Infectious Diseases Institute

LABLITE TRAINING HANDBOOK

Compiled by
Professor Elly Katabira
Dr. Ivan Kiggundu Mambule
Dr. Dan Kaggwa Senjovu

On behalf of the Lablite team

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Foreword

One of the key barriers to ART roll-out in Africa is the perception that all patients on treatment need regular laboratory tests to maximize the effectiveness and minimize the side effects of the ART. This is a major obstacle, particularly in rural areas, where substantial infrastructure and trained personnel for laboratories are costly to set up and maintain.

DART (Development of Anti-Retroviral Therapy in Africa) trial demonstrated that antiretroviral therapy (ART) can be delivered safely and successfully to adults with symptomatic HIV infection without the use of routine laboratory testing for toxicity. DART also suggested a role for CD4 testing, but only from the second year on treatment onwards. Despite 33% having pre-ART CD4 counts of less than 50 cells/mm3, retention and survival were very high in DART participants whether or not they received routine laboratory monitoring (88% alive at 5 years: 87% in clinical monitoring and 90% in laboratory monitoring arms). This demonstrated the importance of good clinical care on survival in ART programs. Since DART was carried out in research setting, lablite re-modeled the clinically driven monitoring strategy and replicated it to a normal resource limited ART program to demonstrate that similar findings would be achieved.

The MOH and lab-lite developed this handbook to empower health workers with clinical judgment skills. It is purposed to improve their capacity to properly provide care, treatment and monitoring services to HIV patients using their best knowledge in clinical judgment and optimal laboratory investigations. It is highly linked to the National ART policy and guidelines, the Integrated Management of Adolescent and adult Illnesses (IMAI) training and the Uganda Clinical Guidelines (UCG).

This book is used in an onsite cascade mode of training where health workers at higher levels are trained and mentored by the national team to train and mentor health workers at lower levels. This mode of training causes minimal service disruption, is owned by the district team and can be integrated in their supportive supervision program. It has a video component and case studies that enhance learning.

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Dr. Jane Ruth Aceng

Director General Health Services

Ministry of Health Uganda

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Name	Organization
Dr Joshua Musinguzi	AIDS Control Program, Kampala
Dr Namagala Elizabeth	AIDS control Program Kampala
Dr Zainab Akol	AIDS control Program Kampala
Dr Elyanu Peter	AIDS Control Program, Kampala
Dr Balidawa Hudson	AIDS control Program Kampala
Dr Mutaawe Arthur	DHO Kalungu District Kampala
Dr Fabian Cataldo	Dignitas International, Zomba
Esther Ratsma	Dignitas International, Zomba
Sumeet Sodhi	Dignitas International, Zomba
Mishek Nkhata	Dignitas International, Zomba
Dr Adrienne Chan	Dignitas International, Zomba
Dr Susan Hoskins	Ellen Owen-Powell
Professor Charles F Gilks	Imperial College London
Prof Elly Katabira	Infectious Diseases Institute, Kampala
Dr Sarah Naikoba	Infectious Diseases Institute, Kampala
Dr Ivan Mambule	Infectious Diseases Institute, Kampala
Dr Dan Senjovu Kaggwa	Infectious Diseases Institute, Kampala
Mr Robinson Lufafa	Infectious Diseases Institute, Kampala
Moses Kairanya	Infectious Diseases Institute, Kampala
Ms Winifred Omuut	Infectious Diseases Institute, Kampala
Dr George Abongomera	Joint Clinical Research Centre, Kampala
Professor Peter Mugyenyi	Joint Clinical Research Centre, Kampala
Dr Cissy Kityo	Joint Clinical Research Centre, Kampala
Dr Harriet Namata	Joint Clinical Research Centre, Kampala
Dr Maggs Thomasen	MRC CTU
Caroline Grundy (Project	MRC CTU/Imperial College
Faith Mirimo	MRC/UVRI Entebbe
Dr Paula Munderi	MRC/UVRI, Entebbe
Professor Janet Seeley	MRC/UVRI, Entebbe
Sylvia Kiwuwa	MRC/UVRI, Entebbe
Professor Diana M Gibb (PI)	UK Medical Research Council Clinical Trials Unit
Dr Sarah Walker (statistician	UK MRC Clinical Trials Unit (MRC CTU)
Debbie Ford (Statistician	UK MRC Clinical Trials Unit (MRC CTU)
Dr Levison Chiwaula	University of Malawi, Zomba, Malawi
Paul Revill	University of York
Professor James Hakim	University of Zimbabwe, Harare
Dr Andrew Reid	University of Zimbabwe, Harare
Dr Travor Mabugu	University of Zimbabwe, Harare
Margaret Muzambi	University of Zimbabwe, Harare
Prof Mark Sculpher	

Acronyms and abbreviations

ART	Anti-Retroviral Therapy
Ca	Cancer
COCs	Combined Oral Contraceptives
Cx	Cervix
DART	Development of Anti-Retroviral Therapy in Africa
EPTB	Extra Pulmonary Tuberculosis
HCIII	Health center Three
HCIV	Health center Four
IMAI	Integrated Management of Adult and adolescent Illness
JCRC	Joint Clinical Research Center
KS	Kaposi's Sarcoma
MDR	Multi Drug Resistance
MRC	Medical Research Council
MUAC	Mid Upper Arm Circumference
NTLP	National TB and Leprosy Program
OI	Opportunistic infection
PGL	Persistent Generalized Lymphadenopathy
PMTCT	Prevention of Mother to Child Transmission of HIV
UN	United Nations
URTI	Upper Respiratory Tract Infection
UVRI	Uganda Virus Research Institute
WHO	World Health Organization

Introduction

This book targets health workers at health centre IV or hospital. The main purpose of this handbook is to build the capacity of health workers in clinical management of HIV patients. Specifically, the training intends to achieve the following specific objectives:

- To improve the knowledge, skills and competency of health care workers, in management and monitoring of HIV patients
- To improve the knowledge, skills and competency of health care workers in drug supply chain management in HIV/AIDS care.
- To improve the performance of staff in HIV records management and utilization of HIV M&E indicators.

The handbook has two main parts: the symptom checklist and the different clinical sessions. All the materials (symptom checklist, a job aide, clinical sessions, and videos) used in this book are interlinked for quick reference and in turn building the confidence of a health worker in turning a symptom in a practical treatment plan.

Lablite symptom checklist: The lablite symptom checklist is intended to assist a clinician in making a diagnosis as well as come up with a management plan. It is composed of the symptom check list and tables 1: for symptoms HIV patients not on ART, 2: patients on ART, 3: for levels of adherence and 4: symptoms of ART failure. This was done through a process of consultation, and harmonization of other checklists e.g. the PALM PLUS, WHO syndromic assessment, WHO Integrated Management of Adulthood and Adolescent Illnesses (IMAI), and National ART guidelines to ensure that all aspects are covered.

The clinical sessions: This book has clinical sessions that are a summary of presentation, diagnosis, management and monitoring of key conditions that HIV patients commonly present with at facilities. The management of these conditions is based on the national guidelines. It also has some sessions on system strengthening. See session outline below.

Session Outline:

Session 1: Acquaintance with lab-lite checklist /job aid
Session 2: Clinical and laboratory monitoring of ART
Session 3: Management of common O.I s in HIV/AIDS
Session 4: Staging of HIV disease
Session 5: Principles of ART (including starting ART)
Session 6: Adherence to ART
Session 7: ARV side effects and their management
Session 8: Drug interactions
Session 9: TB and HIV co-infection
Session 10:Immune Reconstitution Inflammatory Syndrome
Session 11:Pediatric ART Management
Session 12:Patient monitoring tools (M and E)
Session 13:Management, planning, ordering and procurement of drug supplies
Session 14:How to work as a clinical team

The videos: The training videos were developed in collaboration with healthcare workers and journalist with expertise in film making. They were made to demonstrate clinical history-taking and eliciting of signs and symptoms of different HIV related conditions.

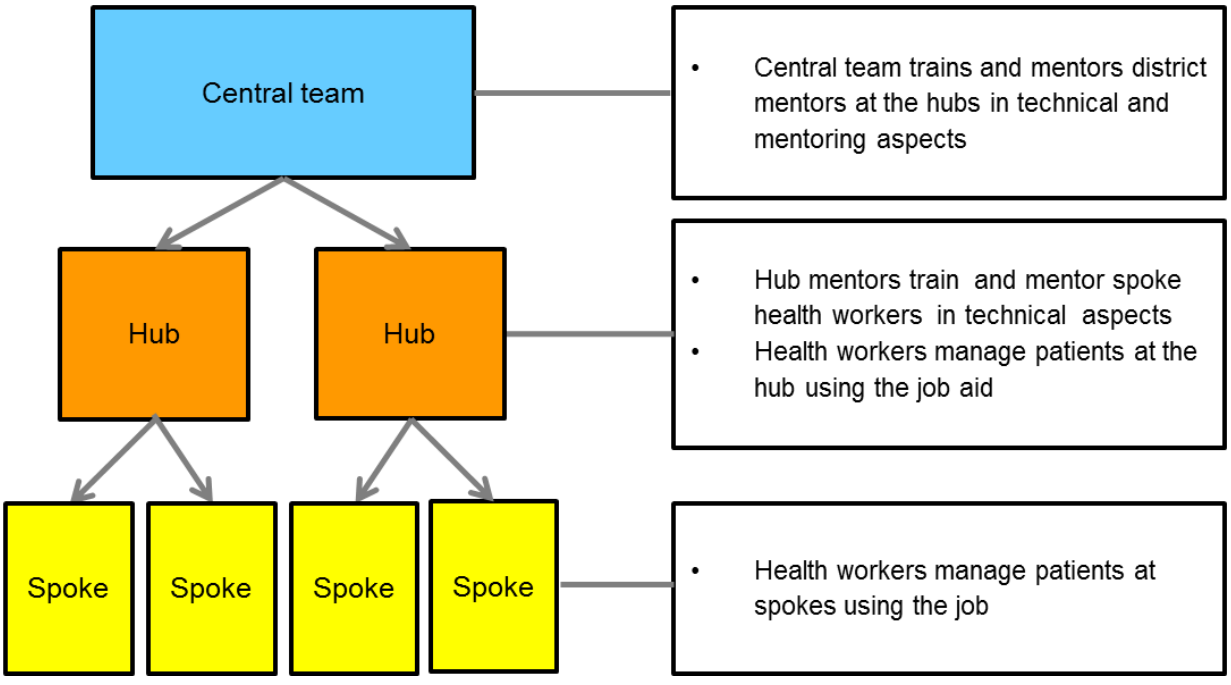
Mode of delivery

This is a 5-day onsite training in each facility. The mode of delivery involves side-room training and mentoring. The side room training is averagely three (45-minute) sessions every day done in a multidisciplinary manner where all health workers involved and capable of providing HIV care participate. The mentorship session is discipline specific where mentors sit with staff in different sections say clinic or records or stores observe and discuss appropriate challenges. The mentorship sessions are repeated for one day every four weeks for 12 weeks.

Training approach

An onsite cascade mode of training is used where health workers at the "hubs" (Health Centre IV/District Hospital) are trained and mentored by the central/national team to offer improved care to patients but at the same time trained to train and mentor health workers at the "spoke" (lower level HCIII).

Figure 1**Diagram summarizing the cascade training**



1.0 Session 1: Symptom Check List/Job Aide for Monitoring HIV Patients

The symptoms are arranged according to body systems and these are color coded. The color code is to help the user to quickly follow the symptom through the tables. For example if symptom is coded green, its diagnosis and management is found under the same color in tables 1 and 2. Additionally, the clinician has to determine whether or not the patient is on ART. If patient is ART naïve, the clinician only refers to table 1 (opportunistic infections) and if the patient is on ART the clinician refers to all the tables 1-4. This handout also has a collection of reference excerpts from different national guideline resources referred to in the symptom checklist.

Table 1: This is composed of guides to making a diagnosis on the treatment plan of opportunistic infections. It is arranged according to the body systems which are color coded to mirror the colors in the symptom checklist. A symptom noted from table 1 is followed along the table to determine the diagnosis, severity and the management depending on the health center level.

Table 2: This follows a similar pattern to table 1, the difference being that table 1 refers to opportunistic infections and table 2 refers to side effects to ART.

Table 3: This deals with adherence. It is split into two tables. The first table guides on what to do and the second refers to adherence scores. The adherence scores are based on number of pills missed in comparison to the number of tablets that are taken per day for that particular regimen. This table is based on a 30 days (monthly) recall. It is not based on the dose of the regimen taken.

Table 4: This is used for diagnosing clinical treatment failure. It uses the diagnoses made from Table 1 that are compared with the list of conditions. If the diagnosis is made in table 1 is amongst list of conditions in table 4, then the patient has clinical failure and should be treated according to the guidance given in the table.

Using this, the clinician determines the symptoms present in the patient, notes them and uses the tables as well as references to manage them. Tables 1 and 2 have columns for management which have reference pages. These are pages of the handbook where management of that particular condition is illustrated in details. Health workers at different levels of the facility can choose to manage according to the columns indicated as Management at HCIII or Management at HCIV/ Hospital.

Instructions on how to use the symptom checklist

1: Ask for or find any of these symptoms on the patients
2: If any is present tick yes or make note of the symptom
3: Determine patient's ART status
4: If patient is not on ART refer to table 1 and follow the symptom through
5: If patient is on ART refer to table 1 for opportunistic infections, table 2 for side effects of antiretroviral drugs, table 3 for adherence and table 4 for clinical treatment failure

	Ask for / Examine	Yes	No
General	*General weakness and body pain*		
	Fever/ Night sweats		
	Weight loss		
	Yellow eyes		
	Swollen breasts		
	Fat accumulation		
	Thinning of face or limbs or prominent veins		
	Swollen Glands		
Skin	Skin Rash		
	Discoloration		
	Skin nodules, vesicles		
Central Nervous System	Headache / confusion/ dizziness		
	Agitation, anxiety, depression and mania, confusion, nightmares, drowsiness,		
	Mental problems /substance use		
	Leg pain/Numbness/ weakness		
	Significant neurological impairment		
	Weakness in limbs		
Respiratory System	Cough		
	Shortness of breath		
Gastro Intestinal Tract	Lack of appetite		
	Mouth sores		
	Nausea/ vomiting / abdominal pain.		
	Pain/difficult on swallowing		
	Diarrhoea		
Genital Urinary System	Genital or anal sore, ulcer or wart		
	Vaginal bleeding		
	Swollen face and eyelids		
	Too much or too little urine		

Table 1: Opportunistic Infections							
System	**Symptom**	**Look for/ Examine**	**Additional information**	**Diagnosis /Impression**	**WHO Stage**	**Management at HCIII**	**Management at HCIV/ Hospital**
General	**Fever**	**Less than a month**	Associated with Cough	URTI or pneumonia	Stage II	Manage pneumonia Pg 27.& *Appx ix*	1.Manage pneumonia Pg 27
			Diarrhoea	Viral or bacterial gastroenteritis		Manage gastroenteritis, Pg 29& *Appx viii*	2. Manage gastroenteritis Pg 29& *Appx viii*
			Malaria B/S positive	Malaria		Treat according to malaria treatment guidelines. Pg 27	3. Treat according to malaria treatment guidelines. Pg 27
			Cough, night sweats	TB in children	Stage III	Document and Refer to the HCIV/Hospital for investigations for TB.	Manage TB in children Pg 26 Start ART
	Fever	**More than month**	Cough, night sweats, weight loss, anemia	TB	Stage III	Treat TB if ZN is +ve. If ZN is –ve, document and Refer to HCIV/ Hospital for Investigation and treatment	Investigate and treat for TB. Pg 26. Start ART
				Cancer	Stage IV	Document and Refer to hospital /HCIV/ for Investigation and treatment of or lymphoma	Investigate and refer for lymphoma management. Consider start ART

	Weight loss	> 10% reduction	Plus fever greater than a month or diarrhoea	HIV wasting syndrome	Stage IV	Start ART R/o TB	Start ART R/o TB
	Swollen Glands		Persistent generalized, no fever no weight loss	PGL	Stage I	Septrin and monitor	Septrin and monitor
			Generalized or local plus fever, weight loss and /or drenching night sweats	TB, lymphoma	Stage III Stage IV	Document and Refer to HCIV/Hospital for Investigation and treatment of TB or lymphoma	Investigate and treat TB, refer for lymphoma management. Consider start ART
Skin	Rash	Generalized	Itchy papular lesions	Pruritic Papular eruption(PPE)	Stage II	Manage PPE Pg 26,& *Appx I*	Manage PPE Pg 26,& *Appx I*
		Blisters or vesicles Grouped, does not cross body midline	Painful	Varicella / herpes zoster (HZ)	Stage II	Manage (HZ) Pg 26,& *Appx I*	Manage (HZ) Pg 26, &*Appx I*
	Nodules	Purple to black nodules or plaques	Black patches on the palate.	Kaposi's Sarcoma	Stage IV	Document and Refer to HCIV/Hospital for ART and treatment of Kaposi's Sarcoma	Start ART and monitor clearance of lesions. If persistent after 3 months refer for KS management

System	Symptom	Look for/Examine	Additional information	Diagnosis /Impression	WHO Stage	Management at HCIII	Management at HCIV/ Hospital
Central Nervous System	Headache/ confusion / dizziness	Neck stiffness, Diplopia(*Double vision*), Photophobia (*Does not want to look at light*)	Confusion, convulsions, fever, neck stiffness, photophobia nausea and vomiting	Cryptococcal meningitis	Stage IV	Document and refer to HCIV/ Hospital immediately	Treat CCM, Pg 30 Start ART
			Confusion, convulsions, fever, neck stiffness, nausea and vomiting	Bacterial meningitis	Stage III	Document and refer to HCIV/ Hospital	Treat Bacterial Meningitis, Pg 31 Start ART
			No (Confusion, convulsions, fever, neck stiffness, photobia nausea and vomiting)	Mild headache probably stress		Manage Headache *Appx ii*	Manage Headache *Appx ii*
	Mental problems	Determine nature Suicide tendencies, depressive or manic features, substance abuse.	No substance abuse	HIV associated dementia or Psychosis	Stage IV	Document and refer to HCIV/ Hospital	Manage neurological problems *Appx iii* Start ART
			Substance abuse	delirium, depression, psychosis, alcohol dependence		Document and refer to HCIV	Provide counseling. Refer to *Appx iii*
	Weakness of limbs	loss of power in any of the limbs, facial nerve palsy		Toxoplasmosis	Stage IV	Document and refer to HCIV/ Hospital	Treat **toxoplasmosis** Pg 31 Start ART

System	Symptom	Look for/ Examine	Additional information	Diagnosis /Impression	WHO Stage	Management at HCIII	Management at HCIV/ Hospital
Respiratory System	Cough		< 2 weeks with fever +/- productive	URTI/ acute pneumonia / TB suspect	If pneumonia -Stage III	Treat as pneumonia, refer to HCIV/Hospital for TB screening	Screen for TB Treat as pneumonia Pg 27 Start ART
			> 2 weeks, fever, night sweats	TB	Stage III	Treat TB if ZN is +ve. If ZN is –ve, document and Refer to HCIV/ Hospital for Investigation	Investigate and treat for TB Pg 26 Start ART
	Shortness of breath	Pleural effusion Observe breathing	Pleural effusion	EPTB, Bacterial pneumonia, heart failure or KS	Stage IV/ emergency	Document and Refer to HCIV/Hospital immediately	Investigate and treat for TB Pg 26 Manual and Start ART
				Bacterial pneumonia	Stage III	Document and Refer to HCIV/Hospital for TB Investigation and treatment	Treat with antibiotics, Pg 27 start ART
			No pleural effusion	PCP	Stage IV	Document and Refer to HCIV/Hospital immediately	Treat for PCP Pg 28 Start ART
Genital Urinary System	Genital sores, wounds or ulcers	Penis or vaginal exam	Painful and recurrent/chronic ulcers, vesicles	Genital herpes	Stage IV	Treat with acyclovir Pg 26 & *Appx v* Start ART	Treat with acyclovir Pg 26 & *Appx v* Start ART
			Rough raised bumps	Genital warts	Stage II	Document and Refer to HCIV/Hospital	Treat according to guidelines *Appx v*
	Vaginal bleeding		Non menstrual or post-menopausal, coital bleeding	Ca CX	Stage IV	Document and refer to HCIV/Hospital	Investigate for malignancy, *Appx v*

System	Symptom	Look for/ Examine	Additional information	Diagnosis /Impression	Severity/ WHO Stage	Management at HCIII	Management at HCIV/ Hospital
Gastro Intestinal Tract	**Mouth sores**	Palate, gum and the tongue	Whitish patches scrapable, painful red patches	Oral candidiasis	Stage III	Treat candidiasis pg. 25 Start ART	Treat candidiasis pg. 25 Start ART
			Whitish patches unscrapable on side of the tongue	Oral hairy leucoplakia	Stage III	Start ART	Start ART
			Ulcerations	Acute ulcerative stomatitis/ Herpes simplex Angular cheilitis Aphthous ulcers	Stage III If HS is > months stage IV	Manage according to guidelines in *Appx vii* Start ART	Manage according to guidelines in *Appx vii* Start ART
			Redness or bleeding gums, Bad breath, Deep pockets between the teeth and gums, loose teeth	Gingivitis /periodontitis	Stage III	Manage according to guidelines in *Appx vii* Start ART	Manage according to guidelines in *Appx vii* Start ART
			Purple lesions	Kaposi's Sarcoma	Stage IV	Start ART and refer to HCIV/Hospital	Start ART and monitor clearance of lesions. If persistent after 3 months refer for KS management
	Difficult or pain on swallowing	Throat exam	White exudates on the throat or on tonsil plus swollen lymph nodes	Tonsillitis		Penicillin According to guidelines *Appx vi*	Manage , *Appx vi*
			Whitish patches scrapable, painful red patches plus	Oral Candidiasis Oesophageal candidiasis	Stage III Stage IV	Treat candidiasis pg. 25& *Appx vi* Start ART.	Treat candidiasis pg. 25 & *Appx vi* Start ART
	Diarrhoea	**Dehydration Weight loss**	Greater than a month	Chronic diarrhoea	Stage III	Treat diarrhea Pg 29,& A*ppx viii* Start ART	Treat diarrhea Pg 29,& A*ppx viii* Start ART
			less than a month	Acute diarrhoea		Treat diarrhea Pg 29,& A*ppx viii*	Treat diarrhea Pg 29,& A*ppx viii*

Table 2: ARV Side Effects

System	Symptom	Exam	Additional information	Diagnosis /Impression	Severity	Management at the HCIII	Management at the HCIV/Hospital
General	General body weakness and body pain	Look for pallor in mucous membranes	On AZT	Aneamia AZT induced	Hb < 7	Stop AZT substitute with TDF or ABC refer to HCIV/Hospital and document	Investigate anaemia and treat accordingly *Session 7*
			Shortness of breath, nausea vomiting	Lactic acidosis		Document and refer to HCIV/Hospital	Investigate or refer to confirm lactic acidosis (serum lactate is2-5 mmol suspect, > or = 5mmol/l confirmed *Session 7*
	Fever	Skin and mucous membranes	If on ABC or NVP, skin rash, jaundice, sore throat and cough	Hypersensitivity ABC ,NVP, anti TB drugs		For NVP refer to skin rash mgt. For ABC refer to HCIV/Hospital immediately	Confirm ABC hypersensitivity. See *Session 7*
	Yellow eyes	Mucous membranes, Abdomen, Skin	Skin rash, abdominal pain and/ or tenderness	Hypersensitivity NVP, ABC, Anti-TB drugs		For NVP refer to skin rash mgt. For ABC refer to HCIV/Hospital immediately	Confirm ABC hypersensitivity see *Session 7*
	Swollen breasts			EFV		Refer to HCIV/Hospital	Consider substitution with NVP
	Fat accumulation	Enlarging breasts, buffalo hump,		Most likely drug induced Lipodystrophy		Refer to HCIV/Hospital	Consider substitution with TDF,

		enlarging abdomen		erg Alluvia, Efavirenz, Nevirapine			Rule out Cushing's syndrome
	Thinning of face or limbs or prominent veins	Facial wasting e.g. prominent bony protrusions, , prominent calf muscle		Most likely drug induced Lipo atrophy e.g. AZT, D4T and DDI		Refer to HCIV/Hospital	Consider substitution with TDF
Skin	Rash	Determine whether Macular, maculopapular, morbilliform (fine), vesicular or bullous Check for mucus membrane involvement	Extensive or bullous or vesicular or ulcerative Involves Mucus membrane	Drug rash NVP, ABC	Severe	Lead out and refer to HCIV/Hospital	If NVP substitute with EFV,
			Diffuse macular, maculopapular, or morbilliform rash	Drug rash NVP, EFV, ABC	Moderate	Continue treatment but refer to HCIV/Hospital for monitoring	continue treatment but observe closely
			Localized macular rash	Drug rash NVP, EFV, ABC	Mild	Reassure and continue treatment and observe closely	reassure and continue treatment and observe closely
	Discoloration		Darkening of finger nails skin and palms on AZT	AZT toxicity	Mild	Reassure and continue treatment and observe closely	reassure and continue treatment and observe closely

System	Symptom	Exam	Additional information	Diagnosis /Impression	Severity	Management at the HCIII	Management at the HCIV/Hospital
Central Nervous System	Agitation, anxiety, depression and manias, confusion, nightmares, drowsiness,		Minimal or no interference to social and functional activities	• Efavirenz induced • Non-ART related	Severe	Document and Refer to HCIV/Hospital	If intolerable replace EFV with NVP chronic *Session 7*
			Interference with normal function	• Efavirenz induced • Non-ART related	Mild-moderate	Reassure and continue treatment	Reassure and continue treatment
	Leg pain/Numbness/ weakness		Sensory alteration and inability to perform normal activity	• Drug related AZT, D4T • Tb drug	Severe	Refer to HCIV/Hospital	Consider substitution with TDF, add amitriptyline 25mg nocte, WHO analgesic ladder *Appx xii*
			Minimal interference with normal function	• Drug related AZT, D4T • Tb drug	Mild-	Reassure and continue treatment, add amitriptyline 25mg nocte, WHO analgesic ladder. *Appx xii*	Reassure and continue treatment, add amitriptyline 25mg nocte, WHO analgesic ladder *Appx xii*
Gastro Intestinal Tract	Lack of appetite	Weight loss measurement	without weight loss	Drug induced	Mild-moderate	Reassure and continue treatment	Reassure and continue treatment
		Weight loss measurement	significant weight loss > % or ± life threatening consequences	Drug induced	Severe	Refer to HCIV/Hospital	Consider regimen simplification
	Nausea and vomiting		Intermittent → Persistent with decreased oral intake for 24 - 48 hours	• Drug induced(AZT, LPV/r, D4T, 3TC • Non-drug related	Mild-moderate	Give anti-emetics, check for other symptoms like fever and reassure and treat appropriately: *Session 7*	Give anti-emetics, check for other symptoms like fever and reassure. Treat appropriately *Session 7*
			Persistent resulting in minimal or no oral intake	• Drug induced(AZT, LPV/r, D4T,	Severe	Give anti-emetics *Session 7* and refer to HCIV/Hospital	Treat , *Session 7* consider stopping offending drug

