CLINICAL PROTOCOLS FOR MANAGEMENT OF CONDITIONS OF CHILDREN, WOMEN AND ADULTS IN PRIMARY CARE SETTINGS

(For use of Primary Care physicians and Nurses at AMRIT Clinics)

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SECTION-1: CONDITIONS OF NEWBORNS AND CHILDREN

AMRIT protocol on assessment and management of neonatal septicaemia

Background: Neonatal sepsis, low birth weight and birth asphyxia are three major killers of newborns. The three conditions put together contribute to about 75% of all deaths in the newborn period. The infection in the newborn can be acquired:

- *In-utero* from the mother
- Postnatally, from mother or any other caregiver in close contact
- Postnatally from an infected umbilical stump

The neonatal septicaemia can be early onset (within first 7 days of life) or late onset (after the first 7 days of life). Early onset is often acquired from the mother in-utero or around the birthing period from the birth canal during the birthing process.

Risk factors for neonatal septicaemia:

- Mother having fever around the childbirth period
- Mother having leaking per vaginum for more than 12 hours before the childbirth
- Premature birth (<=36 weeks)
- Unclean home delivery
- Mother having fever or foul smelling lochia in the postnatal period

Signs and symptoms of neonatal septicemia

Any newborn whose mothers report that the newborn is not well should be suspected to have newborn septicaemia. However, in many cases, mothers may pick up the symptoms very late or not at all, especially in primi cases. During routine post natal examinations (at households or in the clinic), therefore a newborn should be thoroughly assessed for presence of neonatal infections even if the mother does not report any problems.

Presence of any of the following sign or symptom suggests presence of septicaemia:

- Poor sucking or no sucking at all
- Lethargy, and decreased movements
- Cold to touch (especially if cannot be explained by environmental exposure and if does not improve even after warming up using KMC)
- Fever
- Respiratory rate 60 or more and/ or chest in drawing
- Grunting
- A large abscess or multiple small boils

Danger signs that would require urgent referral

* SpO2 <90%, despite oxygenation

* Unconscious

* Convulsions

* Temperature less than 35.5 even after warming

Management:

If the baby has a danger sign, refer after step 1-2 and 3, and first dose of antibiotics. If no danger sign, or danger sign disappears after steps 1-2 and 3, manage on an outpatient visit.

1. *Maintain temperature:* Provide KMC to the young infant. If hypothermic, keep under radiant warmer and re-warm over 30-40 minutes. Follow up with providing KMC.

2. *Maintain oxygen saturation:* Provide oxygen through face mask or nasal prongs. Do not exceed 3 litres /minute. Monitor oxygen saturation, and keep Spo2 between 93-95%. Higher oxygen concentrations can be dangerous to the newborn. If despite adequate oxygenation, the SpO2 levels remain less than 90% refer urgently.

3. *Assess and manage hypoglycaemia:* estimate blood sugar using Dextrostix. If blood sugar is less than 60 mg%, give immediate IV dextrose (10%), 2 ml/kg. If cannot manage an IV access, give 10% Dextrose orally.

4. *Give antibiotics for seven days:* Two options:
   Option-1
   Injection Procaine Penicillin 50,000 units per kg, IM once daily Plus
   Injection Gentamicin 5 mg/kg, IM once daily
   Option-2
   Inj Ceftriaxone 50 mg/kg OD, IM or IV
5. *Provide adequate nutrition and hydration:* If baby is able to breastfeed, continue breastfeeding. If unable to breastfeed, provide expressed breast milk, using *Paldi* every 3 hours. If the baby is unconscious, provide EBM through nasogastric tube, every 3 hrly. If EBM is not adequate to meet hydration, supplement with IV fluids (N/5 in 10% D + 1 ml KCl / 100 ml IVF) to maintain about 100 ml/kg/day of fluids. Shift to oral feeds (EBM or direct breastfeeding) as early as possible.

Reference for antibiotics choice

AMRIT Guidelines on assessment and management of Low Birth weight Infant

Background: Neonatal sepsis, low birth weight and birth asphyxia are three major killers of newborns. The three conditions put together contribute to about 75% of all deaths in the newborn period.

A baby is defined to have low birth weight if her body weight at birth is <2500 grammes.

Low birth weight of a newborn could be due to two reasons, with different prognosis:

- Baby born before full gestation period (premature baby): a baby born earlier than 37 completed weeks of gestation is considered premature.
- Baby born after adequate gestation, but suffered growth retardation in-utero (IUGR baby)

A baby can be low birth weight because of both of the above reasons: that is, a baby could be born premature and also suffer IUGR.

Common Risk factors for low birth weight (IUGR and prematurity)

- Mother's malnutrition and maternal anaemia
- Malaria during pregnancy
- Pregnancy Induced Hypertension
- Sexually Transmitted infections of mother
- Twin or multiple pregnancies

Management of low birth weight babies:

Baby weighing >1800 grams, with no complications:

1. Keep the baby in Clinic for 48 hours
2. During this period, ensure:
    - Baby is breastfeeding well and exclusively
    - Baby is wrapped well, in two layers of clothes in winter, and lying in with mother
    - Baby is provided Kangaroo mother care

3. **Counsel the mother and other family members well for:**
    - Exclusive breastfeeding
    - Clothing the baby well, and lying in with mother
    - KMC for as much as possible, day & night
    - Washing hands before handling the baby
    - Danger signs and need to seek care immediately

- Keeping the cord dry

4. **At discharge**
   - Assess baby for breastfeeding
   - Assess temperature of the baby
   - Take blood sugar levels and rule out hypoglycaemia
   - Assess for any danger signs: lethargic or unconscious, hypothermic, rapid breathing
   - Weigh the baby

5. **After discharge:** conduct postnatal visits at: day 7, day 14, day 21 and day 30. In each visit:
   - Assess and ensure exclusive and appropriate breastfeeding
   - Assess for hypothermia and ensure adequate clothing of the baby, and KMC
   - Assess for danger signs, and refer if danger signs is present

Baby weighing 1500-1799 grams, no complications

Baby weighing 1500-1800 grams should be managed in the clinic, nursed with mothers, for at-least 4-5 days.

Care during clinic stay

- Clothe the baby well
- Provide KMC for as long as possible, interrupted only for change of diaper etc
- Monitor 6 hourly for temperature, circulation (CFT), colour and danger sign
- Feed Expressed breast milk using *Paldai* 3 hourly
- Shift to breastfeeding when baby is able to suckle well and is stable
- Hands to be washed before touching the baby

Educate and counsel mother and other family members on:

- Kangaroo Mother Care, and keeping the baby well clothed
- Exclusive breastfeeding and appropriate positioning
- Washing hands before handling the baby
- Keeping the cord dry and clean
- Recognition and care-seeking for danger signs

Discharge when

- the temperature is stable and
- Baby is able to breastfeed well, or the mother is able to feed comfortably using a paldi and
- Blood sugar is normal, and

- No symptoms suggestive of septicaemia
- Weight loss not more than 10% of the birth weight

At discharge

- Weigh the baby
- Assess temperature, colour and CFT
- Assess blood sugar
- Examine the umbilical stump for any evidence of sepsis
- Assess for any danger sign or sign suggestive of septicaemia
- Reinforce the home care messages

After discharge

Make seven home visits as follows:

- Within one day of discharge
- Three days after discharge
- Five days after discharge
- Seven days after discharge
- 14 days after discharge
- 21 days after discharge
- Day 42 of life

Refer all babies with birth weight less than 1500 grams immediately. If do not accept referral, manage as for children weighing 1500-1800 grams

AMRIT Guidelines for Management of Childhood diarrhoea

What is diarrhea?

Passage of three or more loose stools (loose is defined as a stool that would assume the shape of the container it is kept in) is diarrhea.

Defining diarrhea in newborns

The purge rate in neonates is variable. The frequency may be from 1-10 times per day normally. Each time the baby feeds, small amount of stools are passed which is normal and called as gastrocolic reflex. The frequency changes with great variability over next 6 months.

In the newborn period, if the mother reports any recent change in consistency (more watery than usual) or frequency (larger number of stools than usual), then consider it as diarrhea. The color of stool changes from green (meconium) changes to yellow by 4-5th day of life normally. In first two 2 days mother's vaginal blood may be seen in stool ingested by baby However, if blood persists in stool beyond 1-2 days, it should be considered abnormal during birth.

Assessment of a child presenting with diarrhea:

1. First of all, rule out the general danger signs for every child :

- Not able to breastfeed or drink
- Vomits everything
- Lethargic or unconscious
- Had convulsions

2. Then, proceed further to evaluate the child for diarrhea.

- Ask for the duration (number of days) and frequency (number of times per day. :
- Ask if there is blood in stool or not.

3. Then check for dehydration status:

- *General condition:* Look at the general condition of the child. Is the child playful, irritable or lethargic?
- *Thirst:* offer some clean water or ORS to drink. Does the child drink normally, or drinks eagerly, or is not able to drink?

- *Skin turgor:* Pinch the skin of abdomen. Release it. Does it go back: immediately, slowly or very slowly?

3. **Classify the child as having: no dehydration, some dehydration or severe dehydration, as per Table-1:**

Table-1: Classification of a child with diarrhea for dehydration status

S.No	Assess/ Classify → ↓	No dehydration	Some dehydration (two or more of the following signs)	Severe dehydration (two or more of the following signs)
1.	General condition	Playful	Irritable	Lethargic
2.	Thirst	Normal	Avidly drinking	Not able to drink
3.	Skin turgor	Normal	Skin goes back slowly	Skin goes back very slowly
4	Eyes	Normal	Sunken eyes	Sunken eyes

4. Treat as per dehydration status :

Treatment for no dehydration

- Advice to continue breastfeeding on demand.
- Counsel to give ORS 100-200 ml for each loose stool.
    a. Give at least 2 packets of ORS
    b. Demonstrate how to make ORS
- Advice home based fluids; curd, lemon water, rice and pulse, green coconut water.
- Advice on continuing diet: Food intake should be increased during diarrhea. However, the food should be given in small and frequent feeds.
- Prescribe Zinc Tablet:
    c. For children younger than six months: 10mg (2.5ml, or half a tablet) per day X 14 days
    d. For children 6 months or older: 20mg (5ml, or full tablet)/day X 14day(>6months)
- If blood is present in stools, or the child is severely malnourished, then add **Syrup Cotrimoxazole or Syrup Cefixime:**

Dosage of Cotrimoxazole (Trimethoprim 40 mg+ Sulphamethaxazole: 200 mg)
Body weight < 10 kg: then give 5ml BD X 5days
If 10 kg or more: then give 7.5 ml BD X 5 days
Dosage of Cefixime Syrup (50 mg/5 ml): 5 mg/kg/dose

Treat for Some dehydration:

- Keep the child under observation
- Give ORS 75 ml/kg over next 4 hours
- Give small sips at a time
- Review for hydration status every hour
- After 4 hours, if the hydration status improves, discharge.
- Give ORS and Zinc as described above for children with diarrhea and no dehydration (section 5.1).
- If the dehydration status worsens, treat as for severe dehydration.

Treat for severe dehydration

- Admit the child and give IV fluids as per Table-2:

Table-2: IV Fluid therapy for severe dehydration

Age	Fluid(RL/NS 30ml /Kg)	70ml/Kg
<1 years	1 hour	1 hours
1 years-5years	½ hour	2 ½ hour

- Also assess blood sugar when inserting the IV line. Check blood sugar. If hypoglycemia, treat with 10% D, 2ml/kg body weight, Intravenous.
- Assess for dehydration every hour till it is corrected. Also monitor Pulse rate and Capillary Filling Time.
- Start oral fluids as soon as the child is able to accept
- If the child is severely mal nourished or having signs suggestive of septicemia, give first dose of cotrimoxazole. Also give first dose of Gentamycin as per table-3, and organize referral.
- If unwilling to accept referral, continue cotrimoxazole (oral) and gentamycin (IM/IV), 12 hourly, or Injection Ceftriaxone (75 mg/kg/day, once).
- **Table-3: Dosage of Inj Gentamicin (IM or IV)**

Weight	
1 kg	0.5ml
2kg	1.0ml
3kg	1.5ml
4kg	2.0ml
5kg	2.5ml

AMRIT Guidelines for Management of Childhood Pneumonia

Working Definition: Any child presenting with cough and rapid breathing is considered to be suffering from pneumonia.

For all children presenting with cough:

1. **First of all, assess for danger signs:**
   - Is child able to drink or breastfeed?
   - Is child vomiting everything?
   - Does child had convulsions?
   - Look if child is lethargic and unconscious?
2. Check for chest in-drawing and audible stridor
3. Count respiratory rate. Assess whether the child has rapid breathing:

Cut-offs of respiratory rate[1]

- 0-2 months: 60/ minute or more (measured twice)
- 2months-12 months: 50/minute or more
- 12 months-5 years: 40/minute or more

Children presenting with a respiratory rate higher than these cut-offs are considered as having rapid breathing.

Management of severe pneumonia: If any one of the above danger signs is present, the child is classified as having Severe Pneumonia.

Management of Severe Pneumonia

*Advice referral. Pending referral,

* Start an IV line.

* Check blood sugar. If low, give an IV bolus of 10% Dextrose, 2 ml/kh body weight

* Check SpO2. If SpO2 is less than 94%, start oxygen through face-mask @ 2-3 l per minute.

* Assess for dehydration. If dehydration, give 30 ml/kg of RL or NS over 30 mins-1 hr

*Give the first dose of Injection Ceftriaxone @ 75 mg/kg body weight

[1]Count for one full minute. If the child is crying, wait for the child to stop crying. You may ask the mother to put the child on breast to stop crying. In children less than 2 months, measure twice for one minute each. If higher than 60/minute each time, consider rapid breathing.

* if wheezing present, nebulize with Asthalin , in a semi-recline or sitting position

Management of Pneumonia (non-severe):

If the child does not have any danger sign present, but has cough and rapid breathing, the child is classified as having Pneumonia. Treat as follows:

1. Prescribe Syrup Cotrimoxazole as per table-1.
2. If the child is severely malnourished or did not respond to cotrimoxazole, or has another illness (such as impetigo), prescribe Co-amoxiclav (amoxicillin+Clavulanic acid).
3. If the child also has diarrhea, prescribe Cefixime
4. Give syrup Paracetamol for fever, as per the standard doses (Table-2).
5. If the child has wheezing, add syrup salbutamol : 0.1-0.2 mg/kg/dose for 3 doses per day for 5 days
6. Avoid giving cough syrup to children less than 2 years of age. For relief from nagging cough, advice taking home remedies such as honey with or without ginger extracts, and tea with tulsi leaves. For older children (>2 years of age), you may prescribe cough syrup containing CPM (2.5 ml SOS).
7. Ask to return for a follow-up visit after five days.
8. Inform on danger signs and ask to return immediately if the child develops any of these signs:
   - Becomes sicker
   - Develops fever
   - Not able to drink or breastfeed

Management of cough and cold (no pneumonia):

1. Children presenting with cough, but <u>not</u> having any danger sign or rapid breathing are classified as having cough and cold. They have only upper respiratory infection.
2. Counsel such children to have excessive fluids, such as plain water, chaach and raab to replenish the loss of fluids and to keep the mucous membranes hydrated.
3. Advise to take home remedies such as honey with or without ginger extracts, and tea with tulsi leaves. For older children (>2 years of age), you may prescribe cough syrup containing CPM (2.5 ml SOS).
4. Prescribe Paracteamol for fever.
5. Ask to return for a follow-up visit after five days.
6. Inform on danger signs and ask to return immediately if the child develops any of these signs:
   - Becomes sicker
   - Develops fever
   - Not able to drink or breastfeed

Table-1: Dosage of the Antibiotics used for treatment of pneumonia

	COTRIMOXAZOLE (Trimethoprim + sulphamethoxazole) ➢ Give two times daily for 5 days		AMOXYCILLIN + CLAVULINIC ACID ➢ Give three times daily for 5 days	
AGE & Weight	TABLET 80mgtrimethoprim +400mg sulphamethoxazole	SYRUP 40mgtrimethoprim +200mg Sulphamethoxazole	TABLET 375mg (250mg Amoxycillin +125 mg Clavulanic Acid)	SYRUP 200mg/5ml
2months up to 12months(4-<10kg)	½	5.0ml	½	5ml
1year-5years (10-19kg)	1	7.5 ml	1	10ml

Table-2: Dosage of Paracetamol for management of fever among children

Age & Weight	Syrup(5ml=120mg)	Tablet(500mg)
2months up to 3 years(4 - <14 kg)	5ml	¼
3 years up to 5 years(14-19kg)	7.5ml	½

AMRIT Protocols on Management of Otitis Media (acute and chronic)

Acute Otitis Media:

Common organisms: Strep Pneumonia and H Influenzae

Treatment:

Antibiotics:

First Line:

Tablet or Syrup Cotrimoxazole (4 mg/ kg/ dose of trimethoprim, in two divided doses), for 5 days

Second line:

If no improvement in 5 days, shift to Co-Amoxyclav for 5 days as follows:

Age group	TABLET (250mg Amoxycillin +125 mg Clavulanic Acid)	SYRUP 200mg/5ml
1-12 months	½ BD	5ml BD
1 year- 5years	1 BD	10ml BD

Others

- No evidence of benefit of decongestant or antihistaminic drugs
- Children with recurrent Otitis Media (more than 4 in 6 months) should be referred to an ENT specialist.

Chronic Suppurative Otitis Media

Definition: Ear discharge more than 3 months.

Who are eligible for medical treatment?

Those with no complications such as mastoiditis, cranial abscess, meningitis etc should be initiated on medical treatment. Others would require surgical treatment early, and should be referred.

Aims Medical treatment is aimed at control of infection and elimination of ear discharge as short-term goals and eventual healing of the tympanic perforation and improvement of hearing as long term goals.

