REPUBLIC OF KENYA

MINISTRY OF HEALTH

JOB AID FOR CLINICAL MANAGEMENT OF TB/HIV

2019

NATIONAL TUBERCULOSIS, LEPROSY AND LUNG DISEASE PROGRAM

The Global Fund

NASCOP

Outline of Job Aid

Acronyms and Abbreviations

ABC	Abacavir
ADRs	Adverse Drug Reactions
AE	Adverse Events
AFASS	Available, Feasible, Acceptable, Sustainable and Safe
ALT	Alanine Transaminase
ART	Antiretroviral Therapy
ARV	Antiretroviral drugs
ATV	Atazanavir
AZT	Zidovudine
BMI	Body Mass Index
CCC	Comprehensive Care Centre
CMV	Cytomegalovirus
CPT	Cotrimoxazole Preventive Therapy
CrCl	Creatinine Clearance
CSF	Cerebrospinal Fluid
DBS	Dried Blood Spot
DNA	Deoxyribonucleic acid
DRT	Drug Resistance Testing
DRTB	Drug Resistance Tuberculosis
DST	Drug Susceptibility Testing
DTG	Dolutegravir
EFV	Efavirenz
EID	Early Infant Diagnosis
EPTB	Extra Pulmonary Tuberculosis
FDC	Fixed Dose Combination
HBV	Hepatitis B virus
HCW	Health Care Worker
HEI	HIV Exposed Infant
HIV	Human immunodeficiency virus
HTS	HIV Testing Services
ICF	Intensified case finding
IFAS	Iron Ferrous Acid Supplement
IMAM	Integrated Management of Acute Malnutrition
INH	Isoniazid
INSTI	Integrase Strand Transfer Inhibitor
IPC	Infection Prevention Control
IPT	Isoniazid Preventive Therapy
IRIS	Immune Reconstitution Inflammatory Syndrome

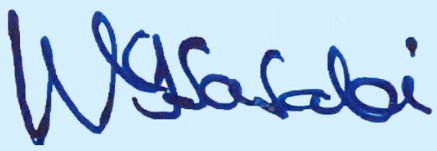
LF LAM	Lateral Flow Lipoarabinomannan
LFT	Liver Function Test
LPA	Line Probe Assay
LPV	Lopinavir
LPV/r	Lopinavir/ritonavir
MAC	Mycobacterium Avium Complex
MDR	Multidrug Resistance
MOH	Ministry of Health
MTB	Mycobacteria Tuberculosis
MTC	Medicine and Therapeutic Committee
MUAC	Mid-upper arm circumference
NASCOP	National AIDS and STI Control Program
NC	Nutrition Counseling
NHRL	National HIV Reference Laboratory
NNRTI	Non-nucleoside reverse transcriptase Inhibitor
NGT	Nasogastric Tube
NRTI	Nucleoside reverse transcriptase Inhibitor
NTLD-P	National Tuberculosis, Leprosy and Lung Disease Program
NVP	Nevirapine
OD	Once daily
PCP	Pneumocystis jirovecii pneumonia
PCR	Polymerase chain reaction
PI	Protease Inhibitor
PPB	Pharmacy and Poison's Board
PWID	People who inject drugs
RH	Rifampicini, Isoniazid
RHZE	Rifampicin, Isoniazid, Pyrazinamide, Ethambutol
Rif	Rifampicin
RTI	Respiratory Tract Infection
RTV	Ritonavir
RUTF	Ready to Use Therapeutic Feeds
SAM	Severe Acute Malnutrition
TDF	Tenofovir Disoproxil Fumarate
TB	Tuberculosis
TWG	Technical Working Group
ULN	Upper Limit of Normal
VL	Viral Load
WHO	World Health Organization
3TC	Lamivudine

Foreword

Tuberculosis is a bacterial infection that has been found more commonly among people infected with HIV/AIDS. It has been associated with increased mortality among people living with HIV (PLHIV) especially when not identified and treated early. In addition, favourable TB treatment outcomes have been observed in HIV positive TB patients compared to HIV negative TB patients. The synergistic effects of the two diseases further compounds their management.

Kenya has made significant strides in implementing collaborative TB/HIV activities as per the WHO recommendations since 2009. The proportion of TB patients with HIV has significantly reduced from 51% in 2006 to 28% in 2017. With the ART Treat and Test policy of 2016, the proportion of TB/HIV co-infected patients started on ART increased from 32% in 2008 to 95% in 2017. Furthermore, in 2015, the country adopted and rolled out 6-month Isoniazid TB Preventive Therapy (IPT) policy to all PLHIVs.

This document is intended as a quick guide for healthcare workers involved in clinical management of patients to aid them in providing the highest standards of comprehensive TB/HIV services. It captures the following essential elements in TB/HIV: 5 I's of TB/HIV; Special populations; nutrition; and pharmacovigilance. This document will also act as a reference material for students in the medical field, researchers, policy makers and community.



Dr. J. Wekesa Masasabi
Ag. Director General
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Acknowledgement

The Division of National Tuberculosis, Leprosy and Lung Disease Program (NTLD-P) in collaboration with the Division of National AIDS and STIs Control Programme (NASCOP) acknowledges the support, stewardship and leadership of the Ministry of Health and the County Governments in the collaborative TB/HIV activities. Special thanks to health care workers involved in TB/HIV care cascade who will find this document practical in aiding clinical management of patients. NTLD-P's and NASCOP's special gratitude goes out to the persons who selflessly devoted their time and expertise in assembling various materials used developing the job aids. This further extends to all who gave their comments and reviewed the final document.

Special thanks to the Global Fund for supporting the development, printing and distribution of the document.

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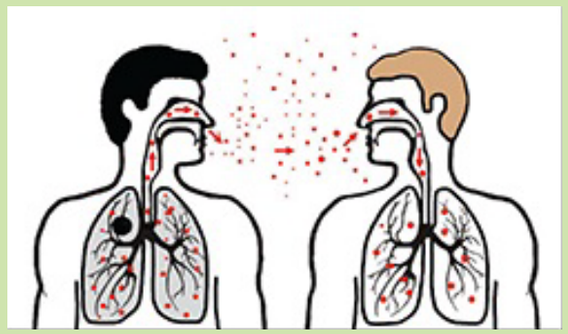
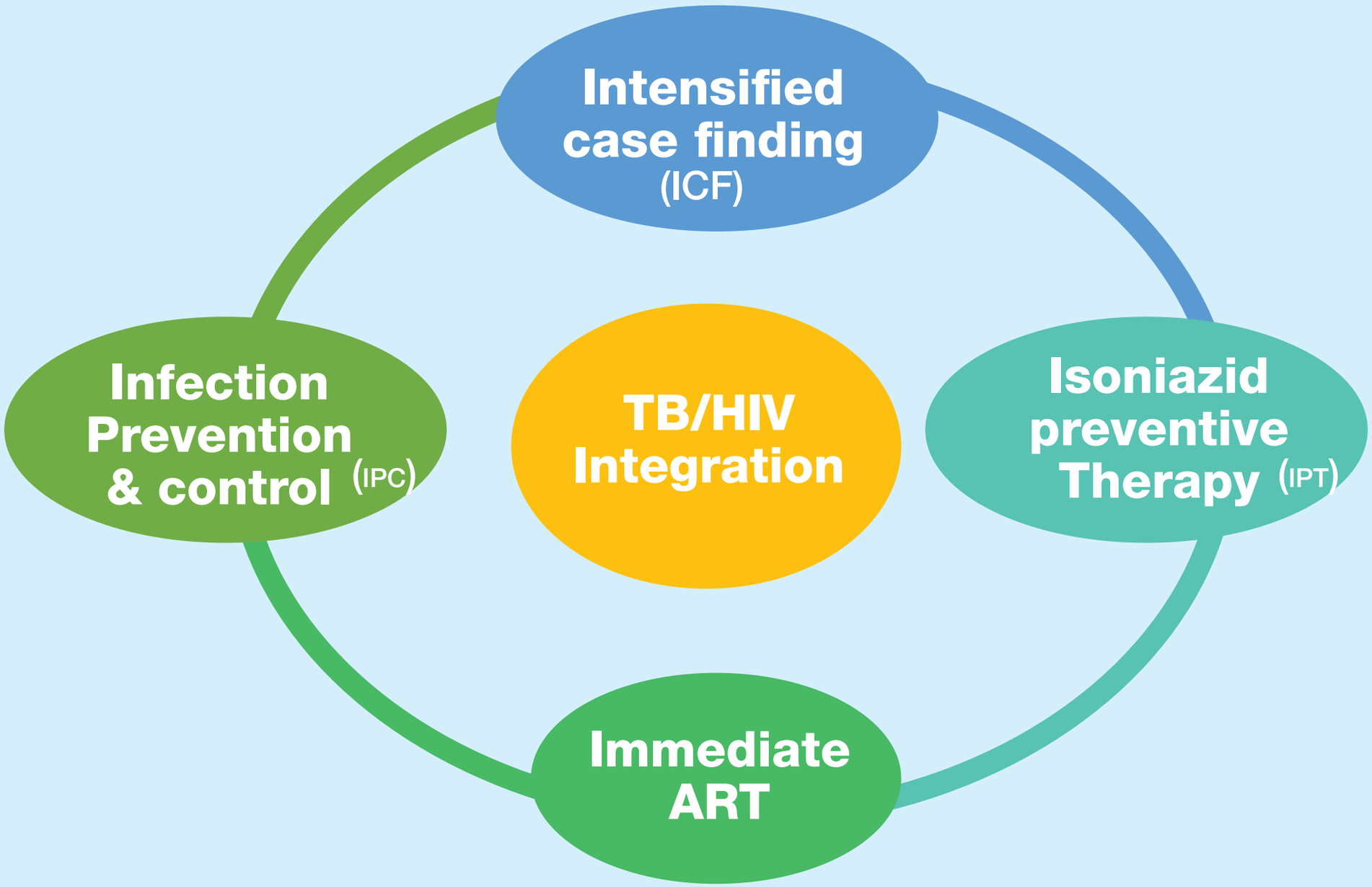
Introduction

Tuberculosis	HIV
⊙ Caused by Mycobacterium tuberculosis ⊙ Usually affects the lungs ⊙ May affect almost any other organ ⊙ Transmission is airborne from an infected pulmonary patient 	⊙ Caused by Human immunodeficiency virus **Mode of transmission:** ⊙ sexually (commonly) ⊙ mother to child ⊙ sharing infected drug equipment, e.g needles, surgical tools ⊙ other infected fluids

Interactions between Tuberculosis and HIV

How HIV affects TB	How TB affects HIV
⊙ Increased lifetime risk of TB from 5-10% to 50% ⊙ Increased rate of progression of new TB infections to disease ⊙ Increased risk of recurrence of TB ⊙ Increased risk of death from TB ⊙ Increased risk of adverse reactions to anti-TB drugs ⊙ Increased stigma to the two diseases	⊙ Rapid progression of HIV disease ⊙ TB is the most common opportunistic infection in HIV ⊙ TB is the leading cause of mortality among PLHIV