				3TC • Non-drug related			
	Severe Upper abdominal Pain		Vomiting , serum amylase > 1.5 times UNL	Pancreatitis	Severe	Stop ART refer to hospital	Treat according to country guidelines see *Session 7*
			Jaundice, NVP, EFV alcohol, viral hepatitis	Acute fulminant liver failure	Severe	Stop ART refer to hospital	Treat according to country guidelines see *Session 7*
	Diarrhoea	check for signs of dehydration	< 6 stools per day and no dehydration	• Drug induced (LPV/r) • Non-drug related	Mild-moderate	Rehydrate and treat according to Pg 29 and observe closely. Refer to HCIV/Hospital if persistent	Rehydrate and treat See pg. 29 Consider loperamide 2 mg 8hrly If LPV/r induced see also *Session 7*
		check for signs of dehydration	< 6 stools per day ± dehydration	• Drug induced • Non-drug related	Severe	Rehydrate, document and refer to HCIV/Hospital	Rehydrate and treat See pg. 29 Consider loperamide 2 mg 8hrly If LPV/r induced see also *Session 7*
Genital Urinary System	Swollen face and eyelids		Confirm with serum creatinine	TDF induced nephropathy		Refer to the HCIV/Hospital	confirm nephropathy consider substitution of TDF with AZT
	Too much or too little urine		**Confirm with serum creatinine**	**TDF induced nephropathy**		**Refer to the HCIV/Hospital**	**confirm nephropathy consider substitution of TDF with AZT**
			Urine sugar Random Blood sugar > 11 mmol /litre (180mg/dl)	**Diabetes mellitus**		**Refer to the HCIV/Hospital**	**Investigate and treat according to national guidelines, *Appx x***

Table 3: Adherence scores and management						
		Assess adherence using		**Indicators of adherence**	**Management at the HCIII**	**Management at the HCIV/Hospital**
	Number of pills missed in a month	Pill count and/ or patient report	Refer to charts to get score	Adherence scores; Fair (85 - 95%) and Poor (< 85%)	Counsel for improving See session 6	counsel for improving See Session 6
				adherence score ≥ 95% good adherence	Encourage to continue	encourage to continue

Adherence using one month (30 days) recall

	MISSED TABLETS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Number of tablets /day	Regimen examples																			
1	*(TDF/FTC/EFV)	96	93	89	86	82	79	75	71	68	64	61	57	54	50	46	43	39	36	32
2	*(AZT/3TC/NVP), *(D4T/3TC/NVP)	98	96	95	93	91	89	88	86	84	82	80	79	77	75	73	71	70	68	66
3	*(AZT/3TC) + EFV, *(TDF/3TC or FTC)+NVP	99	98	96	95	94	93	92	90	89	88	87	86	85	83	82	81	80	79	77
4	*(AZT/3TC) + NVP, TDF +3TC +EFV,	99	98	97	97	96	95	94	93	92	91	91	90	89	88	87	86	85	84	84
5	AZT +3TC +EFV, ABC +3TC+EFV, *(TDF/3TC or FTC)+ LPV/r	99	99	98	97	97	96	95	94	94	93	92	92	91	90	90	89	88	88	87
6	AZT +3TC +NVP, ABC +3TC+NVP, *(AZT/3TC)+ LPV/r	99	99	98	98	97	97	96	95	95	94	94	93	92	92	91	91	90	90	89
		* (fixed combination)=1 tablet + = Separate pills																		

Table 4: Clinical Failure

Suspect treatment failure if a patient has been on ART for greater than 6 months and presents with any of these conditions

Conditions as diagnosed from Table 1	**Management at HCIII**	**Management HCIV/Hospital**
HIV wasting syndrome	Refer to the HC IV /Hospital	Investigate for failure and manage according to guidelines
Oesophageal thrush		
More than 1 month: Herpes simplex ulcerations		
Recurrent severe pneumonia within 6 months		
Lymphoma		
Kaposi sarcoma		
Invasive cervical cancer		
CMV retinitis		
Pneumocystis pneumonia		
Extra pulmonary TB		
Toxoplasma brain abscess		
Cryptococcal meningitis		
HIV encephalopathy		
Pulmonary TB		
Severe bacterial infection		

2.0 Session 2: Clinical and Laboratory monitoring of ART

Follow-up and monitoring patients on ART

Patients on ART need close monitoring to assess their adherence to the prescribed regimen, tolerance and side effects of the medications and efficacy of the treatment. Once someone starts on ART a schedule for follow-up and monitoring should be drawn up. It usually includes a first visit two weeks or earlier after initiation (which may be useful to also evaluate and reinforce adherence to ART), then monthly for 6 months and thereafter every three months. Monthly visits should be combined with those of drug dispensing, as they provide useful opportunities to reinforce adherence. However, after 6 months, the drug dispensing visits may not correspond with those for clinical follow-up. In this case the patient should be encouraged to report any problem to the ART clinician when they come for their drugs and not to wait for the scheduled clinical visit. At all clinic visits, HIV 'prevention with positives' messages should be re-enforced. These should include partner HIV testing, condom use for the sexually active, encouragement regarding faithfulness and abstinence, and prevention of mother to child transmission of HIV (PMTCT), including promotion of family planning.

Clinical guidelines for monitoring ART

Regular patient evaluation and monitoring of ART is important to assess effectiveness of this intervention and to ensure safety.

Clinical assessment and evaluation:

Signs and symptoms of improvement (ART effectiveness);

- The patient's perception of how he/she is doing on treatment;
- Improvement in appetite
- Increase in body weight over the course of therapy or no signs of malnutrition (use MUAC tapes and look for oedema)
- Reduced frequency and/or severity of HIV-associated symptoms (fevers, diarrhea or new OI) Note signs and symptoms of IRIS also show a good response to ART
- Reduced Physical findings (e.g. oropharyngeal or vulvovaginal candidiasis);
- Ability to function properly (can work/play)
- No side effects

Other important parameters to consider during monitoring;

- If the patient is female check the pregnancy status.
- Ask about family planning and the method they use. Encourage use condoms as well if they are using combined oral contraceptive pills. Condoms provide extra contraceptive protection for women on ARV therapy. Some ARV medications may reduce[1] the effectiveness of COCs
- Check for adherence of ART and Septrin. Adherence is said to be good if it is above 95% of the tablets contained in the combination of the ARVs taken.
- Inform patients about the symptoms of ARV drug toxicities and advise them to seek medical care whenever they develop any skin rash or stop therapy if they develop severe skin eruptions and/or jaundice what to do when they do develop
- Screen for TB at every visit

[1] Family Planning: a global handbook for providers Page 9

Signs and symptoms of ineffectiveness of ART

- Development of new OIs while on treatment after 24 weeks on ART in a treatment adherent patients.
- Loss of weight and appetite. Any unexplained loss should prompt careful re-evaluation of the patient.
- Poor functional status. Unable to support oneself (bed ridden) or failure to do daily activities.
- **Note:** A person is considered clinical failure if they develop an AIDS defining disease (stage 4) after taking treatment for more than 24 weeks.

CD4 lymphocyte counts

CD4 counts should be done every 6 months

CD4 levels that show improvement:

- A patient responding well to ART, a rise of >100 CD4 cells/mm3 is expected in the first 6- 12 months in the ARV naïve, adherent patient with drug susceptible virus.
- Higher elevations can be seen and the response often continues in subsequent years in individuals with maximum virological suppression.

CD4 level that show ineffectiveness of ART:

- Immunologic failure on therapy can also be assessed. In adults, a useful definition of immunological failure is a return to the pre-therapy baseline or below
- Or persistent CD4 < 100 cell/mm3 after 6 months of initiation of treatment. (NB. Without concomitant or recent infection to cause a transient decline in the CD4 cell count
- Under five years persistent CD4 levels below 200cells/mm3 or < 10%

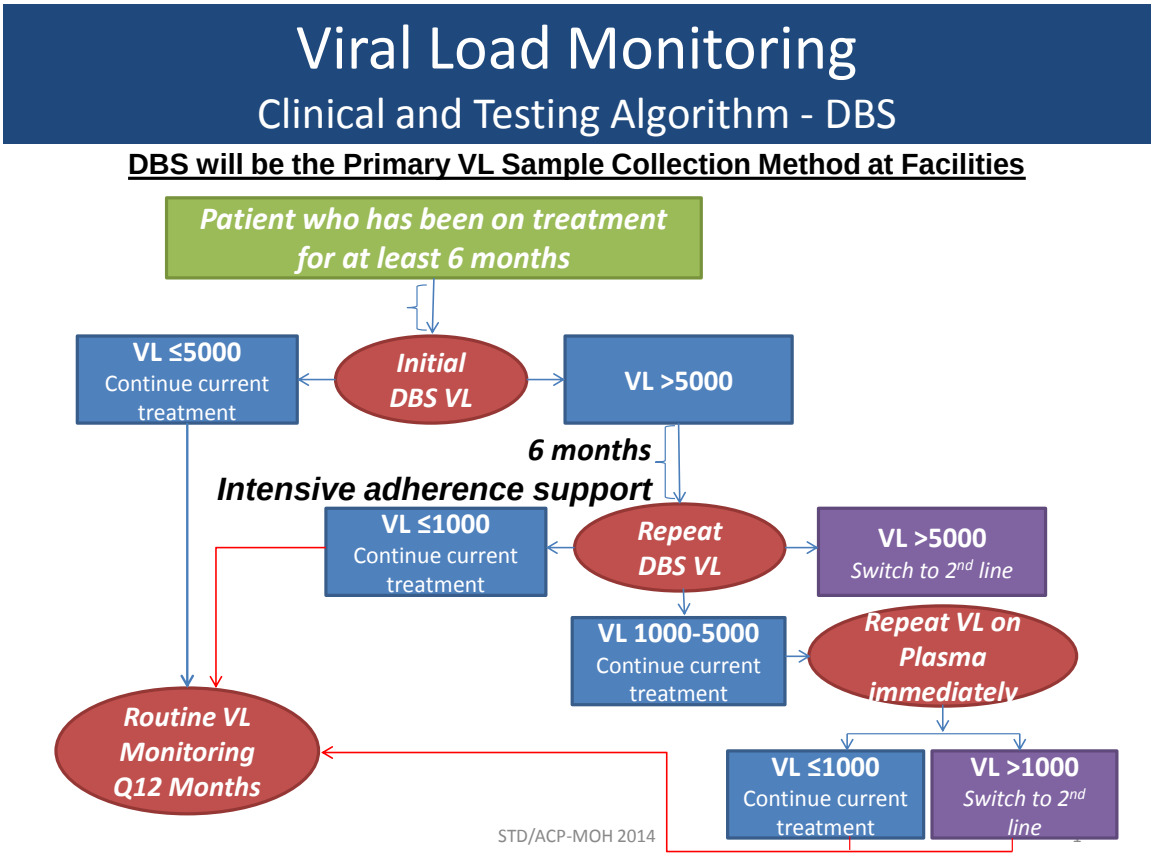
Plasma HIV-RNA levels (Viral Load)

When available, plasma HIV-1 RNA is a useful indicator of the activity of an ARV regimen in individual patients. However, due to its high cost and technical demands, such facility is only available in a few referral hospitals and research centres.

VL that show improvement:

- Viral suppression; undetectable levels of the virus after 6 months of treatment
- Viral load test is the recommended test for routine monitoring of patients on ART
- It's recommended at 6 months after starting ART and annually thereafter if normal.
- Viral load will be done using DBS sent to CPHL using the same transport system as the with EID samples.
- If viral load is not routinely available, CD4 count and clinical monitoring should be used to monitor response on ART

Figure 2: **Virological failure**



Interpreting DBS Viral Load Results

- Once you receive the results, there will be 2 options. Either they will be ≤ 5000 or >5000 copies/ml.

- **If the viral load is ≤ 5000:** The patient has suppressed viral load and is therefore responding well to ART. You continue the same treatment in this patient and do viral load test every 12 monthly. This is what you desire for all your patients.
- **If the viral load is >5000:** The result indicates that the patient has not been able to suppress their viral load. However, this could be due to treatment failure or poor adherence. But you cannot be sure. You therefore need to differentiate between the two.
  - To differentiate between poor adherence and treatment failure, you will do intensive adherence support for the patient for at least 6 months and repeat the viral load using DBS.
- **In the repeat test,** viral load results could be either ≤ 1000, 1000-5000 or >5000 viral copies/mL.

- **If the viral load is ≤1000,** it means the patient has a suppressed viral load, and is therefore responding well to ART. You continue treatment in this patient and do viral load testing every 12 monthly. Initially, this patient was not adhering to treatment. By focusing on strengthening the patient's adherence, the patient was able to suppress the virus.
- **If the viral load is >5000,** it means this patient is failing on treatment and you should therefore switch to 2nd line ART regimen.
- **If the viral load is between 1000-5000,** there is limited knowledge about the interpretation of this viral load figure by using DBS samples. The results could indicate treatment failure or not. It is therefore recommended that another viral load be taken for this patients and this time using **plasma. Plasma viral load samples give more definite results.**

- Once the once plasma viral load results are received, they could be ≤ 1000 or >1000 viral copies/ml.
  - If the viral load is ≤1000, it means the patient has a suppressed viral load and is therefore responding well to ART. You continue treatment in this patient and do viral load every 12 monthly.
  - If the viral load is >1000, it means the patient is failing on treatment. You therefore need to switch this patient to 2nd line ART regimen.

How often should viral load testing be done?

It is recommended that patients receive their 1st viral load after being enrolled in ART for 6 months. Thereafter, viral load tests should be done every 12 months. However, if treatment failure is suspected, patients should receive adherence counseling and be retested after six months of intensive adherence support.

Other laboratory parameters to monitor:

For patients on ZDV, haemoglobin should be done more frequently, at 4, 8 and 12 weeks after initiation of ART in order to detect anemia early.

Documentation:

Document all patient information by filling all parameters on the ART cards, registers and forms.

3.0 Session 3: Management of Opportunistic Infections

This is a brief diagnosis and management of the common opportunistic infections classified in the clinical staging tables above. The details are found in the IMAI acute care manual (2009) [2] and the job aide.

Oral candidiasis ***Clinical Signs*** Multiple whitish or red patches anywhere inside the mouth. They can be scraped off. ***Primary Management*** ***Nystatin oral suspension*** Treat for 7-14 days; keep in mouth as long as possible; apply to mother's nipples if breastfeeding. **Adult:** 4ml 6-hourly **Child:** 1ml 6-hourly ***Secondary Management*** Alternative treatment options if severe or no response to nystatin: ***Fluconazole tablets*** Treat for 14 days **Adult:** 100 mg 24-hourly **Child:** 6mg/kg on day 1 then 3mg/kg daily	***Ketoconazole tablets*** Do not give with NVP **Adult:** 200mg 24-hourly for 14 days **Child:** 5mg/kg 24-hourly for 14 days ***Miconazole gum patch or gel*** Use for children > 4 months and adults Treat with 1 patch 24-hourly for 14 days **Oesophageal candidiasis** ***Clinical signs*** Retrosternal pain on swallowing; infants and children refusing to eat; +/- oral thrush. Sometimes the pain is so severe leading to failure to swallow. ***Primary management*** ***Fluconazole tablets*** Treat for 14 days **Adult:** 200mg 24-hourly for 14 days **Child:** 12mg/kg day one then 6mg/kg

Tuberculosis (TB) ***Clinical signs*** Very variable: Persistent fever / drenching night sweats; weight loss; failure to thrive; persistent cough; anaemia <8g/dl; enlarged nodes; meningitis signs.	***Diagnosis / investigations*** TB case / TB suspect in household; 2x sputum for AAFB; CXR; fine needle aspiration nodes (for microscopy); pleural tap for biochemistry: straw colored effusion?; lumbar puncture: CSF for biochemistry, microscopy.

TB category	Type of Patient	TB treatment regimens	
		Initial phase	Continuation phase
Category 1 Adults	New	2RHZE	6EH OR 4RH
Category 1 children	• New bacteriologically confirmed PTB • New clinically diagnosed PTB with extensive parenchymal involvement • Severe form of extra pulmonary TB • HIV positive child	2RHZE	4RH
	TB meningitis and osteo- articular TB in children	2RHZE	10RH

[2] IMAI Acute care manual 2009, Pg 9 – 60

Category II Adults	• Previously treated bacteriologically confirmed PTB; relapse, treatment after loss to follow-up, treatment after failure	2RHZE/ 1RHZE	5RHE
Category III Children	• New clinically diagnosed PTB with limited parenchymal involvement and known HIV negative • Less severe extra extra-pulmonary TB and known HIV negative	2RHZ	4RH
Category IV	Chronic and MDR-TB cases	Refer to MDR treatment guidelines	

Pruritic papular eruptions[3]

Clinical signs

Severe itching, evenly distributed normal or dark-colored papules on trunk, arms or legs, often scratch-lesions

Primary management

Calamine Lotion

Antihistamines

Chlorpheniramine 4mg 8 hourly

Promethazine 25mg at night.

Secondary management

Corticosteroid cream or tablets

Metronidazole tablets

250mg 12-hourly for 7-14 days

Shingles (Herpes zoster)

Clinical signs

Grouped blisters in one patch; intense pain / burning; +/- fever; +/- body pains; lesions do not usually cross the body's mid-line

Primary management

Analgesic Ladder

Rigorous pain control

Low dose Amitriptyline

Acyclovir tablets

Must be started before blisters burst

Adult: 800mg 5 times per day for 7 days

Child: 20 mg/kg 8-hourly for 7 days

If face affected:

Refer to Eye specialist

Monitor for secondary bacterial infection

Follow up in 7 days if sores not fully healed and earlier if worse

Seborrhoeic dermatitis

Clinical signs

Greasy, scaly rash in axilla, groin, scalp, neck, face.

Primary management

Clotrimazole or Miconazole cream / ointment

Secondary management

Ketoconazole tablets

200 mg twice daily for 7 days

Tinea corporis / cruris / pedis

Clinical signs

Round reddened plaques with scaly edge in multiple sites, poss. widespread

Primary management

Whitfield's ointment

Clotrimazole cream or Gentian-Violet paint

Apply twice daily for 3-4 weeks

Secondary management

Griseofulvin tablets

Adult: 500 mg 12-hourly for 4-6 weeks

Child: 20mg/kg per day for 4-6 weeks

Genital herpes

Clinical signs

Painful anal genital sores

Primary management

Analgesic Ladder

Rigorous pain control

Low dose Amitriptyline

Acyclovir tablets

Must be started before blisters burst

Adult: 800mg 5 times per day for 7 days

Child: 20 mg/kg 8-hourly for 7 days

If face affected: Refer to Eye specialist

Monitor for secondary bacterial infection

Follow up in 7 days and earlier if worse

[3] IMAI Acute care manual 2009

Malaria[4]

Clinical signs

Malaria. Assess severity and treat as

1: Uncomplicated malaria using artemether/lumefantrine or artesunate / amodiaquine or dihydroartemisinin/piperaquine.

2: Complicated malaria using parenteral artesunate as first line and parenteral quinine or artemether as alternatives.

3: Malaria in Pregnancy: Same as for non-pregnant adult apart from treatment of uncomplicated malaria in first trimester. Use Quinine tablets.

Pneumonia[5]

Clinical signs

Rapid breathing

Age group	Breaths/minute
0-2 months	>60
2-12 months	>50
12-60 months	>40
Adult & children >5 years	>30

Productive cough; chest pain; fever; tachypnea / dyspnea

Diagnosis / investigations

Infiltrations on CXR

Primary management

Child:

Ampicillin 25-50mg/kg IV every 6 hours **HC3**

Plus **gentamicin** 2.5mg/kg IV every 8 hours

Neonates <7 days old: give doses every 12 hours

- Continue both drugs for at least 5 days

In severely ill infants

Ceftriaxone 100mg/kg IV once daily for 5 days

Mild: Tachypnea but no dyspnea

Adult:

Mild to moderate presentation:

Cotrimoxazole 24mg/kg every 12 hours for 5 days

Or **amoxicillin** 15-25mg/kg every 8 hours for 5 days**HC4**

If wheezing present

Salbutamol 100 micrograms (0.1mg)/kg every 8 hours until wheezing stops

500mg 8-hourly for 5 days

Doxycycline or Erythromycin if no response

[4] National Malaria Control Programme (NMCP) (2012) Ministry of Health Integrated Management of malaria Training

[5] UCG 2012

Severe pneumonia **Clinical features** Cough or difficult breathing with one or more of - Chest in drawing - Nasal flaring - Grunting (in young infants) Other clinical signs include - Chest crepitation Bronchial breathing - Pleural rub **Management HC4** At lower levels, give the 1st dose of antibiotic of **amoxicillin**	*Or if patient cannot swallow* **Benzyl penicillin** 50,000-100,000 IU/kg IV or IM Refer immediately for further management Give **oxygen** by nasal catheter Continue **benzyl penicillin** 50,000 IU/kg IV or IM every 6 hours Monitor and record as in very severe pneumonia *Once the patient improve* Switch to oral **amoxicillin** 15mg/kg every 8 hours for 5 days to complete a total of at least 5 days of antibiotics *If no improvement in 2 days or condition deteriorates* Switch to **chloramphenicol** 25mg/kg IV every 6 hours until the child improves then continue with oral **chloramphenicol** for a total of 10 days

Pneumocystis carinii (jiroveci) pneumonia (PCP)[6] ***Clinical signs*** Extreme shortness of breath; dry cough; +/- fever Severe pneumonia in infants <12 months ***Diagnosis / investigations*** O_2 saturation: hypoxia CXR: Diffuse interstitial or hyperinflation; bats wing shadow Treat empirically for PCP any HIV exposed or confirmed infected infant presenting with severe pneumonia ***Primary management*** **Admit** **Oxygen** **Cotrimoxazole tablets** **Adult:** 4 x 480mg 8-hourly for 21 days **Child:** 80mg/kg 8-hourly for 21 days Lifelong maintenance (CPT)	IV Cotrimoxazole if unable to swallow and NGT impossible to place **Prednisolone tablets:** Give 15-30 minutes before cotrimoxazole **Adult:** 8 tablets 12-hourly for 5 days 8 tablet 24-hourly for 5 days 4 tablets 24-hourly for 11 days **Child:** 2mg/kg 24-hourly for 7 days 1mg/kg 24-hourly for 7 days 0.5mg/kg 24-hourly for 7 days ***Secondary management*** *For those allergic to sulphur use* **Clindamycin** 300mg 6-hourly for 3 weeks Plus **Primaquine** 30mg 24-hourly for 3 weeks

[6] Malawi Training curriculum

Sepsis ***Clinical signs*** Severe illness; fever (can be absent, especially in children); fast heart rate; fast breathing ***Diagnosis / investigations*** +/- Malaria parasites; do not rule out sepsis if malaria parasites are seen; blood culture for culture and sensitivity (if available) ***Primary management*** **Health Centre Level:** Immediate presumptive treatment Referral to hospital Child: **Benzyl Pen** 50,000 IU/kg IV or IM stat + **Gentamycin** 7.5mg/kg slow IV / IM stat + **Rectal Artesunate** 10mg/kg (Max 200mg) or IM Quinine (10mg/kg) Adult: **Chloramphenicol** 1g IV or IM stat + **Gentamycin** 240mg slow IV or IM stat + **IM Quinine** (10mg/kg)	***Secondary management*** **Hospital management:** Neonate: **Benzyl Pen** 50,000 IU/kg IV 8-hourly + **Gentamycin** 7.5 mg/kg IV 24-hourly Child: **Gentamicin** 7.5.mg/kg 24-hourly + **Benzyl Pen** 50,000 IU/kg IV 8-hourly OR **Ceftriaxone** 50-100 mg/kg IV 24-hourly OR (if pneumococcal sepsis suspected) **Chloramphenicol** 25 mg/kg IV 8-hourly (max. 1g per dose) When stable continue to complete 10 days: **Amoxicillin** 40 mg/kg 12-hourly + **Ciprofloxacin** 15 mg/kg 8-hourly Adult: **Ceftriaxone** 2g IV 24-hourly + **Ciprofloxacin** 500 mg tablets 12-hourly + **Amoxicillin** 500 mg tablets 8-hourly for 5 days

Chronic diarrhoea (Gastroenteritis) ***Clinical signs*** More than 3 loose non-bloody motions per 24 hours for more than 2 weeks ***Diagnosis / investigations*** Based on response to stepwise empirical treatment: Step 1 treats: isospora, cyclospora, bacterial Step 2 treats: giardia, clostridium, amoeba, microspor Step 3 treats: microspor, helminths ***If diarrhea with no dehydration (See symptoms in appendix XI)*** Treat according to plan A. Use ORS Counsel the patient on the ***3 Rules of Home Treatment:*** Drink 1. Drink extra fluid (as much as the patient will take) any fluid (except fluids with high sugar or alcohol) or ORS. • Drink at least 200-300 ml in addition to usual fluid intake after each loose stool until diarrhoea stops. • If vomiting, continue to take small sips. Antiemetics are usually not necessary. Mix one Sachet of ORS in one liter of clean safe water. 2. Continue eating. 3. Return when diarrhea persists.	***If diarrhea with some dehydration:(****See symptoms in appendix XI)* **Treat according to plan B** In clinic": ORS during first 4 hours. Amount of ORS (mls) is obtained by multiplying the patient's weight in Kg by 75. If the patient wants more ORS give more. If the patient is weak, help him/her take the ORS If the patient vomits wait 10 minutes, then continue but more slowly ***After four hours:*** - Reassess the patient and classify for dehydration. - Select the appropriate plan to continue treatment. - Begin feeding the patient in clinic. •If the patient must leave before completing treatment: - Show how to prepare ORS solution at home. - Show how much ORS to give to finish four-hour treatment at home. - Give enough ORS packets to complete rehydration. Also give two packets as recommended in Plan A. - Explain the 3 Rules of Home Treatment: 1. Drink extra fluid 2. Continue eating 3. When to return to the clinic See Plan A for recommended fluids

If diarrhea with severe dehydration : **(***See symptoms in appendix XI)*

Treat according to plan C[7]

Start IV fluid immediately. If the patient can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer's Lactate Solution (or, if not available, normal saline),divided as follows:

Age	**First give 30 ml/kg in:**	**Then give 70 ml/kg:**
Under 12 months	1 hour *	5 hours
12 months and above including adults	30 minutes *	2 ½ hours

** Repeat once if radial pulse is very weak or not detectable.*

• Reassess the patient every 1-2 hours. If hydration status is not improving, give the IV drip more rapidly.

• Also give ORS (about 5 ml/kg/hour) as soon as the patient can drink: usually after 3-4 hours (infants) or 1-2 hours for children, adolescents and adults.

• Reassess an infant after 6 hours and older patient after 3 hours. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

• Refer URGENTLY to hospital for IV treatment.

• If the patient can drink, provide the mother or family/friend with ORS solution and show how to give frequent sips during the trip.

