MINISTRY OF HEALTH

Malaria in Pregnancy Prevention and Treatment Protocols

GOVERNMENT OF UGANDA,
MINISTRY OF HEALTH:

Malaria in Pregnancy Prevention and Treatment Flip chart

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Glossary of Terms

Term	Working Definition
Artemesnin Combination Therapy (ACTs)	A combination of an Artemisinin (Artemether, Artesunate or Dihdro-artemesnin) with another type of antimalarial that has a different mode of action e.g. Lumefantrine, Amodiaquine, and Piperaquine
Anemia in Pregnancy	Hemoglobin levels below 11g/dl in the 1st trimester and less than 11.5g/dl in the 2nd and 3rd trimester.
Antenatal Contact	The active connection between the pregnant woman & health care provider, & can happen at the facility or community level.
Antenatal Care visit	This refers to the old four visits model commonly referred to as focused or basic ANC
Correct and consistent use of LLINs	The long lasting insecticidal mosquito net is used every night through out pregnancy and after delivery, it includes proper hung up, net care and aeration for 24 hours before use.
Gestation age	The time period from the date of conception to the date of visit.
Gestational wheel	The tool used by Health care providers to determine gestational age and the expected date of delivery.
Intermittent Preventive Treatment of Malaria in Pregnancy (IPTp)	Treatment given to pregnant women to prevent Malaria in Pregnancy and associated complications starting as early as possible at 13 WOG, given monthly until delivery.

Glossary of Terms

Term	Working Definition
Long lasting insecticidal Mosquito net	The type of insecticide treated mosquito nets that does not require periodic retreatment with antimalarial insecticide
Prompt and effective treatment & diagnosis	Treatment & diagnosis provided within 24 hours of onset of symptoms as per WHO & MOH guidelines
Severe malaria in Pregnancy	Pregnant woman that presents with fever, other symptoms of Malaria, positive mRDT/blood slide for Malaria and a danger sign/ danger signs
Uncomplicated Malaria in Pregnancy	Pregnant woman presenting with fever and other symptoms of Malaria, a positive mRDT / blood slide without a danger signs.
Symphysis Fundal Height	Distance between the symphysis pubis and fundus of the uterus in CMs or finger breadth.
Weeks of amenorrhea	The number of weeks from the 1st day of the last normal menstruation period to the date of the current visit.
Weeks of gestation	The number of weeks from the date of conception to the date of the current visit.

Introduction

Background

1. Uganda is endemic for Malaria-over 90% of the population stay in areas of moderate to high transmission, all people are at risk but pregnant women are at a higher risk.
2. Pregnancy affects Malaria by increasing the number of episodes and chances of progressing to severe malaria.
3. Malaria affects pregnancy causing complications to the mother and her un-born baby(maternal anemia, abortion, preterm labour, prematurity, still birth low birth weight.
4. Important to prevent and treat Malaria in Pregnancy , the goal is to reduce maternal morbidity and prevent maternal, infant mortality/disability due to Malaria.
5. To reduce the burden of Malaria in Pregnancy, WHO recommends a 3 pronged approach;

    a)***Consistent correct use of LLINs throughout Pregnancy.***

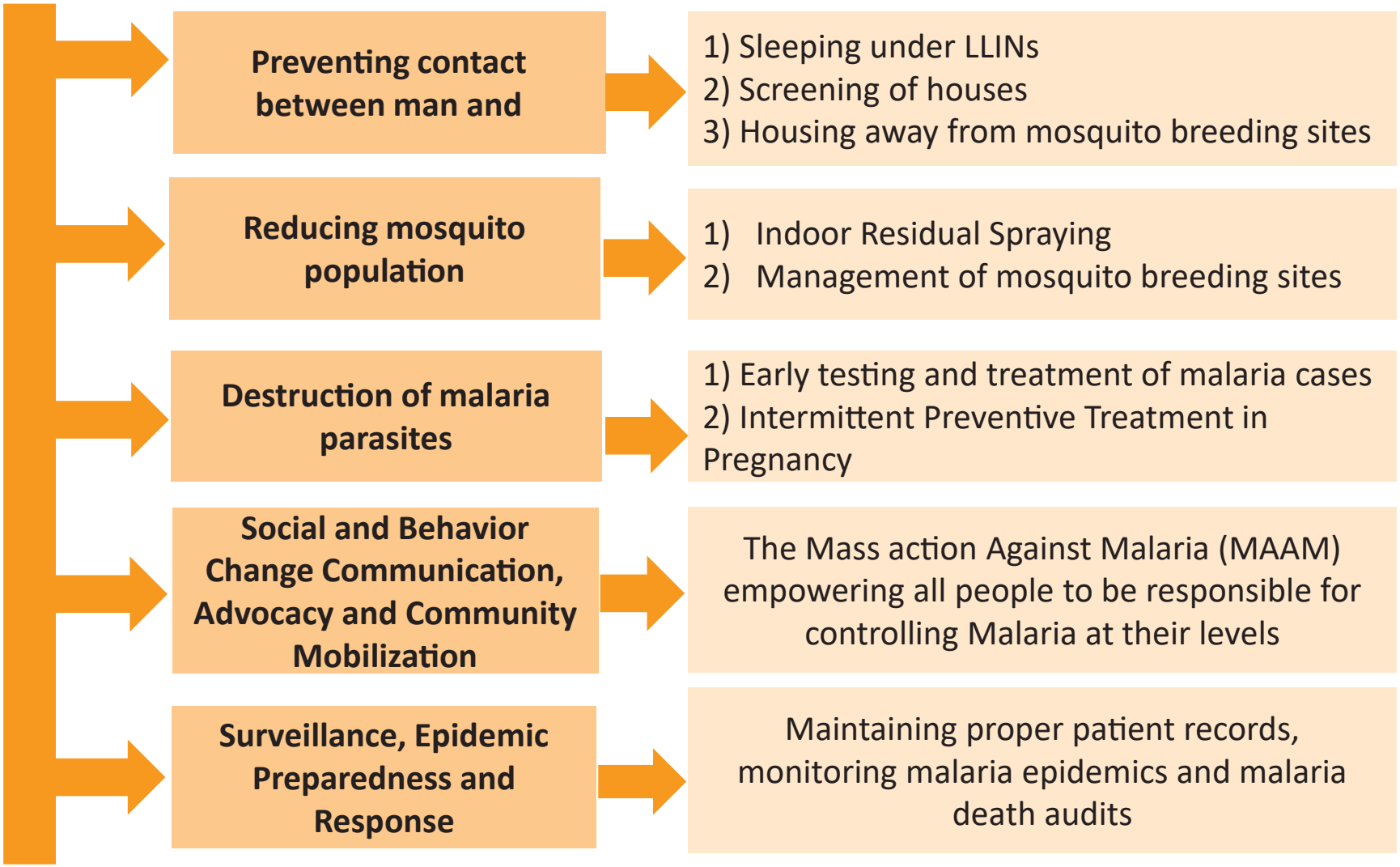
    b) Intermittent Preventive treatment of Malaria in Pregnancy.

    c) Prompt diagnosis and treatment as per the standard guidelines

Why its important to address malaria in pregnancy.

Effects of Malaria to Mother	Effects of Malaria to Baby
Severe or complicated malaria	Intra-uterine growth restriction
Abortion	Perinatal Deaths (including IUFD).
Premature Labour	Prematurity
Pre-term Delivery	Congenital Malaria
Maternal Anaemia	Congenital Anaemia
Maternal Death	Low birth weight
	Poor physical or mental development

Figure1:Malaria Prevention Strategies



PREVENTION OF MALARIA IN PREGNANCY

Intermittent Preventive Treatment of Malaria in Pregnancy(IPTp)

Intermittent Preventive Treatment (IPTp)

1) Quantification and ordering for Sulfadoxine – Pyrimethamine (SP).
2) Determining eligibility for IPTp.
3) The use of the gestational wheel to assess for gestation age.
4) IPTp dosing and the ANC contact schedules.
5) The administration, documentation and reporting of IPTp-SP doses and other forms of prophylaxis in special categories of pregnant women.

- Pregnant women living with HIV/AIDs.
- Pregnant women with Sickle Cell Disease

Quantifying and Ordering for SP

Quantify SP needs based on;

- The expected number of pregnant women calculated using the factor of 5% of the population
- Or the number of pregnant women who attended ANC in the last one year
- Each dose of SP is 3 tablets, if a woman takes all 6 doses they will need 18 tablets over the whole pregnancy
- Quantity needed = 18 tablets x No. pregnant women expected
- Order SP every 2 months (applicable to HC IV and hospitals)
- Before the supply identify overstocked facilities and redistribute

Figure:2 –Flow chart for assessing Eligibility for IPTp.