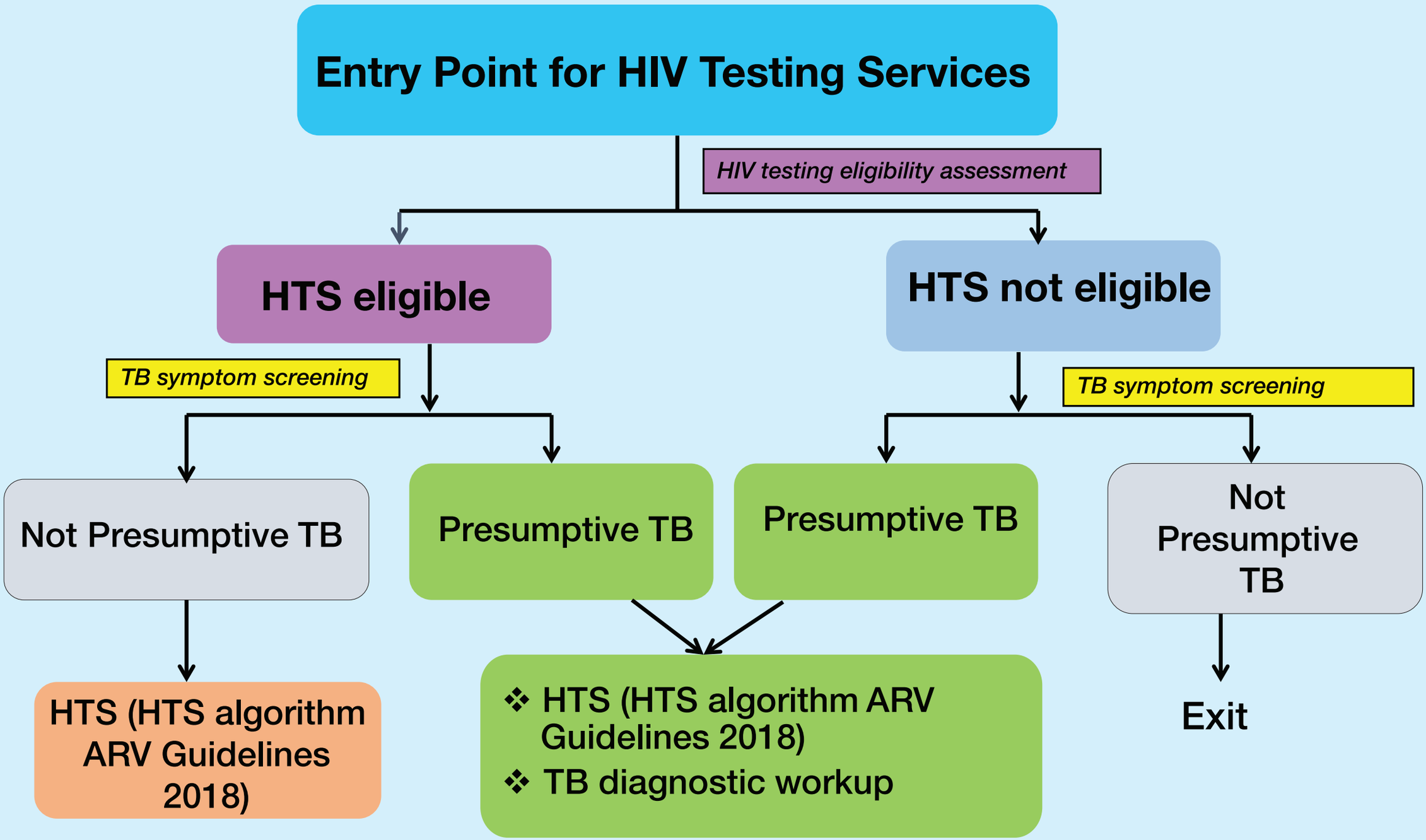
5 I's of TB/HIV Collaboration



5 I's

Intensified case finding	screening for TB among PLHIV at every encounter
Isoniazid Preventive Therapy	providing isoniazid to all eligible PLHIV without active TB disease as well as other eligible populations as recommended in the National guidelines
Immediate ART	ART for all TB/HIV co-infected patients irrespective of CD4 counts
Infection Prevention and Control	providing & ensuring safe environment free from TB cross-transmission
Integration	providing TB and HIV care for co-infected patients under one roof (one-stop-shop)

Integration of TB screening into HIV Testing Services



HIV Testing in the TB Care Setting

Newly diagnosed TB patients, Presumptive TB and contacts of TB patients who report to TB clinic

Step 1
PATIENT EDUCATION

Patient education provided while patient waits

- Group education
- Posters
- Brochures etc

Step 2
ONE ON ONE PATIENT-PROVIDER ENCOUNTER

- Provider informs patient of the importance of HIV testing
- Relationship between HIV and TB
- Benefits of HIV testing
- Access to comprehensive care
- Prevention of HIV infection and transmission
- Response to any arising patient concerns and queries

Step 3
DECLINERS

- Identify barriers to testing and address them
- Repeat benefits of testing
- At next visit, review benefits of testing
- Discuss re-testing in the course of TB treatment

Step 4
PATIENT ACCEPTS HIV TESTING

PROCEED ACCORDING TO HIV TESTING ALGORITHM

Early Infant Diagnosis (EID) Testing

Establish HIV Exposure of Infants and Children <18 months (including 0-6 weeks)

- Mother known HIV positive
- HTS for mothers with unknown HIV status
- Rapid antibody test on infant/child if mother's HIV status cannot be established

Establish HIV infection for HIV Exposed Child at 6 weeks at first contact (Includes child with negative DNA PCR result at birth)

- Collect a DBS for HIV DNA PCR test[1]
- Start/continue infant ARV prophylaxis
- Start CPT

If Mother/infant HIV antibody test negative

Child is HIV unexposed

- Routine under-5 care for the well baby
- Repeat HIV testing for mother as per HTS recommendations

HIV DNA PCR test POSITIVE

Child presumed HIV infected

- Discontinue infant ARV prophylaxis
- Start ART
- Offer comprehensive care including continuation of CPT
- COLLECT new sample for CONFIRMATORY HIV DNA PCR and viral load at ART initiation[1]

HIV DNA PCR test NEGATIVE

Child HIV-Exposed

- Continue HEI follow-up

Conduct DNA PCR at 6 months of age or soonest contact thereafter (or earlier if child develops symptoms suggestive of HIV as per WHO staging criteria)[1]

Confirmatory HIV DNA PCR test POSITIVE

Child confirmed HIV infected

- Continue ART and comprehensive care and routine under 5 care

Confirmatory HIV DNA PCR test NEGATIVE

Child presumed HIV infected continue ART

- Collect and send a DBS for a tie breaker to NHRL and manage as per results from NHRL

HIV DNA PCR result NEGATIVE

Child HIV- exposed

- Continue HEI follow-up
- Continue routine under-5 care
- Conduct HIV Antibody test at 18 months of age
- If breastfeeding, do HIV antibody test every 6 months while breastfeeding and 6 weeks after complete cessation of breast feeding

If HIV antibody test is positive

Child confirmed HIV Positive

- Continue CPT
- Continue routine under-5 care

If HIV antibody test is negative

Child is HIV negative

- Stop CPT
- Review at age 2 years and document status
- Continue routine under -5 care

[1] Where Point of Care DNA PCR is available-EID should be done using the whole blood at the facility.

For baseline viral load testing-if available, use point of care machine for viral load; If there is no point of care machine to do viral load- Take a DBS and send it to the Viral Load testing laboratory

Presumptive Diagnosis of HIV in Children <18 months while awaiting DNA PCR Results

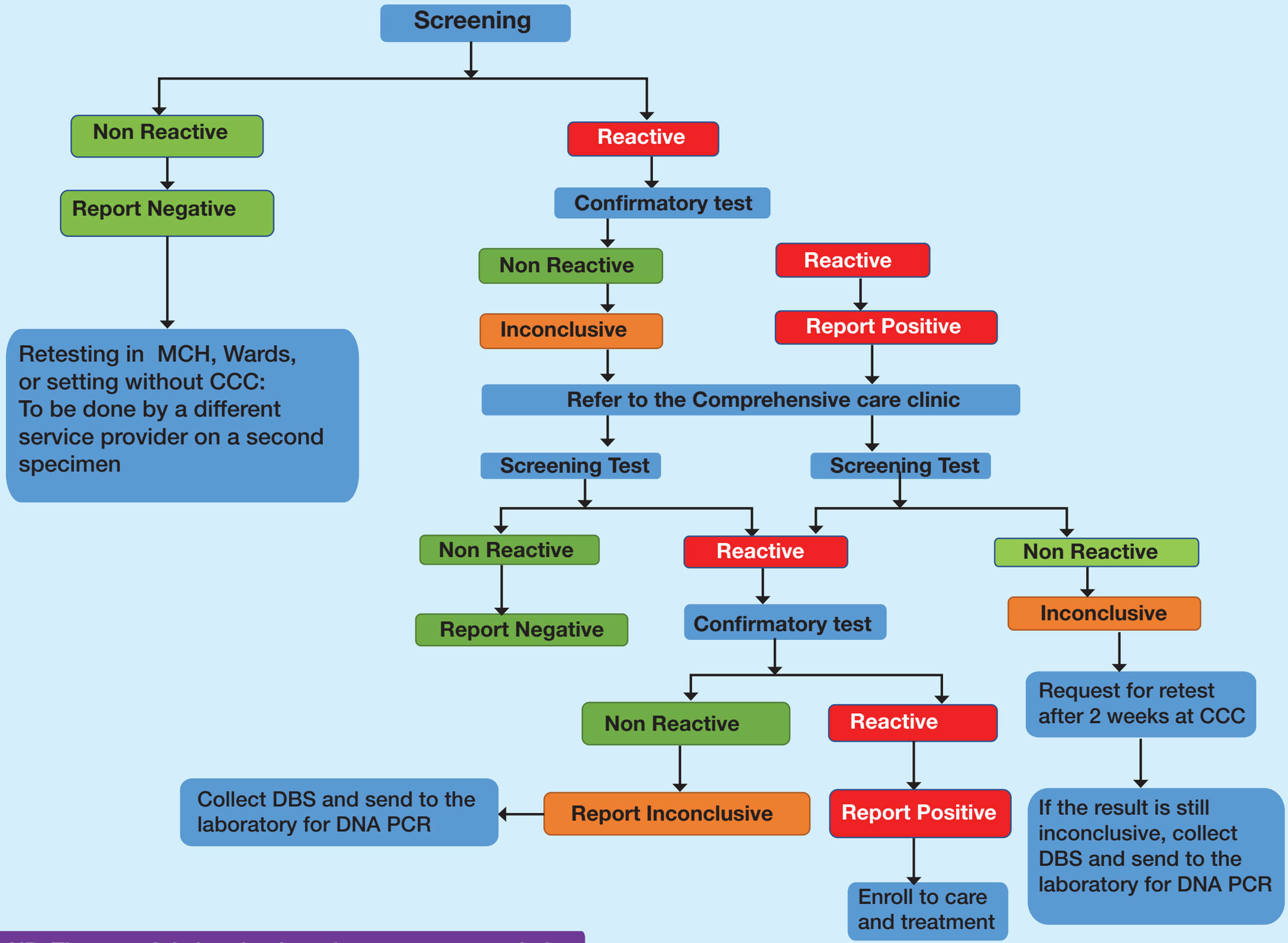
Child < 18 months of age; HIV antibody test positive and symptomatic with 2 or more of the following:

- Oral candidiasis/thrush
- Severe pneumonia
- Severe sepsis

OR, any of the following

- Any WHO Clinical Stage 4 condition
- Recent maternal death (if likely to be have been HIV-related) or advanced HIV disease in mother
- Child's CD4% < 25%

HIV Testing Algorithm



NB: The use of tie breaker is no longer recommended

HIV Testing for the Presumptive TB Patient

Who is a Presumptive TB patient?