If diarrhea persists

Step 1: Cotrimoxazole tablets

Adult: 960mg 8-hourly for 7 days

Child: 80 mg/kg 8-hourly for 7 days

Zinc tablets

Give for 10 days

Child 0-6mths: 10 mg 24-hourly

Child 6mths – 5 yrs.: 20 mg 24-hourly

Secondary management

Continue with step 2 and 3 if no improvement

Step 2: Metronidazole tablets

Adult: 800mg 8-hourly for 7 days

Child: 15mg/kg 8-hourly for 7 days

Step 3: Albendazole tablets

Adult: 400mg 12-hourly for 14 days

Cryptococcal meningitis

Clinical signs

Slow onset severe headache; confusion; convulsions; +/- fever; +/- neck stiffness

Diagnosis / investigations

CSF India ink stain; cryptococcal antigen in serum or CSF(serum crag)

Primary management

Admit

Daily therapeutic spinal tap (up to 20ml per puncture)

Fluconazole tablets

Adult: 1200mg 24-hourly for 14 days
400mg 24-hourly for 42 days
200mg 24-hourly for life

Child: 12mg/kg 24-hourly for 2 weeks
6mg/kg 24-hourly for life

Secondary management

Amphotericin B

Specialized sites only

Adult and Child: 0.7-1mg/kg IV over 6 hours 24-hourly for 14 days

Follow acute treatment with Fluconazole for life

Fluconazole tablets

Adult: 400mg 24-hourly for 42 days
200mg 24-hourly for life

Child: 6mg/kg 24-hourly for life

[7] IMAI Acute care manual 2009 pg 98

TB Meningitis (due to Mycobacterium TB) *See section on Tuberculosis* **Neonatal meningitis** **Note:** organisms causing this are similar to those causing neonatal septicaemia and pneumonia, i.e. *S.pneumoniae,* group A & B streptococci, and enteric Gram-negative bacilli. Management is thus similar to that recommended for neonatal pneumonia.	(7-10 day course) □ **ampicillin** 50mg/kg every 8 hours *neonates <7 days:* every 12 hours **HC4** • □ *plus* **gentamicin** 2.5/kg IV every 12 hours
Bacterial Meningitis[8] Meningitis is acute inflammation of the meninges **Causative organisms** • *Streptococcus pneumoniae* • *Neisseria meningitides* **Clinical features** • *Rapid onset of fever* • *Severe headache and neck stiffness or pain* • *Haemorrhagic rash - may be present in N.meningitidis* infection • *Convulsions* • *Cranial neuropathy* • Altered mental state, confusion, coma **Differential diagnosis** • *Viral meningoencephalitis or cryptococcal* • *Brain abscess* • Space-occupying lesions in the brain **Investigations** • CSF: for white cell count and type, protein, sugar, Gram stain, Culture and Sensitivity	**Management** **Note:** Because of the potential severity of the disease, carry out any required lumbar puncture *promptly* and initiate 'appropriate' antibiotic therapy while awaiting lab results **Treatment** **Initial appropriate therapy** C**eftriaxone** 2g IV or IM daily in 1-2 divided doses for up to 14 days *child:* 50-100mg/kg daily dose given as above • Change to cheaper **effective** antibiotic if and when C&S results become available. *If ceftriaxone not available,* use C**hloramphenicol** 1g IV every 6 hours **.**for up to 14 days (use IM if IV not possible) *child:* 25mg/kg per dose • *Once clinical improvement occurs:* change to 500-750mg orally every 6 hours to complete the course *child:* 25mg/kg per dose
Toxoplasmosis ***Clinical signs*** Weakness in limbs ***Diagnosis / investigations*** Toxo titres. CT scan shows ring enhanced lesions	***Primary management*** **Admit** High dose cotrimoxazole Tabs 1920mg every 6 hours for 2 weeks

[8] Uganda Clinical Guidelines 2010 pg. 9

4.0 Session 4: Staging of HIV disease in adults, adolescents and infants

WHO Staging for HIV Infection and Disease in Adults & adolescents

Clinical Stage I:
1. Asymptomatic
2. Persistent generalized lymphadenopathy

Performance Scale 1: Asymptomatic, normal activity

Clinical Stage II:
1. Moderate weight loss (less than 10% of presumed or measured body weight)
2. Minor mucocutaneous manifestations (seborrhoeic dermatitis, prurigo, fungal nail infections, recurrent oral ulcerations, angular stomatitis)
3. Herpes zoster within the last 5 years
4. Recurrent upper respiratory tract infections, e.g., bacterial sinusitis, tonsillitis, otitis media and pharyngitis

And/or Performance Scale 2: Symptomatic but normal activity

Clinical Stage III:
1. Severe weight loss (more than 10% of presumed or measured body weight)
2. Unexplained chronic diarrhoea for more than 1 month
3. Unexplained prolonged fever, intermittent or constant, for more than 1 month
4. Oral candidiasis
5. Oral hairy leukoplakia
6. Pulmonary tuberculosis (current)
7. Severe bacterial infections such as pneumonias, pyomyositis, empyema, bacteremia or meningitis
8. Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis 9. Unexplained anemia (<8gm/dl), neutropenia (<0.5× 109 per litre), or chronic thrombocytopenia (<50× 109 per litre)

And/or Performance Scale 3: Bed-ridden for less than 50% of the day during the last month

Clinical Stage IV:
1. HIV wasting syndrome – weight loss of more than 10%, and either unexplained chronic diarrhoea for more than 1 month, or chronic weakness or unexplained prolonged fever for more than 1 month
2. Pneumocystis pneumonia (PCP)
3. Recurrent severe bacterial pneumonia
4. Toxoplasmosis of the brain
5. Cryptosporidiosis with diarrhoea for more than 1 month
6. Chronic isosporiasis
7. Extrapulmonary cryptococcosis including meningitis
8. Cytomegalovirus infection (retinitis or infection of other organs)
9. Herpes simplex virus (HSV) infection, mucocutaneous for more than 1 month, or visceral at any site
10. Progressive multifocal leukoencephalopathy (PML)
11. Any disseminated endemic mycosis such as histoplasmosis, coccidioidomycosis
12. Candidiasis of the oesophagus, trachea, bronchi or lungs
13. Atypical mycobacteriosis, disseminated
14. Recurrent non-typhoid salmonella septicaemia
15. Extrapulmonary tuberculosis
16. Lymphoma
17. Invasive cancer of the cervix
18. Kaposi's sarcoma
19. HIV encephalopathy – disabling cognitive and/or motor dysfunction interfering with activities of daily living, progressing slowly over weeks or months, in the absence of concurrent illness or condition other than HIV infection that could account for the findings
20. Atypical disseminated leishmaniasis
21. Symptomatic HIV-associated nephropathy or symptomatic HIV associated cardiomyopathy

And/or Performance Scale 4: Bed-ridden for more than 50% of the day during the last month

WHO Clinical Staging of HIV for infants &children with HIV infection

Clinical Stage I: 1. Asymptomatic 2. Persistent generalized lymphadenopathy
Clinical Stage II: 1. Unexplained persistent hepatosplenomegaly 2. Papular pruritic eruptions 3. Extensive wart virus infection 4. Extensive molluscum contagiosum 5. Recurrent oral ulcerations 6. Unexplained persistent parotid enlargement 7. Lineal gingival erythema 8. Herpes zoster *9. Recurrent or chronic upper respiratory tract infections (otitis media, otorrhoea, sinusitis,* tonsillitis) 10. Fungal nail infections
Clinical Stage III: 1. Unexplained moderate malnutrition not adequately responding to standard therapy 2. Unexplained persistent diarrhoea (14 days or more) 3. Unexplained persistent fever (above 37.5 ºC, intermittent or constant, for longer than one month) 4. Persistent oral candidiasis (after first 6 weeks of life) 5. Oral hairy leukoplakia 6. Acute necrotizing ulcerative gingivitis/periodontitis 7. Lymph node TB 8. Pulmonary TB 9. Severe recurrent bacterial pneumonia 10. Symptomatic lymphoid interstitial pneumonitis 11. Chronic HIV-associated lung disease including bronchiectasis 12. Unexplained anaemia (<8.0 g/dl), neutropenia (<0.5 x 109/L3) or chronic thrombocytopenia (<50 x 109/ L3)
Clinical Stage IV: 1. Unexplained severe wasting, stunting or severe malnutrition not responding to standard therapy 2. Pneumocystis pneumonia (PCP) 3. Recurrent severe bacterial infections (e.g. empyema, pyomyositis, bone or joint infection, meningitis, but excluding pneumonia) 4. Chronic herpes simplex infection; (orolabial or cutaneous of more than one month's duration, or visceral at any site) 5. Extrapulmonary TB 6. Kaposi sarcoma 7. Oesophageal candidiasis (or Candida of trachea, bronchi or lungs) 8. Central nervous system toxoplasmosis (after the neonatal period) 9. HIV encephalopathy 10. Cytomegalovirus (CMV) infection; retinitis or CMV infection affecting another organ, with onset at age over 1 month 11. Extrapulmonary cryptococcosis (including meningitis) 12. Disseminated endemic mycosis (extra pulmonary histoplasmosis, coccidiomycosis) 13. Chronic cryptosporidiosis (with diarrhoea) 14. Chronic isosporiasis 15. Disseminated non-tuberculous mycobacteria infection 16. Cerebral or B cell non-Hodgkin lymphoma 17. Progressive multifocal leukoencephalopathy 18. HIV-associated cardiomyopathy or nephropathy

Key messages about WHO clinical staging

1. WHO clinical staging requires confirmed HIV diagnosis. HIV is diagnosed using serological tests in adults and PCR/DNA in children. Children below 18 months may have maternal antibodies even when they don't have the virus thus giving a false positive serological test. This is why HIV is confirmed using DNA/PCR in this age group[9], [10]
2. An infant aged under 12 months with only a positive HIV rapid antibody test can NOT be given a WHO clinical stage because in infants, HIV antibodies do not confirm HIV infection. However, an infant with HIV antibodies and specific clinical conditions is very likely to have AIDS and needs to start ART without delay (*Presumed Severe HIV Disease*).

3. There are two WHO staging charts: One for adults and another for children under 15 years.

4. There are 4 WHO clinical stages; 1 2 3 and 4. The stage indicates progression of disease. The higher the stage the worse the immunity because iin general the CD4 lowers as stage progresses.

5. WHO defines Advanced HIV/AIDS as any clinical stage 3 or stage 4 disease; or, where CD4 is available, any clinical stage and CD4 <350. Most of these conditions are referred to as AIDS defining conditions.

6. Any one condition in the highest staging determines stage.

7. WHO clinical staging is mandatory on every visit for all HIV patients, including those on and not on ART.

8. Clinical staging can be used to guide medical decisions in specific areas :
    a. Assessment of current clinical status and referral for diagnostic testing for HIV
    b. Patients in WHO stage 3 or 4 are always eligible to start ART. Other conditions apply to patients in stage 1 or 2Starting ART and drug prophylaxis
    c. Assessing the response to ART. Don't expect new opportunistic infection if the patient is responding well on ART but if a patient develops a new or recurrent WHO stage 3 or 4 condition while on ART after the first six months of treatment, it is an indication that the disease is progressing. *See session 2.*

9. WHO clinical stages are not reversible. Once in a stage cannot go back to an earlier stage, even when one improves on treatment.

[9] IMAI Chronic care manual IMAI 2011. Pg H20 – 12
[10]The Integrated National guidelines on ART, PMTCT and Infant and Young child feeding 2011. Pg 105 - 106

5.0 Session 5: Principles of ART

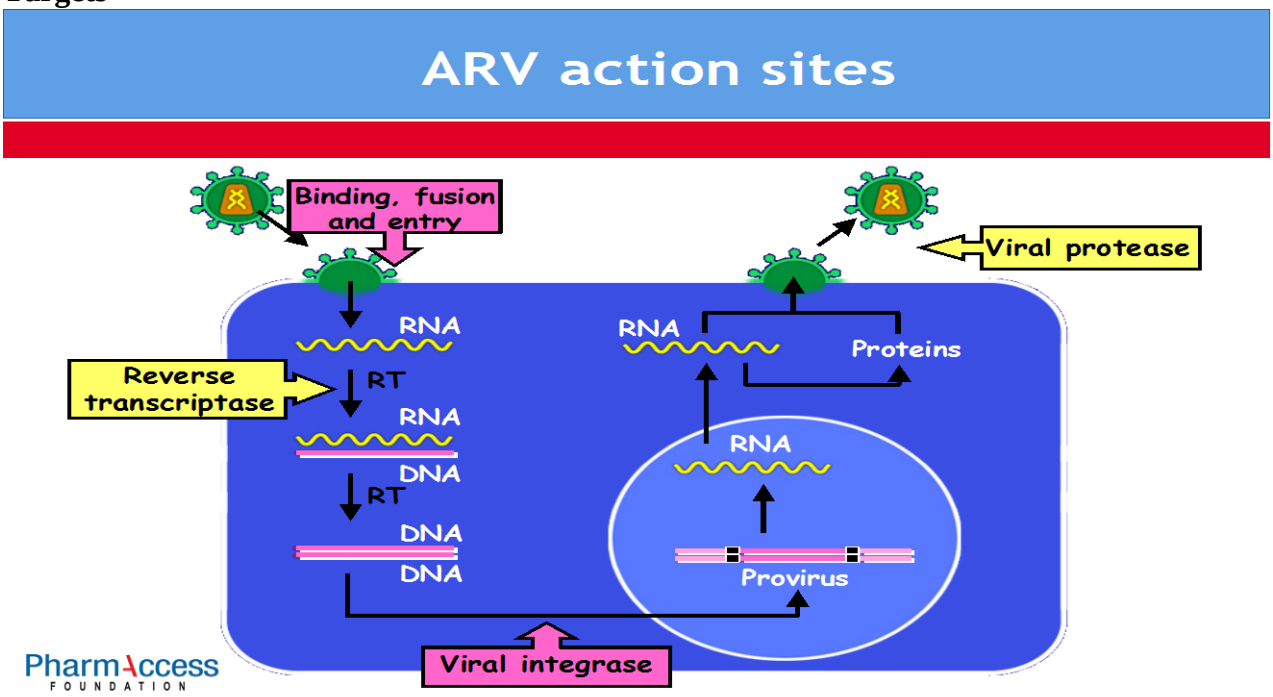
Goal of ART:

- Suppress of HIV replication, as reflected in plasma HIV concentration, to as low as possible (less than 50 copies/ml) and for as long as possible
- The preservation or enhancement of the immune function (CD4 restoration), thereby preventing or delaying the clinical progression of HIV disease
- Reduction in HIV related morbidity and mortality
- Improvement in quality of life
- Promotion of growth and neurological development in children

Antiretroviral therapy is part of comprehensive HIV care. The guiding principles of good ART include:

– Not to start to soon (when CD4 cell count is close to normal) or too late (when the immune system is irreversibly damaged).
– Efficacy of the chosen medicine regimens.
– Freedom from serious adverse effects.
– Ease of administration.
– Affordability and availability of medicines and medicine combinations.
– Ongoing support of the patient to maintain adherence.

The Life Cycle of Human Immunodeficiency Virus Type 1(HIV-1) and Major Antiviral Targets[11]



[11] The Integrated National guidelines on ART, PMTCT and Infant and Young child feeding 2011. Pg 36

Classes of ART

At present there are five different classes of ARVs; each working at different stages of the HIV life cycle. These classes include the following:

- Fusion Inhibitors
- Integrase Inhibitors
- Nucleoside/Nucleotide Reverse Transcriptase Inhibitors
- Non-Nucleoside Reverse Transcriptase Inhibitors
- Protease Inhibitors

Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (see appendix for doses)

Abbreviation	Generic name	Notes
3TC	lamivudine	Take with or without food
ABC	Abacavir	Take with or without food
AZT or ZDV	Zidovudine	Take with or after food
FTC	Emtricitabine	Take with or without food
TDF	Tenofovir	Take with food

Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI)

Generic name	Notes
Efavirenz	Take with or without food
Nevirapine	Take with or without food

Protease Inhibitors (PI)

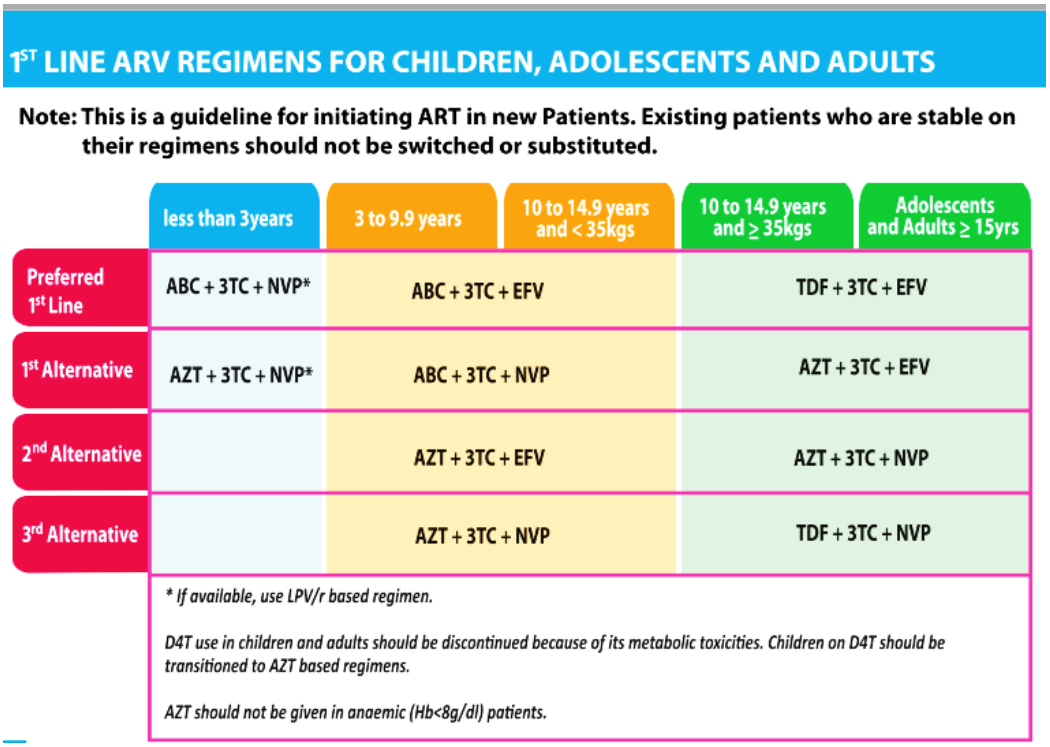
Generic name	Brand name	Notes
Atazanavir	Reyataz	Take with food
Lopinavir + Ritonavir	Alluvia	Take with food.
Darunavir	Prezista	Take with food

CONSTRUCTING AN APPROPRIATE FIRST LINE ART REGIMEN

For ART to be effective for a long time, it has been found that a patient would need to take more than one ARV medicine at a time. This is what is known as Combination Therapy. The term Highly Active Antiretroviral Therapy (HAART) is used to describe a combination of three or more anti-HIV drugs.

The standard is: 2 NRTIs + 1 NNRTI

Figure 3: **Recommended First line ART regimens in Adults and children**[12]



1ST LINE ARV REGIMENS FOR CHILDREN, ADOLESCENTS AND ADULTS

Note: This is a guideline for initiating ART in new Patients. Existing patients who are stable on their regimens should not be switched or substituted.

	less than 3years	3 to 9.9 years	10 to 14.9 years and < 35kgs	10 to 14.9 years and ≥ 35kgs	Adolescents and Adults ≥ 15yrs
Preferred 1st Line	ABC + 3TC + NVP*	ABC + 3TC + EFV		TDF + 3TC + EFV	
1st Alternative	AZT + 3TC + NVP*	ABC + 3TC + NVP		AZT + 3TC + EFV	
2nd Alternative		AZT + 3TC + EFV		AZT + 3TC + NVP	
3rd Alternative		AZT + 3TC + NVP		TDF + 3TC + NVP	

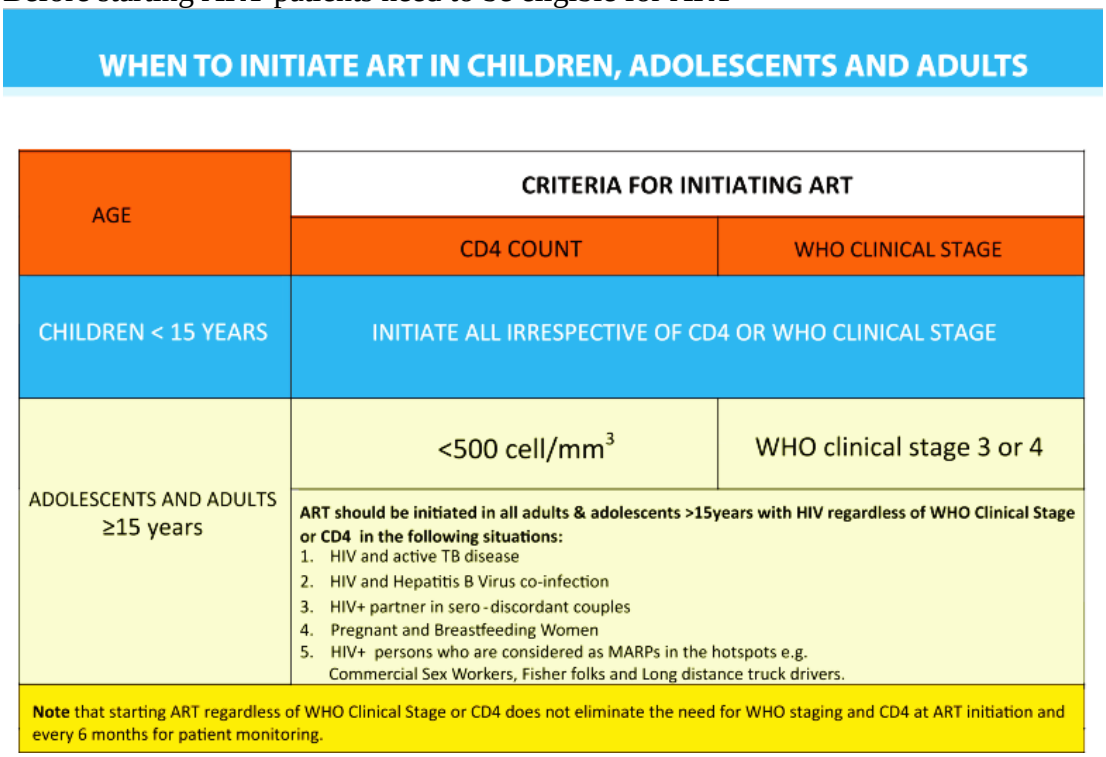
** If available, use LPV/r based regimen.*

D4T use in children and adults should be discontinued because of its metabolic toxicities. Children on D4T should be transitioned to AZT based regimens.

AZT should not be given in anaemic (Hb<8g/dl) patients.

Figure 4**Starting ART (considerations before starting ART)**

Before starting ART patients need to be eligible for ART



WHEN TO INITIATE ART IN CHILDREN, ADOLESCENTS AND ADULTS

AGE	CRITERIA FOR INITIATING ART	
	CD4 COUNT	WHO CLINICAL STAGE
CHILDREN < 15 YEARS	INITIATE ALL IRRESPECTIVE OF CD4 OR WHO CLINICAL STAGE	
ADOLESCENTS AND ADULTS ≥15 years	<500 cell/mm^3	WHO clinical stage 3 or 4
	ART should be initiated in all adults & adolescents >15years with HIV regardless of WHO Clinical Stage or CD4 in the following situations: 1. HIV and active TB disease 2. HIV and Hepatitis B Virus co-infection 3. HIV+ partner in sero-discordant couples 4. Pregnant and Breastfeeding Women 5. HIV+ persons who are considered as MARPs in the hotspots e.g. Commercial Sex Workers, Fisher folks and Long distance truck drivers.	
Note that starting ART regardless of WHO Clinical Stage or CD4 does not eliminate the need for WHO staging and CD4 at ART initiation and every 6 months for patient monitoring.		

[12] **Antiretroviral drugs for treating and preventing HIV infection 2014**

Key points to note:

- ART is not an emergency and it does not cure HIV rather suppresses the virus thus allowing the body to build its immunity.
- ART must be taken every day for life. When it is stopped the virus starts multiplying freely thus damaging the immunity of an individual. When treatment is interrupted or adherence is poor virus resistant viral strains to ARVs may emerge.
- Always first confirm HIV and eligibility before starting someone on ART.
- Seek consent from patients before starting ART. All patients are asked for consent for active follow-up at the time of starting ART. Patients can withdraw consent at any time
- Let patients know that a small number of patients on ART develop side-effects
  Most side-effects are mild and disappear while ART is continued
  Some side-effects require a regimen change

Record keeping

- Fill ART patient cards immediately when ART eligibility is established (PMTCT/ART nurse or clinician). For this reason, keep blank ART treatment cards at OPD, on the wards, etc.
- Dispensing of ARVs must be recorded on the patient treatment cards
- Complete ART treatment cards before giving out the first supply of ARVs
- Patients should only be entered in the ART register after receiving their supply of ARVs

Preparing the patient for ART

- Patients who are clinically stable should start ART no later than 7 days after being found eligible.
- Pregnant women should be offered to start ART on the same day.
- Confirm that patient (or parent/guardian if patient is <15 years) understands implications of ART and is committed to lifelong adherence. Identify long-term treatment support for patients who are unable to take responsibility for their own treatment (persons with mental disability or drug-addiction, etc.)
- Ask all patients to attend the initial group counseling and/or the ART initiation visit with a named guardian/treatment supporter. If the patient is unable to identify a suitable guardian, another patient can be used as the named treatment supporter

Switch to the second line regimen if the patient is failing on the first line

Use the criteria in the table below to determine if the patient is failing on treatment

A regimen should only be switched by using the following regimen criteria after 24 weeks on ART in a treatment adherent client.

	Children< 5 years	Children≥ 5 - 9.9 years	Adults & Adolescents
Clinical criteria	New or recurrent stage 3 or 4 event (with exception of TB)	New or recurrent stage 3 or 4 event (with exception of TB)	New or recurrent clinical event indicating severe immunodeficiency (WHO clinical stage 4)
Immunologic (CD4) criteria	Persistent CD4 level <200cell/mm^3 0r <10%	CD4 fall to the baseline (or below) Or Persistent CD4 levels <100 cells/mm^3 after 6 months of initiation of treatment without concomitant or recent infection to cause a transient decline in the CD4 cell count.	
Virological criteria	*Viral load >5000 copies 0n 2 consecutive DBS VL measurements atleast 6 months apart with adherence support. Viral load >1000 copies if using plasma VL.		
Monitoring ART Response and Diagnosis of Treatment Failure			
*Viral load is recommended as the preferred monitoring approach to diagnose and confirm ARV treatment failure			

Depending on the regimen used as first line. Use the table below to choose the appropriate regimen to switch to.

2nd AND 3rd LINE ARV REGIMENS FOR CHILDREN, ADOLESCENTS AND ADULTS

Age	1st Line regimen	2nd line regimen	3rd Line regimen
Children	ABC+3TC+NVP ABC+3TC+EFV	AZT+3TC+LPV/r	Darunavir/Ritonavir + Raltegravir (or ETV) + 3TC+AZT
	ABC+3TC+LPV/r*	AZT+3TC+(EFV or NVP)	
	AZT+3TC+LPV/r*	ABC+3TC+(EFV or NVP)	
	AZT+3TC+NVP AZT+3TC+EFV	ABC+3TC+LPV/r	
Adolescents and Adults	TDF+3TC+EFV TDF+3TC+NVP	AZT+3TC+ATV/r (or LPV/r)	Darunavir/Ritonavir + Raltegravir + 3TC+ AZT
	AZT + 3TC + EFV AZT + 3TC + NVP	TDF+3TC+ATV/r (or LPV/r)	

*In Children under 3 years of age do not switch to 2nd line unless in the presence of advanced clinical disease progression or lack of adherence specifically because of poor palatability of LPV/r. In this case, switching to a second-line NVP-based regimen should be considered

** ART Patients on a failing 2nd line regimen with no new ARV options should continue with a tolerated regimen.

6.0 Session 6: Adherence to ART and support and adherence preparation

Measuring Adherence using pill counts (see table above)

The formula below can be used to measure adherence.

$$\text{Adherence (\%)} = \frac{\text{Number of pills swallowed} \times 100}{\text{Expected number to have been swallowed}}$$

Results of good adherence

Viral suppression
Increasing CD4 thus improving immunity
Improved quality of life

Consequences of poor adherence

Incomplete viral suppression, declining CD4 counts, disease progression, emergence of resistant viral strains, limited future treatment options and higher costs to the individual and ARV program among others.