Prevention of Malaria during Pregnancy: Administer Intermittent Preventive Treatment in Pregnancy Using Sulfadoxine-Pyrimethamine (IPTp-SP) Starting at 13 Weeks

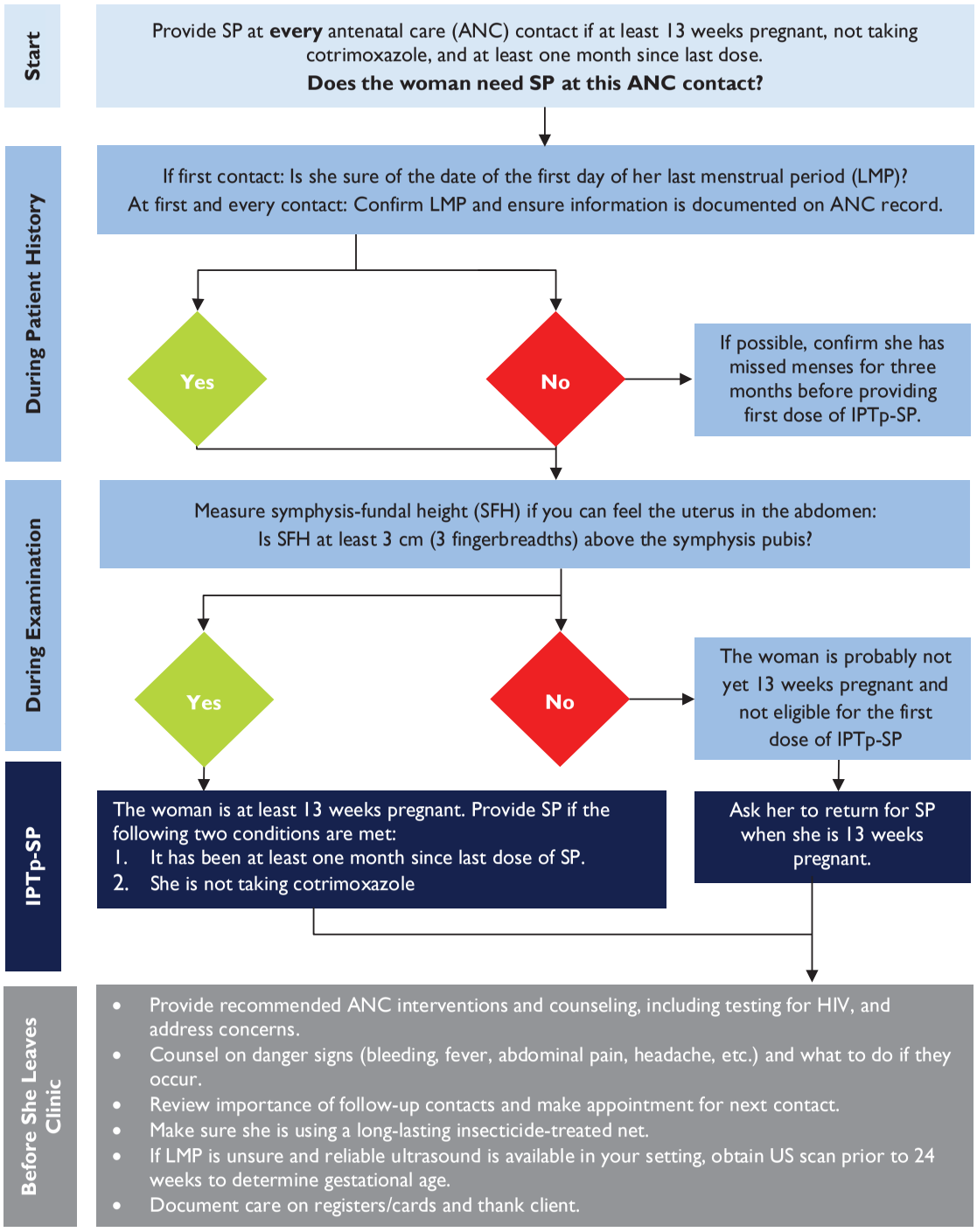
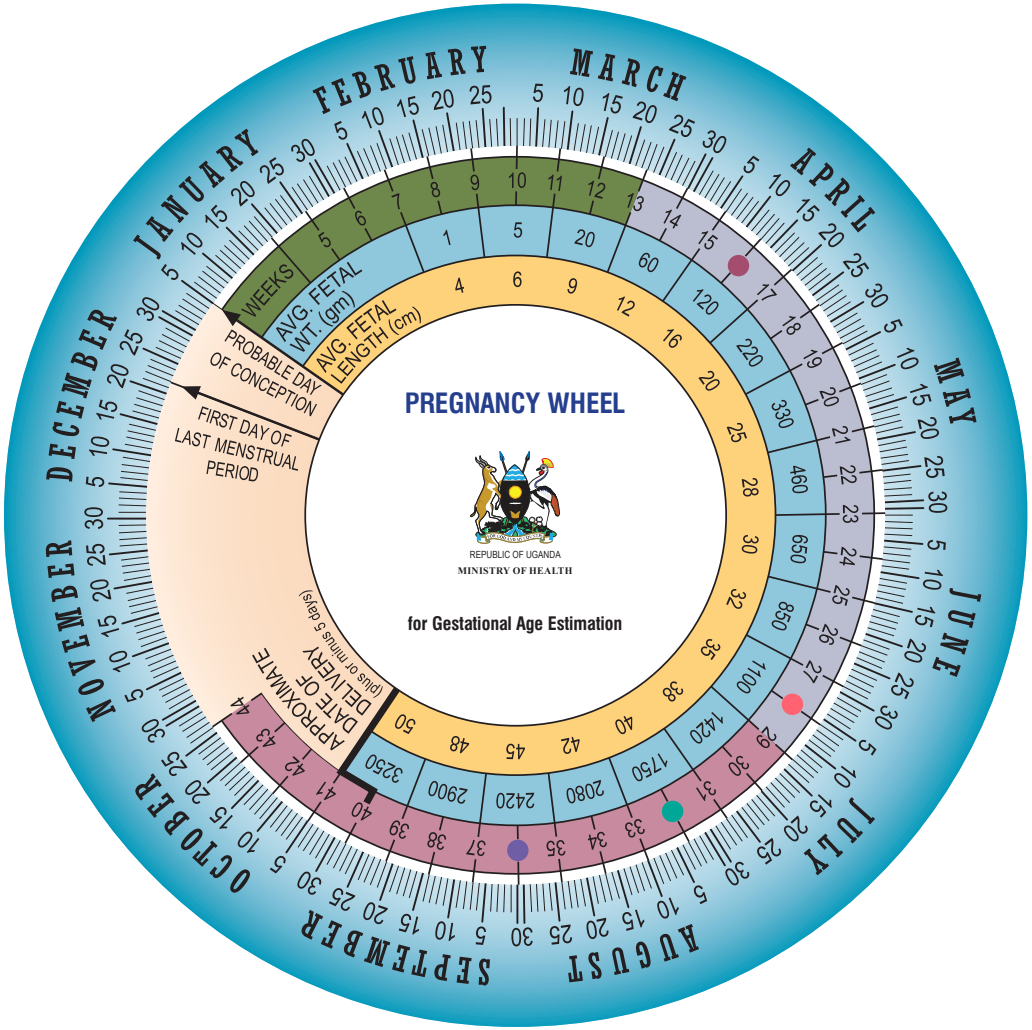


Figure 3: GESTATIONAL WHEEL



Aligning IPTp doses to the ANC Contact schedule.

Contact No	Gestation age in wks	ITN/IPT p-SP Dose
Contact 1:	0 – 12	ITN
Contact 1a:	13 – 16	IPTp – Dose 1
Contact 2:	20	IPTp – Dose 2
Contact 3:	26	IPTp – Dose 3
Contact 4:	30	IPTp – Dose 4
Contact 5 :	34	IPTp – Dose 5
Contact 6:	36	No SP, if last dose received <I month ago
Contact 7:	38	IPTp-SP dose 6 (if no dose in past month)
Contact 8:	40	No IPTp

Note:

a) *IPTp should be given starting at 13 weeks (3 months) monthly until birth. (There should be a period of 4 weeks between the monthly IPTp)*
b) *IPTp should be given as Directly Observed Therapy to be recorded as given*
c) *HIV positive pregnant women on Cotrimoxazole should not be given SP (Septrin)*
d) *All women receiving any form of Malaria prophylaxis should be recorded under IPTp by visit number or dose*

Aligned to the Goal Oriented Antenatal Care Protocol contact schedule

The administration ,documentation & reporting of IPTp doses given during antenatal care.

Intermittent Preventive Treatment schedule	
Before 13 weeks	No IPTp; Sleep under LLIN
At 13 weeks	Start the 1st dose of IPTp-SP, subsequent doses should be given monthly until delivery or continue with daily Cotrimoxazole for the HIV positive pregnant women or Chloroquine for those with Sickle Cell disease. **Note**: Ensure that there is a period of one month or 4 weeks between doses of IPTp –SP.

NOTE:

1) For women with Sickle Cell disease that are using SP, stop the 5mg Folic Acid for 7 days after taking the S/P to allow more effective prevention of malaria
2) For HIV Positive women not yet taking Cotrimoxazole, initiate immediately.

Documentation: All women taking any form of malaria prophylaxis (Septrin / Chloroquine / Fansidar) should be documented under the IPTp column and the corresponding visit number given *(e.g. IPTp 4 on visit 4).*
Those given Fansidar, only record if taken as DOT.

Reporting:
All forms of malaria prophylaxis (Chloroquine, Fansidar and Cotrimoxazole) should be reported as IPTp respectively for IPTp1, IPTp 2, IPTp 3 and IPTp 4+.