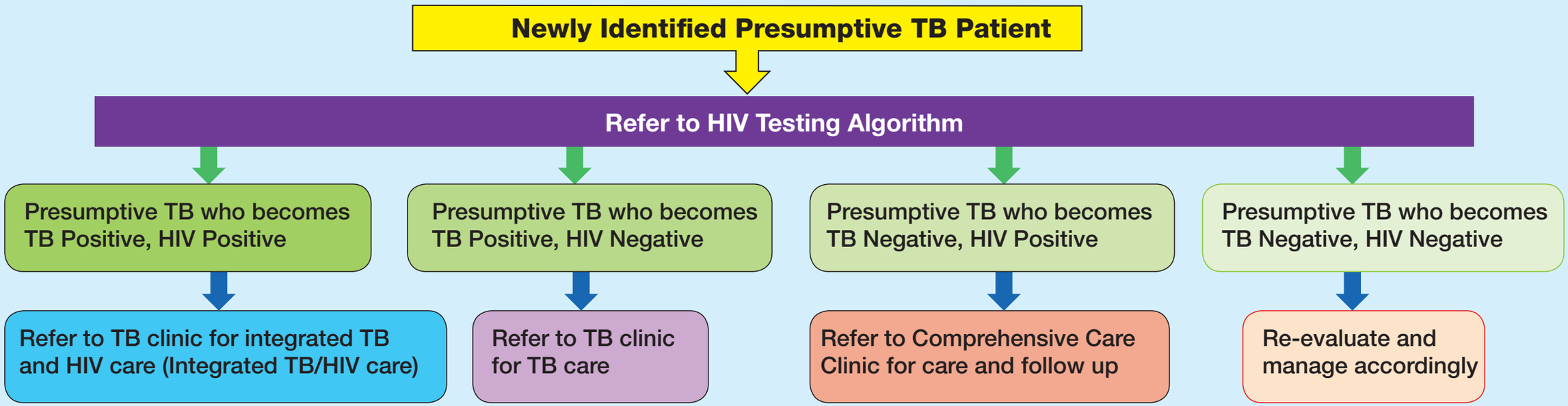
Any patient from any service delivery point who upon TB symptomatic screening is identified with any of the following:

In adults

- Cough of any duration
- Hotness of body
- Loss of weight
- Night sweats
- Chest pains
- BMI (<18.5 for adults)
- Temperature >37.5

In children

- Cough of any duration
- Poor weight gain
- Lethargy
- Reduced playfulness
- History of contact with a TB patient
- Z score <-2 for children



Once HIV is confirmed in TB patient please note:

1. Both TB and ART care and treatment should be provided in the TB clinic during the course of TB treatment 'one stop shop'
2. Upon completion of TB treatment, patients should be referred to CCC
3. ART should be initiated as soon as TB treatment is tolerated, preferably within 2 weeks of TB treatment
4. Adherence counselling and baseline Investigations should be conducted as per HIV guidelines for all TB/HIV co-infected patients

Informed Consent for Children and Adolescents

Age Groups	Guidelines
0-9 years	⊙ Obtain informed parental/caregiver verbal consent ⊙ Also obtain verbal assent (agreement) from child if able to comprehend
10-15 years	⊙ Obtain informed parental/caregiver verbal consent ⊙ Also obtain verbal assent (agreement) from child
15-18 years including all emancipated minors below 15 years	⊙ Obtain informed consent from adolescent ⊙ Adolescents aged 15 years and above and emancipated minors (pregnant, married, a parent or engaged in behaviour that puts them at risk of contracting HIV) can provide self-consent

Algorithm for TB Screening, diagnosis and Isoniazid Preventive Therapy (IPT)

Screening

On every clinic visit, ask for the following:

Adults
- Cough of any duration
- Hotness of body
- Night sweats
- Unintended weight loss
- Chest pains

Children
- Cough of any duration
- Hotness of body
- Poor weight gain, loss of weight
- Reduced playfulness
- History of contact with a TB patient

***Contraindications for IPT:**
- Active TB disease
- Active hepatitis
- Signs and symptoms of peripheral neuropathy
- Active substance abuse by patient
- Abnormal chest X-ray
- Poor adherence to Cotrimoxazole Preventive Therapy
- Poor understanding of IPT by guardian
- Infant < 1 year unlikely to have active TB and not exposed to smear positive TB

Diagnosis

NO

No symptoms found during screening above
Do a Chest X-ray if available

Abnormal Chest X-ray

Evaluate for TB:
- Take history and examination
- Collect samples for Xpert.
- TB LAM Should be considered for eligible PLHIVs

Has TB

Treat for TB

Evaluate for IPT eligibility after completion of TB treatment

No TB

Manage for other conditions and evaluate for IPT

Normal Chest X-ray

YES

If symptoms found during screening above then evaluate for TB:
- Take history and examination
- Collect samples for Xpert.
- Take Chest X-ray
- TB LAM Should be considered for eligible PLHIVs

Has TB

Treat for TB

Evaluate for IPT after completion of TB treatment

No TB

Manage for other conditions and evaluate for IPT

IPT

Check for contraindications* to IPT

Contraindication present

Defer IPT
Reassess for IPT at the next visit

Contraindication absent

Adherence counselling and monitoring for ADRs
Initiate IPT and pyridoxine for 6 months

Review monthly.
- Check adherence
- Reassess for side effects
- Assess for TB

Asymptomatic and no adverse reactions

Continue IPT

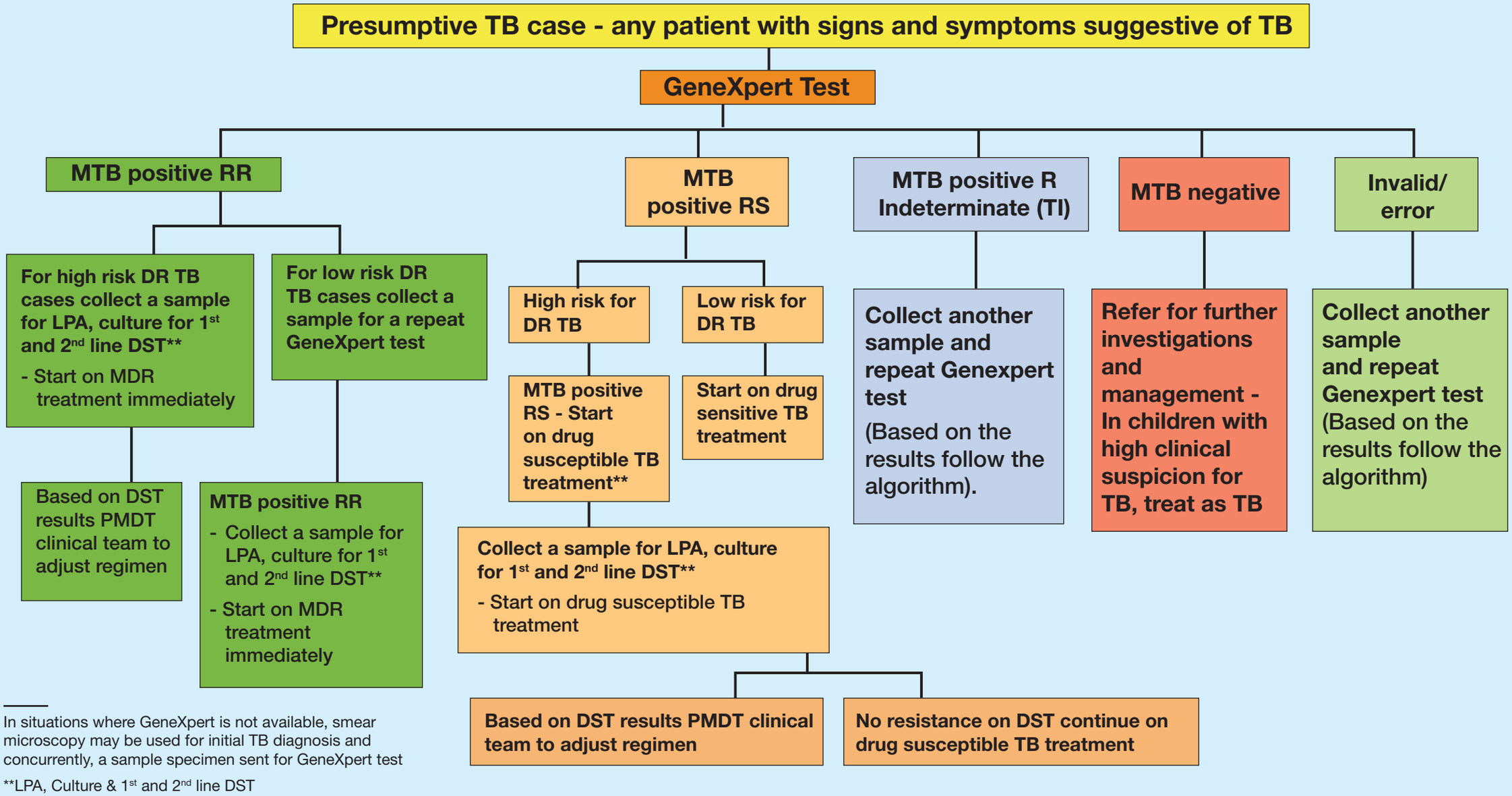
Symptomatic or with adverse reactions

- Stop IPT
- Evaluate and manage accordingly

GeneXpert Algorithm

GeneXpert is the preferred test for TB diagnosis and identification of Rifampicin resistance in all presumptive TB Cases*

Patients diagnosed using GeneXpert should be followed up using smear microscopy



In situations where GeneXpert is not available, smear microscopy may be used for initial TB diagnosis and concurrently, a sample specimen sent for GeneXpert test