Management of adherence according to IMAI 2011

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<td>ASSESS</td>
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Review the medications with the patient and their treatment supporter. Determine whether there is an adherence problem.
Ask questions in a respectful and non-judgmental way. Ask in a way that makes it easier for patients to be truthful:
"Many patients have trouble taking their medications.
What trouble are you having?"<br>"Can you tell me when and how you take each pill?"<br>"When is it most difficult for you to take the pills?"<br>"It is sometimes difficult to take the pills every day and on time. How many have you missed in the last 4 days (insert agreed time period)?"
Ask about the common and locally important factors that may interfere with adherence.
Ask about stigma related to taking the pills.
Count pills.
How many pills forgotten yesterday, last 3 days, last month?

If poor adherence: Determine what the problem is:
Side effects?
Simply forgot?
• Ran out of pills?
• Which dose missed: morning or evening? Why?
• Cost?
• Reminds you of HIV?
• Misunderstood?
Changed work situation?
• Not comfortable taking medication around others?
Stigma?
Different timing when away from home or holiday, travel, weekend?
• Seldom at home and disorganized?
Other locally common constraints:
• Transport problems
• Problems with diet (food availability)?
• Another medical problem?
• Screen for excess alcohol use and depression, and treat, if present other locally common constraints
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ADVISE	• Reinforce the information given before. • Give additional information that may help with adherence problem. • Advise on any suggested changes in the regimen (after consulting with clinician). (If treatment needs to be stopped, or if patient decides to stop a drug, stop all medications at once and consult with clinician. Usually side effects require only changing one drug, not stopping—consult with clinician if this is necessary).

AGREE	• Agree on any changes in Treatment Plan and solutions to adherence problems (if present). • Discuss the agreements you have reached and check for their commitment.

ASSIST	• Provide adherence support.
	• Reinforce interventions which match the patient's needs and adherence problems, if present
	• Make sure that the patient has:
	  o Plan to link taking medications with daily events such as meals.
	  o Any device or skills (e.g. how to use a diary) that s/he needs.
	• Make sure patient has the support s/he needs:
	  o Get help from treatment buddy, other family and friends or peers.
	  o Help patient and treatment supporter to find solutions.
	• I f adherence problem:
	  o Get help! Call for advice or refer back sooner but do not "just refer".
	  o Link with home-based care for help and home visits.
	  o Seek help from district clinic adherence staff if regimen is too complicated or not tolerated or low adherence.
	• If repeated missed doses, use special interventions (home visit, etc).

ARRANGE	• Record adherence estimate on patient's card.
	• Arrange for refills.
	• Arrange for next follow-up visits:
	  o in clinic
	  o home visits
	• Make sure that the patient and supporter understand the follow-up plan and how to contact the clinic team if there is a problem.

Importance of more than one counseling sessions

- Allows enough time for the counselor to explore client's social support system
- Allows patient time to make an informed decision about starting the treatment
- Enhances client's ability to adhere to treatment when started
- Broadens client's comprehension of the HIV disease and treatment
- Improves client/service provider relationship.

Adherence counselor checklist after treatment readiness
• Have I identified any adherence barriers and made a plan on how to overcome them in collaboration with the client? • Have I linked the client to identified concrete and/or other social services? • Have I reviewed with the client his/her daily routine and dosing schedule? • Have I provided adherence education? • Have I provided tools to help with taking medication? • Did I have the client repeat dosing instructions? • Did I provide the client with written/visual instructions? • Does the client know how to contact me with questions and problems? • Has a follow up appointment been scheduled and does the client know when it is?

Adopted from Guthrie et al

Ministry of health Uganda, IMAI guidelines, Comprehensive HIV care including antiretroviral therapy (ART)

7.0 Session 7: ARV side effects and their management

(Chart adapted from IMAI Chronic care 2009)[13]

Signs or symptoms	Response Special additional considerations in managing pregnant or postpartum women are in italics at the end.
Fatigue / anaemia	Consider anaemia especially if on AZT. Check haemoglobin. If low (<8 grams or *<7 grams in pregnancy)* stop AZT. Fatigue commonly lasts 4 to 6 weeks especially when starting AZT. If severe or longer than this, consider drug substitution or call for advice/refer. *Fatigue is common in pregnancy. Rule out other causes.*
Pallor: anaemia	Measure haemoglobin. Refer/consult (and stop AZT/ substitute TDF) if severe pallor or symptoms of anaemia, or very low haemoglobin (<8 grams; *<7 grams in pregnancy).* If non-severe anaemia, consider HIV related illness, AZT, cotrimoxazole, malaria. Give iron/folate; mebendazole if no deworming in last 6 months; and antimalarial if at risk. Counsel on adherence and advice to eat locally available iron rich foods[14] If heavy menstrual bleeding consider use of contraception (ARV interactions) If withdrawal bleeding/post coital bleeding screen for cervical cancer. For painful menstrual cramps or to reduce bleeding give ibuprofen. Review in 2 weeks
Fever	Check for common causes of fever. Rule out malaria. Assess severity and treat as 1: **Uncomplicated malaria** using artemether/lumefantrine or artesunate / amodiaquine or dihydroartemisinin/piperaquine. 2: **Complicated malaria** using parenteral artesunate as first line and parenteral quinine or artemether as alternatives[15] Consider side effect, an opportunistic or other new infection, or immune reconstitution syndrome, *pregnancy- or postpartum-related infection.*
Changes in fat distribution	Discuss carefully with your patient—can she/he accept it?
Blue/black nails	Reassure. It's common with AZT
Rash	If on nevirapine or abacavir, assess carefully. If generalized or peeling or with mucous membrane involvement, stop drugs and refer to hospital. *If pregnant woman is on nevirapine, a new rash is likely due to this.* *Pregnancy-related rashes are rare and this diagnosis is made clinically. Any pregnant woman with unrelenting pruritis should be evaluated by district doctor urgently.*

[13] IMAI Chronic care Manual (2009) H58, H59

[14] IMAI Acute care manual Pg 21

[15] National Malaria Control Programme (NMCP) (2012) Ministry of Health Integrated Management of malaria Training. Pg 69 and 9.

Signs or symptoms	Response Special additional considerations in managing pregnant or postpartum women are in italics at the end.
Headache	Give paracetamol. Assess for meningitis: Ask for additional symptoms: confusion, convulsions, fever, neck stiffness, photophobia, nausea and vomiting[16]. If on AZT or EFV, reassure that this is common and usually self-limiting. If persists more than 2 weeks or worsens, call ATIC 0800200055 for advice or refer. *Measure BP. If diastolic BP>90 mm Hg, consider pre-eclampsia.* (excerpt from UCG 2010)
Anxiety, nightmares, depression	This may be due to efavirenz. Give at night; counsel and support (usually lasts < 3 weeks). Call for advice or refer if severe depression or suicidal or psychosis. Initial difficult time can be managed with amitriptyline at bedtime. *Consider depression during pregnancy and postpartum depression in first weeks after birth.*
Tingling, numb or painful feet/legs or hands	If new or worse on treatment, call ATIC 0800200055 for advice or refer. Patient on d4T should substitute with AZT. Patient on AZT should substitute with TDF.
Cough or difficult breathing	This could be an opportunistic infection or immune reconstitution syndrome or, if difficult breathing, lactic acidosis. See page 77 and 78 for cough or difficult breathing and consult/refer if suspect IRIS or if difficult breathing.
Nausea or vomiting	Take with food (except for ddI or IDV).If on zidovudine, assure that this is common, usually self-limited. Treat symptomatically Seek locally available foods which patient likes and which cause less nausea. Frequently offer small foods such as roasted potatoes, cassava. • Offer the drinks the sick person likes, like water, juice or tea; ginger drinks can help. Take drinks slowly and more frequently. • Avoid cooking close to the sick person. • Use effective and safe local remedies (such as licking ash from wood). IMAI[17] If persists for more than 2 weeks or worsens, call for advice or refer. *This is a common pregnancy problem in first 14 weeks of gestation. Morning sickness can be made worse by nausea from ARV drugs.* *If no response to dietary changes and no other signs or symptoms, try vitamin B6 (25 mg 3-4 times daily, not to exceed 100 mg/day).* *If no response and vomiting interferes with ART or fluid intake, give Phenergan IM or rectally. If no response, consult or refer.*
Signs or symptoms	**Response** Special additional considerations in managing pregnant or postpartum women are in italics at the end.

[16] IMAI Acute care manual (2009) pg 50.
[17] IMAI palliative care: symptom management and end of life care (2004) Pg 23

Diarrhoea	Hydrate. Follow diarrhoea guidelines as describes in session 3 (management of opportunistic infections). Reassure patient that if due to ARVs especially Ritonavir/Lopinavir (Alluvia), will improve in a few weeks. Follow up in 2 weeks. If not improved, call ATIC 0800200055 for advice or refer.
Yellow eyes (jaundice)	Stop drugs. Call for advice or refer (abdominal pain may be pancreatitis from ddI or TDF). If jaundice or liver tenderness, send for ALT test and stop ART. (Nevirapine is most common cause). Call ATIC 0800200055 for advice or refer. This can also be caused by Atazanavir. *Jaundice in pregnancy can be caused by many diseases, some of which can be fatal if not managed correctly and urgently. All pregnant women with jaundice should have an urgent evaluation including liver function tests by a doctor.* *Abdominal or flank pain: consider abruptio placenta, labour, and conditions more common in pregnant women such as pyelonephritis. Consult or refer.*
Abdominal or flank pain	
In patients on abacavir: fever, fatigue, rash, sore throat, or shortness of breath	Consider abacavir hypersensitivity syndrome, a life threatening syndrome. If suspected, discontinued immediately. **Abacavir should never be restarted in a patient who has had Abacavir hypersensitivity syndrome.**
In patients on Tenofovir	Refer if suspected kidney problem. If possible measure serum urea and creatinine. If abnormal, consult or refer.

Single drug substitutions for patients already on treatment with first line regimens

In some cases, it is appropriate to substitute one drug for another for a specific toxicity.
These substitutions can usually be made without having to stop the other drugs in a patient's regimen. Extra care must be taken when substituting a drug in a patient on a fixed dose combination to single drugs.

In patients on	**When to substitute**
Substitute to AZT TDF	If patient has anaemia (low HB) probably caused by AZT, then TDF may be substituted for AZT.
Substitute to TDF AZT	If patient has kidney disease. Substitute AZT for TDF if HB>8g/dl*. The HB should be checked at initiation then if symptomatic after starting AZT.

ABC is alternative substitution for AZT toxicity.

8.0 Session 8: Drug interactions

Patients on ARVs are bound to be on multiple medicine regimens. It is therefore important for you to take a good history to know all the medicines the patient is taking. Ask the patient about concomitant medicine use including herbs, over-the-counter medicines, foods and alcohol. The influence of one medicine/substance on the serum level of another medicine/substance is what we call a medicine interaction. Thus one medicine may lead to increased or decreased serum levels of another medicine depending on its dominant effect

Pharmacodynamics

Pharmacodynamic interactions alter the pharmacologic response to a medicine. The response can be:

- **Additive**: 1 + 1 = 2 e.g. Combination antiretroviral therapy like, use of 2NRTIs + PI or NNRTI. This increases potency and reduces resistance
- **Synergistic:** 1 +1 =3 egg ritonavir boosts other PIs. Thus increasing medicine bioavailability and decreasing pill burden.
- **Antagonistic:** 1+ 1 = 0 combinations that lead to toxicity

Pharmacokinetics

Pharmacokinetic interactions alter the **absorption, transport, distribution, metabolism, or excretion** of a medicine. In therapy for HIV infection, pharmacokinetic interactions are often multifactorial. They may involve alterations in medicine metabolism mediated by the cytochrome P-450 system, modulation of P-glycoprotein (a cellular transport protein), and changes in renal elimination, changes in gastric pH and medicine absorption, and fluctuations in intracellular medicine concentrations.

Absorption:

Because ketoconazole is best absorbed when the gastric pH is low, concomitant administration of ketoconazole and H2-antagonists, antacids, or proton-pump inhibitors results in marked impairment of the absorption of ketoconazole

- Alluvia (Lopinavir/ritonavir) is taken after food; because food in the stomach enhances its absorption. And reduces it side effects. If taken with food patients get less diarrhea.
- Efavirenz is taken at bedtime and usually without food, which is fine. If taken with a high fat meal, its absorption is increased and side effects are worse.
- Didanosine (ddI) is taken without food, because an empty stomach enhances its absorption. Food increases acid which decreases absorption.

Major ARVS Interactions with Commonly Used Medicines, Herbs, Food and Alcohol

NRTI medicine interactions

Because NRTIs are primarily eliminated by the kidneys, they do not interact with other medicines through the cytochrome P-450 system. These medicines can be given with PIs or NNRTIs without dosage adjustments. However, NRTIs are inactive medicines that require phosphorylation into their active forms; they may therefore interact with medicines that compete for the activation pathway.

(i) **Didanosine (ddI) can inhibit absorption of** tetracyclines, dapsone, ketoconazole, indinavir, delavirdine etc through its buffer. Ribavirin significantly increases ddI levels and these two should not be used together.

(ii) **Zidovudine (AZT)** can cause bone marrow suppression through an additive effect if combined with ganciclovir, flucytosine or pentamidine. AZT causes antagonism with

stavudine (d4T) through competition for intracellular activation. These two medicines should never be used together.

(iii) **Didanosine (ddI), Stavudine (d4T) and Zalcitabine (ddC)-the D-medicines** cause additive neurotoxicity when combined with vincristine, cisplatin or isoniazid. These agents also cause additive pancreatoxicity if taken with alcohol, pentamidine or valproic acid.

(iv) **Abacavir** is metabolized by alcohol dehydrogenase and alcohol can increase its levels and toxicity.

(v) **Tenofovir (TDF)** increases the levels of ddI and may need dose adjustments when used together. TDF also decreases the levels of atazanavir which can be overcome by boosting it with ritonavir.

NNRTI Medicine Interactions

All NNRTIs induce the cytochrome P-450 enzyme system, and each of them may alter the metabolism of other antiretroviral and /or concomitantly administered drugs.

PI Medicine Interactions

All PIs inhibit the cytochrome P-450 enzyme system, and each of them may alter the metabolism of other antiretroviral and /or concomitantly administered drugs

Ritonavir most potent inhibitor is consequently used to boost other PIs. Saquinavir is the least potent inhibitor

(i) Inhibitors of Medicine Metabolism

Other medicines like fluconazole, ketoconazole, isoniazid, ciprofloxacillin, erythromycin cimetidine, omeprazole and grape juice are potent inhibitors of medicine metabolism.

(ii) Inducers of Medicine Metabolism

Nevirapine, efavirenz, rifampicin, phenobarbital, carbamazepine and phenytoin are potent inducers of medicine metabolism.

Other important medicine interactions

When treating patients with concurrent **HIV and TB** it is important to remember that **rifampicin**:

- Lowers PI levels by about 80%, therefore don't combine them.
- Lowers Nevirapine by up to 67% (don't combine unless there is really no option)
- Lowers Efavirenz by up to 25%, you may need to increase the dose of efavirenz from 600mg to 800mg in patients > 60kgs but this is rarely necessary.

Anticonvulsants like phenytoin and carbamazepine may lower PIs and NNRTIs, consider this before using them concurrently.

NVP and EFV Induce Alluvia(LPV/r) metabolism so dose increases from 2 tabs BD to 3tabs of Alluvia in the morning and 2 tabs in the evening. **Lipid lowering medicines** like simvastatin and lovastatin are contraindicated with PIs or the NNRTI delavirdine

Combined oral contraceptives and ARV Interactions

Ritonavir and NNRTI can decrease estrogen level in oral contraceptives. Thus, combined oral contraceptives are not reliable in combination with these medicines. It may be important for you to use another method like Depo-Provera (progesterone only) or an additional method like condoms.

9.0 Session 9: TB and HIV co-Infection

Important to note:

- TB is the most common cause of death in people with HIV worldwide
- HIV infection increases the likelihood that new infection with M. Tuberculosis (due to immune suppression) will progress rapidly to TB disease.
- HIV is most powerful known risk factor for reactivation of latent TB infection to active disease.
- HIV infected people are more susceptible to TB disease when they are exposed to M. Tuberculosis
- Among HIV infected individuals, life time risk of developing active TB is 50%, compared to 5-10% in persons who are not infected
- HIV increases the rate of recurrent TB, which may be due to either endogenous reactivation as the true relapse or exogenous infection
- In a person with HIV, the presence of other infections, including TB, allows HIV to multiply more quickly. This may result in more rapid progression of HIV infection
- Increasing TB cases in PLHA pose increased risk of TB transmission to the general community whether or not HIV- infected
- HIV alters the clinical course of TB disease, with increasing numbers of smear negative pulmonary TB and extra-pulmonary TB, and atypical radiological features
- TB becomes more disseminated and more difficult to diagnose as immune suppression progresses

Diagnosis of TB in HIV infected persons:

The diagnosis of TB in HIV infected persons is based on clinical presentation and diagnostic tests. During history taking always ask for history of:

- Persistent cough for ≥ 2 weeks
- Night sweats for ≥ 2 weeks
- Weight lost ≥ 2 kg in the past four months?
- Fevers for ≥ 2 weeks,
- Recent contact with another person with active TB?

Confirmation that a person has TB should be made through diagnostic tests such as sputum microscopy, Sputum culture, radiology and Gene-Xpert.

Sputum Microscopy

Sample 1: On first visit, the patient should provide an on-the-spot sputum specimen

Sample 2: Give the patient a sputum container to take home for an early morning sample on the following day that is day 2

Any positive one of the above confirms pulmonary TB.

Sputum Culture

TB sputum culture is the gold standard for TB diagnosis but it's not easily accessible in day to day diagnosis of TB.

Radiology: If TB is still suspected despite negative smears, you should do a chest x-ray. The classical pattern is upper lobe infiltrates with cavitations. However, note: No chest x-ray is very typical of PTB in HIV infected persons. In severe immuno-suppression, the appearance is often atypical as mentioned earlier in the session.

Terms used in TB diagnosis[18]

Term	Definition
New Patients	Have never been treated for TB or have taken anti-TB drugs for less than 1 month
Presumptive TB (Previously known as a TB suspect).	A patient who presents with symptoms or signs suggestive of TB
Bacteriologically confirmed TB case	One in whom a biological sample is positive by smear microscopy, culture, or GeneXpert
Clinically diagnosed TB case	One who does not fulfill the criteria for bacteriologically confirmation but has been diagnosed with active TB e.g. using CXR, histology
Multidrug resistance (MDR)	Resistance to at least both Isoniazid and rifampicin
Relapse	A patient who was previously treated for TB, was declared cured or treatment completed at the end of the most recent course of treatment, and is now diagnosed with a recurrent episode of TB
Treatment failed	A TB patient whose sputum smear or culture is positive at month 5 or later during treatment
Loss to follow-up (previously known as Default)	A TB patient who did not start treatment or whose treatment was interrupted for 2 consecutive months or more

Management of TB in HIV Infected Persons:

Co-management of TB and HIV is complicated by drug interactions between rifampicin and both the NNRTI and PI classes, IRIS, pill burden, overlapping toxicities, and adherence issues. Active TB may be present when ART needs to be initiated or develop during treatment. For patients with active TB in whom HIV infection is diagnosed and ART is required the first priority is to initiate standard anti-TB treatment.

Irrespective of CD4 counts, HIV patients co-infected with TB should be offered ART within 2-8 weeks of starting TB treatment. TB meningitis patients should have ART deferred for 8 weeks after initiation of TB treatment. Pregnant HIV women with active TB should be started on ART as soon as feasible, for improved PMTCT outcomes.

[18] National training curriculum for roll out of guidelines 2014 page 54

TB Drug Regimens[19]

TB TREATMENT REGIMENS FOR CHILDREN & ADULTS

TB category	Type of Patient	TB treatment regimens	
		Initial phase	Continuation phase
Category I **(Adults)**	◦ New	2RHZE	6EH or 4RH
Category I **(Children)**	◦ New bacteriologically confirmed PTB ◦ New clinically diagnosed PTB with extensive parenchymal involvement ◦ Severe forms of extrapulmonary TB ◦ **HIV positive child**	2RHZE	4RH
	TB Meningitis and Osteo-articular TB in children	2RHZE	10 RH
Category II **(Adults)**	◦ Previously treated bacteriologically confirmed PTB: relapse, treatment after loss to follow up, treatment after failure	*2RHZES/ 1RHZE*	*5RHE*
Category III **(Children)**	◦ New clinically diagnosed PTB with limited parenchymal involvement, known HIV Negative ◦ Less severe Extrapulmonary TB and known HIV-negative	2RHZ	4RH
Category IV	◦ Chronic and MDR-TB cases	Refer to MDR treatment guidelines	

DO NOT USE STREPTOMYCIN FOR TB TREATMENT IN CHILDREN OR PREGNANT WOMEN
Ethambutol is safe to use in children of all ages in the recommended doses

How to handle children previously treated for TB (Re-treatment cases)

	What to do	Comments
• Children previously treated for TB (Re-treatment cases)	• Do GeneXpert to screen for rifampicin resistance • Send sample for Drug Susceptibility Testing	• If GeneXpert reveals rifampicin sensitive treat as new patient under DOT • If GeneXpert reveals rifapicin resistance, refer child to MDR treatment site • If unable to obtain sample GeneXpert is negative refer to Regional Referral Hospital

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In cases where a person needs TB and HIV treatment concurrently, first line treatment options include ZDV/3TC or TDF/3TC plus EFV, ZDV+3TC+ABC and ZDV+3TC+TDF. Don't give NVP with rifampicin.

In severely immunosuppressed patients (CD4 less than 50) co-infected with TB, ART should be started immediately (within 2 weeks of determining eligibility)

For children refer pediatric session 11

Monitoring treatment:

Bacterial monitoring is only possible for patients with smear positive TB. Sputum smear exam should be done as follows:

- At the time of diagnosis
- At the end of initial phase
- During the continuation phase – at the end of month 5
- On completion of treatment – at end of month 6 for RH or month 8 for EH.

– Clinical monitoring e.g. Weight gain while on treatment.
– Using chest x-rays as a monitoring tool is unnecessary and wasteful

[19] **Antiretroviral drugs for treating and preventing HIV infection 2014**

RECOMMENDED REGIMENS FOR TB/HIV CO-INFECTED PATIENTS NOT ON ART

RECOMMENDED REGIMENS FOR TB/HIV CO-INFECTED PATIENTS NOT ON ART Start TB treatment immediately and initiate ART within 2- 8 weeks after starting TB treatment.	
Younger than 3 years	**Preferred:** AZT+3TC+ABC **Alternative:** ABC + 3TC+ NVP, ensuring that dose is 200 mg/m²
3 years to 9.9 years 10 years to 14.9 years and < 35kg	**Preferred:** ABC + 3TC + EFV **Alternative:** AZT + 3TC + EFV
10 to 14.9 years and ≥ 35 kg Adults & adolescents ≥15 years	**Preferred:** TDF + 3TC + EFV **Alternative:** AZT + 3TC + EFV

RECOMMENDED REGIMENS FOR TB/HIV CO-INFECTED CHILDREN ON ART

Start TB treatment immediately and modify ART regimens as below		
Age	**Current regimen**	Substitution regimen
Younger than 3 years	ABC+3TC+NVP OR AZT+3TC + NVP OR PI based regimen	ABC/3TC/AZT
3 years or older	ABC+3TC+EFV AZT+3TC+EFV TDF+3TC+EFV	Continue the same regimen
	ABC+3TC+NVP AZT+3TC + NVP TDF+3TC+NVP	Substitute NVP with EFV
	PI based regimen	• If the child has a history of failure of NNRTI-based regimen or failure status is unknown: AZT + 3TC + ABC OR • If the child has no history of failure of an NNRTI-based regimen: Substitute with EFV
***For children on triple NRTI, switch back to initial / preferred regimen once TB medication is completed**		

10.0 Session 10: Immune Reconstitution Inflammatory Syndrome.

IRIS events may occur in up to 40% of patients treated for TB who start ART and up to 5% in those with cryptococcal disease. The risk is higher in those with advanced HIV disease with low CD4 counts. IRIS events often occur between 2-8 weeks of ART initiation and less commonly after many months of ART. The diagnosis of IRIS should be considered by ART providers when a patient who has recently started ART (last 3 months) develops new symptoms when they should be getting better. This is particularly the case in patients with a known co-infection such as TB or cryptococcal meningitis who seemed to be responding well and adhering to treatment but then deteriorate within weeks after starting ART

Key Facts for Providers and Patients

- A small number of patients may get worse in the first 6 months after starting ART. This may be caused by IRIS or may be due to Undiagnosed / untreated OI/, drug-resistant OI mainly TB, poor adherence to ART.
- IRIS is an over-aggressive response of the body's defense system caused by a sudden recovery on ART
- IRIS appears as a severe bout / worsening of an OI: Common IRIS related diseases in Uganda include
    - *Tuberculosis* (TB),
    - *Cryptococcal meningitis,*
    - CMV retinitis,
    - Genital ulcers from Herpes Simplex,
    - Kaposi's sarcoma.
- IRIS should only be considered if the more common causes for worsening have been ruled out Patients who start ART with very advanced AIDS are at a higher risk of developing IRIS

Principles of Management of IRIS[20]

The management of IRIS should be based upon the following questions:

1. Is the responsible antigen being treated appropriately (e.g. TB, cryptococcal meningitis)?

• If the TB or Cryptococcal infection is being adequately treated then it will not be necessary to alter this treatment.

• If the treatment has not been adequate or the adherence of the patient to the prescribed treatment has been poor, then treatment failure must be considered.

• If the infection was unknown/undiagnosed/untreated and has only been 'unmasked' by ART, then appropriate therapy should be initiated immediately.

2. Should the ART be continued or stopped?

• Once the diagnosis of IRIS has been made, patients should continue with their ART. Stopping should only be considered if there is a strong suspicion of drug toxicity.

3. *What other treatment can be used to treat IRIS patients?*

• IRIS reactions are typically self-limiting, although may require the use of a brief course of corticosteroids to reduce inflammation for central nervous system or severe respiratory symptoms.

[20] The Integrated National Guidelines on ART, PMTC and Infant and Young Child Feeding, (2012) Pg 45

11.0 Session 11: Pediatric ART Management

Diagnosis of HIV in children

1. All infants should have their HIV exposure status established at their first contact with the health system, at or around birth, but always before 6 weeks of age.
2. DNA PCR is the recommended test for confirming HIV status in infants and children less than 18 months of age. It should be done at 6 weeks of age or the earliest opportunity thereafter.
3. If DNA PCR is positive the child has to start ART and cotrimoxazole.
4. If negative but child breast feeding, it has to be repeated 6 weeks after cessation of breast feeding. If not breast feeding the child is negative stop cotrimoxazole prophylaxis.
5. For children older than 18 months a serological test for adults can be used.
6. If no DNA services, presumptive ART is recommended in infants less than 18 months who or their mother are HIV serology positive and have symptoms of HIV like severe wasting, molluscum contagiosum, generalized lymph node enlargement, skin lesions common in KS, ear infections, fungal infections, oral thrush, skin rash, stunted growth and HZ.

