treatment as prescribed by your doctor

18. What are the rights of the person living with HIV?
a. Right to health
b. Right to work
c. Right to procreation
d. Right to discrimination
e. Right to sexuality

19. In what cases can the focus group be used?
a. Mediation with relatives
b. Exchanges between patients on the experience of the disease
c. Compliance support
d. The search for the lost

20. Which of the following people have a particular vulnerability?
a. Sex workers
b. The inmates
c. Homosexuals
d. The orphans

21. Therapeutic education allows:
a. Develop patient skills to manage their disease
b. To monitor patient compliance

c. To allow the patient to express himself on the management of his disease
d. Improve the patient's quality of life

22. What are the tritherapies recommended for a pregnant woman with HIV+ according to the WHO recommendations?
a. NVP + AZT + 3TC
b. TDF + 3TC (or FTC) + EFV
c. LPV + ABC + 3TC
d. ABC + 3TC + NVP
e. TDF+3TC+DTG

23. Which of the following statements about protected breastfeeding are correct?
a. Protected breastfeeding is exclusive breastfeeding for 1 year
b. Protected breastfeeding is breastfeeding combined with preventive ARV treatment of the infant
c. Protected breastfeeding is breastfeeding combined with triple ARV therapy for the mother and preventive treatment for the infant
d. Protected breastfeeding means safe sex during the entire breastfeeding period.

24. In a 12-month-old child born to an HIV-positive mother, which of the following situations is a definite HIV infection?
a. The child's HIV serology is positive;
b. Virus research in the baby's blood is positive by PCR technique;
c. The child presented with severe pneumonitis, bacterial meningitis and oral candidiasis;
d. The child presented with cryptococcal meningitis.

25. The use of single-use gloves may eliminate the need for hand hygiene.
a. V
b. F

26. Which of the following needles is most at risk of infectious transmission in the event of an AES?
a. Venous sampling needle (hollow)
b. Suture needle (solid)

27. What is the ideal time to take chemoprophylaxis after an AES?
a. 4 hours
b. 48 hours
c. 7 days
d. 24 hours

28. The duration of chemoprophylaxis after an AES is :
a. 2 weeks;
b. 4 weeks;
c. 3 months.

29. The maximum time required after an untreated SEA to be able to say that there is no HIV infection is :

a. 1 month;
b. 3 months;
c. 6 months;
d. 2 years.

Some principles of the National HIV Screening Algorithm for Pregnant and Breastfeeding Women: circle the letter that applies (T = true or F = false)

30. V F If the first rapid test is positive, a second specific rapid test is mandatory for confirmation and discrimination.
31. T F If the first rapid test is negative, the woman is considered HIV-negative or seroconverting and should be retested after three months.
32. T F A first rapid test is performed at the first contact with the pregnant or breastfeeding woman.
33. V F If the first rapid test is positive and the second specific rapid test is negative, the result is indeterminate**.**
34. T F If the first and second rapid tests are positive, a third test must be performed to consider the woman HIV-positive.

PART B - Please put "T" for True and "F" for False before the statement.

35. Household insects such as bedbugs and cockroaches can carry HIV and transmit the disease to humans.

36. If a mosquito bites a person with AIDS and then bites someone else, the second person it bites can get AIDS.

37. Women with AIDS can sexually transmit HIV to men.

38. A person with HIV who looks healthy is not likely to transmit the virus to others through sexual contact.

39. ___ People who test negative during the "window period" are not likely to transmit the virus through blood transfusion.

40. ___ It is impossible for a serodiscordant couple to have healthy children.

41. ___HIV-positive pregnant women should receive ARV treatment regardless of the stage of their HIV infection.

42. ___ Biosafety is the set of measures aimed at preventing and countering the dangers associated with the handling and use of biological materials.

43. Counseling is a non-confidential dialogue between a client and a health care provider to enable the client to overcome stress and make personal decisions about HIV/AIDS.

44. The board process consists of five steps: prepare, prepare the board setting, begin the session, conduct the session, and close the session.

45. ARV treatment aims to cure the HIV-infected patient.

46. For a drug that exists in several forms (tablets with two strengths, tablet or suspension), only one stock record is required.

47. To count medications when dispensed, simply place them carefully in the palm of your hand.

48. Malnutrition promotes immune system impairment.

49. Nutritional management helps limit the side effects of some ARVs

50. The body of a person living with HIV needs high-fat foods.

51. A person living with HIV should drink a maximum of 1.5 liters of water per day.

52. Community-wide use of ARV treatment for HIV-infected people could reduce the number of new infections.

ANSWERS TO THE QUESTIONS - DO NOT PRINT WITH THE TESTS

Answers

Part A: *1. b, 2. d, 3. c, 4. c, 5. d, 6. a, b, and c, 7. c and e, 8. a, 9. a and b, 10. b, 11. c, 12. b and d, 13. b, 14. c, 15. c, 16. a, c and d, 17. d, 18. a, b, c and e, 19. b, c, and d, 20. d, 21. a, c and d, 22. b and e, 23. c, 24. b and d, 25. F, 26. a, 27. a, 28. b, 29. c, 30. v, 31. v, 32. V, 33. V, 34. V.*

Part B: *35. F, 36. F, 37. V, 38. F, 39. F, 40. F, 41. V, 42. V, 43. F, 44. V, 45. F, 46. F, 47. F, 48. V, 49. V, 50. F, 51. F, 52. V.*

DAY 1 MODULE 1. general information on hiv/aids

Theory Session:

Background on HIV/AIDS - 15 minutes. (Sources 3 and 6)

The trainer presents background information on HIV/AIDS. It is best to use slides that draw on the various resource documents provided (the basics are below). It is especially important that any information presented comes from national and international sources (such as WHO). Contextual information in Gabon, in addition to HIV prevalence, should also be included.

Generalities should include:

- What is HIV and AIDS?
- What are the modes of HIV transmission?
- How is the biological diagnosis of HIV made?

Allow time for questions and discussion of each slide. It is important to motivate participants to ask questions if they have questions. Find important contextual points for your presentation below:

1.1 Definition and modes of transmission of HIV

HIV is an extremely short-lived retrovirus (half-life in plasma is 6 hours). It consists of a nucleus containing ribonucleic acid (RNA) genetic material, which is surrounded by a shell made up of proteins with spikes formed by glycoproteins, by which it attaches itself to T4 lymphocytes, also known as CD4 cells, in order to penetrate them and multiply. The multiplication of HIV in CD4 cells requires a series of transformations in 6 steps catalyzed by enzymes as shown in the diagram below (**Figure 1**).

1) HIV penetration into target cells:
– HIV enters the CD4 lymphocyte after recognition (by the glycoprotein gp120 of the virus envelope) of the CD4 molecules (or receptors) present on the lymphocyte surface;
– after penetration, HIV releases the 3 viral enzymes (reverse transcriptase, protease and integrase) and the RNA it contains inside the lymphocyte (see structure of HIV).

2) Proviral DNA synthesis: inside the lymphocyte, HIV RNA is transformed into DNA (called proviral DNA) thanks to reverse transcriptase;

3) Integration of proviral DNA into lymphocyte DNA: HIV proviral DNA is integrated into lymphocyte DNA using integrase; at this stage, the virus is called provirus.

4) Transcription of DNA into RNA and formation of viral proteins:
– inside the nucleus, the viral DNA is transformed into RNA;
– viral RNA leaves the nucleus, then viral proteins are synthesized via messenger RNAs.

5) Cleavage of viral proteins: viral proteins are cut into smaller proteins by the protease.

6) Assembly of viral proteins and formation of new viruses: the cleaved viral proteins are assembled around the RNA to form new viruses, which bud out of the cell and are released into the bloodstream; they will infect other cells.

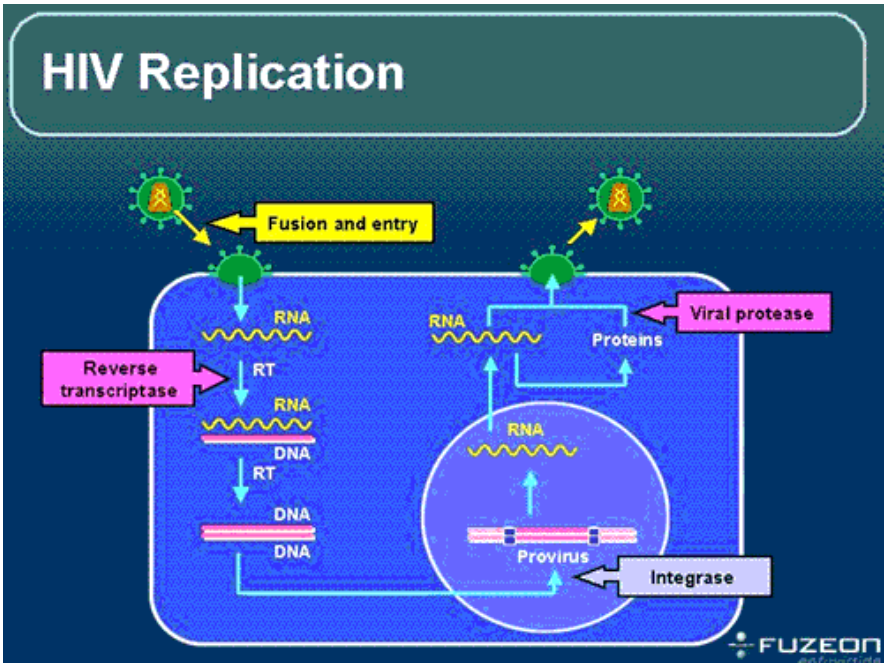


Figure 1: HIV replication in immune cells

Modes of HIV transmission

- The predominant mode of transmission in Gabon remains sexual.
- HIV prevalence in Gabon according to the Demographic and Health Survey (DHS) 2012) is 4.1%.
- The risk of mother-to-child transmission has been declining since 2012 in Gabon (11% in 2013 and 4% in 2017).
- The risks of transmission through blood transfusion are almost eliminated.
- Other modes of transmission such as injecting drug use, homosexual sex (men who have sex with men) as well as blood or body fluid exposure accidents are not documented.

Risk factors

Behaviors and situations that increase an individual's risk of acquiring HIV infection include:

- unprotected anal or vaginal penetration;
- the presence of another sexually transmitted infection (STI), such as syphilis, herpes, chlamydia, gonorrhea or bacterial vaginosis;

- s h a r i n g needles, syringes, other injection equipment or contaminated solutions when injecting drugs;
- injections, unsafe blood transfusions, tissue transplants, medical procedures that involve cutting or piercing the skin under non-sterile conditions; and
- Accidental needle sticks, especially among health care workers.

The main factors of vulnerability

In the Gabonese context, the main factors of vulnerability retained are

- early sexual activity,
- multi-partnering, non-use of condoms,
- the low level of knowledge about prevention methods, especially among young people,
- trans-generational relationships and population poverty (NSP 2017 - 2021).

The 2016 WHO guidelines identified individuals to be carefully monitored during the implementation of this NSP. These are:

- particularly exposed and disproportionately affected populations including Men who have sex with men (MSM), men who have sex with men (MSM) injecting drug users (IDUs), sex workers (SWs), and prisoners.
- vulnerable populations include youth aged 10-24 (particularly men and women in uniform, transporters, and the like. port workers, orphans and street children, people with disabilities, as well as migrant or mobile workers, indigenous peoples.

Given the early age of sexual activity, there is a need for the country to adopt appropriate strategies for youth under the age of 15 (10-14).

1.2 Biological (laboratory) and RDT diagnosis of HIV/AIDS - 25 minutes (Source 6)

The trainer introduces the module on HIV/AIDS testing. It is important that all information presented be from national and international sources (such as WHO). This section focuses on laboratory diagnosis and RDT diagnosis.

HIV tests are very accurate, but no test can detect the virus immediately after infection. How quickly a test can detect infection depends on a number of factors, including the type of test used. There are three types of HIV diagnostic tests: nucleic acid tests (NAT), antigen/antibody tests, and antibody tests.

Biological diagnosis of HIV infection

The diagnosis of HIV infection can be made either directly by the detection of the virus or one of its components, or indirectly by the presence of antibodies. Indeed, an important progress has been made with the introduction of rapid tests for the detection of antibodies which are very sensitive and specific.

For quality management, diagnosis of HIV infection requires a few principles that the test prescriber should be aware of, namely:

- natural history of HIV infection;
- the central role of the test prescriber in screening ;
- the objectives of the test prescriber in relation to the screening.

The table below defines the key concepts in the biological diagnosis of HIV. Table 1:

Determinants in the biological diagnosis of HIV infection

Biological markers during the natural history of the disease	Viral antigens are substances of a protein nature that are produced during viral replication and are released into the body by HIV-infected cells (e.g., P24 antigen). Antibodies are proteins and glycoproteins produced by certain cells in the body (B lymphocytes) to neutralize the effect of antigens (e.g. anti-P24 antibody). -Antigens and antibodies appear in the body of an infected individual at different times. Some antibodies (those directed against membrane antigens) are longer-lived than others (such as antibodies directed against the antigens of the nucleus).
Primary infection (1 month)	After the entry of the virus in the organism one attends : - a significant increase in the number of viruses in the body, resulting in a strongly positive P24 antigen test; - the secondary appearance (after 14 to 21 days) of the various antibodies. The period between virus entry as evidenced by the rise in P24 and the appearance of antibodies is called the "window period" during which the virus is present, but serology is negative.
Clinical latency phase (3 months-12 years)	After the primary infection, the antibodies are and remain high and allow the diagnosis of the infection. The amount of virus in the body decreases and settles in a plateau.
Stage of AIDS	Progressively, the level of antibodies decreases, while the level of the P24 antigen increases in parallel with the amount of virus.

Direct biological diagnosis of HIV infection

Special circumstances (recent primary infection, child born to an HIV-positive mother under 18 months of age) require the use of direct diagnostic methods, but these are still rarely performed in routine practice.

Two procedures are used for direct diagnosis: detection of the P24 antigen and detection of viral genetic material (*Polymerase Chain Reaction* or PCR). This diagnosis can be difficult for HIV 2 because of the absence of PCR for this type of virus in current practice.

Indirect biological diagnosis

Generally in resource-limited countries, the biological diagnosis of HIV infection is based primarily on serological testing, which is an indirect diagnosis involving the detection of HIV antibodies in the serum of patients. The methods used to visualize the antigen-antibody reaction are immunological methods such as ELISA or
"rapid" which involves agglutination/absorption of the complex on a membrane, followed by staining visible to the naked eye.

HIV can be diagnosed using rapid diagnostic tests (RDTs) that provide same-day results, making early diagnosis and linkage to treatment and care much easier.

Most common HIV tests detect antibodies produced by the individual as part of their immune response to the virus. Most people produce antibodies to HIV within 28 days of infection. During this period, known as the "window period," antibodies have not yet been produced and signs of infection may not have appeared, but the infection can already be transmitted to others. Once infected, it is possible to transmit HIV to a sexual partner or to someone who uses the same needle.
After a positive diagnosis, retesting should be performed prior to initiating treatment and care to rule out screening or reporting errors. Once a diagnosis has been made and treatment has been initiated, there is no need to retest the subject.

While tests for adolescents and adults have been simplified and are effective, tests for children born to HIV-positive mothers have not. Before the age of 18 months, serological screening is not sufficient to identify HIV infection and virological screening must be performed (at birth or at six weeks of age). However, new techniques are becoming available that allow for point-of-care testing and same-day return of results to expedite appropriate linkage to treatment and care.

1.3 HIV Testing Services (Source 1)

In this section, the trainer presents the conditions for screening and the vulnerable populations. This information should come from national and international sources such as the WHO.

Testing must be voluntary and the right to refuse must be recognized. Mandatory or coerced testing by a health care provider, authority, partner or family member is not acceptable, as it is contrary to good public health practice and a violation of human rights.

New techniques to help people test themselves are being introduced, and many countries are implementing self-testing as an additional option to encourage HIV diagnosis.
HIV self-testing involves a person who wishes to know his or her HIV status taking a sample, performing the test, and interpreting the result in private or with a trusted person. However, self-testing for HIV cannot provide a definitive positive diagnosis: it is an initial test that requires further testing by a health worker.
Many countries are now using innovative approaches to expand and support HIV self-testing through digital platforms and online support for assistance with the testing process and linkage to services.

Testing for HIV and other STIs is strongly recommended for all persons exposed to any risk factor (multiple sexual partners, unprotected sex, etc.). Soldiers and their partners are at high risk due to their mobilization to different locations with varying levels of HIV and other STIs in the local population.

Sexual partners of people diagnosed with HIV and partners in injection drug use are more likely to be

also positive. WHO advocates for assisted partner notification services as a simple and effective way to inform partners, many of whom are undiagnosed and unaware of their HIV exposure and may welcome support and the opportunity to be tested. Partner services can be broadly acceptable and effective, but they must always be provided in a way that respects the choices of the individuals to whom they are offered. It should always be voluntary and supportive, and multiple options should be offered to avoid potential harm.

All HIV testing services must adhere to the five principles recommended by WHO: the 5 Cs

- informed consent
- confidentiality
- advice
- correct test results
- connection (linking) to care, treatment and other services

1.4 Case Index (15 minutes) (Sources 1 and 14)

The trainer explained that access to HIV testing remains limited because not everyone still has access to testing, treatment, and care. In particular, the 2018 Global Acceleration Framework target of reducing the number of new pediatric cases to 40,000 has not been met *(Source: HIV/AIDS, WHO, July 2020, https://www.who.int/fr/news-room/fact-sheets/detail/hiv-aids)*.

This section explains how to maximize HIV testing through the index case concept, which aims to optimize HIV testing of children and partners of HIV-infected individuals.

What is index case screening?

Client index

A newly diagnosed HIV positive person and/or an HIV positive person enrolled in HIV treatment services

Indexing test

Voluntary process in which counselors and/or health agents ask indexed clients to list:
(1) all their sexual partners or drug injectors in the past year and
(2) minimum children.

The purpose of the index test is to break the chain of HIV transmission:

- offering voluntary HIV testing to people who have been exposed,
- And by linking them to health care services in case of positivity, or to prevention services in case of negativity.

All index tests must follow the 5Cs and be consensual, confidential and include counseling, correct test results and connection to treatment or prevention services

If the **index** client **agrees**, each partner and child listed is :
(1) contacted
(2) informed that they have been exposed to HIV and
(3) receives voluntary HIV testing services
If the **index** client does **not agree,** the counseling process must continue.

In addition, sites that offer baseline testing services must ensure that appropriate systems are in place for testing providers to identify and respond to clients who disclose their fear or experience of intimate partner violence (IPV) from one or more named partners.

What are the strategic directions for index case screening?

Screening can be done in several ways, including client (or patient) referral and provider-assisted referral.

Screening for index cases through patient/client referral: passive referral

According to WHO terminology and definitions, as part of patient orientation (also called *passive orientation*), a trained provider encourages HIV-positive clients to self-disclose their status to their sexual and/or drug-injecting partners, and to also offer hepatitis C testing to the partner(s), given their potential exposure to HIV infection.

HIV-positive clients can also inform their partner(s) through anonymous means, such as online messaging services, if they do not want to reveal their identity.

Screening of index cases through provider-assisted referral

In provider-assisted referral (also called *assisted partner notification)*, a trained provider asks consenting HIV-positive clients about their sexual and/or drug-injecting partner(s) and then, with the consent of the HIV-positive client, informs the partner(s) of their potential HIV exposure. The provider then offers HIV testing to the partner(s).

There are three types of provider-assisted referral approaches: contractual referral, provider referral, or dual referral.

Contractual referral: HIV-positive clients contract with a trained provider and agree to self-disclose their status and potential HIV exposure to their partner(s) and refer them to HTS within a specified time frame (e.g., 2 weeks). If the HIV-positive person's partner(s) do not access HTS or contact the health provider within this time frame, then the provider will contact the partner(s) directly and offer voluntary HTS.

Provider referral (also called *provider notification*): With the consent of the HIV-positive client, a trained provider confidentially (i.e., without revealing the identity of the HIV-positive client) contacts the person's partner(s) directly and offers voluntary HRT.

Dual orientation: A trained provider accompanies and supports HIV-positive clients as they disclose their status and potential exposure to HIV infection to their partner(s). The provider also offers voluntary HIV testing to the partner(s).

1.5 National HIV Testing Algorithm (20 minutes plus 15 minutes where trainer dynamically asks participants to discuss the standards presented)(Source 6)

In this section, the trainer presents the existing national standards on HIV/AIDS testing. It is important to present the screening algorithms and tests that are used in Gabon (Source 4)

The National HIV Testing Algorithm

This is a decision tree that is recommended by the PNLIST/HIV-AIDS and that must be followed by all providers who perform HIV testing throughout the country.

This algorithm recommends the use of three rapid diagnostic tests or two rapid diagnostic tests and one ELISA. Depending on the results, other more sophisticated tests may be used to confirm or rule out the diagnosis.

- If the first test is **negative**, the result is **negative**.

- If the first test is **positive,** the sample is subjected to a second test using different principles than the first test. **The same test** should not be used **twice**, as the same test may be sold under different names. Whether the result of this second test is **positive or negative**, the sample is subjected to a **third test**.

- If all three results are positive, the result is **positive**.

- When the results of the three tests are discordant (two positive and one negative), the result is rendered **indeterminate**. The opinion of a specialized laboratory may be required in this case.

- When the results of the three tests give one positive and two negative results, the result is **negative**.

NB:

 Tests should be performed in series (Screen 1, Screen 2, Screen 3) and **NOT** in parallel.

 WHO r e c o m m e n d s using tests with a sensitivity of at least 99% and a specificity of at least 98%.

Newborns and infants (from birth to 18 months inclusive)
While testing for adolescents and adults has been simplified and is effective, testing for children born to HIV-positive mothers has not. Before the age of 18 months, serological testing is not sufficient to identify HIV infection and virological testing should be performed (at birth or at six weeks of age).

Plenary discussion

With general reference to Gabon's national norms, the facilitator should lead a plenary discussion on the topic of testing with particular attention to questions about "Who is currently being tested? "How close is Gabon to achieving the goal of 90% of people living with HIV knowing their status? ....

Once some answers are suggested, dig into the data.
approach is "OK, so we have a general feeling that (whatever we said) is true today.... Assuming we are right, how can we know? If we can articulate what has convinced us, we should be able to convince others."....

Follow this discussion element with a review of the weaknesses of the analysis. Where are the assumptions. How can we find out more?

Conclude the discussion with a set of ideas on how to expand access to and benefit from testing in various population groups. (Keep in mind that youth under 25 are less likely to respond to standard health messages than older cohorts. Therefore, consider how to reach them.)

DAY 1 MODULE 2. HIV PREVENTION

Theory Session:

2.1 Prevention Basics: Combination Prevention (Source 1) (45 minutes)

The trainer presents information on how to prevent HIV infection. It is important that any information presented comes from national and international sources (such as the WHO).

At the individual level, the risk of HIV infection can be reduced by limiting exposure to risk factors. The main HIV/AIDS prevention approaches, often used in combination, are listed below.

Male or female condom use (Source 3)

Correct and consistent use of male or female condoms during vaginal or anal intercourse can prevent the transmission of sexually transmitted diseases and HIV.
Although no barrier method is 100% effective, the correct and consistent use of condoms, used with condom-compatible lubricants, significantly reduces the risk of transmission of HIV and other sexually transmitted infections (STIs) and helps prevent unintended pregnancies (Source: *Condom Fact Sheet* ,CDC,April2015, URL https://www.usaid.gov/sites/default/files/documents/1864/condomfactsheet.pdf).
Laboratory tests show that male and female condoms are impervious to microorganisms as small as viruses. Male and female condoms have been shown to be very effective in preventing HIV. When used correctly and consistently, male condoms are estimated to be 90% effective in reducing HIV transmission. Female condoms can reduce HIV transmission by up to 94% when used correctly during every sexual encounter.

Male and female condoms are the only barrier methods that offer dual protection, meaning that both male and female condoms offer significant protection against HIV, other STIs, and unintended pregnancy. Studies show that male condoms have efficacy rates of about 87% when used consistently as the primary method of contraception. Female condoms have been shown to be up to 95% effective in preventing pregnancy (*Source Condom Fact Sheet, CDC, April 2015*).

Table 2. Rates of condom effectiveness in preventing pregnancy, HIV, and other STIs (Condom Fact Sheet, CDC, April 2015)

Method	HIV	Pregnancy	Other STIs
Male condom	98.5%	98%	66%-75%
Female condom	94%	95%	66%-75

The SABERS Gabon survey shows that there is still a lot of work to be done with regard to condom use among the FDSG. About half of the study participants (53.3%) reported always using condoms with their casual partner in the past 12 months (men = 55.0%, women = 46.3%; p = 0.01). Among participants who reported not using condoms with this casual partner in the past 12 months, the reasons were: both are HIV negative (25.7%), no one is sick (24.0%), one or both do not like to use condoms (22.9%), and condoms are not available (20.1%) (*Enquête Epidémiologique de Séroprévalence VIH et des Risques Comportementaux (SABERS), November 2018, Gabon)*.

HIV and STI testing and counseling

Screening for HIV and other STIs is strongly recommended for all individuals exposed to any of the risk factors. Individuals can

know their own infection status and access necessary prevention and treatment services without delay.

WHO also recommends offering testing to partners or couples. It also advocates for assisted partner notification approaches so that HIV-positive individuals can be supported to inform their partners, either by themselves or through health care providers.

TB screening, counseling and referral

Tuberculosis (TB) is the most common disease among people living with HIV. It is fatal if left undetected and untreated, and is the leading cause of death among people living with HIV, accounting for one-third of HIV-related deaths.

Early detection of tuberculosis and prompt referral to tuberculosis and antiretroviral treatment services can prevent a fatal outcome. TB screening should be offered routinely in HIV services, as should HIV screening for persons suspected or diagnosed with TB.

Patients diagnosed with HIV infection and active tuberculosis should be started on effective anti-tuberculosis treatment (including multidrug-resistant forms) and ART as a matter of urgency.

Elimination of mother-to-child transmission of HIV

Vertical transmission or mother-to-child transmission (MTCT) refers to the transmission of HIV from an HIV-positive mother to her child during pregnancy, labor, delivery or breastfeeding. In the absence of any intervention at these stages, transmission rates can range from 15-45% (Source: HIV/AIDS, WHO, July 2020, https://www.who.int/fr/news-room/fact-sheets/detail/hiv-aids).

MTCT can be almost completely prevented by giving both mother and child antiretrovirals as early as possible in pregnancy and during breastfeeding.
WHO recommends lifelong ART for all people living with HIV, regardless of CD4 count and clinical stage of disease, and this recommendation includes pregnant and lactating women.
In 2019, 82% of the estimated 1.3 million pregnant women living with HIV worldwide received ARV treatment to prevent transmission of the infection to their child *(Source: HIV/AIDS, WHO, July 2020, https://www.who.int/fr/news-room/fact- sheets/detail/hiv-aids).*
A growing number of countries and territories are achieving very low rates of MTCT, and some (Anguilla, Antigua and Barbuda, Armenia, Belarus, Bermuda, Cuba, Cayman Islands, Malaysia, Maldives, Montserrat, St. Kitts and Nevis, and Thailand) have formally validated the elimination of MTCT as a public health problem.
Several countries where HIV infections represent a heavy burden are also making progress toward elimination. In Gabon, the risk of mother-to-child transmission was reduced from 11% to 4% from 2013 to 2017.

The protocol for enrolling pregnant women on treatment (ART) to prevent them from transmitting HIV to their infants in utero is known as Prevention of Mother-to-Child Transmission (PMTCT).

Voluntary medical male circumcision

Male circumcision reduces the risk of heterosexual HIV infection for men by about 50% *(Source: HIV/AIDS, WHO, July 2020, https://www.who.int/fr/news- room/fact-sheets/detail/hiv-aids)*

In 2020, WHO updated its 2007 recommendation to maintain voluntary medical male circumcision as an additional prevention strategy among men aged 15 years and older. This is a key prevention intervention supported in 15 high HIV prevalence countries in eastern and southern Africa with low rates of male circumcision *(Ibid)*.

Voluntary medical male circumcision also reduces the risk of other sexually transmitted infections. By the end of 2019, 27 million adolescents and men in eastern and southern Africa had received a service package. More than 15 million voluntary medical male circumcisions were performed between 2016 and 2019. Services included in the package include education on safe sex and condom use, provision of HIV testing, management of sexually transmitted infections, including linkage to treatment as needed, and surgery. It is believed that circumcision provides a good link between men and adolescents and health services, which they rarely seek, and other services such as hypertension screening that are offered in some locations. *(Ibid)*.

It should be noted that this method of prevention already exists in Gabon in a cultural way because circumcision is done naturally in every family where a male child is born. At the same time, it is important that circumcision be performed in a medically safe manner to avoid any risk of infection of the incision site.

Strategic use of antiretrovirals for prevention

Evidence has highlighted the benefit of antiretroviral therapy for HIV prevention. In 2011, a scientific trial confirmed that if an HIV-positive person strictly follows an effective antiretroviral treatment regimen, the risk of transmitting the virus to an uninfected sexual partner is potentially reduced by 96%. This finding led the WHO to recommend offering ART in order to save lives and significantly reduce transmission.

Pre-exposure prophylaxis (PrEP) for the negative partner

Oral HIV PrEP involves the daily use of antiretroviral drugs by HIV-negative individuals to block HIV transmission. More than 10 randomized controlled trials have demonstrated the effectiveness of PrEP in reducing HIV transmission among various populations, including serodiscordant heterosexual couples (one partner infected and the other not), men who have sex with men, transgender women, high-risk heterosexual couples, and injection drug users.

WHO recommends PrEP as a prevention option for people at high risk of HIV infection, using a combination of prevention approaches. WHO has also extended these recommendations to HIV-negative women who are pregnant or breastfeeding.