**LPA, Culture & 1st and 2nd line DST

High risk for DR TB

- Previously treated TB patients: treatment failures, relapses, treatment after loss to follow up
- Drug Resistant TB patient contacts
- TB patients with a positive smear result at month 2 or month 5 of TB treatment
- Patient who develops TB symptoms while on IPT or has had previous IPT exposure
- Healthcare Workers with TB symptoms
- Prisoners with TB symptoms
- Refugees with TB symptoms

Low risk for DR TB

All presumptive TB cases who are not in the high-risk group including:

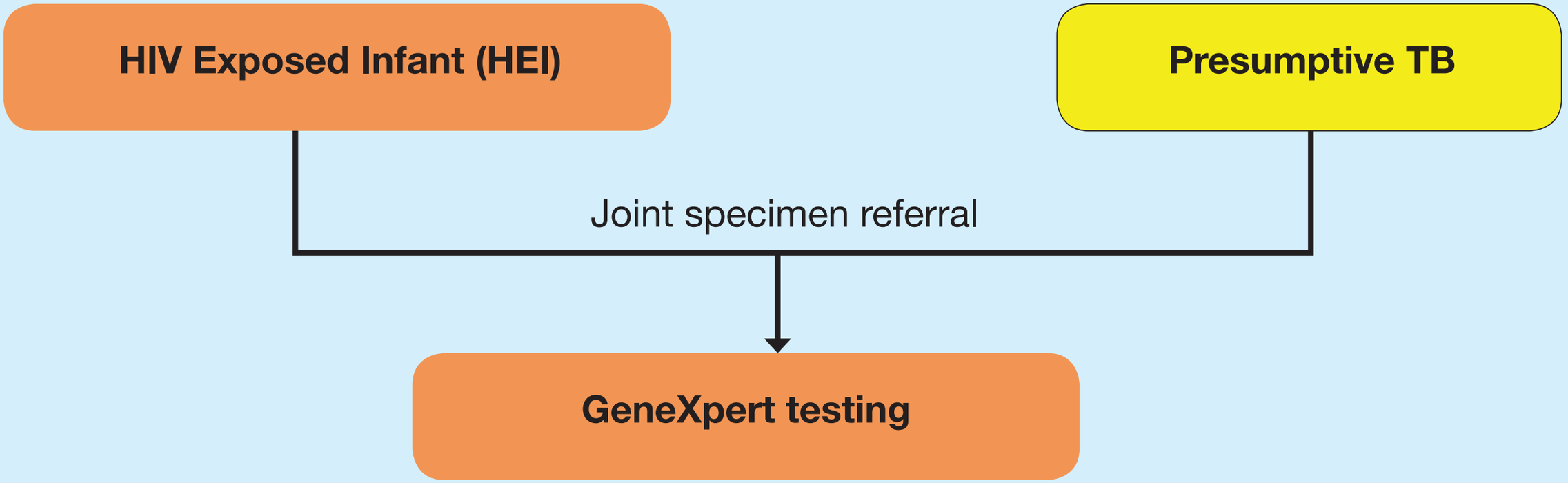
- People Living with HIV with TB symptoms
- Children <15 years with TB symptoms
- All presumptive TB cases with a negative smear microscopy result

Integrated Platforms for Early Infant Diagnosis and GeneXpert testing

GeneXpert testing platform can be used for multi-disease testing for both EID and TB diagnosis.

Joint specimen referral for EID and TB diagnosis is encouraged.

Integrated platform for EID and TB testing



Algorithm for Diagnosis of Pulmonary TB in Children

History of presenting illness	◉ For all children presenting to a health facility, ask for the following suggestive symptoms (Cough, fever, poor weight gain, lethargy or reduced playfulness). ◉ Suspect TB if child has two or more of these suggestive symptoms. ◉ Ask for history of contact with adult/adolescent with chronic cough or TB within the last 2 years	
Physical Examination	◉ Examine the child and check for: ◉ Temperature >37.5 (fever) ◉ Weight (to confirm poor weight gain, weight loss)- check growth monitoring curve ◉ Respiratory rate (fast breathing) ◉ Respiratory system examination-any abnormal findings ◉ Examine other systems for abnormal signs suggestive of extra-pulmonary TB#	
Investigations	◉ Obtain specimen* for Xpert MTB/RIF (and culture when indicated**) ◉ Do a chest Xray where available ◉ Do a mantoux test where available ◉ Do a HIV test ◉ Do other tests to diagnose extra-pulmonary TB where suspected*	
Diagnosis	**Bacteriologically confirmed TB:** Diagnose if specimen is positive for MTB	**Clinically diagnosed TB:** *Child has two or more of the following suggestive symptoms* Persistent cough, fever, poor weight gain, lethargy. PLUS two or more of the following: Positive contact, abnormal respiratory signs, abnormal CXR, Positive Mantoux **Note:** If the child has clinical signs suggestive of EPTB, refer to EPTB diagnostic table#

Key Message

All patients with malnutrition should be screened for TB and tested for HIV

Specimen may include: Expectorated sputum (child > 5 years), induced sputum, nasopharyngeal aspirate and gastric aspirate.

Attempt to obtain specimen in every child

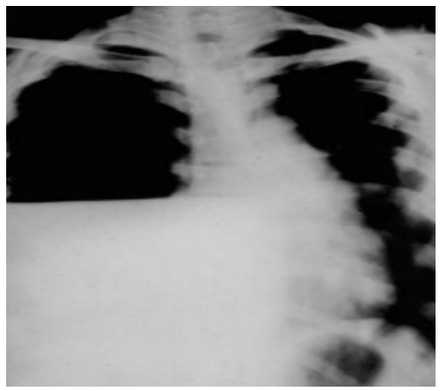
When to consider a diagnosis of Extra pulmonary TB (EPTB)

Consider EPTB if a patient presents with constitutional symptoms suggestive of TB such as fever, weight loss and night sweats in addition to symptoms affecting other organs.

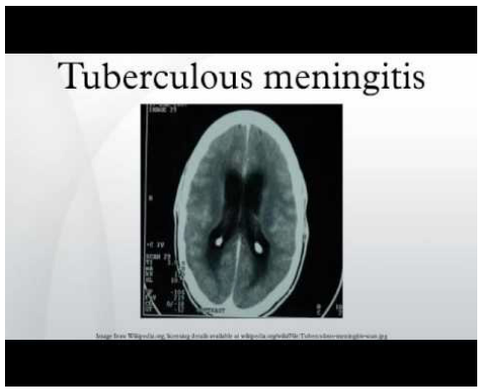
Specimens that may be collected to diagnose EPTB include CSF, pleural aspirate, ascitic fluid, FNA and lymph node biopsies.

Common forms of Extra-Pulmonary TB among adults and children

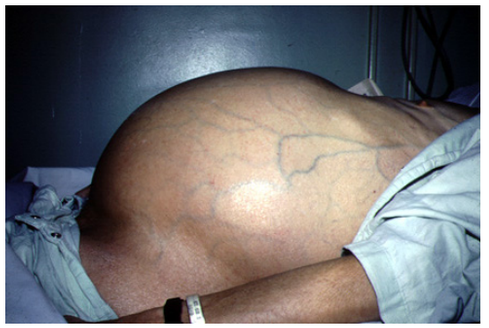
TB with pleural effusion



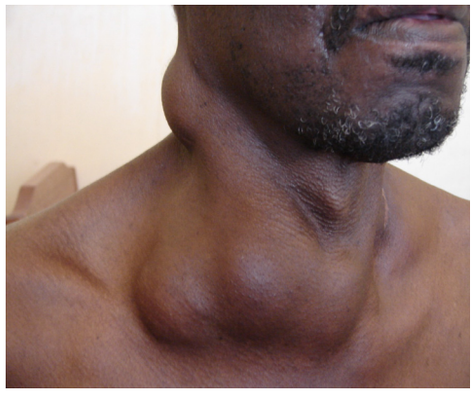
TB Meningitis



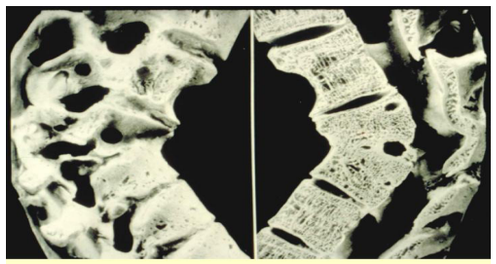
TB Abdomen (with peritonitis & ascites) joints and the spine)



TB Adenitis



Osteo-articular TB (affecting joints and spine)



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Hein J, Kleinschmidt H, Uehlinger E (eds). Thieme, Stuttgart, 1964
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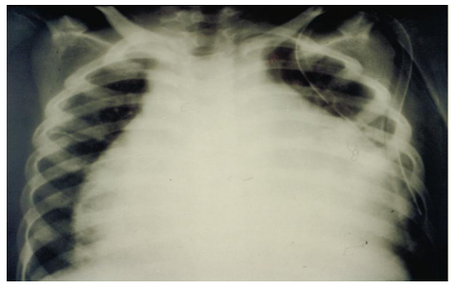
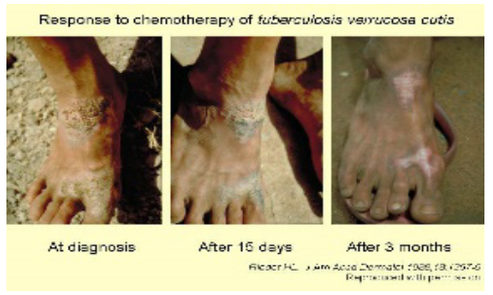
TB pericarditis



TB of the skin



Sample Collection for Adults and Children with Presumptive TB

The patient should:

- Take a deep breath.
- `Cough severally.
- Attempt sputum production.
- Number 1 to 3 can be repeated several times.
- Spit sputum (and not saliva) into the provided container
- Close the lid tightly
- Submit sample to the laboratory as soon as possible.

In children:

- Educate child and family to build confidence
- Child to rinse mouth with water
- Child to take three deep breaths and cough into the container on the last exhalation
- Repeat step 3 severally until sufficient sample is obtained.

In young children and adults who cannot expectorate, the following can be done:

- Gastric aspiration through a nasogastric tube (NGT)
- Sputum induction through nebulization with hypertonic saline
- Bronchial wash or broncho-alveolar lavage sample obtained through bronchoscopy

NB. For details on the above procedures, refer to guidelines.

Sample handling by HCWs

- Label the sputum containers on the side *(not on the lid)* prior to sputum collection
- Fill in the sputum examination forms ensuring that the patient's contacts are included.
- Instruct the patient to collect sputum samples in a well ventilated area preferably outdoors (not in the facility lavatories).
- Give patients clear instructions on when to return for their results.

Results should ideally be available within 24 hours after the sample is submitted.

TB/HIV Co-infection Management: TB/HIV Essential Package of Care

All TB-HIV patients should receive a package of services that are known to promote health, improve the quality of life.