Care and follow-up of exposed children

1. Monthly follow-up up to 6 months and there after 3 monthly up to 18 months.
2. All HIV exposed infants or children should be immunized according to the national schedule
3. All facilities should monitor the growth of exposed children. Record and interpret weight and height compared to the expected growth curve.
4. Loss of developmental milestones is a sign of severe HIV infection effect. All facilities should assess for motor and cognitive skills

Nevirapine prophylaxis

1. All HIV exposed infants should be given NVP prophylaxis from birth.
2. Infants born to mothers on full course of HAART or infants on total replacement feeding should take NVP until 6 weeks of age.
3. Infant is born to mothers on PMTCT option B plus should take NVP until 6 weeks of age.

NVP infant doses

Infant NVP dosing	**Age**	**Birth to 6 weeks**		**6weeks-6 months**	**>6months-9month**	**>9mo to end of breastfeeding**
		2.0-2.5kg	>2.5kg			
	Daily Dose	1ml	1.5ml	2ml	3ml	4ml

Cotrimoxazole prophylaxis

Cotrimoxazole prophylaxis should be provided for infants from 6 weeks of age and should be continued if final HIV status is positive and stopped if final HIV status is negative. See doing chart in appendix XV

When to start ART in infants and children

Before ART child must be eligible, ready and had baseline evaluation.

a) Eligibility of infants and children (consider age, immunological status and WHO stage

- Confirmed HIV positive
- All confirmed HIV positive children below 15years are eligible for ART irrespective of CD4 or WHO stage

b) Determine the readiness to start ART
    a. Adherence counseling must be done
    b. Myths cleared
    c. Treatment supporter
c) Baseline evaluation
    a. Full clinical assessment and treatment of any OI
    b. Neuro development assessment
    c. Weight, height head circumference
    d. Cd4 count
    e. Viral load

Prescribing ARVs for Children
Prescribe ART for children if eligible, prepared and ready.

When prescribing ARV's you follow 3 steps	
Step A	• Identify the proper regimen to prescribe, based on national guidelines and child's clinical assessment and condition.
Step B	• Select which ARV formulations to use, based on the ARV regimen chosen for the child
Step C	• Prescribe the proper ARV dose, using the ARV dosing job aid and paying close attention to the child's weight

A. Determine the proper ARV regimen to prescribe. All children being initiated on ARV's should be started on the first line ARV regimens, this can be done using Figure 3

B. Choose the correct formulation
Pediatric ARVs are available in three kinds of formulations:
(1) Oral suspensions
(2) Single drug tablets
(3) Fixed Dose Combination (FDC) tablets

Fixed-dose combinations should always be used when possible due to their many advantages over oral suspensions and single drug tablets.

- Easier to dose, as you do not have to give instructions for multiple drugs
- Better control in administration than oral solutions
- More versatile – can be split crushed, dispersed in food or water, swallowed as a pill
- More neutral taste
- Lower pill burden/volumes
- Easier to check adherence
- Easier to transport/store with no need for refrigeration
- Easier to order due to reduced number of formulations

- **Fixed dose combination tablets are easy to administer as most of them can be split, crushed, and dissolved in water**. This is important information for the child's caregiver.

The table below shows the characteristics of different pediatric FDC ARV tablets.

Formulation	Can be Split?	Can be crushed	Can be dispersed in water
AZT/3TC/NVP 60/30/50mg	√	√	√
AZT/3TC 60/30mg	√	√	**X**
ABC/3TC 60/30mg	√	√	**X**

When using fixed-dose combinations, only 9 pediatric formulations are required at your facility. They are listed below:

Fixed Dose formulation	**Single formulations**
1. AZT/3TC/NVP 60/30/50mg	4. EFV 200mg
2. AZT/3TC 60/30mg	5. NVP 50mg
3. ABC/3TC 60/30mg	6. NVP 200mg
7. ABC 60 mg	
8. LPV/r solution	
9. LPV/r 125mg	

- *Remember: When giving a prescription to the caretaker, make sure she/he knows which formulation she is receiving.*

C: Prescribe the correct ARV dose for the child.
Doses can be obtained from the ARV dosing by formulation and weight range chart.
Doses increase as the child grows. You must weigh a child each time he/she comes to the clinic to check if it has reached the next weight range.

Nutrition in exposed children
MOH recommends the following feeding practices HIV exposed infants

a) HIV negative infants and those of unknown status
    a. Exclusive breast feeding for 6 months and continue breast feeding up to 12 months of life while mother and baby are receiving ARVs as per PMTCT.
    b. From 6 months the infant should be started on appropriate complimentary feeding. Breast feeding should be met when a nutritionally adequate and safe feed. It should be affordable, Feasible, Acceptable, Safe and Sustainable (AFASS)
b) Infant and young children already HIV positive.
    a. Exclusive BF for 6 months and continue up to 2 years of age or beyond
    b. Mothers should be on HAART to reduce transmission
    c. Counsel mother on benefits of exclusive breast feeding

Complementary feeding 6-12 months

a) Breast feed as often as infant wants
b) If mother stops BF, they should feed their infants at least 500ml of milk every day

c) Counsel mothers on the following
    a. Frequency = at least 3-5 times a day and increase as baby grows
    b. Amount = at least 2-3 heaped tea spoons per feed. Increase as baby grows
    c. Thickness = mash and soften food
    d. Variety = balanced diet
    e. Hygiene = cleanliness

Complementary feeding 12-24 months

d) Discourage BF for mother whose children are negative at 12 months
e) Encourage them to feed their children at least 5 times a day (3 main meals and 2 extra snacks)
f) For those that are infected with HIV
    a. Encourage BF till 24 months or beyond
    b. 3 main meals and 2 extra snacks

12.0 Session 12: Patient monitoring Tools

ART data management and reporting

As more health units in Uganda provide ART services, there is need to collect relevant data that will help the health units to monitor their patients. This information will also assist the Ministry and stakeholders to monitor the performance of the ART program and the emergence of early warning indicators of HIV drug resistant strains. The patient monitoring system comprises of a minimum set of data elements that are collected and reported using standardized forms. The various forms comprise of:

- The Facility held HIV care/ART card that maintains a record of the client's basic information and their follow up chronic AIDS care/ART
- Patient held ART card is a short summary record of the client and follow-up appointments
- The Pre-ART register lists all clients who are enrolled in chronic HIV/AIDS care including ART at the facility.
- The ART register maintains a longitudinal record of the follow up care of clients who are enrolled into ART
- The quarterly cross sectional reporting form is completed at the end of every quarter to keep track of all clients on ART and chronic HIV/AIDS care.
- The cohort analysis form is used for summarizing treatment outcomes

Data collection and analysis

- The data should be collected by all those units providing ART services and chronic AIDs care and should include the following information:
- At all levels of the health care system (National, District and Health Facility) for program monitoring.

Information that is collected and reported on a quarterly basis includes:

- Number of individuals receiving chronic AIDS care during the quarter
- Cumulative number of individuals ever enrolled in chronic AIDS care by the end of the quarter
- Number of individuals in chronic AIDs care who received cotrimoxazole prophylaxis at their last visit in the quarter.
- Number of individuals enrolled in chronic AIDS care during the last quarter
- Number of pregnant females enrolled in chronic AIDS care in the last quarter
- Percentage of infants born of HIV-infected women started on cotrimoxazole prophylaxis within 2 months of birth
- Number of individuals receiving HIV care/ART who were screened for TB at their last visit in the quarter
- Number of individuals receiving HIV care/ART who started TB treatment during the quarter

- Number of individuals who are eligible for ART but have not yet started treatment during the quarter.
- Percentage of adults and children receiving first-line regimen
- Percentage of adults and children receiving second line regimen
- Cumulative number of individuals ever started on ART by the end of the quarter
- Number of ART naïve individuals who started ART during the quarter
- Percentage of individuals still alive and known to be treatment 6, 12 months and annually after initiation of therapy

At the health facility level for patient monitoring

- Percentage of individuals referred by the health facility for HIV care at another facility
- Distribution of care entry points of patients enrolled in chronic AIDS care at the facility
- Percentage of patients who demonstrate ≥95% adherence to their ARV medication
- Reasons for poor adherence
- Percentage of pregnant females linked with PMTCT interventions
- Percentage of new mothers whose infants are linked to care
- Distribution of reasons for substituting, switching or stopping ART
- Number, nature and frequency of side effects, opportunistic infections and other problems
- Percentage and number of health facilities that have access to CD4 cell count services.
- Percentage of months in the year where there were no drug stock outs at the health facility (target should be 0)

The data collected should be forwarded to heads of health sub-districts, the district directors of health services and to the MoH headquarters at the AIDS Control Program (ACP) at the end of each quarter. It is anticipated that once the normal reporting mechanism of passing through established institutions at health sub-district and district to Ministry of Health has been established and functional, the reporting loop from health facilities to MOH will be phased out. At the health sub-district and district levels information should be used to inform the drugs, reagents and other logistics procurement processes, estimate staff requirements, identify bottlenecks in the ART program and find solutions. At ACP the data should be used to improve policies and guidelines on the program at national level and also allow for proper budgeting for the National ART Program.

13.0 Session 13; Management, planning, ordering and procurement of drug supplies
Part 1: ARV Logistics and Practical

Question: What are the benefits of a strong logistics system at the facility-level? What are the consequences of a poor logistics system at the facility-level?
Answer: *Because each health facility is different, there are many correct answers to this question. Below are some examples of correct answers.*

Benefits of a strong logistics system:
Elimination of stock outs
Ensures good stock management
The lives of health workers are made easier because:
It takes less time to fill out the ARV order form
Order forms are filled out correctly, so there are fewer stock outs
Knowledge loss is not a risk during staff turnover
HIV+ patients are on continuous treatment programs
Frequent stock outs can force patients to start and stop therapy
Gaps in treatment can build patient resistance to ARVs, which is expensive and time-consuming for facilities, and dangerous to patient health

Consequences of a poor logistics system:
Patients can suffer if logistics are poor and the facility is exposed to drug stock outs, misplaced order forms, or poor patient tracking
Patient confidence in the facility health care system declines
Health care workers work inefficiently, spending more time and energy than necessary
Health care workers cannot act self-sufficiently without an organized system to navigate

- **Logistics is a system in place to procure, manage, dispense, and order ARV drugs.** At the facility level, we usually see three main components in a logistics system: the store, service delivery points, and links between store and service delivery points.
  - Store: receives, stores, and distributes ARVs within the clinic
  - Service delivery points: distributes prescribed ARVs to clients
  - Links between store and service delivery points: ensures service delivery points get drugs
- **Why do facilities sometimes struggle with creating strong logistics systems?** A strong logistics system requires all health workers in a facility to abide by and contribute to the system. A strong logistics system also requires that all logs and registers be fully completed and kept up to date. This level of coordination can be difficult, especially when you have many HCWs involved.

- **Creating a strong logistics system at your facility is critical.** Logistics dictates whether the right drugs are sent to your facility from the national warehouse at the right now. Logistics dictates whether the ANC has a stock of Option B+ treatment ARVs.
- **After this training, your facility is responsible** for creating a strong logistics system so that you can procure, track, dispense, and order ARV drugs on your own. Note that you should pay close attention to the national warehouse deadlines for drug order forms!
- **Good stock management can help a facility avoid stock outs.** Stock outs can erode patient or community confidence in the capabilities of the health facility.
- **All health care workers based in clinical stations that dispense ARVs** should understand basic stock management vocabulary and concepts. If you interact with your DHO or your national warehouse, they may use these terms and so it is important to understand them.

Definitions of logistics terminology	
stock	Stock the quantity of a commodity. In the context of health facilities, these commodities are usually drugs or supplies. For example, if someone asks, "what is your stock of TDF/3TC?" they are asking, "how many packs of TDF/3TC do you have in your clinical station's inventory?"
stock level	Stock level is how long the stock at a facility will last.
minimum stock level	You are at risk of stock out! Minimum stock level is the amount of stock that you cannot drop below. For ARVs, this is 2 months of stock. For example, if a facility has 10 PMTCT mothers, and each mother requires 1 pack of drugs per month, and the minimum stock level is 2 months, the facility requires 10 mothers x 1 pack per month x 2 months minimum stock = 20 packs is the minimum stock level.
maximum stock level	You are at risk of expiries! The maximum stock level is the amount of stock above which stocks of a given product should not exceed (for example, if the maximum stock level for AZT is 100 packs, you must ensure there are always less than 100 of AZT).
drug storage specifications	This is information that helps you store drugs properly. If not stored properly, drugs can spoil or expire early, which is both wasteful and dangerous to patients who need ARV drugs.

- **A logistics system can be complex,** and you should use tools to help make your job easier.
- **There are three main tools used to quantify need and to order ARVs** through the national system. As a health care worker, you must be proficient at filling out each tool on your own. These tools will be covered in depth below and will be followed by an exercise on how to fill them out:
    1. HMIS 015: Stock Card
    2. ARV Dispensing Log
    3. Integrated ARV & PMTCT Order Form

Storage documents for ARVs are not any different from the ones used for other medicinal products. The principle storage documents are the **stock or bin cards.** The difference between a stock card and a bin card is only in their location; bin cards are located at the physical location of the product while the stock card is not necessarily next to the product.

- **The stock card is filled out every time ARVs are added or removed from a facility's store.** Each ARV should get its own stock card. The stock card is usually filled out by personnel at the stores and/or dispensing facility. It is used to track the stock level of ARVs, OI medicines and other supplies.
- **The stock card is filled out** whenever there is an interaction with the drugs at the store.
  - When the products are physically counted
  - When products are received
  - When products are issued
  - When there is a change in status of product (product is misplaced/damaged/expired/stolen)
- All medicines should be tracked in packs, not tablets. Thus, if you issued that same pack of AZT/3TC/NVP 300/150/200mg, you would list 1 because you issued 1 pack.
- **A new stock card should is used for every delivery.** When a new delivery comes, you write the balance from the old cycle's stock card onto the new stock card and then put the new folio number on the top of the new stock card.
  - The folio number is a reflection of the batch number from the manufacturer of the drug
  - If there is ever a problem with a batch of drugs, NMS would ask you for the folio number

HMIS 015: STOCK CARD

Health Unit Name: Financial Year_____ Page ____of pages ____

FOLIO NUMBER _____ CARD NUMBER _____

DESCRIPTION:				**SPECIAL CONDITIONS:**				
STRENGTH/ SIZE:				EXPIRY DATE(S:)				
ISSUE UNIT:	AMC:	MAXIMUM STOCK:		MINIMUM STOCK:		QUANTITY TO ORDER:		
DATE	TO OR FROM	VOUCHER NUMBER	QUANTITY IN	QUANTITY OUT	LOSSES AND ADJUSTMENTS (-/+)	BALANCE ON HAND	REMARKS / BATCH NUMBER	INITIALS

- **For practice, you will fill out an HMIS 015 stock card.** You may work in small groups for this exercise. Remember, the stock card is used for inputting medicines received and issued. When you receive ARVs or prophylaxis medicines from anywhere, whether it is a national warehouse or another facility, you enter this information on the stock card.

In November of 2012, you are working at Kaabong Hospital in Karamoja. It is your job to track the movement of Nevirapine Oral Suspension (100 ml). You have heard that NVP will spoil if it is not kept in a temperature-controlled room. Your maximum stock is 4 months and your minimum stock is 2 months.

- *<u>On 2/11/12</u>, you do a physical count of NVP at the facility. You count 480 bottles of NVP with expiry date of 31/12/2013 and folio number 107782 in the dispensing facility's storage space. You record this on the HMIS 015 stock card.*
- *<u>On 5/11/12,</u> you receive a shipment of NVP from NMS. You unpack the box that arrives in the dispensing facility and count 2400 bottles of NVP with expiry date 31/07/2014 and folio number 109345. You record this on the HMIS 015 stock card.*
- *<u>On 12/11/12</u>, the ART clinic in your facility requests NVP bottles. After talking to some personnel in the ART clinic about estimated patient numbers, you send 720 bottles of NVP to the ART. You record this on the HMIS 015 stock card.*
- *<u>On 23/12/12,</u> a staff member from the nearby Kopot HCIII visits your Hospital. The HCIII is approaching a shortage of NVP syrup, and wants to see if you can supply them with extra stock. You give the staff member 1200 bottles NVP syrup. You record this on the HMIS 015 stock card.*
- *<u>On 31/12/12</u>, you realize that over a month has passed since the last time you conducted a physical count of stock. You count all of the bottles of NVP in the dispensing facility storage space. You record this on the HMIS 015 stock card.*

- **Now, fill out the below stock card** after you carefully read through the follow case study.

HMIS 015: STOCK CARD

Health Unit Name: Financial Year_____ Page ____of pages ____

FOLIO NUMBER _____ CARD NUMBER _____

DESCRIPTION:				**SPECIAL CONDITIONS:**				
STRENGTH/ SIZE:				EXPIRY DATE(S:)				
ISSUE UNIT:	AMC:	MAXIMUM STOCK:		MINIMUM STOCK:		QUANTITY TO ORDER:		
DATE	TO OR FROM	VOUCHER NUMBER	QUANTITY IN	QUANTITY OUT	LOSSES AND ADJUSTMENTS (-/+)	BALANCE ON HAND	REMARKS / BATCH NUMBER	INITIALS

HMIS 015: STOCK CARD

Health Unit Name: Kaabong Hospital Financial Year 2012 Page 1 of pages 1

FOLIO NUMBER 107782, 109345 CARD NUMBER _____

DESCRIPTION: Nevirapine 100ml				SPECIAL CONDITIONS: Room temperature				
STRENGTH/ SIZE: 100ml bottle				EXPIRY DATE(S:) 31/12/2013, 31/07/2014				
ISSUE UNIT: 1 bottle	AMC:	MAXIMUM STOCK: 4 months		MINIMUM STOCK: 2 months		QUANTITY TO ORDER:		
DATE	TO OR FROM	VOUCHER NUMBER	QUANTITY IN	QUANTITY OUT	LOSSES AND ADJUSTMENTS (-/+)	BALANCE ON HAND	REMARKS / BATCH NUMBER	INITIALS
2/11/12	Physical count					480		
5/11/12	From NMS		2,400			2,880		
12/11/12	To ART clinic			720		2,160		
23/12/12	To Kopot HC III				- 1,200	940		
31/12/12	Physical count					940		

The ARV dispensing/Issuing log is used on an on-going basis. Dispensing involves the process of ensuring that the patient receives the correct item. Other relevant records for purpose of dispensing includes prescription book, ART treatment charts, and switch records. It should be born in mind that the main record is still the dispensing log not the stock cards.

Tracking data is useful to obtain consumption as well as out of stock data It is usually filled out by dispensing facility personnel (e.g. in the ART clinic or ANC). Each time a drug is given to a patient, it is marked in the dispensing log. A sample of the ARV dispensing log is shown below.

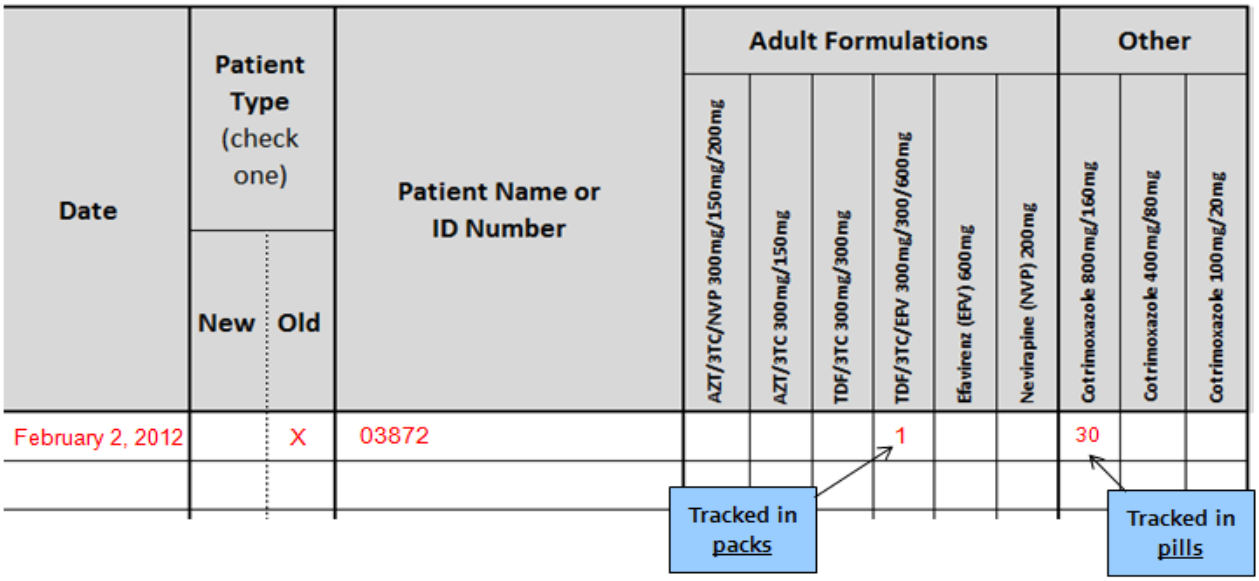
ARV Medicines Dispensing Log

Date	Patient Type (check one)		Patient Name or ID Number	Adult Formulations											
	New	Old		AZT/3TC/NVP 300mg/150mg/200mg	AZT/3TC 300mg/150mg	TDF/3TC 300mg/300mg	TDF/3TC/EFV 300mg/300/600mg	Efavirenz (EFV) 600mg	Nevirapine (NVP) 200mg	Atazanavir (ATV/r) 300mg (given with Ritonavir)	Ritonavir (ATV/r) 100mg (given with Atazanavir)	Lopinavir/Ritonavir 200mg/50mg	Zidovudine (AZT) 300mg	Lamivudine (3TC) 150mg	Abacavir (ABC) 300mg

- **When you fill out the ARV dispensing log,** remember to include the following:
  - Enter the date
  - Enter the client's name and/or unique patient ID
  - Enter whether the client is new or existing
  - Find the columns for the medicines you have dispensed
  - Enter the amount dispensed (in either packs or bottles)
- **Note that all medicines dispensed must be tracked in PACKS, not TABLETS.** In the old dispensing log, if a pack of AZT/3TC/NVP 300/150/200mg was dispensed to a patient, 60 would be noted in the dispensing log since that drug is 60 tablets. However, in the new system, only 1 would be recorded. This will help to greatly simply the dispensing log.
- **If a fraction of a pack is given to a patient** (for example, 14 days of NVP to a patient who is new to NVP), then mark that fraction e.g. 0.5. All bottles dispensed (e.g. NVP 100ml) should be tracked in bottles, not mls.
- **However, drugs for OI's, such as Cotrimoxazole, should be tracked in pills.** This is because the pack size of these drugs is very high (e.g. 1000 pills per pack) and a full pack is never given to a patient. If Cotrimoxazole was to be tracked in packs, the dispensing log would read 30/1000 for each patient that received a month's supply. This would be very difficult to count at the end of the month!
- **At the end of the cycle, consumption for OI's from the dispensing log must be converted** from pills into packs when being reported on the ART & PMTCT order form, as the order form is completely in packs!

- **You will now complete the dispensing log for practice.** You may work in a small group on this exercise. Read through the case study carefully before filling out the ARV dispensing log.
- **Remember, the ARV dispensing log tracks** any medicines dispensed to patients. It is crucial that health care workers always fill out the dispensing log (at the ART, ANC, maternity, or EID care point) because when your facility orders drugs, you need to know the amount of each ARV drug that has been dispensed to patients.

Date	Patient Type (check one)		Patient Name or ID Number	Adult Formulations						Other		
	New	Old		AZT/3TC/NVP 300mg/150mg/200mg	AZT/3TC 300mg/150mg	TDF/3TC 300mg/300mg	TDF/3TC/EFV 300mg/300/600mg	Efavirenz (EFV) 600mg	Nevirapine (NVP) 200mg	Cotrimoxazole 800mg/160mg	Cotrimoxazole 400mg/80mg	Cotrimoxazole 100mg/20mg



Quantifying stock needed

Factors to Consider in the Quantification of ART need to be ordered.

ART commodities quantification requires an additional uniqueness in their quantification process owing to their costs and patient-specific nature. Quantification of ART commodities require a lot of key considerations to ensure accuracy and such considerations include:

1. Rate of patient enrolment at your facility. A scale-up requires an accurate plan of how many new clients are expected to start ART. A scale-down may be due to transfer of patients to another facility and this should also be planned for where possible.
2. Type of regimen chosen for the patients. It is important to know which regimens are required and how many patients are on each.
3. Number of auxiliary centres (satellites) served by the facility: Does your centre supply other lower or similar centres? And are these units scaling up or down? How many different ART services you centre is giving and which are they?
4. Procurement period: how long will the product you are ordering take before the next cycle of quantification?
5. What changes have or are going to take place in the treatment regimens of your clients? Are there planned switches to a second line regimen and which one if any? Are there plans of change in policy?
6. What is your stock on hand and average monthly consumption, minimum and maximum stock levels?
7. Pipeline analysis: which items are in the procurement process and about to be delivered and in what quantities? Which items are already on order and are still in the system and what are their quantities?

Major steps in the quantification process

The key steps to be taken in consumption-based method of quantification include:

Prepare a list of all the ART medicines/items eligible for procurement (i.e. usually in use or which has been used). Use the previous past records of stock consumption to calculate

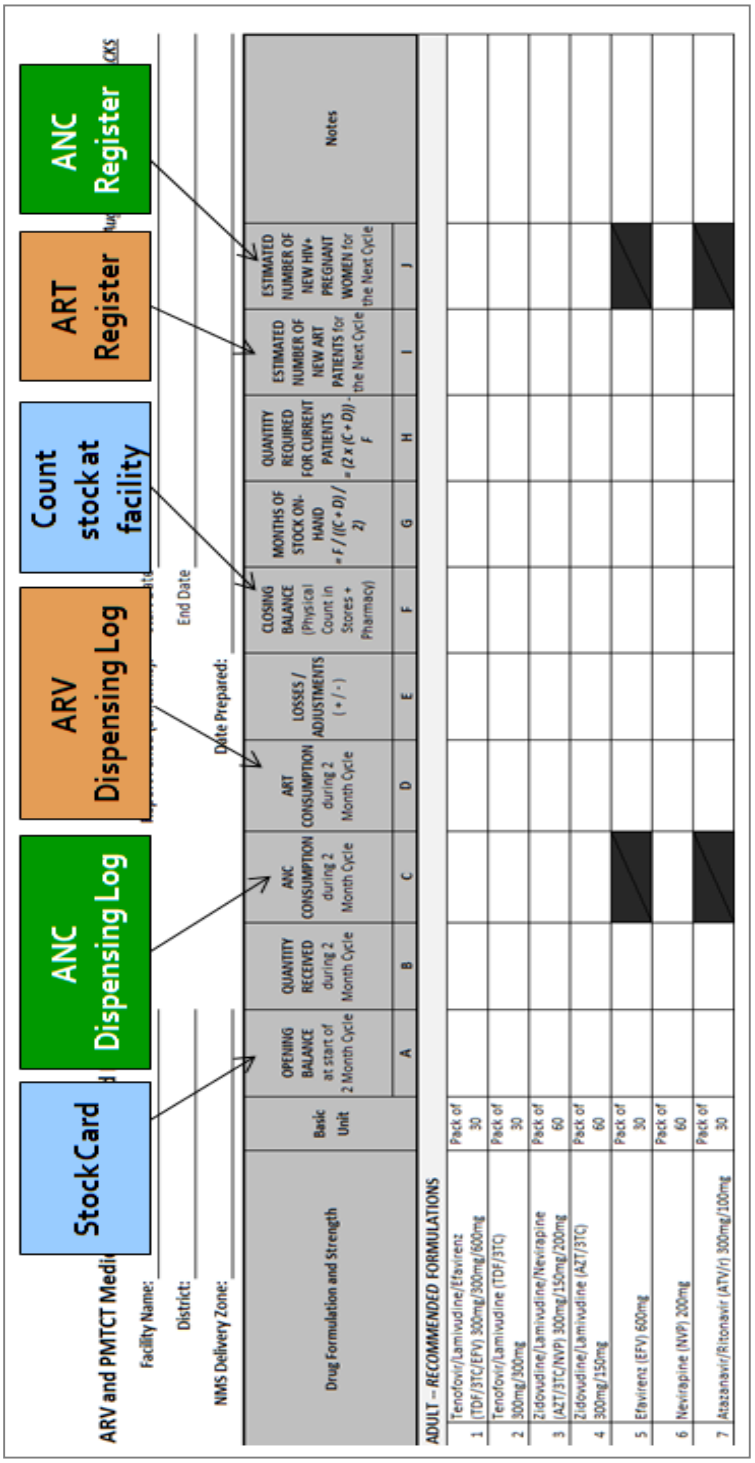
the quantities of each of the ART medicines/items you are to order (including making your adjustment for stock outs and lower units).
Determine the period of time to be reviewed for consumption
Enter consumption data for each drug
Calculate the average monthly consumption
Calculate the safety stock needed for each drug
Calculate the quantity of each drug required in the next procurement period
Adjust for expected changes in consumption pattern
Adjust for losses
Compile decentralized quantifications if applicable
Estimate costs for each drug and total costs
Compare total costs with budget and make adjustments

The order form is used to order ARVs from a national warehouse. It is completed at the end of drug order cycles (usually around two months long). The order form we use today is different from the one we used before Option B+. There are several differences.