PrEP is prescribed as a once-daily combination of **Tenofovir (TDF, 300mg), Lamivudine (3TC, 150mg) and Dolutegravir (DTG 50mg)** taken once daily on a **continuous basis until major risk of exposure is eliminated.**

In discordant couples, the HIV-negative partner should receive pre-exposure prophylaxis for a period of at least 6 months, during which time the HIV-positive partner should be placed on antiretroviral therapy and have an undetectable viral load.
The protection of pre-exposure prophylaxis becomes effective only after 5 to 7 days of continuous use in men and about 3 weeks in women. When PrEP is stopped, protection may still persist for 7 days, but then it can drop dramatically.

In Gabon, this strategy is used for serodiscordant couples.

HIV post-exposure prophylaxis (PEP) (This is covered in Module 8)

Post-exposure prophylaxis (PEP) involves taking ARVs within 72 hours of exposure to HIV to prevent infection. PEP includes counseling, first aid and HIV testing, and the administration of ARVs for 28 days with medical follow-up.

WHO recommends PEP for both occupational and non-occupational exposures and for both adults and children *(Source: HIV/AIDS, WHO, July 2020, https://www.who.int/fr/news-room/fact-sheets/detail/hiv-aids).*

Harm reduction for injection drug users

People who inject drugs can take precautions to avoid becoming infected with HIV by using sterile equipment, including needles and syringes, for every injection and by not sharing the same equipment and drug solutions when injecting. Addiction treatment, particularly opioid substitution therapy for people who are dependent on opioids, also helps reduce the risk of HIV transmission and promotes adherence to HIV treatment.

A comprehensive module of HIV prevention and treatment interventions for people who inject drugs includes:

- Needle and syringe programs;
- opioid substitution therapy for people who are dependent on opioids evidence-based substance abuse and other addiction treatments;
- HIV testing and counseling ;
- HIV treatment and care ;
- provision of information and education about risk reduction and provision of naloxone to prevent opioid overdose;
- access to condoms;

- and management of STIs, tuberculosis and viral hepatitis.

2.2 Identification of priority populations and vulnerable groups in the military context (15 minutes)(Source3)

Factors that make certain populations more vulnerable

Due to cultural, societal, legal, and religious practices and beliefs, changes in the political and social environment, and factors such as war and poverty, certain population groups are more susceptible to HIV infection. In the military context, vulnerability may also arise from the Gabonese military's involvement in peacekeeping in other African countries, particularly the Central African Republic.

The absence of pre-exposure prophylaxis and the low rate of post-exposure prophylaxis are also factors of vulnerability.

Priority populations and vulnerable groups

Although we do not have the results of a specific survey on this subject, we believe that the following groups identified as vulnerable in the general population are also vulnerable in the Gabonese military context:

- Children in the context of mother-to-child transmission;
- Young people in different environments (school, recreational and festive, associations);
- Women and girls;
- Populations at risk.

The SABERS survey shows that HIV prevalence differs by rank, with non-commissioned officers having the highest rate (2.6%), followed by non-commissioned officers (2.4%). HIV prevalence among officers is 0.8%. These elements must be taken into account in HIV prevention and management strategies among military personnel, their partners, and their families *(Enquête Epidémiologique de Séroprévalence VIH et des Risques Behavioraux (SABERS), November 2018, Gabon)*.

PREVENTION TO BE DEVELOPED AND DIVERSIFIED -- CONCLUSION AND RECOMMENDATIONS

In terms of prevention, much remains to be done: the figures from Eastern Europe and Central Asia are worrying, with new HIV infections having soared by 72% since 2010. They have also increased by 22% in the Middle East and North Africa and by 21% in Latin America.

Overall, the world has fallen far behind in preventing new HIV infections and 1.7 million people have been infected with HIV, more than three times the global target. WHO estimates that approximately 62% of new HIV infections occur in populations at risk and their sexual partners, such as gay men and other men who have sex with men, sex workers, men who have sex with men, and other vulnerable populations.

drug users and the incarcerated population *(Source: HIV.org, July 2020, https://vih.org//objectifs-2020-de-l'onusida-a-failure-increased-by-the-covid-19).*

While condoms are still essential for prevention, other tools are now available for combined or diversified prevention, including screening and biomedical prevention. This diversity is a real asset in the fight against HIV. However, it is not sufficiently adapted to the different audiences, in particular to people most at risk of HIV, who remain poorly informed about the available services. Information campaigns and the involvement of the national education system in improving knowledge of HIV/AIDS among young people are also insufficient.

DAY 1 MODULE 3. ORGANIZATION AND PRINCIPLES OF HIV CARE

The trainer defines and presents the principles of comprehensive HIV care. It is best to use slides that draw on the various resource documents provided (the basics are below). It is especially important that any information presented comes from national and international sources (such as WHO). The organization of this care in Gabon should also be shown.

This module answers the following questions:

- What is Comprehensive HIV Care?
- What are the necessary means for a global quality ECP?
- How is the medical, social and psychological care of PLWHIV organized at the Gabon ?
- Which CEP in the military context in Gabon?

Allow time for questions and discussion of each slide. It is important to motivate participants to ask questions if they are unsure.

3.1 Definition and principles of comprehensive care (10 minutes)

Definition

The global care is a medical, psychological, social and nutritional care, which takes into account all the problems of the patient in order to bring him back to a normal family, social and professional life.
It aims to:

- To ensure that all patients concerned receive adequate care;
- Reduce mortality and morbidity due to HIV/AIDS;
- Improve the quality of life of the patients concerned;
- Promote prevention among both the uninfected and the infected living with HIV.

Despite significant efforts in the care of PLHIV, major challenges remain. According to WHO, the majority of people living with HIV in low- and middle-income countries are unaware of their status, and many of those who come for testing and treatment present too late. ART coverage is inadequate in several regions, and gaps remain, particularly among pregnant women, children, and certain key populations.

In sub-Saharan Africa and South Asia, the number of new infections between partners of serodiscordant couples is increasing. HIV prevalence remains high in key populations. These populations face significant barriers to accessing prevention and treatment services, ranging from human rights violations to stigma and discrimination. Therefore, in addition to strengthening the testing system, the organization of care must take into account these differences in care and the changes that have occurred in the epidemic in recent years.

Strengthening the management of co-morbidities (Source 10)

Only a comprehensive and personalized approach to PLWHIV will make it possible to accurately identify the person's needs and to set up a care program likely to improve living conditions and effectively combat the risk factors for morbidity and mortality.

The life expectancy of people living with HIV (PLHIV) on treatment with a viral load < 50 copies/mL and CD4 > 500/mm3 is now close to that of the general population on all continents (*Source: Wanderer G, Johnson LF, Egger M. Trends in life expectancy of HIV-positive adults on antiretroviral therapy across the globe: comparisons with general population. Curr opin HIV AIDS 2016; 11: 492-500).* In a study published in 2014, conducted in the United Kingdom *(Source: May M, Gompels M, Delpech V et al. Impact on life expectancy of HIV-1 positive individuals of CD4+ cell count and viral load response to antiretroviral therapy. AIDS 2014; 28: 1193-202),* a 35-year-old PLHIV starting her first ARV treatment had an estimated life expectancy up to about 77 years, equivalent to that of the general population, provided she started treatment at more than 200 CD4 cells and obtained a good therapeutic response.

In a Swiss cohort study *(Source: Gueler A, Moser A, Calmy A et al. Life expectancy in HIV-positive persons in Switzerland: matched comparison with general population. AIDS 2017; 31: 427-36),* life expectancy for a 20-year-old person increased from 11.8 years on monotherapies to 54.9 years in the most recent period. Life expectancy is similar among PLWHA with high education levels

compared to people in the general population with a high school education, but it is still about 5 years shorter than people in the general population with a high level of education.
It is therefore important, in addition to consolidating medical care for HIV infection, to be vigilant about the management of co-morbidities.

Optimizing psychological and social support for vulnerable patients (Source 10)

In many studies, the proportion of people with psychosocial difficulties among PLHIV is more frequent than in the general population. In France, in the VESPA2 survey *(Source: Lert F, Anenquin M, Tron L et al. Situation socioéconomique des personnes vivant avec le VIH suivies à l'hôpital en France métropolitaine en 2011. First results of the ANRSVespa2 survey. BEH 2013: 26-27. 293-9),* the socioeconomic conditions of PLHIV deteriorated between 2003 and 2011, particularly among patients of foreign origin with a decrease in the employment rate. Nearly 13% of PLWH report a major depressive episode in the year, a higher rate than that observed with the same measurement instrument in the general population (5% to 8% depending on the study). This translates into a higher rate of suicide among PLHIV (18.6/1000 person-years) compared to the general population (8.5/1000 person-years) as reported in a Canadian study *(12. Samji H, Zhang W, Eyawo O et al. Rates and predictors of injury in a population-based cohort of people living with HIV. AIDS 2017; 31: 295-304).*

This calls for a multidisciplinary approach, the reinforcement of therapeutic patient education (TPE) structures and the possibility of psychological and social care in the centers and associations taking care of PLWHA. It is facilitated by teams in charge of counseling, support, follow-up and compliance, both within the care structures and in the communities. The involvement of families and PLWHA is an essential element in psychosocial care.

Diversification of the care offer (Source 10)

In the active files of PLWHA in 2016, the population profiles can be very different depending on how long ago the infection was diagnosed. The VESPA2 survey *(Source: Bonnet F, Le Marec F, Leleux O, et al. Characteristics evolution of people living with HIV and their comorbidities in the ANRS CO3 Aquitaine cohort, 2004-2014. 17eme JNI, 7-9 June 2016, Poster VIH25)* shows these groups of patients: 40.7% diagnosed before 1996, 24.6% between 1996 and 2002 and 34.7% between 2003 and 2011. Management must be adapted to meet the different needs of these patients: the first infected patients whose health status has been strongly impacted by profound immunodepression, heavy treatments with adverse effects and comorbidities; and the more recently infected PLWHIV, treated earlier with simpler treatments and less likely to cause adverse effects.

The health care system must take this heterogeneity into account in order to innovate in terms of the management of this chronic disease that HIV infection has become. It is necessary to propose

different types of care, depending on the patient's autonomy and choices, allowing for an adapted care pathway, and to identify complex situations, by stimulating an ambulatory offer of specialized care for HIV.
This implies the definition of a care pathway with the aim of achieving greater efficiency through personalized and coordinated patient follow-up and support, and the provision of various professional actors to facilitate coordinated city/hospital care. The shared hospital and city care offer, based on a framework of multidisciplinary cooperation, must have guidelines for practices that can be used throughout the country and by all health professionals.

This diversification of care must be equitable throughout the country and aim to improve the quality of care.

3.2 Practical organization of care and treatment (10 minutes)

Framework of care and appropriate treatment

The proper functioning of the PEC of PLWHIV requires the establishment of a care framework conducive to good medical and psychosocial management.

- Suitable premises in which patient confidentiality can be assured;
- A multidisciplinary team available, in sufficient number and trained in the management of HIV disease management, as well as the management of patients with HIV disease;
- An efficient and decentralized technical platform.
- The presence of the necessary drugs with the organization of a circuit supply and distribution system capable of ensuring uninterrupted treatment of patients.

Multidisciplinary and committed care team

It must be multidisciplinary, based on the intervention of several professionals with complementary skills to cover the different needs of the patient. Within the same service, the care team should be made up of members of the health care staff, reinforced by the presence of people from the community or associations (doctors, nurses, midwives, psychologists, pharmacists, biologists, nutritionists, social workers, associative mediators and PLWHA networks).

Depending on the pathology presented, care may be provided by services of different specialties that must work in complementarity with the core team and participate in meetings to review the patients.
The ground rules that govern the care team are:

- Trust;
- Respect for confidentiality;
- The shared secret;
- Non-stigmatization.

All of these structures must be complemented by a mechanism to ensure continuity of care by working on the interface between the care structure and the "outside", with the informed consent of the patient.

Continuum of care and home care

The ECP must ensure continuity of care within and outside the health facility. This continuity requires the participation of the associative, community and private sectors in ECP, which are capable of providing comprehensive care in the home. They must work under the supervision of the core team, with whom they must develop management programs. These involve regularly scheduled visits with clinical and support staff, based on a predetermined schedule. They should take into account patient information provided by the core service.

Home-based care requires the involvement of the community and voluntary sector, which must be trained in the practice of certain care when necessary.

3.3 Organization of PLWHIV care in Gabon (15 minutes)(Source 6)

At this point, the trainer reports on the general organization of care for PLWH in Gabon. It is appropriate to use slides that are based on *the Guide de Prise en Charge des Personnes Vivant avec le VIH et le Sida au Gabon.*

National coordination of care for PLWHIV

It is carried out by the National Program for the Control of Sexually Transmitted Infections and AIDS (PNLIST/AIDS). This program is attached to the General Directorate of Health and is coordinated by a director, assisted by heads of thematic services.

The roles of the NACTP/AIDS are to:

- Define national HIV/AIDS and STI policy and guidelines;
- Define national targets for comprehensive care for PLHIV and plan for the operational steps for its implementation;
- Coordinate comprehensive care activities for PLHIV with those of other services and programs of the Ministry of Health (General Directorate of Prevention AIDS, the National Pharmaceutical Office, the National Public Health Laboratory, the National Tuberculosis Control Program, the National Directorate of Maternal and Child Health, etc.), other Ministries (National Defense, Higher Education and National Education, Popular Education, Interior, etc.),NGOs/Associations involved in the care of PLWHA, and Cooperation Agencies (WHO, UNICEF, UNAIDS, RED CROSS, WORLD FUND, AFD, UNFPA, Japanese Cooperation, UNDP, etc.);
- Acquire and distribute the resources needed to care for PLHIV, by drugs, laboratory materials and equipment, equipment and supplies, and necessary for nutritional support, various management tools, etc;
- Train and supervise staff involved in the care of PLHIV;
- Train and supervise the community relays involved in the management of PHAS;
- Mobilizing resources for the care of PLHIV ;

- Evaluate the comprehensive care program for PHAs.

Figure 2: Functional organization chart of HIV/AIDS treatment in Gabon

The structures of PEC of the PLWHIV

Care for PLWHA is almost exclusively provided in Outpatient Treatment Centers (OTC) and in the medical departments of certain hospitals. The country currently has 10 ATCs (2 in Libreville, the administrative capital, and 1 in each of the 8 provincial capitals) and 16 referral services for PLWHA (public, semi-public and private), i.e. a total of 26 care facilities (including the Omar Bongo Ondimba Armed Forces Training Hospital).

These structures are located at two levels of the health pyramid: the central level (Libreville) and the intermediate level (regional). The peripheral levels (departmental and community), as well as the private sector, are still poorly covered for the care of PLWHA according to the guidelines of the PNLIST/SIDA. A program to integrate care at all levels of the health pyramid is underway.

The care offered in these facilities for PLWHA consists of counseling, screening, medical follow-up, dispensing of antiretroviral drugs, psychosocial and nutritional support, biological follow-up and community support.

The structures for the care of PLWHA are directed by a doctor, supported by a multidisciplinary team composed of other doctors (in some centers), a psychologist, a social worker, laboratory technicians, nurses, a technical assistant from the pharmacy, a manager, a secretary, a driver, a guard, and

surface technicians and community agents (mediators, volunteers, etc.). Human and material resources are still unevenly distributed among the various care centers/services.

Structures involved in HIV testing

Regarding testing, 106 facilities (public, private, community) offer counseling and testing services (anonymous or provider-initiated) throughout the country.

The screening algorithm recommended by the program is the use of three rapid tests: Alere Combo and Determine (more sensitive test) as first-line tests, followed by Bispot (more specific test) for confirmation of the diagnosis and discrimination (see Guide du conseil et dépistage au Gabon).

More elaborate screening tests (Elisa, Westernblot), early detection by PCR and quality control are performed by more equipped laboratories, both public (National Public Health Laboratory, National Blood Transfusion Center and Microbiology Laboratory of the Faculty of Medicine) and private (Medical Research Unit of the Albert Schweitzer Hospital in Lambaréné, International Medical Research Center in Franceville).

3.4 Overview of the situation of the care of PLWHA in the FDSG structures in Libreville in 2019 (10 minutes)

Make a presentation on the Military AIDS Program

At the military level, the reference structure for the care of PLWHIV is located at the Hospital for the Instructions of the Armed Forces Omar Bongo Ondimba (HIAOBO). This center, which officially started its medical care activities for PLWHA in January 2009, has a multidisciplinary, trained and qualified staff and a high-performance technical platform. Indeed, the recent partnership developed with the International Medical Research Center of Franceville has made it possible to perform ARV resistance genotyping. HIAOBO was already performing HIV viral load.

In addition to HIAOBO, the Directorate General of Military Health has recently opened a second hospital: the Hospital for the Instructions of the Armed Forces in Akanda (HIAA), where comprehensive care for PLWHA is still in its infancy. Access to ARVs is still limited. It also offers great prospects with a good care environment, many medical specialties and a multidisciplinary and qualified staff.

The military health centers and garrison infirmaries complete this system. A situational analysis mission of these facilities in 2019, before the start of the DHAPP project's activities, showed that comprehensive care for PLHIV was almost non-existent, with services often limited to counseling and, in some cases, testing as part of PMTCT.

Plenary discussion (10 min): With reference to the organization of comprehensive care for PLHIV in Gabon, the facilitator should lead a plenary discussion on the theme of the UNAIDS 3-pronged universal access goal. The discussion will focus on the following question: "With the current comprehensive care and support system for PLHIV, how close is Gabon to achieving the goal of 90% of people living with HIV knowing their status, 90% of those tested being on ART, and 90% of those on ART having an undetectable viral load?" ....

Conclude the discussion with a set of ideas on how to expand access to HIV testing, care, and antiretroviral treatment.

DAY 1 MODULE 4. PSYCHOLOGICAL CARE AND SOCIAL SUPPORT

The trainer presents the importance of psychosocial care. This module helps answer the following questions: Why should psychosocial care and support be part of comprehensive care for PLWHA? What are the main activities of psychosocial care?

This section is based on Sources 6 and 12.

4.1 Reasons for providing psychological and social support to PLWHA

HIV/AIDS is a medically complex chronic condition with many psychological and socio-economic repercussions on the individual and his family. It is a disease that attacks different aspects of human life. The announcement of the diagnosis of HIV/AIDS is followed by psychological and social upheavals that require psychosocial support taking into account the needs and problems of the infected person at different stages of the disease. The aim is to help them manage their illness, their treatment and its consequences.

Table 3. Reasons for psychological and social support

HIV/AIDS affects the different dimensions of the life of the person and his or her entourage	Somatic (physical): body degradation and other physical signs; Psychological: emotional shock, loss of self-esteem, denial, withdrawal and any other related emotional signs; Social/family: rejection, shame, exclusion, discrimination, stigmatization etc. Spiritual, cultural, mystico-religious beliefs.
Addressing HIV/AIDS-related stigma and discrimination	Counseling and social support contribute greatly to the reduction of stigma and discrimination that can be inflicted on people living with HIV/AIDS. This contributes, among other things, to changing the community's perception of HIV/AIDS and reducing the self-stigma that may be experienced by people living with HIV/AIDS. disease.

Ensuring good adherence to antiretroviral therapy and to other treatments	The success of antiretroviral therapy is the result of good adherence to treatment. Psychosocial support is a major pillar for adherence as it consists of eliminating negative factors for adherence to antiretroviral therapy and other drug treatments. Counseling and social support help the patient and his or her caregivers to cope with the various problems related to HIV/AIDS at different stages of the infection and thus improve the quality of life of those infected and/or affected.

Moreover, support must be adapted to each person, particularly by taking into account the specificities of certain situations (serodiscordant couples, women, management of the desire for a child, prisoners, men who have sex with men, etc.). It must also be done within the framework of a continuum of care that allows the person to be cared for both in and out of the health care setting.

Psychosocial care and support means the continuity of support to address the psychological, social and spiritual issues of people living with HIV/AIDS, their partners, families and caregivers. This care goes beyond physical needs. It focuses on the emotional needs of people infected and/or affected by HIV and their needs for social interaction and integration.

Psychosocial care could be seen as a combination of psychological knowledge and social action in a community/anthropological context. There are thus three actions to be carried out in interaction for a person (or a group of people).

4.2 Qualities required for psychological care

Respect for confidentiality

Strict confidentiality of HIV status is an essential element of a trusting relationship with patients. In general, any transmission of information to family and friends must have the consent of the person concerned.

Empathy

Empathy consists in understanding what the person is feeling without feeling the same emotions. It requires a distance on the part of the coach that allows him/her to remain professional, objective and efficient.

Pitfalls to avoid:

- to bring into the relationship one's own references and values;
- from empathy to sympathy or pity;
- to fall into a charitable and compassionate attitude, in a context of strong marked by religious values.

Self-control

Self-control is about understanding the reactions of people living with HIV and their loved ones, both negative and positive, while controlling one's own reactions.

It is essential even if the person refuses to cooperate or shows resistance or hostility. It reassures the persons accompanied and facilitates the establishment of a relationship of trust.

Neutrality and tolerance

The provider shall:

- be open-minded, able to overcome their own prejudices and stereotypes;
- refrain from judging (positively or negatively) the persons accompanied, whatever the their tradition, religion, beliefs, lifestyle or orientation sexual ;
- not to replace the religious guide.

If the person is assured that the caregiver is non-judgmental about their present life and past, it will be easier to express itself.

Ability to build confidence

In order to create a trusting relationship, the coach must:

- Strive for sincere and truthful dialogue;
- practice active listening so that the person perceives the attention that is being paid to them.

Clarity and precision

As the point of contact on HIV, the coach should:

- to master perfectly the knowledge on the subject;
- be able to provide simple and understandable explanations.

If the provider is unsure of any information, they should not hesitate to tell the person accompanied and to direct them, if necessary, to the appropriate interveners.

Ability to work in a team

In order to meet the needs of HIV-positive people and their families, psychological support requires a network approach, as part of a continuum of care and skills. Teamwork involves:

- be able to work with other providers, especially in a interdisciplinary, whether within an organization or institution, or in liaison with other organizations and institutions;
- to have the reflex to refer the persons concerned, with their agreement, to other persons and structures, when necessary.

Commitment

Any caregiver involved with people living with HIV must be aware of the physical, emotional and psychological commitment that is essential to their work. Their commitment must be part of an ongoing process, inevitably punctuated by periods of strength during difficult times.

Knowing your limits

Knowing one's limits is essential for the caregiver to know how to ask for technical or possibly psychological help in a difficult situation.

4.3 HIV Counseling and Testing

Here, the trainer shows slides explaining the 2 important steps involved in getting tested. Now that the participants have learned about HIV testing techniques, they need to know, first, how to get people to voluntarily get tested and, second, what to do with the test results. The important questions are: How do you create interest in HIV testing? How do you get people to come in and get their results? What should they do with the test results? With positive results, but also what should they do with negative results?

Definition

According to WHO, "HIV/AIDS counseling is a confidential dialogue between a client and a service provider to enable the client to cope with stress and make personal decisions about HIV/AIDS. Counseling includes assessing personal risk of HIV transmission and facilitating the adoption of preventive behaviors.

Importance and basic principles

Sincere motivation is essential. However, this commitment must have limits, including the need to keep one's professional life separate from one's private life.

- Counseling is an integral part of the HIV testing process.
- Counseling should be conducted by a person trained in interviewing and HIV/AIDS.
- Counseling requires confidentiality and informed consent:
  - confidentiality is a duty and its violation violates the principle This principle is valid between colleagues and with any other person;
  - Informed consent means that the person freely agrees to be tested after receiving all the necessary information about HIV infection and the implications of testing.
- Counseling consists of 3 stages: pre-test counseling, post-test counseling and a follow-up after screening regardless of HIV status. To all the steps :
  - psychological support is essential;
  - The communication set up must take into account the fact that the person is a special case, with specific difficulties and needs;
  - the counsellor must be able to address sensitive topics, such as sexual p to account the emotional reactions and socio-cultural characteristics of the person.

Pre-test counseling

Pre-test counseling is designed to prepare the person for HIV testing. Well-conducted pre-test counseling makes it easier to tell the test result.

To begin, the counsellor introduces himself, explains his role and reassures the person that confidentiality will be respected. This first contact is very important in order to foster the helping relationship that will follow.

After the initial contact, the counselor discusses HIV and the benefits of testing or not testing with the person. To structure the discussion, the counselor should address the following points in sequence (see also Table 3):

- the person's knowledge of HIV/AIDS ;
- the person's risk of having been exposed to HIV and the possibility of a possible risk reduction;
- the significance of HIV serology tests;
- the implications of the screening result on the person's life;
- the person's ability to cope with being HIV-positive and its consequences ;
- the person's informed consent to the test;
- possibly, the topic of contraception in women.

Table 4. Pre-test counseling steps

STEPS	CONTENTS
KNOWLEDGE TEST AND CORRECTING MISUNDERSTANDINGS	Introduce the topic and then explore knowledge on the following topics, supplementing information as necessary • Basic knowledge of HIV (modes of transmission and contributing factors, prevention, treatment, etc.) • Beliefs and prejudices about HIV • Reasons for requesting a test • Knowledge about the test • Expected attitude towards the result (negative or positive) • How is the person affected by HIV/AIDS? • Specific behaviors or symptoms of the person • Expectations of the screening or care facility
ASSESSMENT OF INDIVIDUAL RISKS WITH REGARD TO HIV INFECTION WHILE RESPECTING THE PATIENT'S PRIVACY (WHICH MUST REMAIN A PRIORITY OVER KNOWLEDGE OF THE INFORMATION)	Tactfully learn about sexual partners and risk behaviors: number of partners, types of partners, frequency of partner changes, unprotected sex, blood transfusions, contact with soiled objects, drug and alcohol abuse, etc. • Assess emotional, interpersonal, social and economic resources • If applicable, determine if the person understands the importance of changing their behaviour
DEVELOP A RISK REDUCTION PLAN BASED ON THE INFORMATION GATHERED IN STEP PREVIOUS	• Helping to list possible actions to reduce the risk of contracting or transmitting HIV, to propose a personalized risk reduction plan

STEPS	CONTENTS
EXPLAIN THE SIGNIFICANCE OF THE TEST RESULT AND EVALUATE ITS IMPLICATIONS	If negative: HIV antibodies were not detected • Explain to the person that he or she is not infected with HIV, or that he or she may be seroconverting if recent high-risk contact has taken place (in this case, advise the person to be tested again three months later, reminding him or her of the need to avoid exposure to high-risk situations) • Remember that negative serology does not mean immunity to HIV If positive: HIV antibodies have been detected • Explain to the person that he or she is infected with HIV and that he

	or she

	can transmit the virus in case of risky behaviors • In asymptomatic or minimally symptomatic persons, explain that a positive serology does not mean AIDS • Explain that medical management offering the possibility of a normal life is possible, whatever the stage of the disease; this management must be all the more rapid as there are symptoms In case of a test with an undetermined result: the presence or absence of HIV antibodies cannot be determined • Explain that another test must be performed • After explaining the possible results of the test, ask about the consequences they could have on the person's life, on family, relationships, work, etc.
OBTAIN INFORMED CONSENT	• Ensure that the person understands the meaning and implications of the screening test. • Ensure that the person agrees to be tested with an understanding of what it means and what it entails. • After obtaining informed consent, write the order for the blood test.

Post-test counseling

Post-test counseling is the interview in which the result of the HIV test (positive, negative, or undetermined) is made known to the person who had it done:

- if the person is willing and psychologically ready, the result must be given to him/her directly announced;
- during the interview, the announcement should not be too long because, in most cases, people are impatient to know their result;
- a result of any kind should never be given to anyone other than the (except in the presence and with the consent of the person concerned).

To begin the interview, the counselor:

- welcomes the person ;
- discusses with her the wait for the test result and congratulates her for waiting and being revenue ;
- asks if she has any questions or points to clarify.

When the person is ready, the counselor announces the test result in a neutral tone:

- If the result is negative, say for example: "Your test result is negative, which means that antibodies against HIV were not detected in your blood;
- in case of a positive result, the announcement can be introduced by recalling the evaluation of the HIV risk mentioned in the pre-test, before saying: "The result of your test is positive, which means you are infected with HIV";
- In the case of an indeterminate result, say, after a brief review of the discussion points covered during pre-test counseling: "The presence or absence of HIV in your blood cannot be determined and another test must be performed.

After the announcement of the test result, the counsellor should always wait for the person's reaction before continuing the interview, so that he or she can adapt his or her attitude as best as possible. This applies primarily to the announcement of a positive result, but also to the announcement of a negative result.

(which can cause so much anxiety), and sometimes even a negative result (for example, if the person has an HIV-positive partner and doubts the accuracy of the result).

After the announcement phase, the interview continues in a different way depending on the outcome:

Table 5. Post-test counseling

Test result	
HIV-negative result	Possibility of being in the seroconversion phase with the need for a control test 3 months after the last exposure to the risk; Means of preventing HIV infection and the importance of condom use (with a possible review of the risk-reduction plan discussed during pre-test counseling), reminding the client that a negative result does not mean that he or she is protected from HIV (even in a serodiscordant couple); Notion of serodiscordant, notification of the partner and the partner's decision to be tested.
HIV-positive result	Determine what information is best suited to the particular needs of the person (whose ability to pay attention to explanations is limited after being told he or she is HIV-positive) and emphasize the elements that can reassure him or her; Explain the significance of the result; Remind people that, with proper medical care, a normal long-term life is possible; Addressing the issue of transmission prevention (condom) and its implications; In the case of pregnancy, emphasize that prompt management and initiation of ARV treatment can prevent infection of the unborn child. In women of childbearing age, indicate that subsequent pregnancies can be achieved without risk to the partner and without significant risk to the unborn child, provided that proper medical follow-up and prevention counseling are provided; Address the issue of psychological and social care; Conclude by suggesting a referral to a medical, psychological and social care structure.
Indeterminate HIV result	Organize the realization of the control test (by a test different from the first one, see above), as soon as possible and in the best conditions (if necessary, in another structure); Set up psychological care, just like after the announcement of an HIV positive status.

Follow-up beyond the announcement of the test result

People who test negative for HIV should be supported in adopting a life plan to avoid the risk of infection.
People who test positive for HIV must receive the necessary psychological support and be referred to a care structure that allows for the implementation of adequate care.