COMPONENT OF STANDARD PACKAGE OF CARE	SUBCOMPONENT
Anti- retroviral therapy Anti-TB therapy	• Patient preparation • Anti TB Therapy • ART Therapy • Monitoring (clinical and laboratory)
Positive health, dignity and prevention(PHDP); Gender Based Violence (GBV); and TB/HIV counselling	• Positive health, dignity and prevention components - Disclosure and partner/family testing - Condom use - Family planning - STI screening, prevention, and treatment - Adherence counselling and support • Gender-based violence screening and support • HIV education/counselling • TB education/counselling - Behaviour change communication - Infection control -Home based care, supervision and patient support -Stigma reduction
Specific opportunistic infection screening and prevention	• Cotrimoxazole preventive therapy • Cryptococcal meningitis
Reproductive health services	• Sexually transmitted infections screening and management • Family planning and pre-conception services • Maternal healthcare • Cervical cancer screening
Non-communicable diseases screening and management	• Hypertension • Diabetes mellitus • Dyslipidaemia • Chronic kidney disease • Chronic liver disease • Other NCDs
Mental health screening and management	• Depression and other mental illness • Alcohol and drug use/addiction
Nutritional services	• Assessment • Counselling and education • Management and support
Prevention of other infections	• Immunizations • Malaria • Safe water, sanitation and hygiene
TB Contact management	• Contact Invitation • Contact tracing -TB Preventive Therapy (IPT) for eligible population

Drug Susceptible TB Treatment Regimen for Paediatrics, Adolescents and Adults

TB disease category	Recommended regimen	
	Intensive phase	**Continuation phase**
All forms of TB except TB meningitis, bone and joint TB (osteoarticular TB)	2 RHZE*	4 RH*
• **TB meningitis** • **Osteoarticular TB**	2 RHZE*	10 RH*
Drug resistant TB	Refer to a DRTB Clinical team	

***Patients taking isoniazid containing regimen should also be given Pyridoxine (Vitamin B6) daily to reduce the risk of developing peripheral neuropathy**

Timing of ART for TB/HIV Co-infection

Type of Patient	Timing of ART
Patients who are not yet on ART	• Start TB treatment immediately • Initiate ART as soon as anti-TB medications are tolerated, preferably within 2 weeks
Patients who are already on ART	• Start TB treatment immediately • Continue ART, making any required adjustments to the ART regimen based on predicted drug interactions • Assess for HIV treatment failure in patients who develop TB after being on ART for ≥ 6 months

- **Patient being treated concurrently for TB and HIV require close monitoring for toxicity**
- **MDR TB and HIV coinfection should be managed in settings where close toxicity monitoring and follow up by experienced clinicians is possible**
- **Patients on TDF and aminoglycosides are at high risk for renal toxicity and require close monitoring**

Preferred ART Regimens for TB/HIV Co-infection for Children and Adolescents Newly Initiating 1st Line ART

Age	Scenario	Recommendation
<20kgs[a]	**ABC/3TC/LPV/r**	• Super Boost LPV/rc
20kgs-35kgs	**ABC/3TC/DTG**	• RAL at x2 standard weight-based BD dosing until 2 weeks after completion of Anti TBs
>35kg	**TDF/3TC/DTG**	• DTGb x2 standard dose BD dosing

1 For children who cannot tolerate LPV/r + RTV (usually because of GI side-effects), the alternative regimen is RAL (double-dose) if ≥ 2 years old, if < 2 years old use triple-NRTI regimen of ABC + 3TC + AZT for the duration of TB treatment, then return to ABC + 3TC + LPV/r upon completion of TB

2 For children >35kgs HIV-TB co-infected to use DTG x2 standard dose BD dosing. Those who cannot tolerate DTG, the alternative is RAL at X2 standard weight-based BD dosing

3 For patients on these regimens who become viremic consult Regional or National HIV Clinical TWG (ulizanascop@gmail.com) or call Uliza Toll-free Hotline 0800 72 48 48

Use of Alternative ARVs for Children and Adolescents in First-Line Regimens[1]

Age/Weight	Scenario and ARV Affected	Recommended Alternative ARV to Use
Birth – 4 weeks	RAL: Not available or unable to tolerate	Use NVP
	AZT: Infant Hb < 9.5 g/dL	Defer ART until 4 weeks of age, then start ABC+3TC+LPV/r
< 20 kg (above 4 weeks old)	ABC: Develops ABC hypersensitivity reaction[1]	Use AZT (if Hb ≥ 9.5 g/dL); if Hb < 9.5 g/dL consult Regional or National HIV Clinical TWG
	LPV/r: Unable to tolerate	Use RAL
	LPV/r: Currently on anti-TB medications	Use LPV/r + RTV[2] If not able to tolerate super-boosted LPV/r + RTV then use RAL double-dose (if ≥ 2 years old) or ABC+3TC+AZT (if < 2 years old)
20 kg – 35kg	ABC: Develops ABC hypersensitivity reaction[1]	Use AZT (if Hb ≥ 9.5 g/dL); if Hb < 9.5 g/dL consult Regional or National HIV Clinical TWG
	DTG: Unable to tolerate	Use LPV/r If unable to tolerate LPV/r then use RAL
	DTG: Currently on rifampicin-containing TB treatment	Use RAL at double standard weight-based dose until 2 weeks after completing TB treatment, then switch to DTG
> 35 kg	TDF: Impaired renal function (CrCl < 60 ml/min) or unable to tolerate	Use ABC[3]
	DTG: Unable to tolerate	Use LPV/r If unable to tolerate LPV/r then use RAL
	DTG: Currently on rifampicin-containing TB treatment	Increase DTG to 50 mg BD until 2 weeks after completing TB treatment, then revert back to DTG 50 mg once daily[4]

Preferred ART Regimens for TB/HIV Co-infection for Patients Newly Initiating 1st Line ART

Age	1st Line if TB/HIV Co-infection
≥ 15 years (or ≥ 35 kg body weight)	• Give TDF/3TC/DTG FDC am + DTG 50mg pm for duration of rifampicin-containing TB treatment and for an additional 2 weeks after TB treatment is completed, then revert to TDF/3TC/DTG FDC OD • TDF + 3TC + EFV[4]
PWID/HIV ≥ 15 years	• Give TDF/3TC/DTG FDC am + DTG 50mg pm for duration of rifampicin-containing TB treatment and for an additional 2 weeks after TB treatment is completed, then revert to TDF/3TC/DTG FDC OD • Female PWID/HIV of child-bearing potential use ATV/r (with rifabutin-based anti-TB treatment) instead of DTG

[1] Refer to Annex 10 2018 ARV Guidelines for weight-based ARV dosing

[2] Use "super-boosted" LPV/r by adding additional ritonavir suspension to manage the drug interaction between LPV/r and rifampicin (see Table 8.8 2018 ARV Guidelines for dosing recommendations). Two weeks after TB treatment is completed the child should go back to standard LPV/r dosing. For children ≥ 2 year who cannot tolerate LPV/r + RTV (usually because of GI side-effects), the alternative regimen is RAL at x2 standard weight-based BD dosing until 2 weeks after TB treatment then continue with RAL standard weight-based BD dosing.

[3] EFV is no longer being recommended for children < 3 years old because of highly variable EFV metabolism at this age group

[4] DTG is not currently recommended for women and adolescent girls of childbearing potential because of possible risk of birth defects when DTG is used around the time of conception. Women and adolescent girls who are on effective contraception may opt to use DTG and should be supported in their decision

Preferred ART Regimens for Patients Who Develop TB while Virally Suppressed on 1st Line ART

Current Regimen	Age	Recommended Substitution
PI/r-based	**≥ 15 years (or ≥ 35 kg body weight)**	Switch from PI/r to DTG and continue this regimen even after completing TB treatment (give DTG 50 mg BD for duration of rifampicin-containing TB treatment, then reduce to DTG 50 mg once daily 2 weeks after TB treatment is completed) For women and adolescent girls of childbearing potential continue PI/r (with rifabutin-based anti-TB treatment) instead of DTG
EFV-based	**Any age**	Continue same regimen for duration of TB treatment. Consider for regimen optimization after completing TB treatment (Table 6.52018 ARV Guidelines)
RAL-based	**All ages[6]**	Give double the standard dose of RAL until 2 weeks after completion of rifampicin-based TB treatment, then reduce to standard weight-based dosing
DTG-based	**≥ 15 years (or ≥ 35 kg body weight)**	Give TDF/3TC/DTG FDC am + DTG 50mg pm for duration of rifampicin-containing TB treatment and for an additional 2 weeks after TB treatment is completed, then revert to TDF/3TC/DTG FDC OD

1 Always assess for HIV treatment failure in patients who develop TB after being on ART for ≥ 6 months. For patients failing 1st line ART refer to Table 8.7 2018 ARV Guidelines for recommended 2nd line regimens

2 For patients on 2nd line ART, subsequent regimens, or nonstandard drugs who require regimen change because of TB treatment, consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com

3 NRTIs in the patient's current regimen do not require any adjustments with anti-TB treatment

4 Use "super-boosted" LPV/r by adding additional ritonavir suspension to manage the drug interaction between LPV/r and rifampicin (see Table 8.8 2018 ARV Guidelines for dosing recommendations). Two weeks after TB treatment is completed the child should go back to standard LPV/r dosing. For children ≥ 2 year who cannot tolerate LPV/r + RTV (usually because of GI side-effects), the alternative regimen is RAL at x2 standard weight-based BD dosing until 2 weeks after TB treatment then continue with RAL standard weight-based BD dosing.