Updates to the new ART and PMTCT integrated order form	
1. The order form is integrated	ARVs for the ART and ANC clinics are ordered using one form
2. The form now requires you to write in packs, not pills/tablets	The old form was in pills/tablets. For example, if you had consumption of 1 pack of TDF/3TC, you would list consumption as 30, since TDF/3TC comes in packs of 30 pills. In the new system, you should only write 1, since consumption was 1 pack.
3. There are now two columns for tracking consumption	The number of packs of a drug given to patients during an ordering cycle. Consumption from both clinics should be tracked using the dispensing log in that clinic. – ART consumption: How many packs are given out of the ART clinic – ANC consumption: How many packs are given out of the ANC
4. There are now two columns for tracking new clients	This should be completed based on the number of patients that started at the ART or ANC in the last cycle. – New ART patients: Clients expected to enroll at the ART clinic – New PMTCT patients: Clients expected to enroll in PMTCT at ANC
5. Certain formulations are "blacked out" to help you follow new guidelines	For example, the 'New Patients' column for Lopinavir/Ritonavir 200/50mg has been blacked out because all new patients should be initiated onto Atazanavir/Ritonavir, the new preferred PI for Adult 2nd Line Treatment.

•

- **The image below shows where in your health centre you can find the information** required by different columns in the Integrated ART and PMTCT order form. As you review this job aid, think about your own facility and whether or not you could fill out a drug order form like this.



You will now fill out the ARV order form for practice. You may work in small groups for this exercise. Read through the case study carefully before filling out the order form.

- **Remember, the Integrated ARV & PMTCT order form is used** to communicate with a national warehouse about how many of the drugs they sent you in the last order cycle were used, how many drugs you need during this upcoming order cycle, and how many new patients you suspect will require the drug regimen.

> *Only four patients were dispensed ARVs in the last two months (your facility is a small HC III which has very few clients). They were dispensed a total of 6 packs of TDF/3TC and 6 packs of EFV. 2 packs of AZT/3TC/NVP were also dispensed. In the beginning of the cycle, the facility had 23 packs of TDF/3TC and 10 packs of AZT/3TC/NVP and 20 packs of EFV. You also have 3 PMTCT patients, and they have consumed 6 packs of TDF/3TC/EFV. At the beginning of the cycle, you only had 10 packs of TDF/3TC/EFV. Last month, you provided a nearby facility with 7 packs of TDF/3TC because they had stocked out from poor ordering. In the last cycle, you added one ART patient onto AZT/3TC/NVP and one PMTCT patient onto TDF/3TC/EFV, so you expect to add the same number of new patients onto these formulations in the next cycle.*

ARV and PMTCT Medicines Order Form and Patient Report (page 1 of 2)

August 2012 Version - IN PACKS

Facility Name: _____ **Report Period (2 months):** Start Date _____

District: _____ End Date _____

NMS Delivery Zone: _____ **Date Prepared:** _____

	Drug Formulation and Strength	Basic Unit	OPENING BALANCE at start of 2 Month Cycle	QUANTITY RECEIVED during 2 Month Cycle	ANC CONSUMPTION during 2 Month Cycle	ART CONSUMPTION during 2 Month Cycle	LOSSES / ADJUSTMENTS (+ / -)	CLOSING BALANCE (Physical Count in Stores + Pharmacy)	MONTHS OF STOCK ON-HAND *= F / ((C + D) / 2)*	QUANTITY REQUIRED FOR CURRENT PATIENTS *= (2 x (C + D)) - F*	ESTIMATED NUMBER OF NEW ART PATIENTS for the Next Cycle	ESTIMATED NUMBER OF NEW HIV+ PREGNANT WOMEN for the Next Cycle	Notes
			A	B	C	D	E	F	G	H	I	J	
ADULT – *RECOMMENDED* FORMULATIONS													
1	Tenofovir/Lamivudine/Efavirenz (TDF/3TC/EFV) 300mg/300mg/600mg	Pack of 30											
2	Tenofovir/Lamivudine (TDF/3TC) 300mg/300mg	Pack of 30											
3	Zidovudine/Lamivudine/Nevirapine (AZT/3TC/NVP) 300mg/150mg/200mg	Pack of 60											
4	Zidovudine/Lamivudine (AZT/3TC) 300mg/150mg	Pack of 60											
5	Efavirenz (EFV) 600mg	Pack of 30											
6	Nevirapine (NVP) 200mg	Pack of 60											
7	Atazanavir/Ritonavir (ATV/r) 300mg/100mg	Pack of 30											

ARV and PMTCT Medicines Order Form and Patient Report (page 1 of 2)

August 2012 Version - IN PACKS

Facility Name: _____ **Report Period (2 months):** Start Date _____

District: _____ End Date _____

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			A	B	C	D	E	F	G	H	I	J	
ADULT – *RECOMMENDED* FORMULATIONS													
1	Tenofovir/Lamivudine/Efavirenz (TDF/3TC/EFV) 300mg/300mg/600mg	Pack of 30	10		6			4	1.3	8		1	
2	Tenofovir/Lamivudine (TDF/3TC) 300mg/300mg	Pack of 30	23			6	-7	10	3.3	2			
3	Zidovudine/Lamivudine/Nevirapine (AZT/3TC/NVP) 300mg/150mg/200mg	Pack of 60	10			2		8	8	0	1		
4	Zidovudine/Lamivudine (AZT/3TC) 300mg/150mg	Pack of 60											
5	Efavirenz (EFV) 600mg	Pack of 30	20			6		14	4.7	0			
6	Nevirapine (NVP) 200mg	Pack of 60											
7	Atazanavir/Ritonavir (ATV/r) 300mg/100mg	Pack of 30											

Receiving

Once an order has been sent and processed by the source of the product for our facility, this product is now delivered and we have to receive them. When receiving products we are required to check and acknowledge that they've reached and in good conditions. Receiving requires us to obtain from the supplier an issue voucher or delivery note and possibly an invoice if we are paying. Within our own system, we need a goods received note (GRN).

A good GRN should at least be able to get details of the supplier; product and all require information for purpose on clarification. In addition, there is need to have at least two independent persons check every consignment upon delivery. The parameters of the product to be captured include name and particulars, unit pack, quantity received, batch number, expiry date and cost of the consignment.

Other Requirements for Storage of Different ARV'S/ OI'S Drugs

A good storage system should be able to maintain the quality of a product throughout the period of storage. A number of issues are importance and the outlines below give the minimum requirements for good storage:

- Clean and disinfect storeroom regularly taking precautions to discourage harmful pests and rodents.
- Store drugs in a dry, well-lit, well-ventilated storeroom-out of direct sunlight.
- Protect storeroom from water penetration.
- Keep fire safety equipment available, accessible and functional, and train employees to use it.
- Store latex products away from electric motors and fluorescent lights.
- Maintain cold storage, including a cold chain, as required.
- Limit storage area access to authorized personnel and lock up controlled substances
- Stack cartons at least 10cm (4in.) off the floor, 30cm (1 ft.) away from the walls and other stacks, and no more than 2.5m (8ft.) high.
- Arrange cartons with arrows pointing up (↑), and with identification labels, expiry dates, and manufacturing dates clearly visible.
- Store health commodities to facilitate "first-to-expire, first-out" (FEFO) procedures and stock management.
- Store health commodities away from insecticides, chemicals, flammable products, hazardous materials, old files, office supplies, and equipment; always take appropriate safety precautions.
- Separate damaged and expired health commodities from usable commodities, remove them from inventory immediately, and dispose of them using established procedures.
- Items requiring cold storage and maintenance of a cold chain

ARV's:

- Kaletra Oral solution and Stavudine oral solution once reconstituted.
- Soft gel capsules

This list is not exhaustive; always check instructions on packaging to ensure safe storage.

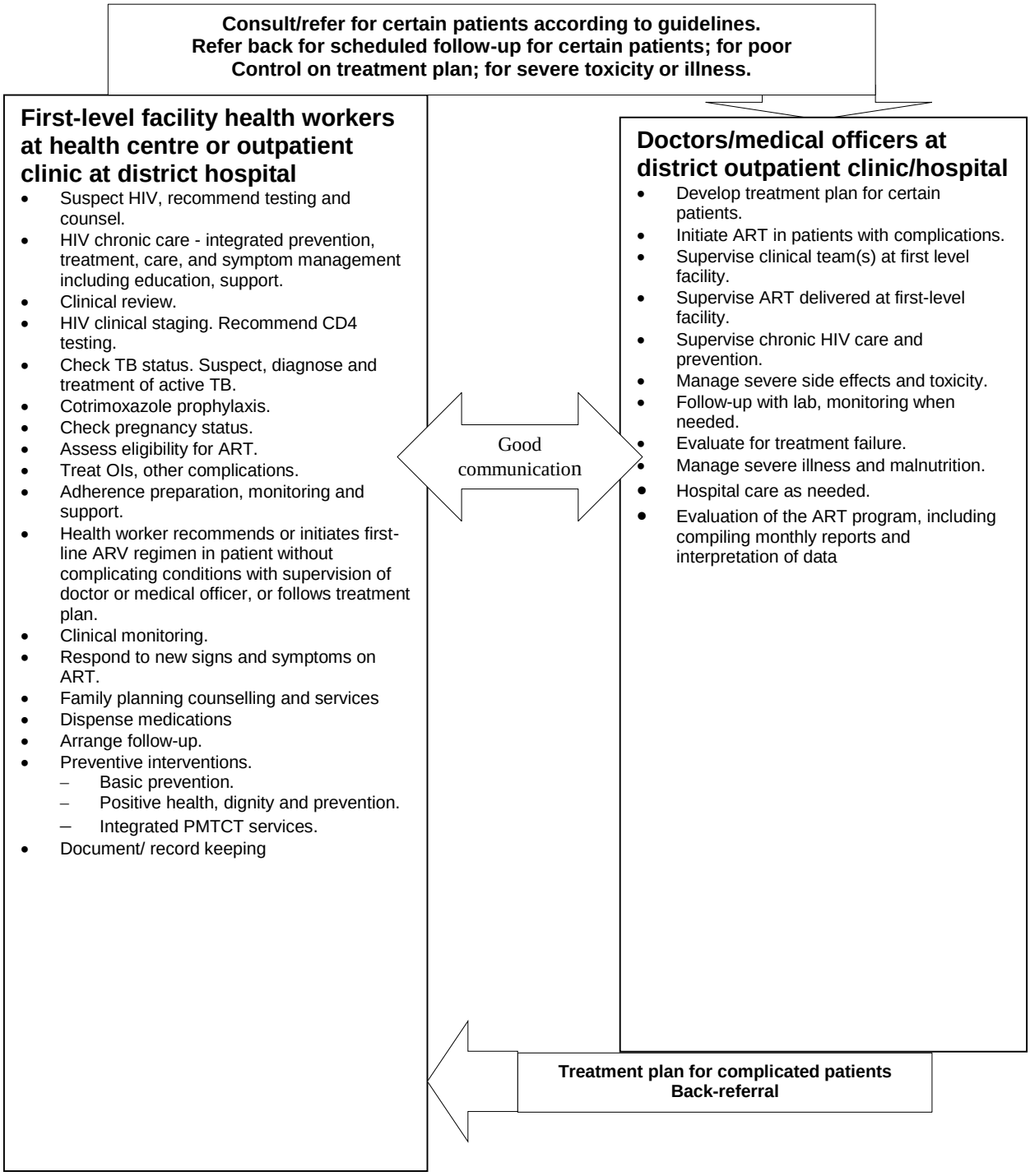
Guidelines for ARVS Security

- Access to ARVs store should be limited to only necessary personnel.
- It is important to close all doors and windows before leaving store. Use burglar proof windows and doors and good padlocks in you can afford

14.0 Session 14: How to work as a clinical team

The organizational culture provides a shared frame of reference that enables everyone to understand the purpose of the team and the roles of its members before the team is even assembled. Individuals should have a common orientation and understanding of set of values. They have a shared understanding of the actions that must be taken, and of the role played by each person who takes action in that situation.

CLINICAL TEAM ROLES AND RELATIONSHIPS



Major activities required in the ART clinic

1. Patient testing
2. Determining eligibility (clinical or immunologic)/ treatment of opportunistic infections.
3. Determine readiness for ART; Patient counseling and education
4. Starting ART; accurate prescriptions in consideration of side effects, convenience and co-administered medication.
5. Monitoring patients on ART
6. Records keeping (Dispensed medicines, ART cards, reporting tools)
7. Supplies chain management

Guiding Principles to building a good team.

- Good communications with participants as team members and individuals
- Increased department productivity and creativity
- Team members motivated to achieve goals (Refer to the targets stated in session 12)
- A climate of cooperation and collaborative problem-solving
- Higher levels of job satisfaction and commitment
- Higher levels of trust and support
- Clear work objectives
- Better operating policies and procedures

Building an Effective Clinical Team

To lead a team effectively, you must first establish your leadership with each team member. Remember that the most effective team leaders build their relationships of trust and loyalty, rather than fear or the power of their positions.

i. Consider each employee's ideas as valuable. Create an environment of freely sharing personal histories. Personal stories reveal competencies, generate respect and foster cooperation. This signals that past experiences are valued as potential contributions.

ii. Describe how the team will work together. Clearly state the vision, purpose and plan, and describe each person's role within the team.

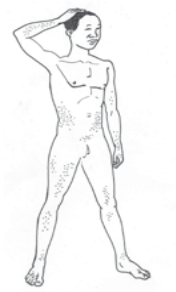
iii. Optimize individual team member's strengths. Make realistic assignments that take advantage of each team member's strengths.

iv. Establish norms for making decisions. Let team members know what types of decisions they are expected to make on their own and what types of decisions will be made by the team leader.

v. Establish a process for giving and receiving feedback. This allows information to be exchanged quickly, easily and in all directions.

Appendix I: Management of skin manifestations

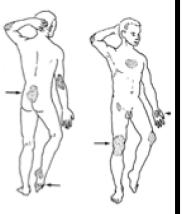
Use this table if **itching skin problems:***

Scabies	**Papular itching rash (prurigo)**	**Eczema**	**Ringworm (tinea)**	**Dry itchy skin (xerosis)**
Rash and excoriations on torso; burrows in web space and wrist; face spared 	Itching rash with small papules and scratch marks. Dark spots with pale centers.	Wet, oozing sores or excoriated, thick patches. 	Pale, round, bald scaling patches on scalp or round patches with thick edge on body or web of feet.	Dry and rough skin, sometimes with fine cracks.
Manage with benzyl benzoate (p.94 IMAI Acute 2009). • Treat itching. • If persistent, consider HIV related illness (p. 57 IMAI Acute 2009).	• Treat itching. • Locally effective remedies. • Give chlorpheniramine 4 mg every 8 hours or promethazine hydrochloride 25 mg at night. • Consider HIV related illness (p. 57 IMAI Acute 2009).	• Soak sores with clean water to remove crusts (no soap). • Dry the skin gently. • Short term: use topical steroid cream (not on face). • Treat itching.	• Whitfield's ointment (or other Antifungal cream) if few patches. • If extensive, Give ketoconazole or griseofulvin. • If in hairline,shave hair. • Treat itching. • Consider HIV related Illness (p. 57 IMAI Acute 2009).	• Emollient lotion or calamine lotion; continue if effective. • Locally Effective remedies. • Give chlorophenira mine or promethazine. • Consider HIV related Illness (p. 57 IMAI Acute 2009).

Use this table if **blister, sore or pustules:**

Contact dermatitis	**Herpes zoster**	**Herpes simplex**	**Drug reaction**	**Impetigo or folliculitis**
Limited to area in contact with problem substance. Early: blistering, red. Later: thick, dry, scaly. 	Vesicles in 1 area on 1 side of body plus intense pain; or scars plus shooting pain. 	Vesicular lesion or sores, also involving lips and/or mouth —see p. 28 IMAI Acute 2009. In children, primary herpes simplex presents with many small sores or ulcers in mouth, with or without fever and lymphadenopat hy; usually resolves within 2 weeks.	Generalized red, widespread with small bumps or blisters; or 1 or more dark skin areas (fixed drug reaction).	Red, tender, Warm crusts or small lesions. 
• Hydrocortisone 1 **%** ointment or cream. • If severe reaction with blisters, exudate or oedema, give prednisone. • Find and remove cause	• Keep clean and dry; use local antiseptic. • If eye involved or any suspicion encephalitis, give aciclovir 800 mg 5 times daily x 7 days. • Pain relief— Analgesics and low dose amitriptiline. • Offer HIV counselling and testing. Consider HIV-related illness. Discuss the possible HIV illness (p. 57 IMAI Acute 2009). • Follow up in 7 days if sores not fully healed, earlier if worse.	• If ulceration for > 30 days, consider HIV related illness. • If first or severe ulceration, give acyclovir. • Maintain fluid in take. • Give liquid food and pain relief as required.	• Stop medications. • Give chlorpheniramine or promethazine HCl. • If peeling rash with involvement of eyes and/ or mouth (e.g. Stevens Johnson)— refer urgently to hospital. • Give prednisone if severe reaction or any difficulty breathing – refer urgently to hospital.	See infection table on p. 45 IMAI Acute 2009.

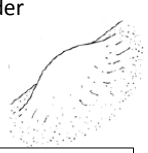
Use this table if skin rash with no or few symptoms:

No or few symptoms					
Leprosy Skin patch(es) with: • No sensation to light touch, heat or pain. • Any location. • Pale or reddish or copper-colored. • Flat or raised or nodular. • Chronic (> 6 months). • Not red or itchy or scaling.	**Seborrhoea** Greasy scales and redness, on central face, scalp, body folds, and chest. 	**Psoriasis** Thickened and scaling patches (may itch in some). Often on knees and elbows, scalp and hairline, lower back. 	**Molluscum contagiosum*** Raised dome-shaped lumps which may have a dimple in the center. Usually on face, neck, armpits, hands. In adults, on the genitals.*	**Warts** Small lumps or bumps with rough surface. May appear anywhere (see p. 22 for genital warts).	**Syphilis** Macular, papular or pustular rash on entire body, especially on palms and soles. Wides-pread, bilateral. May be symmetric pink, coppery or red. • May heal sponta-neously. • In dark skin patients look at palms.
• Treat with leprosy MDT (multidrug therapy) if no MDT in past (see ***Chronic Care*** module or other leprosy guidelines).	• Ketoconazole shampoo (alternative: keratolytic shampoo with salicylic acid or selenium sulfide or coal tar). Repeated treatment may be needed. • If severe, topical steroids or trial ketoconazole. • Consider HIV-related illness (p. 57).	• Coal tar ointment 5% in salicylic acid 2%. • Expose to sunlight 30-60 minutes/ day.	• Freeze with silver nitrate or scrape. Do not treat fascial molluscum as may get scarring. • Consider HIV-related illness (p. 57), especially if giant or extensive.	• Freeze with liquid nitrogen, salicylic acid or silver nitrate. Do not treat facial warts as may get scarring. • If severe, consider HIV-related illness (p. 57).	Do syphilis test. If positive, give benzathine penicillin (p. 75).

* Molluscum-like lesions with ulcerations may be a sign of a disseminated HIV-related infection such as a fungus.

Note: All the pages referred to on this page are for the IMAI Acute care 2009

If Patient has a **skin problem** or **lump:**

If Yes, Ask:	LOOK AND FEEL
• Do you have a sore, a skin problem or a lump? If yes, where is it? If yes, for how long? • Does it itch? • Does it hurt? • Duration? • Discharge? • Do other members of the family have the same problem? • Are you taking any medication?	• Are there lesions? Where? How many? Are they infected (red,tender,warm,pus or crusts) • Are they tender? • Is there sensation to light touch? • Feel for fluctuance • Feel for lymph nodes. Are they tender Look/feel for lum 

If enlarged lymph nodes or mass:

Is it infected? Consider this in all skin lesion

If red/dark, tender, warm, pus or crusts (infected skin lesion):

If on ARV therapy
Skin rash or worsening/growing skin lesions or lumps could be a serious side effect or immune reconstitution. See
Chronic HIV Care

If painful inguinal node or ano-genital ulcer or vesicles, Seep.22 Acute IMAI

If dark lumps, Consider HIV – related illness, seep.57 Acute IMAI

If itching-skin problem, use p. 47 Acute IMAI).
If skin sores, blisters or pustules, use p. 48.
If skin rash with no symptoms or loss of feeling, use p. 49 Acute IMAI).

Use this table if enlarged Lymph nodes or mass:

SIGN	CLASSIFY	TREATMENT
• Size>4cm or • Fluctuant or • Hard or • Fever	**SUSPICIOUS LYMPH NODE OR MASS**	• Refer for diagnostic • Consider TB
• Nearby infection, which could explain lymph node or • Red streaks	**REACTIVE LYMPHADENOPATHY**	• Give oral antibiotic • Follow up in 1 week
• >3 lymph node groups with: - >1node	**PERSISTENT GENERALISZED LYMPHADENOPATHY**	• Screen for syphilis if not done recently • Consider HIV-related

Is it infected? Ask this in all skin lesions. ***If yes****, also use the infection classification table below:*

Use this table if lesion red, tender, warm, pus or crusts (Infected skin lesion):

• Fever or • Systemically unwell or • Infection extends to muscle	**SEVERE SOFT TISSUE OR MUSCLE INFECTION**	• Refer to hospital • Start IV/IM antibiotics if not available, give oral cloxacillin). • Consider HIV-related illness
• Size >4cm or • red streaks or • Tender nodes or • Multiple abscesses	**SOFT TISSUE INFECTION OR FOLLICULITIS**	• Start cloxacillin • Drain pus if fluctuance • Elevate the limb • Follow up the next day
• Only red,tender,warm,pus or crusts – none of the signs in the pink or yellow row	**IMPETIGO OR MINOR ABSCESS**	• Clean sores with antiseptic. • Drain pus if fluctuance • Follow up in 2 days

Go to next page

Appendix II: Management of headache and neurological problems:

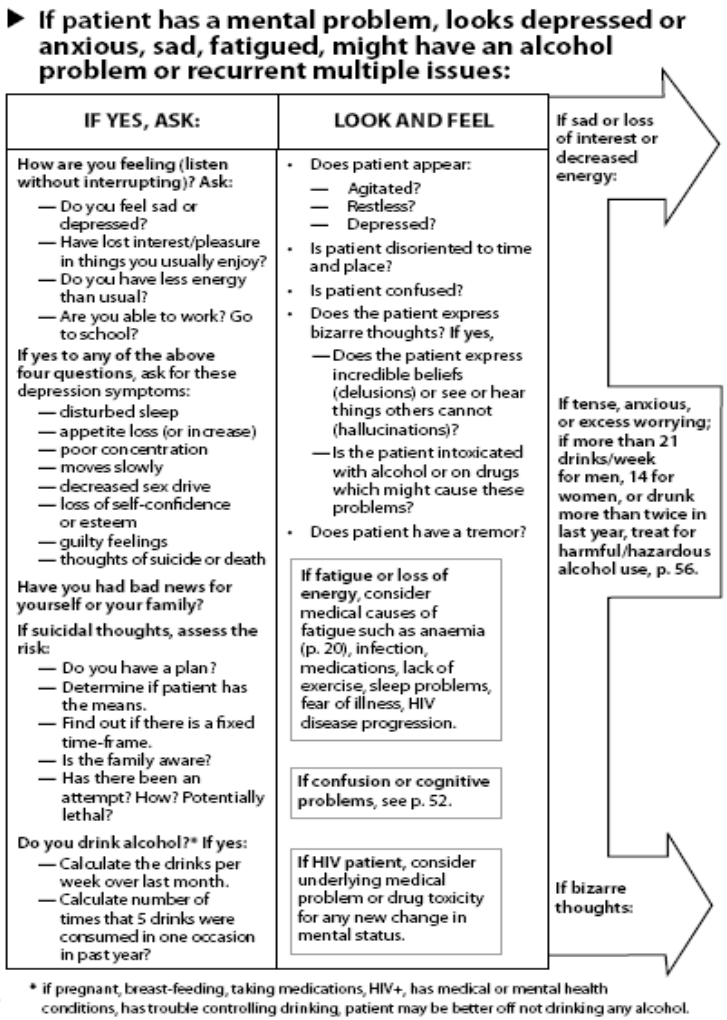
• Loss of body functions or • Focal neurological signs or • Stiff neck or • Acute headache trauma or • Recent convulsion or • Behavioral changes or • Diastolic BP >120 or • Prolonged headache (>2weeks) or • In known HIV patient: • Any new unusual headache or • Persistent headache more than 1 week	**SERIOUS NEURO-LOGICAL PROBLEM**	• Refer urgently to hospital. • If stiff neck or fever, give IM antibiotics and IM antimalarial. • If flaccid paralysis in adolescent >15years, report urgently to EPI programme. • If recently convulsion, have diazepam available during referral. • Consider HIV- related illness (P.57 IMAI Acute)
• Tenderness over sinuses	**SINUSITIS**	• Give appropriate oral antibiotics • Give ibuprofen • If recurrent, consider HIV-related illness (P.57 IMAI Acute)
• Repeated headaches with - Visual defects or - Vomiting or - One sided or - Migraine diagnosis	**MIGRAINE**	• Give ibuprofen and observe response. • If more pain control is needed, see palliative care guidelines on acute pain.
• None of the above	**TENSION HEADACHE**	• Give paracetamol • Check vision – consider trial of glasses. • Suggest neck massage • Reduce: stress, alcohol and drug use. • Refer if headache more than 2 weeks • If on ARV drugs, this may be a side effect ***(see chronic HIV care)***

Use this table if painful leg neuropathy

• Painful burning or numb or cold feeling in feet or lower legs	**PAINFUL LEG NEUROPATHY**	• If on INH, give pyridoxine. If chronic diarrhoea, try ORS. • Consider HIV – related illness (p.57 IMAI Acute), syphilis (do syphilis test): ART side effect – see ***Chronic HIV Care.*** • Refer for further assessment if cause unclear. • Treat with low – dose amitriptyline (p.88 IMAI Acute) • Follow up in 3 weeks.