Special case of couple's counselling

When counseling a couple, there are several steps that must be taken separately with each partner:
– obtaining consent to participate in interviews;
– assessment of risk of acquiring HIV infection during pre-test counseling (each person should be free to assess his or her own risk);
– Announcement of test results during post-test counseling, unless both partners have expressed a desire to receive their results together and provided that they have done so freely.
After the results are announced, the couple's partners, if they wish, can be seen together for further post-test counseling.
After the announcement of the results, 3 situations are possible, each of which is the subject of different advice
:

Table 6. Special case of the couple

SITUATION	CONTENT OF THE SESSION
Case of the concordant HIV-negative couple	Review the risk-reduction plan developed during pretest counseling, emphasizing to the couple ways to maintain lower-risk behaviors and protect their health; Explain the concept of a seroconversion period and the need to test within 3 months of the last risk exposure.
Case of the concordant HIV-positive couple	Knowing how to deal with the psychological reactions of both partners, making sure to give each of them an individual interview and to make the necessary arrangements for a rapprochement; Taking specific time to discuss the woman's point of view, which helps to clear up misunderstandings within the couple and helps to reduce the risk of violent reactions against her; Helping partners to identify solutions that allow them to maintain their understanding and to take care of themselves medically; Since superinfection is a possible event, but its consequences within couples seem minimal, condom use within couples is not essential apart from use for contraception.
Case of the serodiscordant couple	Helping partners overcome tensions and emotions: the HIV-negative partner must be able to accept and support his or her spouse, the HIV-positive partner must be encouraged to live as positively as possible; Discuss a long-term risk reduction plan to protect the HIV-negative partner from becoming infected; Explain the concept of seroconversion and the possibility that the HIV-negative partner may have had contaminating sex in the previous 3 months, and encourage the HIV-negative partner to be tested 3 months after the last unprotected sex; Emphasize the importance of condom use, especially if the infected partner is not treated; Explain the possibility of post-exposure treatment and the need for a follow-up HIV test in case of unprotected sex or condom breakage.

Areas requiring special psychological support for HIV-positive couples

- Communication within the couple.
- Communication with the extended family.
- Communication with children.
- Reconciliation.
- Anger management.
- Learning to forgive.
- The future of children.

Special case of child counselling

In the majority of cases, HIV testing in children follows clinical manifestations suggestive of immune deficiency, the discovery of HIV status in the mother, or rape.
Counselling will almost always involve the child, but also the child's parents or guardians.
In the event that the child is HIV-positive and the parents are HIV-negative, psychological support for the parents may be necessary to avoid a rejection reaction.

Special case of adolescent counselling

For adolescent minors, it is not legal to conduct testing without parental/legal guardian consent. The counselor should encourage the minor to obtain parental permission.
If the child comes to counseling with his or her parents, there should be time for one-on-one time with the child so that he or she can express him or herself freely, especially on the issue of sexuality.

4.4 Therapeutic education (ETP)

Here the trainer discusses the topic of therapeutic education (TPE). The questions asked are: What is TPE? How do we go about it?

What are we talking about?

The ETP is a learning process aiming at the acquisition, by the patient, of competences allowing him to :

- understanding your illness and treatment;
- take active responsibility for their own illness, care and prevention of illness transmission, in cooperation with the caregivers ;
- improve compliance with medication;
- live as healthily as possible;
- maintain or improve its quality of life.

How do I go about it?

Because of its complexity, TVE is conceived according to a systemic approach that involves 5 interactive and complementary steps:

The educational diagnosis

It allows the identification of the patient's needs in order to propose a personalized education. It aims to assess the patient's needs and resources while considering his or her project in order to negotiate personalized skills and learning objectives with him or her.

It is developed during one or more individual interviews conducted by different professionals (caregivers/educators) with the support of an interview guide. The interview guide consists of open-ended or alternative questions exploring different dimensions.
The use of open-ended questions is useful because it gives the patient time to reflect on his or her own situation, to make connections between events in his or her life, to perceive what he or she already knows about his or her illness, and to express his or her experience (e.g., How did you do it, what do you want to do? Which way are you going....)
Alternative questions indicate a willingness to help the patient express themselves and offer several possible directions. Example: Would you prefer that I read or read it yourself?

The interview guide is organized around 5 main questions:

Table 7. Questioning of the interview guide

What's wrong with it? (bioclinical dimension)	Review the information available in the patient's medical record.
What do they know about his disease? (cognitive dimension)	Update the patient's "prior" knowledge and representations of his or her illness. For example, what do they know about their illness, its severity, its evolution, its chronic nature, how have they tried to solve health problems that have arisen since their illness, what is their perception of illnesses opportunistic infections and treatments.
Who is he/she ? (psycho-affective dimension)	Take an interest in their acceptance of their illness (resignation, denial, acceptance), their experience of the illness, their emotions, their experience of the announcement of their illness, their self-image, their health behaviour (recourse to alternative medicine for example)
What does he (she) do? (socio-professional dimension)	Explore the family and friends situation, the support he can find from his entourage, his social and community life, his activities, his financial resources, his reading and writing skills, his beliefs
What is his project?	Help the patient identify a project to be carried out in the short term. The professional (caregiver/educator) will be able to rely on this project to reinforce the patient's motivation to learn and to self-care.

To establish an educational diagnosis, a synthesis of the information collected by all the professionals must be carried out. It will make it possible to answer the following questions:

- What are the supporting factors and obstacles, i.e. the patient's potential to learn and which will encourage him to use his skills?
- what must the patient learn (or relearn) to meet his or her specific demands and needs?
- what is his project?

The summary of the educational diagnosis will enable the team to develop hypotheses about the patient's needs and propose a personalized educational program. It is desirable that the summary of the educational diagnosis be the result of teamwork.

The education contract

It is negotiated with the patient and specifies the competencies he or she

must acquire. What is a competency?
According to many authors, competence is "knowing how to act in a situation". A skill is composed of a set of interrelated knowledge that can be broken down into theoretical knowledge, practical knowledge and behavioural skills. In the context of TVE, in order to be accessible to the patient and assessable, the knowledge constituting the competencies will be expressed in terms of educational objectives.
Example: Competence: solve a problem in daily therapy, disease management and prevention.

Teaching objectives: to be able to ...
- adjusting medication schedules in exceptional circumstances;
- Identify a risky situation and adopt an appropriate behaviour;
- solve the difficulties of taking medication related to its environment;
- apply a condom;
- etc...

In order to manage their illness in their daily lives, patients must acquire a set of skills known as self-care skills (understanding, explaining their illness, practicing what they do, etc.) and skills for adapting to their illness (expressing their emotions, managing their stress, etc.).

Implementing educational sessions;

How to help the patient learn?

In order to help the patient learn and enable him/her to acquire the necessary skills, it is important to consider 4 main principles:
- Supporting motivation to learn by offering activities that the patient perceives as accessible (I can do it) and useful (I can use it);
- soliciting the patient's knowledge and experience, valuing them through positive feedback;
- to rely on what is expressed to adapt the complementary and useful knowledge to be brought to the patient to enable him to act in his daily life;
- propose to the patient concrete situations to solve, close to his life context to train him to mobilize his new knowledge and to feel able to apply them;
- Vary the learning activities to use several communication channels (cognitive, visual, auditory, physical).

How to conduct a TVE session?

Whether the TVE session is group or individual, the following steps are essential:

Table 8. Steps of the TPE session

STEPS	CONTENT S
Preparation	- choose a location that allows for confidentiality;

	– Organize the space according to the activity to be performed; – check that the teaching material is present.
Beginning of a TVE session	– Make the patient comfortable; – introduce themselves (patient and caregiver/educator); – recall the educational objective(s) (usefulness for the patient) in reference to the educational diagnosis and the patient contract; – explain the course of the session and its duration (availability of the patient).
Course of the session	– question the patient's previous knowledge and experience (the patient reflects, questions, finds meaning...); – adjust, take over, complete, enrich the patient's knowledge and experience (the caregiver/educator adjusts to the patient's understanding); – to propose varied and relevant activities with regard to the educational objectives (picture book support, study of a problem situation, observation of a gesture, etc.); – ensure the patient's understanding throughout the session.

The evaluation of the skills acquired by the patient;

The implementation of a follow-up.

What facilitates the implementation of TVE?

Beyond the biomedical resources necessary for patient care, in order for TVE activities to be set up and sustained, it is important to think about the material conditions and quality criteria for TVE.

Prerequisites for the implementation of TVE : Large caseloads require the integration of FTE into care to:

- to have a room and spaces for group and individual TVE with office and pedagogical equipment available to professionals (caregivers/educators);
- to reflect as a team on the integration of TVE into the patient's care circuit;
- determine, as a team, the inclusion criteria for the patients

4.5 Adherence consultations

Compliance is the degree of agreement between an individual's behavior and medical recommendations and plays a major role in therapeutic effectiveness.

Compliance with treatment takes place over time. It is subject not only to the patient's adherence, which is in turn conditioned by the belief in its effectiveness and the ability to cope with the various psycho-social changes, but also to certain factors that can influence it. These factors may be related to:

- the patient (determination, confidence in the effectiveness of ART, lifestyle, socio-cultural context, etc.);
- the treatment regimen (number of tablets and doses, drug interactions, adverse effects);

- to the caregiver/caregiver relationship;
- the experience of HIV infection (patient status).

All of these factors should be explored by the health worker to minimize the risk of non-compliance. Thus, after the initiation of treatment, it is important to provide support to the patient in order to assess tolerance and reinforce compliance:

- D15, M1, M3, M6 and at each ARV renewal (if possible);
- At any time in case of: patient request, compliance problems, treatment failure, modification of ARV treatment, desire for pregnancy, difficulties of any kind (psychological, social, economic, legal, etc.).

To do this, adherence support should include the following:

- Ensure that the patient has accepted their HIV status;
- Evaluate compliance success by monitoring the intake plan;
- Review the treatment plan with the patient;
- Review the recommendations for the treatment regimen with the patient;
- Helping to formalize strategies so that the patient solves his problems;
- Discuss any changes to the treatment plan and how to address compliance issues (if any);
- Helping the patient choose a compliance tool;
- Plan for follow-up or referral (subsequent VAD, scheduled medical visit, etc.).

Some tools to help with compliance:

- Pill box,
- Electronic tools (pager, telephone),
- Adherence buddy (partner, child, sister, other family member),
- Medication journal,
- Support group,
- Scorecard.

4.6 Group therapy or discussion groups

A discussion group is a psychotherapy practice that brings together several people, patients, members of a staff, generally around a predefined theme and in order to allow the open expression of feelings, emotions, conflicts, suffering and possibly reflection on the means to resolve them. It also helps to reduce the psychosocial isolation of the participants, which is often a source of great suffering. It allows each person to become an actor in his or her own change, stimulated by the creativity generated by the group, and develops solidarity among participants.

A place facilitated by a professional listener who provides a space for participants to discuss difficulties encountered in an issue.

A discussion group must respect the following rules: listening to others, non-judgment, confidentiality, freedom, respect for others.

4.7 Social Assessment

The social assessment of people with HIV focuses on the individual and, if possible, his or her household and the rest of the family, its resources and needs. It must take into account important elements that have some impact on the patient's adherence and/or that aim at his or her integration into social life. Thus it is necessary to:

- Assessing the patient's resources and needs;
- Assess their ability and willingness to disclose their HIV status to the appropriate people in the welfare system;
- Identify local community and social services;
- Develop a network of social services;
- Assess the social supports and intermediary persons or structures active with the patient, such as family, close friends, the community, those related to the patient's faith (church), associations and others, as well as social service agencies;
- Inquire about religious and spiritual beliefs to explore the place of religion and spirituality in the patient's experience;
- Assess the use of traditional and complementary health systems and consider them as a possible source of support;
- Probing concerns that stigma and isolation may cause;
- Enable patients to identify the safest supports in their families and communities

Providers should also examine their own ideas and fears that may contribute to the stigma the patient experiences. They need to assess the impact of the patient's disclosure of his or her status. With this in mind, they should:

- Ask the patient if they have disclosed their HIV status to anyone;
- Take feedback from their support system;
- Examine concerns about disclosing their HIV status: to spouse, children, family members and friends;
- Develop strategies that reveal one's HIV status according to the patient's level of readiness;
- Estimate social supports and needs, note any changes in social activities since diagnosis and any concerns about self-stigmatization;
- Refer to support group as appropriate.

4.8 The home visit

A home visit or HV is a visit that a provider makes to a PHA or family in the community. It is a means of carrying out the helping process. Its purpose is:

- to improve access to care for PLWHIV,
- to complement the services provided within the care structures,
- to meet the different needs of the HIV-infected person as much as possible.

A VAD must be planned in time and structured in its content: the person must understand the objectives and the benefits he or she can get from it. VADs allow for :

- give advice to improve hygiene and quality of life,
- check the level of compliance,
- to check with the person if the means and resources are used in an effective way and,
- in some cases, to provide nursing care.

A VAD should be planned, as much as possible, in conjunction with the caregivers and be the subject of feedback to the care team.

VAD helps to reduce the number of people lost to follow-up and to manage them once they occur.

Table 9. Home visits

Importance of VAD	Strengthen compliance; Provide psychosocial support; Inquire about the socio-economic situation; Search for the lost; Build trust between providers and patients.
VAD from the approach	Identification of patients to be visited; Plan the visits taking into account the target group and priorities; Conducting the visit; Feedback to the care facility for solutions to identified problems; Reaction or contribution of solutions.
VAD services	Personalized problems, support interviews(psychological identification); Family Counseling; Family or marital mediation (in case of conflict); Therapeutic education; Provide material or financial support.

DAY 2 MODULE 5. MANAGEMENT OF OPPORTUNISTIC INFECTIONS

In this section, the trainer presents the prevention and management of common opportunistic infections (OIs) during the course of HIV infection, with the exception of tuberculosis, which will be covered with co-infections in Module 6. It is best to use slides that draw from the various resource documents provided (the basics are below). It is important that all information presented is from national and international sources (such as WHO).

This module answers the following questions:

- How to prevent OIs?
- What are the main OIs in HIV infection?
- How to treat OIs in HIV infection?

Allow time for questions and discussion of each slide. It is important to motivate participants to ask questions if they are unsure.

This section of the paper is based on Source 6.

5.1Orientation of IO (5 minutes)

HIV infection is responsible for an immune deficiency that favors the occurrence of OIs. These OIs can be revealing of the infection or occur in a patient with known HIV status. Many of them classify HIV infection as AIDS.

OIs, which usually occur below 200 CD4/s, cause significant morbidity and mortality, making it essential to know how to prevent them and what signs to look for in order to treat them as early as possible.

They can occur in all organs of the human body. However, only the management of the most common ones is discussed in this chapter. Among the most affected organs, we can mention :

- the brain in the form of toxoplasmosis, lymphoma, cryptococcosis, etc. ;
- the lungs, with pneumocystis, tuberculosis ;
- skin, with Kaposi's sarcoma and herpes;
- the digestive tract, in the form of oral candidiasis, cryptosporidiosis.

To fight these diseases, prevention measures are fundamental.

5.2Prophylaxis of OIs

Prophylaxis of bacterial and parasitic OIs (20 minutes)

<u>Primary chemoprophylaxis with cotrimoxazole</u>

Principle

Cotrimoxazole (CTX) is a sulfonamide anti-infective that combines sulfamethoxazole (SMX) and trimethoprim (TMP) in two dosages:

– single dose: SMX 400 mg + TMP 80 mg ;
– strong dosage: SMX 800 mg + TMP 160 mg.

Primary CTX chemoprophylaxis consists of continuous use of CTX by people living with HIV to prevent certain common opportunistic infections and has been shown to be effective in prevention:

– toxoplasmosis, pneumocystis, isosporosis and malaria;
– digestive, pulmonary, sinus, meningeal and urinary bacterial infections.

Indications, dosage and duration in adults

In adults, CTX prophylaxis has broad indications:

-Any symptomatic PHA (WHO stage 2, 3 or 4), regardless of CD4 count;
AnyPHA with CD4 ≤ 500/mm3, regardless of WHO stageThe dosage is 2

tablets at 480 mg/d in 1 dose or 1 tablet at 960 mg/d.

Primary prophylaxis with CTX should be continued continuously until immunity is restored (CD4 > 500/mm3) on ARV therapy.

Indication for secondary discontinuation of prophylaxis

If CD4 count is available, discontinue prophylaxis if CD4 count is >500/mm3 after more than 6 months of ARV treatment.

In case of intolerance to Cotrimoxazole

For prophylaxis against pneumocystis and toxoplasmosis, use Dapsone 100 mg/d + Pyrimethamine 50 mg/week + Folinic acid 25 mg/week.

Cotrimoxazole desensitization protocol

Indication: This protocol is administered two weeks after an episode of grade 3 or less toxicity (Tables 9 and 10).

Table 10. Graduation of Cotrimoxazole toxicity.

Grade 1	Erythema	Keeping CTX under surveillance
Grade 2	Dry desquamation, vesicles, pruritus	Stop CTX until all manifestations have stopped, then reintroduce or desensitize
Grade 3	Wet desquamation, mucous ulceration	Permanent cessation of CTX. Mention it in the file and the health booklet
Grade 4	Necrosis, Lyell syndrome, Stevens-Johnson	Keeping CTX under surveillance

Table 11. Cotrimoxazole desensitization protocol

Days	Cotrimoxazole	Formulation
1	80 mg/16mg	2 ml oral suspension
2	160/32 mg	4 ml oral suspension
3	240/48 mg	6 ml oral suspension
4	320/64 mg	8 ml oral suspension
5	400/80 mg	1 single tablet
6	800/160 mg	1 strong tablet

Cotrimoxazole chemoprophylaxis in children:

The table below shows the modalities of Cotrimoxazole prophylaxis in exposed and HIV-infected children.

Table 12: Initiation of Cotrimoxazole Prophylaxis in Exposed and HIV-Infected Children

Children exposed to HIV	Children infected with HIV		
Prophylaxis at cotrimoxazole is indicated from the 6th week after birth and maintained until what the risk of a HIV infection be excluded	<1 year	1 - 4 years old	5 years and older
	Cotrimoxazole prophylaxis is recommended regardless of CD4 percentage or clinical stage	Cotrimoxazole prophylaxis is recommended at the stage WHO clinic 2, 3, and 4whatever the CD4 percentage or when CD4 <25% regardless of stage	See adult recommendations

		WHO clinic	

The recommended dosage of Cotrimoxazole is ***20-30 mg/kg*** once daily.

Table 13. Cotrimoxazole prophylaxis in HIV-exposed and -infected children - Recommended daily dosage based on weight.

Weight	Suspension 240mg **(40mg TMP + 200mg SMX / 5ml)**	480 mg tablet (**80 mg TMP + 400 mg SMX)**	960 mg tablet **(160mg TMP + 800mg SMX)**
< 5 kg	2.5 ml	1/4 tablet	-
5-15 kg	5 ml	½ tablet	-
15-25kg	10 ml	1 tablet	1/2 tablet
>25kg	-	2 tablets	1 tablet

Contraindications to the prescription of Cotrimoxazole:

- Macrocytic anemia (Hb< 6.5g/dl)
- Severe neutropenia (<750 neutrophils/100ml)
- Hepatic cytolysis (transaminases > 3 times normal)
- Renal insufficiency
- History of allergy to sulfonamides
- Breastfeeding
- Premature, newborn less than 6 weeks of life.

Chemoprophylaxis with fluconazole

It targets cryptococci. Prophylaxis is recommended for PHAs with a CD4 count of less than 100/mm3 and a negative test for cryptococcal antigen in the CSF and blood.

Chemoprophylaxis is done by prescribing Fluconazole at a dose of 100mg/d until the CD4 count>350/mm3.

INH chemoprophylaxis *(See Module 6)*

5.3 MainOIs and their treatment(30 minutes)

Table 14. Bacterial OIs

Bacterial manifestations	Symptoms	Diagnosis	Treatment
Salmonellosis	Acute or bloody diarrhea Fever Abdominal pain	Coproculture Blood culture	Ciprofloxacin 500 mg x 2 /d for 10 days Or Ofloxacin 200 mg x 2/d for 10 days
Atypical Mycobacteria	Fever, altered general condition, sweating Worsening anemia in a setting of severe immunosuppression with fever is suggestive of atypical mycobacteria	Blood culture Biopsy (lymph node, bone marrow)	Clarithromycin (1 to 1.5 g/d + Ethambutol (15mg/kg/d) + Rifabutin (300mg/d) for 3 to 6 months Followed by Clarithromycin or Azithromicin (600mg/d) + Ethambutol for at least 12 months

Table 15. Parasitic OIs

Parasitic manifestations	Symptoms	Diagnosis	Treatment
Toxoplasmosis brain	*Table of an expansive process intracerebral* Insidious, gradual onset; Headache, fever, drowsiness, temporo-spatial disorientation; Sometimes abrupt onset	*Scanner brain* : images of abscesses in cockade (hypodensity plant represents the focus of necrosis surrounded by a contrast control ring, associated to a peri- edema lesion repressing the structures medians of the brain	*Attack treatment* Pyrimethamine 100mg/d at D1 then 50mg/d Sulfadiazine 4 to 6g/d + Folinic Acid for 6 weeks ***or*** Pyrimethamine 50mg/d + Clindamycin 40mg/kg/d in case of anemia related to Sulfadiazine
	Complete table combining typically An infectious syndrome A hypertension syndrome intracranial (vomiting, headache, consciousness disorders)		*Maintenance treatment* Pyrimethamine 25mg/d + Sulfadiazine 2g/d + Folinic acid ***or*** Cotrimoxazole 960mg/d
	Neurological signs in focus Hemiplegia, hemiparesis, convulsions, nerve paralysis cranial, ataxia, decreased ability to visual or visual blur		*Primary prophylaxis* Cotrimoxazole 960mg/d
Pneumocystis jroveci	Dry cough with little or no production, associated with dyspnea of progressive aggravation, Fever of 38 to 38.5°C Normal pulmonary auscultation, sometimes severe dyspnea with respiratory failure and cyanosis	*Chest X-ray*: interstitial infiltrate, fine reticulated, heterogeneous, bilateral with hilar predominance *Blood gases*: severe hypoxemia, decrease in LDH (good value orientation) Detection of *Pneumocystis jroveci* in bronchoalveolar lavage fluid	Cotrimoxazole 100mg/kg/d In IV 4 ampoules every 8 hours (12 ampoules/d) Or peros Cotrimoxazole 960mg : 2cpx3 /d pdt 3 weeks If hypoxemia<75 mmHg combination of corticosteroid therapy + oxygen therapy In case of intolerance to Cotrimoxazole: Atovaquone 750mg x2/d in oral suspension *Secondary prophylaxis* Cotrimoxazole 100mg/kg/d or Pentamidine 300mg in aerosol / monthj

Table 15. Parasitic OIs (continued)

Other parasitic manifestations	Symptoms	Diagnosis	Treatment
Cryptosporidiosis *Cryptosoridium parvum*	*Intestinal form*: watery liquid diarrhea (10 to 20 stools/day) profuse choleriform type *Biliary form*: nausea, vomiting, abdominal pain, jaundice	Evidence of oocysts in the stool (3 consecutive days) or in the duodenal biopsy	No specific treatment Paromomycin 2g/day in 3 doses for 4 weeks Nitazonanide 500mg x2 /d for 14 days Rifaximin 200mg x2/d for 2 to 8 weeks
Microsporidiosis *Enterocytozoon bieneusi* *Encephalitozoon intestinalis*	Aqueous liquid diarrhea (10 to 20 stools/day), non-bloody, sometimes mucous Nausea, vomiting, abdominal meteorism, epigastric pain	Evidence of oocysts in stool or duodenal biopsies	No specific treatment Enterocytozoon bieneusi : Fumagillin 20mg x 3/d for 14 days Encephalitozoon intestinalis :Albendazole 400mg/d for 10 days
Isosporosis *Isospora belli* *Isospora hominis*	Diarrhea of variable intensity with watery or bloody stools Abdominal pain and fever	Evidence of oocysts in stool or duodenal biopsies	Cotrimoxazole 960mg/d for 10-15 days then ½ dose for maintenance In case of allergy Ciprofloxacin 500mg x2/d for 10 days then 500mg x3/week in maintenance Pyrimethamine 100mg for 14 days then 25mg/d + Folinic acid 10mg/d then 5mg/d in maintenance

Table 16: Viral OIs

Viral manifestations	Symptoms	Diagnosis	Treatment
Zona	Unilateral cutaneous eruption made of macules then of rounded vesicles grouped in bouquet then confluent polycyclic Sometimes extensive necrotic-ulcerative lesions that can lead to loss of vision in herpes zoster ophthalmica	Routine ophthalmic examination for herpes zoster to assess the extent of lesions	*General treatment:* Aciclovir 800mg x5/d or Valaciclovir 1g x3/d for 7 to 10 days Complicated shingles with ocular involvement, neurological, necrotic, disseminated complications: Aciclovir 10mg/kg x3/d IV infusion for 10 days then relay peros until healing Valaciclovir 1g x3/d for 7 days Adjuvant treatment of acute pain *Local treatment:* antiseptic, 1% aqueous eosin, antibiotic therapy if superinfection
Cytomegalovirosis	Retinitis in 80% of cases Other forms: Other forms are possible, with digestive (esophagitis, gastroduodenitis, colitis), neurological (encephalitis, ventriculitis, myeloradiculitis, neuritis), hepatic, splenic, pancreatic or adrenal attacks.	Fundus associated with angiography: hemorrhagic necrosis beginning at the periphery of the retina and evolving in a centipede fashion	Ganciclovir: 5 mg/kg x2/d for 3 weeks by 1-hour IV infusion Foscarnet: 90 mg/kg x2/d for 3 weeks by 1-hour IV infusion Cidofovir: 5 mg/kg per week by 1-hour IV infusion *Maintenance treatment* theoretically for life either intravenously Foscarnet (100 to 120 mg / kg/d in IV infusion every 2 weeks), or Ganciclovir (5mg/kg/d in a 1-hour IV infusion) or Cidofovir (5mg/kg x2/week) or oral Ganciclovir (3 g/d in 6 doses) less effective,

			but more practical.

Table 17. Mycotic OIs

Mycotic manifestations	Symptoms	Diagnosis	Treatment
Candidiasis	Thrush Perlachia Erythematous Glossitis Esophagitis Anitis		*Local treatment* Gargarism with 14% bicarbonate solution, 4 to 8 times a day; Nystatin chewable tablet 500,000 IU×4/d for 7-10 days; Miconazole oral gel: 4 cm x3/d for 7-10 days. *Systemic treatment*: Amphotericin B 2 capsules x2/d or 1 ml/2 kg/d, per os for 15 days; Ketoconazole: 200 mg x 2/d for 15 days; Fluconazole: as a second-line treatment in oral forms, at a rate of 50-100 mg/d as a single oral dose for 7 to 10 days.
Neuromeningeal Cryptococcosis	Moderate fever Persistent headache Sometimes mental disturbance Moderate vomiting Stiffness of the neck often frustrated and dissociated	CSF examination with *India ink:* low cellularity (10-500 leukocytes/mm moderate hyperproteinorachy, moderate hypoglycorachy, detection of cryptococcus Presence of cryptococcal Ag in blood or CSF	*Attack treatment* Subtractive lumbar puncture Amphotericin B 0.7-1mg/kg/d or every other day by IV infusion, alone or with 5-fluorocytosine (150mg/kg/d IV or per os) for 15 days, followed by Fluconazole 400-800mg/d for 6 weeks In case of absence of Amphotericin B intolerance, Fluconazole 400mg IV/d and 800mg/d in severe forms, during 7 to 10 days then relay 400mg/d during the rest of this phase. *Maintenance treatment* Fluconazole oral 200mg/d
Cutaneous Cryptococcosis	Initially papular lesions evolving into a nodule, an umbilical papule simulating a molluscum contagiosum or a skin ulceration at type of herpes.	Evidence of capsulated yeast on the smear of the lesion or skin biopsy	

Seborrheic Dermatitis	Dandruff condition of the scalp, erythema-squamous eczema of the facial folds, eyebrows, dermatitis of the mid-thoracic region, auricular pavilions and the edge of the hair		Local treatment: Ketoconazole alternating with dermocorticoids

Dermatophytes	Hairless skin and folds		Griseofulvin 0.5 to 1g/d or Terbinafine 200mg/d
	Onyxis		Anti-fungal varnish

Table 18. Tumor OIs

Tumor Manifestations	Symptoms	Diagnosis	Treatment
Kaposi's disease	Macule++, papule, nodule, plaque, budding tumor, sessile or pellicular ulcerative vegetation; Angiomatous, erythematous, purplish, hyperpigmented, painless, non-pruritic lesion; Generalized or localized lesions; Lymphatic edema resulting in elephantiasis kaposiens	Histological; double proliferation of vascular, endothelial and spindle cells located in the superficial and middle dermis; more difficult to diagnose in visceral forms as infiltration is usually sub-mucosal.	**Etiological**: systematic ARVs **Symptomatic**: *minimal impact*: no symptomatic treatment *Cosmetic or functional impact* without life-threatening consequences: Bleomycin 15 mg IM every 2 weeks for 6 months and/or local treatment (surgery, cryotherapy); *Severe retardation* (severe visceral damage) or failure of Bleomycin: multi-drug therapy(Adriamycin/Vincristine/Neomycin) or taxanes; Immune reconstitution syndrome: indication for multidrug therapy; transient systemic corticosteroid therapy may be associated with it, especially in in cases of pulmonary involvement.
Lymphoma	Burkitt's lymphoma: Occurs at an early stage of HIV infection (CD4>200/mm3); Mainly ganglionic.		
	Malignant non-Hodgkin's lymphoma: Occurs at a very advanced stage (CD4<100/mm3) Mostly extraganglionic in the digestive tract and brain; Clinical picture: ▷unexplained *fever* despite a full infectious workup; ▷▷decrease in overall condition; ▷▷adenopathies; ▷▷ elevation of LDH and ß 2-microglobulin.		