Aural toilet:

Irrigating solution: Normal Saline, half strength Betadine

Process:

1. Instil in middle ear through medicine dropper, 2-3 times per day. Or through a rubber bulb compressing and releasing to instil and suck back the mucus. Older children could perform the Valsalva to throw back the mucus from Eustachian tube. Repeat till the return is clear.
2. Then dry the ear with cotton tipped applicator: wind tufts of cotton on the tips of wire or wooden applicators.
3. Avoid water entry during bath through applying cotton wool dipped in glycerine.

Antibioitics

- *Local antibiotics:* Along with aural toilet, start with Ciprofloxacin drops: few drops 2-3 times per day for 3-4 weeks after the discharge stops. The drops should be instilled after irrigating the ear and drying it up.
- *Oral Antibiotics:* If after a month of aural toilet and instilling of ciprofloxacin drops, does not improve, then add oral antibiotics (Co-Amoxyclav, in 2 divided doses), for 10 days.

Source:

1. Chronic Suppurative Otitis Media: Burden of Illness and Management Options. World Health Organization, Geneva Switzerland, 2004.
2. NICE Guidelines on Otitis Media

AMRIT Protocol for treatment of children with severe acute malnutrition (SAM)

Definition: A child is considered to be suffering from severe acute malnutrition if she/he fulfils any one of the following criterion:

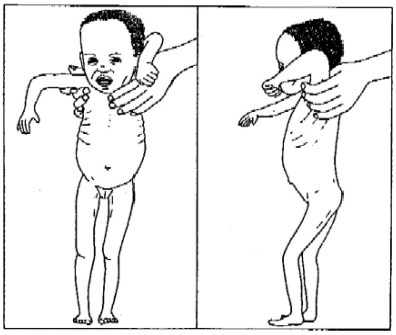
1. Weight-for-Height Z score <3 SD or
2. Visible severe wasting or
3. Edema both feet (in absence of any other obvious cause of edema).

Magnitude: In Rajasthan, 9 out of 100 children under 5 are suffering from SAM (NFHS 4). In rural Udaipur, there are more SAM children as compared to the state average- 12 out of 100 children are SAM. The risk of dying in SAM children is 12 times that of a child who is not wasted (Olofin 2013).

Identification of children with SAM:

1. Outreach workers and SKs weight the children in selected hamlets, and plot their weights in growth charts. Children found to be severely underweight (WAZ <-3SD, red zone in the growth chart) will be referred to AMRIT Clinics.
2. At AMRIT Clinics, Nurses and health workers will determine date of birth and calculate age of children, measure their weight and plot it on the growth chart. They will also measure height/ length of children found to be **severely underweight.**
3. They will refer to the field tables for determining if the child has SAM (WHZ <-3 SD, red zone).
4. The Nurses will also check for the following:
    - Visible Severe Wasting (VSW)
    - Edema feet

Visible Severe Wasting: A child has this sign if he is very thin, has no fat, and looks like skin and bones. To look for visible severe wasting, remove the child's clothes. Look for severe wasting of the muscles of the shoulders, arms, buttocks and legs. Look to see if the outline of the child's ribs is easily seen. When wasting is extreme, there are many folds of skin on the buttocks and thigh. It looks as if the child is wearing baggy pants.



Oedema of feet: Use your thumb to press gently for a few seconds on the top side of each foot. The child has oedema if a dent remains in the child's foot when you lift your thumb.

SAM will be defined as WHZ<-3SD or VSW or edema feet.

Clinic Staff (physician and/ or nurses) will assess and manage the SAM children as follows:

Assessment of a SAM child

- All SAM children will be assessed using IMNCI case sheets (2 months- 5 years).
- Following Investigations will be conducted:
    - Haemoglobin [at 1st visit and at end of treatment (2 months)]
    - Mantoux test (to be administered to all SAM children)
    - Blood sugar (to be done in children with complications)
- Appetite Test: checked by feeding the child RUTF. Poor appetite considered if she/ he does not eat RUTF at all. **Note:** Appetite will not be checked in a child with general danger signs or severe pneumonia.
- Peanut Allergy: This will be considered if a child develops rashes with itching, or swelling of the neck, noisy breathing and difficulty in breathing within half hour of eating RUTF. If there are symptoms of peanut allergy, no more RUTF will be given to the child.

Treatment of a SAM child with no complications

The children will be given the following:

1. Antibiotics:
   - Amoxycillin 30-50 mg/ kg body wt/ day for 5 days;
   - For children who have diarrhea, Syrup Cefixime 10 mg/ kg body wt/ day for 5 days
2. Deworming (children 2 years or older): Albendazole, 400 mg once
3. Vitamin A: 100,000 IU (9-<12 months), 200,000 IU (12 months and older)
4. Ready to Use Therapeutic Food (RUTF), for 2 weeks.
5. Iron: For children with anaemia (Hb <11), start Iron (3 mg/kg body weight of elemental iron) after 1-2 weeks, after child starts gaining weight. To be given for 3 months

SAM Treatment card will be filled for all children and given to the parents.

Mother will be asked to bring the child again after 2 weeks or after the RUTF supplies get over, whichever is earlier

Amount of RUTF to be given:

- Upto 5 kg: 1 pkt/ day (14 packets given for 2 weeks)
- 5-<8 kg: 1.5 pkts/ day (22 packets given for 2 weeks)
- 8 kg and above: 2 pkts/ day (28 packets given for 2 weeks)

Counseling: Mothers will be counseled for feeding RUTF:

* Hand-washing with soap and water

* Giving sips of water

* Feeding 5-6 times per day

Families will be counseled that the total duration of treatment is 3 months, and they need to bring their child every 2 weeks for a total of 6 visits.

SAM Children with complications: A child with SAM is considered to have complications if she has any of the following:

- Age <6 months old
- Presence of general danger signs (i) lethargic or unconscious, (ii) not able to drink or breastfeed, (iii) vomits everything, (iv) convulsions, bulging fontanelle or stiff neck,
- Severe pneumonia (presence of chest indrawing)
- Diarrhoea with some or severe dehydration
- Hypothermia (measured axillary temperature <35^{0}C) that does not get corrected after stabilization and warming or providing KMC even after 2 hours
- Severe vitamin A deficiency defined as corneal clouding or ulceration or Keratomalacia
- Severe anaemia- Hb <5 or severe palmar pallor
- Child looks severely ill, according to health worker's judgement even in the

Management of a SAM child with complications:

All children with complications will be referred to the district hospital. Children who are unable to accept referral will be started on the following treatment:

1. Check blood sugar: If less than 60, give 10% Dextrose- 5 ml/kg body weight.
2. Keep the baby warm.
3. Give Antibiotics:
    a. Inj. Ceftriaxone 75 mg/ kg per day, IM or IV, once a day or
    b. Oral Amoxycillin+Clavulanic Acid: 30 mg/per kg/day, 2-3 divided doses
4. Deworming (children 2 years or older): Tab Albendazole 400 mg once
5. Vitamin A: 100,000 IU (9-<12 months), 200,000 IU (12 months and older), once
6. RUTF: Give RUTF as for children without complication. However, do not start RUTF for children who are <6 months old or those with general danger signs and or severe pneumonia.

Children with complications will be followed up daily at the clinic. If the child does not come, she will be visited at home by the Senior Health Worker (SHW) or Male Health Worker (MHW). When general danger signs or severe pneumonia improve, they will be offered a small amount of RUTF. If the child accepts RUTF, she will be started on home treatment of SAM.

Follow up of SAM children

1. Families will be given RUTF for 2 weeks and asked to come back to the clinic after 2 weeks/ supplies are finished. The SAM Follow up card will be filled for all children at the first visit. The date of the next follow up will be written in the card.
2. The SKs or ORWs will visit the child at home every week after start of treatment.
3. When the child comes to the clinic for a follow up visit, she will be assessed by the physician or the nurse (IMNCI assessment, check for Appetite and allergy). Child's weight and length will be measured at each visit to the clinic. The nurse will refer to the field table to determine if the child has recovered from SAM (WHZ≥-2SD).
4. At every visit, the SAM Follow up card will be filled. At recovery, date for the follow-up visit (6 months from the date of recovery) will be entered on the card and also in the SAM register.

Tracking of SAM children:

Details of the SAM children will be written in the SAM Register and every week the SHW will check the register to identify SAM children not coming to the clinic., The SHW will contact the SK/ ORW who will visit the family at home and ask them to bring their child to the clinic. For families who do not come, the SHW/ MHW will visit the child at home, counsel the mother and advise her to bring the child to the clinic.

SAM children not gaining weight/ developing complications during treatment:

If there is no weight gain between 3 visits, child will need to be brought to the clinic on the day of doctor's visit. The doctor will assess the intake of RUTF and evaluate for infections, especially TB. If needed an X-ray will be performed. Depending on the need, child will be referred to Udaipur.

If the child develops any complication during treatment, management will be as for a SAM child with complications.

SAM child not eating RUTF well:

If a child is found to be not eating RUTF well, SHWs will counsel for feeding and ask mother to give a feed in her presence. The advise will include-

- Start feeding the child early in the day, if the feeding is delayed child becomes irritable and does not eat well.
- Active feeding- talk to the child, encourage the child, sing songs, tell stories- make the feeding experience more enjoyable
- Give the child sips of water during feeding- many times the child is thirsty and does not eat because of thirst.

SAM children who do not recover after 2 months of treatment

SAM children who do not recover after 2 months will be called on Doctor day for evaluation by the physician. The child will be evaluated for TB, any other infection. Chest Xray and urine multistick test (for leucocytes and nitrates) will be performed.

Criterion for recovery of a child from SAM: A child is considered to be recovered when her Weight-for-Height Z score has become ≥-2 SD, and she has no edema feet

Follow up of SAM children after Recovery

- When the child recovers, he/ she will be given RUTF for 2 more weeks. Iron syrup will be continued in children who are anaemic (Hb<11 grams%) for a total duration of 3 months. After RUTF is stopped, 2 packets of *Sattu* will be given for feeding of the child, every 2 weeks till 3 months are completed.
- Mother will be counselled for feeding the child energy rich home foods and seeking treatment if the child falls ill.
- All SAM children will be asked to come to the clinic whenever the child falls ill, and 6 months after completion of treatment. Date for follow-up will be written in the SAM follow-up form. At this visit, their weight and length/ height will be measured and assessment done using IMNCI. The Haemoglobin will also be measured.
- Children who do not come to the clinic will be visited at home for measurement of weight and length/ height.

Management of Severely underweight children who are not SAM:

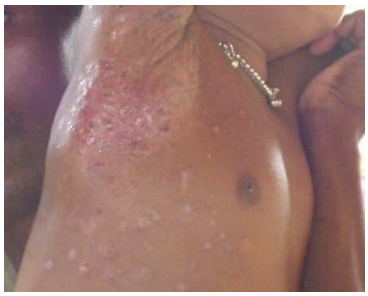
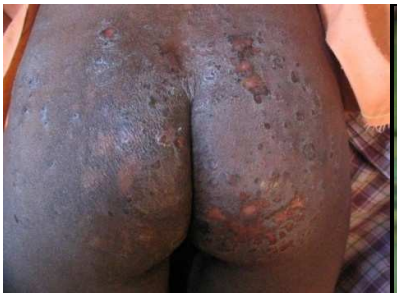
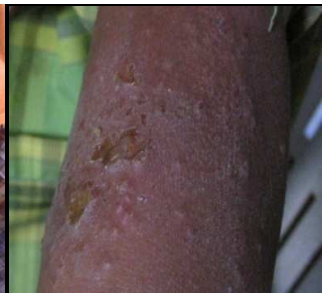
All severely underweight children will be assessed using IMNCI protocols, Hb will be measured and children given a feed of sattu at the clinic. Children will be provided the following:

- If any infection is present (URI/ Pneumonia/ Diarrhoea) a course of antibiotics will be given.
- MV: Tablet MV, 1 per day for 2 weeks
- IFA: If Hb <11, Iron will be given for a total of 3 months
- Deworming- Albendazole to children 2 years or older
- Sattu: 2 pkts given for 2 weeks. Advised to give energy rich home foods.
- Vitamin A: 100,000 IU (9-<12 months), 200,000 IU (12 months and older)
- Child will be called for follow up for a period of 3 months, till treatment of anaemia is complete.

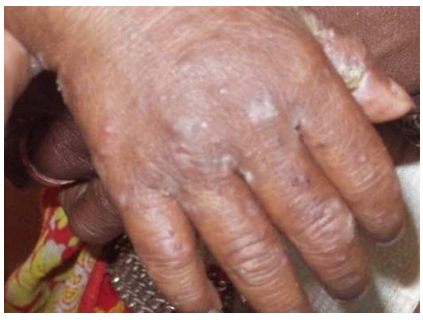
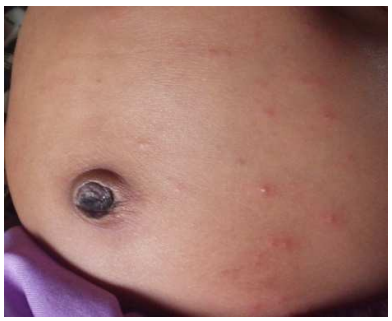
AMRIT Protocols for Management of Skin Conditions among children & adults

Impetigo

1. Gentle debridement of crusts using warm soaks
2. Limited involvement, no systemic symptoms (no fever): Fusidic acid locally, thrice a day application for 3-5 days
3. Extensive involvement, or having systemic symptoms (such as fever):
    a. Syrup Augmentin: 90 mg/kg/day in two divided doses for children;
    b. Tab Augmentin: 250 mg -500 mg/dose X 2 doses per day for 10 days

Scabies:

Older patients

1. Apply 1% Gamma Benzene Hexachloride
2. Dispense about 30 ml for the patient and same volume for each of the contacts.
3. Apply from chin to toes.
4. Give special attention to hands and feet, webs of fingers and toes, axillae, beneath the fingernails, groin

5. If extensive and crusted (Norwegian scabies), a second application after 7-10 days with special emphasis on skin fold, underneath the fingernails and umbilicus should be applied
6. For pruritis associated with scabies, given CPM in the dose of 1 tab (4 mg) tid for 2 weeks
7. If there is an associated or superadded bacterial infection, treat with Co Amoxyclav 500 mg BD for7 days.

Children less than 2 years of age:

1. Apply 5% permethrin cream
2. Dispense ½ of the 30 gram cream to children 5-12 years, and ¼ of the cream to children less than 5 years.
3. Apply on dry skin: after bath, thoroughly dry the skin and then apply.
4. Massage thoroughly on skin from head to soles of the feet.
5. Give special attention to area between fingers and between toes, axillae, buttocks, external and genitals
6. Reapply to hands or face if the cream is washed off due to washing hands or face, within 8 hours of applying the cream.
7. Wash and bathe the child to remove the cream after 12-14 hours
8. If after 7-10 days, new lesions appear, give a second dose. Mere presence of itching is not an indication for reapplication since itching may persist for 3 weeks.
9. For prurutis, give CPM at the dose of 0.3 mg/ kg body weight three times a day for 7-14 days

Management of contacts:

1. All contacts should also apply the lotion or cream as above, prophylactically.
2. All bed-sheets and clothes of the affected person should be washed with soap and hot water.
3. If the child is school going, he should be advised not to go to school for one day.

Key advice for patients with Scabies

1. Wash the clothes and bed sheets of the patient and family contacts with soap and hot water
2. Family contacts to also apply the cream or lotion so that they do not contract it.
3. While the application is once, the effect lasts for long time. Itching may persist for 2-3 weeks. That does not mean that the disease has not been cured
4. Make a repeat visit to the clinic 7 days later to confirm if the disease has been cured, or if it requires one more application.
5. Apply all over the body (1% gamma scab should not be applied over face), with special attention to skin folds and under the finger nails.

6. If the cream is washed off within 12 hours from some parts such as hands, reapply.

Caution in pregnancy and breastfeeding

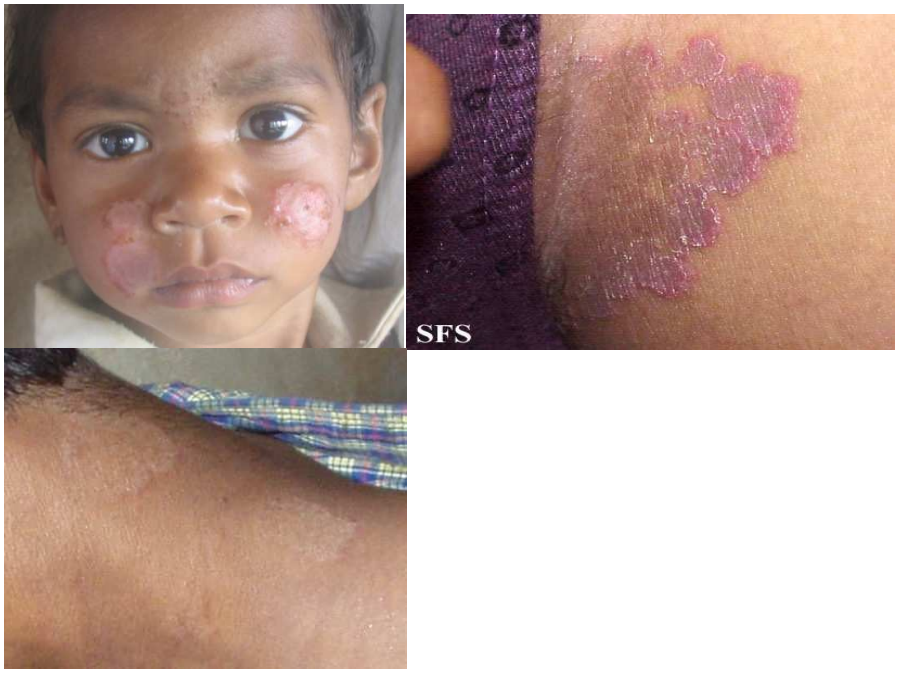
- Permethrin or Lindane SHOULD NOT be used by breastfeeding women at all.
- Avoid in pregnant women as well. However, if its extensive and causing significant discomfort, may be given

Management of Tinea

Common types:

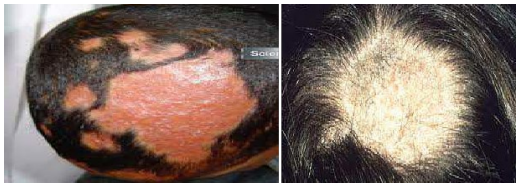
- Tinea capitis (scalp)
- Tinea cruris (groin, buttocks, and scrotum)
- Tinea corporis (trunk, face, extremities)
- Tinea pedis (feet)

Tinea cruris/ tinea pedis and tinea corporis:



1. Apply Miconazole (2%), twice a day, on the lesion and a 2cm area surrounding the lesion, for a period of 14 days, and for one week after the lesion is treated, whichever is longer.
2. Advice to keep the folds clean and dry.
3. For recurrent and difficult to treat infections, give Tab Fluconazole 150 mg weekly for 4-8 weeks

Tine Capitis:



Treatment: Oral anti-fungals are required. Treat with Fluconazole 150 mg /day, in children 6 mg/kg/d, for 2-3 weeks. Local application of miconazole/clotrimazole

Tinea unguium

Tab Fluconazole 150 mg OD for one week/month X 4 months

Tinea versicolor

Local application of Whitfield's ointment daily for 7 days, intermittently thereafter

Eczema or dermatitis:

Basic principles:

1. Bath with warm, not hot water
2. Avoid using soap
3. Avoid any irritant that causes or worsens the symptoms (such as chemicals, detergents). Use vinyl gloves if cannot avoid
4. Keep the body moisturized. Apply a moisturizer or paraffin wax over non-affected parts.
5. Use low-mid potency steroid cream on the affected area.
6. Use anti-histaminics for controlling itching.