If patient has a mental problem, looks depressed or anxious, sad, fatigued, might have an alcohol problem or recurrent multiple issues

Appendix III Management of Mental problems:



▶ **If patient has a mental problem, looks depressed or anxious, sad, fatigued, might have an alcohol problem or recurrent multiple issues:**

IF YES, ASK:	LOOK AND FEEL	
How are you feeling (listen without interrupting)? Ask: — Do you feel sad or depressed? — Have lost interest/pleasure in things you usually enjoy? — Do you have less energy than usual? — Are you able to work? Go to school?	• Does patient appear: — Agitated? — Restless? — Depressed?	If sad or loss of interest or decreased energy:
If yes to any of the above four questions, ask for these depression symptoms: — disturbed sleep — appetite loss (or increase) — poor concentration — moves slowly — decreased sex drive — loss of self-confidence or esteem — guilty feelings — thoughts of suicide or death	• Is patient disoriented to time and place? • Is patient confused? • Does the patient express bizarre thoughts? If yes, — Does the patient express incredible beliefs (delusions) or see or hear things others cannot (hallucinations)? — Is the patient intoxicated with alcohol or on drugs which might cause these problems?	If tense, anxious, or excess worrying; if more than 21 drinks/week for men, 14 for women, or drunk more than twice in last year, treat for harmful/hazardous alcohol use, p. 56.
Have you had bad news for yourself or your family?	• Does patient have a tremor?	
If suicidal thoughts, assess the risk: — Do you have a plan? — Determine if patient has the means. — Find out if there is a fixed time-frame. — Is the family aware? — Has there been an attempt? How? Potentially lethal?	If fatigue or loss of energy, consider medical causes of fatigue such as anaemia (p. 20), infection, medications, lack of exercise, sleep problems, fear of illness, HIV disease progression.	
Do you drink alcohol?* If yes: — Calculate the drinks per week over last month. — Calculate number of times that 5 drinks were consumed in one occasion in past year?	If confusion or cognitive problems, see p. 52. If HIV patient, consider underlying medical problem or drug toxicity for any new change in mental status.	If bizarre thoughts:

54 * if pregnant, breast-feeding, taking medications, HIV+, has medical or mental health conditions, has trouble controlling drinking, patient may be better off not drinking any alcohol.

Use this table if sad or loss of interest or decreased energy:

SIGNS:	CLASSIFY AS:	TREATMENTS:
• Suicidal thoughts If patient also has a plan and the means, or attempts it with lethal means, consider high risk	**SUICIDE RISK**	• If high risk, refer for hospitalization (if available) or arrange to stay with family or friends (do not leave alone). • Provide emotional support and ensure safety. • Assess for and treat underlying mental illness. • Remove any harmful objects. • Mobilize family support. • Follow closely.
• Five or more depression symptoms and • Duration more than 2 weeks	**MAJOR DEPRESSION**	• If suspect bipolar disorder (manic at other times), refer for lithium. • If patient is taking efavirenz (EFV), see *Chronic HIV Care.* • Otherwise, start amitryptiline or fluoxetine (p. 88). • Educate patient and family about medication. • Refer for counselling if available or provide basic counselling to counter depression (see p. 123). • Follow up.
• Less than 5 depression symptoms or • More than 2 months of bereavement with functional impairment	**MINOR DEPRESSION/ COMPLICATED BEREAVEMENT**	• Counsel to counter depression. • Give amitryptyline or fluoxetine if serious problem with functioning. • If problems with sleep, suggest solutions. • Follow up in 1 week.
• Bereaved, but functioning	**DIFFICULT LIFE EVENTS/LOSS**	• Counsel, facilitate psychosocial support. • If acute, uncomplicated bereavement with high distress and not able to sleep, give diazepam 5 mg or amitryptiline 25 mg at night for one week only.

Use this table in all with bizarre thoughts:

• Delusions • Hallucinations • Confusion	**POSSIBLE PSYCHOSIS**	• Exclude alcohol intoxication/withdrawal or drug toxicity or ARV side effect (especially EFV). • Consider infection and other causes—see Delirium, p. 52. • Refer for psychiatric care. • If acutely agitated or dangerous to self or others, give haloperidol (p. 91).

Note: All the pages referred to on this page are for the IMAI Acute care 2009

Use this if tense, anxious or excess worrying:

SIGNS:	CLASSIFY AS:	TREATMENTS:
• Sudden episodes of extreme anxiety or • Anxiety in specific situations or • Exaggerated worry or • Inability to relax or • Restlessness	**ANXIETY DISORDER**	• Counsel on managing anxiety according to specific situation. • Teach patients slow breathing and progressive relaxation. • If severe anxiety, consider short-term use of diazepam (up to 2 weeks only). If anxiety > 1 month, start fluoxetine. Refer if patient cannot tolerate fluoxetine or does not improve after several weeks. • Follow up in 2 weeks.

Use this if more than 8 drinks per week in last month or more than 5 drinks on one occasion in past year:

Two or more of: • Severe tremors • Anxiety • Hallucinations	**SEVERE WITHDRAWAL SIGNS**	• Refer to a treatment center or hospital. • Give diazepam for withdrawal if not able to refer; monitor daily. • Give thiamine.
• Possible excessive alcohol use	**HAZARDOUS OR HARMFUL ALCOHOL USE**	• Assess further using WHO AUDIT. • Give brief interventions for harmful or hazardous alcohol use.

Assess and treat other problems

If:
- pain from chronic illness,
- constipation,
- hiccups, and/or
- trouble sleeping,

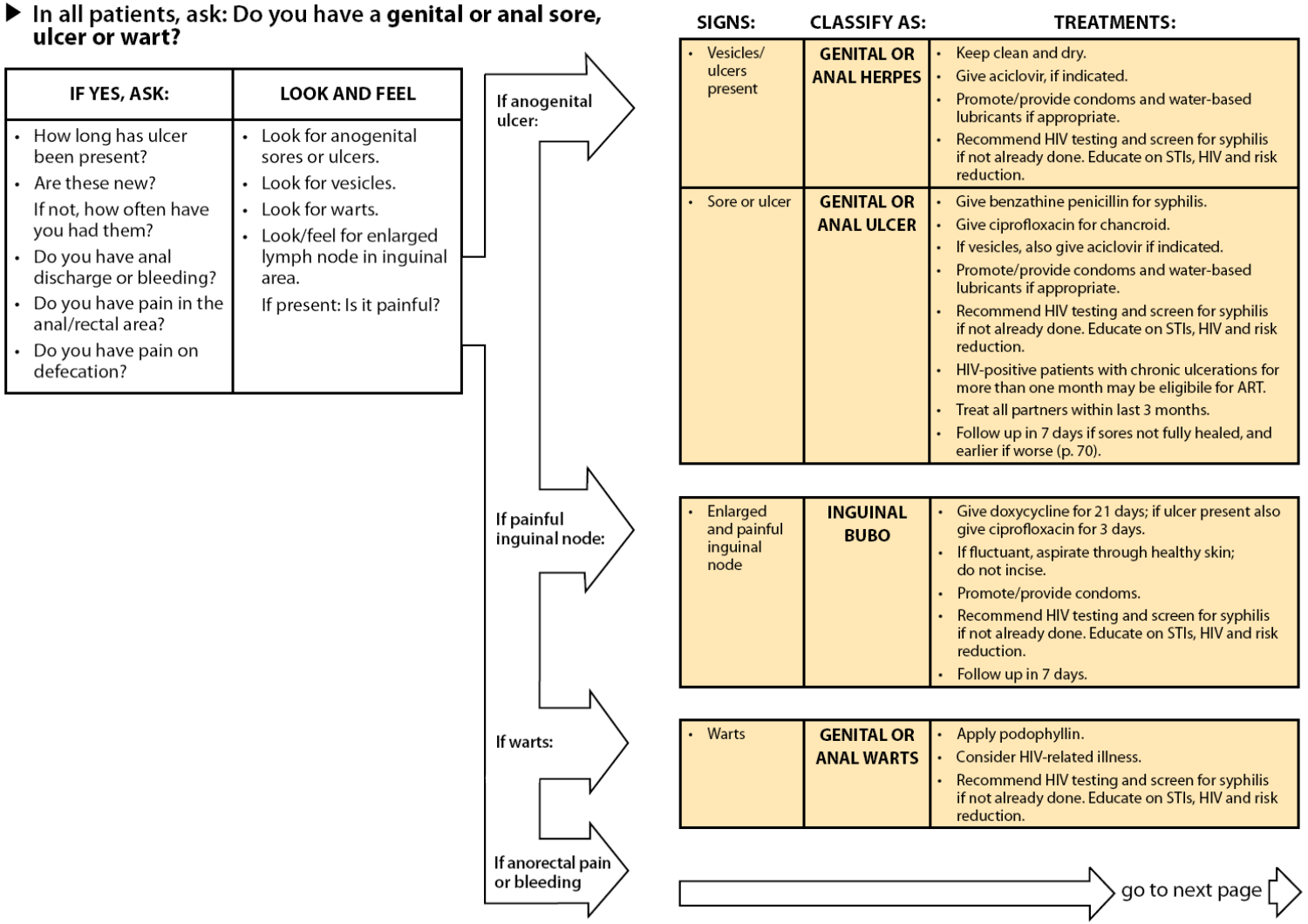
see ***Palliative Care*** module.

If chronic illness, see ***Chronic Care*** modules.

Note: All the pages referred to on this page are for the IMAI Acute care 2009

Appendix IV: Management of genital and anal sore

(Note: All the pages referred to on this page are for the IMAI Acute care 2009)



Use this table if patient has anorectal pain or bleeding:

• Bleeding or • Palpable mass on rectal examination	**RECTAL MASS**	• Refer for evaluation.
• Anorectal pain and • Tenesmus and • Discharge	**PROCTITIS**	• Give benzathine penicillin for syphilis and treat for possible GC/chlamydia infection. • Return if worse or not improved within 1 week . • Recommend the use of condoms and water-based lubricants if anal sexual practices. • Recommend HIV testing and screen for syphilis if not already done. Educate on STIs, HIV and risk reduction. • Manage/treat partners.
• Visible hemorrhoids or visible anal fissure	**HEMORRHOIDS OR ANAL FISSURE**	• Discuss possible causes (constipation, prolonged sitting, anal sexual practices). Manage/treat partners. • Recommend the use of condoms and water-based lubricants if anal sexual practices.

Note: All the pages referred to on this page are for the IMAI Acute care 2009

Appendix V: Management of female genital urinary

▶ If female patient complains of genito-urinary symptoms or lower abdominal pain:

- ❖ **For an adult non-pregnant woman or an adolescent,** use this page.
- ❖ **For a pregnant woman,** use antenatal guidelines.
- ❖ **For a man,** use p. 22.

IF YES, ASK:	LOOK AND FEEL
• What is the problem? • What medications are you taking? Do you have: • Burning or pain on urination? • Increased frequency of urination? • Ulcers or sore in your genital area? • An abnormal vaginal discharge? — If yes, does it itch? • Any bleeding on sexual contact? • Has your partner had any genital problem? — **If partner is present,** ask him about urethral discharge or sores. • When was your last menstrual period? — **If missed period:** Do you think you might be pregnant? Have you had very heavy or irregular periods? — ***If yes:*** –– Is the problem new? –– How many days does your bleeding last? –– How often do you change pads or tampons? • Do you have very painful menstrual cramps? • Are you using contraception? **If yes,** which one? • Are you interested in contraception? **If yes,** use *Family Planning* guidelines**.	• Feel for abdominal tenderness. **If tenderness:** — Is there rebound? — Is there guarding? — Can you feel a mass? — Are bowel sounds present? — Measure temperature. — Measure pulse. • Perform external exam, look for large amount of vaginal discharge (if only small amount white discharge in adolescent, this is usually normal). • Look for anal or genital ulcer. **If present,** also use p. 23. • Feel for enlarged inguinal lymph node. **If present,** also use p. 23. • **If you are able to do bimanual exam,** feel for cervical motion tenderness. • **If burning or pain on urination or complaining for back or flank pain:** — Percuss flank for tenderness. If cervical cancer prevention programme, perform recommended cervical cancer screening tests if you are trained and equipped to do so.

Classify:

- If lower abdominal pain (other than menstrual cramps):
- If abnormal vaginal discharge, p. 42.
- Burning or pain on urination or flank pain, p. 42.
- If menstrual pain or missed period or bleeding irregular or very heavy periods, p. 43.
- If suspect gonorrhoea/ chlamydia infection based on any of these factors:

* *If fever with right lower abdominal pain and referral is delayed, give ampicillin and metronidazole for possible appendicitis.*

** *Such as Decision-Making Tool for Family Planning Clients and Providers.*

Use this table in all women with **lower abdominal pain** (other than menstrual cramps):

SIGNS:	CLASSIFY AS	TREATMENTS:
Abdominal tenderness with: • Fever > 38° C or • Rebound or • Guarding or • Mass or • Absent bowel sounds or • Not able to drink or • Pulse > 110 or • Recent missed period or abnormal bleeding	**SEVERE OR SURGICAL ABDOMINAL PROBLEM**	• Give appropriate IV/IM antibiotics. • Give patient nothing by mouth (NPO). • Insert IV. • Refer URGENTLY to hospital *. • If bleeding, follow other guidelines for bleeding in early pregnancy; consider ectopic pregnancy. • Manage pain (see ***Paliative Care***).
• Lower abdominal tenderness or • Cervical motion tenderness	**PID** (pelvic inflammatory disease)	• Give ciprofloxacin plus doxycycline plus metronidazole. • Follow up in 2 days if not improved; follow up all at 7 days (p. 72). • Promote/provide condoms. • Offer HIV/STI counselling and HIV and syphilis testing • Treat partner for GC/chlamydia. • Abstain from sex during treatment. • Manage pain (see ***Paliative Care***).
• Abdomen soft and none of the above signs	**GASTRO-ENTERITIS OR OTHER GI OR GYN PROBLEM**	• If diarrhoea, see p. 36. • If constipation, advise remedies (see *Palliative Care.* • Return if not improved.

Use this table if suspect **gonorrhoea/chlamydia** based on any of these factors

• Sex worker or • Bleeding on sexual contact or • Partner with urethral discharge or burning on urination or • Any woman who thinks she may have a STI	**POSSIBLE GONORRHOEA/ CHLAMYDIA INFECTION**	• Treat woman and partner with antibiotics for possible GC/ chlamydia infection. • Promote/provide condoms. • Offer HIV/STI counselling and HIV and syphilis testing. • Follow up in 7 days if symptoms persist (p. 71).

go to next page

Management of abnormal vaginal discharge

Use this table in all women with **abnormal vaginal discharge:**

SIGNS:	CLASSIFY AS:	TREATMENTS:
• Itching or • Curd-like vaginal discharge	**CANDIDA VAGINITIS**	• Treat with nystatin. • Return if not resolved. • Consider HIV-related illness if recurrent (p. 57).
• None of the above	**BACTERIAL VAGINOSIS (BV) OR TRICHOMONIASIS**	• Give metronidazole 2 gm PO single dose. • Follow up in 7 days if not resolved (p. 72).

Use this table in all women with **burning or pain on urination or flank pain:**

• Flank pain or • Fever.	**KIDNEY INFECTION**	If systemically ill: • Give appropriate IM antibiotics. • Refer URGENTLY to hospital. Also refer if on indinavir (an ARV drug). If not: • Give appropriate oral antibiotics. • Follow up next day.
• Burning or pain on urination and • Frequency and • No abnormal vaginal discharge	**BLADDER INFECTION**	• Give appropriate oral antibiotics. • Increase fluids. • Follow up in 2 days if not improved (p. 72).
• None of the above	**BLADDER INFECTION UNLIKELY**	• Treat for vaginitis if abnormal discharge. • Dipstick urine if possible.

Use this table in all women with **menstrual pain or missed period or bleeding irregular or very heavy period:**

SIGNS:	CLASSIFY AS:	TREATMENTS:
• Irregular bleeding and • Sexually active or • Any bleeding in known pregnancy	**PREGNANCY-RELATED BLEEDING OR ABORTION**	• Follow guidelines for vaginal bleeding in pregnancy, e.g. IMPAC* * or • Refer
• Missed period and • Sexually active and • Not using a very reliable method of contraception*.	**POSSIBLE PREGNANCY**	• Confirm pregnancy. • Discuss plans for pregnancy. • If she wishes to continue pregnancy, use guidelines for antenatal care e.g. IMPAC**. • Refer or provide PMTCT interventions if pregnant.
Not pregnant with: • New, irregular menstrual bleeding or • Soaks more than 6 pads each of 3 days (with or without pain)	**IRREGULAR MENSES OR VERY HEAVY PERIODS (MENORRHAGIA)**	• Consider contraceptive use and need (see *Family Planning* guidelines): - If contraception desired, suggest oral contraceptive pill. - IUD in the first 6 months and long-acting injectable contraceptive can cause heavy bleeding; combined contraceptive pills or the mini-pill can cause spotting or bleeding between periods. • If on ART, consider withdrawal bleeding from drug interaction (see ***Chronic HIV Care*** module). • If unusual or suspicious bleeding in women >35 years or HIV-positive, perform clinical exam with speculum and do recommended cervical cancer screening test if indicated, or refer for gynaecological examination. • If painful menstrual cramps or to reduce bleeding, give ibuprofen (not aspirin). • Follow up in 2 weeks.
• Only painful menstrual cramps	**DYSMENORRHOEA**	• If she also wants contraception, suggest oral contraceptive pill. • Give ibuprofen (aspirin or paracetamol may be substituted but are less effective).

* *Very reliable methods include injectable, implant, IUD, pills, sterilization.*

** *WHO Integrated Management of Pregnancy and Childbirth (IMPAC)*

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Note: All the pages referred to on this page are for the IMAI Acute care 2009

Management of penis discharge:

▶ **Ask men: Do you have a discharge from your penis? If male patient complains of genito-urinary symptoms or lower-abdominal pain:** (use this page for men).

IF YES, ASK:	LOOK AND FEEL
• What is your problem? • Do you have discharge from your urethra? — If yes, for how long? If this is a persistent or recurrent problem, see follow-up box. • Do you have burning or pain on urination? • Do you have pain in your scrotum? — If yes, have you had any trauma there? • Do you have sore(s)?	Perform genital exam: • Look for scrotal swelling. • Feel for tenderness. • Look for ulcer: — If present, also use p. 22. • Look for urethral discharge. • Look and feel for rotated or elevated testis. — If abdominal pain, feel for tenderness. — If tenderness: -- Is there rebound? -- Is there guarding? -- Can you feel a mass? -- Are bowel sounds present? -- Measure temperature. -- Measure pulse.

If lower-abdominal pain:

If urethral discharge or urination problems:

If scrotal swelling or tenderness:

**If fever with right lower abdominal pain and referral is delayed, give ampicillin and metronidazole for possible appendicitis.*

Use this table in men with lower abdominal pain:

SIGNS:	CLASSIFY AS:	TREATMENTS:
Abdominal tenderness with: • Fever > 38°C or • Rebound or • Guarding or • Mass or • Absent bowel sounds or • Not able to drink or • Pulse > 110	**SEVERE OR SURGICAL ABDOMINAL PROBLEM**	• Give patient nothing by mouth (NPO). • Insert IV. • Give appropriate IV/IM antibiotics. • Refer URGENTLY to hospital.*
• Abdomen soft and none of the above signs	**GASTROENTERITIS OR OTHER GI PROBLEM**	• If diarrhoea, see p. 36. • If constipation, advise remedies. • Return if not improved.

Use this table in men with urethral discharge or urination problem

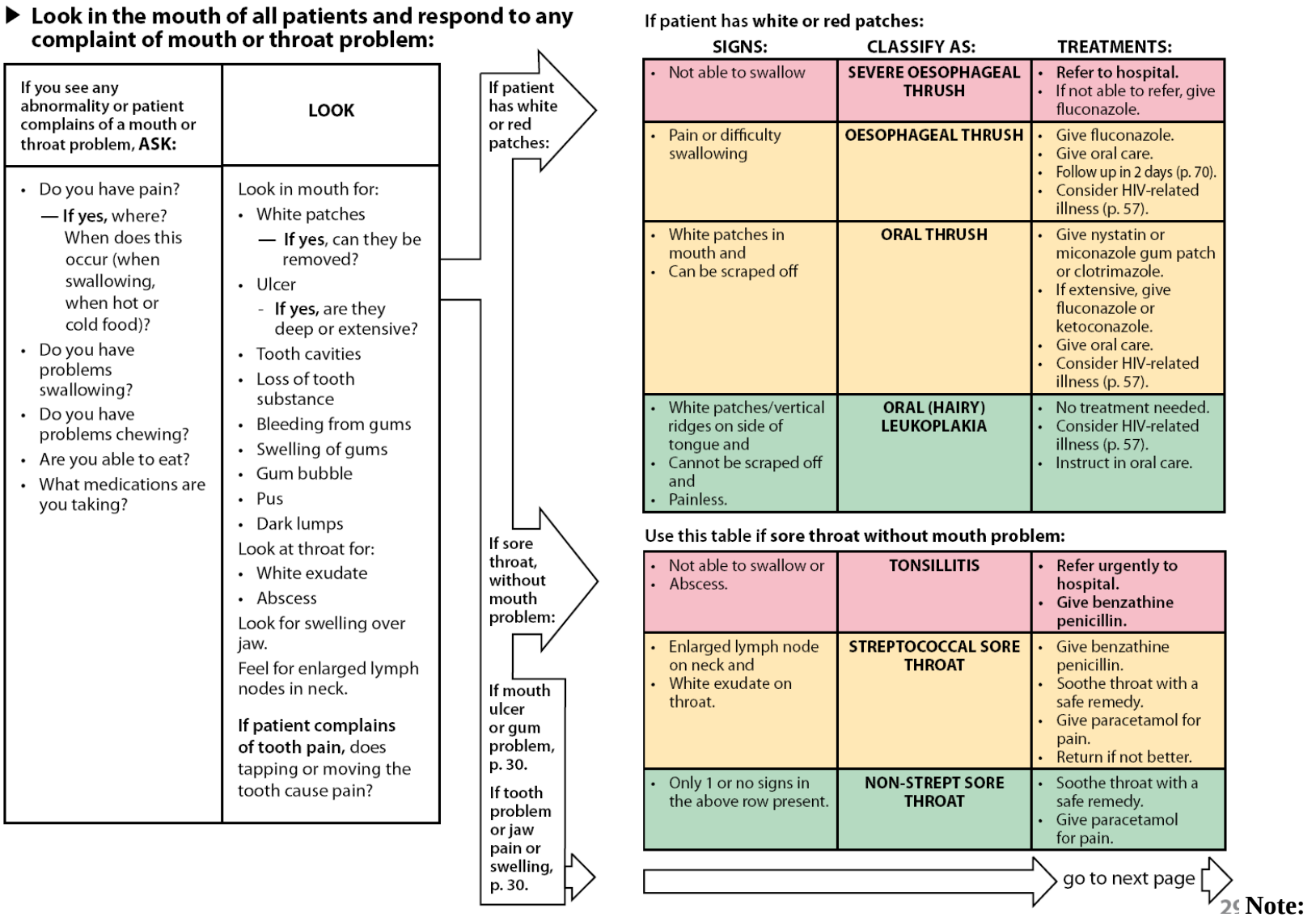
• Not able to urinate and • Bladder distended	**PROSTATIC OBSTRUCTION**	• Pass urinary catheter if trained. • Refer to hospital.
• Urethral discharge or • Burning on urination	**POSSIBLE GONORRHOEA/ CHLAMYDIA INFECTION**	• Treat patient and partner with antibiotics for possible GC/chlamydia infection. • Promote/provide condoms. • Return if worse or not improved within 1 week (p. 71). • Offer HIV/STI counselling and HIV and syphilis testing. • Consider HIV infection (p. 57). • Partner management.

Use this table in all men with scrotal swelling or tenderness

• Testis rotated or elevated or • History of trauma	**POSSIBLE TORSION**	• Refer URGENTLY to hospital for surgical evaluation.
• Swelling or tenderness (without the above signs)	**POSSIBLE GONORRHOEA/ CHLAMYDIA INFECTION**	• Treat patient and partner with antibiotics for possible GC/chlamydia infection. • Promote/provide condoms. • Follow up in 7 days; return earlier if worse (p. 71). • Offer HIV counselling and HIV and syphilis testing. • Consider HIV infection (p. 57).

Note: All the pages referred to on this page are for the IMAI Acute care 2009

Appendix VI: Management of mouth or throat problem



Note:

All the pages referred to on this page are for the IMAI Acute care 2009

Appendix VII: Management of mouth ulcer or gum problem

Use this table if mouth ulcer or gum problem:

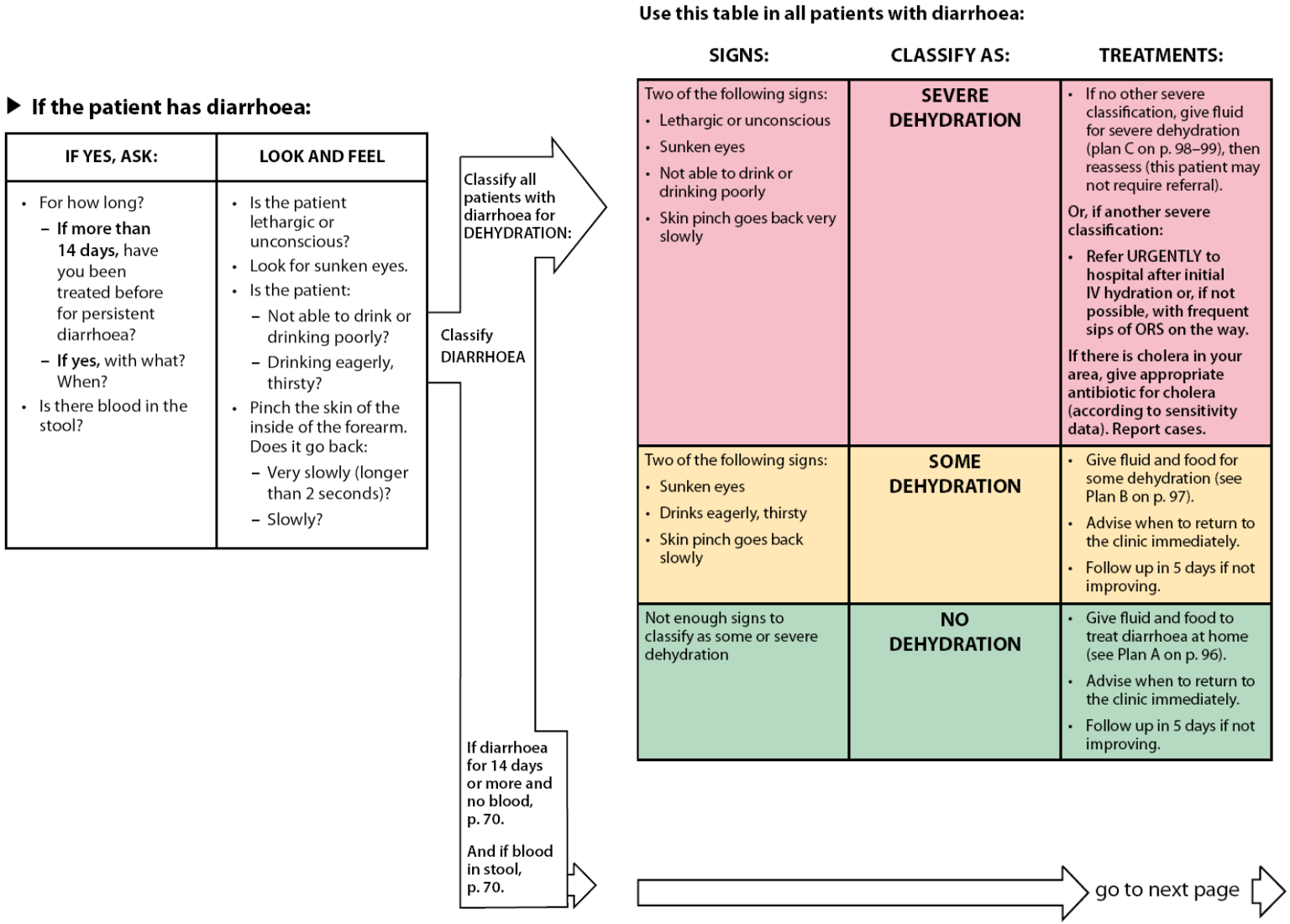
SIGNS:	CLASSIFY AS:	TREATMENTS:
• Deep or extensive ulcers of mouth or gums or • Not able to eat	**SEVERE GUM/ MOUTH INFECTION**	• **Refer urgently to hospital unless only palliative care planned.** • **Trial aciclovir.** • **Start metronidazole if referral not possible or distant.** • **Consider HIV-related illness (p. 57).** • **If on ARV therapy, this may be drug reaction (see *Chronic HIV Care).***
• Ulcers of mouth or gums.	**GUM/MOUTH ULCERS**	• Show patient/family how to clean with saline, peroxide or sodium bicarbonate. • If lips or anterior gums, give aciclovir. • Instruct in oral care. • If oral sex, consider syphilis. Screen for syphilis. • Consider HIV-related illness (p. 57). • If on ARV, started cotrimoxazole or INH prophylaxis within last month, this may be drug reaction, especially if patient also has new skin rash (see *Chronic HIV Care*—refer, stop drugs). • See *Palliative Care* for pain relief. • Follow up in 7 days.
• Bleeding from gums (in absence of other bleeding or other symptoms) • Swollen gums	**GUM DISEASE**	• Instruct in oral care.