Table 19. Other IO

Other Events	Symptoms	Diagnosis	Treatment
Prurigo	Lesion: papule. Dyschromia in small rings, particularly evocative and very frequent. Multiple lesions. Intense general pruritus , which can greatly affect daily life. Particular topography :preponderantly affecting the limbs,morerarely the trunk or face, the buttocks and genital areas being usually, but not always, the most important. systematically spared. Frequent bacterial superinfection.		*Symptomatic treatment*: combines oral treatment (antihistamines) and local treatment: Crotamiton (2-4 times a day) or a level II dermocorticoid (once a day) in the absence of superinfection and on localized areas. *Etiological treatment*: According to the WHO classification, prurigo defines a stage 2 disease. At this stage, national guidelines recommend the prescription of ARVs when CD4 is less than 500/mm^3 (See table on eligibility criteria for antiretroviral treatment). *Additional measures:* Preventive antisepsis (optionally polyvidone-iodine-chlorhexidine) ; Treatment of a possible superinfection.
Scabies	Sometimes atypical associated with a fierce pruritus Scaly erythematous lesions, papulo-squamous predominantly on the trunk with hyperkeratosis of the elbow, knees, scrotum sparing the palms Exaggerated or scabby scabies		

Psoriasis	Erythematous scaly patches well limited to the typical scratching with particular localization of the friction zones. Chronic evolution by successive attacks	Histological diagnosis: considerable thickening of the epidermis with foci of micro-abscesses at polynuclear	Dermocorticoids and salicylates

		neutrophils.	

CLINICAL CASES **(30 minutes)**

Comment #1

Mr SL consulted for headaches that had been present for 1 week, not relieved by paracetamol. He complains of easy vomiting and has a fever of 39°C. His HIV1+ status was discovered 18 months earlier, but he is not on ARV because he is not being followed up. He has lost 15 kg over the past few years.
On examination, he appeared in poor general condition. He is agitated and has an altered state of consciousness, but no motor deficit. Oral candidiasis was noted.

1. What diagnosis do you suggest?
2. How can this be confirmed?

Comment #2

Mrs. YM, HIV1+ not followed up, was seen for an incapacity to move her right side in a febrile context at 38°C. This sudden onset deficit followed headaches that had been evolving for 2 weeks, sometimes accompanied by convulsions. Her CD4 count is 107/mm3. Mrs. YM does not receive any chemoprophylaxis.

1. What is your diagnostic hypothesis?
2. How do you conduct yourself?

Comment #3

Mr MS, HIV+, consulted for a 15 kg weight loss in 6 months and dysphagia for 15 days. On examination, his tongue was covered with yellowish-white patches.

1. What diagnosis do you have in mind?
2. Do you ask for an esogastric fibroscopy if it is available?
3. What treatment are you considering?

DAY 2 MODULE 6. MANAGING HIV/TB, HIV/COVID19, HIV/HEPATITIS, HIV/MALARIA CO-INFECTIONS

The theme addressed by the trainer in this section is the infections that are frequently associated with HIV infection and that make the patient vulnerable: tuberculosis, viral hepatitis B and C and malaria. In addition, the COVID19 pandemic is currently having a profound impact on the management of HIV infection. The slides to be presented should be based on the following reference documents, drawn from national and international sources.

Allow time for questions and discussion of each slide. It is important to encourage participants to express their questions. The discussion should be relevant to the local context.

6.1 HIV/TB co-infection (Sources 7 and 11) (2 hours 15 minutes)

Epidemiological context

- **Global impact of tuberculosis**

Tuberculosis is prevalent in all parts of the world and is one of the top 10 causes of death in the world.

In 2018, the largest number of new cases was recorded in the Southeast Asia Region, with 44% new cases, followed by the African Region, with 24% new cases, and the Western Pacific with 18%.

In 2018, 87% of new cases occurred in the 30 high TB burden countries. Eight countries accounted for two-thirds of new cases: India, China, Indonesia, the Philippines, Pakistan, Nigeria, Bangladesh, and South Africa *(Source: WHO, Key benchmarks: tuberculosis, October 17, 2019. URL https://www.who.int/fr/news-room/fact- sheets/detail/tuberculosis).*

Multidrug-resistant tuberculosis continues to cause a public health crisis and remains a threat to health security. WHO estimates that there are 484,000 new cases with resistance to rifampicin, the most effective first-line drug, of which 78% are multidrug-resistant TB.

Globally, the incidence of TB is declining at about 2% per year. The annual rate of decline needs to be 4-5% if the 2020 milestones set in the Strategy to End TB are to be met.

An estimated 58 million people were saved from TB diagnosis and treatment between 2000 and 2018.

Ending the tuberculosis epidemic by 2030 is one of the targets set out in the Sustainable Development Goals for health.

- **Global situation of TB-HIV co-infection**

HIV and tuberculosis, which accelerate each other's progression, form a deadly combination. Tuberculosis is the leading cause of death among HIV-positive people. It is responsible for about 13% of AIDS deaths worldwide.

In Africa, HIV is the main driver of the increase in TB incidence observed over the past decade *(Source: WHO, Key Benchmarks: Tuberculosis, 17 October 2019. URL https://www.who.int/fr/news-room/fact-sheets/detail/tuberculosis)*. In 2018, 10 million people (including 1.1 million children) contracted TB and 1.5 million died from it (including 230,000 children with HIV). That same year, there were an estimated 862,000 new cases of TB among HIV-positive people, 74% of whom lived in Africa; more made TB.

- **Situation of tuberculosis-HIV co-infection in Gabon**

TB and HIV infection are major public health problems in Gabon. The number of FTT cases remains high, 6299 cases in 2014 and 6036 cases in 2016. Similarly, the number of new bacteriologically confirmed cases increased from 1342 in 2003 to 2184 in 2016 (Country Epidemiological Profile & WHO Report 2017).

Gabon is also a high HIV prevalence country located at 4.1% in the general population (15-49 years) according to the 2012 GDHSII. The proportion of TB patients National Management Guide for TB-HIV co-infection 15 tested for HIV remains low, although increasing as it rose from 46% in 2011 to 54% in 2016 (Epidemiological Profile and WHO Report 2016). The proportion of HIV-TB positive patients was 21% in 2014.

The incidence of TB-HIV co-infection in 2016 was estimated at 102 per 100,000 population, or 635 TB-HIV co-infected cases. The observed resurgence of TB in Gabon over the past decade is dependent on HIV infection. In countries with a high prevalence of HIV infection such as Gabon, TB is often a revealing manifestation of HIV infection.

Mode of transmission

Tuberculosis is caused by a bacterium (Mycobacterium tuberculosis) that most often affects the lungs. It is a preventable and curable disease.

TB is spread from person to person through the air. When a person with pulmonary TB coughs, sneezes or spits, he or she throws TB bacteria into the air. If you inhale a few of them, you can become infected.

About a quarter of the world's population has latent tuberculosis, which means that these people have been infected with the tuberculosis bacillus but are not (yet) sick and cannot transmit the disease.

Who is most at risk?

Tuberculosis primarily affects adults during their most productive years, but all age groups are at risk. Over 95% of cases and deaths occur

in developing countries. The risk of developing the disease at some point in their lives is 5 to 15 percent for those who carry the TB bacteria. The risk is higher for those with compromised immune systems, such as people living with HIV, those who are malnourished, diabetics and tobacco users.

It is estimated that people living with HIV are 20 to 37 times more likely to develop TB than the general population.

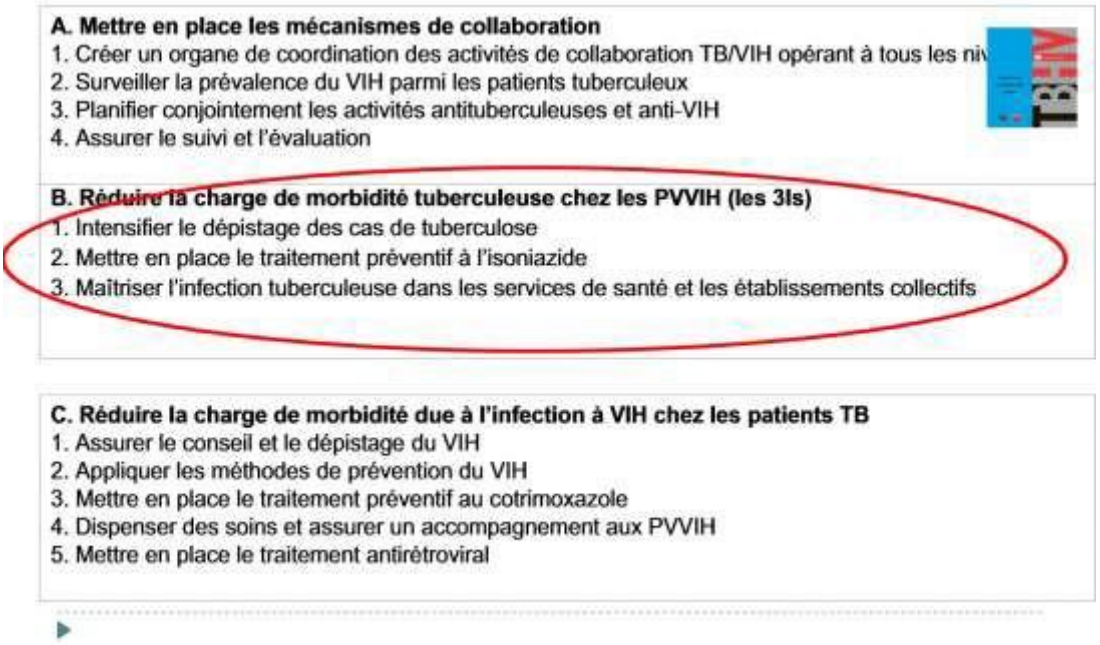
The risk is also higher for people with other conditions that weaken the immune system. The risk is three times greater for people who are malnourished. In 2018, there were 2.3 million new cases of TB worldwide attributable to undernutrition *(Source: WHO, Key Benchmarks: Tuberculosis, October 17, 2019. URL https://www.who.int/fr/news-room/fact-sheets/detail/tuberculosis).*

Alcohol abuse and smoking increase the risk of contracting the disease by a factor of 3.3 and 1.6 respectively. In 2018, globally, 830,000 new cases of TB were attributable to alcohol abuse and 860,000 to smoking.

WHO Policy for Joint TB/HIV Activities

To reduce mortality, WHO recommends a 12-component approach that includes integrated TB and HIV activities, including prevention and treatment of infection and disease.
Research and management of tuberculosis among PLWHA must be an integral part of the policy to fight HIV/AIDS. In the same way, the management of the two diseases is becoming a priority for the two programs, which must collaborate through a referral and counter-referral system.

Table 20: The 12 TB/HIV collaborative activities recommended by WHO.



Collaboration between the TB and HIV programs is already effective in almost all health regions through a system of referral and counter-referral of cases.

However, the Infectious Disease Department at CHUL, the Internal Medicine Department at Albert SCHWEITZER Hospital, and the Medicine Department at BONGOLO Evangelical Hospital function as one-stop shops for TB and HIV care.
The proximity of the CDT and the CTA of the NKEMBO Specialized Hospital means that they function as a one-stop shop.

Screening and diagnosis of tuberculosis in HIV/AIDS patients

- **Symptoms and clinical signs of tuberculosis**

As with other opportunistic infections in people living with HIV, TB should be screened for at regular intervals by looking for the symptoms below when it presents at each visit to HIV care services.

TB has a chronic and insidious course in most cases. The suggestive signs are as follows:
- a persistent cough (more than 2 weeks)
- chest pain
- hemoptysis
- dyspnea
- systemic symptoms: fever, night sweats, loss of appetite, weight loss

The clinical presentation varies according to the degree of immunity in both adults and children.
When tuberculosis becomes active, the symptoms may remain mild for many months, so that the sick person seeks medical attention late in life and passes the disease on to others. In one year, a person with active tuberculosis can infect 5 to 15 other people through close contact. Without treatment, an average of 45% of HIV-negative TB patients die, and almost all HIV-positive patients die.

- **Diagnostic tools**

Several tools are currently available in Gabon to guide or confirm the diagnosis of TB. These are: Xpert MTB/RIF, sputum microscopy, chest radiography and culture.

The Xpert MTB/RIF (Mycobacterium Tuberculosis/Rifampicin) test

The Xpert MTB/RIF test should be the first test used for the diagnosis of TB in PLWH. It is a molecular test that uses a real-time PCR technique to identify the BK genome (DNA) and allows for the rapid diagnosis of TB and rifampicin resistance.

There are six (6) GeneXpert hubs set up by the NLTP at the following locations:
- In Libreville: at the National Laboratory of Public Health and at the Specialized Hospital of Nkembo;
- In Lambaréné: at the Lambaréné Medical Research Center (Cermel);
- In Lebamba: at the Evangelical Hospital of Bongolo;
- In Franceville: at the Amissa Bongo Ondimba Regional Hospital;

- In Port-Gentil: at the Regional Hospital Center of NTchengue;
- In Oyem: at the Regional Hospital Center.

Microscopic examination of sputum

Microscopic testing for BAARs is difficult in PHAs because it may remain negative for some time. The rate of smear positivity depends on the degree of immune deficiency.

To perform this test, two (2) sputum samples must be collected within 24 hours: the first in front of the health personnel during the consultation for suspected TB and the second the next morning upon awakening.

Chest X-ray

Thoracic Rx is a referral tool for the diagnosis of pulmonary TB and some extrapulmonary locations. It may be useful in settings where Xpert MTB/RIF and microscopy are not available.

A chest x-ray should be taken before treatment is started and used to monitor progress on treatment. However, the X-ray is often negative or difficult to interpret because there are no characteristic images of TB, especially in PHAs.

NB: In the context of HIV infection, the presence of a cavity or cavern on radiography is rare.

Diagnosis of multidrug-resistant or extensively drug-resistant TB as well as HIV-associated TB can be expensive and complicated. In 2016, WHO recommended 4 new diagnostic tests, a rapid molecular test for peripheral health centers that cannot use Xpert MTB/RIF, and 3 tests to detect resistance to first- and second-line anti-TB drugs.

Tuberculosis is particularly difficult to diagnose in children.

Table 21: Variations in pulmonary tuberculosis according to early or late stage of HIV infection.

Clinique de la tuberculose pulmonaire (TP)	Stade de l'infection par le VIH	
	Précoce	Tardif
Aspect clinique	Ressemble à une TP commune	Ressemble souvent à une TP primaire
Résultats du frottis d'expectoration	Souvent positif	Souvent négatif
Radiographie thoracique	Souvent des cavités	Souvent des infiltrations sans cavités

- **Contact Case Finding and Management**

The NTP recommends actively seeking out individuals who have been exposed to TB in order to provide early treatment and break the chain of infection of the disease

tuberculosis. Active close contact investigation, known as contact tracing, should therefore be integrated into the programmatic management of TB

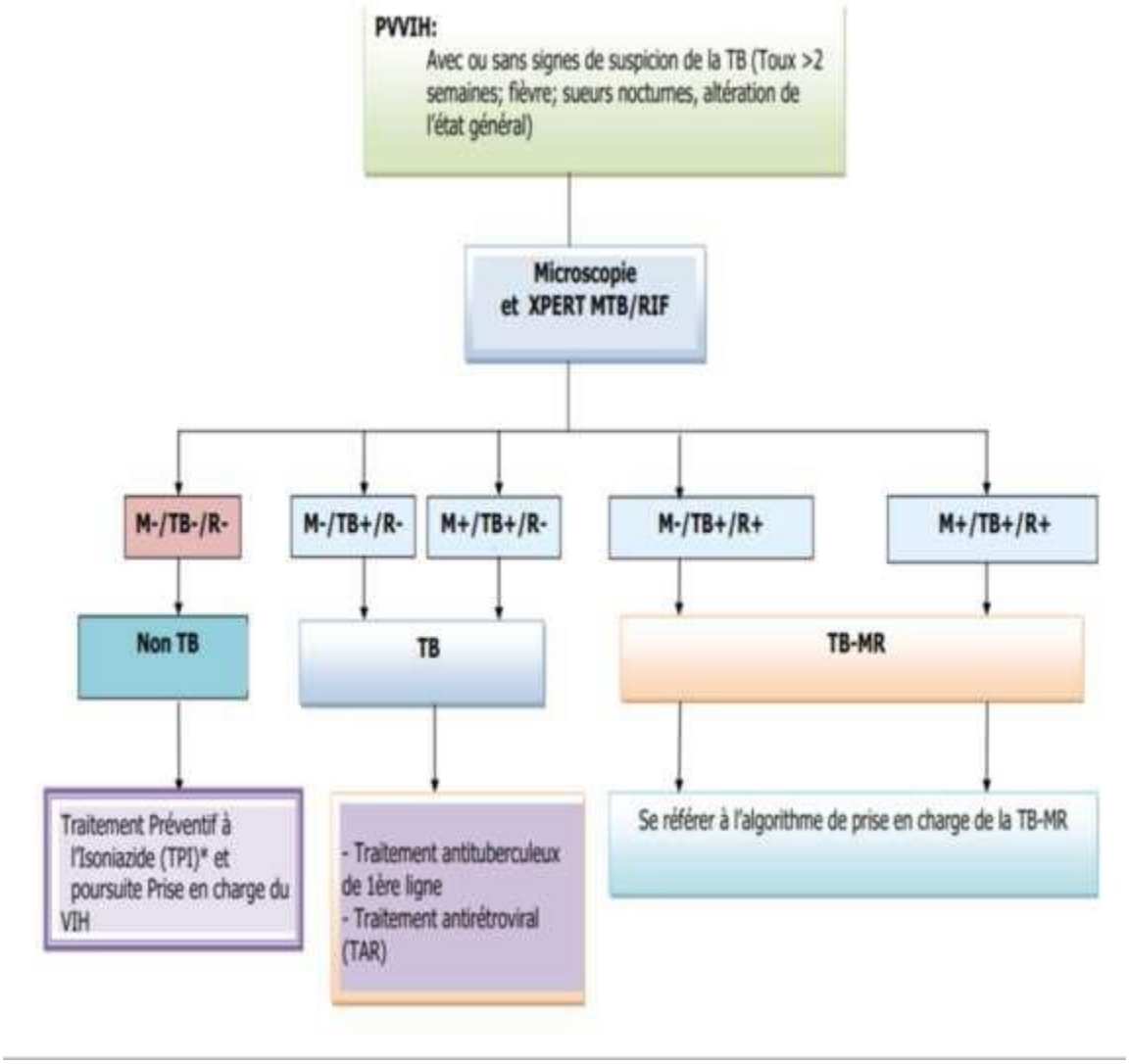


Figure 3. Management algorithm for TB-HIV co-infection

Isoniazid prophylaxis

Isoniazid preventive treatment to prevent a first episode of tuberculosis in
PHA requires exclusion of active TB, otherwise there is a risk of monotherapy. This treatment should be the prerogative of physicians who have the means to exclude active TB.
In Gabon, the NTP recommends regular testing for TB and initiation of TB treatment in cases of active TB.

- **Who should receive an IPT?**

Adults and adolescents living with HIV should be screened using a clinical algorithm. Those without a cough, fever, weight loss or night sweats should not be screened.

probably do not have active pulmonary TB and should receive isoniazid preventive therapy.

The Mantoux test (TST) is not mandatory for initiating INH preventive therapy in PLWH. When available, it can be used.

- **How long is the IPT?**

Adults and adolescents living with HIV who have a positive or unknown Mantoux test (IDR) and are unlikely to have active TB should receive at least 6 months of INH preventive therapy. This IPT should be given regardless of CD4 count, ARV use, pregnancy, or previous TB treatment.

- **What is the dose of IPT?**

IPT is administered at a dose of 5 mg/kg/day for at least 6 months.

- **What are the contraindications to IPT?**

Contraindications to IPT include active hepatitis (acute or chronic), regular and heavy alcohol use, and symptoms of peripheral neuropathy.

A history of tuberculosis and a current pregnancy should not be a contraindication to the initiation of IPT.

Remark:
• Administration of INH preventive therapy does not increase the risk of developing INH-resistant TB. Concerns about the development of resistance should not be a barrier to starting INH preventive therapy.

• Adults and adolescents living with HIV screened via the clinical algorithm with at least one of the following symptoms: cough, fever, weight loss, or night sweats likely have active TB and should be evaluated for TB and other diseases.

• Children living with HIV without fever, weight loss, or current cough probably do not have active TB and should receive preventive treatment with INH.

• Children >12 months of age who are living with HIV and who are unlikely to have active TB should receive 6 months of INH preventive therapy (10 mg/kg) as a minimum package of care.

• Children living with HIV with fever, low weight gain, or current cough likely have active TB and should be evaluated for TB and other diseases. Weight loss being defined as reported weight loss or very low weight for age (less than Ŕ 3 z-score) or weight loss >5% since last visit or a flat growth curve.

• All children >12 months of age living with HIV who have successfully completed treatment for active TB should receive an additional 6 months of INH.

Treatment

Tuberculosis is a treatable and curable disease.

For drug-susceptible active TB, a standard 6-month regimen of 4 anti-TB drugs is prescribed and, in parallel, the patient receives support and information from a trained health worker or volunteer. Without this support, compliance is more difficult.
An estimated 58 million people were saved from TB diagnosis and treatment between 2000 and 2018.

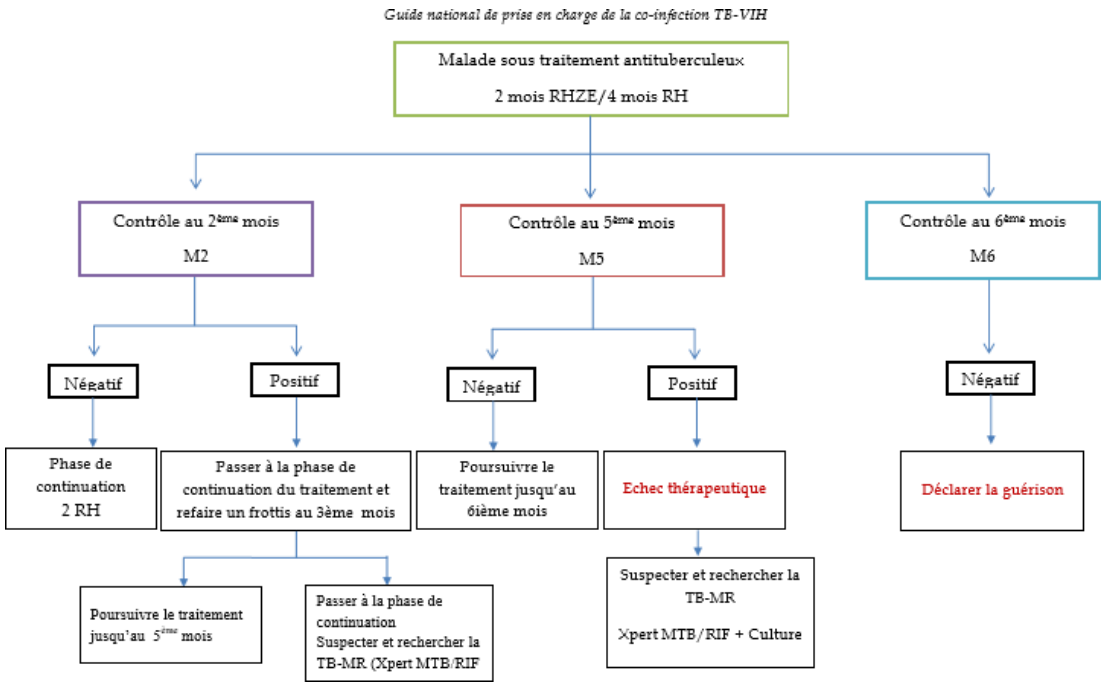


Figure 4: Algorithm for bacteriological monitoring of patients on first-line anti-tuberculosis treatment.

- **Providing care for TB patients living with HIV**

Care prior to antiretroviral therapy includes:
- regular assessment of the clinical and immunological stages of the infection,
- prophylactic measures and care for opportunistic infections,
- preparation for adherence to antiretroviral treatment,
- nutritional support, advice on a healthy lifestyle,
- psychological and social support,
- if necessary, the prevention and management of mental disorders, particularly those related to the use of alcohol and other substances.

A continuum of care must also be provided to PLHIV who are on or have completed TB treatment, either in integrated services or through an enhanced referral system.

Preventive treatment of some of these diseases should be systematically considered when HIV infection is detected. It may include prophylaxis with Albendazole and treatment of opportunistic infections other than TB (respiratory, digestive, neuromeningeal, skin, inflammatory, malignant, etc.).

Support for HIV-infected tuberculosis patients should be based on a patient-centered approach.

- **Providing antiretroviral treatment to TB patients living with HIV**

TB and HIV programs should ensure that TB and HIV-positive patients are started on antiretroviral therapy as soon as possible, preferably in integrated services or in CDT/CT.

Referral to HIV services remains an option, but it depends on functional referral and counter-referral systems, as well as on the patient's financial ability to cover the associated costs. These programs must collaborate to ensure that all TB patients living with HIV receive ART in the most decentralized services possible.

In HIV co-infected TB patients, ART has several objectives:
- an improvement in the length and quality of life;
- a decrease in HIV-related morbidity and mortality through a reduction in the incidence of opportunistic infections (including TB);
- a reduction in viral load;
- restoration and maintenance of immune function, including normal growth and development, if the patient is a child.

ART enhances TB treatment outcomes by significantly improving quality of life and prolonging survival in TB patients living with HIV, and by preventing HIV transmission. It should be considered a component of HIV and TB prevention and treatment.

TB treatment should be started first, followed by ART as soon as possible within eight weeks of starting TB treatment.

For patients with a CD4 count of less than 50 cells/mm³, ART should be initiated within two weeks of starting TB treatment.

There are five main families of ARVs:

– Reverse transcriptase inhibitors divided into three groups: nucleoside reverse transcriptase inhibitors (NRTIs), nucleotide reverse transcriptase inhibitors (NNRTIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs),
– protease inhibitors,
– fusion inhibitors,
– CCR5 inhibitors
– integrase inhibitors.

The ART protocol is a combination of the 3 ARVs (triple therapy); the drugs are taken daily and for life.

Depending on the patient's history with the drugs, they are divided into three types of protocols: first-line protocols for naive patients, second-line protocols for patients who have failed treatment and third-line protocols for special situations;

Each protocol includes a preferred (or initial) regimen for the first-time patient and an alternative regimen to be used in the event of special circumstances (toxicity, drug interactions and management difficulties) of the preferred regimen;

Special measures (prophylaxis, use of fixed suits, etc.) should be taken when initiating ART in pregnant women, breastfeeding women and infants, and children under 3 years of age. In this case, patients may be referred to a specialized service.

The physician should select ARV regimens that are compatible with TB treatment.

Rifampicin reduces the therapeutic effect of non-nucleoside reverse transcriptase inhibitors and protease inhibitors through its enzymatic induction of cytochrome p450 in the liver.

When Rifampicin is administered with protease inhibitors, there is a wide variation in their plasma concentrations, essentially subtherapeutic, even in the presence of boosted doses of Ritonavir. Rifabutin is therefore preferred over Rifampicin, whose combination with boosted PIs at standard doses is contraindicated.

In patients starting ART while receiving anti-tuberculosis therapy, the preferred non-nucleoside reverse transcriptase inhibitor (NNRTI) is Efavirenz (EFV), as it has few interactions with Rifampicin compared to Nevirapine (NVP).

For TB/HIV co-infected patients who cannot tolerate EFV, 3-NRTI regimens can be offered as alternative options while on TB treatment**.**

When Rifabutin is used in place of Rifampicin, all boosted PIs can be administered concomitantly at usual doses. However, LPV/r and SQV/r can be used with an adjusted dose of Ritonavir for additional potentiation:

- (LPV/r 400 mg/400 mg twice daily
- or SQV/r 400 mg/400 mg twice daily)
- or by doubling the daily dose of LPV/r (LPV/r 800 mg/200 mg twice daily). This option is associated with a high risk of toxicity and therefore requires close clinical and biological monitoring. However, this combination may be less complex and more realistic, especially since LPV/r is widely available in a single formulation, which is not the case for **RTV.**

Table 22. Preferred 2-line ART options in TB/HIV co-infection ème

Preferred 2nd line options (TB/HIV co-infection)		
If Rifabutin available (150 mg 3 x/week)	**Plans**	**Comments**
	The same diets are recommended for adults and adolescents	▪ There is no difference in efficacy between Rifabutin (RFB) and rifampin. ▪ RFB causes significantly fewer drug interactions with PIs, allowing maintenance of usual ARV doses
If Rifabutin not available	The same NRTIs are recommended for adults and adolescents plus LPV/r or SQV/r with adjusted doses of RTV, which are: LPV 400 mg/RTV 400 mg, 2x/day or LPV 800mg/RTV 200 mg, 2x/day or SQV 400 mg/RTV 400 mg, 2x/day	▪ Rifampicin significantly reduces PI levels, limiting effective options. ▪ Use of extra doses of ritonavir with selected PIs (LPV and SQV) can combat these effects, but with a high risk of toxicity

- **Tuberculosis drugs recommended by the NTP**

The NTP recommends four anti-TB drugs for the treatment of susceptible TB. These are: Rifampicin (R), Isoniazid (H), Pyrazinamide (Z) and Ethambutol (E).

NB: Re-treatment regimens including Streptomycin (S) are no longer recommended by WHO as of 2017.

The main recommended treatment regimen is: **2 RHZE / 4RH**.

Table 22. Fixed-dose combinations of first-line anti-tuberculosis drugs (adult forms)

Drugs	**Presentation**	**Dosages**
Rifampicin + Isoniazid [R 300 mg + H 150 mg **RH]**	Tablets	R 150 mg + H 75 mg
Rifampicin + Isoniazid + Ethambutol [RHE].	Tablets	R 150 mg + H 75 mg + E 275mg
Rifampicin + Isoniazid + Pyrazinamide + Ethambutol [RHZE]	Tablets	R 150 mg + H 75 mg + Z 400mg + E 275 mg

The Continuum of Care

It is the entirety of care from the health facilities to the community and more particularly to the patient's home and vice versa. These must meet the needs of the patient and his family.