<u>For exacerbations:</u>

1. Cold compresses to decrease the swelling and clear the crusts
2. Remove exposure to any irritant that exacerbates the symptoms
3. Use high potency steroid cream
4. Treat any superadded infection aggressively with anti-staph antibiotics
5. If still not controlled, a short course (1-2 weeks) of systemic steroids

Summary of advice to the patient with Eczema/ Dermatitis

1. Longstanding waxing and waning illness, will not go away
2. However, with appropriate care, can be controlled
3. Avoid exposure and contact to irritants. Wear protective gear (such as gloves)
4. Wear cotton clothes. Avoid synthetic clothes
5. Keep the skin clean and dry, avoid using soap.

SECTION-2: CONDITIONS DURING PREGNANCY AND CHILDBIRTH

AMRIT Protocol for management of moderate / severe anaemia during pregnancy &post-partum period

1. Measure hemoglobin for all pregnant women presenting to AMRIT Clinics; once in each trimester:

2. All those with hemoglobin < 6 gm (<7 in last trimester) will require referral for transfusion.

3. All those with hemoglobin between 6 and 8 grams, assess the reason for anemia:
    a. Is there an active bleeding from some site?
    b. Is there likelihood of malaria?
    c. Is there any other active infection?

4. If answers to any of the above is yes, manage accordingly.

5. If answer to the above is no, please take a peripheral smear slide and a blood sample for CBC, including reticulocyte count. Take the sample in an EDTA vial, and send it to the laboratory.

6. If the woman is in first trimester, start Iron folic Acid, 1 tab BD.

REMEMBER THAT IRON DEXTROSE IS CONTRAINDICATED IN FIRST TRIMESTER.

7. If the woman is in second or third trimester, give Iron Dextrose as follows:
    a. Ask for a history of eczema or bronchial asthma. If the woman has any of these conditions or any other allergic condition, do not give Iron Sucrose.

    b. Call the woman on the doctor's day.

    c. Dilute 100 mg of Iron sucrose in 100 ml of Normal Saline

    d. Keep IV adrenaline and IV hydrocortisone ready.

    e. Give 15 ml of the solution IV slowly over 15 minutes.

    f. Observe for any rigors, itching, urticaria or hypotension. If the woman develops any of these symptoms or signs, stop IV infusion. A woman who develops reaction once should never be given Iron Dextrose.

g. If the woman does not show any reaction, infuse the remaining amount over 30-40 minutes (about 20-30 macro-drops per minute).

h. Repeat the dose (100 mg in 100 ml) one more time, 2-3 days apart this week.

i. Further repeat the dose, next week, 2 doses, 2-3 days apart (a total of 4 doses over 2 weeks).

j. Do not give IFA tablets during these two weeks. Start oral IFA about 5 days after the last IV dose, as per the standard protocol of iron supplementation during pregnancy.

k. If in the third trimester, woman still has haemoglobin less than 9 grams, give two top-up doses of 100 mg in 100 ml, 2 days apart.

8. In the past partum period, if the woman has haemoglobin less than 8 gram percent, give two doses of IV Iron Dextrose (100 mg diluted in 100 ml NS) 24 hours apart.

9. After five days, start with oral IFA, as per standard protocols for iron supplementation during pregnancy.

AMRIT Protocol for supplementing MV-MM (multi-vitamins, multi-minerals) for supplementation during pregnancy

Background

1. Many pregnant women suffer from multiple vitamin and mineral deficiencies.
2. Deficiencies of vitamins and minerals cause low birth weight and still births
3. It has been proven that supplementation of multi-vitamins and multi-minerals during pregnancy reduce the incidence of low birth weight and still births.[2]
4. This document provides guidance on supplementing MV-MM during pregnancy in AMRIT Clinics.

Composition A tablet of multi vitamin multi mineral supplement has the following contents:

Vitamins

1. Vitamin-A: 2675 IU
2. Vitamin D3: 200 IU
3. Vitamin B1: 1.4 mg
4. Niacin: 18 mg
5. Folic acid: 600 mcg
6. Vitamin C: 55 IU
7. Vitamin E: 22.5 IU
8. Vitamin B2: 1.4 mg
9. Vitamin B6: 1.9 mg
10. Vitamin B12: 2.6 mcg

Minerals

1. Iron (as sulphate): 27 mg
2. Iodine: 250 mcg
3. Selenium: 30 mcg
4. Copper: 1.15 mg

Guidelines for supplementation:

1. Tab MV-ANC should be started for all women on completion of 12 weeks of pregnancy.

2. MV-ANC should be given to the women from 12 weeks of pregnancy till 6 weeks after birth.

[2] Multiple-micronutrient supplementation for women during pregnancy (Review). Cochrane Library, 2016.

3. Conduct haemoglobin

4. For those with haemoglobin <8 gm%:
    - Give Iron sucrose as per AMRIT protocol for management of moderate and severe anaemia during pregnancy.

    - Give one Tablet of MV-ANC per day

5. For those with haemoglobin 8 gms and above:
    - Give one tablet of MV-ANC per day -- DO NOT give Tab IFA [3]

[3] Since the tablet also contains Vitamin C that increases the absorption of Iron, about 30 mg (27 mg) of elemental Iron in the tablet will be roughly equal to 60 mg of iron in the IFA tablet

AMRIT Protocols on Missed periods and Bleeding per-vaginum

Background: We are increasingly seeing women with missed periods, unwanted pregnancy, who present to us within 2 months of the last menstrual period, with bleeding per vaginum. This protocol provides guidance on how to manage such women.

History

- Confirm the date of last menstrual period. Assess the duration (in weeks) since last missed period.
- Ask whether she had regular menstrual periods earlier, or had irregular menstrual cycles.
- Ask for a history of sexual contact, and use of contraception.
    - With unmarried girls, ask this question in a sensitive manner, in private. Do not ask this question in front of anyone, not even mother.
- **Ask for a history of having taken oral medicines for abortion.** Many women will provide history of having taken medicines. Confirm how many weeks ago was this drug taken.
- Also ask for a history of having an abortion tried by a Dai or a Bengali doctor (quack), by inserting a stick or any other item.
- Ask whether she has fever or foul smelling discharge.
- Ask how long has the bleeding been going on. Is it decreasing or increasing now?
- Ask if any apparent body part or tissue has been expelled.

Test Conduct a pregnancy test

Examination Conduct a pelvic examination for the following:

- Size of Uterus
- Tone of Uterus
- Any adnexal mass

I. History of having taken drugs for termination of pregnancy:

Assess for degree of bleeding

If excessive bleeding (more than 2 pads in pone hour): Stabilize and refer

If bleeding not excessive and duration of bleeding less than 15 days:

- Reassure that bleeding often continues for 15 days
- Do <u>not</u> do pelvic examination

- Give analgesics if pain present
- Give sanitary pads and counsel on menstrual hygiene
- Reassess on completion of 15 days.
    - Bleeding and pain reduces/ subsides on day-15, reassure
    - Bleeding and pain increases: treat as incomplete abortion

Not excessive bleeding and bleeding persists for 15 days or more

- Ask if she noticed passing of products of conception
- Conduct pelvic examination
- Perform pregnancy test

Pregnancy test positive and

Uterus enlarged and bulky

- Woman is likely to have incomplete abortion
- Give two tablets of misoprostol (200 micro-grams each) per vaginum, one after other in posterior fornix.
- Keep under observation for four hours
- Counsel for side effects
- Reassess after three days

If fever is present, or any other sign of pelvic infection, give Tab Doxycycline 100 mg 1 BD X7 days

1. **No History of having taken drugs for termination of pregnancy**
    - Advise and ensure adequate rest for 1-2 weeks
    - If bleeding stops, and pain subsides, continue routine antenatal care
    - If bleeding persists beyond 2 weeks and or pain increases, refer for an ultrasound and further management. It could be ectopic pregnancy
    - IM progesterone has no significant value.

AMRIT Protocol for active management of third stage of labour (AMTSL), and post-partum haemorrhage (PPH)

Background

Post-partum haemorrhage (PPH) is defined as blood loss more than 500 ml after delivery or within 24 hours of delivery[4]. It is the single biggest cause of maternal deaths in India. Most of these deaths occur within 48 hours of birth. Post-partum hemorrhage can be prevented to a large extent by the active management of third stage of labour (AMTSL). Third stage of labour is the period between delivery of the child and delivery of placenta.

Guidelines for AMTSL:

AMTSL includes three interventions:

1. Give a uterotonic drug
2. Controlled cord traction
3. Uterine massage

Steps:

Within a minute of childbirth, rule out additional baby (twin) in the uterus.

Intervention-1: Give a Uterotonic:

1. Once a second baby is ruled out, give intramuscular Oxytocin 10 IU. Oxytocin is the drug of choice in AMTSL.
2. Alternatively, give Tab Misoprostol 400 micrograms per vaginum
3. Do not give both misoprostol and Oxytocin

Intervention-2: Controlled Cord Traction (CCT):

Clamp the cord 3 minutes after the baby is delivered. It helps in reducing anaemia in the newborn.

Perform the CCT as follows:

1. Hold the clamped cord and end of the forceps with one hand.
2. Place the other hand just above the woman's pubic bone
3. Stabilise the uterus by applying traction during controlled cord traction- this would help prevent inversion of the uterus

[4] WHO recommendations for prevention and treatment of postpartum hemorrhage, 2012

4. Keep slight tension on the cord and await a strong uterine contraction (2-3 minutes)
5. When the uterus becomes rounded or the cord lengthens, very gently pull down on the cord to deliver the placenta. Do not wait for a gush of blood before applying traction on the cord.
6. Continue to apply counter traction to the uterus with the other hand
7. If the placenta does not descend during 30-40 seconds of controlled cord traction (i.e., there are no sign of placental separation), do not continue to pull on the cord; gently hold the cord and wait until the uterus is well contracted again.

8. As the placenta delivers, the thin membranes can tear off. Hold the placenta in two hands and gently turn it until the membranes are twisted.

9. Slowly pull to complete the delivery of placenta.

10. Examine the placenta for complete expulsion, and completeness of membranes

If the placenta is not expelled within 30 minutes of childbirth, manual removal of placenta may be required. The mother would require a referral.

Intervention-3:

2. After delivery of the placenta, massage the fundus of the uterus gently till it becomes firm. If the placenta does not become firm and rounded, reassess for:
    - Incomplete expulsion of placenta
    - Presence of blood clots
    - Atonic PPH: Insufficient contraction of the uterus, requiring management for PPH using additional uterotonics (see below).

Guidelines for management of PPH

Some bleeding is normal after delivery. A blood loss of 500 ml or more is considered to be PPH and can be life-threatening. For severely anaemic women, the loss of even a smaller amount of blood can cause death.

Most PPH is slow in nature, with a strong gush of blood starting and continuing usually only in cases of trauma.

Assessment and management of PPH

1. During the postnatal period, always observe the woman for excessive bleeding. Give her a pad, and check for soakage. If more than two sanitary pads are soaked in less

than an hour, bleeding is considered excessive. The woman may feel faint and giddy; may be sweating; pulse is rapid and BP is low.

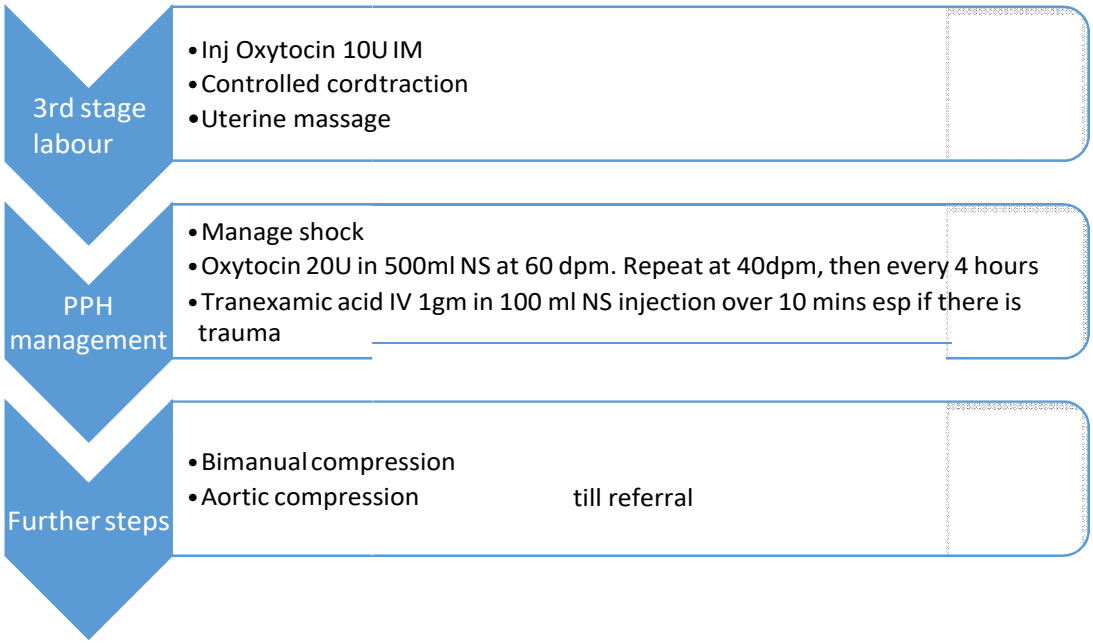
2. Quickly assess whether the uterus is well contracted. If uterus is well contracted, it will be globular and firm.
3. If the uterus is not well contracted, the PPH is labelled as **Atonic PPH.** Manage the atonic PPH as follows:
    a. Monitor vitals. If tachycardia and or hypotension, start isotonic IV Fluids (Normal Saline or Ringer's lactate). Manage as for hypovolemic shock
    b. Catheterize the bladder.
    c. Start Injection Oxytocin 20 IU in 500 ml of Normal Saline, and start @ 40-60 drops per minute (in other arm). Repeat after 15 minutes if required and then every 4 hours.
    d. Check if placenta is expelled, and if membranes are intact.
    e. If placenta is expelled, and membranes are intact, and uterus is still flabby, massage the uterus
    f. If oxytocics do not stop the atonic PPH and cause the uterus to contract, give Tab Misoprostol 600 micrograms (3 tablets of 200 micrograms) vaginally.
    g. If bleeding persists, give Traxenamic acid (TXA) 1gm (preparation has 100mg/ml) IV mixed in 50 or 100 ml IV NS. Drip rate not to exceed 100mg / min ie, 1gm is given over 10 minutes. You can repeat this only ONCE after 30 minutes if needed. TXA is particularly useful if bleeding is suspected to be partially due to trauma.
    h. If placenta is not expelled or uterus remains flabby, even after oxytocin, misoprostol, Traxenamic acid and uterine massage, refer the patient.
    i. If referral is not possible
        i. Initiate Bimanual compression of Uterus
        ii. Consider aortic compression
    j. Refer the patient with the Oxytocin drip.

If the uterus is well contracted and still the woman has PPH, conduct per speculum examination and look for cervical tears. Suture the tear if present, and consider starting traxenamic acid.

4. If there is a cervical tear, suture the tear.

5. If a clear tear is not visible, pack the vagina and refer the patient.

Prevention and management of atonic post-partum haemorrhage



SECTION-3: CONDITIONS AFFECTING WOMEN

AMRIT Guidelines for assessing and treating abnormal vaginal discharge

Definition: Normally there is a small amount of discharge from the vagina for cleaning itself. The discharge changes during the days of the menstrual cycle and also during pregnancy. But a major change in amount, colour or smell can mean that there is an infection in the vagina.