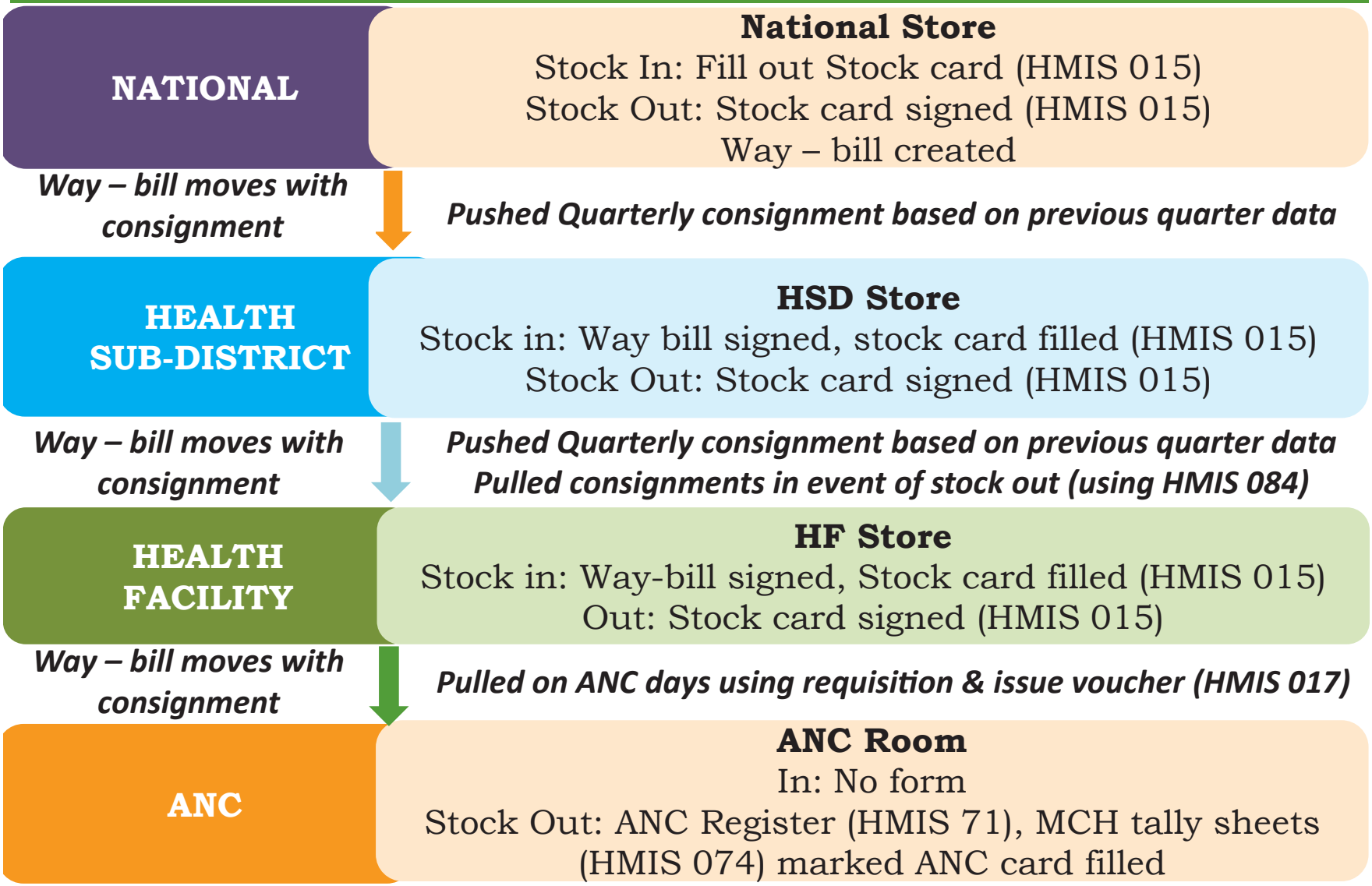
PREVENTION OF MALARIA IN PREGNANCY

USE OF LONG LASTING INSECTICIDAL NETS (LLINs) TO PREVENT MIP

Use of Long-Lasting Insecticidal Nets

1. Supply Chain and documentation
2. Giving out LLINs in ANC
3. Reporting on LLIN distribution in HMIS
4. Quantification of LLINs

LLIN supply chain and documentation



Step-by-step: Giving out the LLIN in ANC

During the ANC consultation the health worker should:

- Receive the client and check her ANC card to see if she has received an LLIN already
- If she does not have an ANC card, probe for prior possible received LLIN from elsewhere

Key messages to ANC clients about LLINs

a) "Before using your LLIN, hang it somewhere to air out for one day"

b) "Hang up the net using strings provided on the corners of the net"

c) "At night, tuck the net under the mat or mattress so mosquitoes have no space to enter"

d) "Sleep under an LLIN EVERY night"

e) "During the day, flip up the net so it cannot get damaged"

f) "Wash the net when it's dirty, using regular washing soap and water"

g) "Dry the LLIN away from direct sunlight, under a tree or indoors"

Check whether she has any questions or concerns that she would like to discuss

- At the end of the ANC visit give the net to the ANC client
- Write ***"1 LLIN received"*** on her ANC card
- Record in the ANC register that the woman has been given a LLIN (column 23)
- Record on the MCH tally form (HMIS 075) that the woman has been given an LLIN
- Summarise LLINs given out as part of the daily summary on HMIS Table 2a.

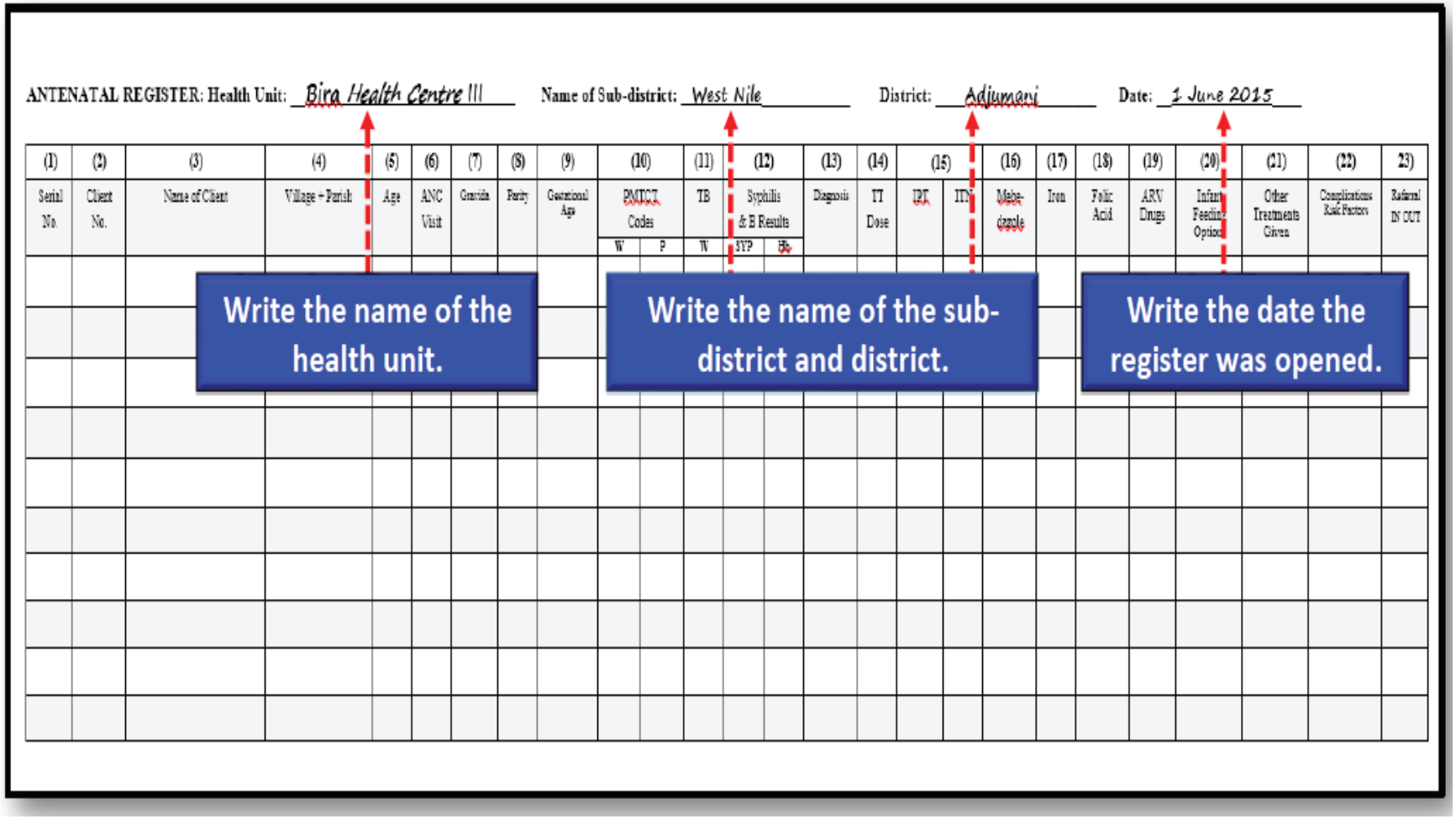
NOTE: ***It is planned that each pregnant woman should only receive one LLIN from the free ANC system during her current pregnancy***

Recording on LLINs distribution in the HMIS system

Form	Filled by	Filled when	Action
Recording forms			
ANC register (HMIS 071)	ANC service provider	When LLIN is given	Remains in HF Retained for future reference
MCH tally sheet (HMIS 074)	ANC service provider	When LLIN is given	Remains in HF Used to fill HMIS Table 2a
MCH Daily Summary (HMIS Table 2a)	In charge of MCH clinic	At end of ANC day	Remains in HF Used to fill HMIS Table 2b
MCH Monthly Summary (HMIS Table 2b)	In charge of MCH clinic	At end of month	Remains in HF Given to HF In-charge to aid completion of HMIS Form 105

Job Aid for Completion of the Integrated Antenatal Register for Prevention of Malaria in Pregnancy Services

1 Complete the register information:



2 Record the client information for each antenatal care (ANC) visit:

ANTENATAL REGISTER: Health Unit: Biya Health Centre III Name of Sub-district: West Nile District: Adjumani Date: 1 June 2015

(1) Serial No.	(2) Client No.	(3) Name of Client	(4) Village + Parish	(5) Age	(6) ANC Visit	(7) Gravida	(8) Parity	(9) Gestational Age	(10) PMTCT Codes W	(10) PMTCT Codes F	(11) TB	(12) Syphilis & B Results SYP	(12) Syphilis & B Results Hb	(13) Diagnosis	(14) TT Dose	(15) IPT	(15) ITN	(16) Mebendazole	(17) Iron	(18) Folic Acid	(19) ARV Drugs	(20) Infant Feeding Option	(21) Other Treatments Given	(22) Complications Risk Factors	(23) Referral IN OUT
1	235	Harriet Owole	Boroli	22	1	2	1	12 wks																	
2	R23	Edith Asiimwe	Central 11	20	3	2	0	33 wks																	

(1) Serial No.	(2) Client No.	(3) Name of Client	(4) Village + Parish	(5) Age	(6) ANC Visit
1	235	Harriet Owole	Boroli	22	1
2	R23	Edith Asiimwe	Central 11 Biyaya	20	3
3	176	Maria Mutabwire	N	25	2
4	37	Prossy Mugerwa	Boroli	17	4

(1) Record the serial number:
Start with number "1" on the first of every month.