The Continuum of Care includes different components depending on the stage of infection and the environment in which they find themselves, patients and their families express a variety of needs that are classified into four domains:

a. Medical needs: access to prevention services, biological check-ups, treatment of opportunistic infections (tuberculosis, toxoplasmosis, pneumocystis, etc.) and antiretrovirals (ARVs);

b. Psychological needs: emotional support, spiritual support ;

c. Socio-economic needs: nutritional support, schooling, support for orphans and vulnerable children;

d. Legal needs and respect for the rights of patients and their families: assurance, preservation and promotion of the rights and duties of patients and their families, protection against stigma and discrimination.

Multidrug-resistant tuberculosis

TB drugs have been in use for decades and resistance to one or more drugs has been identified in every country where studies have been conducted. Resistance occurs when TB drugs are not used properly, either because the drugs are not properly prescribed, because they are of poor quality, or because patients stop treatment prematurely.

Multidrug-resistant tuberculosis (MDR-TB) is a form of the disease caused by a bacillus that does not respond to isoniazid and rifampicin, the two most effective first-line anti-TB drugs. However, MDR-TB can be treated and cured with second-line drugs. However, these treatment options are limited and require the long-term administration (up to two years of treatment) of drugs that are both expensive and toxic.

In some cases, more severe resistance may develop. Extensively drug-resistant tuberculosis (XDR-TB) is an even more severe form of MDR-TB caused by bacilli that do not respond to the most effective second-line drugs, leaving patients often with no treatment options.

As of 2018, multidrug-resistant TB continued to create a public health crisis and remained a threat to health security. WHO estimates that there are 484 000 new cases of TB resistant to rifampicin-the most effective first-line drug-of which 78% are MDR-TB. The burden of MDR-TB falls mainly on 3 countries, India, China, and the Russian Federation, which together account for nearly half of all cases worldwide. In 2018, approximately 6.2
% of MDR-TB cases had XDR-TB.

Currently worldwide, only 56% of MDR-TB cases are successfully treated. In 2016, WHO approved the use of a short, standardized treatment protocol for MDR-TB cases that do not have strains resistant to second-line drugs. This regimen lasts 9 to 12 months and is much less expensive than conventional treatment, which can take up to 2 years. However, this regimen cannot be used for patients with XDR-TB or second-line drug-resistant TB and requires a long treatment regimen to which one of the newer drugs (bedaquiline and delamanid) can be added.

In July 2018, an independent expert panel convened by WHO reviewed the latest evidence on the treatment of resistant TB. WHO has issued a rapid communication on key changes to the recommendations for treating resistant TB, and will release updated and comprehensive policy guidelines before the end of the year.

WHO also licensed a rapid diagnostic test in 2016 to quickly identify these patients. Sixty-two countries have begun using the shorter treatment regimens for MDR-TB. By the end of 2018, 90 countries had introduced bedaquiline and 57 countries had introduced delamanid in an attempt to improve the effectiveness of MDR-TB treatment. *(Source: WHO, Key benchmarks: tuberculosis, 17 October 2019. URL https://www.who.int/fr/news-room/fact-sheets/detail/tuberculosis).*

6.2 Managing HIV infection in the context of the COVID 19 pandemic (Source 4, 5 and 15)

The trainer in this section presents the pathogen of COVID19 , the clinical manifestations, prevention measures, diagnosis of the disease and its impact on the management of people living with HIV and the evolution of the HIV/AIDS epidemic. It is important that the information comes from international sources such as the WHO.

Definition

- **What is a coronavirus?**

According to WHO Coronaviruses are a large family of viruses that can be pathogenic in animals or humans. Several coronaviruses are known to cause respiratory infections in humans, ranging from the common cold to more serious diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).

The latest coronavirus (SARS-CoV-2) that has been discovered is responsible for coronavirus disease 2019.

- **What is COVID-19?**

COVID-19 is the infectious disease caused by the latest coronavirus to be discovered. By definition this acronym stands for "Corona Virus Disease 2019". This disease is caused by the "SARS-CoV-2" virus. This new virus and disease was unknown before the outbreak in Wuhan, China in December 2019. COVID-19 is now pandemic and affects many countries around the world.

Global epidemiological situation

As of August 31, 2020, 25,118,689 confirmed cases of COVID-19, including 844,312 deaths, have been reported to WHO since the beginning of the epidemic. More than 1.8 million new cases of COVID-19 and 38,000 new deaths have been reported to WHO in the past week.

Overall, the Americas Region continues to bear the brunt of the pandemic, accounting for nearly half of all new cases reported in the past seven days, although in the region there has been a slight decrease in new cases and deaths over the past week.

The WHO South-East Asia Region showed the largest increase in new cases over the past week, with more than 500 000 new cases reported. In the European Region, new cases and deaths continued to increase over the past seven days compared to the previous week. Along with the Americas Region, the percentage change in new cases in the Africa, Eastern Mediterranean, and Western Pacific Regions have all decreased from last week.

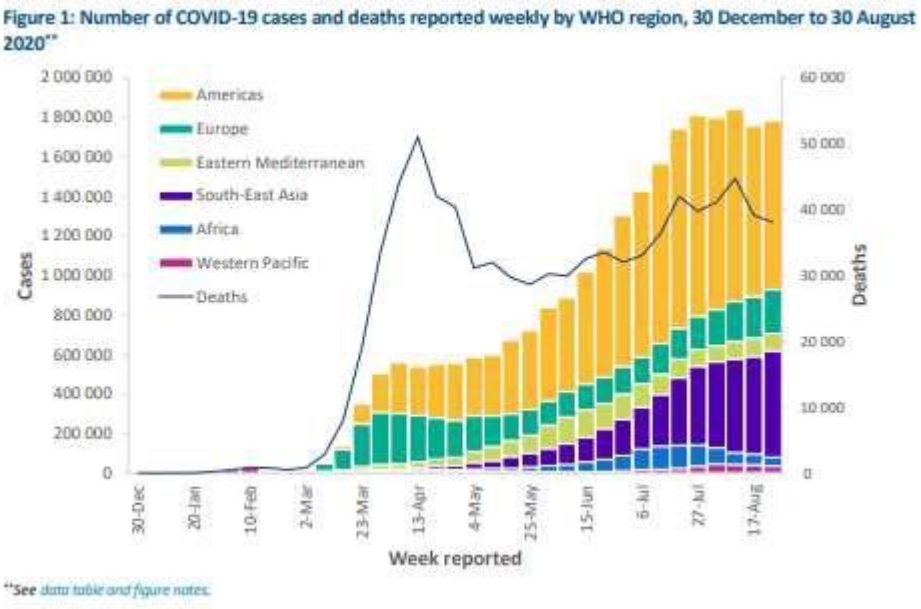


Figure 5: **Trends in COVID-19 cases and deaths, December 30, 2019 to August 30, 2020 (WHO).**

Evolution of COVID-19 in Gabon

From the declaration of the first case of COVID 19 on March 12, 2020, to August 26, 2020, the epidemic reached all 10 health regions, the number of cases increased to 8468 and the number of deaths to
53. The epicenter of the health crisis is located in the capital, Libreville, which accounts for 70% of the cases and in (10% of cases). Franceville

The modes of contamination are predominantly family-based.

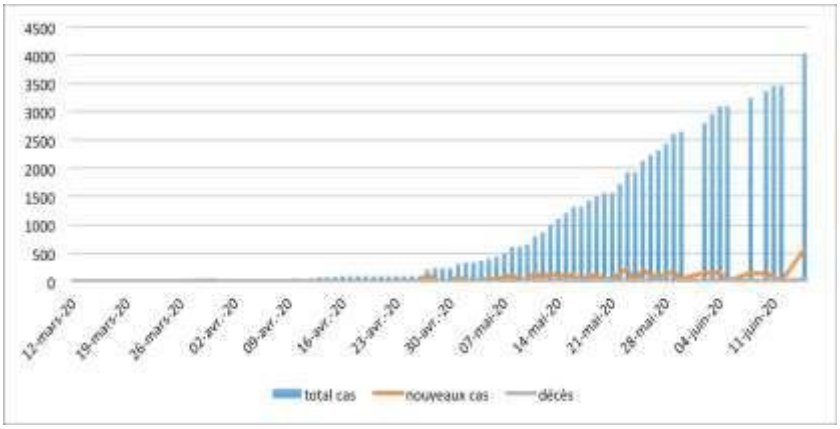


Figure 6: Evolution of the COVUD-19 epidemic in Gabon (COPIL)

With 61% of cases, men are more affected as well as the population aged 30 to 39 years. More than 40% of the cases of comorbidities are hypertensive patients.

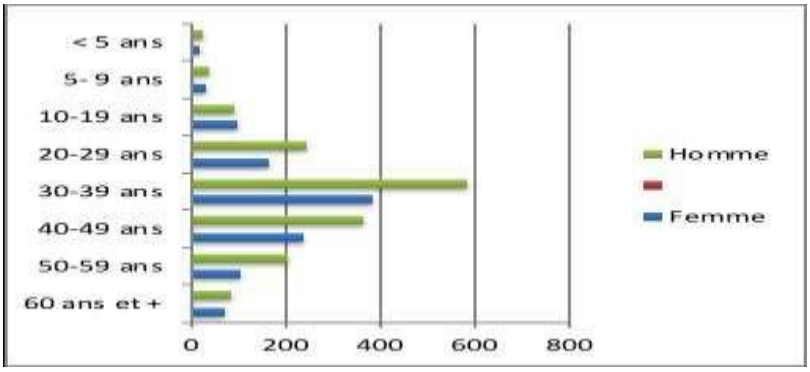


Figure 7: Distribution of infected cases by age and gender (COPIL)

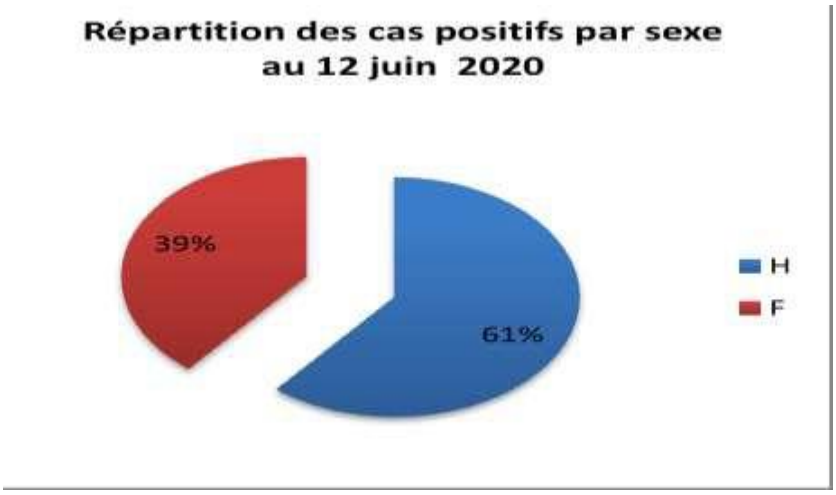


Figure 8: Distribution of positive cases by gender as of June 12, 2020 (COPIL)

What are the symptoms of COVID-19?

According to the WHO, the most common symptoms of COVID-19 are fever, dry cough and

fatigue. Other less common symptoms may also appear in some people

people, such as aches and pains, nasal congestion, headaches, conjunctivitis, sore throat, diarrhea, loss of taste or smell, skin rash or discoloration of the fingers of the hand or foot. These symptoms are usually mild and appear gradually. Some people, although infected, have only very mild symptoms.

Most patients (about 80%) recover without the need for hospitalization. About one in five people who get the disease have severe symptoms, including difficulty breathing.

Older people and those with other health problems (high blood pressure, heart or lung problems, diabetes or cancer) are more likely to have severe symptoms.

However, anyone can get COVID-19 and become seriously ill. People of any age who develop a fever and/or cough with difficulty breathing/shortness of breath, chest pain/pressure, or loss of speech or difficulty moving should seek medical attention immediately. It is recommended that, if possible, the health care provider or facility be called first so that the patient can be referred to the appropriate service (Institut Pasteur - *COVID19 (New Coronavirus) Disease, July 2020.* URL: https://www.pasteur.fr/fr/centre-medical/fiches-maladies/maladie-covid-19-nouveau- coronavirus).

How does COVID-19 spread?

COVID-19 is transmitted by people who carry the virus. The disease is transmitted primarily from person to person through respiratory droplets expelled through the nose or mouth when a sick person coughs, sneezes or talks. These droplets are relatively heavy, do not travel long distances and fall quickly to the ground. It is possible to contract COVID-19 if these droplets are inhaled.

These can also be found on objects or surfaces around the person who is ill (e.g., tables, doorknobs and handrails). You can then contract COVID-19 if you touch these objects or surfaces and then touch your eyes, nose or mouth. Therefore, hands should be washed regularly with soap and water or with a hydroalcoholic solution.

How is the diagnosis made?

There are two types of tests to break the chains of transmission of the virus and control the evolution of the epidemic: https://www.pasteur.fr/fr/centre-medical/fiches-maladies/maladie-covid-19-new-coronavirus

- Virological tests (RT-PCR) determine whether a person is a carrier of the virus at the time of testing through a nasal or salivary swab.
- Serological tests are used to determine whether a person has developed an immune response after contact with the virus**.**

What is the difference between self-isolation, self-quarantine and physical distancing?

Quarantine is the practice of isolating or restricting the activities of people who are not ill but who have been exposed to COVID-19. The goal is to prevent the spread of the disease when people first develop symptoms.

Isolation is the seclusion of people who have symptoms of COVID-19 and may be infectious to prevent the spread of the disease.

Physical distancing is physically keeping a distance from other people. The WHO recommends standing at least one meter away. This is a general measure that should be applied by everyone, even if there are no symptoms or known exposure to COVID-19.

How to reduce the risk of COVID-19 contamination?

- Wash your hands frequently and thoroughly with a hydroalcoholic solution or with soap and water.
- Maintain a distance of at least one meter from other people.
- Avoid crowded areas.
- Avoid touching your eyes, nose and mouth.
- Make sure to respect the rules of respiratory hygiene: in case of coughing or sneezing, cover the mouth and nose with the fold of the elbow or with a handkerchief and throw away the handkerchief immediately afterwards, then wash your hands.

Is there a vaccine, medication or treatment for COVID-19?

Research is active in the treatment of COVID-19. Several randomized clinical trials are underway to determine if the antiretrovirals used to treat HIV can also be used against COVID-19. These trials have not been completed and it is too early to say whether antiretrovirals or other drugs are an effective treatment for COVID-19.

A recent clinical trial showed that there was no real benefit to using Lopinavir/Ritonavir to treat COVID-19. Doctors sometimes use antibiotics to prevent or treat bacterial superinfection, which can be a complication of COVID-19 in severely ill patients. Antibiotics should only be used when prescribed by a doctor to treat a bacterial infection.

Government response to COVID-19 **Goal** Break

the chain of transmission of the virus **Flagship**

measures :

- Declaration of a state of health emergency
- Closure of land, air and port borders

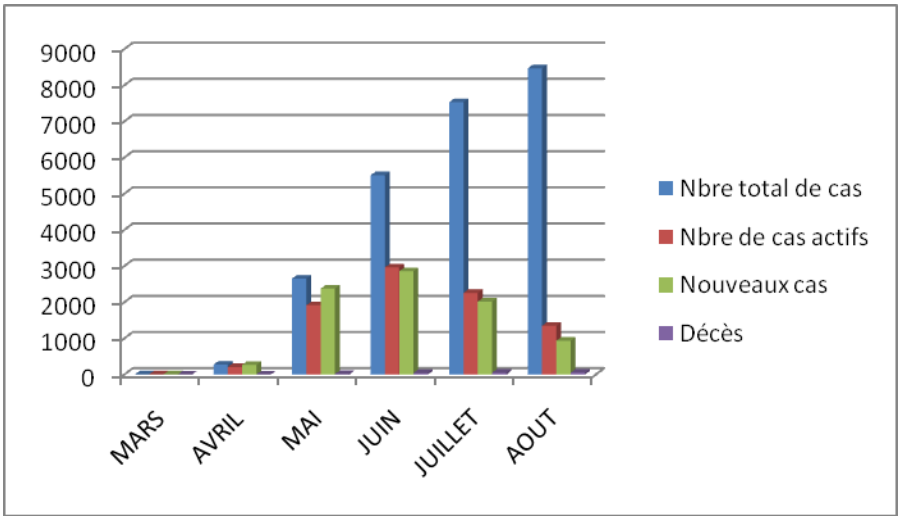
- Curfew from 18H to 06H
- Total containment for 15 days
- Partial lockdown for nearly 3 months

The strategies of the national response plan focused on:

– Ensure the coordination, monitoring and evaluation of activities;
– Strengthen epidemiological surveillance to ensure early detection of COVID-19-related infections;
– Increase communication about the risks of infection;
– Ensure rapid isolation of suspected cases and management of confirmed cases.
– Strengthen prevention and control measures in health and community facilities (awareness, hygiene and barrier measures);
– To ensure logistical support and optimal working conditions for the teams in charge of the response.

Impact of government measures on the evolution of the COVID-19 epidemic

After a peak in the epidemic in June 2020, a gradual decline in the number of new and active cases has been observed since July. This trend was confirmed at the end of August 2020.



<u>Figure 9</u>: Evolution of the epidemic curve of COVID-19 in Gabon as of August 26, 2020

Impact of the COVID 19 pandemic on HIV/AIDS

According to a new WHO survey conducted prior to the International AIDS Society conference, 73 countries have reported that they are at risk of experiencing stock-outs of antiretrovirals (ARVs) due to the COVID-19 pandemic. Twenty-four countries reported that their ARV stockpiles were extremely low or that the supply of these life-saving drugs was disrupted.
The survey follows modeling by WHO and UNAIDS in May that estimated that a six-month interruption in access to ARVs could result in a doubling of AIDS-related deaths in sub-Saharan Africa in 2020 alone.

The response to HIV/AIDS could suffer a serious setback and be set back at least a decade if the COVID-19 pandemic continues to disrupt health services. This setback would reduce the region's AIDS mortality rate to 2008 levels. A disruption of even 20% would result in 110,000 additional deaths. In its new report, *Act Now*, released at the AIDS 2020 conference, UNAIDS expresses concern that the 2020 targets set by the international community are not being met and that the Covid-19 crisis threatens the response to HIV https://vih.org/20200707/objectifs-2020 -from- unaids-a-failure- exacerbated-by-the-covid-19

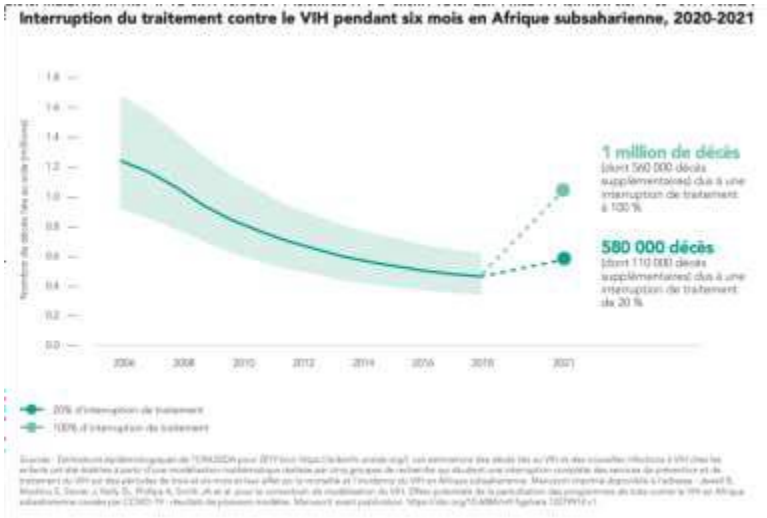


Figure 10: **HIV Treatment Interruption for 6 Months in Sub-Saharan Africa, 2020**

An estimated 8.3 million people were receiving ARVs in the 24 countries currently experiencing shortages in 2019. This represents about one-third (33%) of people taking HIV treatment globally. Although there is no cure for HIV infection, ARVs can control the virus and prevent sexual transmission.

The survey found that the inability of suppliers to deliver ARVs on time and the closure of land and air transport services, combined with limited access to health services within countries due to the pandemic, were among the causes of these disruptions.

No further progress

According to data released on July 6, 2020, by UNAIDS and WHO, the number of new HIV infections decreased by 39% between 2000 and 2019. The number of HIV-related deaths fell by 51% over the same period, and antiretroviral treatment has saved an estimated 15 million lives.

However, progress toward global targets has stalled. Over the past two years, the annual number of new HIV infections has plateaued at 1.7 million, and there has been only a slight decline in the number of HIV-related deaths, from 730,000 in 2018 to 690,000 in 2019. Despite continued progress in

treatment scale-up - more than 25 million people in need of ARVs received them in 2019 - key global targets for 2020 will not be met.

Those most in need are not receiving HIV prevention and testing services. Better targeting of proven prevention and testing services will be critical to revitalizing the global response to HIV.

WHO guidance and country actions

COVID-19 may make the situation worse. WHO recently developed guidance for countries on how to safely ensure access to essential health services during the pandemic, including for all people living with or otherwise affected by HIV. The guidance encourages countries to limit disruptions to access to HIV treatment by providing treatment for several months, following a policy of prescribing drugs for longer periods of up to six months. To date, 129 countries have adopted this policy.

Countries are also mitigating the impact of disruptions by maintaining flights and supply chains, engaging communities in HIV drug delivery, and working with laboratories to overcome logistical challenges.

6.3 HIV/Paludism co-infection

HIV and malaria are the two most common infections in sub-Saharan Africa, responsible for considerable morbidity and mortality.
HIV infection is characterized by a progressive impairment of cell-mediated immune defenses. In malaria, although humoral immunity plays a central role, cellular immunity plays a decisive role, particularly through CD4 and CD8 lymphocytes. It is for this reason that PLWHIV and immunocompromised persons have a high risk of malaria complications in malaria endemic areas such as Gabon.

Impact of HIV immunosuppression on malaria

In areas of stable malaria transmission such as Gabon, parasitaemia is high and malaria attacks are frequent. The impact of HIV infection on malaria infection is modulated by the degree of immunosuppression of patients and by the degree of immunity to the malaria parasite, Plasmodium. HIV infection increases the incidence of malaria attacks the more severe the immunodepression.

Impact of malaria on HIV

Any malaria attack leads to an increase in HIV viral load (up to a factor of 7), which is transient and regresses with antimalarial treatment. The impact of malaria on the clinical course of HIV infection is not yet known. The presence of serum antimalarial antibodies may result in false positive HIV ELISA tests.

Malaria and HIV infection in pregnant women

In HIV-positive versus HIV-negative mothers:
- parasitaemia is more often positive, at higher levels;
- there are fewer asymptomatic forms and more severe forms;
- the risk of malaria no longer seems to decrease with parity;
- Gravidial anemia is more common;
- HIV viral load is increased in the blood (up to 7 months post partum).

It is now recommended that at least 3 courses of IPT be started during pregnancy from the 2nd trimester (16 weeks of amenorrhea), with an interval of 1 month between courses, until delivery. In children, due to co-infection, intrauterine growth retardation, low birth weight, prematurity and post-natal mortality are more frequent.

Malaria prevention

It is based on the following key interventions: vector control, use of long-lasting insecticidal nets (LLINs), indoor residual spraying to control mosquito vectors, and intermittent preventive treatment (IPT) during pregnancy.

Therapeutic aspects of HIV/malaria co-infection

The rapid and effective treatment of cases involves the use of artemisinin-based antimalarial drug combinations,

The response to antimalarial treatment is as good in HIV-positive patients as in HIV-negative patients. If treatment is not successful in the HIV-positive patient, the treatment regimen should be reviewed. However, there may be drug interactions and cross effects between the two types of treatment. Parasitological confirmation by microscopic examination (e.g., thick drop or blood smear) or rapid diagnostic test (RDT) should be obtained for each case of malaria.

Drug interactions
Interactions between antimalarials and antiretrovirals are potentially possible due to shared cytochrome P450 metabolism pathways. In practice, antiretrovirals and antimalarials are prescribed at usual doses.

However, caution should be exercised when co-prescribing drugs with comparable toxicities, especially artemisinin, lumefantrine, NNRTIs and PIs, Abacavir or Nevirapine and Pyrimethamine + Sulfadoxine. In addition, artemisinin-based combination therapies containing Amodiaquine should, if possible, be avoided in PLWH receiving AZT or EFV because of the high risk of neutropenia associated with AZT use and liver toxicity associated with EFV use.

Cross-effects
Treatment or intermittent preventive therapy containing sulfadoxine-pyrimethamine should not be given to PHAs receiving prophylaxis with cotrimoxazole.

6.4 HIV / Hepatitis B co-infection

Definition / Pathogen

Hepatitis B is a viral infection caused by the hepatitis B virus (HBV) that attacks the liver and can lead to both acute and chronic liver disease.

The hepatitis B virus (HBV) can cause life-threatening liver infections. It is a major public health problem. It can also cause chronic infections and carries a significant risk of death from cirrhosis or liver cancer for those exposed.

The hepatitis B virus can survive outside the body for at least 7 days. During this time, it can still cause an infection if it enters the body of a person who is not protected by the vaccine. This virus has an incubation period that averages 75 days, but can vary from 30 to 180 days. It can be detected within 30 to 60 days of infection and can persist in the body, resulting in chronic hepatitis B.

The likelihood of an infection becoming chronic depends on the age at which the person was infected. Children infected with the hepatitis B virus before the age of 6 are most likely to develop a chronic infection.

In adults, HBV infection leads to chronic hepatitis in less than 5% of cases, while in infants and young children, it leads to chronic disease in about 95% of cases.

20-30% of adults with chronic infection will go on to develop cirrhosis and/or liver cancer.

Epidemiology

Approximately 1% of people living with HIV (or 2.7 million people) are also infected with HBV.

Global prevalence of HBV infection among people also infected with HIV is 7.4%.

In 2015, WHO estimated that 257 million people were living with chronic hepatitis B (which a condition defined as persistent hepatitis B surface antigen or HBsAg that persists beyond 6 months).

In that same year, hepatitis B caused an estimated 887,000 deaths, mostly from cirrhosis or hepatocellular carcinoma (i.e., primary liver cancer).

In 2016, 27 million individuals (10.5% of the total estimated population of people living with hepatitis B) were aware of their infection, while 4.5 million (16.7%) of those diagnosed were on treatment. According to the latest WHO estimates, the proportion of children under 5 years of age with chronic HBV infection has decreased to just under 1% in 2019 from about 5% in the pre-vaccine era (1980s to early 2000s).

Geographical distribution

Hepatitis B prevalence is highest in the WHO Western Pacific and African Regions, with an adult population infection rate of 6.2% in the former and 6.1% in the latter.

In the Eastern Mediterranean Region, South-East Asia Region and European Region, an estimated 3.3%, 2.0% and 1.6% of the general population are infected, respectively. In the WHO Region of the Americas, 0.7% of the population is infected.

Transmission modes

HIV is most commonly transmitted:

- from the mother to the child at birth,
- by contact with blood or by sharing needles, syringes, or preparation materials when injecting drugs, and by needle stick or sharps contact,
- through contact with other biological fluids, including sexual intercourse with an infected partner

In highly endemic areas, hepatitis B is most often transmitted from mother to child at birth (perinatal transmission) or by horizontal transmission within households (exposure to infected blood), particularly from infected to uninfected children during the first five years of life. The development of chronic infection is very common in infants infected by their mothers or before the age of 5 years. Mother-to-child transmission is more common in children whose mothers had a high HBV viral load. In the absence of preventive interventions, the risk of mother-to-child transmission ranges from 70% to 90% for HBeAg-positive mothers (who generally have a higher HBV viral load).

Hepatitis B is also transmitted through needle sticks, tattoos, piercings and exposure to infected blood or body fluids such as saliva, menstrual discharge, vaginal secretions or seminal fluid.

The virus can also be transmitted through the reuse of needles or syringes in health care settings or among injection drug users. In addition, infections can occur during medical, surgical or dental procedures or when using razors or similar objects contaminated with infected blood.

Sexual transmission of hepatitis B is also possible, especially for unvaccinated men who have sex with men and for heterosexual individuals with multiple sexual partners or contact with sex workers.

Diagnosis and assessment of HBV infection

HIV infection alters the natural history of HBV infection and worsens the overall prognosis of chronic hepatitis B. The rate of progression of fibrosis to cirrhosis is also increased and the risk of developing hepatocellular carcinoma is increased.
Overall, there does not appear to be any impact of HBV on the immunovirological course of HIV infection. However, the SMART trial showed that during the ART interruption phases, there was a greater decrease in CD4 counts and an increase in viral load in HIV/HBV co-infected patients than in HIV monoinfected patients.

The search for markers of HBV infection (Hbs antigen, anti-Hbs antibodies) must be systematic, as well as the search for immunization against HBV (anti-Hbs antibodies). Hepatitis B is said to be chronic when Hbs antigen carriage exceeds 6 months. Depending on the viral markers, there are several types of HBV carriage. **Chronic inactive carriage (formerly called "healthy carrier")**

In this type of carriage, transaminases, gamma globulins and liver ultrasound are normal. Transaminases should be monitored semi-annually and, when conditions permit, HBV viral load should be measured annually.

Hbs antigen	Hbe antigen	Anti-Hbe antibodies	Viral load B
+	-	-	<2000 IU/ml

Chronic active carry:

In this type of carriage, transaminases are often elevated (3 to 5 times the normal value); however, they may be normal.

Hbs antigen	Hbe antigen	Anti-Hbe antibodies	Viral load B
+	+	-	>2000 U/Iml

Chronic mutant virus hepatitis:

It is a persistence of viral replication despite the negativity of the HBe antigen. A genetic defect in the gene coding for the HBe antigen prevents the synthesis of this antigen.