Common Causes:

Vaginal infection alone (vaginitis):

- Trichomonas vaginalis
- Candida
- Bacterial Vaginosis

Vaginal infection with pelvic infection (Pelvic Inflammatory Disease):

- Neiserria Gonorrhea
- Chlamydia trachomatis

Vaginal discharge alone:

Symptoms:

SYMPTOMS

Bacterial Vaginosis	**Candidiasis**	**Trichomoniasis**
Offensive fishy smelling discharge	White non-smelling discharge	Smelly vaginal discharge
No other symptom	Itching around the genitals	Itching on and around genitals
		Dysuria
	Pain during intercourse	Rarely, low abdmonial discomfort

SIGNS

Bacterial Vaginosis	Candidiasis	Trichomoniasis
Thin white homogenous discharge coating walls of vagina and vestibule	Redness around vulva	Offensive vaginal discharge
No signs of vaginal inflammation	Fissuring of the vulva	Itching around vulva
	Curdy discharge	Pain on urination
		Low abdmonial discomfort
	Swelling of the vulva	Swelling of the vulva

Symptoms of vaginal discharge with pelvic infection:

- Purulent vaginal discharge
- Lower bilateral abdominal pain
- Deep dyspareunia
- Abnormal vaginal bleeding (post-coital, inter-menstrual, menorrhagia)

Signs:

- Lower abdominal tenderness which is usually bilateral
- Adnexal tenderness on bimanual vaginal examination
- Cervical motion tenderness on bimanual vaginal examination
- Cervial erosions, cervical discharge and unhealthy cervix
- Fever (>38°C)

When to suspect:

Any woman presenting with:

- Vaginal discharge
- Pain abdomen
- Painful urination

TREATMENT

<u>Vaginal infection alone</u> (no evidence of cervicitis on speculum examination, no systemic symptoms such as fever)

- Tab Metronidazole: 2 grams orally single dose Plus
- Clotrimazole vaginal pessary 200 mg X 3 days, or 500 mg once (what we have is 100 mg, so would require for 6 days, likely to reduce the compliance) Or Tab Fluconazole 150 mg once

Vaginal discharge with pelvic infection:

Preferred Regime:

Injection Ceftriaxone 250 mg IM stat Plus

Tab Metronidazole 2 gm stat Plus

- Tab Doxycycline 100 mg BD X 14 days

Alternative regime:

- Tab Norflox 800 mg by mouth stat Plus
- Tab Metronidazole 2 gm stat Plus
- Tab Doxycycline 100 mg BD X 14 days

If associated with pain, give ibuprofen for pain relief.

1. **Preventive actions:**
2. Contact husband and treat him as well for chlamydia and Gonorrhea (if associated with pelvic infection):
   Injection Ceftriaxone 250 mg IM
   Tab Doxycycline 100 mg 1 BD X 7 days

3. Counsel the couple to practice abstinence till the infection is fully resolved, and provide condoms to the woman or her husband

If the woman has an intra-uterine-device, advice and assist immediate removal

AMRIT Guidelines for assessment and management of Heavy Menstrual Bleeding (HMB)

Definition: HMB should be defined as excessive menstrual blood loss which interferes with the woman's physical, emotional and social quality of life, and which can occur alone or in combination with other symptoms.

History:

1. IUCD insertion
2. Recent history of a hormonal contraceptive (Injection DMPA or oral contraceptives)
3. Excessive bleeding from any other site
4. Pregnancy
5. History of taking oral drugs for termination of pregnancy
6. Recent abortion
7. Vaginal discharge
8. Inter-menstrual bleeding
9. Other symptoms of PID such as abdominal pain and burning micturition
10. Dyspareunia and post-coital bleeding

Examination:

- Conduct abdominal examination for any palpable fibroids in the uterus.
- If there is a positive history of the above, especially of the points 7-9, conduct vaginal examination to rule out an infection, or cancer cervix or fibroid. Subsequent investigations (such as USG for fibroids and cervical biopsy) may be required for ruling out some of these factors.

Treatment:

If based on history, and if required vaginal examination, there is no apparent cause of

the excessive bleeding, treat as follows:

1. Traxenamic Acid Plus Mefenamic Acid (Chromostat/Flocheck: 500 mg + 250 mg): 2 tablets three times a day for 4 days

2. Oral contraceptives (combined, Mala-D): from day 5- day 26 of the menstrual cycle; especially if the woman does not want to conceive or

3. Injection DMPA: if no contra-indications for DMPA exist

If does not improve, with above, refer for investigations.

AMRIT protocol for assessment and management of Infertility

Infertility is defined as inability of conceive after one full year of cohabitation and having unprotected intercourse. It can be primary when the woman has never conceived, and secondary when there is inability to conceive after an initial conception (if a previous conception led to a still birth or an abortion, it is not infertility)

Of 100 married couples, 10-15 will be infertile. Of these, no cause can be found in 10% of cases, in spite of extensive investigations.

Take a detailed history from woman:

To confirm that the woman has infertility

- Ask about the duration of marriage
- Ask about the duration of cohabitation
- Ask about the occurrence and frequency of intercourse
- Ask about use of contraceptives, now or in past
- Ask about past obstetric history (especially find out about past stillbirths or abortions)

To assess for a male cause of infertility

1. Ask about the husband's occupation (working in occupations that expose to high temperatures etc reduce the sperm count; single migration increases the chance s of STDs and HIV)
2. Ask about the history of erection, penetration and ejaculation
3. Ask about a genital sore or urethral discharge in the husband

To assess for a female cause of infertility

1. **Ask detailed menstrual history:** regularity, amount of bleeding (heavy or scanty), inter-menstrual bleeding, severe pain
2. **Suggestive of PID:** Pain in lower abdomen, flanks, vaginal discharge **(**colour, amount, smell, itching), burning micturition, dyspareunia
3. **History of a systemic illness:** long standing cough, weight loss, excessive thirst and excessive urination, headaches, dizziness
4. Any ulcer or lesion on genitals
5. Past history of abdominal or perineal surgery
6. Past history of any medication

Examination:

1. Look at physical structure, and take weight and height: Malnourished/ obese: Infertility can be on account of malnutrition as well as due to obesity
2. Look for any signs of Polycystic Ovary Syndrome (facial hair, pimples, balding, dark thickening and blackening of skin folds, pimples)
3. Look for enlarged lymph nodes: tuberculosis or lymphatic cancers may cause infertility
4. Measure Blood pressure: severe hypertension
5. Examine the genitals for any evidence of a Sexually Transmitted Disease (STDs): STDs can cause infertility
6. Conduct a per vaginum examination: size and shape of uterus, vaginal discharge: these may be indicative of a reproductive tract infections ore pelvic inflammatory disease.
7. Per speculum examination: painful cervix, cervicitis, thickened adnexa

Lab tests (in all cases)

1. Hemoglobin estimation
2. VDRL test
3. HIV test
4. Sperm Count of the husband
5. Blood Sugar

Management

If any specific cause is found, manage appropriately

If no specific cause is found, refer for further investigation and management

Common manageable causes would include

- Inadequate/ absent cohabitation or intercourse: Advice and counsel
- Pelvic Inflammatory Disease: treat as per protocol
- Sexually transmitted Infection such as Syphilis or Gonorrhoea: Manage accordingly
- A systemic illness such as Tuberculosis, Diabetes or Hypertension : Manage as per protocol
- Oligospermia: Loose under-wear, avoid work where there is exposure to excessive heat. If these measures do not lead to increased counts, advice IVF.

If after management of an apparent cause, with about a year of cohabitation and unprotected intercourse, the woman does not conceive, refer for further assessment and management.

SECTION-4: INFECTIOUS CONDITIONS AFFECTING ADULTS

AMRIT Clinic Guidelines for Assessment of a patient presenting with Fever

Common causes of fever in primary care practice are:

1. Infections localized to a specific system: Such as respiratory tract infections, reproductive tract infections
2. Infections which are not localized to one specific system: such as enteric fever, malaria, common viral infections such as *Chikungunya*
3. Autoimmune diseases: such as Rheumatic fever and Rheumatic Heart Disease
4. Cancers: such as Ca Cervix

Assessment and diagnosis of people presenting with fever

Look at general condition and assess vitals

<u>Patient has altered consciousness, or vitals unstable:</u>

- If in shock, manage accordingly (Put in an IV line, start oxygenation, raise the feet
- If convulsing, manage accordingly.
- Estimate blood sugar, perform an RDK for malaria
- Look for neck rigidity

Possible reasons include cerebral malaria, meningitis or environmental hyperthermia

<u>If conscious and vitals stable:</u>

Ask for duration of fever: less than 2 weeks, or 2 weeks or more

Check the temperature

Is it daily or alternate day?

Ask and assess for specific localizing symptoms and sign:

- For respiratory infections:
    - Ask for cough, difficulty in breathing.
    - Examine the oral cavity for redness of or pus points in pharyngeal wall / tonsils or pus serious
    - Check respiratory rate
    - Auscultate chest
- For gastrointestinal infections:

- Ask for loose stools and blood in stools
- Ask for vomiting
- Look for jaundice
- Assess dehydration

- For infection in the middle ear:
  - Ask for any pus discharge from the ears.
- For urinary tract infection:
  - Ask for increased frequency of urination and burning while urination
- For abscesses or infected wound:
  - Ask for a history of wound or an abscess in some part of the body
- For infections of the reproductive tract: Ask for vaginal discharge and menstrual disturbances. If suspected, conduct PV and PS examination.

Based on the above, make presumptive diagnosis as below:

Table: Symptoms associated with Fever, accompanying signs and corresponding presumptive diagnosis

Symptom	**Other associated symptoms**	**Signs**	**Presumptive diagnosis**
Cough	Runny nose	Redness of the posterior pharynx or tonsils	Upper respiratory infection
Cough	Difficulty in breathing	* Increased RR * Crepitations	Pneumonia
Loose stools	Vomiting Pain abdomen Blood in stools	Dehydration	Acute Diarrhea Acute Dysentry
Loose stools	Vomiting Pain abdomen	Looks toxic Tongue coated Spleen enlarged, soft	Typhoid fever*

Burning in urination	Increased frequency of urination	Pain lower abdomen	Urinary Tract infection**
Vaginal discharge	Itching of vagina	PV and PS examination: *Visible discharge * Redness of vaginal walls	Reproductive Tract Infection
Vaginal Discharge	Menstrual disorders Pain abdomen Burning urination	Cervical discharge/ redness/ erosions Bulky uterus	PID
Ear discharge	Pain in the ear Cough	Discharge from middle ear	Otitis media
Skin Swelling with redness	Pus discharge Pain over the swelling History of injury	Red, hot swelling with or without pus discharge	Abscess Impetigo
Joint swelling	Number of joints		

* Conduct Rapid Test for typhoid

** Conduct urinary strip test for leucocyte and nitrite

If there are no localizing signs or signs not clearly suggestive of an underlying infection:

- Perform the rapid test for Malaria. If positive, treat accordingly.
- IF negative, and symptoms suggestive (toxic looking), test for typhoid fever.
- IF associated severe body ache, nasal discharge, refer
- If stable otherwise, not toxic, do not give any antibiotic. Give paracetamol and ask to come back for review after 2 days or SOS

Based on the above, make a definitive diagnosis (for Malaria and Typhoid), and a presumptive diagnosis of a viral illness. Ask to return in 2 days.

If there is a fever longer than 2 weeks, always suspect Tuberculosis. Look for other symptoms and signs such as:

*Loss of weight

*Loss of appetite

*History of TB in the family

*Malaise (feverishness), especially in the evening

*Lymphadenopathy

If fever does not improve in 7 days, refer for further review and investigations.

AMRIT Protocol for assessment and treatment of Diarrhoea among Adults

Definition: Three or more loose stools in 24 hours, or one large bloody stool

Causes:

- **Bacteria:** E. Coli, Salmonella, Shigella, Cholera
- **Toxin induced:** Food poisoning (Staph Aureus)
- **Parasitic:** E Histolytica, Giardia, Cryptosporidium

APPROACH

Ask for:

- Predominant vomiting or predominant loose stools
- Blood in stools
- High Fever
- Colicky pain abdomen and Tenesmus (constant feeling of passing stools, and pain)

Check for

- Hydration
- Fever

Treatment

Based on above, classify into:

1. Predominant Symptom Vomiting

2. Predominant Symptom Diarrhoea

Without blood, tenesmus or high fever

with dehydration

without Dehydration

With blood, tenesmus or high fever

1. Predominant symptom vomiting: Likely to be a bacterial toxin induced food poisoning (staph aureus or bacillus cereus). Correct hydration, if dehydrated. Provide symptomatic treatment for vomiting and pain abdomen.

2. Predominant symptom diarrhoea: with no blood, tenesmus, high fever

With dehydration:

- Likely to be cholera; presents as rapid onset of dehydration
- Can be life threatening.
- Stools appear like rice-water. On microscopic examination, may appear as shooting bacteria.
- Often will require IV rehydration
- Keep under observation, because they can rapidly deteriorate due to rapid dehydration.
- Give Tab Doxycycline 300 mg stat (only one dose is required)
- On rehydration, give ORS for home, after observing for few hours

Without Dehydration:

- Often milder, caused by bacteria that are self-limiting (such as Salmonella).
- There is no associated fever or tenesmus.
- Provide ORS to prevent dehydration, metaclopromide if vomiting significant
- These patients will not require antibiotics. Only exceptions are:
    - Old patients more than 60 years
    - Malnourished adults (BMI<18.5)

  In these cases, start Tab Ciprofloxacin 500 mg 1 BD X 5 days

With blood in stools (and high fever and tenesmus)

- High fever, colicky pain and tenesmus are often associated. Early on in the disease, these may be the only signs and blood may appear later.
- Such diarrhea is caused by invasive pathogens. Shigella and Entamoeba Histolytica (amoeba) are the most common pathogens. Often, a person presenting with bloody diarrhea will be infected with both of them.
- All such patients will require ORS to prevent dehydration.
- All such patients will require anti-biotics:
    - Tab Ciproflox 500 mg 1 BD X 5 days plus
    - Tab Metronidazole 400 mg 1 TID X 5 days

AMRIT guidelines for assessment and treatment of Pneumonia among Adults

Stabilize and refer if: Presence of more than one of the following

*Confusion or disorientation to person, place, or time
*Respiratory rate >=30 breaths/min
*Low blood pressure (systolic <, 90 mm Hg; or diastolic <60 mm Hg), and
*Age > 65 years

Symptoms

Recent onset of following symptoms

- Cough
- Fever
- Sputum production
- Chest pain (pleuritic, increases on breathing)

Signs

- Increased respiratory rate (20 breaths or more per minute)
- Toxic/ anxious appearance
- Chest examination:
    - Crepitations
    - Bronchial breathing
- Low oxygen saturation (mandatory in all patients, sometimes may be the only indication)

Causes:

Most common causes:

- Streptococcus pneumonia
- Haemophilus influenzae
- Mycoplasma pneumonia
- Chlamydia Trachomatis
- Respiratory viruses

Treatment:

Well nourished, young, no other illness, no antibiotic in past three months:

Cap Doxycycline 100 mg 1 BD X 7 days

Poorly nourished (BMI<18.5), old (>65 years), or associated condition (such as diabetes):

Amoxycillin 1 gm TID X 5 days Plus

Tab Doxycycline 100 mg 1 BD X 7 days

Or,

Inj Procaine Penicillin 800,000-10, 00,000 units IM OD X 5 days Plus

Tab Doxycycline 100 mg 1 BD X 7 days

If does not improve after 48 hours (only in consultation with the doctor)

Mox-Clav 2 gm 2 times per day or

Inj Ceftriaxone 2-3 g IM OD X5 days

ALWAYS GIVE THE FIRST DOSE IN THE CLINIC

Duration of therapy

Treat for a DURATION OF 7 days*. However, the patient should be afebrile for 48-72 hrs. He should also not have more than one sign of clinical instability before discontinuing:

Criteria for clinical stability

*Temperature < 37.8 C
*Heart rate <100 beats/min
*Respiratory rate <24 breaths/min
*Systolic blood pressure > 90 mm Hg
*Arterial oxygen saturation > 90%
*Ability to maintain oral intake
*Normal mental status

Prevention of pneumonia:

1. In all patients, assess smoking and counsel on cessation
2. In all patients, assess cooking (indoor and use of bio-mass fuels)
3. For prevention of spread in the clinic
    - Wash hands after touching the patient
    - Use the face mask

AMRIT Guidelines for Diagnosing and Treating Malaria

Introduction

Malaria is one of the major public health problems of the country. Around 1.5 million confirmed cases are reported annually by the National Vector Borne Disease Control Programme (NVBDCP), of which 40–50% are due to *Plasmodium falciparum.*

Malaria is curable if effective treatment is started early. Delay in treatment may lead to serious consequences including death. Prompt and effective treatment is also important for controlling the transmission of malaria.

Symptoms

Fever is the cardinal symptom of malaria. It can be intermittent with or without periodicity or continuous.

- Many cases have chills and rigors. However, it is not necessary that the fever is always intermittent, or accompanied with chills and rigors
- Headache and myalgia
- Arthralgia
- Anorexia, nausea, vomiting, pain abdomen
- Cough
- Diarrhoea

Signs

- Febrile (not necessarily)
- Spleen may be palpable, firm (see in left lateral position)
- Liver may also be enlarged, firm
- In severe malaria, there will be signs of confusion and disorientation.

Diagnosis

Suspect Malaria in any case of fever, especially when no other specific sign is present.

Microscopy

Microscopy of stained thick and thin blood smears remains the gold standard for confirmation of diagnosis of malaria.

Rapid Diagnostic Test

The kits are temperature sensitive. The kits identify both Plasmodium vivax as well as Plasmodium falciparum. It should be noted that kits may show positive result up to three weeks after successful treatment.

Early diagnosis and treatment of cases of malaria aims at:

- Complete cure
- Prevention of progression tosevere disease
- Prevention of deaths
- Interruption of transmission
- Minimizing risk of selection and spread of drug resistant parasites.