Use this table if mass, tooth problem, jaw pain or swelling:

• Constant pain with: - Swollen face or gum near tooth or - Gum bubble or • Tooth pain when tapped or moved.	**DENTAL ABSCESS**	• If fever, give antibiotics. • Lance abscess or pull tooth. • **Refer urgently to dental assistant if not able to do so.** • Consider sinusitis (do not pull teeth if this is cause).
• Pain when eating hot or cold food or • Visible tooth cavities or • Loss of tooth substance.	**TOOTH DECAY**	• Place gauze with oil of clove. • Refer to dentist for care or pull tooth.

Note: All the pages referred to on this page are for the IMAI Acute care 2009

Appendix VIII: Management of a patient with diarrhoea



Note: All the pages referred to on this page are for the IMAI Acute care 2009

Also use this table if **diarrhoea for 14 days or more and no blood:**

SIGNS:	CLASSIFY AS:	TREATMENTS:
• Some or severe dehydration present	**SEVERE PERSISTENT DIARRHOEA**	• Give fluids for dehydration (plan B or C on p. 97–99) before referral, then reassess (this patient may not require referral). • If signs of dehydration persist, or another severe classification, refer urgently to hospital.
• No dehydration	**PERSISTENT DIARRHOEA**	• Give appropriate empirical treatment, depending on recent treatment and HIV status. • Consider HIV-related illness (p. 57). • If on ARV treatment, this could be drug side effect (see *Chronic HIV Care)*. • Give supportive care for persistent diarrhoea (see *Palliative Care)*. • Give nutritional advice and support. • Follow up in 5 days (explain when to refer).

Also use this table if **blood in stool:**

• Blood in the stool	**DYSENTERY**	• **Treat for 5 days with an oral antibiotic recommended for Shigella in your area.** • Advise when to return to the clinic immediately. • Follow up in 2 days.

Note: All the pages referred to on this page are for the IMAI Acute care 2009

Appendix IX: In all patients: Do you have cough or difficult breathing?

<table>
<tr><th>IF YES, ASK:</th><th>LOOK AND LISTEN</th></tr>
<tr><td>For how long?
• Are you having chest pain?
— If yes, is it new? Severe?
Describe it.
• Have you had night sweats?
• Do you smoke?
• Are you on treatment for a chronic lung or heart problem, or TB? Determine if patient diagnosed with asthma, emphysema or chronic bronchitis (CO PD), heart failure or TB.
• If not, have you had previous episodes of cough or difficult breathing?
— If recurrent:
— Do these episodes of cough or difficult breathing wake you up at night or in the early morning?
— Do these episodes occur with exercise?
• Are you HIV-positive or do you think you might be?</td><td>Is the patient lethargic?
• Count the breaths in one minute repeat if elevated.
• Look and listen for wheezing.
• Determine if the patient is uncomfortable lying down.
• Measure temperature.
If not able to walk unaided or appears ill, also:
• Count the pulse.
• Measure BP.
<table><tr><td>Age</td><td>5-12 years</td><td>13 years & above</td></tr><tr><td>Fast breathing</td><td>≥30 breaths per minute</td><td>≥ 40 breaths per minute</td></tr><tr><td>Very fast breathing</td><td>≥20 breaths per minute</td><td>≥30 breaths per minute</td></tr></table></td></tr>
</table>

Use this classification table in all with cough or difficult breathing:[21]

SIGNS:	CLASSIFY AS:	TREATMENTS:
One or more of the following signs: • Very fast breathing or • High fever (39°C or above) Or • Pulse 120 or more or • Lethargy or • Not able to walk unaided or • Uncomfortable lying down or • Severe chest pain.	**SEVERE PNEUMONIA OR VERY SEVERE DISEASE**	Position. • Give oxygen. • Give first dose IM antibiotics. • If wheezing present, treat (*p. 80 IMAI Acute care 2009*). • If severe chest pain in patient 50 years or older, use *Quick Check*. • If known heart disease and uncomfortable lying down, give furosemide. • Refer urgently to hospital. • Consider HIV-related illness (*p. 57 IMAI Acute care 2009*). • If on ARV therapy, this could be a serious drug reaction. See *Chronic HIV Care* module.
Two of the following signs: • Fast breathing • Night sweats • Chest pain	**PNEUMONIA**	Give appropriate oral antibiotic Exception: if second/third trimester pregnancy, HIV clinical stage 4, or low CD4 count, give first dose IM antibiotics and refer urgently to hospital. • If wheezing present, treat (*p. 80 IMAI Acute care 2009*). • If smoking, counsel to stop smoking. • If on ARV therapy, this could be a serious drug reaction; consult/refer. • If cough > 2 weeks or HIV-positive, send sputum for AFB. • Advise when to return to the clinic immediately. • Follow up in 2 days (*p. 68 IMAI Acute care 2009*).
Cough or difficult breathing for more than 2 weeks or • Recurrent episodes of cough or difficult breathing which: - Wake patient at night or in the early morning or - Occur with exercise.	**POSSIBLE CHRONIC LUNG OR HEART PROBLEM**	Send sputum for AFB (record in register). • If sputum sent recently, check register for result. See follow-up TB (*p. 69 IMAI Acute care 2009*). • If smoking, counsel to stop. • If wheezing, treat (*p. 80 IMAI Acute care 2009*). • Advise when to return to the clinic immediately.
Insufficient signs for the above classifications	**NO PNEUMONIA COUGH/COLD, OR BRONCHITIS**	Advise on symptom control. • If smoking, counsel to stop. • If wheezing, treat (*p. 80 IMAI Acute care 2009*). • Advise when to return to the clinic immediately. If HIV positive, follow up in 3-5 days.

[21] *IMAI Acute care 2009*

What to do in HIV-positive patients with SEVERE PNEUMONIA OR VERY SEVERE DISEASE when referral is impossible

1. Send sputum samples for AFB if possible.
2. Treat empirically for bacterial pneumonia with IM antibiotics.
3. If patient has very fast breathing or is unable to walk unaided, treat empirically for *Pneumocystis* pneumonia (PCP)

- Give cotrimoxazole: 2 double-strength or 4 single-strength tablets three times a day for 21 days (15mg/kg of TMP component). Give supplemental oxygen if available.

4. Assess the patient daily. Consult and discuss case with medical officer if possible (via phone, etc). and continue to try to refer:

- Check the patient with pneumonia using the Look and Listen part of the assessment:
    - Is the breathing slower?
    - Is there less fever?
    - Is the pleuritic chest pain less?
    - How long has the patient been coughing?

5. After 3-5 days, if breathing rate and fever are the same or worse, start standardized, first-line TB regimen if available, or refer to district hospital. Do not start an incomplete regimen. Once TB treatment is started, treatment should be completed.
6. If breathing slower or there is less fever, start first line oral antibiotic (for bacterial pneumonia) and finish 7 day course. If PCP treatment started, continue cotrimoxazole for three weeks.

Appendix X: Management of diabetes mellitus

ENDOCRINE SYSTEM
150 UCG 2012

6.3 DIABETES MELLITUS

Metabolic disease resulting from insulin insufficiency or ineffectiveness, primarily due to peripheral resistance to the action of insulin.

Clinical features

- Excessive thirst, excessive fluid intake (polydipsia)
- Excessive urine production (polyuria)
- Tiredness
- Loss of weight
- Increased appetite (polyphagia)
- Genital itching
- Impotence
- Poor sight
- Coma

Complications

- Blindness
- Impotence
- Amputations
- Strokes
- Kidney failure
- Heart attack

Differential diagnosis

- Diabetes insipidus
- Other causes of polyuria, polydipsia, weight loss, polyphagia
- Other causes of coma, e.g. alcohol poisoning
- HIV/AIDS

Investigations

- Urine: Glucose
- Blood: Glucose
- HBA1C – Haemoglobin A1C

ENDOCRINE SYSTEM
UCG 2012 151

Management HC4

Type 1 Diabetes

Insulin Dependent Diabetes Mellitus (IDDM)

- **Isophane insulin** 10-20 IU twice daily SC *child*: 5 - 10 IU twice daily

- **Isophane insulin** is 2/3 of the 24 hour stabilization soluble insulin requirement and should be used only after this daily requirement has been established. **Soluble insulin** 40 - 100 IU SC daily in 3 divided doses before meals
- *Child*: 40-80 IU as above

- Conventional insulin therapy often combines the two types of insulin in mixture of **30/70 soluble to isophane insulin**

Note

- Avoid using propranolol or other B-blockers in diabetics because they mask hypoglycaemic symptoms

- if required, use alternative antihypertensives

Type 2 Diabetes

- **Metformin** 500mg twice daily at breakfast and supper **HC4**
- Or **glibenclamide** 5mg once daily with meals initially

Elderly: 2.5mg daily initially (but see caution below) adjust according to response up to a max. of 10mg

Caution

- Glibenclamide: Caution in elderly patients because of risk of prolonged hypoglycaemia

6.4 DIABETIC KETOACIDOSIS

An acute metabolic complication of diabetes mellitus more common in the insulin-dependent (IDDM) type diabetics

Cause

- Newly diagnosed diabetes
- Poor control of diabetes mellitus
- Infections and trauma

Clinical features

- Excessive thirst, fluid intake, and passing of urine
- Tiredness
- Weight loss in new cases
- Abdominal pain, vomiting
- Collapse and unconsciousness
- Sweet, acetone smell on the breath

Differential diagnosis

- Other causes of ketoacidosis
- Other causes of acute abdominal pain
- Other causes of coma

Management HC4

- **Soluble insulin** 10-20 IU im every hour
- Monitor urine and the blood sugar hourly
- Treat any dehydration (with **normal saline** or 5% **glucose** when blood sugar has fallen below 250mg for 5 days)
- **Potassium chloride** 1g every 8 hours for 5 days
- Treat any infection present

Prevention

- Early detection
- Good control of diabetes
- Prompt treatment of infections
- General education

Appendix XI: Antiretroviral dosage regimens for adults and adolescents

Drug Class	Drug	Dose	Comments
Nucleoside RTIs	Zidovudine (ZDV)	300 mg twice daily	
	Lamivudine (3TC)	150 mg twice daily or 300mg once daily	Well tolerated No food restrictions Also active against hepatitis B
	Didanosine (ddI)	400 mg once daily	250mg once daily if <60 kg or with TDF
	Abacavir (ABC)	300 mg twice daily	
	Emtricitabine (FTC)	200 mg once daily	
Nucleotide RTI	Tenofovir (TDF)	300 mg once daily	
Non-nucleoside RTIs	Efavirenz (EFV)	600 mg once daily	Should be taken at bedtime
	Nevirapine (NVP)	200 mg once daily for 14 days, then 200 mg twice daily	This is the 'lead in dosing'
	Delavidrine (DLV)	400 mg three times a day	It has several drug interactions
	Etravirine (ETV)	200 mg twice daily	
	Rilpivirine (RPV)	25 mg once daily	
Protease Inhibitors	Lopinavir/ritonavir (LPV/r)	400 mg/100 mg twice daily	533 mg/133 mg twice daily if combined with EFV or NVP
	Nelfinavir (NFV)	1250mg twice daily	
	Indinavir/ritonavir (IDV/r)	800 mg/100 mg twice daily	Dose adjustment when combined with an NNRTI may be required
	Saquinavir/ritonavir (SQV/r)	1000 mg/100 mg twice daily or 1600 mg/100 mg once daily	Dose adjustment when combined with an NNRTI may be required
	Atazanavir (ATV)	400 mg once daily	ART/r 300 mg/100 mg once daily
	Tipranavir (TPV)	500 mg twice daily	
	Duranavir (DRV)	600 mg/100 mg twice daily	
Fusion Inhibitors	Enfuvirtide (T-20)	90 mg (1 ml) twice daily	Injected subcutaneously into the upper arm, thigh or abdomen
Integrase Inhibitors	Raltegravir (ISENTRESS)	400 mg twice daily	
Fixed combinations	ZDV/3TC/ABC (Trizivir)	300 mg/150 mg/300 mg as 1 tablet twice daily	Use tablet with d4T 30 mg
	TDF+FTC+EFV (Atripla)	300mg/ 200mg/600mg as 1 tablet daily	Take at bedtime because of efavirenz
	ZDV/3TC (Combivir)	300 mg/150 mg as 1 tablet twice daily	

Excerpt from the National ART Guidelines 2011

Appendix XII: WHO Analgesic ladder

The ladder advocates a stepped approach to the use of pain killers from these analgesic groups:

Step I: Simple analgesics like Paracetamol and NSAIDS

Step II: Weak opioids like Codeine and Tramadol

Step III: Strong opioids like Morphine, Pethedine

Step IV: Adjuvants. Are drugs which were not originally for pain but have been found to be effective in difficult to manage pain, particularly neuropathic pain. E.g. Anticonvulsants like carbamazepine, antidepressants like amitriptyline.

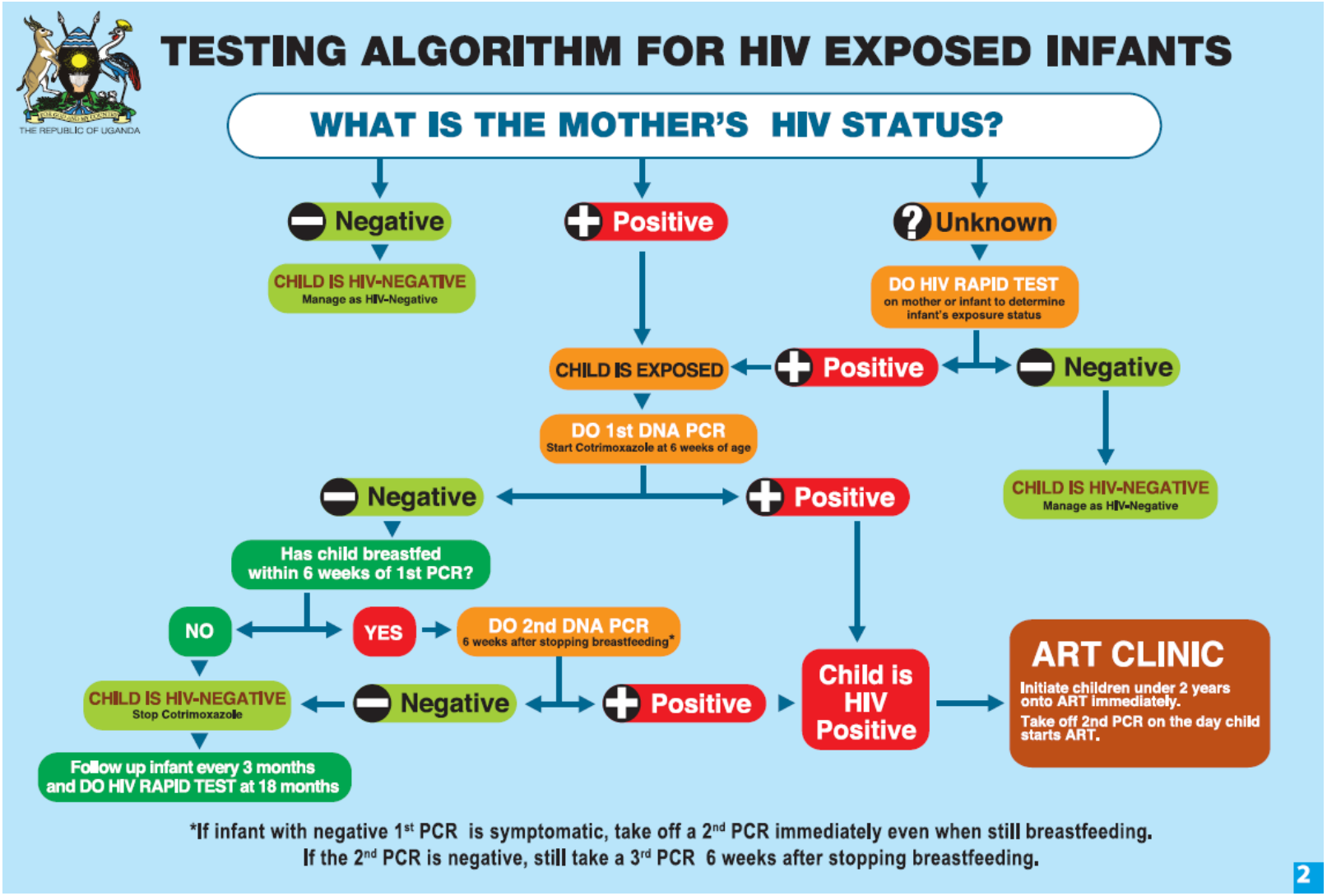
Appendix XIII: ARV dosing chart 2014

2014 ARV dosing chart

		3-5.9 Kg	6-9.9 Kg	10-13.9 Kg	14-19.9 Kg	20-24.9 Kg	25-34.9 Kg	≥ 35kg
Fixed-Dose Combination Tablets	AZT/3TC/NVP 60/30/50mg	1 BD	1.5 BD	2 BD	2.5 BD	3 BD	nr	nr
	AZT/3TC 60/30mg	1 BD	1.5 BD	2 BD	2.5 BD	3 BD	nr	nr
	ABC/3TC 60/30mg	1 BD	1.5 BD	2 BD	2.5 BD	3 BD	nr	nr
	AZT/3TC/NVP 300/150/200mg	nr	nr	nr	nr	nr	1 BD	1 BD
	AZT/3TC 300/150mg	nr	nr	nr	nr	nr	1 BD	1 BD
	TDF/3TC/EFV 300/300/600mg	nr	nr	nr	nr	nr	nr	1 OD (at night)
	TDF/3TC 300/300mg	nr	nr	nr	nr	nr	nr	1 OD (at night)
Single-Dose Tablets/Capsules	ABC 60mg	1 BD	1.5 BD	2 BD	2.5 BD	3 BD	4 BD	nr
	NVP 50mg	1 BD	1.5 BD	2 BD	2.5 BD	3 BD	nr	nr
	NVP 200mg	nr	nr	nr	nr	nr	1 BD	1 BD
	EFV 200mg	nr	nr	1 OD	1.5 OD	1.5 OD	2 OD	3 OD
	EFV 600mg	nr	nr	nr	nr	nr	nr	1 OD
	LPV/r 100/25 mg	nr	nr	2 AM /1 PM	2 BD	2 BD	3 BD	nr
	LPV/r 200/50 mg	nr	nr	nr	1 BD	1 BD	2 AM /1 PM	2 BD
	LPV/r 80/20 mg/ml	3-3.9kg: 1ml BD 4-5.9kg: 1.5ml BD	1.5ml BD	2ml BD	2.5ml BD	3ml BD	nr	nr
	ATV/r 300/100mg	nr	nr	nr	nr	nr	nr	1 OD

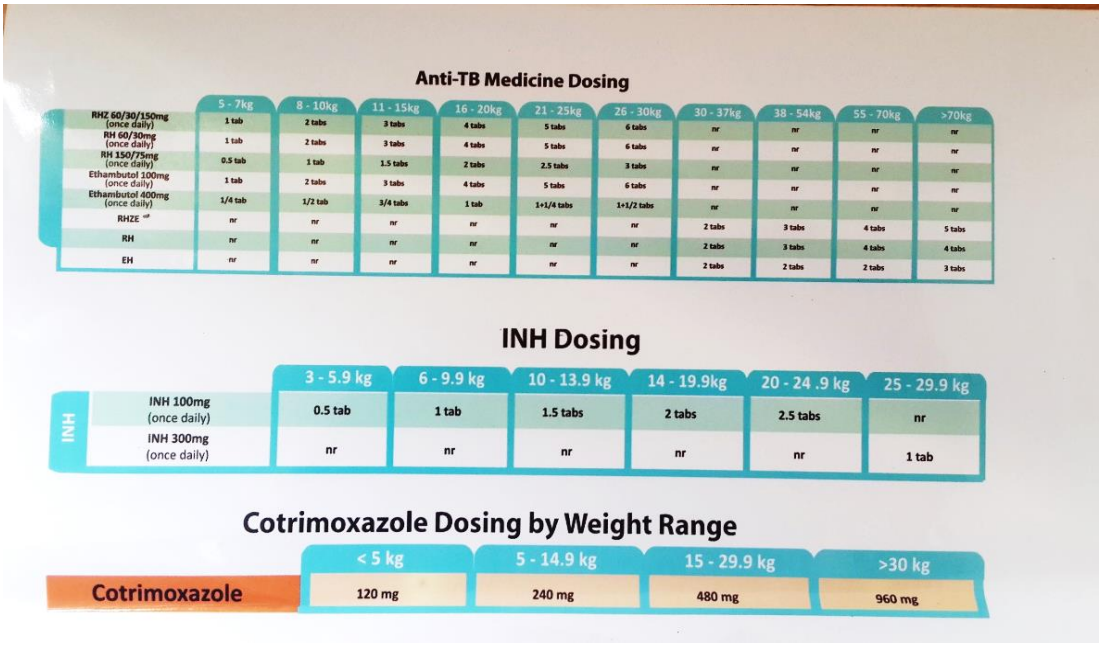
nr: Not recommended

Appendix XIV: Testing algorithm for exposed infants22.



[22] The Integrated Guidelines on Antiretroviral Therapy, Prevention of Mother to Transmission of HIV, Infant and young child feeding 2012

Appendix: XV TB dosing chart



Anti-TB Medicine Dosing

	5 - 7kg	8 - 10kg	11 - 15kg	16 - 20kg	21 - 25kg	26 - 30kg	30 - 37kg	38 - 54kg	55 - 70kg	>70kg
RHZ 60/30/150mg (once daily)	1 tab	2 tabs	3 tabs	4 tabs	5 tabs	6 tabs	nr	nr	nr	nr
RH 60/30mg (once daily)	1 tab	2 tabs	3 tabs	4 tabs	5 tabs	6 tabs	nr	nr	nr	nr
RH 150/75mg (once daily)	0.5 tab	1 tab	1.5 tabs	2 tabs	2.5 tabs	3 tabs	nr	nr	nr	nr
Ethambutol 100mg (once daily)	1 tab	2 tabs	3 tabs	4 tabs	5 tabs	6 tabs	nr	nr	nr	nr
Ethambutol 400mg (once daily)	1/4 tab	1/2 tab	3/4 tabs	1 tab	1+1/4 tabs	1+1/2 tabs	nr	nr	nr	nr
RHZE [a]	nr	nr	nr	nr	nr	nr	2 tabs	3 tabs	4 tabs	5 tabs
RH	nr	nr	nr	nr	nr	nr	2 tabs	3 tabs	4 tabs	4 tabs
EH	nr	nr	nr	nr	nr	nr	2 tabs	2 tabs	2 tabs	3 tabs

INH Dosing

		3 - 5.9 kg	6 - 9.9 kg	10 - 13.9 kg	14 - 19.9kg	20 - 24 .9 kg	25 - 29.9 kg
INH	INH 100mg (once daily)	0.5 tab	1 tab	1.5 tabs	2 tabs	2.5 tabs	nr
	INH 300mg (once daily)	nr	nr	nr	nr	nr	1 tab

Cotrimoxazole Dosing by Weight Range

	< 5 kg	5 - 14.9 kg	15 - 29.9 kg	>30 kg
Cotrimoxazole	120 mg	240 mg	480 mg	960 mg

Appendix: XVI Video Cases

Refer to the handbook for cases.
The cases in the handbook correspond to the conditions listed on the symptom check list.
Each case also has a video that gives a visual concept of presentation and management of the most conditions HIV patients normally present to health workers.

Example of case scenarios

This 37 year old man has arrived in hospital complaining of burning in his feet. He tested positive for HIV 4 years ago. He was also diagnosed at the same time with Kaposi's Sarcoma. He underwent a 9 month course of chemotherapy with vincristine at that time. He was also initiated on first line ARVs

CURRENT TREATMENT: Stavudine/lamivudine/nevirapine. Initiated 4 years ago. No baseline CD4.

Qn: what would you look for in an examination?

Ugandan Health worker checks on checklist – Central Nervous System – Leg pain/numbness/weakness. If the patient is on ART, look for side effects as well. Also look for severity – does it affect ability to walk or sensory alteration, feeling in his legs/feet?)

More information

When his feet and legs are checked for feeling, he says that they are numb. He does not feel the touch, up to his knees. It is the same for both legs. Both feet are also swollen, but one more than the other. When he is asked to describe the level of pain he says that it feels like he has burned himself with hot embers - it is very painful. He can, however, walk, although he says that it is too painful to put shoes on.

Qn: What treatment and Management would you suggest for this patient?

Ugandan Health worker: This is severe so refer to doctor or hospital. If referral is likely to take a long time consider stopping Stavudine?

(Clinician's notes: Stavudine and vincristine both can cause severe peripheral neuropathy. But stavudine is much more likely, given that his vincristine course was several years ago. KS can also cause pain, although not normally this acute, however KS may be contributing. Is the KS coming back? He needs a thorough check up for KS and needs to be watched on subsequent visits. Another question to ask: did he ever receive TB treatment. Isoniazid can also cause Peripheral Neuropathy.)

More information

The most likely cause of the pain is peripheral neuropathy as a side effect of stavudine, although other causes are also possible. So he is switched to another combination of ARVS and booked for follow-up in two weeks.

Qn: Which ART regimen should he be switched to? What other medicine does he need?

Stavudine**,** Amitriptyline.

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