Hbs antigen	Hbe antigen	Anti-Hbe antibodies	Viral load B
+	-	+	>2000 U/Iml

Occult Hepatitis B*:*

In this case, anti-Hbc antibodies are positive and isolated HBV DNA is present in low titer.

Hbs antigen	Hbe antigen	Anti-Hbe antibodies	Viral load B
-	-	-	>12 IU/ml

Assessment of liver damage

In the presence of elevated transaminases and a detectable HBV viral load (>2,000 IU/ml), an evaluation of liver damage should be performed to determine both
the stage of the disease and the risk of progression to cirrhosis and its complications, and thus help in the therapeutic decision. This evaluation, of necrotic-inflammatory activity and fibrosis, is based on :

- An abdominal ultrasound and an α-fetoprotein assay to look for direct or indirect signs of cirrhosis and for hepatocellular carcinoma, which can occur at any stage of HBV infection.

– Histological study of the liver by Hepatic Biopsy Puncture (HBBP) or non-invasive tests such as serum fibrosis markers (Fibroscann, FibrotestR, Fibrometer, Hepascore

Therapeutic strategies

Treatment of acute hepatitis B

There is no specific treatment for acute hepatitis B. Therefore, care is aimed at maintaining patient comfort and adequate nutritional balance, including replacement of fluid losses due to vomiting and diarrhea.

The most important thing is to avoid unnecessary medication. Paracetamol and antiemetics should not be given.

Treatment of chronic hepatitis B in adults

Chronic hepatitis B virus infections can be treated with medications, including oral antiviral agents.

This treatment can slow the progression of cirrhosis, reduce the incidence of liver cancer and improve long-term survival.

The two available therapeutic strategies, pegylated interferon alpha (Peg-IFN) and second generation analogues: entecavir (ETV) or tenofovir (TDF) in monotherapy are currently the two possible therapeutic options.

The duration of treatment should be 48 weeks for Peg-IFN. For analogues, a finite duration of treatment can only be considered in non-cirrhotic patients, initially HBeAg(+) and having seroconverted to HBe, after an additional 12 months of treatment after seroconversion to limit the risk of seroreversion, which is still about 20%.

Because of the more rapid progression of fibrosis in chronic HIV/HBV co-infection, ART is started in chronic active hepatitis B regardless of CD4 count.

Priority should be given to the use of ARVs with both HIV and HBV activity: 3TC, FTC and TDF.
The ideal is a triple therapy with 2 ARVs with dual action on hepatitis B and 1 ARV acting only on HIV, for example

FTC or 3TC+TDF + 1 II or 1 NNRTI

Table 23. Choice of antiretroviral regimen in HIV/HBV co-infected patients according to HIV viral typing

Profile of HIV/HBV co-infected patients	Choice of antiretroviral regimen
HIV infection1 ALAT<3N ALAT≥3N	TDF + FTC or 3TC + EFV TDF + FTC or 3TC + LPV/r or TDF + FTC or 3TC + DTG
HIV2 and HIV1 infection and HIV2 CD4<200 cells/ml ALAT≥200 IU/ml	TDF + FTC or 3TC + LPV/r TDF + FTC or 3TC + AZT

For HIV/HBV co-infected individuals whose first-line regimens contained TDF + 3TC (or FTC), these NRTIs should be continued in the second-line regimen because of their anti-HBV activity and to reduce the risk of hepatic cytolysis flares. This is true regardless of the second-line regimen chosen, which should consist of AZT + TDF + 3TC (or FTC) + a boosted PI.

NB:

HbAg testing is recommended for all HIV+ patients before starting ART.
If ART fails, TDF+ (3TC or FTC) can be maintained for anti-HBV activity and the 2ème line regimen should include other drugs with anti-HIV activity.

Treatment of hepatitis B in children

Interferon alpha, lamivudine and adefovir dipivoxil have been studied.

The decision to treat or not depends on the specialist and several factors: family history, age of the child, viral DNA, liver histology, transaminase levels, and the existence of a Delta virus coinfection.

The goal of treatment remains the disappearance of viral DNA, with long-term HBe seroconversion indicating the end of replication in order to prevent the long-term consequences of inflammation and fibrosis (cirrhosis, hepatocarcinoma).

Prevention

Hepatitis B can be prevented by safe, available and effective vaccines and antiviral prophylaxis during pregnancy.

The vaccine provides 98-100% protection against the disease. Preventing hepatitis B can help avoid the complications that this disease can cause, including the development of chronic hepatitis B and liver cancer.

Anti-HBV vaccination in HIV-infected individuals who are HBV-negative (HBsAg negative and/or anti-HBsAb negative) if CD4 >200/mm3.

Mother-to-child transmission of HBV: Immuno-prophylaxis by injection of anti-HBV immunoglobulin to the newborn of an HIV-HBV co-infected mother

6.5 HIV / Hepatitis C co-infection

General

HIV-HCV co-infection is an important factor in co-morbidity and mortality among HIV-infected individuals due to the increased life span associated with the effectiveness of HAART.

In case of HIV-HCV co-infection, HCV viremia is higher than in HCV mono-infected individuals, with an increased risk of nosocomial and sexual transmission of HCV, and the probability of HCV cure is modified.

HCV infection does not appear to affect the course of HIV. The prognosis of hepatitis C is worsened by a more rapid evolution of fibrosis. The rate of cirrhosis is increased by 2 to 5 times.

During the SABERS Survey, the prevalence of hepatitis C among the FDSG was 1.8%.

Diagnosis of HCV infection

It is recommended that hepatitis C serology be offered to the entire HIV population. Diagnosis is made by testing for HCV antibodies and confirmed by HCV RNA testing.

Management of HCV infection

The management of this HCV co-infection is multidisciplinary, involving HIV physicians and hepatologists, in order to adapt prescriptions according to drug interactions.

The goal of HCV treatment is to cure, but in case of failure, regression or stabilization of fibrosis, prevention of complications of cirrhosis or the occurrence of hepatocellular carcinoma.

DAY 3 MODULE 7: ANTIRETROVIRAL TREATMENT IN ADULTS, ADOLESCENTS, CHILDREN AND PREGNANT WOMEN

The trainer presents the objectives and basic principles of treatment as well as the different molecules available for prescription. He also defines when and how to start a treatment, how to monitor it and how to adapt it in case of adverse effects or insufficient efficacy. It is best to use the various slides and resource documents provided (the basics are below). It is especially important that any information presented comes from national and international sources (such as the WHO). It is also important to show the antiretroviral treatment algorithms in Gabon.

This module answers the following questions:

- What are the principles of TAR?
- When should ART be started?
- What are the treatment protocols recommended by the WHO?
- What should be done in case of treatment failure?
- Which ECP in the context of PMTCT and the HIV-infected child?

Allow time for questions and discussion of each slide. It is important to motivate participants to ask questions if they are unsure.

7.1 Purpose and principles of antiretroviral therapy

The purpose of ARV treatment is

- *to improve the health and quality of life of patients in a sustainable way:*
  - by blocking HIV replication so that the plasma viral load (amount of virus) in the blood is undetectable for as long as possible;
  - by restoring a normal CD4 lymphocyte count (immune reconstitution);
- *to reduce HIV transmission.*

Only the complete absence of virus multiplication can prevent the appearance of resistance, an essential factor in the durability of the antiviral effect.

Principles of antiretroviral therapy:

HIV can be suppressed with regimens that use a combination of three or more antiretroviral drugs. Current antiretroviral therapy does not cure HIV infection, but it does suppress viral replication in the body and allows the immune system to strengthen and rebuild its ability to fight infection.

Since 2016, WHO has recommended lifelong antiretroviral treatment for all people living with HIV: children, adolescents, adults, pregnant and lactating women, regardless of their clinical status or CD4 count. By the end of 2019, 185 countries had already adopted this recommendation, which covers 99% of people living with HIV worldwide. https://www.who.int/fr/news-room/fact-sheets/detail/hiv-aids

Treatment antiretroviral must be maintained à life so that eradication of HIV is not possible.

Since 2006, the WHO has recommended the combination of two nucleoside reverse transcriptase inhibitors (NRTIs) and one non-nucleoside reverse transcriptase inhibitor (NNRTI), known as HAART (Highly Active Antiretroviral Therapy), which can be translated as "effective combination therapy.

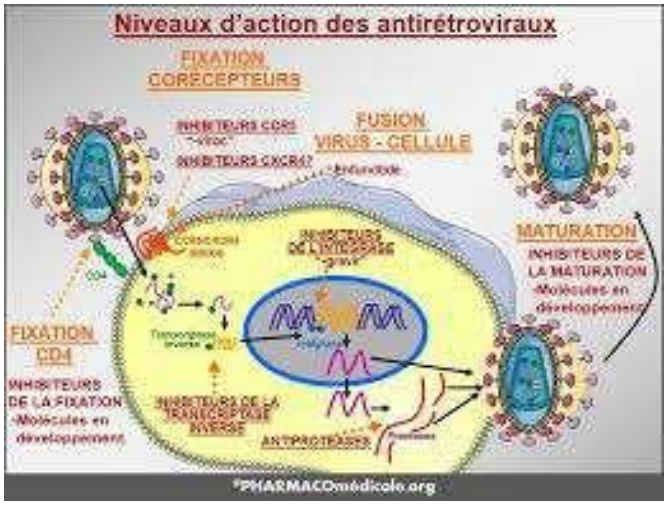
Conditions of effectiveness

- ARV treatment prevents HIV from multiplying (replicating) but does not destroy it.
- ARV treatment is effective provided that 3 different drugs are systematically combined (triple therapy). The gradual introduction of ARVs should be avoided if it is not justified for reasons of tolerance and pharmacology.
- ARV treatment must be taken for life, without interruption, and in accordance with the instructions for taking it.
- If it does not sufficiently reduce HIV replication (multiplication), ARV treatment can lead to the emergence of resistant viruses, a source of therapeutic failure.

If it is necessary or desirable to discontinue an ARV, it is best to discontinue all antiretroviral therapy to avoid the development of resistance to the ARVs that would have been maintained. These interruptions must take into account the pharmacological characteristics of each antiretroviral. This is the case for those involving NNRTI-based triple therapy (such as Efavirenz).

Factors predictive of a sustained biological response after initiation of a first course of antiretroviral therapy are: viral load and CD4 cell count at initiation, adherence to therapy, and rate of viral load reduction after initiation.

Through an accurate history and a thorough examination of the patient, the clinician classifies the patient based on the WHO classification (Appendix 1).



Tolerance

- Like any treatment, ARV treatment can cause adverse effects;these adverse effects can occur early or over time and can be mild or severe.
- The number or severity of adverse events is not related to the antiviral potency of the treatment.
- On ARVs, the occurrence of adverse events may compromise the patient's compliance with treatment.

Importance of accompanying the patient

On ARVs, patient support is essential to the success of the treatment**.**

An undetectable plasma viral load does not mean that the virus has disappeared from the body, nor does it mean that the patient is cured, because the presence of the virus persists in the reservoir cells that remain inaccessible to treatment.

7.2 Initiation of antiretroviral therapy

When to start ARV treatment?

Linking HIV-positive people to ART services is difficult, with many people being lost to follow-up in the period between testing and initiation of ART. Recent attention has focused on how quickly ART can be started after confirmation of diagnosis, or even on the same day, and whether this could reduce dropouts before ART initiation and improve patient outcomes.

Scientific evidence indicates that the proposal for rapid ART initiation, including same-day initiation, increases the number of people starting treatment, reduces mortality, and may further decrease both mother-to-child transmission and transmission to HIV-negative partners. Early initiation of ART was widely accepted by people living with HIV.

The NACP/HIV-AIDS now recommends initiation of ART for all adults, adolescents and children living with HIV, regardless of CD4 count and stage of disease. Efforts should be made to shorten the time from diagnosis to initiation of ART to improve clinical status and quality of life.

It is strongly recommended that ART be started promptly for all people living with HIV, i.e., within seven days of a positive diagnosis, as long as there are no contraindications. ART will be started on the same day that patients are ready to start it.

This recommendation applies to all people living with HIV, in all age groups, and is particularly important for patients with WHO stage III and IV and those with low CD4 counts and therefore an increased risk of death.

Table 24: ART Guidelines

Preparing people living with HIV for ART	
Initiation of Accelerated ART	Efforts should be made to shorten the time from diagnosis to initiation of ART, based on an assessment of the person "s readiness
When to start the TAR	
When to start ART in adults (>19 years)	ART should be initiated in all adults living with HIV, regardless of WHO clinical stage and CD4 count
	ART should be initiated as a priority in all adults with evidence of severe or advanced HIV-related clinical disease (WHO clinical stage 3 or 4) and in adults with a CD4 count of 500 cells/mm³ or less
When to start ART in women pregnant or breastfeeding	ART should be initiated and continued for life in all pregnant or breastfeeding women living with HIV, regardless of either the CD4 count and independently of the WHO clinical stage
When to start ART in adolescents (10-19 years)	ART should be initiated in all adolescents living with HIV, regardless of CD4 count and WHO clinical stage ART should be initiated as a priority in all adolescents with evidence of severe or advanced HIV-related clinical disease (WHO clinical stage 3 or 4) and in adolescents with a CD4 count ≤ 350 cells/mm³
When to start ART in children under 10 years of age	ART should be initiated in all children living with HIV, regardless of CD4 count and stage WHO clinic:
	Infants diagnosed in the first year of life

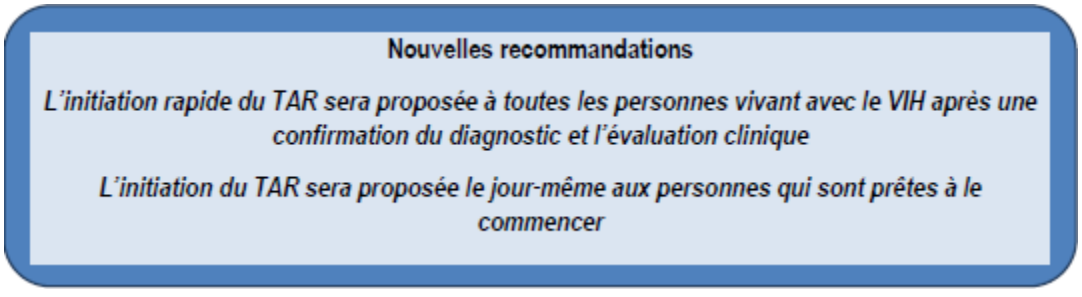
	Children aged 1 year and under 10 years living with HIV
	ART should be initiated as a priority in all children ≤2 years of age or children younger than 5 years of age with WHO clinical stage 3 or 4 HIV or CD4 count ≤750 cells/mm³ or CD4 percentage <25% and children 5 years of age and older with WHO clinical stage 3 or 4 HIV or CD4 count ≤ 500 cells/mm³.
Starting ART for adults and children with TB	ART should be initiated in all TB patients living with HIV, regardless of CD4 count TB treatment should be started first, followed by ART as soon as possible within 8 weeks of treatment
	HIV-positive TB patients with severe immunosuppression (e.g., CD4 count less than 50 cells/mm3) should receive ART within the first two weeks of starting TB treatment. ART should be started as soon as possible for any child with active TB within 8 weeks of starting TB treatment, regardless of CD4 count and clinical stage

How to start the TAR?

Current HIV treatment guidelines offer new antiretroviral treatment options that are better tolerated, more effective, and have lower dropout rates than previously used drugs. In 2019, WHO recommended the use of low-dose dolutegravir and efavirenz for first-line treatment.

In first-line ART regimens, fixed-dose, once-daily combinations of ARVs are preferred.

CD4/mm3 lymphocyte count and viral load are useful for initiation and monitoring of antiretroviral therapy, but should not delay initiation of ART.



Special cases:

- **Advanced HIV infection**

Definition

For adults, adolescents, and children aged ≥ 5 years, advanced HIV disease is defined as a CD4 count <200 cells/mm3 or a manifestation characteristic of clinical stage III or IV according to the WHO classification.

All children <5 years of age with HIV infection are considered advanced.

Why talk about it?

Scientific evidence indicates that at least one in three people living with HIV present to our care services in an advanced stage. In addition, there are a number of people who return to care at an advanced stage of the disease after discontinuing their treatment.

People with advanced HIV disease are at high risk of death, even after starting ART, with the risk increasing as CD4 counts fall. The most common causes of death are tuberculosis, severe bacterial infections and cryptococcal meningitis.

A package of interventions that includes screening, treatment and/or prophylaxis for major opportunistic infections, prompt initiation of ART, and intensified adherence support should be offered to any person presenting with advanced HIV disease.

Table 25: Late Stage HIV Intervention Package for Adults and Adolescents

Domains	**Intervention**	**CD4 count**	**Adults and teenagers**
Screening and Diagnosis	Xpert MTB/RIF on sputum as a first diagnostic test for TB in symptomatic patients	Whatever the result	Yes
	LAM" urine test for the diagnosis of tuberculosis in patients with signs and symptoms of this disease	≤100 cells/mm3 or whatever the result if severely ill	Yes
	Cryptococcal antigen (CrAg) testing	≤ 100 cells/mm3	Yes
Prophylaxis and preventive treatment	Cotrimoxazole prophylaxis	≤ 500 cells/mm3 or significant WHO clinical stage III or IV event. Regardless of the CD4 count result in a high prevalence of malaria and/or bacterial infections	Yes

		severe	
	Isoniazid prophylaxis	Whatever the result	Yes
	Preventive treatment with fluconazole for CrAg positive patients without apparent meningitis	< 100 cells/mm3	Yes
	Quick initiation of TAR	whatever the result	Yes
Quick initiation of TAR	Delay initiation of ART if clinical signs and symptoms are suggestive of tuberculosis or cryptococcal meningitis	Whatever the result	Yes
Support adapted to compliance	Personalized counseling for optimal adherence advance care package, including home visits if possible	< 200 cells/mm3	Yes

- **People living with HIV who are not ready to start ART immediately on the day of diagnosis**

They should not be forced to start taking medication right away.

Instead, they should be educated about the benefits of ART, including the option of starting it the same day, and supported in making an informed choice about when to start treatment.

The decision to start ART should be a collaborative process between the health care provider and the person living with HIV or their close contacts. The timing of counseling should be appropriate. Priority should be given to developing an immediate adherence plan and recognizing the side effects of the medication.

Subsequent counseling sessions during the first few months of ART should cover other topics, such as knowledge of treatment, including the need for optimal adherence throughout life, how to monitor ART, and opportunities for differentiating HIV care in the future.

- **Children and their guardians, adolescents and drug users**

This category of people must be given special attention. Indeed, compliance may present specific difficulties that may prevent them from accepting to start treatment on the same day as the diagnosis.

7.3 Therapeutic protocols

First-line treatment in adults and adolescents

- **First-line treatment in HIV-1 infected adults and adolescents**

The first-line protocols that are preferentially recommended by the AIDS program in accordance with the latest WHO guidelines are described in Table 26

The recommended preferred option for initiating ART is a single fixed-dose combination of ARVs.

Table 26. Preferred 1st line ART regimens and other recommended options

Target population	**Preferred schemes**	**Alternative schemes**
Adults	**TDF + 3TC (FTC) + DTG** or TDF + 3TC (or FTC) + EFV	TDF + 3TC (or FTC) + NVP AZT + 3TC + EFV (or NVP)
Teenagers	**TDF + 3TC (FTC) + DTG** or TDF + 3TC (or FTC) + EFV	AZT + 3TC + EFV (or NVP) TDF (or ABC) + 3TC (or FTC) + DTG TDF (or ABC) + 3TC (or FTC) +EFV400 TDF (or ABC) + 3TC (or FTC) +NVP

Box 2: How to treat?

■ First-line ART should preferably include two nucleoside reverse transcriptase inhibitors (NRTIs) and an integrase inhibitor; a non-nucleoside reverse transcriptase inhibitor (NNRTI) may be used instead of an integrase inhibitor.

■ The use of simplified, less toxic and more convenient fixed-dose combination regimens is recommended for first-line ART.

Once-daily regimens consisting of a non-thymidine Nucleoside Reverse Transcriptase Inhibitor (TDF + FTC or TDF + 3TC) and an integrase inhibitor (DTG) or a Non-Nucleoside Reverse Transcriptase Inhibitor (NVP) are considered preferable options in adults and adolescents

■ TDF + 3TC (or FTC) + DTG is currently the recommended fixed-dose combination as the preferred option for initiating ART.

- TDF + 3TC (or FTC) + EFV is still a recommended fixed-dose combination for initiating ART in the absence of DTG.

- If TDF + 3TC (or FTC) + EFV is not available one of the following options is recommended:

- AZT + 3TC + EFV
- AZT + 3TC + NVP
- TDF + 3TC (or FTC) + NVP

■ DTG should only be used in children aged 6 years and older.
■ NVP will only be used if EFV and DTG are not available or EFV is not tolerated.

Note:

❖ For any prescription of Nevirapine in naive patients, it is necessary to:

- Do not use if the CD4 count is above 400/mm3 in men and 250/mm3 in women;
- start with half the dose (200 mg) for the first 2 weeks ;
- monitor transaminases every 2 weeks for the first 16 weeks of treatment;
- avoid the combination of Abacavir+Nevirapine, because of the high risk of reactions cutaneous.

❖ Safety and efficacy data on the use of DTG and EFV 400mg in adolescents, pregnant women and TB-HIV co-infected individuals are not yet available. Studies are ongoing.

- **First-line treatment of adults and adolescents infected with HIV2 or co-infected with HIV1+ HIV2**

Because HIV 2 is naturally resistant to NNRTIs, treatment of ARV-naive HIV 2-infected or HIV1 + HIV2 co-infected individuals should be with a regimen that includes

- three NRTIs (**TDF+(3TC or FTC**) +AZT OR **AZT+3TC+ABC**);
- or a PI boosted with ritonavir and two NRTIs;
- or two NRTIs and an Integrase Inhibitor (active on HIV1 and HIV2); the preferred Integrase Inhibitor is DTG.

Table 27. Recommended first-line ARV protocols for HIV2 infection or HIV1 + HIV2 co-infection in adults and adolescents

Recommended combinations if HIV2 infection or HIV1 + HIV2 co-infection		
3 NITIS	**2 NRTIs + 1 boosted PI*.**	**2 NRTIs + 1 Integrase inhibitor**
TDF + 3TC + AZT	TDF + 3TC + LPV/r TDF +FTC + LPV/r AZT + 3TC + LPV/r	TDF + 3TC + DTG TDF + FTC + DTG AZT + 3TC + DTG
ABC + 3TC + AZT	ABC + 3TC +LPV/r	ABC + 3TC + DTG

* If a PI-based regimen is used, the preferred first-line option is LPV/r, bearing in mind that in low-income countries it is often used as second-line treatment in adults and first-line treatment in children.

N.B.: As an alternative option, DRV/r can be used as a boosted PI; however, it is not yet available as a fixed-dose thermostable combination.

Second-line antiretroviral therapy in adults and adolescents

- **Indication for second-line treatment**

Second-line treatment is indicated in case of therapeutic failure.

Preferred second-line regimens as well as other options are proposed, consistent with the principles of ART optimization, availability of fixed-dose ARV combinations, tolerability, and risk of resistance mutations.

The combination therapy strategy recommended by the program includes a ritonavir-boosted protease inhibitor (Atazanavir/ritonavir, Lopinavir/ritonavir).
The new recommendations are for the use of Darunavir/ritonavir as an alternative regimen for adults and adolescents.

Dolutegravir may also be used for second-line therapy if not used in the first line, and Darunavir/ritonavir is recommended as an anchor drug in the third line or as an alternative therapy in the second line.. https://www.who.int/fr/news-room/fact-sheets/detail/hiv-aids 6 July 2020

- **How to treat?**

The use of a combination of a boosted PI + two NRTIs is ère recommended as the preferred strategy for 2nd-line ART in adults and adolescents when NNRTI-containing regimens (EFV, NVP) have been used for 1st-line ART.

Box 3. Second-line ART for adults

Second-line adult ART should contain 2 NRTIs + 1 PI boosted with ritonavir.

The recommended NRTI options are as follows:

- In case of failure with a 1st line regimen based on TDF + 3TC (or FTC), AZT + 3TC is used as a major NRTI in the 2nd line regimen.
- If a first-line regimen based on AZT + 3TC fails, TDF + 3TC (or FTC) is used as a second-line NRTI.
- The use of NRTIs in a fixed-dose combination is the preferred approach.
- Thermostable fixed-dose combinations of ATV/r and LPV/r are the preferred boosted PI options for 2nd-line ART

In some specific situations, other NRTIs such as ABC can be used as potential backup options, but are not recommended as preferred alternatives because they have no specific benefit and increase complexity and cost.

Table 28: Currently recommended 2nd-line ARV treatment protocols as preferred options for adults and adolescents co-infected with TB and viral hepatitis B (WHO 2017)

Target population	Preferred second-line plans	
Adults and teenagers (≥10 years)	If AZT was used as a first-line ART line	TDF + 3TC + ATV/r TDF + FTC +ATV/r TDF + 3TC +LPV/r TDF +FTC + LPV/r
	If TDF was used in ART front line	AZT +3TC + ATV/r AZT + 3TC + LPV/r
HIV and TB co-infection	If rifabutin is available	Standard PI-based diets identical to those recommended for adults and adolescents
	If rifabutin is not available	Same NRTIs as recommended for adults and adolescents plus a double dose of LPV/r (i.e., LPV/r 800mg/200mg twice/day) or a standard dose of LPV with an adjusted dose of RTV (i.e., LPV/r 400mg/400mg twice a day)
HIV and HBV co-infection	AZT + TDF + 3TC + ATV/r AZT + TDF + 3TC + LPV/r AZT + TDF + FTC + LPV/r AZT + TDF + FTC + LPV/r	

For people with HIV and HBV co-infection who have received a first-line regimen containing TDF + 3TC (or FTC), these same NRTIs should

be continued in the second-line regimen because of their anti-HBV activity and to reduce the risk of hepatic cytolysis flares. This principle is valid regardless of the second-line regimen chosen, which should be composed of AZT + TDF + 3TC (or FTC + a potentiated PI).

Third-line antiretroviral therapy

Third-line treatment is indicated when there is documented failure of first- or second-line antiretroviral therapy.

Since 2017 PNLIST has established a committee for the initiation of third-line antiretroviral therapy. It is a multidisciplinary committee composed of clinicians, biologists and psychologists the purpose is to discuss cases of patients in failure of 1ère /2ème line treatment requiring the setting on new therapeutic lines, especially the 3 rd line.

The principles from the 2013 guidelines are still in effect for third-line regimens; these should include new drugs, which have minimal risk of cross-resistance with previously used regimens.

Table 28: Proposed RDR for change

Population	**1st line diagram**	**2nd line diagram**	**3rd line diagram**
Adults and adolescents	2 NRTIS + EFV or 2 NRTI + NVP	2 NRTI + ATV/r or LPV/r:	DRV/r1+ DTG (or RAL) +1-2 NRTI
		2 NRTI + DRV/r	
	2 NRTI + DTG	2 NRTI + ATV/r or LPV/r	DRV/r + 2 NRTI ±INNTI
		2 NRTI + DRV/r	Optimization of the diagram therapeutic with the help of from genotypic profile

In patients who have received a prior PI, the recommended dose of DRV/r is 600mg/100mg twice daily.

A patient who is failing on second-line ART and for whom no new ARV option is available, after genotyping, should remain on a well-tolerated regimen.

7.4 Management of treatment failure

Types of treatment failure

Antiretroviral treatment failure can take three forms :clinical failure, immunological failure and virological failure.

- **Clinical failure**:

It is characterized by the occurrence of WHO stage III (pulmonary tuberculosis and severe bacterial infections) or stage IV clinical events after 6 months of effective treatment, indicating disease progression (HIV-related symptoms, new or relapsed opportunistic infection, tumor development). Usually, this stage of clinical failure is accompanied by biological failure with collapsed CD4 T cells and high viral load.

The pathology must be differentiated from an IRIS (Inflammatory Immune Reconstitution Syndrome) occurring after the initiation of ART.

- **Immunological failure**

It is defined by the absence of CD4 T cell ascension despite effective antiretroviral therapy for at least 6 months. This is more likely to be seen in patients with initially low CD4 T cell counts. This failure may be accompanied by virological success (undetectable viral load) or virological failure. This is the situation where CD4 T cells remain below 100 cells/mm^3 .

- **Virological failure:**

This is when the plasma viral load is greater than 50 copies/ml based on two measurements taken three months apart, with adherence support. A person must be on ART for at least 6 months before a determination of treatment failure can be made.

The optimal threshold for defining virological failure and the need to change ARV regimens has not been determined. However, it should be noted that the risk of HIV transmission and progression of infection is very low when the viral load is below 1000 copies.

The mechanisms that lead to virological failure are most often progressive over time. In patients starting a first antiretroviral treatment, the persistence of a detectable viral load beyond 3 to 6 months or its rebound after a period of undetectability are almost never related to a primary resistance of the virus, but result from an ineffective concentration of the drugs.

On the other hand, in patients who have already been treated several times and for whom the succession of treatments has not been effective or only partially effective, the virus' resistance mutations to the antiretroviral molecules accumulated over time play a predominant role in the therapeutic failure.

NB:

A ″Blip″ is defined as an isolated viral load rebound with no drop in CD4 count and no clinical manifestation. In this case, a viral load should be re-requested two weeks later.

When using Dried Blood Spot (DBS) technologies to assess viral load, it may be possible to set a higher viral threshold (3000-5000 copies/mL) to define virological failure, until sufficient sensitivity is achieved with lower thresholds.

What to do in case of treatment failure

Viral load measurement is the preferred monitoring method for diagnosing and confirming antiretroviral therapy failure.

It provides an earlier and more accurate indication of treatment failure and therefore the need to switch to second-line ARVs. It thus contributes to reducing the accumulation of ARV resistance mutations and improving clinical outcomes.

Viral load measurement can also help distinguish between treatment failure and nonadherence, and can be used as a population-level transmission risk control measure.