Drug Treatment of Malaria:

Treatment of uncomplicated malaria

General recommendations for the management of uncomplicated malaria

- Avoid starting treatment on an empty stomach. The first dose should be given under observation. Dose should be repeated if vomiting occurs within 30 minutes.
- The patient should report back, if there is no improvement after 48 hours or if the situation deteriorates.
- The patient should also be examined for concomitant illnesses

Table 1: Diagnosis and treatment of clinically suspected malaria case

Take slide for microscopy or do RDT		
Positive for P.vivax	Positive for P.falicparum	Negative, no other cause of fever
CQ 3 days + PQ 14 days	ACT 3 days + PQ single dose	CQ 3 days

Treatment of P. vivax cases

- 10 mg/kg on day-1
- 10 mg/kg on day-2
- 5mg/kg on day-3

Each tablet contains 150 mg of chloroquinee

A person with 45 Kg body weight will require:

- 450 mg (or 3 tablets) on day-1,
- 450 mg (or 3 tablets) on day-2 and
- 225 mg (or 1.5 tablets) on day-3

1. Positive *P. vivax* cases should be treated with chloroquinee in full therapeutic dose of 25 mg/kg divided over three days
2. Vivax malaria relapses due to the presence of hypnozoites in the liver. For its prevention, primaquine is given at a dose of 0.25 mg/kg daily for 14 days under supervision
3. Primaquine is contraindicated in infants and pregnant women
4. Primaquine can lead to hemolysis in G6PD deficient people. Patient should be advised to stop primaquine immediately if they develop symptoms like dark coloured urine, yellow conjunctiva, bluish discoloration of lips, abdominal pain, nausea or vomiting.

Table 2: Dose of Chloroquine for *P.vivax*

Age in years	Tablets / syrup		
	Day 1 (10 mg/Kg)	Day 2 (10 mg/Kg)	Day 3 (5 mg/Kg)
<1	7.5 ml	7.5 ml	3.75 ml
1 – 4	15 ml	15 ml	7.5 ml
5 – 8	30 ml	30 ml	15 ml
9 – 14	3 tab	3 tab	1½ tab
15 & above	4 tab	4 tab	2 tab

Table 3: Primaquine for *P. vivax*(for 14 days, under supervision)

Age in years	Daily dosage (in mg base)	No. of tablets (2.5 mg base)
< 1	Nil	Nil
1 – 4	2.5	1
5 – 8	5.0	2
9 – 14	10.0	4
15 & above	15.0	6
Pregnant women	Nil	Nil

Treatment of P. falciparum cases

Artemisinin Combination Therapy (ACT) is given for P Falciparum cases. ACT should be given only to confirmed *P. falciparum* cases found positive by microscopy or RDT.

Table 4: ACT (Artemether +Lumifantrine) dosage schedule for *P. falciparum* cases in chloroquine resistant areas

Co-formulated tablet of AL (80mg/480 mg)	Total dose of AL (twice daily for 3 days)	Number of tablets in the packing	No of tablets per dose (BD X 3 days)*
5-14 kg (>5 mo to <3 yrs)	20mg / 120 mg	6	¼
15-24kg (>=3to <9years)	40mg / 240 mg	12	½
25-34 kg (>=9-<14 yrs)	60mg / 360 mg	18	1
>34 kg (14 yrs or more)	80mg / 480 mg	24	1

Not recommended for pregnant women and for children under 5 months

Table 5. Primaquine for *P. falciparum*(Single dose on first day)

Age in years	Dosage (in mg base)	No. of tablets (7.5 mg base)
< 1	Nil	Nil
1 – 4	7.5	1
5 – 8	15	2
9 – 14	30	4
15 & above	45	6
Pregnant women	Nil	NilNil

Severe malaria

Clinical features

Severe manifestations can develop in *P. falciparum* infection over a span of time as short as 12 – 24 hours and may lead to death, if not treated promptly and adequately. Severe malaria is characterized by one or more of the following features[5]:

- Hyperthermia (Temperature >104° F)
- Generalized weakness: patient unable to sit or stand or walk by themselves.
- Impaired consciousness/coma
- Repeated generalized convulsions – more than twice in 24 hours
- Severe anaemia (Hb <5 g/dl)
- Jaundice (Serum Bilirubin >3 mg/dl and parasite count >100,000 / ml.
- Circulatory collapse/shock (Systolic BP <80 mm Hg, <70 mm Hg in children)
- Abnormal bleeding and DIC
- Hyperparasitaemia (>5% parasitized RBCs in low endemic and >10% in hyperendemic areas)
- Hypoglycaemia (Plasma Glucose <40 mg/dl)
- Renal failure (Serum Creatinine >3 mg/dl)
- Pulmonary oedema/acute respiratory distress syndrome – SpO2 <92%, RR more than 30 pm, chest indrawing, crepitations on auscultation.
- Metabolic acidosis – seen clinically as respiratory distress – rapid, deep, laboured breathing.
- Haemoglobinuria (tea-coloured urine)

Treatment of severe malaria.

Parenteral treatment with artesunate should be continued for 24 hours, regardless of the patient's ability to take oral medication before this. Once the patient can take oral medication, give a full course of ACT (Artemether + Lumifantrine)

1. **Immediately:** Injection Artesunate 2.4 mg/kg IM
2. **At 12 hours:** Injection Artesunate 2.4 mg/kg IM
3. **At 24 Hours:** Injection Artesunate 2.4 mg/kg IM

Children weighing less than 20 kg should be given Inj. Artesunate at a dose of 3 mg / kg / dose compared to older children and adults (2.4 mg / kg /dose).

[5] https://www.ncbi.nlm.nih.gov/books/n/whomalaria3ed/

NOTE: Injection Artesunate is available as 60 mg vial, along with 5% sodium bicarbonate. Dilute in 1 ml Soda-bicarbonate and then with 2 ml DW (for IM) or 10 ml DW (for IV)

If the patient is in shock or is disoriented / unconscious,

Immediate treatment:

1. Manage Shock (see Shock protocol)
2. Refer if altered sensorium is present. Treat hypoglycemia before referring. Correct hypoglycaemia with I.V. bolus of 1 ml/kg of 50% dextrose (max 50 ml 50% dextrose) diluted in an equal volume of normal saline or 5ml/kg 10% dextrose given over a few minutes; followed by 5% dextrose infusion.
3. Give the bolus dose of IV quinine or first dose of IV artesunate before referral.

Parenteral anti-malarial drugs

1. **Inj. Artesunate:** 2.4 mg/kg I.V. or I.M. given on admission (time=0),then at 12 hours and 24 hours, then once a day for a maximum of 7 days. (Care should be taken to dilute artesunate powder in 5% Sodium bi-carbonate provided in the pack).
2. **Quinine:** 20 mg quinine salt/kg on admission (I.V. infusion in5% dextrose/dextrose saline over a period of 4 hours) followed by maintenance dose of 10 mg/kg 8 hourly; infusion rate should not exceed 5 mg/kg per hour. Each dose is given over a 4 hour period.

   Loading dose of 20 mg/kg should not be given, if the patient has already received quinine. NEVER GIVE BOLUS INJECTION OF QUININE. If parenteral quinine therapy needs to be continued beyond 48 hours, dose should be reduced to 7 mg/kg 8 hourly.

   IV quinine is available as a 2 ml ampoule, with 300 mg / ml of quinine.

Follow- up treatment

Once the patient can take oral therapy, the further follow-up treatment should be as below:

1. Patients receiving parenteral quinine should be treated with oral quinine 10 mg/kg three times a day to complete a course of 7 days, along with doxycycline 3 mg/kg per day for 7 days.
2. (**Doxycycline is contraindicated in pregnant women and children under 8 years of age**; instead, clindamycin 10 mg/kg 12 hourly for 7 days should be used).
3. Patients receiving artemesinin derivatives should get full course of oral ACT.

NOTE:

1. **Intravenous preparations should be preferred over intramuscular preparations in severe malaria.**

2. **In first trimester of pregnancy, parenteral quinine is the drug of choice.** However, if quinine is not available, artemisininderivatives may be given to save the life of mother. In second and third trimester, parenteral artemisinin derivatives are preferred.

Prevention of Malaria during Pregnancy:

Why is it important to prevent malaria during pregnancy?

It is important to prevent malaria during pregnancy because:

- A woman who has malaria during pregnancy is likely to have a more severe forms of malaria and more likely to die during pregnancy, the risk being two-three times higher than in non-pregnant women in areas of low malaria transmission[6].
- A mother who has malaria during pregnancy is more likely to have an abortion or a still birth
- The baby born alive to a mother who has malaria during pregnancy is more likely to be a low birth weight and to be premature, both of which increase its chances of dying due to various causes.

I. Chemoprophylaxis[7]:

Weekly chloroquine (2 tablets or 300 mg base) starting at 13 weeks of pregnancy and continuing till 4 weeks after delivery, was long used as a standard method of preventing malaria in pregnant women living in malaria endemic areas. If given regularly, it has been shown to reduce the risk of low birth-weight by over 40%. This was the policy followed by Government of India also till a few years ago.

In some countries, due to chloroquine resistance and ease of administration, intermittent preventive therapy with S-P (sulphadoxine-pyrimethamine) in the second and third trimesters was given, which was also effective in reducing low birth weight.

[6]http://www.who.int/features/2003/04b/en/

[7] Desai M, et al. Epidemiology and burden of malaria in pregnancy. Lancet Infectious Diseases 2007;7:93-104

For chloroquine chemoprophylaxis to pregnant women, the first dose is 4 tablets, and subsequent weekly doses are 2 tablets. The tablets should be taken the same day each week.

Chloroquine is safe and does not cause anyharm during pregnancy

II, Sleeping under a bed-net, preferably insecticide treated:

Sleeping under a bed-net, especially if it is insecticide treated will prevent the woman from being bitten by a mosquito and therefore from getting malaria. In AMRIT,all pregnant women are to be given a medicated mosquito net when they register for antenatal care, and also advised to use it daily. They should continue to use it even after delivery for at least a year, so that even the infant is protected from malaria.

Some communities may need a demonstration of how to put up the net in their homes.

Frequently asked questions:

1. **Should Artemisinin derivatives be given alone?**

   Artemisinin derivatives must never be administered as monotherapy for uncomplicated malaria. These rapidly acting drugs, if used alone, can lead to development of parasite resistance.

2. **Can ACTs be given in pregnancy?**

   According to current WHO guidelines, ACTs can be given in the second and third trimester of pregnancy. The recommended treatment in the first trimester of pregnancy is quinine.

3. **What if the infection is mixed: P. falciparum as well as P. vivax?**

   Mixed infections with *P. falciparum* should be treated as falciparum malaria. However, as *P.vivax* is not responsive to ACT of A-SP, other ACT must be used. 14 days of Primaquine may be given as per dosage.

4. **What is the treatment, if there is clinical suspicion of malaria, but RDT and microscopy is not available or negative?**

If RDT for only *P. falciparum* is used, negative cases showing signs and symptoms of malaria without any other obvious cause for fever should be considered as 'clinical malaria' and treated with chloroquine in full therapeutic dose of 25 mg/kg body weight over three days.

AMRIT Guidelines for Tuberculosis diagnosis and management in adults[1].

Background

India has the largest number of TB cases in the world, which causes as many as 250,000 deaths every year. In tribal populations and among high migration communities, TB prevalenceand deaths due to TB is even higher. AMRIT Clinics receive a large number of patients suffering from Tuberculosis. Malnourished people, those living in crowded households, who smoke and who work in mines or in tile fitting are more likely to contract tuberculosis.

The disease is caused by a bacteria, called Mycobacterium Tuberculosis. A patient suffering from Tuberculosis exhales these bacteria, which stay suspended in the air for a long time. Anyone who inhales this air also inhales the bacteria, which then lodge in his lungs. The bacteria can stay in the lungs for a long time. If the person is well nourished and is otherwise in good health, the bacteria is not able to cause much damage to the lungs. However, in those who are poorly nourished, whose lungs are weakened by smoke or dust, or have low immunity due to any reasons (such as due to HIV infection), the bacteria damages the lungs.

Symptoms

1. Fever more than two weeks - low grade, often with evening rise
2. Cough more than two weeks, with or without sputum
3. Hemoptysis
4. Weight loss
5. Chest pain on breathing in
6. Malaise
7. Loss of appetite

Clinical diagnosis

Suspect TB in any person presenting with above symptoms. Index of suspicion is even higher if the person lives in close contact with a patient diagnosed to have TB, OR has a past history of having received ATT

In children, suspect TB if the child has any of the following symptoms or signs:

- Non remitting cough for more than 2 weeks
- Persistent fever for more than 2 weeks

[1] RNTCP - Technical and Operational Guidelines for Tuberculosis Control in India,2016

- Loss of weight or poor weight gain
- Lethargy/malaise or reduced play
- Enlarged cervical Lymph nodes

Working up a patient with suspected Pulmonary tuberculosis:

1. Always measure weight and height and calculate BMI in adults and WAZ scores in children

2. Order Chest X Ray and sputum for AFB for all adult patients. Please ensure that patients are counselled on how to collect a good sputum sample (See annexure-1).

3. Other tests:
    a. HIV test- as many of the symptoms such as weight loss and risk factors, such as migration are common between the two illnesses, and because there is likely to be a co-infection.
    b. Blood sugar- as Diabetes lowers immunity and increases vulnerability for TB disease
    c. Haemoglobin Many patients are anemic, and symtoms improve if treated for anemia as well

4. If the sputum is positive for AFB:

    a. Conduct a CBNAAT test to determine sensitivity to Rifampicin. This is needed both in newly diagnosed, and previously treated patients.
    b. If sensitive to Rifampicin, treat as drug sensitive TB. If resistant, refer to the District TB hospital for further management.

5. If the sputum is negative for TB, but there is strong suspicion (clinical and radiological), send the sample for CBNAAT. If positive, follow as per 4 b above. If CBNAAT is negative for TB or could not be done, plan treatment as per clinical and/ or radiological findings.

Initiating ATT without microbiological confirmation

Sometimes, you need to initiate the treatment even before microbiological confirmation (sputum or CBNAAT) can be obtained, based on strong suspicion

-Sputum is negative and CBNAAT is taking time or

-Sputum and CBNAAT are negative

In such cases, you may have tostart the treatment empirically on strong suspicion alone. Use following considerations to decide

-Clinical and radiological signs indicate tuberculosis

-Patient is very sick

-Patient has HIV co-infection

-He lives or works in crowded situations (likely to infect others)

Classification of Tuberculosis

I. Based on history of treatment

a. New case – patient with TB who has never taken treatment or has taken treatment for less than one month
b. Previously treated patient – a TB patient who has received treatment for one month or more (for further sub classification of previously treated tuberculosis, see annexure-2)

II. Based on site of disease

- Pulmonary tuberculosis (PTB): TB of the Lungs, this is the most common site
- Extra-pulmonary tuberculosis (EPTB) like skin, brain, bones, intestines, lymph nodes, etc.

  At AMRIT Clinics, tubercular lymphadenopathy is the most common site for extra-pulmonary tuberculosis

III. Based on microbiology

*Microbiologically confirmed*A person who on microbiological examination of sputum or another body fluids is

a. Sputum positivefor AFB Or
b. CBNAAT positive for mycobacteria Or
c. Culture positivefor Mycobacterium
d.

Clinically confirmed TB case

Clinically confirmed TB patient IS ONE who is sputum and CBNAAT negative, but has symptoms and clinical signs suggestive of TB and one of the following

a. X-ray abnormalities suggestive of tuberculosis
b. Fine Needle Aspiration Cytology or biopsy of lymph node suggestive of TB
c. pleural fluid analysis is suggestive of tuberculosis
d. History of close contact with an adult suffering from tuberculosis

In children, clinically confirmed TB case is diagnosed on the basis of

- Clinical findings suggestive of TB
- X-ray abnormalities consistent with tuberculosis
- Evidence of TB infection (positive Mantoux Test)
- FNAC or biopsy of a lymph node suggestive of TB
- A history of exposure to an infectious case (May or may not be present)

IV. Based on drug resistance

Drug resistance testing is done by CBNAAT at the onset of treatment, or with CBNAAT and LPA if patient fails to improve during treatment.

Multi-drug resistance (MDR) – resistance to both INH and RIF with or without resistance to other first line drugs. CBNAAT only detects resistance to RIF, but it is assumed that those resistant to rifampicin will also be resistant to INH, and hence is indicative of MDR.

Mono-resistance (MR) - TB patient whose microbiological specimen is resistant to one first-line anti-TB drug only. The most common mono resistance is for INH alone. It is detected by LPA.

Sometimes, the specimen is resistant to two more antitubercular drugs but not to INH and RIF. Such patients are labelled as *Poly drug resistance* (PDR)

Multidrug resistance (detected as RIF resistance in CBNAAT) is most common form of resistance

NOTE: CBNAAT detects resistance to Rifampicin only. However, all such Rifampicin Resistant cases are then presumed to be MDR, and treated as such. Similarly, all those cases who are sensitive to Rifampicin in CBNAAT are presumed to be sensitive to other first line drugs.

Extensive drug resistance (XDR) – an MDR case who is also resistant to a fluoroquinolone (ofloxaxin, levofloxacin and moxiflocacin) and a second line injectable anti-TB drug (kanamycin, amikacin or capreomycin).

Treatment of drug sensitive and clinically confirmed TB

Patients with drug sensitive TB, or clinically confirmed cases are usually given 2 months of intensive treatment with RHZE, followed by four months of RHE in the continuation phase.