(2) Record the client number:
Start with the number "1" on the first of July each year. Record this number also on the Antenatal Card. If a client is referred from another clinic, use the ANC number on her card and add R at the beginning to show referral.

(3) Write the full name of the client.

(6) Record the number of this ANC visit:
Review client's Antenatal Card to determine visit number: 1, 2, 3, 4, etc.

3 Record IPT dose given by DOT, ITN use, and doses of Folic Acid given:

ANTENATAL REGISTER: Health Unit: Bira Health Centre III Name of Sub-district: West Nile District: Adjumani Date: 1 June 2015

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		(11)	(12)		(13)	(14)	(15)		(16)	(17)	(18)	(19)	(20)	(21)	(22)	23)
Serial No.	Client No.	Name of Client	Village + Parish	Age	ANC Visit	Gravida	Parity	Gestational Age	PMTCT Codes		TB	Syphilis & B Results		Diagnosis	TT Dose	IPT	ITN	Mebe-dazole	Iron	Folic Acid	ARV Drugs	Infant Feeding Option	Other Treatments Given	Complications Risk Factors	Referral IN OUT
									W	P	W	SYP	HB												
1																1	N			✓ 90 0.4mg					
2																									
3																									
4																									

(15) Record the Intermittent Preventive Treatment (IPT) dose given by direct observed therapy (DOT) during 2nd and 3rd trimester:
Review client's Antenatal Card to determine last IPT dose.
Record "1" for first dose of IPT given.
Record "2" for second dose of IPT given.
Record "3" for third dose of IPT given.
Record "3+" for more than 3 doses of IPT given.
Record "ND" if not due for IPT dose during this visit.
Record "CTX" if mother is taking cotrimoxazole or sulpha drug.

(15) Record ITN use:
Record "Y" if mother is using an ITN.
Record "N" if mother is not using an ITN.

(18) Record the dose and number of tablets of Folic Acid Given:
Record a tick "✓" if folic acid was given and record number of tablets and dose given.

(15)		(16)	(17)	(18)
IPT	ITN	Mebe-dazole	Iron	Folic Acid
1	N			✓ 90 0.4mg
3+	Y			
2	Y			✓ 90 0.4mg
CTX	Y			

Reporting on LLINs distribution in the HMIS system

Form	Filled by	Filled when	Action
Reporting forms			
HMIS Form 105: Facility Outpatient Monthly Report	Facility in Charge	Monthly	One copy remains in HF One copy sent to HSD by the 7th of the following month One copy sent to DHO
HMIS form 123 District / HSD Outpatient Monthly Report	DHT & HSD	Monthly	a) Completed by HSD, by HF. One copy retained and one copy sent to DHT. b) Completed by DHT, by HSD. One copy retained and one copy sent to MoH by 28th of the next month
HMIS Table 16 District/HSD tool for monitoring timeliness and completeness of HMIS reporting	By the DHT and HSD	Monthly	One copy sent from HSD to DHT One copy sent from DHT to MoH By the 28th of the following month

Quantification for LLINs in ANC

District	HSD	HF with ANC	Quarter 1			Quarter 2		
			Allocation based on previous Q4 report	HMIS report should reach HSD on the 7th of the 1st month of next quarter to guide new Quarter allocation		Allocation based on previous Quarter report	HMIS report should reach HSD on the 7th of the 1st month of next quarter to guide new Quarter allocation	
				1st ANC attendance	LLINs given		1st ANC attendance	LLINs given
District A	HSD 1	HC A	76	96	76	121		
District A	HSD 1	HC B	153	130	115	115		
Total			**229**	**226**	**191**	**236**		

Allocation rationale:

i. HC A had insufficient stock in Q1 and is expected to have returns in Q2 as well as regular expected 1st ANC attendees. Calculation:

96 expected 1st ANC attendees + 5% buffer of 96 + LLINs for the 96 1st attendees who didn't receive nets (96 – 76). There is no stock balance to take into account.

96 + 5 + (96-76) = 121 LLINs are allocated in Q2

ii. HC B had more stock that needed in Q1 but not all women who came received nets. **Action:** support supervision to investigate why not all women receiving despite available stock. Calculation:

130 expected 1st attendees + 5% buffer of 130 + LLINs for the 130 who didn't receive nets (130 – 115) – stock balance (153 – 115).

Which equals: 130 + 7 + (130-115) – (153-115) = 114 LLINs are allocated in Q2

The Management of Malaria in pregnancy

1. Diagnosis

&

2. Treatment

THE MANAGEMENT OF MALARIA IN PREGNANCY

1. Diagnosis of Malaria in Pregnancy

A: Clinical Diagnosis..

i. History taking.

ii. Physical examination.

B: Laboratory Diagnosis.

i. Tests to confirm a Malaria diagnosis.

ii. Tests to detect complications & diagnose severe malaria.

A: Clinical diagnosis –Part (i) : History taking

- History of Fever: *Duration, pattern*
- Associated factors: *chills, rigors*
- Malaise(general body weakness
- Joint and muscle pains
- Headache
- Loss of appetite, nausea, vomiting, abdominal pain, and diarrhea
- Confusion, altered consciousness
- Other symptoms / Review of Systems
  - *Cough and flu*
  - *Painful swallowing*
  - *Ear pain*
  - *Dysuria/painful urination*
  - *Lower abdominal pain*
  - *Painful bone and soft tissue swelling*
  - *Skin rash*

- Last normal menstruation period(LNMP)
- Past medical History.
  - *Known chronic illness*
  - *Ongoing or previously used treatments.*
  - *Immunization history*
  - *Allergy to treatment and foods*
- Patient's recent activities
- Past gynaecological history
- Present and past obstetric history.
- Family social history
  - *Familial diseases*
  - *Mosquito net use*

A: Clinical Diagnosis – (II)Physical Examination

» Assess for vital signs

- Temperature
- Blood pressure
- Pulse rate
- Respiratory rate

» Take patient' s weight

» Assess for danger signs

- Current convulsion or
- Two or more convulsions in 24 hours
- Unable to drink or breast-feed
- Vomiting everything
- Altered mental state *(lethargy, drowsiness, unconsciousness or confusion)*
- Prostration or extreme weakness *(unable to stand or sit without support)*
- Respiratory distress *(nasal flaring, intercostal recession, chest indrawing)*
- Severe pallor
- Severe dehydration
- Severe malnutrition

» **Do a general examination**

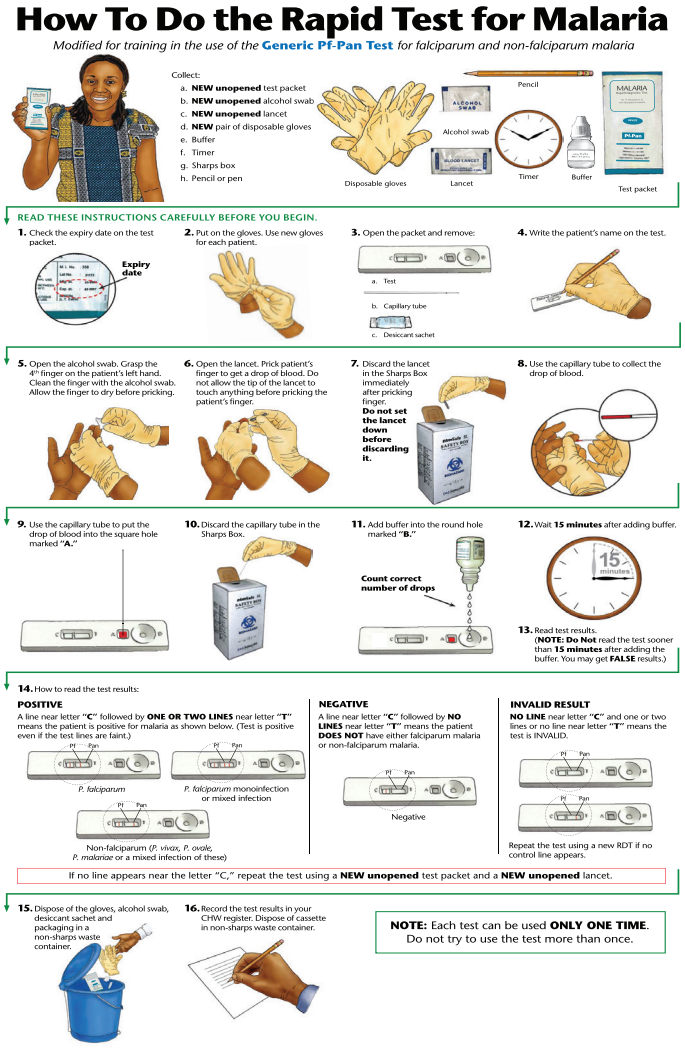
Pallor, oedema, dehydration,cyanosis,

» **Carefully examine the following systems:**

- **Ears / Nose / Throat (ENT): i**nflamed throat or tonsils; coating on tongue/mouth, ears for inflammation and discharge
- **Central Nervous System** neck stiffness; bulging fontanel in children
- **Respiratory system:** cyanosis; nasal flaring and chest in-drawings etc
- **Cardiovascular:** extra heart sounds e.g. murmurs, rubs, or gallops
- **Abdomen:** enlarged spleen or liver, palpable masses, tenderness
- **Skin:** rash; pain, muscle weakness
- **Musculoskeletal:** range of motion and reflexes, pain, muscle weakness