If viral load measurement is not routinely available, diagnosis of treatment failure should be made by monitoring CD4 counts and clinical follow-up.

7.5 National protocol for the treatment of pregnant and breastfeeding women with ARVs in Gabon

Conditions of treatment

In Gabon, since October 2013, pregnancy and breastfeeding are now eligibility criteria for ART. Treatment is indicated for any pregnant or breastfeeding woman with a positive HIV status, regardless of WHO clinical stage and CD4 count.

All HIV-positive pregnant or lactating women should start ART with a combination of three (3) ARVs. This ART must be continued for life.

When to start and how to proceed to initiate ART in a pregnant or breastfeeding woman?

For pregnant women, ART should be started regardless of gestational age. It is recommended that ART be started as early as possible in the pregnancy, especially in the first trimester.
The main objective of ART in pregnant women is to achieve an undetectable maternal plasma viral load in the third trimester of pregnancy. Indeed, the risk of mother-to-child transmission of HIV is less than 1% when the maternal viral load at delivery is undetectable.

For breastfeeding women, ART must be started regardless of the breastfeeding period.
For both pregnant and breastfeeding women, treatment is continued for life.

- **Steps in starting ART**

Doing pre-treatment education

Pre-therapy education consists of explaining:

– the purpose of the treatment;
– the need for immediate treatment initiation and lifelong continuation of antiretroviral therapy;
– treatment modalities (name of the specialty, dose, presentation, frequency of administration, route of administration and possible side effects);
– the fact that achievement of results depends on the quality of compliance;
– consequences of poor compliance;
– the modalities of follow-up of the

treatment. It also consists of :

- Look for possible factors that may interfere with treatment and discuss possible solutions:
- Solicit the client's commitment to treatment.

At the end of this session, the provider should demonstrate her willingness to support the client as much as possible.

Initiate antiretroviral treatment

ART in pregnant or lactating HIV-positive women

Currently, standardized ART in the form of preferred and alternative regimens is available. These standardized ARTs in HIV-positive pregnant or lactating women have advantages:

- The same simplified ART regimen is administered to all pregnant and lactating women (regardless of WHO stage and CD4 count) and continued for life:
- Prevention of HIV infection in children;
- Improved maternal health:
- A strong preference and acceptability of the populations for this approach;.
- Reducing sexual transmission of HIV to partners.

It should be noted that the RDR differs according to the type of

- HIV 1 :
- HIV 2:
- HIV1+HIV2.

- **ART in pregnant or lactating HIV1 positive women**

Preferred regimen for pregnant or lactating women (or preferred first-line regimens)

In pregnant and lactating women, the preferred regimen of ART is 2 NRTIs + 1 NNT

A once-daily fixed-dose ARV combination of :
Tenofovir (TDF) + Emtricitabine (FTC) + Efavirenz (EFV)
One (1) bedtime tablet of (Tenofovir 300mg, Emtricitabine 200mg, Efavirenz 600mg) It is recommended that this tablet be administered at night at bedtime. because of the neurosensory side effects of Efavirenz.

Alternative regimens in HIV1-positive pregnant or lactating women (or alternative first-line regimens)

In case of unavailability of the preferential diet or intolerance to one of the molecules or other situation, it is recommended in pregnant or breastfeeding women to use :

Zidovudine 300 mg (AZT) Lamivudine 150 mg (3TC) and Efavirenz 600 mg (EFV) or

Zidovudine 300 mg (AZT) Lamivudine 150 mg (3TC) and Nevirapine 200 mg (NVP)

or Tenofovir 300 mg (TDF) Lamivudine 150 mg (3TC) and Nevirapine 200 mg (NVP)

or

Tenofovir 300 mg (TDF) Emtricitabine 200 mg (FTC) and Nevirapine 200mg (NVP)

NB When prescribing Nevirapine to naive patients (first-time use), it is important to

- Do not use if CD4 count is greater than 250/mm3 in women
- Start with half the dose (200 mg) for the first 2 weeks
- Monitor transaminases every 2 weeks for the first 16 weeks of treatment

***Note**: Efavirenz has a superior virological efficacy and genetic barrier profile compared to Nevirapine.*

If intolerance to one of the molecules of the preferential or alternative regimen is detected, the patient must be referred to a specialized care center (CTA, Inteme medicine service, etc.)

Second-line regimen in pregnant or lactating women (or second-line regimens)

The second-line ARV treatment protocols that are currently recommended for HIV-positive pregnant and lactating women are the same as those used for other adults.
These protocols should be initiated at specialized care sites.

- **ART in pregnant or breastfeeding HIV2 positive women**

Because HIV2 is naturally resistant to NNRTIs, ARV-naive HIV2-infected or co-infected VH1+2 individuals should be treated with a regimen consisting of 3 INTs OR 2 NRTIs+1 PI/ritonavir.
These people must be referred to a care center.

- **Special cases**

In pregnant or breastfeeding HIV+ women already on ART, the first step is to verify the effectiveness of the current treatment (viral load as a priority and CD4 if viral load is not available) and the absence of toxicity of the molecules used for the mother (hemoglobin, transaminases, creatinine, urea) and the child.

NB: ARVs are free of charge for pregnant or breastfeeding women and infants throughout the country. Any woman who tests positive for HIV should receive free ARVs as well as her child.

7.6 Protocol for the therapeutic management of HIV-infected children

Expanding access to appropriate antiretroviral treatment for young children is at the forefront of global concerns. According to WHO, the number of HIV-related deaths worldwide can be significantly reduced at a faster rate by increasing support and services to populations disproportionately affected by the epidemic, including young children.

In 2019, there were an estimated 95,000 HIV-related deaths and 150,000 new infections among children. Only about half (53%) of children who needed antiretroviral therapy were receiving it. The lack of appropriate pediatric formulations for optimal medications has long been a barrier to achieving better outcomes for children living with HIV.

In June 2020, WHO welcomed the decision by the U.S. Food and Drug Administration to approve a new 5 mg formulation of dolutegravir for infants and children older than four weeks and weighing more than 3 kg. This decision will allow all children to have rapid access to an optimal drug that, to date, is only available for adults, adolescents and older children. WHO is committed to accelerating the prequalification of dolutegravir as a generic drug so that it can be used as soon as possible by countries to save lives. https://www.who.int/fr/news-room/detail/06-07-2020-who-access-to-hiv-medicines-severely- impacted-by-covid-19-as-aids-response-stalls

Preparation for ART adherence

The major challenge of treatment in children is adherence to ART. Good adherence to ARV treatment, i.e., taking the treatment daily and at a fixed time, is the main objective that the infant/child/adolescent child must achieve, with the support of the health care team and his/her parents.

- **General information on adherence to treatment**

In all chronic diseases, long-term compliance is a challenge that teams must face. Studies have shown that there are both favourable and unfavourable factors for compliance. Some are related to the treatment itself, others to the representation that the patient and his or her parents have of this treatment: the history of the disease and its evolution have a more or less favourable influence on compliance, as does the quality of the relationship between the family and the care team.

Finally, the solidity of the family environment and the involvement of the parents around the child are of major importance, especially for the youngest.

Table 29: Main factors favouring and hindering treatment compliance

Factors related to compliance	**Enabling factors,**	**Adverse factors**
Drug-related factors or treatment	Short treatment, limited in time	Prolonged or indefinite treatment
	Single treatment taken twice a day	Number of intakes greater than or equal to 3 per day
	1 to 4 tablets per day	More than 4 tablets per day
	Treatment that has visible/unpleasant effects when stopped quickly	Preventive and prophylactic treatments, the cessation of which has no visible short-term consequences
	Well-tolerated treatment	Important side effects
	Adapted galenic, easy to use	Big tablets, bad taste
Related factors knowledge of the disease and treatment	Good knowledge and understanding of the role of each drug and its modes of action	Taking medication without information about the disease
	Confidence in the efficacy of the treatment and the possibility of long-term survival	Lack of belief in the effectiveness of a treatment
Factors related to the history and evolution of the disease	History of severe opportunistic infections	Long asymptomatic period
Relationship factors between the team, the child and his/her parent	Regular communication and exchange between the physician and the family	Vertical, authoritarian relationship
	Mutual trust between the team and the family (child and parents)	Suspicious, infantilizing relationship with caregivers
Patient and family factors	Support from family or friends) to take the treatment	stress, anxiety, depression weakness of adjustment strategies
	Stable family setting and structure	High levels of insecurity can have negative effects on compliance (food insecurity, difficulties to pay for transportation...)

- **Particularities according to age**

These different factors do not influence in the same way, according to the age of the child, his medical and family history. Certain aspects must be observed more carefully in certain age groups.

In infants

In this age group, the difficulties frequently encountered are :

- Psychological difficulties for the mother: guilt for having transmitted the virus to the baby, sometimes difficulties in managing one's own HIV status if the announcement is recent.
  Offer individual psychological support.
- Difficulties in establishing the mother-child relationship, lack of interest in the child, inability to believe in the child's future (more frequent if the mother has died and the parental substitute (guardian) is not directly involved with HIV).
  Offer psychological support, integration into a mother's group, encourage father's participation.

These disorders, which can be observed during the care of infants, may have repercussions on compliance, but also deleterious effects on the baby, who sometimes develops eating disorders (anorexia) or relationship disorders.

In young children

- Discouragement in relation to iterative or recurrent diseases (severe from the start). **Reinforce the medical explanations, possibly take a specialized pediatric opinion**.
- Low motivation to administer treatments (especially syrup forms), especially if they are poorly accepted by the infant. **Reinforce therapeutic education, exchanges with other parents of infants.**

It is difficult to give a treatment every day to an infant and young child. Information alone, given to parents, is not enough. It is important to check regularly that they are able to manage the difficulties of daily administration and that they remain motivated to treat the child. Some parents may not be able to do this, but they must feel entitled to tell the doctor and the team. It is important not to make parents feel guilty, but rather to recognize the difficulty of daily treatment and to seek solutions with them. Among these, the team can try:

- To replace syrups by pediatric (oro)-dispersible tablets, adapted to infants and children. These tablets are more and more available in the South but sometimes not ordered by the sites.
- To repeat the explanations on the tricks to mask the taste of medication, on the ritualization of taking medication.
- Reinforce parents' belief in the treatment. Because infants and young children are very sensitive to the emotional state of the adult, they are more likely to accept treatment if the adult giving the treatment is convinced of its value. One of the best ways to convince parents is to highlight the child's progress (learning, growth, general health, etc.) during the consultation. Sharing with parents of young infected children can be very supportive for some parents.

In school-aged children

The problem, in older children, is less related to the galenic form of the medication than to the justification for taking the treatment every day. From the age of 7-8 years, we most often see the child questioning the treatments. If the parents are not accompanied, they answer in an evasive or erroneous manner.

For the child, this attitude of not saying anything and lying can lead to suspicion and mistrust of the treatment.

The role of the physician and the team in this age group is to look for signs that the child is questioning before non-compliance occurs.

This requires regular questioning of the parents outside the presence of the child Ŕ on the questions he asks at home and on his attitudes in daily life. The response to be provided consists of a permanent dialogue with the child, the transmission of clear and appropriate information about his disease, in order to gradually announce the disease from which he suffers. This process must be carried out in consultation, in individual interviews, and in group activities (therapeutic education sessions, thematic groups*).*

In the adolescent

Adolescent non-compliance problems are very common and often complex to decipher. Adolescents are generally aware of their diagnosis and the risks of stopping or taking their medication irregularly. But the process of adolescence often interferes negatively with the acceptance of the disease and the constraints of daily treatment.

Appropriate medical and psychological support, participation in discussion groups for infected adolescents, and multidisciplinary management make it possible to resolve a number of cases of refusal of the therapeutic project. The approach to deciphering compliance problems in adolescence and ways of dealing with them is detailed in chapter III of this guide.

At the parents' home

Parental involvement was emphasized for young children. But it is important at any age, including adolescents. It is important to ensure that they understand how ART is administered, that they believe in its effectiveness, and that they take their role in administering or supervising the medication seriously.

Sometimes parents delegate the supervision of the medication to someone in the family who is not familiar with the diagnosis or does not have authority over the child (e.g., an older sister). The adult who is responsible for the intake must be available to be present at the time of intake.

If there is a failure of the child's caregiver, it is advisable to better support this adult or sometimes to look for another referent adult. In all cases, it is important to remain vigilant about side effects, even moderate ones, which may lead to irregular intake or discontinuation of treatment. Parents and children should be warned of the possibility of these side effects (without listing them exhaustively either) and asked to consult if they are bothersome.

Administration of antiretroviral therapy

- **When to start ARV treatment in children?**

The decision to start ARV treatment is based on clinical (disease stage), biological (degree of immune deficiency, CD4) and socio-familial (adherence) criteria,

compliance). The choice of antiretroviral drugs depends on the patient's clinical status (history or existence of opportunistic disease), the pre-treatment assessment and the availability of antiretroviral drugs.

The treatment regimen is "personalized. A baseline clinical assessment prior to initiating ARV therapy must necessarily take into account the following

Interrogation

- Birth history.
- Clinical condition of the mother during pregnancy and delivery
- Did the mother receive antiretroviral treatment during pregnancy for prevent mother-to-child transmission of HIV (PMTCT)?
- Birth information (mode of delivery, birth weight, neonatal complications)
- Has the newborn received ARV prophylaxis (Nevirapine or AZT)?
- Medical history of the child (all other routes of contamination should be investigated)
- Allergy, Drug intolerance
- History of weight and psychomotor development
- Serological status for hepatitis B and C
- Identification of current and past OIs, co-infections (TB, hepatitis) and adolescent pregnancy that may interfere with treatment.

Physical examination

It should be comprehensive with a complete evaluation of all devices including:

- Weight, height, head circumference and brachial circumference (for children under 5 years of age) to be measured at each visit and indicated on the growth charts,
- Assessment of psychomotor development
- Search for stigmata related toHIV infection:oral candidiasis, lymphadenopathy, hepatomegaly, splenomegaly, dermatitis.....

This examination should result in the clinical classification of the child.

Para clinical assessment

According to national recommendations, a minimum package of examinations has been retained:

- CD4 cell count to assess the degree of immunodeficiency. In children under 5 years of age, the percentage (%) is preferred over the absolute value
- Hemogram (Blood count): Hb, Hct, WBC, formula leukocytes, platelets
- Biochemistry: Glycemia, Creatinine, transaminases, (to assess organ damage and adapt ARV treatment),
- Chest X-ray (face) to detect a tuberculosis

Plasma viral load: is not essential to initiate ARV treatment, but may be requested during treatment or in case of clinical and/or immunological failure.

- **Antiretroviral molecules available in GABON**

Chemical molecules act on the virus by blocking the virus cycle at different stages of replication. The ARVs used in Gabon in children belong to three classes

– Reverse transcriptase inhibitors composed of nucleoside inhibitors (NRTI): Zidovudine (AZT), Lamivudine (3TC), Emtricitabine (FTC), Abacavir (ABC), Didanosine (DDI)

– Nucleotide inhibitors (INRTt): Tenofovir (TDF)

– Non-nucleoside inhibitors (NNRTI) represented by Nevirapine (NVP) Efavirenz (EFV). They block the transformation of RNA into DNA, thus preventing the virus from using the DNA of the host cell to reproduce.

– Protease inhibitors (PI): They prevent viral replication by forming defective viral particles that are unable to infect other cells. They are : Lopinavir (LPV), Ritonavir (rit), Atazanavir (ATV), Darunavir (DRV)

– Integrase inhibitors are still very rarely used in our context in children. It is Raltegravir (RTV), Dolutegravir (DLG)

- **Treatment protocols for children infected with HIV 1**

First-line antiretroviral therapy in children infected with HBV1

Better ARV treatment options are needed today because of their efficacy/cost ratio, low toxicity, good tolerance and ease of administration, long-lasting effect, strong genetic barrier to resistance, better sequencing of treatment lines (1st, 2nd and 3rd line) and switching between lines

Table 30: First-line ART in children

First-line antiretroviral treatment for children		
	Newborns	4 weeks Ŕ 6 years/ 6 Ŕ 10 years
1st intention	AZT + 3TC + RAL1	ABC + 3TC + DTG 2
2nd intention	AZT + 3TC + NVP	ABC + 3TC + LPV/r ABC + 3TC + RAL1
Special circumstances 4	AZT + 3TC + LPV/r	ABC or AZT + 3TC + EFV AZT + 3TC + LPV/r AZT + 3TC + NVP ABC or AZT + 3TC + RAL

1 - Shortest possible time until a solid formulation of LPV/r or DTG can be used
2 - For age and weight groups with an approved dosage by DTG 3 -
From 3 years of age
4 - In cases where no other alternative is available

Table 31: Protocol Change Options

Treatment line options for children		
1st line	**2nd line***	**3rd line**
2 NRTIs + LPV/r 1-	2 NRTIs + DTGs	DRV/r + DTG**** +/-DRV/r + DTG**** +/- 1-2 NRTIs. Where possible, consider optimization through genotyping
2 NRTIs + EFV or NVP	2 NRTIs + DTG***	
2 NRTIs + DTG or RAL	2 NRTIs + ATV/r or LPV/r	

Options

* Imperative use of optimized NRTI

** Applies to children for whom the appropriate dosage/formulation of DTG is available, otherwise replace with RAL

*** Applies to children for whom the appropriate dosage/formulation of DTG is available; otherwise, replace with ATV/r or LPV/r

**** Third-line DTG therapy following NRTIs should be administered twice daily.

Box 4: New developments and anticipated trends in ART

News	***Anticipated trends***
DTG-containing regimens for all infants and children 4 weeks of age and older • RAL granules for the treatment of newborns • LPV/r or RAL as 2nd line for infants and children • Treatments containing only **NNRTIs** in special circumstances, when no alternative is available • DTG-containing treatments in 2nd line after failure in 1st line of a treatment containing LPV/r or NNRTI • IP booster treatment after failure in 1st line containing INSTI	• Increasing use of ABC/3TC as a primary 1st line NRTI • Treatments containing NNRTI are being used less and less • Increasing use of formulas containing INSTI in the 1st and 2nd line • Increasing demand for RTV super booster in process

Harmonization of pediatric protocols: DTG

• Currently approved in children ≥ 6 years/ ≥ 15kg

• Work in progress to establish dosing in young children and infants as well as the use of the 50mg single dose in children ≥25kg*

• **Available in 50mg, 25mg and 10mg tablets**

• Generic DTG and ABC/3TC/DTG formulations under development

Table 32: Pediatric DTG Assay

Body weight (kg) Dose	**Dosage**
15 to less than 20kg	20mg single dose
20 to less than 30kg	25mg single dose
30 to less than 40kg	35mg single dose
40kg and more	50mg single dose

* TDF/3TC 300mg/300mg already recommended in children ≥30kg. Use of DTG 50mg in this age group would favor the use of TLD

Second-line antiretroviral therapy in HIV-infected children1

Second line is only used in children over 3 years of age. If first-line therapy fails, switch to second-line ART. (See Table 31 on page 119).

- **Treatment protocols for children infected with HIV 2**

The recommended protocols are based on the use of ARV combinations consisting of

2 NRTIs + 1 PI/r or 3 NRTIs.

CONCLUSION ON ARV TREATMENT :

THE CHALLENGE: MAINTENANCE OF SKILLS_ACCELERATION_PERENIZATION

Globally, 25.4 million people living with HIV were receiving antiretroviral treatment in 2019, which corresponds to a global coverage rate of 67%. However, more efforts are needed to scale up treatment, especially for children and adolescents. Only 53% were receiving antiretroviral treatment at the end of 2019.

Over the past two years, the annual number of new HIV infections has plateaued at 1.7 million, and there has been only a slight decline in the number of HIV-related deaths, from 730,000 in 2018 to 690,000 in 2019. Despite continued progress in scaling up treatment coverage-more than 25 million people in need of ARVs received them in 2019-the major global targets for 2020 will not be met.

2020 Targets: Disparate progress. The UNAIDS report on the global AIDS epidemic points to a failure accentuated by COVID-19. Since 2015, 3.5 million additional HIV infections and 820,000 additional AIDS-related deaths are attributable to unmet targets. These would have been prevented if the 2020 targets had been met. The response could also turn back the clock by at least 10 years if the COVID-19 pandemic severely disrupts HIV services.

Discussion points

What about Gabon?

What is the situation in relation to the 90 90 90 target in relation to TAR? In relation to the availability of the CV?

What can be done to improve CEP? And at the

military level: next steps?

DAY 3 MODULE 8: BIOSECURITY AND POST EXPOSURE PROPHYLAXIS

Theory Session:

8.1 Biosafety (30 minutes)

In this section, the trainer introduces the general concept of biosafety: definition, generalities, risk assessment, good laboratory practices, sample transport, waste management and personnel protection.

Definition

Biosafety is the set of measures aimed at preventing and countering the dangers associated with the handling and use of biological materials.

Risk assessment

It is important to include the following information in provider training for at-risk groups:

Risk Group 1

- Low or no risk to individuals or the community
- A microorganism that is unlikely to cause human or animal disease.

Risk Group 2

- Moderate risk to individuals, low risk to the community
- A pathogen capable of causing human or animal disease but which rarely constitutes a serious hazard to laboratory personnel, the community or the environment.
- Laboratory exposure is likely to result in a serious infection, but can be prevented or treated effectively.
- Risk of spreading the infection is limited.

Risk Group 3

- High risk to individuals, low risk to the community.
- Pathogenic germ = >a serious human disease,
- No transmission from one individual to another.
- Existence of effective treatment and preventive measures

Risk Group 4

- High risk to individuals, high risk to the community.
  A pathogenic germ that usually causes serious human disease Direct
- and indirect transmission from one individual to another,
- No effective treatment or preventive measures

8.2 Blood Exposure Accident (BEE) (30 minutes)

Trainer introduces the general concept o f Blood Exposure Accident (BEA) - trainer may include the following information from an international resource.

Definition of HIV Exposure Accident

These are accidents that expose people to the risk of transmission of HIV, but also of hepatitis B and C viruses and other STIs (syphilis, gonorrhea infections, chlamydia trachomatis, etc.). There are several types of HIV exposure accidents. There are: Accidents of exposure to blood (AES), to a biological fluid (cerebrospinal fluid, inflammatory secretions, etc.) or contaminated by blood, most often occurring during a health professional practice or not, during a needle stick, a cut with a sharp object or by contact with a wound, a non-intact skin or a mucous membrane (mouth, eye, etc.) ;

Exposure accidents involve two people:

- the exposed person, i.e., the person who has been potentially at risk of HIV infection through exposure to blood or body fluids, whether in the workplace or elsewhere, and
- the source person, which is the person (identified or not) who may have been the source of the potentially infected blood or body fluid. If the source person is identified and his or her HIV status is not known, he or she may be asked to give informed consent for HIV testing. The source person may be a patient when a health care worker is exposed, or the perpetrator of a sexual assault.

HIV-exposed injuries among health care workers

Occupational exposure is defined as exposure that occurs in the course of work. However, the extent of occupational hazards in health services is not well known, partly because of the tendency to stigmatize sharps injuries and the lack of post-exposure prophylactic provisions.

Employers should ensure that health care workers and those providing care at all levels are aware of the risk of HIV/AIDS in the workplace. However, the term occupational post-exposure prophylaxis should not be understood to refer only to medical workers: it also applies to other workers, such as emergency rescue teams, garbage collectors, law enforcement personnel, firefighters, and others who may be exposed to potentially infected blood, tissue, or body fluids in the course of their work.

Potentially contaminating liquids
■ Blood; ■ Cerebrospinal, pleural, pericardial, ascitic, synovial, peritoneal, amniotic fluid; ■ Semen; ■ Genital secretions.

Non-contaminating liquids
■ Tears; ■ Saliva; ■ Sweat; ■ Nasal secretions; ■ Urine;■ Stool.

AES risk gestures
■ Venous sampling (blood cultures...); ■ Catheter placement; ■ Subcutaneous injections; ■ Invasive surgical procedures.

Types of exposure that define the criteria for treating :

*Massive exposure***:** deep puncture, intravascular device or hollow IV or intra-arterial needle.

*Moderate exposure***:** cut with scalpel through gloves, superficial puncture with hollow IV or intra-arterial needle. Minimal exposure: superficial erosion, with a solid (suture) or small-bore hollow needle (IM or SC); mucocutaneous contact; puncture with an abandoned syringe.

What to do in case of an HIV exposure accident

In this situation, it will be a matter of post-exposure prophylaxis (PEP), involving all the services necessary to protect the exposed individual from HIV infection.

- **What is Post Exposure Prophylaxis (PEP)?**

Post-exposure prophylaxis is an emergency medical intervention (under the responsibility of a physician) to prevent the transmission of blood-borne pathogens following a potential exposure. In the context of HIV, post-exposure prophylaxis refers to the set of services provided to manage the specific aspects of HIV exposure and to protect an individual exposed to HIV infection. These services consist of first aid, PEP counseling with risk assessment, HIV testing (with informed consent and counseling), and depending on the outcome of the exposure assessment, prescription of antiretroviral (ARV) drugs with appropriate support and follow-up. Where appropriate, other treatments may be prescribed to prevent sexually transmitted or blood-borne diseases (e.g., hepatitis B) and unwanted pregnancy.

PEP should be initiated as soon as possible after exposure, preferably within a few hours and no later than 72 hours after exposure.

- **Requirements for initiating a PEP**

The requirements for considering HIV PEP are as follows:
1. Less than 72 hours have elapsed since exposure; and
2. The potential exposed person is not known to be HIV-positive and
3. There has been significant exposure of mucous membranes or injured skin to a potentially infectious biological fluid; and
4. The exposure source is HIV positive or their HIV status is unknown.

Prior to obtaining informed consent for PEP, individuals who have been exposed to HIV should be informed of all of the following:
- the risk of becoming infected with HIV as a result of the exposure
- in question; what is known and not known about the effectiveness
- of PEP;
- the importance of getting an HIV test and appropriate post-test counseling (even if it is necessary to delay testing);

 the need to assess in advance the possibility that these individuals may already be infected with HIV if they have not been recently tested;

 that PEP drugs will be discontinued if the first HIV test is positive: this prophylactic treatment is not a treatment for people living with HIV and may increase the risk of drug resistance;

 that people already living with HIV should be referred to a local health care facility for HIV treatment and if they have started PEP prior to receiving positive HIV test results, they should stop it once the diagnosis is confirmed;

 that for individuals with a discordant rapid test result, PEP will be provided pending a confirmatory test;

 the importance of compliance with the

 treatment; the duration of the treatment (4

 weeks);

common side effects that may occur with medications given as part of PEP;

 that these individuals can stop taking PEP drugs at any time during treatment if they wish, but that they will not receive the full benefits of PEP if the source to which they were exposed was HIV-positive;

 that PEP drugs can be taken during pregnancy and may protect the mother who has been exposed from developing HIV infection;

that breastfeeding can be safely continued while undergoing PEP, but that if the woman is infected with HIV while breastfeeding, the risk of transmitting HIV through breastfeeding is higher in the early stages of infection; appropriate counseling should address the possibility of using alternatives to breastfeeding if these are acceptable, feasible, affordable, sustainable, and safe; otherwise, exclusive breastfeeding is strongly recommended when such alternatives are not possible.

- **Immediate conduct:**

 If stung or wounded: clean the lesion immediately with soap and running water, rinse and then use an antiseptic: Dakin's solution or bleach at 12° chlorometric freshly and correctly diluted at 1/10, or failing that: alcohol at 70°, or dermal polyvidone-iodine. Contact time of at least 5 minutes.

 If splashed on mucous membranes: rinse thoroughly, preferably with saline solution or water for at least 5 minutes.

• Do not make the wound bleed.

- **Subsequent conduct:**

Medical: Within hours of the incident, and no later than 48 hours after the incident, promptly consult a referral physician (physician from a PHA care center) to :

- Risk assessment: The decision to start antiretroviral treatment must be made within 48 hours of exposure (ideally within 4 hours). In the case of a source patient of unknown status, HIV serology is performed urgently
  with his consent.

ACCIDENTS OF EXPOSURE TO HIV Assessment of the risk of exposure		
Risk and nature of exposure	**Patient eyebrow**	
	Infected with HIV	**HIV serology unknown**
Important Deep stitching, hollow needle, intravascular device (arterial or venous)	Recommended prophylaxis	Recommended prophylaxis
Intermediate Cutting with scalpel Needle stick IM or SC Needle stick with solid needle Mucocutaneous exposure with contact time greater than 15 minutes	Recommended prophylaxis	Recommended prophylaxis
Minimal Needle stick with abandoned syringes Spitting, biting or scratching	Non-systematic prophylaxis Assess the lesion	Non-systematic prophylaxis Assess the lesion

-Prescription modalities: the treatment scheme is

TDF + 3TC + DTG

The doses are the same as for long-term treatment. The duration of the prophylactic treatment is one month (4 weeks). However, the treatment can be stopped at any time according to the different situations described above.

In the case of sexual assault on a woman of childbearing age, offer a pregnancy test. In all cases, offer psychological care to all victims of SEA.

HIV serology should be performed on the injured caregiver before 8ème days. If the serology is negative, a serological follow-up is carried out, in particular at 3ème months and 6ème months.

Administratively, the accident must be declared within 48 hours as a work-related accident and must be notified to the occupational health department. From the first contact, the HIV test is proposed and carried out after informed consent of the injured person. In case of refusal to take the test, the injured person must sign a release form. In all cases, the injured person receives ARV chemoprophylaxis. This prophylactic treatment is stopped as soon as a positive HIV serology is proven in the casualty, who must then integrate the circuit of the care of the PLWHIV.

Universal precautionary measures

These steps must be taken by all caregivers and for all patients.
 Wear gloves for any risk of contact with: a biological liquid containing blood, a skin lesion, a soiled material.

 Dressing: to protect a wound with a dressing.
 Always wash your hands with soap or antiseptic liquid after any care.
 Wear a mask, goggles and an overcoat when there is a risk of splashing.
 Use caution when handling potentially contaminated sharp instruments.
 Never bend or recap needles: do not release needles from syringes or vacuum systems by hand.
 Use a container designed for this purpose: dispose of all sharp instruments immediately in a special container.
 Immediately decontaminate used instruments and surfaces soiled with blood or body fluids with bleach.