Intensive phase (IP)	Continuation phase (CP)
2 RHZE	4RHE

Continuation phase is extended by 3 to 4 months in following situations

- patient has a clinically advanced disease
- patient is severely malnourished
- X ray shows *cavitation or more extensive disease* on initial chest Xray,
- *sputum is positive for AFB even after 2 months of intensive* p*hase*

Dosage of treatment for adults

At AMRIT Clinics, we use fixed dose combination of Rif 150 mg, INH 75 mg, ZA 400mg andEthambutol 275 mg (AKURIT4) and Rif 15O mg, INH 75 mg , Ethambutol 275 mg (Akurit3). The number of tablets to be given every day is based on body weight bands, as follows (Table-1)

In addition, Tab Pyridoxine is added 50 mg per day to prevent neurotoxicity by INH.

Table-1 Dosage of fixed dose combination ATT tablets for treating adults with Tuberculosis

Weight band	**Intensive Phase** No of Mycurit- 4* tablets per day	**Continuation Phase** No of Mycurit-3* tablets per day
25-39 kg	2	2
40-54 kg	3	3
55-69 kg	4	4
>/= 70 kg	5	5

*** Each Mycurit 4 tablet contains H 75, R 150 mg, Z 400 mg, E 275 mg**
**** Each Mycurit 3 tablet contains H 75, R 150 mg, E 275 mg**

Others considerations in treatment

1. Check for anaemia and treat with Iron and Folic Acid for a period of three months at-least. Also add Multivitamin Multi-mineral tablets

2. Patients with pleural effusion or miliary TB need steroids for the first two months. Dosage – 1 mg / kg / 24 hours (upto a maximum of 30 mg / day) given in divided doses, for 4-6 weeks, start tapering in 2 weeks or when X-rays show clearing of fluid.

3. Some patients complain of persistent cough, especially in the first few weeks. In such cases, add the cough expectorant syrup 10 ml SOS.

4. In some cases, the patient has persistent cough and breathlessness, especially in the night, due to associated wheeze. In such cases, add a bronchodilator.

If drug resistant TB is diagnosed, refer to the Government hospital for further treatment.

Dosage of treatment for children

For children, the regimen of treatment (2 HRZE + 4 HRE) remains the same. However the dosage is different and is estimated as follows (table 2)

Table 2 Dosage of ATT drugs for treatment of children

Drug	Dosage	Formulation

INH	10-15 mg / kg	Tab 100 mg
Rifampicin	10-20 mg / kg	Syrup 100 mg /5ml Cap 150 mg/ 5ml
Ethambutol	20 mg / kg	Tab 400 mg
Pyrazinamide	35 mg / kg	Tab 500 mg Tab 750 mg

Managing a patient with tuberculosis

1. At the time of starting ATT, assess the family and economic condition of patient. Assess the food availability at his household. Find out where does he work, and if he is a migrant. Also, assign a worker (male health worker, senior health worker or TB Supervisor) to follow up, counsel and support the patient during the full treatment.

2. During the initial assessment, also counsel the family members and identify if someone in the village could be assigned as the directly observed treatment provider. One of the AMRIT Volunteer (SK, Outreach worker etc) or a family member could be the DOT provider. If there is no one, or the patient assures to be responsible for taking the treatment himself, then he may take the treatment himself.

3. Since TB patients are usually malnourished, pay attention to their diet. Supplement where possible with high protein / high calorie diet (eggs, soya, pulses, oil). In AMRIT Clinics, AMRIT Aahar is given to all patients for a period of six months. Counselling messages for feeding are annexed (Annexure-# 3).

4. Screen other members of the family for tuberculosis, and follow up every few months especially if the patient is sputum positive TB

    a. Screen all family members for symptoms and signs of TB, using the family screening format (Annexure-# 4).

    b. Perform Mantoux test on all children (under-fives) contacts of adults with TB (see Annexure # 5)

c. Perform sputum examination and CXR of adult contacts who have cough with sputum

d. Perform CXR alone of all adults with some suggestive symptoms, but no sputum

5. Educate the patient about side-effects of the medicines being used, the need to continue treatment for the recommended period of time without discontinuing in between, and how to dispose the sputum. See annexed the FAQs related to TB that will help you in addressing the queries that TB patients or their family members may have. (Annexure-# 6)

6. Educate the patient also on breathing exercises. See annexed a note on exercises that are helpful for removing mucus and improving oxygenation (Annexure # 7)

Prophylaxis of childhood contacts of adults suffering from tuberculosis

1. Screen each child contact (less than five years of age) for presence of active tuberculosis. If the child has any of the symtoms listed earlier, she may have active tuberculosis.
2. If symptomatic, conduct Mantoux test, and order a CXR. If MT is positive or CXR is suggestive of TB, we should initiate the treatmentp
3. If the child is asymptomatic, CXR is normal and MT is negative, the child still requires anti-tubercular prophylaxis to prevent the disease.

Such children are prescribed INH at 10 mg/kg/day for a period of six months

Managing common adverse effects

Some of the common, mild adverse effects are

Gastrointestinal Upset Nausea, Vomiting, Poor Appetite, Abdominal Pain. GI reactions are common, especially early in therapy. If nausea and loss of appetite is significant, or there is jaundice, conduct SGPT test. If SGPT elevated, manage as described for hepatotoxicity. Manage others as follows

- Advice the patients to take the medications at bedtime.
- Add Rantidine or famotidine
- Advice the patients to take the ATT 2 hours after the morning meals. And then do not eat or drink anything for half an hour after taking the drugs.

Rash: All anti-TB drugs can cause rash.

- If the rash is mainly itchy without mucous membrane (mouth or lips)involvement or presenceof fever: treat with antihistamines (such as CPM). Continue all TB medications.

- If the rash is petechial (rash with bleeding under the skin), this may be because of thrombocytopenia (low platelet count due to Rifampicin hypersensitivity. Get platelet counts checked. If the platelet count is low, stop rifampicin permanently and monitor platelet count closely.
- If the patient has a generalized erythematous rash with fever or involvement of mucous membrane, stop all TB drugs.

Management of serious adverse effects

Drug-induced hepatitis:It is the most frequent serious adverse reaction to the first-line drugs. INH, RIF, and PZA can cause drug- induced liver injury.

*When to suspect:*when the SGPT level is ≥3 times the upper limit of normal in the presence of hepatitis symptoms, or ≥5 times the upper limit of normal in the absence of symptoms.

Management:

- Stop INH, RIF and PZA immediately.
- Exclude other causes of abnormal liver tests such as viral hepatitis, alcoholism, other hepatotoxic drugs
- If no other apparent cause, stop the above. Start or continue (as the case may be): Ethambutol (plus) Streptomycin (add Levofloxacin if in intensive phase)
- Conduct weekly serum SGPT until levels return to baseline.
- Once the SGPT returns to <2 times the upper limit of normal, restart the drugs one at a time.
- Start with RIF with the lower dose, increase to full 2-3 days later. If there is no increase in SGPT after a week, restart INH. Start with lower dose, increase to full dose 2-3 days later.
- PZA can be started 1 week after INH if ALT does not increase. Start with lower doses, increase to full 2-3 days later.
- If symptoms recur or SGPT increases, the last drug added should be stopped.
- If SGPT levels do not come back to normal, we will have to use alternate regimens (refer to WHO TB guidelines).

Optic neuritis: The onset of optic neuritis is usually >1 month after treatment initiation but can occur within days. EMB is promptly discontinued if visual abnormalities are found. If vision does not improve with cessation of EMB, experts recommend stopping INH as well, as it is also a rare cause of optic neuritis.

Managing patients who stop the treatment in between and then are relinked to treatment

Principle*Earlier the break in therapy and the longer its duration, the more serious the effect and the greater the need to restart treatment from the beginning*.

If the treatment is stopped during the first two months (Intensive phase)

- If the treatment has been stopped for less than 2 weeks, then continue the treatment to complete total of 60 days of treatment.
- If the treatment has been stopped for two weeks or more, restart the treatment.

If the treatment is stoppedafter completion of intensive phase

- If more than 80% of doses have been completed, then continue to complete all the remaining doses.
- If less than 80% doses have been completed, and the treatment was stopped for less than 2 months continue to complete the remaining treatment
- If less than 80% doses have been completed, and the treatment was stopped for 2 months or more, continue to complete the remaining treatment

The determination of whether or not treatment has been completed is based on the total number of doses taken—not solely on the duration of therapy. For example, in continuation phase, normally a patient has to take four months of daily treatment, or 4 X30 = 120 doses. 80% of doses would mean 96 doses.

Annexure 1: Collecting sputum sample from patient

1. Amount of sample required – 5-10 ml
2. Ask the patient, the night before the test, to drink lot of fluids such as water or tea. This will help his/her body to make more sputum overnight. (Collecting sputum in the morning makes the test more accurate. More bacteria are present.)
3. Ask the patient to rinse mouth out with clean water (this will reduce food/bacteria in the mouth)
4. Give the labelled container to the patient (Tell patient not to touch the inside of the container at any time. Maintain sterility of container and lid.)
5. Tell the patient to take a deep breath and hold for a few seconds then breathe out slowly (Repeat the process 3 times)
6. Tell the patient to blow out hard during their 3rd breath (It may be helpful to count the blows for the patient)
7. Ask patient to lift container close to his/her mouth and blowout hard once more (The container should not touch the mouth. This motion will bring sputum from the lungs
8. Tell the patient to cough directly into plastic container

Annexure 2:Sub classification of previously treated tuberculosis

Annexure 3 Counselling messages on dietary advice

Annexure 4 Family Screening format

Annexure 5 Conducting a Mantoux test

Annexure 6 FAQs

Annexure 7 Breathing exercise

Annexure5 Conducting a **MantouxTest**

Background

Mantoux test (MT) is based on the fact that infection with TB bacteria results in sensitivity to certain antigens of the organisim. Tuberculins are extracts from the culture of TB bacteria which contain these antigens.

The aim of the test is to identify infection (past or present) with Tuberculosis. When a person with infection is administered the MT, it elicits a delayed hypersensitivity reaction with induration and erythema which peaks at 48-72 hours and subsides over a period of 5-7 days.

Procedure of MT

A standard dose of 5 tuberculin units (TU) (0.1 ml) is injected intradermally (between the layers of dermis) into the ventral surface of he forearm, in the long axis of the forearm. This raises a wheal 6-10 mm in diameter. The injection site should not be rubbed. The injection is administered with a short 26/27 gauge needle.

Reading the MT

The test should be read 48 to 72 hours later. The reading should be made in good light, with the forearm slightly flexed at the elbow. It is based on the presence or absence of induration which can be determined by palpation or the pen moethod. The pen method consists of drawing a line with a ballpoint pen about 1 cm from the reaction site and moving towards the site until the induration stops the pen. A similar line is drawn on the other site of the reaction and the distance between the lines is measured. The diamter of the induration should be measured transversely to the long axis of the forearm and recorded in mm. Erythema (redness) should not be measured.

Precautions

- Skin test should be given as soon as possible after the syringe is filled.
- The remaining solution should not be frozen
- The Tuberculin should be stored in dark place as far as possible.

Interpretation

A positive test conveys that the patient has been infected with TB either recently or in the past. The reaction to the test is interpreted as follows:

<10 mm: Negative

10 mm: Borderline

>10 mm: Positive

In immunodeficient states, including HIV infection the cutoff is lower to 5 mm

Annexure 2 Sub classifications of previously treated TB cases

In AMRIT, we classify all patients who have received treatment before as previously treated cases.

Previously treated TB cases, under RNTCP are further classified as follows

I. *Recurrent TB case* – a TB patient who has been successfully treated (cured / treatment completed) and is subsequently found to be microbiologically confirmed TB.

True relapse: Recurrent TB caused by the same strain as was identified at baseline, is due to failure of chemotherapy to sterilize the host tissues, thereby enabling endogenous recrudescence of the original infection.

Recurrence: In high-incidence settings or where infection control is poor, exogenous reinfection with a new strain of MTB may be responsible for the recurrence.

Timing of relapse: Mostly within the first 6–12 months after completion of therapy.

Reasons: In the majority of patients with TB caused by drug-susceptible organisms who were treated by DOT with rifampicin -containing regimens, relapses occur with susceptible organisms.

However, the risk of acquired drug resistance is substantial in patients who have a relapse after receiving SAT, a highly intermittent regimen in the setting of HIV infection, a non-rifampicin -containing regimen, or a second-course of a first-line regimen reinforced by streptomycin

II. *Treatment after failure* – a patient who has previously been treated for TB and whose treatment failed at the end of the most recent course of treatment.

Reasons: For patients not receiving DOT, failure may be due to nonadherence to the treatment regimen. Among patients receiving DOT, cryptic nonadherence (spitting out or deliberately regurgitating tablets or capsules) or failure of the healthcare system to reliably deliver the drugs may be a cause. Other potential reasons include drug resistance,malabsorption (diarrhea, or taking TB medications with antacids or other drugs/substances that might bind or interfere with drug absorption), or diabetes mellitus.

III. *Treatment after loss to follow up* – a patient with TB who has taken ATT for one month or more, and was lost to follow up, and has now been diagnosed to have microbiologically confirmed TB

IV. *Other previously treated TB patients* – those who have had ATT earlier but whose status at the end of the most recent course of treatment is unknown or undocumented.

AMRIT Guidelines for Diagnosing and Treating UTI among Adults

Classic Symptoms of Urinary Tract Infection:

- Dysuria
- Frequency of urination
- Suprapubic tenderness
- Urgency
- Polyuria
- Hematuria

Lower UTI (Bladder infection, cystitis): Dysuria, frequency, without fever, chills, and back pain

Upper UTI (kidney infection, pyelonephritis): Fever, chills and rigors, flank pain and tenderness

Severe UTI: Presence of 3 or more classical symptoms is considered severe UTI

Mild UTI: Presence of 1 or 2 symptoms alone is considered Mild UTI

The diagnosis of UTI is primarily based on symptoms and signs

Presence of vaginal discharge and vaginal itching along with dysuria or increased frequency is likely to be due to RTI or PID and not due to UTI

Adult women (non-pregnant) with UTI:

Diagnosis

If symptoms <=2 (Mild UTI): Use dipstick and urine microscopy:

- If leucocyte test + (with or without nitrite), or/and
- Urine microscopy shows >= 5 pus-cells/hpf, Treat as UTI

If symptoms 3 or more (severe UTI):

Consider UTI and treat empirically (no need to perform dipstick)

TREATMENT of Adult Women (non-pregnant) with UTI

*** Upper UTI:** Tab Ciprofloxacin: 500 mg TID X 7 days or Co-Amoxiclav

*** Lower UTI:**

Treat with Co-trimoxazole (160 mg) 1 BD X 5 days

Or

Tab Norfloxacin 400 mg 1 BD X 5 days

Pregnant woman with UTI

- Based on symptoms, treat with an antibiotic for 7 days. If possible, take urine culture
- Avoid using Cotrimoxazole and nitrufrantoin
- Give Tab Augmentin 625 mg BD X 7-10 days

Adult Man with UTI

Diagnosis:

No advantage of urine microscopy for diagnosis

Advantage of urinary dipstick is not clear

Based on symptoms

Those likely to have prostatitis (painful urination, inability to empty the bladder, pain in the lower back, abdomen or pelvic area, fever and chills)

90% of those men with febrile lower UTI are likely to have prostatitis

Use ciprofloxacin 500 mg BD X 4 weeks

Those not likely to have prostatitis

Use Tab Co-trimoxazole DS (160 mg + 800 mg) X 7 days

Or Tab Norfloxacin 400 mg 1 BD X 5 days

UTI in diabetic patients

Prescribe a longer treatment duration of 4 weeks

When to refer:

- Severe Upper UTI (fever, pain and tenderness) among men
    - If referral not possible:
        - Admit the patient
        - Take consent
        - Start Inj ceftriaxone 75 mg/ kg body weight per day
        - Start IV fluids as required
- Recurrent UTI (for investigations to rule out structural and other abnormalities)

SECTION - 5: NON-COMMUNICABLE CONDITIONS AFFECTING ADULTS

AMRIT Guidelines for Management of Chronic Obstructive Pulmonary Disease

Definition

Chronic Obstructive Pulmonary Disease is a state characterized by airflow limitation that is not fully reversible. Clinically, it is defined by patient having sputum production at least for 3 months in 2 consecutive years when other causes of sputum production have been ruled out. COPD includes chronic bronchitis and emphysema.

In chronic bronchitis the bronchi are inflamed and filled with mucus, reducing the airway and leading to a wheeze. In emphysema the alveoli are extra distended, lose their elasticity and some walls between alveoli are broken down, leading to loss of elasticity of the lungs.

Cause

- **Smoking:** Active and Passive both. More than 90% are smokers.
- **Airway responsiveness** (genetic): Increased broncho-constriction and mucus production to exogenous stimuli
- **Occupational exposure**: Dust at construction sites (stone and cement dust), marble dust, coal mining, gold mining, and cotton textile dust.
- **Ambient Air Pollution**: *Chulha* smoke produced by firewood combustion is a significant risk factor.

Symptoms

The 4 most common symptoms are

- **Cough with sputum**
- **Breathlessness, especially on physical exertion**
- **Wheeze**
- **Chest tightness**

- The symptoms are aggravated by respiratory infection (acute exacerbation of chronic bronchitis). Acute exacerbation is characterised by:
    - Fever
    - Increased breathlessness
    - Increased sputum and/or change in colour of the sputum

Signs

- Increased respiratory rate
- Because of airway obstruction, wheeze is heard at the end of expiration
- Because of trapping of air, the chest becomes barrel shaped, and air entry is reduced
- Decreased Oxygen saturation (SpO2), resulting in clinical cyanosis when extreme
- Patient may not be alert or may have poor concentration due to low oxygen levels
- Accessory respiratory muscles work, with or without nasal flaring
- Persistently reduced forced expiratory flow rate

Chest X-ray PA view

1. Hyperinflation - Increased darkness, diaphragm upto 6th rib or beyond and flattened diaphragm.
2. Elongated heart shadow and
3. Increased bronchovascular markings (reaching to lateral 1/3rd of chest).