B. Laboratory diagnosis

There are two recommended testing methods used to test for malaria are Microscopy and Malaria Rapid Diagnostic Test



7	Test	Reason
1.	Microscopy	• Quantify parasites especially during patient monitoring. • Typing malaria parasites
2.	Urinalysis	• Detect proteins especially for women with convulsions.
3.	Complete blood cell count or Hb estimation	• Diagnosis and grading of anemia. • Diagnosis of other comorbidities
4.	Random blood sugar	• To make a diagnosis of Hypoglycemia or gestational diabetes
5.	Renal functional tests	• Diagnosis of acute renal failure
6	Blood culture and CSF analysis	• Diagnosis of septicemia or meningitis
7.	Serum electrolytes	• Diagnosis of electrolyte imbalance or metabolic acidosis

Laboratory Diagnosis of Malaria using Microscopy and interpreting parasite Load

Result	Number of visible parasites on Microscopy per 100 thick film
+	1 – 10 parasites per 100 thick film fields
++	11 – 100 parasites per 100 thick film field
+++	1 – 10 parasites per one thick film field (hyper-parasitemia)
++++	>10 parasites per one thick field

NOTE: Hyper-parasitemia is not basis for diagnosis of severe malaria. However, the patients with hyper-parasitemia should be monitored through treatment to ensure complete parasite clearance at the end of treatment especially if diagnosed with severe malaria

The management of Malaria in Pregnancy.

2. Treatment of Malaria in Pregnancy

(OR)

A: Treatment of Uncomplicated Malaria

i. Specific treatment
ii. Supportive treatment

B: Treatment of Severe Malaria

i. Supportive treatment
- Triage
- Resuscitation
- Monitoring

ii. Specific treatment

C: Referral

D: Follow up

Anti-malarial treatment of uncomplicated malaria

First Line: Treatment schedule for Artemether/Lumefantrine (AL)

Weight (Kg)	Age	Day 1	Day 2	Day 3
<14	Birth to 3 years	1 tablet at 0 hours then 1 tablet at 8 hours	1 tablet twice (12 hourly)	1 tablet twice (12 hourly)
15-24	3 to 7 years	2 tablets at 0 hours then 2 tablets at 8 hours	2 tablets twice (12 hourly)	2 tablets twice (12 hourly)
25-34	7 to 12 years	3 tablets at 0 hours then 3 tablets at 8hours	3 tablets twice (12 hourly)	3 tablets twice (12 hourly)
>35	12 years and above	4 tablets at 0 hours then 4 tablets at 8 hours	4 tablets twice (12 hourly)	4 tablets twice (12 hourly)

Alternative 1st line Treatment - Artesunate + Amodiaquine

Age	Day 1	Day 2	Day 3
0 – 12 months	25mg / 76mg (½ tab)	25mg / 76mg (½ tab)	25mg / 76mg (½ tab)
1 – 6 years	50 mg / 153mg (1 tablet)	50 mg / 153mg (1 tablet)	50 mg / 153mg (1 tablet)
7 – 13 years	100mg / 306mg (2 tablets)	100mg / 306mg (2 tablets)	100mg / 306mg (2 tablets)
>13 years	200mg / 612mg (4 tablets)	200mg / 612mg (4 tablets)	200mg / 612mg (4 tablets)

2nd Line antimalarial for uncomplicated malaria

Preferred 2nd line: Dosing schedule for Dihydroartemisinic / Piperaquine

Body Weight	Product Description	Day 1 Dose	Day 2 Dose	Day 3 Dose
5kg to < 8kg	D-ARTEPP Dispersible Dihydroartemisinin / Piperaquine (20 mg / 160 mg)	1Tablet	1 Tablet	1 Tablet
8kg to < 11kg		1.5 Tablet	1.5 Tablet	1.5 Tablet
11kg to <17kg		2 Tablets	2 Tablets	2 Tablets
17kg to < 25kg	D-ARTEPP Dispersible Dihydroartemisinin / Piperaquine (40 mg / 320 mg)	1.5 Tablet	1.5 Tablet	1.5 Tablet
25kg to < 36kg		2 Tablets	2 Tablets	2 Tablets
36kg to < 60kg	D-ARTEPP Dihydroartemisinin / Piperaquine (40 mg / 320 mg) *Non-dispersible*	3 Tablets	3 Tablets	3 Tablets
60kg to < 80kg		4 Tablets	4 Tablets	4 Tablets
> = 80kg		5 Tablet	5 Tablets	5 Tablets
60kg to < 80kg	D-ARTEPP Dispersible Dihydroartemisinin / Piperaquine (80 mg / 640 mg)	2 Tablet	2 Tablet	2 Tablet
>=80kg		2.5 Tablets	2.5 Tablets	2.5 Tablets

2nd Line antimalarial for uncomplicated malaria

Alternative 2nd line: Dosing schedule for Quinine

Weight (Kgs)	Age	Dose (Every 8 hours for 7 days)
5 – 10	3 months – 1 year	¼ tablet (75mg)
10 – 18	1 – 5 years	½ tablet (150mg)
18 – 24	5 – 7 years	¾ tablet (225mg)
24 – 30	7 – 10 years	1 tablet (300mg)
30 – 40	10 – 13 years	1¼ tablets (375mg)
40 – 50	13 – 15 years	1½ tablets (450mg)
> 50	> 15 years	2 tablets (600mg)

2nd Line antimalarial for uncomplicated malaria

Alternative 2nd line: Dosing schedule Pyronaridine Tetraphosphate/ Artesunate

PYRONARIDINE TETRAPHOSPHATE/ ARTESUNATE (PYRAMAX)

Body Weight	Product Description	Day 1 Dose	Day 2 Dose	Day 3 Dose
5kg to < 8kg	Pyronaridine / Artesunate (60mg / 20mg) Sacket granules for Oral Suspension	1 Sachet	1 Sachet	1 Sachet
8kg to < 15kg		2 Sachets	2 Sachets	2 Sachets
15kg to <20kg		3 Sachets	3 Sachets	3 Sachets
20kg to < 24kg	Pyronaridine / Artesunate (180mg / 60mg) Film Coated Tablet	1 tablet	1 tablet	1 tablet
24kg to < 45kg		2 Tablets	2 Tablets	2 Tablets
45kg to < 65kg		3 Tablets	3 Tablets	3 Tablets
> = 65kg		4 Tablets	4 Tablets	4 Tablets

Supportive Treatment

The purpose is to relieve symptoms and support recovery

Supportive Treatment	Indication	Reason
Paracetamol 10-15mgs/kg 3 to 4times for 3days	• Fever- antipyretic should be given once the temperatures is more than 38.50 C • Headache • Muscle ,bone and joint pains	• To reduce temperature. • To relieve pain
Oral fluids, ORS	• Dehydration • Lethargy • Diarrhea and vomiting • Fever	• To replace lost electrolytes and calories. • To rehydrate patients.
Regular feeding	• General Body weakness. • Diarrhea • Vomiting	• To replace lost calories and electrolytes.
Patient exposure/removal of clothes	• Fever	• To reduce temperatures.

Treatment of severe malaria

Supportive treatment of treatment

Triage: Categorize patients according to disease severity

a) Emergency category

- Per vaginal bleeding.
- Severe Pallor.
- Obstructed airway -Noisy breathing.
- Cold extremities, clamy skin, slow capillary return and low B.P
- Current or ongoing episode of convulsions.
- Woman in Labour.
- Unconsciousness.
- Cyanosis.
- Severe respiratory distress (Nasal flaring, head nodding chest indrawing).
- Very slow skin pinch.
- Sunken eyes.

b) Priority category

- Oedema involving both feet.
- Mild to moderate respiratory distress.
- Referrals.
- Prostration (extreme weakness).
- History of convulsions in the past 2 days.
- Restlessness.
- Dehydration.
- Trauma, Burns or poisoning.
- Temperature above 39^0C.
- Altered level of consciousness.
- Vomiting all feeds.
- Inability to feed.

C: The women in this category must have no dangers and therefore can safely wait.