5 Guidelines recommend LPV/r for children < 3 years, however some children < 3 years maybe on NVP due to LPV/r toxicity, consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com)

6 Studies of RAL in the treatment of pediatric TB are ongoing. Initial data from older cohorts suggest that a x2 standard weight-based BD dosing of RAL is safe and effective in the treatment of HIV in children receiving TB therapy containing rifampicin. However, there is no data on the treatment of TB in children under 2 years of age using RAL. Given the highly variable pharmacokinetics in this age group, caution is advised and routine VL monitoring must be followed

Recommended ART Regimens for Patients who Develop TB while Failing 1st Line ART

Age/ Scenario	First-line ART	Second-line ART
< 3 years	PI/r-based 1st line	• Start anti-TB immediately • Super-boost the LPV/r[2] while following the viral load monitoring algorithm (Figure 6.5 2018 ARV Guidelines), including assessing for and addressing reasons for treatment failure • Once treatment failure is confirmed and patient is ready to switch to 2nd line, switch to DRT-based 2nd line[2]
	ABC (or AZT) + 3TC + RAL (or NVP)	• Start anti-TB immediately • Switch to AZT + ABC + 3TC while following the viral load monitoring algorithm (Figure 6.5 2018 ARV Guidelines), including assessing for and addressing reasons for treatment failure • Once treatment failure is confirmed and patient ready to switch to 2nd line, switch to AZT + 3TC + LPV/r (with super-boosted LPV/r[2] until 2 weeks after completion of TB treatment). If patient was on AZT-containing 1st line then switch to ABC in 2nd line
3 - 14 years (and < 35 kg body weight)	ABC (or AZT) + 3TC + EFV (or RAL)	• Start anti-TB immediately • Continue current regimen (if on RAL, then use double dose) while following the viral load monitoring algorithm (Figure 6.5), including assessing for and addressing reasons for treatment failure • Once treatment failure is confirmed and patient ready to switch to 2nd line, switch to AZT + 3TC + LPV/r (with super-boosted LPV/r 2 until 2 weeks after completion of TB treatment). If patient was on AZT-containing 1st line then switch to ABC in 2nd line
	PI/r-based 1st line	• Start anti-TB immediately • Super-boost the LPV/r[2] while following the viral load monitoring algorithm (Figure 6.5 2018 ARV Guidelines), including assessing for and addressing reasons for treatment failure • Once treatment failure is confirmed and patient is ready to switch to 2nd line, switch to DRT-based 2nd line[2]

Recommended ART Regimens for Patients who Develop TB while Failing 1st Line ART

≥ 15 years (or ≥ 35 kg body weight)	TDF (or ABC or AZT) + 3TC + DTG	• Start anti-TB immediately • Add DTG 50 mg pm to their current regimen while following the viral load monitoring algorithm (Figure 6.5 2018 ARV Guidelines), including assessing for and addressing reasons for treatment failure • Once treatment failure is confirmed and patient ready to switch to 2nd line, switch to AZT + 3TC + ATV/r (if on TDF or ABC in 1st line) and change to rifabutin-based anti-TB treatment. If patient was on AZT-containing 1st line then switch to TDF in 2nd line
	TDF (or ABC or AZT) + 3TC + EFV (or NVP)	• Start anti-TB immediately • Continue current regimen (if on NVP, switch to EFV) while following the viral load monitoring algorithm (Figure 6.5 2018 ARV Guidelines), including assessing for and addressing reasons for treatment failure • Once treatment failure is confirmed and patient ready to switch to 2nd line, switch to AZT + 3TC + ATV/r (if on TDF or ABC in 1st line) and change to rifabutin-based anti-TB treatment. If patient was on AZT-containing 1st line then switch to TDF in 2nd line
	PI/r-based 1st line	• Start rifabutin-based anti-TB therapy immediately • Continue current regimen while following the viral load monitoring algorithm (Figure 6.5 2018 ARV Guidelines), including assessing for and addressing reasons for treatment failure • Once treatment failure is confirmed and patient is ready to switch to 2nd line, switch to DRT-based 2nd line[2]
Pregnant or Breastfeeding	Consult the Regional or National HIV Clinical TWG urgently (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com)	
HIV/HBV Co-infection	Always maintain TDF in second-line instead of switching to a different NRTI and instead of adding an additional NRTI	

1 For patients on 2nd line ART, subsequent regimens, or nonstandard drugs who require regimen change because of TB treatment, consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com)

2 Use “super-boosted” LPV/r by adding additional ritonavir suspension to manage the drug interaction between LPV/r and rifampicin (see Table 8.8 for dosing recommendations). Two weeks after TB treatment is completed the child should go back to standard LPV/r dosing. For children ≥ 2 year who cannot tolerate LPV/r + RTV (usually because of GI side-effects), the alternative regimen is RAL at x2 standard weight-based BD dosing until 2 weeks after TB treatment then continue with RAL weight-based BD dosing.

Immune Reconstitution Inflammatory Syndrome

Definition:

IRIS is a paradoxical inflammatory reaction against a foreign antigen (alive or dead) in patients who have started ART with reconstitution (improved functioning) of their immune system. The immune system, once it regains some function, is now able to respond against the foreign antigen.

Classification:

Unmasked IRIS: appearance of a previously undiagnosed opportunistic infection (OI) following ART initiation (or switch of ART to a suppressive regimen).

Paradoxical IRIS: worsening of a previously diagnosed disease after ART initiation (or switch of ART to a suppressive regimen).

Risk Factors for IRIS:

10-20% of patients who start ART with advanced immunosuppression experience clinical deterioration during the first few months due to IRIS.

High risk patients include:

- Advanced immunosuppression (WHO Stage 3 or 4, or CD4 count ≤ 200 cell/mm^3 (or CD4% ≤ 25% for children ≤ 5 years old))
- Patients with a diagnosed opportunistic infection like TB, MAC, CMV, and PCP
- Low baseline CD4 (CD4 count ≤ 50 cells/mm^3 or CD4% ≤ 10%)
- High baseline viral load
- Substantial increase in CD4 count and drop in viral load after starting ART

Diagnosis of IRIS

- IRIS should be suspected any time a patient has clinical deterioration weeks to months after starting ART (or switching to a suppressive ART regimen).
- Clinical deterioration usually occurs within 4-8 weeks of initiation or change of ART (but can be months afterwards).
- IRIS has varied clinical presentations due to multiple possible pathogens that the immune system may be reacting to, and various immune system reactions; there are generally clinical manifestations consistent with an inflammatory condition
- A high level of suspicion is required when making a diagnosis of IRIS, which is generally one of exclusion
- Rule out the possibility of drug reaction, patient non-adherence to OI treatment, persistently active infection and/or drug resistance to OI treatment
- There could be localized tissue inflammation with or without systemic inflammatory response

Management of patient with IRIS: Refer to Kenya ARV Guidelines

Infection Prevention and Control (IPC)

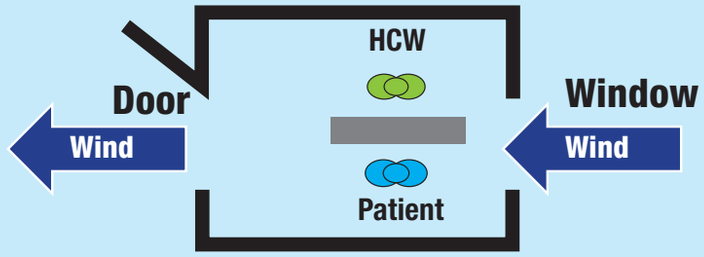
Administrative control:

- Screen clients for cough
- Educate clients on cough hygiene
- Triage all clients who cough and fast track them
- Health Care Worker screening for TB every 6 months and HIV testing as per the national Guidelines

Environmental Control

- Keep windows open at all times and no curtains
- Ensure Sitting arrangements promotes natural cross ventilation
- Where natural ventilation is not adequate use mechanical ventilation (refer to TB IPC guidelines)

Direction of natural ventilation or correct working location



Good Compromise!

Sitting arrangement in a clinic

INFECTION PREVENTION AND CONTROL

Personal Protective Equipment (PPE)

- Educate staffs and clients on the use and importance of respirators and surgical mask
- Wash/disinfect your hands with liquid soap/disinfectant before and after examining a patient
- Wear gloves while attending to patients and change after each patient.

TB/HIV Services for Special Populations

Health care workers

Screen all health care workers for TB every 6 months and provide HTS routinely.

Provide IPT for HCWS living with HIV who screen negative for TB

For HCWs with TB/HIV provide TB treatment and ART as per the guidelines with close monitoring.

Recommend for redeployment for HCWs diagnosed with TB, HIV and diabetes to low risk areas.

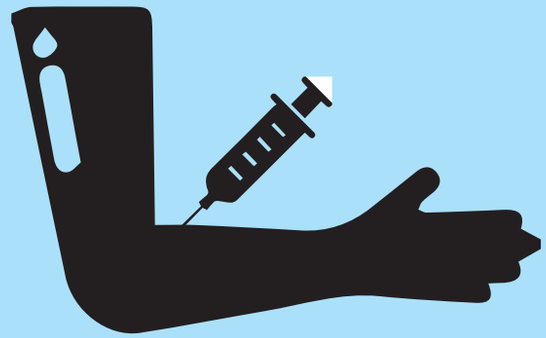
Prisoners/Inmates

Screen for TB using PF 10 tool and provide HTS services on entry.

Provide IPT to prisoners who screen negative for active TB irrespective of their HIV status. Document in the IPT register and monitor the patient.

Ensure IPC practices are followed, separate coughers from the others.

Provide immediate ART for all HIV positive prisoners.



People Who Inject Drugs (PWID)

Screen all PWID for TB and access TB prevention Care and treatment services as other population at risk or living with HIV all the IDUs for TB and provide HTS

Provide IPT to PWID who screen negative for active TB.

PWID Should be offered regular HIV testing and Counselling and be linked to comprehensive HIV prevention care and treatment services including Harm reduction counselling and support.

Provide ART and TB treatment for TB/HIV co-infected PWIDs as per the guidelines.

Classification of Nutritional Status and Management

CHILDREN 6-59 MONTHS		
WEIGTH/HEIGHT LEVEL	**CLASSIFICATION**	**MANAGEMENT**
80% or >-1z score or MUAC >=12.5	Normal	i. Nutrition counselling ii. Vitamin A supplementation as per WHO recommendation iii. Monthly nutrition assessments
<80% or <-2z score or MUAC <12.5CM	Moderate acute malnutrition	i. Nutrition counselling ii. Monthly nutrition assessments iii. Nutrition supplementation(Vitamin A, Fortified blended foods like fast food, Read To Use Supplementary Food-RUSF)
<70% 0R -3 Z score or MUAC <11.5	Sever acute malnutrition without medical complication (passes appetite test, alertness, care giver willing to manage SAM at home	i. Nutrition counselling ii. Weekly nutrition assessment iii. Therapeutic feeds(Ready To Use Therapeutic Foods – RUTF- either bar or Paste)
<70% or -3 z score with oedema +++ or MUAC <11.5	Severe acute malnutrition with medical complication(fail appetite test, intractable vomiting, anorexia, high fever, convulsions, no alertness, lethargy, lower RTI, severe anemia or dehydration, hypoglycaemia and hypothermia)	Manage in inpatient set up as per IMAM guidelines

BMI for Age 5- 17 Years

BMI FOR AGE	CLASSIFICATION	MANAGEMENT
80% or >-1z score or MUAC 5-9years >=14.5cm 10-14years >=18.5 15-17years >=19.5	Normal	• Nutrition counselling • Vitamin A supplementation as per WHO recommendation • Monthly nutrition assessments
<80% or <-2z score or MUAC 5-9years>=13.5 to <14.5cm 10-14years>=16 to< 18.5cm 15-17years>=17.5 to <19.5	Moderate acute malnutrition	• Nutrition counselling • Monthly nutrition assessments • Nutrition supplementation (Vitamin A, Fortified blended foods like foundation plus, Ready To Use Supplementary Food
<70% 0R -3 Z score or MUAC 5-9years>=13.5cm 10-14years<16cm 15-17years17.5cm	Sever acute malnutrition without medical complication (passes appetite test, alertness, care giver willing to manage SAM at home)	• Nutrition counselling • Weekly nutrition assessment • Therapeutic feeds(Ready To Use Therapeutic Foods either bar or Paste) • Hydrolysed feed for DRTB
<70% or -3 z score with oedema +++ or MUAC 5-9years<13.5cm 10-14years<16cm 15-17years17.5cm	Severe acute malnutrition with medical complication Fail appetite test(fail appetite test, intractable vomiting, anorexia,high fever, convulsions, no alertness, lethargy, lower RTI, severe anemia or dehydration, hypoglycaemia and hypothermia)	Manage in inpatient set up as per IMAM guidelines