In the laboratory: samples should be transported in a bean bag, tray or collection box.

DAY 4 MODULE 9: FOLLOW-UP OF THE PERSON LIVING WITH HIV

9.1 General principles

In resource-limited countries, WHO recommends that patient follow-up be based on clinical assessment first, both before and after initiation of ARVs.
However, in order to improve the effectiveness of therapeutic interventions and to minimize risks during ARV administration, countries are strongly advised to develop a biological monitoring protocol.

9.2 Initial clinical and biological assessment

All HIV-infected patients should undergo an initial clinical and biological evaluation to determine the stage of their infection and to decide on possible therapeutic intervention.
The initial workup recommended by the WHO is as follows:

Assessment of the clinical stage of HIV disease
• Searching for special concurrent circumstances
(e.g. hepatitis B, hepatitis C, tuberculosis, pregnancy, injection drug use, significant psychiatric pathology)
• Taking concomitant treatment (including traditional medicines and herbal treatments)
• Weight
• Assessment of the patient's readiness to start treatment

Initial biological assessment

Confirmation of the patient's HIV-positive status, for any naïve subject
• Measure CD4 count (if available). Lack of CD4 count and viral load should not deter initiation of ART.
• Hemoglobin measurement if AZT therapy is being considered
• Pregnancy testing in women being considered for VFE treatment
• Screening for tuberculosis and malaria (and diagnostic testing for other co-infections and opportunistic diseases based on clinical signs)

9.3 Clinical and biological monitoring of patients on ARV treatment

Monitoring of patients on ARV therapy includes both clinical and biological monitoring, both of which focus on the evaluation of treatment efficacy and tolerance.
The table below is a summary of the WHO recommendations for clinical and biological monitoring; the elements of the assessment and the rhythm of monitoring are given as a guide, so that they can be adapted to the possibilities of each management center.

Follow-up schedule for patients on ART in the first year

Dates	Clinic	Compliance	CD4	CV	NFS	Biochemistry ALT, fasting blood glucose Creat	Sputum (Xpert MTB/Rif
J0	+		+		+		
J15	+	+			If required		
M1	+	+			+		
M3	+	+					
M6	+	+	+	+	+		
M9	+	+					
M12	+	+	°	+	°		

From D15 onwards, sputum examinations will be requested if necessary according to the clinical context.

9.4 Nutritional management of PLWHIV

The clinical signs of AIDS will influence the nutritional status of the individual, resulting in progressive undernutrition. A PHA with no signs of disease must eat like everyone else. Once the disease is declared, the person's energy and nutrient needs increase and will increase even more as the disease progresses. They will need to eat more.

Early and appropriate nutritional management combined with drug treatment and a healthy lifestyle will enable the PLWHIV to :

- maintain weight and strength;
- strengthen or improve its ability to defend itself against infections;
- strengthen or improve their ability to defend themselves against infection; improve their response to
  to drug treatment ;
- delaying the onset of AIDS;
- stay active and productive, with an improvement in her mental state.

Nutritional management includes:

- screening for nutritional problems;
- food survey;
- nutrition education.

Screening for nutritional problems

It involves a thorough interrogation of the patient in search of
- eating difficulties: food disgust due to fatigue, side effects of medication, physical handicap, anorexia, fatigue, lack of motivation, difficulties economic and/or professional ;
- feeding difficulties: dental problems, food allergies, mouth sores, nausea, vomiting, diarrhea, chills, coughs or colds, fever

The individual food survey

It consists of evaluating
- Food intake: number of meals per day and per week, composition and variety of meals;
- weight: evaluate the weight curve;
- and hygienic conditions: cleanliness of the PLWH and its environment.

Nutritional education

This is a very important step in nutritional management. It must be appropriate, personalized and take into account the nutritional problems and eating habits (good or bad) identified during the interview.
As a general rule, general nutritional advice should be given, adapted to the age of the subject, his state of health and his tastes, i.e. eat a sufficient number of meals, eat enough fruit, not too much fatty food, eat enough protein (fish, meat, eggs, etc.).

- **What is a balanced diet?**

It is a diet that contains the 3 main food groups and in the required proportions. It is recommended to eat three meals a day (morning, noon and evening). Example of a balanced meal
- an energetic food rich in slowly absorbed sugar (e.g. manioc, bread);
- an energy food rich in fats (e.g. palm oil, butter);
- a food for growth and maintenance (e.g. meat, milk, fish, peanuts);
- a protective food (e.g. tomato, spinach, folong, orange, papaya).

- **What is a varied diet?**

It is the fact of not eating the same foods every day. Within each food group, you need to change foods regularly.

- **What is a healthy diet?**

It is a food prepared under good hygienic conditions. The purpose of food hygiene is to prevent contamination of the places where food is prepared, as well as the multiplication and proliferation of microbes in food.

- **Nutritional needs of people living with HIV**

The body needs energy, building and protective foods

• *Energy foods*:
– cereals : rice, millet, wheat, sorghum...
– tubers : yam, manioc, sweet potato, taro, potato...
– fruits, starches: banana, pine tree fruit...
– Fatty foods in moderation; oils should be consumed in limited quantities, avoiding, if possible, palm oil (poor dietetic quality).

• *Food builders*:
– legumes: soybeans, kidney or white beans, lentils, peanuts, peas...
– proteins of animal origin: meat, milk, cheese, eggs, fish, seafood...
Meat should be eaten in limited quantities, especially beef, which is a source of "bad" fats.

• *Protective foods:*
– leafy vegetables: spinach, amaranth, green cabbage...
– yellow and orange vegetables: carrot, sweet potato...
– yellow and orange fresh fruits: banana, mango, papaya...
– citrus fruits and tomatoes, sources of vitamin C.

DAY 4. MODULE 10: SUPPLY AND INVENTORY MANAGEMENT

The advent of ARV therapy has significantly reduced the morbidity and mortality of HIV infection and has made HIV/AIDS a chronic disease compatible with normal life. The success of ARVs and OI treatment depends not only on patient compliance, but also on the continuity of their drug supply and the quality of therapeutic education given to them at the time of prescription.

It is therefore essential to manage the pharmacy according to rigorous rules that allow us to provide patients with quality medicines, in a perfectly regular manner and by accompanying the dispensing with advice and support to ensure effective treatment.

10.1 Supply management

ARV Supply Chain in Gabon

Currently the supply circuit is centralized at the level of PNLIST, and on the following diagram:

- The order is issued by the care centers and transmitted to the PNLIST for validation every month for the Libreville structures and every three months for the regional structures;
- The processing time of an order is fifteen days;

- After validation, the order is transmitted to the National Pharmaceutical Office (OPN) which prepares the package;
- Orders are picked up by the pick-up centers at the OPN

How to restock and place orders

The objective of drug management in the care centers is to avoid stock-outs, over-stocking and expiry of drugs.
Effective stock management means that antiretrovirals are available in time, in the quantity needed, and at the location where they are needed for patients. This means that facilities need to know the quantity and type of products needed at the facility in order to :

- avoid stock-outs (products whose stock is exhausted and cannot meet demand);
- avoid overstocking (excess products in stock with economic cost and risk of losses).

Principles for replenishment of required quantities

Proper evaluation of an ARV order requires:

- Control the number of patients on antiretroviral therapy and their protocols;
- Controlling the amount of ARVs used;
- Establish the frequency of monitoring and ordering of ARV supplies;
- Take into account new patients to be enrolled, so plan for increased quantities for subsequent periods.

How to estimate the quantities to order?

The active stock
This is the quantity of product consumed between replenishment periods (e.g. monthly) plus a safety stock.
Active stock + safety stock is the maximum quantity of a product that can be stored in the pharmacy without endangering the products.

The safety stock
The usefulness of having a safety stock (also called buffer stock) is to be able to maintain the supply of products if unexpected events occur, causing a higher consumption than normal of the active stock (losses, sudden increase in demand, randomness of the delivery time...), therefore to avoid a stock shortage
The safety stock is not a quantity of product that we put in reserve in a separate room, or boxes where we indicate safety stock, but it is included in the total stock (active stock + safety stock = maximum stock).
To estimate the safety stock, the simplest method is to build up a quantity equal to the quantity needed for the period covered by the order threshold.

Consideration of replenishment times:
The replenishment lead times are to be taken into account to define the moment when the order must be launched (order threshold) in order to avoid stock shortage.

Delivery control:

This control is essential because it is frequent that the delivery does not correspond to the order.

Average monthly consumption (CMM)
The MMC is the amount of product that is "consumed on average each month. That is,
On the stock card, it is the quantity of drugs that is issued each month, but as the exact same quantity is not issued each month, the average consumption per month is calculated.
The MMC is calculated for each product, dosage and packaging.
The average monthly consumption (AMC) is the quantity of drugs used during a given period divided by the number of months in that period (e.g., if you want to know the AMC over a period of 3 months or 12 months, you divide the total quantity used over 3 or 12 months by 3 or 12 respectively).
The calculation of the average monthly consumption is not correct if the product was out of stock during the months considered; if this is the case, it should be calculated only for the months in which the product was available.
The Average Monthly Consumption (AMC) is one of the elements to be taken into account when setting the order threshold.

$$\text{CMM period N} = \frac{\text{Total consumption during the period N}}{\text{Number of months in the consumption period N}}$$

10.2 Pharmacy management

General storage conditions

The storage room must be large enough to hold the products. It must also be clean and cool.
Only the pharmaceutical warehouse manager and possibly another staff member should have access to the stock.
The pharmacy must be closed at all times in order to control the movement of stocks and to avoid the disappearance of medicines.

How to store medications

General principles of storage:

- Store products on shelves (the use of shelves facilitates the storage of products).
- Store and label all products.
- Arrange the medicines with their original packaging on the shelves by writing on labels at the level of the place, the name in DC, the dosage of the product, the form;
- List similar products together under their INN and classified by dosage form (injectable, tablets, miscellaneous) and for each form, in alphabetical order;
- Leave enough space for each product;

- Group identical products by two, five or ten so they can be easily counted;
- Store products on a "first in, first out" basis. Each box is marked with a date indicating how long the drug remains effective (expiration date). When the ARVs are taken out, the products with the closest expiration date should be taken out first.
- Avoid opening the door unnecessarily if medicines are kept in the refrigerator, check the temperature twice a day to make sure it is between 2 and 8°C (keep a daily temperature record) and defrost it regularly according to the instructions;
- Make sure to leave a space between the boxes of products in order to allow the passage if we store large quantities (in large boxes for example), not to deposit them on the ground (ideally deposited on pallets or equivalent at least at 10 cm from the ground), nor against the walls (ideally at least at 30 cm from the walls and particularly if a wall is exposed to the sun in the morning or at the end of the afternoon. This also applies to refrigerators).
- Reminder: Do not store anything directly on the ground.

ARVs are classified according to their therapeutic class or whether they belong to first-line, second-line or third-line antiretroviral therapy (ART). Classify ARVs as follows:

- Top shelves: solid forms (tablets, capsules) must be stored there.
- Bottom shelves: Liquid forms, including ointments, should be stored here.Always store liquid forms on the lowest shelves, underneath other products, to prevent damage from liquid leakage.

Maintenance of stock records

Each drug must have a stock card which must be next to the corresponding product

► On each stock card must appear the name of the drug, its form (tablets, syrup, etc.), its dosage, its packaging (box, bottle …), and the quantity of product in the packaging (box of 50, 100 cp ...).

► The stock card also has columns to record information about the movement of the product, namely:

- the date: on which the article entered or left the pharmacy;
- the source: name of the supplier (wholesaler, central purchasing office);
- the quantity received: number of units received at the pharmacy (box, bottle, tube...);
- destination (dispensed at): name of the place where the drugs will be dispensed to patients or dispensing (if drugs are dispensed on site);
- the quantity dispensed and the date of release: number of units released from the pharmacy;
- the remaining stock: number of units left in the stock;
- observations: important information on the movement of the product,lot number, expiration dates, borrowed from, returned to such and such a health facility;
- the signature of the person who records the movement of the product;
- taking into account the input and output of drugs:

How to manage expired or spoiled products

The regular realization of a physical inventory (every 6 months at least) products are expired when the expiration date is exceeded.
They are deteriorated when quality is lost due to external or internal factors (a change in color, smell or appearance is considered a change in organoleptic characteristics and deterioration.
Products with damaged bottles (cracks, unsealed caps...) or damaged packaging are considered as damaged products.

What to do with expired or spoiled products?

- Remove expired and deteriorated products from the pharmacy;
- It is necessary to keep a trace of the withdrawal of these products. Therefore, systematically record as outgoing on the stock card all deteriorated or poor quality products that are withdrawn from stock (see stock card). It is preferable to also have a specific document of withdrawal of products (it can be a card or a notebook) where each withdrawal is signed by the person in charge, by indicating the reason;
- Care should be taken to ensure the controlled destruction of withdrawn products. For this, if the structure does not have adequate means of destruction, it is necessary to identify a structure where these products can be sent for destruction (for example a cement factory). If not, send them to the OPN. This destruction must be accompanied by a discharge document (e.g. content: removed from stock on .... sent for destruction on... received for destruction on...). Then draw up and countersign a destruction report which will be sent to PLIST;
- Return on time all products that you know you cannot use before they expire, or because you have changed your preferred protocol.

10.3 Dispensing of medicines

It includes four important steps:

- check the prescription to ensure that it is appropriate for the patient;
- Prepare the medications that will be given to the patient;
- give the patient the information necessary to follow his treatment correctly;
- check that the patient has understood how to take his or her medication and take the opportunity to discuss compliance.

The delivery of a treatment to a patient is also a privileged moment to talk with the person about his or her possible difficulties in taking the medication and about solutions to improve compliance.

DAY 4. MODULE 11: MONITORING AND EVALUATION OF ACTIVITIES

11.1 Definition of concepts

Information: the characteristics of the aggregated data obtained after interpretation or analysis of the data constitute the information that can inform a program.

Strategic information: information collected to be interpreted and used to help plan and inform policy and program decisions, i.e., to best guide a program and appropriately define its priorities. The axiom
"Know your epidemic, know your response" characterizes the strategic information needed to guide the HIV response. It recognizes that epidemics and their contexts may vary from place to place.

Therefore, knowing who is affected, how people are infected and where they are located is crucial to developing a sound, tailored response that benefits those in need. For the response to HIV to be as effective, responsive and cost-effective as possible, it is essential that it be monitored.

The overall goal of strategic information is to optimize programs and maximize the benefits to affected populations. It has three main roles
1. To provide an understanding of the epidemic and the extent of change resulting from the interventions
2. Enable the monitoring and measurement of the health sector response to HIV, including
3. provide useful information to improve programs, ensure that services are provided in a timely manner, and
maximize the benefits for the resources mobilized, and help identify obstacles as well as opportunities.

Relevant data can be obtained from a variety of sources (e.g., from evaluation monitoring systems, program reviews, surveys, and case studies). It should be analyzed in a comprehensive and strategic manner to best guide the program.

Indicator: In the context of monitoring and evaluation, an indicator is a quantitative or qualitative variable that provides a valid and reliable measure of what has been accomplished, assesses performance, or reports on changes related to the implementation of an activity, project, or program. An indicator must be calculated from clearly identified data sources.

Monitoring and evaluation system: A set of mechanisms built into the routine operations of a program that generate data or information on an ongoing and regular basis to provide useful information for program decision-making.

Monitoring: is the ongoing and regular reporting of priority program information, including inputs and outputs, accomplishments, and anticipated impacts, to observe and track progress.

Evaluation: A periodic and rigorous examination of information about a program's activities, characteristics, and context, and their relationship to program achievements. Evaluation aims, from an objective perspective, to examine validate and improve the overall value of a program.

Data: all the values of qualitative or quantitative variables collected and recorded. Data are the raw building blocks for strategic information and knowledge.

Health sector: this is the sector of society that includes organized public and private health services, government health service policies and activities of ministries, NGOs and community groups working in the field of health, and professional associations, including health promotion, disease prevention, diagnosis, treatment and care services.

Supervision: Supervision is a continuous training process. It consists of gathering information on the performance, motivation and working conditions of staff, with a view to improving their skills and achieving the set objectives. The target of supervision is always the agent (the staff).

11.2 Management tools for care centers Routine data

collection tools

Patient monitoring tools

Paper medical record, kept at the site, is essential. Each facility must implement a document that will include:

- the initial information sheet, including socio-familial data, history, and the findings of the first consultation
- the content of subsequent consultations,
- the results of bio-immuno-virological examinations,
- weight and growth curves,
- Key information about what the PHA knows about their disease

Computerized record,
HIV Exposure Patient Registration Form Psychological and Social
Records,
Screening Card
Screening Registry
ETP (therapeutic education) notebook, a "picture box" or "picture binder" to support explanations given in a group or individually.
Other media: educational games, comic books, adapted stories.
Laboratory logbook, temperature check sheets, bench sheet and calibration sheet for laboratory equipment.
Pharmacy register
Archiving system
Lost and Found Registry

NB: These different elements are taken into account by the SANTIA software.

Medication management tools (ARVs and drugs for opportunistic infections)

- The order form
- The stock sheet
- The dispensation form

Tools for monitoring the quality of services

- The Provider Supervision Worksheet
- The service evaluation grid

Tools for collecting the compiled data

- Grids/service reports
- Summary report of care centers or services
- PMTCT Fact Sheets/Reports
- PNLIST Activity Summary Grid/Report
- Country summary report template (UNAIDS)

Survey data collection tools

They will be established according to the type of survey to be carried out (questionnaires, surveys, focus group ...).

Data processing software

The program uses two software programs to exploit the collected data. These are:

- Santia software used by the centers for the care of PLWHIV. It allows to save the data and to centralize and exploit them.
- Spectrum software is used for estimates and projections of the national HIV epidemiological situation from programmatic and survey data. It is composed of modules that allow for analysis, planning and advocacy for health programs. It is used to project future needs and examine the effects of policy options

11.3 The Indicators

In general, two main groups of programmatic indicators are used to monitor the activities of the DHAPP project "HIV/AIDS Prevention, Care and Treatment Program specific to the Defense and Security Forces of Gabon":

- MER indicators
- The PNLIST indicators

But in practice, many of the indicators collected are common to both lists.

The PNLIST indicators

They fit into the three levels of indicators recommended by WHO. These are the 10 global indicators, the 50 national indicators selected according to national programs and context, and additional indicators to obtain more information in specific situations.

Patient follow-up indicators + PMTCT indicators

- Screening Indicators
- TAR Enrollment Indicators
- Indicators of achievement of undetectable CVs
- Retention indicators under ART
- Indicators on AIDS-related deaths
- Indicators on new HIV infections
- Indicators of ARV toxicity
- Indicators on ARV resistance
- Early warning indicators of drug resistance

Governance and Service Monitoring Indicators

- HIV funding indicators
- Indicators on the organization of the health system
- Quality of Service Indicators

Indicators of PLHIV commitment to treatment continuation

- Indicators of retention of PLWH on ARVs
- Indicators of participation in outreach and peer support activities

Systematic evaluation indicators

- Program performance evaluation indicators
- Indicators for evaluating program effects (impact)

11.4 Periodicity of monitoring/evaluation activities

Internal monitoring and supervision is done monthly in each service or care center. It is an activity planned and organized by the head of the health facility or service.
External monitoring is a quarterly activity of the central level. It is carried out by the Pro-program
The evaluation is semi-annual or annual at the peripheral level (centers and services), triennial or quinquennial at the central level (external and internal review of program activities, performance review, reprogramming of activities, etc.)

NB: the 10 global indicators (WHO 2016)
1. People living with HIV: number and % of people living with HIV,
2. Public funding for HIV: % of total HIV-related expenditures from domestic public spending
3. Prevention by type of population (% of condom use among TS, MSM, multi-partners in the last 12 months, number of needles distributed among IDUs, etc.)
4. Percentage of people living with HIV diagnosed
5. Number and percentage of PWIH receiving care including ART
6. ART coverage: % of PWIH receiving ART
7. Retention on ART: % of PWIH who are retained on ART 12 months after initiation of treatment
8. Viral load suppression: % of PLWH on ART with viral load suppression
9. AIDS-related deaths: number of AIDS-related deaths per 100,000 population
10. Incidence of HIV infection: rate of new HIV infections, number of NI per 1000 susceptible population.

Key Reference Documents

1) World Health Organization - *Key benchmarks, HIV/AIDS,* 06 July 2020. URL: https://www.who.int/fr/news-room/detail/hiv-aids.
2) World Health Organization - *WHO says access to HIV drugs severely disrupted by* ***COVID-19 as AIDS response stalls*** ,06July2020.URL :https://www.who.int/fr/news- room/detail/who-access-to-hiv-medicines-severely-impacted-by-covid-19-as-aids- response-stalls.
3) Medical Care Development International: Trainer's Booklet: Training Service Providers in HIV Prevention and Testing
4) World Health Organization - *Diseases, New coronavirus (2019-nCoV),* July 2020 URL: https://www.who.int/fr/emergencies/diseases/novel-coronavirus- 2019.
5) Institut Pasteur - *COVID19 disease (New Coronavirus), July 2020.* URL: https://www.pasteur.fr/fr/centre-medical/fiches-maladies/maladie-covid-19- new-coronavirus
6) *Guide de prise en charge des personnes vivant avec le VIH et le sida au Gabon, Programme National de Lutte contre les STI et le VIH/SIDA,* 2019.
7) World Health Organization *Key benchmarks: tuberculosis,* 17 October 2019. URL https://www.who.int/fr/news-room/fact-sheets/detail/tuberculosis.
8) *HIV prevention and care - June 2019*. Cour des comptes (Government of France) URL: www.ccomptes.fr
9) *Epidemiological Survey of HIV Seroprevalence and Behavioral Risks (SABERS), November 2018, Gabon*
10) *Medical care for people living with HIV Monitoring of adults living with HIV and organization of care (April 2018) 2 Expert Group "Medical care for people infected with HIV"* CNS / ANRS.
11) *National guide for the management of TB-HIV co-infection, 2017, Gabon*
12) web_guide_formation_vih_afd_2eme_edition_2015_0
13) World Health Organization - Key Benchmarks, Hepatitis B, July 27, 2020. URL: https://www.who.int/fr/news-room/fact-sheets/detail/hepatitis-b
14) PEPFAR: Site Assessment Tool for Minimum Standards for Case Tracking Program Index (Generic)
15) UNDP: Socio-economic impact of COVID19 in Gabon, June 2020.

APPENDICES

ANNEX 1. WHO CLASSIFICATION

APPENDIX 1a: WHO CLASSIFICATION OF HIV/AIDS INFECTION IN ADULTS AND ADOLESCENTS, 2006 Revision

Clinical stage 1	• Asymptomatic patient • Persistent generalized lymphadenopathy
Clinical stage 2	• Unexplained moderate weight loss (less than 10% of estimated or measured body weight) • Minor mucocutaneous manifestations: seborrheic dermatitis, prurigo, fungal nail involvement, recurrent oral ulcerations, perlchea • Pruritic papular rash • Zona • Recurrent upper respiratory tract infections (sinusitis, tonsillitis, otitis media, pharyngitis) • Angular cheilitis
Clinical stage 3	• Severe unexplained weight loss (greater than 10% of estimated or measured body weight) • Chronic unexplained diarrhea for more than 1 month • Prolonged/persistent unexplained fever (intermittent or constant) for more than 1 month • Persistent oral thrush • Hairy leukoplakia of the oral cavity • Pulmonary tuberculosis • Severe bacterial infections (pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteremia) • Stomatitis, gingivitis or acute necrotizing periodontitis • Anemia (<8 g/dl), neutropenia (<0.5 x 109/l) and/or chronic thrombocytopenia (<50 x 109/l), unexplained
Clinical stage 4b	• HIV-related cachectic syndrome (CDC definition) • Pneumocystis (jirovecii) pneumonia • Cerebral toxoplasmosis • Chronic cryptosporidiosis or chronic isosporosis • Extrapulmonary cryptococcosis, including meningitis • Cytomegalovirus infection (retinitis or other organ involvement) • Chronic herpes simplex infection (oral-labial, genital or anorectal for more than 1 month, or visceral regardless of location) • Progressive multifocal leukoencephalopathy (PML) • All endemic disseminated mycoses (histoplasmosis, coccidioidomycosis) • Esophageal or tracheal or bronchial or pulmonary candidiasis • Disseminated atypical nontuberculous mycobacteria

	• Recurrent sepsis (including non-typhoidal/typhoidal salmonella) • Extrapulmonary tuberculosis • Lymphoma (brain or non-Hodgkin's B-cell) • Kaposi's Sarcoma (KS) • HIV encephalopathy • Severe recurrent bacterial pneumonia

a. In this table, an adolescent is defined as a person 15 years of age or older. For anyone under the age of 15, classification should be done using the clinical stages in children.

b. Some additional specific conditions may be added to the classifications depending on the region, such as penicillinosis in Asia, HIV-associated rectovaginal fistula in southern Africa, and reactivation of trypanosomiasis in Latin America.

APPENDIX 1b: WHO CLASSIFICATION OF HIV/AIDS INFECTION IN CHILDREN

Clinical stage 1	• Asymptomatic • Persistent generalized lymphadenopathy
Clinical stage 2	• Persistent unexplained hepatosplenomegaly • Recurrent or chronic upper respiratory tract infections (otitis media, otorrhea, sinusitis, tonsillitis) • Zona • Linear gingival erythema • Recurrent oral ulcers • Pruritic papular rash • Fungal infections of the nail • Extensive wart infection of viral origin • Extensive Molluscum contagiosum • Persistent and unexplained parotid volume increase
Clinical stage 3	• Unexplained moderate malnutrition not responding satisfactorily to standard treatment • Persistent unexplained diarrhea (14 days or more) • Persistent unexplained fever (greater than 37.5°C, intermittent or constant, for more than one month) • Persistent oral candidiasis (after the first six weeks of life) • Hairy leukoplakia of the oral cavity • Lymph node tuberculosis • Pulmonary tuberculosis • Recurrent severe bacterial pneumonia • Acute necrotizing ulcerative gingivitis or periodontitis • Unexplained anemia (<8g/dl), neutropenia (<0.5 x 109/l) and/or chronic thrombocytopenia (<50 x 109/l) • Symptomatic lymphocytic interstitial pneumonia

	• HIV-associated chronic lung disease, including bronchiectasis
Clinical stage	• Unexplained severe emaciation, unexplained severe stunting, or unexplained severe malnutritionb not responding satisfactorily to standard therapy • Pneumocystis (jirovecii) pneumonia • Recurrent severe bacterial infections (e.g., empyema, pyomyositis, bone or joint infection, meningitis, but not including pneumonia)

a. In children younger than 5 years of age: moderate malnutrition is defined as a weight-to-height ratio with a Z value less than -2 or a midline brachial circumference ≥ 115 mm and < 125 mm.

b. In children under 5 years of age: severe wasting is defined by a weight/height ratio with a Z value of less than -3; stunting is defined by a length/age or height/age ratio with a Z value of less than -2; and severe acute malnutrition is defined either by a weight/height ratio with a Z value of less than -3, or by a midline brachial circumference of less than 115mm, or by the presence of edema.

APPENDIX 2: CLASSIFICATION INTO CLINICAL CATEGORIES OF THE CDC 1993.

Category A	One or more of the criteria listed below in an HIV-infected adult or adolescent, if none of the criteria in categories B and C exist - Asymptomatic HIV infection - Persistent generalized lymphadenopathy - Symptomatic primary infection
Category B	Clinical manifestations in an HIV-infected adult or adolescent, not in category C, that meet at least one of the following conditions: - Bacillary angiomatosis - Oropharyngeal candidiasis - Persistent, frequent or poorly responsive vaginal candidiasis treatment - Cervical dysplasia (moderate to severe), carcinoma *in situ* - Constitutional syndrome: fever (38°5) or upper diarrhea to 1 month - Oral hairy leukoplakia - Recurrent shingles or shingles invading more than one dermatome - Idiopathic thrombocytopenic purpura - Listeriosis - Peripheral neuropathy
Category	This category corresponds to the definition of AIDS in adults.

C	When a subject has presented one of the following pathologies, he/she is permanently classified in category C: - Tracheal, bronchial, pulmonary and esophageal candidiasis - Extrapulmonary Cryptococcosis - *Peunomocystiscarinii* pneumonia - Cerebral toxoplasmosis - CMV infection other than hepatic, splenic or lymph node - CMV Retinitis - HIV encephalopathy - Herpetic infection, ulcer > 1 month or bronchopulmonary, esophageal - Pulmonary or extrapulmonary *Mycobacterium tuberculosis* infection - Mycobacterial infection, identified or not, disseminated or extrapulmonary - Disseminated or extrapulmonary *Mycobacterium avium* or *kançaii* infection - Recurrent bacterial pneumonia - Recurrent non-typhi salmonella sepsis - Intestinal cryptosporidiosis that has been ongoing for more than one month - Chronic intestinal isosporidiosis evolving for more than one year month - Progressive multifocal leukoencephalopathy or PML - Coccidioidomycosis, disseminated or extrapulmonary - Disseminated or extrapulmonary histoplasmosis - Kaposi's Sarcoma - Burkitt's lymphoma - Immunoblastic lymphoma, primary brain lymphoma, invasive cervical cancer - HIV-induced cachectic syndrome - Invasive cervical cancer - Intestinal or extra intestinal microsporidiosis

CDC 1993 classification for adults and adolescents

Number of CD4/mm3 Categories	A Asymptomatic, or acute primary infection Lymphadenopathy	B Symptomatic, but without criteria A or C	C AIDS
> 500/mm3 > 29	A1	B1	C1
200 Ŕ 499/mm3 15 Ŕ 28%	A2	B2	C2
< 200/mm3 < 15	A3	B3	C3

NB: All patients in categories A3, B3 and C1-C2-C3 are in the AIDS stage