Resuscitation

Case definition (including danger sign)	Severe malaria complication	Emergency treatment
More than 2 convulsions in 24 hours, deep coma (GCS<10/15), positive m- RDT or BS and normal CSF.	Cerebral Malaria	Ensure safety-turn patient 2 hourly, catheterisation and NGT for feeding. Quickly assess ABCD (start oxygen if needed) I.V Diazepam slowly over 1 minute (0.2mg/kg) OR Rectal Diazepam 0.5mg/kg. Repeat the dose if convulsions have not stopped after 10 mins. Don't give more than three doses of diazepam within 24 hours. If convulsions persist, use other anticonvulsants; Phenobarbitone: I.V 15mg/kg given slowly I.V. as a loading dose OR Phenytoin: 15mg/kg given slowly I.V. as a loading dose.
More than 2 convulsions in 24 hours, positive m- RDT/BS, no proteins in urine and normal CSF	Repeated convulsions	• Same as above
Repeated convulsions, deep coma, random blood sugar of <3.3mmol/l or 60g/dl	Hypoglycemia	• Give 2 mls/Kg of I.V 25% dextrose slowly for over 3–5 minutes (as a bolus) • Insert a nasal gastric tube for continuous feeding.

Resuscitation

Case definition (including danger sign)	Severe malaria complication	Emergency treatment
Severe pallor, positive m-RDT/BS and Hb < 8g/dl +/- respiratory distress.	Severe anemia	• Group and cross match • Transfuse with 20mls/kg of whole blood under 1-2 mls /kg of I.V Lasix • Or Packed cells 10- 15mls/kg. • Can give oxygen if in respiratory distress or oxygen saturation is < 92% at room air. Or if there features of congestive cardiac failure.
Features of respiratory distress(fast breathing > 20bpm, nasal flaring, head nodding and chest indrawing with a +VE RDT/BS.	Pulmonary Oedema	• Prop up the patient in bed at 45 degrees. • Avoid or minimize giving IV fluids. • Give IV Lasix 1-2 mgs/kg .
Positive malaria test with deep (acidotic) breathing, Plasma bicarbonate < 15 mmol/L	Acidosis	• Gibe bolus of IV fluid like normal saline and if IV access cannot be achieved, use a nasogastric Administer oxygen if needed • Give Sodium bicarbonate if serum lactate is high • Exclude Hypoglycemia, Hypovolemia and Septicaemia
Positive malaria test with Clinical shock (systolic pressure <50 mmHg for	Circulatory collapse/shock	• Rule out shock due to septicaemia (blood culture) and if present manage accordingly

Resuscitation

Case definition (including danger sign)	Severe malaria complication	Emergency treatment
Positive malaria test with hypovolaemia (Systolic pressure <80mmHg and signs of severe dehydration. Check for acidosis.	Fluid and electrolyte abnormalities	• Rehydrate with Normal Saline or Ringer's Lactate
Positive malaria test with failure to pass urine for several hours, urine output <17 ml/kg/24 hours, raised plasma creatinine > 3.0mg/dl *(normal range: 0.5 - 1.2mg/dl)* and raised Blood urea *(normal range 8-18mg/dl).*	Renal failure	• Exclude the pre-renal causes such as shock or hypovolaemia (commonly due to dehydration and/or bleeding). • Check the fluid balance (input and output) and urinary sodium. If urine output is inadequate despite sufficient fluid replacement, give a diuretic or dopamine • If this fails, refer for peritoneal dialysis and hemodialysis.
Positive malaria test with deep (acidotic) breathing, Plasma bicarbonate < 15 mmol/L	Acidosis	• Gibe bolus of IV fluid like normal saline and if IV access cannot be achieved, use a nasogastric Administer oxygen if needed • Give Sodium bicarbonate if serum lactate is high • Exclude Hypoglycemia, Hypovolemia and Septicaemia
Positive malaria test with Tachypnoea, nasal flaring and intercostal recession in a patient	Respiratory distress	• Exclude other diagnoses like severe Pneumonia, Pulmonary oedema or severe anemia and if present manage accordingly

Resuscitation

Case definition (including danger sign)	Severe malaria complication	Emergency treatment
Positive malaria test with free hemoglobin in urine (dark colored' urine but no RBC's) renal involvement. Not all patients presenting with dark urine have severe malaria. Dark urine could be due to acute glomerulonephritis, sickle cell disease, G6PD deficiency or autoimmune reaction	Hemoglobinuria (Black water fever)	• Rehydrate patients, to avoid the accumulation of haemoglobin in the renal tubules, which may lead to acute renal failure • Avoid drugs such as Quinine and primaquine which can trigger massive haemolysis in patients with glucose 6 phosphate dehydrogenase (G6PD) deficiency. • Assess for anaemia and transfuse with blood if necessary
.*Positive malaria test with* unexplained spontaneous bleeding such as bleeding from the gums, nostrils, under the skin etc	Spontaneous bleeding	• Transfuse with fresh whole blood • Or give fresh frozen blood or platelets.

Glasgow coma scale for adults and older children

Observation		Score
Eyes opening Response:	Spontaneously	4
	To speech	3
	To pain	2
	No eye opening	1
Best verbal response	Oriented	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	No verbal response	1
Best motor response	Obeys commands	6
	Localizes pain	5
	Withdrawal from pain	4
	Flexion to pain	3
	Extension to pain	2
	No motor response	1
Total		**3 – 15**

NOTE: To calculate the Glasgow coma score, take the score for each section, add the three figures to obtain a total score. A state of unarousable coma is reached at a score of <10

Patient monitoring

Parameter to monitor	Finding	Response
Vital signs like temperature, pulse rate ,respiratory rate, Oxygen saturation, and blood pressure	Temperature>38.50 C	Tepid sponge, plenty of oral fluids if conscious ,expose patient and give antipyretics(Paracetamol 10-15mgs/kg 6 to 8hourly for 3 days
	Pulse rate <60bpm,rapid,thin with a slow capillary return of >2secs	Give iv fluids preferably Ringers lactate (Refer to UCG 2016- pgs --- to----
	Respiratory rate>25bpm other features of respiratory distress,SPO2	If SPO2 is<92% ,give oxygen by nasal cannula5 -10L/min and 10-15L/min by mask
	Blood pressure; systolic<70mmhg ,diastolic <50mmhg	Elavate the foot of the bed and give IV fluids
Level of consciousness, Dehydration, Pallor, oedema	Use the AVPU score and findings like unconsciousness, response to pain	Nurse in the left lateral position,2hourly turning, rule out hypoglycemia as one of the causes by doing a RBS.
	Severe dehydration	Give IV Fluids
	Pallor/anemia with Hb< 8g/dl	Transfuse
	Odeama	Investigate for PET. Eclampsia
Urinary outputs,	Reduced urine out	Give Lasix,1to 2kgs.IV fluids +/- referral for dialysis

Patient Monitoring

Parameter to monitor	Finding	Response
Level of Parasitemia	Positive B/S, same level of parasitemia as before initiation treatment after dose 3 of treatment.	Revisit the doses of the treatment in use and where need be make adjustments.
	Persistent positive B/s after day 3 even after adjustment of doses.	Stop the current treatment, change to the alternative treatments .
PV bleeding and fetal movements	Per vaginal (PV) bleeding Reduced or no fetal movements	Request for an urgent obstetric ultrasound scan.
Pressure sores	Presence of pressure sores	Catheterization and 2 hourly turning
Colour of urine	Passing c/tea colored /coca like cola urine ,Hb>8g/dl	IV fluids and monitor Hb
	Tea colored or coca cola like urine with Hb < 8g/dl.	Group and crossmatch Transfuse
Convulsions	Subtle or generalized convulsions and RBS>3.3mmols/L or 60g/dl	Control convulsions with diazepam, Monitor RBS and encourage feeding Do other investigations(CBC, blood culture and sensitivity urinalysis and CSF analysis to rule out comorbidities
	Subtle/generalized convulsions with RBS<3.3mmol/L or 60g/dl	IV 25% dextrose 1-2mls/kg. Do other investigations (CBC ,Urinalysis, blood culture and sensitivity and CSF analysis

GUIDELINES FOR ADMINISTRATION OF INJECTABLE ARTESUNATE FOR SEVERE MALARIA

WHO RECOMMENDED TREATMENT [2]

Artesunate powder 60mg | Bicarbonate ampoule | Saline solution *

PRODUCT DESCRIPTION [1]

Dose: For children < 20 kg: 3.0 mg/kg
For children > 20 kg and adults: 2.4 mg/kg

Can be given by intravenous route (IV) or intramuscular route (IM).
IV is the preferred route of administration.
Please refer to the patient information leaflet for more information.