BMI for Adults 18 Years and Above

BMI FOR AGE	CLASSIFICATION	MANAGEMENT
BMI >30	Obese	• Nutrition counselling • Vitamin A supplementation • Monthly nutrition assessment
BMI>25cm-29.9	Overweight	• Nutrition counselling • Vitamin A supplementation • Monthly nutrition assessment
BMI >=18.5-24.9 or Pregnant and postpartum up to 6months MUAC= >23CM	Normal	• Nutrition counselling • Vitamin A supplementation as per WHO recommendation • Monthly nutrition assessment
BMI<18.5 or MUAC <23cm	Moderate acute malnutrition	• Nutrition counselling • Monthly nutrition assessments • Nutrition supplementation (Vitamin A, Fortified blended foods like foundation plus, Ready To Use Supplementary Food
BMI<16.5 CM or MUAC <19CM	Severe acute malnutrition without medical complication	• Nutrition counselling • Weekly nutrition assessment • Therapeutic feeds (Ready To Use Therapeutic Foods either bar or Paste) • Hydrolysed feed for DRTB
BMI < 16.5CM with bilateral pitting oedema +++ or MUAC <16CM	Severe acute malnutrition with medical complication (fail appetite test, intractable vomiting, anorexia,high fever, convulsions, no alertness, lethargy, lower RTI, severe anemia or dehydration, hypoglycaemia and hypothermia)	• Manage in inpatient set up as per IMAM guidelines

For pregnant and postpartum mother	MUAC	>23	<23	<19	CLASS	Normal	MAM	SAM
	CLASS	Normal	MAM	SAM	MANAGEMENT	• NC and • IFAS	• RUTF and advantage plus • IFAS	

Key Nutrition Messages

- Children born of TB/HIV positive mothers should be breastfed exclusively for the first 6 months and continue up to 2 years
- Offer optimum complementary feeding after 6 months
- Where a mother is not able to support exclusive breastfeeding, appropriate replacement feeding should be availed with consideration of AFASS criteria
- Ensure monthly growth monitoring and age appropriate immunization as per schedule
- All TB/HIV patients should consume 3 healthy meals and 2 energy dense snacks in between meals
- Take at least 8 glasses of safe water per day
- Take physical exercise of at least 30 minutes a day
- Medication should be taken as per the instructions; with food, after food or before food
- All malnourished patients should be screened for TB

Pharmacovigilance

Pharmacovigilance is the science of collecting, monitoring, researching, assessing and evaluating information from healthcare providers and patients on the adverse effects of medical products and health with the view to; Identifying new information about hazards & preventing harm to patients.

Patient Counselling

What are Adverse Drug Reactions (ADRs)?

- A response to a medicine which is noxious and unintended, and which occurs at doses normally used in humans for the prophylaxis, diagnosis or therapy of disease, or for the modification of physiological function.
- Sometime people (not all) can get ADRs when taking medicines.
- ADRs vary from person to person.
- Most ADRs occur within the first few weeks of starting medication and then improve after a few weeks or months.

What do you do if you notice any side effects?

- If you develop any ADR return to the clinic immediately and discuss with your healthcare worker.
- If the side effects are mild then you can continue taking your medicines without missing any doses, and then discuss it with the clinician at your next appointment.
- If the side effects are bothering you too much then return to the clinic immediately, even if you do not have a scheduled appointment, to discuss what to do next; you can also call the clinic if you are not able to make it yourself immediately.

Pharmacovigilance (Cont'd)

How to suspect/identify/monitor ADRs

- When a patient develops a new symptom soon after starting medication.
- When a patient develops a new problem while on medications.
- When a child is born with defects.
- Probing questions on medicine use during re-fill visits
- Give shorter re-visit dates e.g. monthly especially if the drug is new in the market or new regimens introduced to the patient.

Why report a suspected ADR?

Reporting helps improve patient safety and build confidence in health care system.

Who should report?

All healthcare providers (Clinicians, Nurses, Pharmacists, Dentists, Physiotherapists, Community Health workers, Nutritionist, laboratory staff etc.), patients and the public (care givers).

Reporting tools

- Reporting can be online via PPB website *www.pv@pharmacyboardkenya.org*
- Manual filling of the hard copy forms
- Yellow form (For reporting suspected adverse drug reactions)
- Pink form (For reporting suspected poor quality medicines)

Patient alert card (For patients who are allergic to certain drug)

MINISTRY OF HEALTH
PHARMACY AND POISONS BOARD
LENANA ROAD, NAIROBI
P.O. BOX: 27663- 00506
TEL: (020) 2716905/6 Ext 114 Fax: (020)-2713431 / 2713409

ADVERSE DRUG REACTION ALERT CARD

PATIENT NAME: .....

DATE OF BIRTH:.....GENDER.....

DATE ISSUED: ..... ADDRESS: .....

SUSPECTED DRUG(S): .....

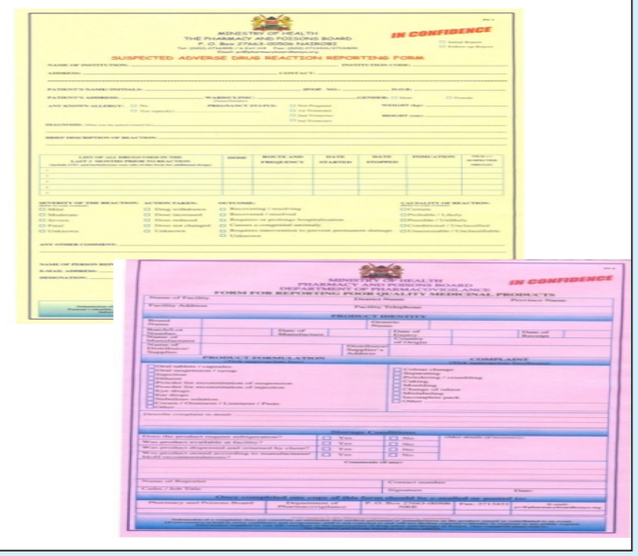
DESCRIPTION OF REACTION: .....

.....

Other comments (if any): .....

Tafadhali hakikisha unebeba kadi hii kila wakati. Kumbuka kumwonyesha mhuduumu wa afya kadi hii unapo pata matibabu

Please carry this card with you at all times and remember to produce it to your health care professional at each time of consultation.



How to report a suspected ADR or poor quality medicine

Key components of a report

- Facility details
- Patient initials/Product details e.g. batch number, expiry date etc.
- Description of the ADR/Description of the complain
- Medication history/Storage conditions
- Name of the reporter
- Date of report

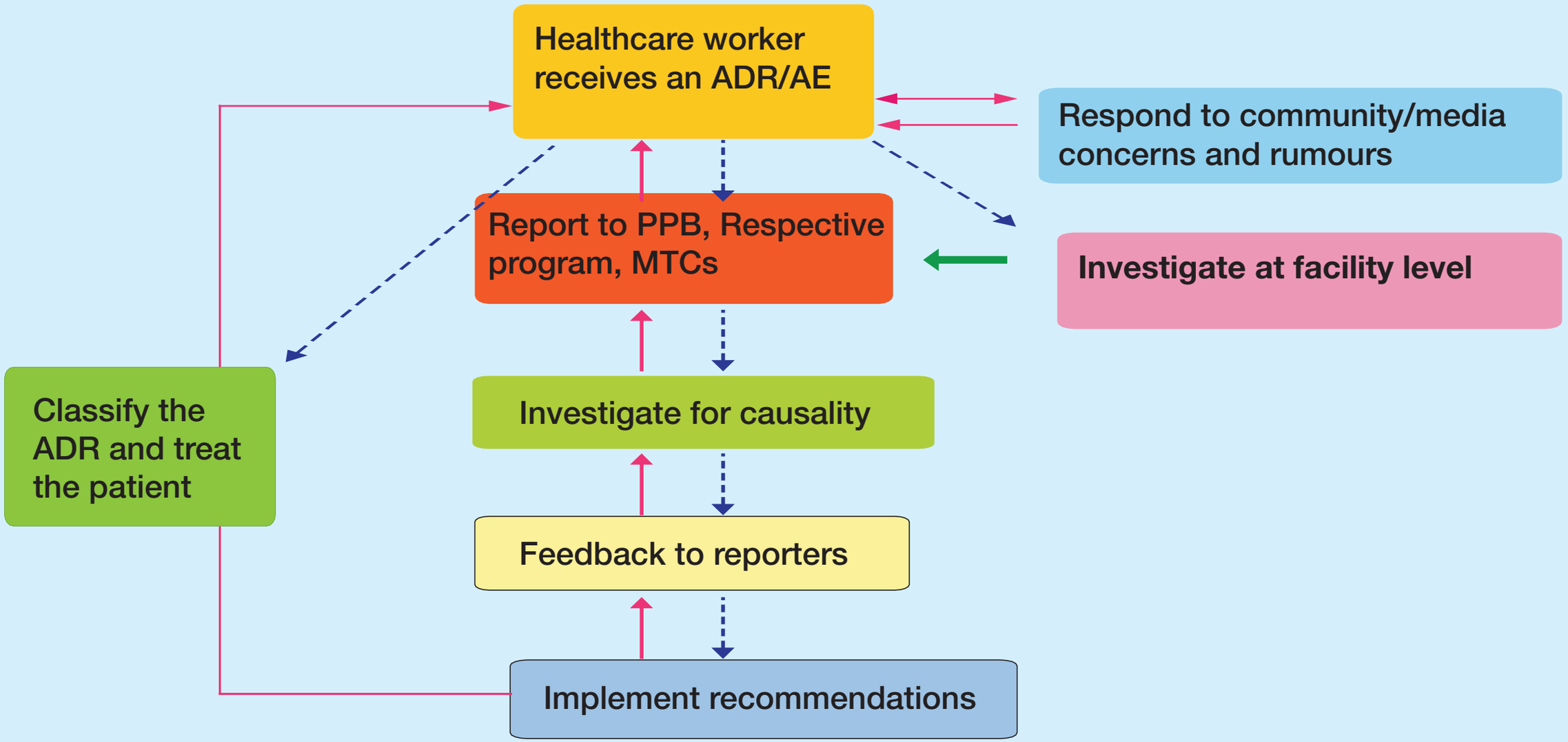
Where to send the report

Filled hard copy forms should be send to Pharmacy and Poisons Board, Pharmacovigilance department through the office of the respective county pharmacist