Clinical features differentiating between COPD and Asthma

Features	COPD	Asthma
Smoker or ex-smoker	Almost always	Sometimes
Onset of symptoms below age 35	Rarely	Usually
Chronic productive cough	Common	Uncommon
Breathlessness	Persistent and progressive	Variable
Night-time waking with breathlessness and/or wheeze	Uncommon	Common
Significant diurnal or day-to-day variability of symptoms	Uncommon	Common

(FEV1 improves by more than 400 ml with bronchodilators in asthma, but not in COPD)

Complications

Acute:

- Repeated and prolonged lower respiratory infections
- Acute respiratory failure: characterized by dyspnea at rest, falling SpO2, and increased respiratory rate. When extreme, chest becomes silent, cyanosis sets in and respiratory rate decreases
- Pneumothorax (disruption of emphysematic bullae)

Chronic:

Cardiopulmonary disease: Cor Pulmonale (right heart failure), Congestive Heart Failure

Treatment

Cessation of smoking: This is the most essential factor regarding the prognosis. Cessation does not normalize lung function, but the progressive deterioration slows down. According to present knowledge, there is no drug therapy available that could delay the deterioration of lung function if the patient continues smoking.

Drugs act only by relieving subjective symptoms and in the treatment of acute exacerbations Treatment is required life-long.

Mild to moderate disease (breathlessness on moderate exertion, BMI normal, PEFR 150-400)

- Tab Salbutamol 4 mg tid on a regular basis

OR

- Inhalational Salbutamol (2 puffs three times a day)

(*The inhaled route is preferred for medication delivery as the incidence of side effects is lower**)***

If not controlled, Add:

Tab Deriphyllin 150 mg twice a day

Severe Disease (breathlessness on rest or while performing activities of daily living, PEFR <150, BMI<18.5)

- Regular inhalation of a combination of Salmeterol (250 micro-grams)+ Inhalational steroid (50 micrograms): I puff twice a day
- Often will require addition of Tab Deriphylline, long acting (150 mg twice a day)

Acute exacerbation:

1. Give Oxygen by face mask. Do not exceed more than 2 litres per minute
2. Inhalational Salbutamaol, 2.5-5 mg, add inhalational ipratropium

3. **Add antibiotics if any of the two:**
   - Breathlessness has increased
   - Sputum production has increased
   - Sputum has become purulent
   - Fever

Antibiotic treatment
Cap Amoxycillin 1 gm tid X 7-10 days
or
Cap Doxycycline 100 mg BD X 7-10 days

4. **In case of severe breathlessness: Steroids have shown to reduce mortality. Give** 30–40 mg of oral prednisolone, in 3 divided doses, for a period of 10–14 days.

5. **Referral, on oxygen if:**
   - Confusion setting in
   - RR>= 30 despite oxygen and inhalational salbutamol
   - Systolic BP < 90 mm Hg
   - SpO2 below 90% despite 2L of oxygen

In all COPD cases, teach to

1. Blow air through straw in a bottle filled with water, combined with effective coughing.
2. Blow air in balloon.
3. Stop Smoking
4. Avoid Indoor cooking
5. Avoid exposure to cold air
6. Tell them that drugs will be required lifelong. There may be addition or deletion of drugs, but unlikely that you will be off drugs
7. If engaged in an occupation that exposes to inhalation of dust, they should discontinue immediately
8. Teach COPD exercises

AMRIT Guidelines for Screening, Diagnosis, Assessment &Treatment of Hypertension.

Background

Non-communicable diseases account for 60% of deaths among Indians[8]. Of these, cardiovascular diseases (coronary heart disease, stroke and hypertension) account of 45% of deaths. Risk factors include: Obesity, smoking, alcohol consumption and low level of physical activity.

Tobacco use (single largest risk factor for cardiovascular disease) in India is high (higher than global average), and prevalence of obesity is increasing. Average alcohol consumption has increased as well. One in four Indians over 18 years of age is hypertensive. More than 2/3 adolescents are physically inactive, while 13% adults are physically inactive.

Public health approach to Hypertension in India

1. Prevention of hypertension in communities
   - Weight reduction in obese
   - Increase exercise levels in sedentary persons
   - Decrease salt, sugar and fat intake
   - Stop tobacco use
   - Moderate alcohol use

   Increase fresh fruit and vegetables in the diet also has the potential to reduce high BP significantly.

2. Screening
   - Measure BP of all persons over 18 when they come to the Clinic, for screening for hypertension
   - Screening of the communities for high risk groups.
3. Diagnosis
   - At PHC level or higher – at least two BP readings taken by a health care provider at least 1 week apart (except in case of hypertensive emergency or hypertensive urgency)
4. Management including lifestyle changes
   - Five groups of antihypertensive drugs needed –
     - Thiazide diuretics
     - ACE inhibitors

[8] http://www.searo.who.int/india/topics/noncommunicable_diseases/ncd_situation_global_report_ncds_2014.pdf?ua=1

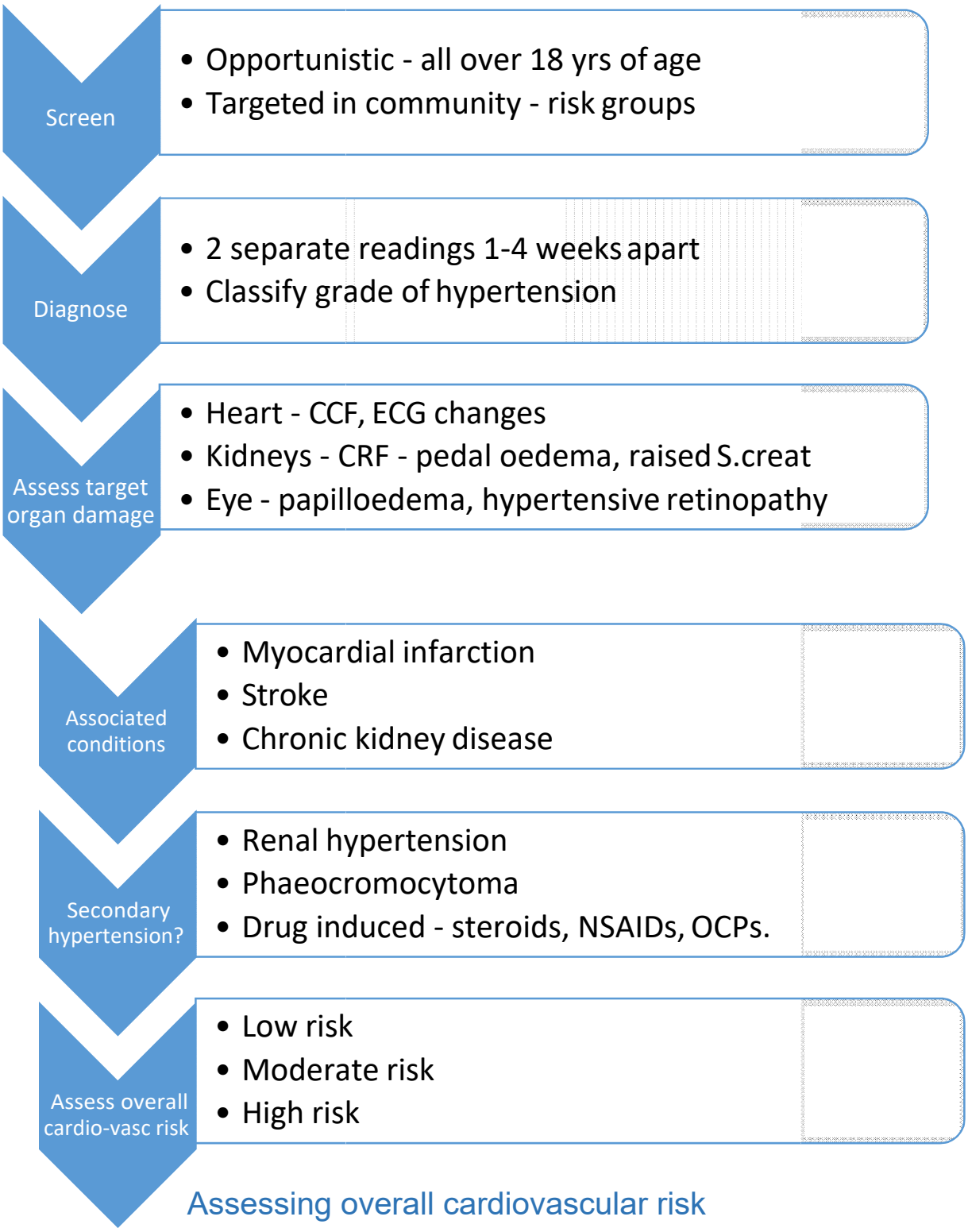
    - ACE receptor blockers if people are sensitive to ACE inhibitors
    - Calcium channel blockers
    - Beta blockers
  - Lifestyle changes

5. Follow up, Monitoring adherence to treatment
   - Keep treatment regimen simple to improve compliance
   - Follow up as needed

Table-1: Classification of Hypertension

Category	Systolic BP (mmHg)		Diastolic BP (mmHg)
Optimal	<120	and	80
Normal	120-129	and / or	80-84
High Normal (pre-hypertension)	130-139	and / or	85-89
Grade 1 hypertension	140-159	and / or	90-99
Grade 2 hypertension	160-179	and / or	100-109
Grade 3 hypertension	≥180	and / or	≥110
Hypertensive urgency	>180	and	>110 Severe hypertension with no evidence of acute target organ damage.
Hypertensive emergency (malignant hypertension)	>180	and	>110 Severe hypertension with cardiovascular (eg. Left ventricular failure), cerebral (eg. hypertensive enchepalopathy / stroke), renal (acute renal failure), or retinal (Grade III-IV retinopathy) involvement. To diagnose malignant hypertension, papilledema must be present.

Management flow chart



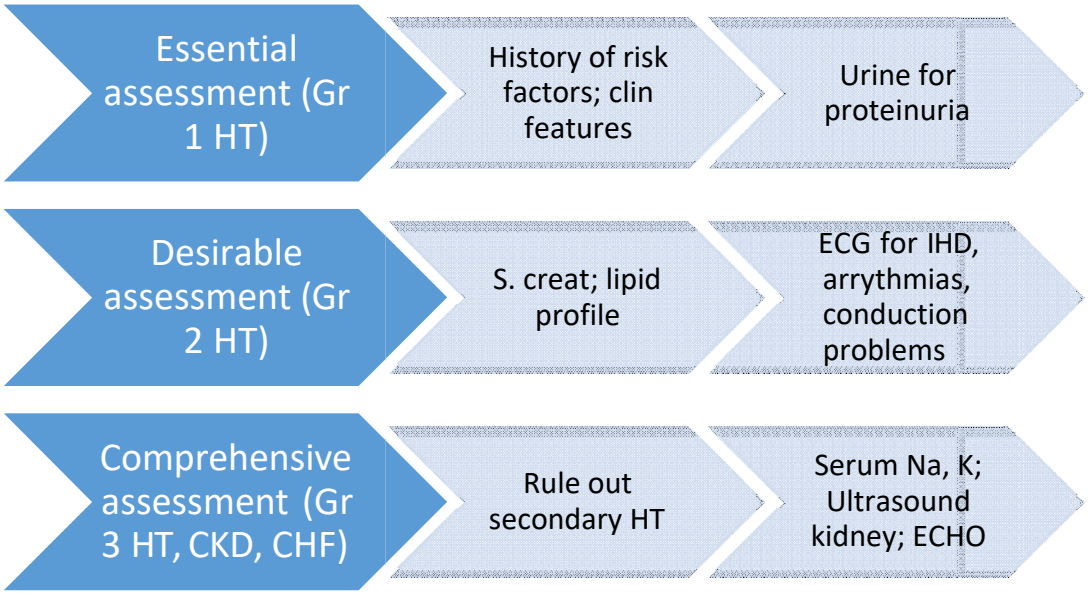
Assessing overall cardiovascular risk

Table-2: Assessing cardiovascular risk

	Grade I HT	Grade 2 HT	Grade 3 HT
No risk factor	Low risk	Moderate risk**	High risk***
1-2 risk factors	Moderate	Moderate to high risk	High risk
>3 risk factors	Moderate to high risk	High risk	High risk
Target organ damage, DM, CKD stage 3	High risk	High risk	Very high risk
Symptomatic CVD (stroke, coronary artery disease), diabetes with organ damage, CKD > stage 4)	Very high risk	Very high risk	Very high risk

20-30% risk of CV event over 10 years; *>30% risk of CV event over 10 years. Ty)

Risk factors (apart from hypertension): age (> 55 years in men; 65 years in women); male gender; diabetes mellitus; smoking; obesity (including abdominal obesity); dyslipidemia (High LDL, Low HDL, High TG); impaired fasting glucose (FPG 100-125 mg/dl); family history of premature coronary artery disease.



In all patients, screen for diabetes, advise to stop smoking or other forms of tobacco use.

Management of Hypertension

1. Lifestyle measures

- Stop tobacco use
- Weight loss
- Regular exercise
- Healthy diet with reduced salt, and more fruits and vegetables

2. When do you begin treatment?

a. Grade 1 hypertension –
   - If patient has no risk factors, and high BP persists after 3 months of lifestyle changes.
   - After two readings in two different visits.
   - Start immediately -
     - If target organ damage is present (LVH, proteinuria, hypertensive retinopathy);
     - Any evidence of CAD, CCF, CVD present.
     - Diabetic
     - Presence of chronic kidney disease (CKD)
     - Patients with three or more risk factors

b. Grade 2 hypertension -
   - Start treatment on confirmation of Gr 2 HT after measurement on a subsequent visit and not the initial one.

c. Grade 3 hypertension -
   - Confirmed after repeat measurements on initial visit.

3. Target BP for treatment:

- Systolic BP: <140 mm Hg
- Diastolic BP: <90 mm hg

(in elderly patients more than 80 years, 150 systolic and 100 diastolic is acceptable target)

4. Classes of anti-hypertensives and choice for treatment

A - Angiotensin converting enzyme (ACE) inhibitors Enalapril. AND

Angiotensin – receptor blockers (ARBs) eg. Losartan.

B – Beta – blockers eg. Propranolol, atenolol, metoprolol

C – Calcium channel blockers eg. Nifedipine, Amlodipine

D – Diuretics – hydrochlorothiazide, Frusemide

Table-3: Contra-indications to use of anti-HT drugs

Drug	‘ Absolute contraindication	Possible contraindication
Diuretic	Gout	Metabolic syndrome, glucose intolerance, hypokalaemia, hypercalcaemia
Beta blockers	Asthma, A-V block	Metabolic syndrome, glucose intolerance, COPD
Calcium channel blockers		Heart failure, tachyarrythmia
ACE inhiibitors	Pregnancy Hyperkalaemia Bilat renal artery stenosis	Women with childbearing potential
Angiotensin receptor blockers	Pregnancy Hyperkalaemia Bilat renal artery stenosis	Women with childbearing potential

Summary drug treatment

	Initial drug/s	Second drug	Third drug
Grade 1 HT (SBP 140-159/ DBP 90-99)	* Enalapril or Amlodipine or Diuretic	Enalapril+Amlodipine or Amlodipine+HCT or Enalapril+HCT if no response on 2-4 weeks	Enalapril+ Amlodipine +HCT if no response in 2-4 weeks
Grade 2 HT (BP 160-179/DBP 100-109)	Enalapril or Amlodipine or HCT	Enalapril+Amlodipine or Amlodipine+HCT or Enalapril+HCT if no response on 2-4 weeks	Enalapril+ Amlodipine + HCT if no response in 2-4 weeks
Grade 3 HT (BP≥ 180/DBP ≥110	Enalapril+Amlodipine or Amlodipoine+HCT or Enalapril+Diuretic		Enalapril + Amlodipine + HCT if no response in 2-4 weeks

* Enalapril can be replaced with Losartan

Initial and maximum dosaages

Drug	Low dose in some situations	Initial dosage	Maximum dosage	Dosage schedule	Side effects
Calcium channel blockers					Pedal oedema
Amlodipine	2.5mg*	5 mg	10 mg	1	
ACE inhibitors					Dry cough, angioedema hypotension,hyperkalemia more in elderly and diabetic
Enalapril	2.5 mg#	5mg	10-20 mg	1-2	
Angiotensin receptor blockers					
Losartan	25 mg@	50 mg	100 mg	1-2	
Telmisartan		40 mg	80 mg	1	
Diuretics					Hyperglycaemia, hypokalaemia
Hydochlorothiazide		12.5 mg	25 mg	1	
Beta – blockers'					Fatigue, hyperglycaemia esp when combined with diuretics
Atenolol	25 mg	50 mg	100 mg	1	
Metoprolol		50 mg	100 mg	2	

*- When amlodipine is given in low BMI elderly patients or when it is added to a patient taking diuretic.

#- Reduced dose of enalapril when given to elderly over 65 yrs or to patient who has been on diuretic.

@- Use low dose losartan if patient weight is below 50 kg.

Hypertension with other clinical conditions

Patient with diabetes – Target BP <140/<90 mm Hg. First choice ACE inhibitor (Enalapril), then calcium channel blocker (amlodipine) as add-on, last is diuretic (HCT is associated with glucose intolerance in diabetics).

Elderly patient: Target in those over 80 yrs is BP <150/<90 mm Hg. Target for below 80 age group – BP<140/90 mm Hg. Hypertension grade measured on standing BP. First choice – long acting calcium channel blocker (amlodipine) or low dose thiazide diuretic.

Hypertensive urgency: reduce BP over hours or days using oral drugs. See the separate protocol on hypertensive urgency and emergency

Hypertensive emergency – reduce BP over hours and days using IV drugs initially, changing to oral later. See the separate protocol on hypertensive emergency and urgency.