*** Water for injection is not an appropriate dilutant**

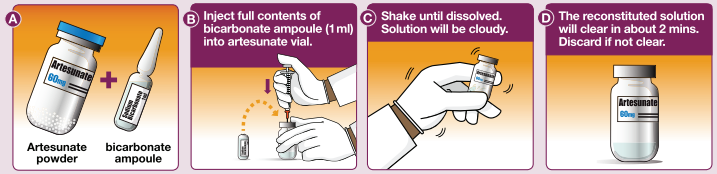
1 WEIGH THE PATIENT

2 DETERMINE THE NUMBER OF VIALS NEEDED

Weight	less than 25 kg	26-50 kg	51-75 kg	76-100 kg
60 mg vial	1	2	3	4

3 RECONSTITUTE

■ Activate the drug: artesunate powder + bicarbonate ampoule (immediately before use)



Artesunate powder | bicarbonate ampoule

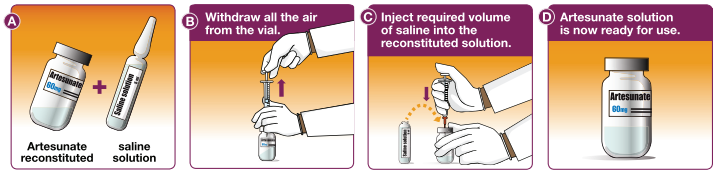
4 DILUTE

■ Reconstituted artesunate + saline solution (or dextrose 5%)
■ Volume for dilution

	IV	IM
Bicarbonate solution volume	1 ml	1 ml
Saline solution volume	5 ml	2 ml
Total volume	**6 ml**	**3 ml**
Artesunate 60 mg solution concentration	10 mg/ml	20 mg/ml

IMPORTANT

Water for injection is not an appropriate dilutant



1. World Health Organization (WHO) List of Prequalified Medicinal Products (http://apps.who.int/prequal/query/ProductRegistry.aspx?list=ma): artesunate injectable, reference N° MA051, prequalified on 05-Nov-2010.
2. World Health Organization, Management of Severe Malaria - A practical handbook - Third edition - April 2013 - (http://www.who.int/malaria/publications/atoz/9789241548526/en/index.html)

5 CALCULATE THE DOSE

■ Calculate and withdraw the required dose **in ml** according to route of administration:

Less than 20 kg

For intravenous route (IV)
Concentration: 10 mg/ml

$$\frac{\text{3.0 mg} \times \text{body weight (kg)}}{\text{IV artesunate solution concentration 10 mg/ml}}$$

Round up to the next whole number

Example:
Dose needed (ml) for 8 kg child:

$$\frac{3.0 \times 8}{10} = 2.4 \text{ ml}$$

2.4 ml rounded up to **3 ml**

Weight kg	Dose mg	Dose ml
6 - 7	20	2
8 - 10	30	3
11 - 13	40	4
14 - 16	50	5
17 - 20	60	6

For intramuscular route (IM)
Concentration: 20 mg/ml

$$\frac{\text{3.0 mg} \times \text{body weight (kg)}}{\text{IM artesunate solution concentration 20 mg/ml}}$$

Round up to the next whole number

Example:
Dose needed (ml) for 8 kg child:

$$\frac{3.0 \times 8}{20} = 1.2 \text{ ml}$$

1.2 ml rounded up to **2 ml**

Weight kg	Dose mg	Dose ml
6 - 7	20	1
8 - 10	30	2
11 - 13	40	2
14 - 16	50	3
17 - 20	60	3

More than 20 kg

Concentration: 10 mg/ml

$$\frac{\text{2.4 mg} \times \text{body weight (kg)}}{\text{IV artesunate solution concentration 10 mg/ml}}$$

Round up to the next whole number

Example:
Dose needed (ml) for 26 kg child:

$$\frac{2.4 \times 26}{10} = 6.24 \text{ ml}$$

6.24 ml rounded up to **7 ml**

Weight kg	Dose mg	Dose ml
20 - 25	60	6
26 - 29	70	7
30 - 33	80	8
34 - 37	90	9
38 - 41	100	10
42 - 45	110	11
46 - 50	120	12
51 - 54	130	13
55 - 58	140	14
59 - 62	150	15
63 - 66	160	16
67 - 70	170	17
71 - 75	180	18
76 - 79	190	19
80 - 83	200	20
84 - 87	210	21
88 - 91	220	22
92 - 95	230	23
96 - 100	240	24

Concentration: 20 mg/ml

$$\frac{\text{2.4 mg} \times \text{body weight (kg)}}{\text{IM artesunate solution concentration 20 mg/ml}}$$

Round up to the next whole number

Example:
Dose needed (ml) for 26 kg child:

$$\frac{2.4 \times 26}{20} = 3.12 \text{ ml}$$

3.12 ml rounded up to **4 ml**

Weight kg	Dose mg	Dose ml
20 - 25	60	3
26 - 29	70	4
30 - 33	80	4
34 - 37	90	5
38 - 41	100	5
42 - 45	110	6
46 - 50	120	6
51 - 54	130	7
55 - 58	140	7
59 - 62	150	8
63 - 66	160	8
67 - 70	170	9
71 - 75	180	9
76 - 79	190	10
80 - 83	200	10
84 - 87	210	11
88 - 91	220	11
92 - 95	230	12
96 - 100	240	12

Remark: the upper limit for each weight band is 0.9 kg e.g. 14 - 16 kg covers 14 - 16.9 kg.

6 ADMINISTER

IV: slow bolus 3-4 ml per minute.

IM: Inject slowly. Spread the doses of more than 2 ml over different sites for babies and 5 ml for adults.

7 DOSING SCHEDULE

1. Give **3 parenteral doses** over 24 hours as indicated in the opposite table

2. Give **parenteral doses** for a minimum of 24 hours once started irrespective of the patients ability to tolerate oral treatment earlier.

- **Day 1** **Dose 1: on admission (0 Hours)**
  Dose 2: 12 hours later
- **Day 2** **Dose 3: 24 hours after first dose**

- When the patient can take oral medication, prescribe a full 3-day course of recommended first line oral Artemisinin Combination Therapy (ACT). The first dose of ACT should be taken **between 8 and 12 hours** after the last injection of artesunate.
- Until the patient is able to take oral medication, continue parenteral treatment (one dose a day) **for a maximum of 7 days**.
- A course of injectable artesunate should always be followed by a 3-day course of ACT.

- Evaluate the patient's progress regularly.

IMPORTANT

- **Prepare a fresh solution for each administration.**
- **Discard any unused solution after use.**

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Alternative treatment with injectable Artemether

Dose	**Timing**
Dose 1 (3.2mg/kg)	Day 1 On admission
Dose 2 (1.6mg/kg)	Day 2 Maintain the same time of injection
Dose 3 (1.6mg/kg)	Day 3 Maintain the same time of injection
Dose 4 (1.6mg/kg)	Day 4 Maintain the same time of injection
Dose 5 (1.6mg/kg)	Day 5 Maintain the same time of injection

Alternative treatment with Injectable Quinine for severe malaria

Injectable I.V Quinine dilution: Quinine dihydrochloride 10 mg /kg body weight diluted in 10ml/kg body weight of isotonic fluid for IV infusion over 4 hours

Injectable I.M Quinine dilution: A 2ml ampoule of Quinine (600mg) add 4ml to get 600mg of quinine in 6 ml of solution. Each ml of the solution will contain 100 mg of Quinine

Step 1: Give the first dose (Dilute as above)

- Calculate volume (ml) of the diluted quinine needed at 10mg/Kg body weight
- For I.M injection, if total solution to be administered is > 3 ml, split in two and inject one half in each thigh. **Do not inject into the buttock**

Step 2: Provide Continuation dose

- Give maintenance dose of 10mg/kg body weight every 8 hours from the start of the initial dose, over 4 hours until patient is able to tolerate oral treatment
- The recommended isotonic fluids include: 5% dextrose & Normal Saline

Step 3: Complete treatment by giving quinine tablets

- Complete treatment by giving quinine tablets, 10 mg /kg body weight 8hourly to complete a 7-day course of treatment from the first infusion of quinine.
- Alternatively, complete treatment with full course of the Artemether / Lumefantrine starting at least 8 hours from the last quinine dose

Referral

1. Do a quick check at the triage point to identify danger signs.

2. Decide if you can manage the mother;- facilities with no capacity to conduct assisted deliveries should refer mothers to high level facilities.

3.Where possible ,resuscitate the patient before referral;

- Control temperature by exposing the patient, paracetamol and oral fluids if conscious.
- Convulsions :manage with anticonvulsants – refer to UCG 2016 pg…….
- Drowsy patients or one in prostration give oral sweet fluids if conscious

4.Provide pre-referral treatment:

- RDT is positive -give I.M Artesunate 2.4mgs/kg or I.M Quinine0.1mls/kg.
- Add a broad spectrum antibiotic

5.Communicate and discuss the need for referral .

- Share reasons , available referral options/referral destinations and reasons for the kind of choice.
- Discuss available means of transport .
- Let them decide.

6. Write a referral note in triplicate(copies include; patient's copy, referring facility and that for the point of referral;

The following should be documented

- Patients demographics: Full names, age, sex, next of kin, address, occupation
- LNMP, WOG and EDD
- Presenting complaints, history and physical exam findings
- Investigations done and their results
- Treatment given, reason for referral ,time of arrival and departure.

Follow up

1. **General follow up schedule is day 7 ,14,28 and monthly for 6 months if the patient has no problems.**
2. **In case of new or persistence of symptoms ,the mother should return immediately.**
3. **Align the follow up plan with the ANC contacts schedule.(Refer to the GOAL oriented antenatal care protocol)**

Trimester	Follow up	ANC contact schedule	Actions
1st Trimester (0 -12 weeks	Day 7,14 and 28 then Monthly for 3 months if less than 4 weeks of gestation Monthly for 2 months if less than 8 weeks of gestation. Monthly for 1 month if less than 12 weeks of gestation.	• Contact 1: up to 12 weeks. • Align the follow up visits with the scheduled ANC Contacts.	• Quick check for presence of severe Malaria neurological sequalae(Hearing loss, reduced vision &limb weakness • If any is present, refer for further assessment and specialized care. • Do routine ANC assessment and care for that contact • Provide treatment persistent /new symptoms.
2nd Trimester(13 – 28 weeks)	• Day 7,14,28: do this follow up visits between 13 weeks and 24 weeks • Intergrate subsequent monthly follow-up visits into the ANC contacts at 20 weeks	• Align the monthly follow up visits to contacts 2 and 3 . • Contact 2: at 20 weeks • Contact 3: 26weeks	• Do the recommended follow up assessment and care. • If the follow up visit has been integrated into the ANC routine package ,do both the follow up and ANC assessment and care.