Scanned copies can be sent via email: *pv@pharmacyboardkenya.org*

Pharmacovigilance hotline: **+254 795 743 049**

Flow Chart: ADR Reporting



Common ADRs and their Management

Adverse Drug Reactions	Management
• Abdominal pain • Vomiting • Diarrhoea	• Rest • Traditional remedies for nausea and vomiting • Watch for signs of dehydration • Plenty of water or juices
• Malaise • Fatigue	• Rest • protect from excessive temperature, noise and light
• Fever • Headache • Joint pains or inflammation	• Rest • Appropriate pain killer & cold compress the inflamed area
• Dizziness	• Rest • Check blood pressure • Prop the head up with pillows
• Wheezing • Chest pain	• Make sure administered tablet is not choking the patient • Give appropriate antihistamines • If symptoms are uncontrolled or worsen, refer patient for further management
• Mild hives, rashes • Itching	• For non-serious cases, give appropriate antihistamines

Drug Specific ADRs and their Management

ADR	ARV Agents	Management
Hypersensitivity reaction	ABC	• Stop ABC and substitute • NEVER re-challenge • Clearly mark file (Give patient alert card)
Anaemia <8.5 Neutropenia<1.0 lipoatrophy	AZT	• Switch the drug
Renal dysfunction	TDF, Aminoglycosides	• AVOID the use of TDF in patients with Cr Cl < 50 ml/min unless there are no suitable alternatives for example in HIV/HBV co-infection
Gynaecomastia/ CNS side effects	EFV	• Consult
Hyperbilirunemia	ATV/r	• Substitute if it affects adherence
Peripheral neuropathy	Isoniazid, cycloserine Aminoglycosides, fluoroquinolones,	• Pyridoxine or increase dose • Lower dose of suspected agent without affecting regimen
Hepatotoxicity	Pyrazinamide, Isoniazid, Rifampicin, Protionamide/ Ethionamide, Nevirapine, fluoroquinolones	• Do LFTs • ALT>5 times ULN, eliminate other potential causes of hepatitis • Suspend most likely agent
Seizures	Cycloserine, Isoniazid and fluoroquinolones	• Suspend the agent, give or increase pyridoxine to max dose, restart the suspected agent at lower dose
Hearing loss	Aminoglycosides	• Decrease frequency and/or lower dose or discontinue suspected agent
Optic neuritis	Ethambutol	• Stop the drug • Refer patient to an ophthalmologist

NB: For more of ARV drug reactions, refer to ART National Guidelines, and Anti TB National TB Guidelines

Key Drug-Drug Interactions (TB/HIV/Diabetes)

Adverse events	Drugs
Prolonged QT interval	Bedaquline + Efavirenz
Liver toxicity	Pretomanid + Efavirenz/Lopinavir
Hyperglycemia Hyperinsulinemia	Rifampicin + Insulin

Drug-Food Interactions for ARVs used in TB/HIV treatment

Drug	Dietary restrictions	Recommendations
Ritonavir (RTV)	• Food increases absorption and helps reduce gastrointestinal side effects.	• The bitter taste of the syrup is lessened when given with food within 2 hours of mixing
Atazanavir (ATV)	• Food can enhance the levels of ATV in the body.	• Administer with or immediately after a meal.
Lopinavir/ritonavir (LPV/r, Kaletra)	• Moderate fat in food increases bioavailability.	• Tablets should be taken with food and swallowed whole.
Efavirenz (EFV)	• Preferably taken on an empty stomach.	• Avoid high fat meals which increase absorption.
Abacavir (ABC)	• Alcohol increases ABC levels by 41%.	• Avoid alcohol while on ABC.

Side Effects Related to TB Drugs and Food Intake Recommendations

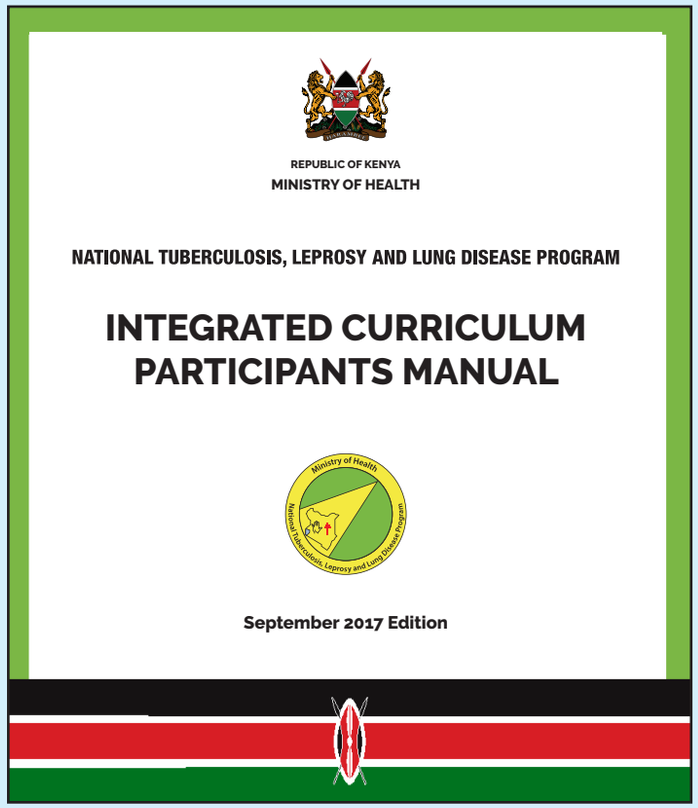
Drug Name	Possible side effects	Food recommendations
Rifampicin	Nausea, vomiting, appetite loss	• To be taken 1 hr before or 2 hrs after food
Isoniazid	Peripheral neuropathy, liver toxicity	• To be taken 1 hour before food or 2 hours after food. • Supplement with pyridoxine
Ethambutol	Retro bulbar neuritis, arthralgia	• To be taken with food
Pyrazinamide	Hepatitis, nausea, vomiting, arthralgia	• To be taken with food
Ethionamide	Abdominal discomforts, nausea	• Take with or after meals • Pyridoxine prophylaxis
Ofloxacin	Gastrointestinal reactions, insomnia	• Take 2 hours before or after food
Capreomycin	Nephrotoxicity, deranged renal function,	• Increase fluid intake • Take with foods high in potassium (Bananas, avocado)
Para-aminosalicyclic acid (PAS)	Gastrointestinal reactions, memory loss	• Increase fluid intake • Supplement with B6
Cycloserine	Memory loss	• Supplement with B6

Grading Severity of ADRs

Mild	• Transient or mild discomfort • No limitation in activity • No medical intervention / therapy required
Moderate	• Mild to moderate limitation in activity • some assistance may be needed • No or minimal medical intervention/therapy required
Severe	• Marked limitation in activity • Some assistance usually required • Medical/intervention/ therapy required • Hospitalization possible
Life-threatening	• Extreme limitation in activity • Significant assistance required • Significant medical intervention/therapy required hospitalization or hospice care probable

NOTE: | **.... “You don’t need to be certain, just be suspicious” .... Report all suspected adverse drug reactions to Pharmacy and Poisons Board.**

References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NATIONAL TUBERCULOSIS, LEPROSY AND LUNG DISEASE PROGRAM
INTEGRATED CURRICULUM PARTICIPANTS MANUAL
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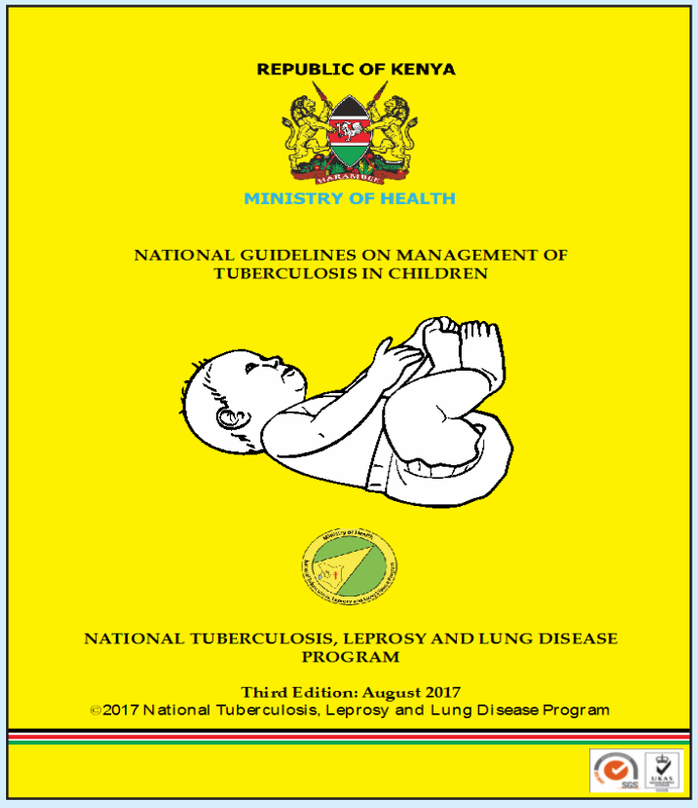
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Third Edition: August 2017
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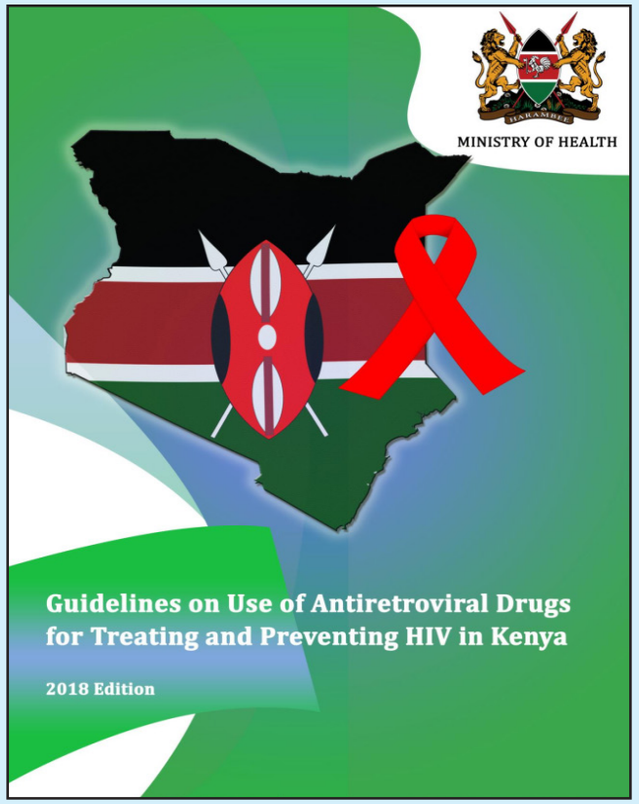
MINISTRY OF HEALTH
Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV in Kenya
2018 Edition

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