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GOAL ORIENTED ANTENATAL CARE PROTOCOL

Important: Goals are different depending on the timing of the visit. Minimum 8 contacts are aimed for in an Uncomplicated pregnancy.
If a woman books later than in first trimester, preceding goals should be combined and attended to. At all visits address any identified problems, check the BP and measure the Symphysio-Fundal Height (SFH)

	TRIMESTER	GOAL	TIMING OF CONTACT	HISTORY TAKING	EXAMINATION	LABORATORY Investigations	PROMOTION	ACTION
FIRST CONTACT	First Trimester 0 – 12 weeks	- Confirm pregnancy - General / Risk Assessment - Health Education - Plan for delivery - Appropriate preventive interventions - Involve the male partner / spouse	Contact 1: Anytime ≤ 12 weeks	- Presenting complaint - LNMP - Estimate period of gestation - Contraceptive? -Obstetric -Medical -Surgical -STI -Social: smoking / alcohol/drugs -TB screening -Intimate Partner Violence (IPV) -Dietary	-General exam -Vital exam (e.g. BP, pulse) -SFH measurement -Abdominal/ specific exam -Vulva exam (Speculum if indicated) -Nutritional assessment (height, weight, MUAC)	- Hb (CBC where available) - HIV test - Syphilis test (RPR) - Blood group/RhD - Urine albumen, Glucose - Gram staining for ASB, urine culture if indicated - Glucose tolerance test (GTT) (for suspicious cases/hospital) - RDT for Malaria (where indicated) -Hepatitis B test	- Health Education on common pregnancy complaints -Involve husband in ANC - Draw up a birth and emergency preparedness plan - Counsel on PPFP methods - Danger Signs *(abdominal pain, severe headache, blurred vision etc)* - PMTCT - Nutrition education, Hygiene, Rest and exercise - Infant feeding - LLINS, IPTp use - Dangers of smoking, alcohol and substance abuse	-Tetanus/Diphtheria vaccine (Td) - Ferrous SO_4 -Folic acid -Treat incidental ailments -Condom use for HIV prevention in discordant couples and those at high risk - Debriefing mother on findings and course of action -Give next appointment and explain what will be done emphasizing need to come back any time if there is need
2nd & 3rd CONTACT	2nd Trimester **>13 – 28 weeks**	- Respond to abnormal Lab results - Provide preventive measures (Td, IPTp) - Exclude multiple pregnancy and fetal abnormalities -Promote nutrition and wellbeing -Assess for danger signs of Pregnancy Induced Hypertension and any other danger signs -Rule out anaemia	Contact 2: 13 – 20 Weeks Contact 3: 21 – 28 Weeks	- Ask for presenting complaints - Date of 1st foetal movements - vaginal bleeding - Social: smoking/ alcohol/drugs - TB screening -Intimate partner violence	- General exam; BP - Symphysis Fundal Height (SFH) - Abdominal exam - Rule out multiple pregnancy - Nutritional assessment - Early Ultra sound Scan best at 20 weeks but can be done up to 24 weeks	- Hb at 26 weeks - If BP ≥140/90 - Urine albumen, if there is glycosuria refer to hospital for GTT	- Address presenting complaints - Discuss Laboratory results and need to treat partner where necessary - Symptoms of PIH, vaginal bleeding - PMTCT/HCT - LLINs / IPTp use - Danger Signs - Nutrition & Hygiene, Rest and exercise -Male involvement -Birth and emergency preparedness plan	- TD - Ferrous SO_4 - Folic acid - IPT dose - Mebendazole - Treat incidental ailments - Use of condoms in high risk individuals / discordant - Debriefing mother - Give next appointment and explain what will be done emphasizing need to come back any time if there is need
4th, 5th, 6th,7th and 8th CONTACT	Third Trimester 29 – 40 weeks	Check foetal growth -Exclude anaemia -Assess for signs of PIH -Review birth and emergency preparedness plan -Exclude abnormal presentation/lie -Review delivery plan	Contact 4 30 weeks Contact 5 34 weeks Contact 6 36 weeks Contact 7 38 weeks Contact 8 40 weeks	Ask for problems/ complications -Vaginal bleeding -Fetal movements -Intimate partner violence	General exam -Rule out anaemia -Nutritional assessment -BP -Abdominal exam -Obstetric (SFH) -Check lie presentation	If BP ≥140/90 -Urine albumen -Hb at 36 WOA -Midstream gram staining to rule out Asymptomatic Bacteruria at 34 weeks -Repeat HIV testing and Viral as per current guidelines (36 weeks)	Address problems -Discuss signs of labour/ PROM -Discuss vaginal bleeding -Review delivery plan -PMTCT/HTS -LLIN/IPTp use -Postpartum FP -Sex and other postpartum Care -Infant Feeding -Danger signs -Nutrition & Hygiene, Rest and exercise -Male involvement -Cervical cancer screening	Ferrous SO_4 -Folic acid -IPT dose -Treat incidental ailments -Treat presenting ailments based on lab findings -Use of condoms in high risk individuals/discordant -Debriefing mother -Review and modify birth and emergency preparedness plan

Note: If not delivered by 41 weeks, immediately report to the nearest health facility

SUSPECTED MALARIA CASE MANAGEMENT FLOW CHART

History taking → Assess Patient for Danger signs and Review all systems

System Examination → Examine all relevant systems based on history

Lab tests → 1) Either microscopy or malaria RDT
2) Include other investigations relevant to the history and examination findings e.g CBC, urinalysis etc

Results	**Positive**		**Negative**	
Danger Signs	**NO**	**YES**		
Diagnosis	Uncomplicated Malaria	Severe Malaria	Other diagnosis	No evidence of disease
Treatment	*First Line Antimalaria AL*	*I.V or I.M Artesunate completed with AL or DP*	*Manage according UCG*	*Manage symptoms Give return for review*

NOTE: *For negative test results, manage other diagnosis. If no confirmed cause of fever, give symptomatic treatment and advise to return if symptoms persist or patient gets worse*

Management of other causes of fever in Pregnancy

Symptoms and signs	Investigations	Diagnosis	Treatment
Fever, headache, vomiting Photophobia Convulsions Refusal to feed confusion Stiff neck	• Complete blood cell count (CBC) • CSF analysis • Blood culture and sensitivity	**Meningitis**	**Chloramphenicol** 1g IV every 6 hours for 14 days (or) **If not better Ceftriaxone**1g IV every 6 hours for 14 days .
Fever Throat pain, mild cough Red throat and tonsils AND Swollen lymphnodes in anterior neck White coating over the throat	• Throat swab for gram stain, culture and sensitivity • CBC	**Pharyngitis**	• Amoxicillin 500mg every 8Hoursx5 –7days Or • Erythromycin500 mg every 6 hours x 10 days
Fever • Ear Pain and / or Pus discharge • Tender swelling behind the ear • Bulging, irritated tympanic membrane with or without pus discharge on examination with otoscope	• Complete blood cell count • Pus swab for gram stain, culture and sensitivity	**Otitis Media**	• Amoxicillin 500mg every 8Hoursx5 –7days Or • Erythromycin500 mg every 6 hours x 10 days • Paracetamol 1 g 8hourly for 3 days

• Throbbing headache above the eyes, sinus tenderness • Discharge from nostrils and into the throat • Clear when due to viruses • Yellow(purulent) when due to bacteria • Nasal blockage	CBC	**Acute Sinusitis**	• Amoxicillin 500mg every 8Hoursx5 – 7days • Paracetamol 1 g 8hourly for 3 days Or • Erythromycin500 mg every 6 hours x 10 days
• Fever • Irritating, productive cough • Chest tightness • Shortness of breath	CBC	**Bronchitis**(if there is wheezing, blood stained sputum) /**Pneumonia**	• Amoxicillin 500mg every 8Hoursx5 days • IV/IM Ampicillin 25mgs /kg body weight 6hourly then oral antibiotics for 7 days(if there symptoms of chest indrawing , head nodding ,nasal flaring • Add oxygen if SPO2<92%, cyanosis
• Dysuria • Frequent urination • hematuria • Urgency • Lower abdominal tenderness	Urinalysis	**Urinary Tract Infection**	• Amoxicillin 500mg every 8Hoursx5 - 7days • IV Ampicillin 1-2 g 6hourly for 7-14days • And Gentamycin IV/IM5mgs/kg once a day for 7- 14days **Note**: Use Parenteral treatment if there are features of pyelonephritis- renal angle pain ,fever
• Fever, abd pain, nausea, vomiting,	Blood culture and sensitivity, CBC	**Enteric Fever**	• IV Chloramphenicol 1 g 6hourly for 10 to 14 days

• Fever, • Lower abdominal pain • Fowl smelling discharge	CBC	Chorioamnionitis	• IV Ampicillin 25-50mgs /kg 6hourly for 7 to 10 days • IV Gentamycin 5mgs/kg once day for 7 to 10 days
• Fever • Skin rash • Sore throat	None	• **Chicken pox** (history of contact) • **Anaphylaxis**(itchy skin rash, history of drug use	• Apply ***calamine*** lotion every 12 hours and cool, wet compresses to provide relief • Paracetamol 1g 8 hourly for 3 days • ***Chlorpheniramine:*** *Adult* 4 mg every 12 hours Child <5 years: 1-2 mg every 12 hours for 3 days • Recommend isolating the patient
• Fever • Acute localized pain, • Swelling • Affected area is warm/hot • Skin becomes tense and shiny in advanced stages	None	Cellulitis	• Elevate the affected limb • Give an analgesic as required. • Give Antibiotic therapy: • (7 – 10 days course) • Once condition improves change to oral therapy
Note: Refer to the Uganda Clinical Guidelines 2016 for guidance on diagnosis and management of other causes of fever			

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