Table-3: Clinical conditions associated with hypertension and preferred drugs

Clinical condition	Drugs to be preferred as first drugs	Second drug if needed to achieve BP control	Third drug if needed to achieve BP control.
Isolated systolic hypertension (elderly)	Amlodipine / HCT	Enalapril*	HCT+ Enalapril + Amlodipine
Hypertension and diabetes	Enalapril	Amlodipine	Enalapril + Amlodipine+ HCT**
Chronic Kidney Disease	Amlodipine	Amlodipine or HCT (Frusemide if severe renal failure)	Enalapril + Amlodipine + HCT
Hypertension and previous myocardial infarction	Atenolol/Metoprolol, Enalapril		
Hypertension with heart failure	HCT / Frusemide + Enalapril + Atenolol+ Spironolactone		
Hypertension with previous stroke	Enalapril	HCT or Amlodipine	Enalapril + HCT + Amlodipine

*Angiotensin Receptor Blockers (ARB) may be used for this indication if there is intolerance to ACE inhibitors (cough, angioedema) though these are more expensive.

**HCT can worsen diabetic control

Follow-up

Review at periodic intervals.

Add on second drug after 1-2 months of initial drug for G1 and G2, or third drug for G3.

Encourage continuation of lifestyle changes – smoking, alcohol consumption, weight reduction, exercise, salt and oil intake.

AMRIT Protocols for management of Non-Insulin Dependent Diabetes mellitus

DM is a common illness and is a condition of high blood glucose levels. Information on books and the internet talks of it being a problem of the rich and the fat, but we find a lot of thin diabetics in rural areas.

Normal physiology: Maintaining blood glucose levels

All parts of our body need glucose to function. When we eat, the blood sugar rises and insulin is secreted to increase uptake by muscles and fat and also conversion in liver to glycogen for storage. Extra glucose is also stored in muscles and fat cells.

When blood sugar is low, glycogen in liver is made into glucose. The stored form of glucose in muscles and fats is also released into the blood and converted into glucose in the liver. When we are stressed, or hungry, other hormones in the body keep the blood sugars high.

Types of diabetes mellitus

There are two types of diabetes:

1. **Type 1** – usually starts in younger age. Due to autoimmunity, pancreas cells that secrete insulin are destroyed. These patients usually need insulin to survive.
2. **Type 2** – usually starts later in life (more than 40 years). It occurs due to insufficient insulin secretion or resistance to insulin. It commonly occurs in obese persons, but in our areas we also see it in very thin undernourished patients also. These patients are often controlled by diet, exercise and oral drugs.

Diagnosis of diabetes mellitus

Suspect Diabetes Mellitus in patients of any age complaining of:

- Excessive thirst and excessive urination
- Unexplained abscesses and non-healing wounds
- Recent onset of increased appetite with lose of weight
- In any comatose patient with no apparent infectious reason

Confirmation of Diabetes mellitus

DM is confirmed if blood glucose levels are higher than the cut-offs (with or without accompanying symptoms). The cut-offs are:

1. Fasting glucose > 126 mg % (no calorie intake for >=8 hours)
2. 2 hours post-prandial glucose > 200 mg %
3. Random plasma glucose > 200 mg %

Some people have glucose levels that do not fit the criteria for diabetes but are too high to be considered normal. Such people have a higher risk for developing diabetes if they do not control their sugars with diet and exercise. They are considered to be pre-diabetic. Such people may have Impaired Fasting Glucose (IFT) or Impaired Glucose Tolerance (IGT):

Criteria for defining Pre-Diabetes

*Impaired fasting glucose (IFT): Fasting glucose > 100 mg % and < 126 mg%

* Impaired glucose tolerance (IGT): 2 hour postprandial glucose >140 mg % and <200

Risk factors for type 2 diabetes

a. Age > 45 years
b. Obese (BMI > 23 Kg / m2)
c. Family history of diabetes
d. Habitual Physical Inactivity
e. Previously identified IFT / IGT
f. History of diabetes in pregnancy or delivering a baby > 3.5 kg
g. Hypertension (>140/90 mm Hg)

Management of Non-Insulin Dependent Diabetes Mellitus:

Aim of diabetes control is to keep blood sugars in a normal range. Recommended target levels for effective control are:

- HbA1c <6.5%
- Fasting glucose 90-130 mg %
- Post-prandial <180 mg%

In addition, it is recommended that BP levels of diabetic patients should be maintained at <130/80 mm Hg.

Principles of Management of NIDDM

NIDDM is a chronic disease and would require life-long management. Like with other chronic disorders, management includes a combination of lifestyle modifications and drugs. Key elements of an effective management program for NIDDM patients include the following:

- Diet – reduce the amount of calorie intake and the type of food eaten
- Exercise – burn up the sugars in the blood so that levels are reduced
- Tablets – that improve glucose uptake or insulin secretion
- Insulin injections

Diet:

1. The patient should eat food that does not cause a sudden rise in blood sugar levels (this causes a sudden sharp increase in insulin and then the blood sugar goes down very fast).
2. Make sure that calorie intake is not more than the energy that is required by the body.
3. A diabetic should eat three meals and three snacks during the day (look at the calorie requirements ***in the annexure)***

Main eating recommendations for DM patients are:

- Reduce cereal intake
- Avoid simple sugars (biscuits, sugar and, jams/ murabbas)
- Avoid fruit juices
- Increase use of vegetables
- Eat meals at regular intervals

Exercise

This is one of the most critical factors in controlling diabetes. Exercise improves insulin sensitivity, and also in improved absorption by the body cells. It helps to reduce body weight and blood pressure and reduces the other health risks that a diabetic patient may have.

The patient should be advised to undertake exercise 4-6 times a week for 30-60 minutes at a time. He should start with 10 minute period of light exercise or brisk walk every day and increase it.

Walking is the best exercise. It does not need expensive equipment or a special place. It only needs a good pair of shoes. Brisk walking can burn as many calories as jogging but is less likely to cause injuries. It is also an aerobic and weight bearing exercise and so helps the heart as well as reduces osteoporosis.

Foot Care

Diabetic patients tend to have dry skin on their feet. Also due to nerve damage, their sensation is also reduced. If there is an injury, they will not feel pain, or feel it very mildly. Therefore they are at risk of getting injured and such injuries tend to get infected very quickly. Sometimes the injury causes gangrene and it becomes necessary to remove part of all of their foot.

Therefore good care must be taken of the feet. Following measures are helpful:

a. Wear comfortable footwear

b. Keep the feet clean and dry at all times.

c. Do not walk without slippers even in the house.

d. Examine the feet daily, especially between the toes to make sure there is no fungal infection

e. Cut toenails carefully and cut them flat. Do not cut right to the base of the nail in case the skin gets damaged and starts getting infected.

Pharamocologic treatment: Oral hypoglycaemic agents (OHA)

Most commonly used drugs are biguanides and sulphonylureas.

- Biguanides – reduce production of glucose in the liver - metformin
- Sulphonylureas – increase insulin secretion in the pancreas - glibenclamide; gliclazide; glipizide; glimepiride

Starting treatment in a fresh case of NIDDM

Examine and record the following:

- Blood Pressure
- Vision

- Cataract
- Any ulcers or non-healing wounds

Test for:

- **Essential**: Blood glucose (fasting and 2 hours PP)
- **Desirable**: HbAIC, S cholesterol, LDL and HDL

Initiate Treatment:

1. Counsel on Diet and exercise as above
2. Start with Tab Metformin: 500 mg with breakfast (may cause nausea and diarrhea)
3. Weekly monitoring of fasting blood sugar
4. Increase by maximum of 500 mg each week after Blood Glucose monitoring. First add Tab 500 mg at dinner time first, and then if required at lunch time.
5. Counsel on signs of hypoglycemia and need for regular meals
6. Progressively increase to a maximum total daily dose of 2250 mg.
7. If with adequate exercise and diet and metformin, the glucose levels remain uncontrolled, add Glibenclamide (2.5 mg) once a day, or Glimepride (1 mg).

Monitor:

In the beginning when the doses are being titrated (1-2 months)

- Weekly fasting blood sugar:
- Elicit history of hypoglycemia
- Elicit dietary history and reinforce dietary counseling

Subsequently:

Once in 2 months:

- Fasting and PP blood sugar
- HbA1C
- Examine feet
- Look for cataract

- Take Blood Pressure

Insulin therapy

If despite the highest recommended and tolerated doses of oral hypoglycemic and diet and exercise does not help in achieving the target levels, Insulin in added to the management. Usually a mix of soluble (quick acting but short duration) and lente (slow release and longer acting) insulin is used. Details of Insulin treatment is not included in this note.

Complications of diabetes:

a. increased risk of stroke

b. increased risk of heart attack

c. damage to kidneys

d. damage to eyes

e. damage to nerves in the hands and feet

f. increased risk of foot ulcers

g. increased risk of infections

Emergencies in diabetics:

Hypoglycaemia –

Hypolgycemia is defined as blood glucose levels less than 50 mg % in adults. It may happen due to missing a meal, or due to overdose of anti-diabetic medications, or a change in exercise levels. If treatment is not prompt, the patient can die.

Signs and Symptoms:

- Patient may complain of – sweating, feeling faint, dizziness, nervousness.
- On examination: High heart rate and breathing rate, hypertension and the skin is dry and hot. Patient may get tremors or convulsions.

Management of hypoglycemia:

- Take a blood sample for blood glucose estimation, then

☐ **Give 50 ml of 50% dextrose intravenously immediately.**

- Start 10% dextrose drip after this. Admit the patient if there is no obvious cause for the episode, or if they are taking diabetic tablets (which act for a long time and so the low sugars may continue for some more time), or they continue to have tremors or are drowsy.

- Educate all diabetics to always keep some sweets with them to take immediately if they feel their sugars are going low.

Hyperosmolar coma and Diabetes Ketoacidosis (see annexure-2 for details)

Summary of advice for all patients with Diabetes Mellitus

1. This is a lifelong disease and would require treatment and care lifelong.
2. Eat three meals and three snacks everyday.
3. Do not eat refined sugars. Eat lot of roughage.
4. Walk for 30 minutes everyday
5. Wear comfortable footwear
6. Explain signs of hypoglycemia: anxiety, dizziness, excessive hunger, sweating. Keep sugar in person, and consume whenever signs of hypoglycemia are present.
7. Take drugs in prescribed doses everyday.

AMRIT Guidelines for managing OSTEOARTHRITIS in AMRIT Clinics

Risk factors for Osteoarthritis

- Increased age: R*are in <40yrs and found in >50% over age of 70yrs*
- Female gender
- Obesity
- Injurious physical activity:
- Previous damage or mal-alignments (such as varus or valgus deformities, an earlier fracture or ligament or meniscal tear)

Clinical Features

Symptoms

1. Joint pain: increases with use. As the day progresses, the pain increases with increased use. There may be morning stiffness, but it lasts less than 30 minutes. In contrast, the pain in Rheumatoid Arthritis has significant prolonged morning stiffness, and then eases out over the day
2. Joint instability or buckling
3. Loss of function

Most affected joints in osteoarthritis are:
Weight bearing joints: Knee, Hip, lumbar spine, cervical spine
Joints with repeated movements and thin cartilage: DIP,PIP, First CMC joints[9]

Signs

- Bony enlargement at affected joints
- Limitation of range of motion
- Crepitus on motion
- Pain with motion
- Mal-alignment and/or joint deformity

INVESTIGATIONS

In general, OA is a clinical diagnosis. No investigations are required to confirm the diagnosis. If any clinical suspicion of an auto-immune disorder, perform an ESR. If the ESR is more than 20 mm, consider the possibility of an autoimmune etiology.

[9]DIP-Distal interphalangeal joint,PIP- proximal interphalangeal joint,CMC- carpometacarpal joints

If any clinical suspicion of an infective arthritis, synovial fluid tap will show leucocytosis (>2000/cm3)

X ray of affected joints shows following cardinal features[10]

1. Reduced OR loss of joint space
2. Osteophytes: extra bony growth from affected joint surface
3. Increased thickness of subchondral bone
4. Irregular cartilage surface

Knee is the most common site seen in primary care practice.

Classification Criteria for Idiopathic Osteoarthritis of the Knee

Knee pain and at least one of the following:

- Patient age older than 40 years
- Morning stiffness lasting 30 minutes or less
- Crepitus on passive motion of the joint

Classification Criteria for Osteoarthritis of the Hand

Hand pain, aching or stiffness*plus*Hard tissue enlargement of two or more of 10 selected joints*

Plus

Fewer than three swollen metacarpophalangeal joints

Plus

Hard tissue enlargement of two or more distal interphalangeal joints

Or

Deformity of two or more of 10 selected joints*

** —The 10 selected joints are the second and third distal interphalangeal joints, the second and third proximal interphalangeal joints and the first carpometacarpal joints (of both hands)*.

Management

Goal of management is to alleviate pain and minimize loss of function.

A. Core Treatment

Patient Education

1. Counsel the patient that the disease is likely to last lifelong, and that relief will be slow
2. Also educate them on the need for adherence to treatment for long term
3. Avoid activities that overloads joint as evidenced by causing pain.
4. Demonstrate the exercises: advise on local strengthening

However, there is no need for routine CXR in cases with clinical Osteoarthritis

Exercises

1. Local muscle strengthening exercise: for example, quadriceps strengthening in knee osteoarthritis: Flex and extension of knee joint against resistance.
2. Low impact exercises: like Fitness walking. These exercises are gentle on bones and stimulate good remodelling of cartilage.

Fitness walking:

How to start: First of all, start out slow and easy. Walk for 10 minutes, and walk back (total of 20 minutes). Add five minutes to your walks next week (total walking time 30 minutes). Keep adding 5 minutes until you are walking as long as you can (usually 45 minutes of walking is good)

WATCH your posture. Walk tall. Think of elongating your body. Hold your head up and eyes forward. Your shoulders should be down, back and relaxed. Tighten your abdominal muscles and buttocks and fall into a natural stride.

Be sure to drink plenty of water before, during, and after walking. Start your walk at a slow warm up pace, stop and do a few warm ups (like bending and touching your feet). Then walk for the desired length of time. End your walk with the slower cool down pace and stretch well after your walk.

Walking daily will help (a minimum of 5 days a week is a good goal). Walk at a "talking" pace. (Talking pace means you have elevated breathing, but you can still carry a conversation.)

Local muscle strengthening exercises (detailed exercises annexed)

Key messages to the patient of OA

Aim for 30 minutes of exercise a day. Start small, with what feels OK. If the pain doesn't bother you, do more next time. Over time you'll build your leg muscles to support your knee and increase flexibility.

Some muscle soreness is normal when you work out. Hurting or swollen joints need rest, though. Ice painful joints and take acetaminophen or an anti-inflammatory pain reliever, like ibuprofen.

Reinforce exercise prescription at each visit

Use of Assistive devices

The use of an appropriately selected cane can reduce hip loading by 20 to 30 percent. The top of the cane's handle should reach the patient's proximal wrist crease when the patient is standing with arms at the side and usually held on the unaffected side of the body.

Hot and cold compress:

Heat therapy is ideal for loosening up tight muscles by stimulating blood flow. Heat treatment helps prepare stiff joints for use. Thus, it should be recommended to patients to start the day with hot fomentation, this would help them have a pain free day

Cold compresses are ideal for a condition where patient is having acute flare up of pain and swelling, and requires immediate relief (SOS): it acts as anaesthetic, decreases swelling by constricting blood vessels and prevents fluids from leaking into the surrounding tissues.

Methods of hot and cold compresses:

Hot compress can be given as thick folded cotton cloth warmed with hot vessel or towel dipped in hot water. Assure that the heat doesn't burn skin. The cold - in the form of an ice pack or towel dipped in cold water Be sure not to use ice for more than 15 to 20 minutes at a time.

Contrast Bath: In this method benefits of both hot and cold therapy can be taken. The affected area should be washed with hot water for one minute f/b cold water wash for 4 minutes. This cycle should be repeated 3 times ending with hot water bath.

Proper foot wear

Barefoot walking is good for patients with osteoarthritis. For walking outdoors, suggest walking with canvas shoes.

Weight loss

Each half kg increase in weight increases the loading across the knee 3-6 folds! Thus every half a kg of weight load can decrease the weight load on the knees by as much, significantly improving the progression of disease and symptomatic relief.

SUMMARY OF CORE THERAPY

* Walk 30 minutes per day
* Do one of the muscle-strengthening exercise 20-30 minutes everyday
* Use a cane for walking. The top of the cane should be at the height of proximal crease. Use in the non-affected limb.
* Use hot compress everyday in the morning.
* Lose weight: restrict oil and ghee in the diet

Pharmacologic therapy

Step-1

If pain does not subside with core treatment, start with pharmacologic treatment.

Start with Topical NSAIDs (Diclofenac sodium ointment)

Or/and

Paracetamol as 1gm /dose, upto 4 times per day

Start Paracteamol intermittently, whenever there is pain, for a week.

Step-2:

If the pain is not relieved with local analgesics and paracetamol, start with NSAIDs as follows:

Tab Ibuprofen (low dose): 400mg 3-4 times a day after meals

Step-3

Increase Tab Ibuprofen to a higher dose for a period not exceeding 3-4 weeks: 800mg 3-4 times a day after meals, plus Tab Famotidine BD as prophylaxis for peptic ulcers.

Step-4

For acute flare-ups of severe pain and swelling, start a short course of steroids (especially for hip and knee joints).

Star with Tab Prednisolone: 10mg 3 times a day. Do not exceed 4 weeks, taper after 2 weeks. (C/I in diabetics & hypertensives)

Step-5:

If severe pain and swelling does not improve with oral steroids, Intrarticular steroids may be tried. One single shot may of Inj Hydrocortisone (100 mg) give relief for 2-8 weeks. Do not give more than 4 injections per year

If the response is inadequate, consider referring patient for joint replacement and osteotomy.

SECTION - 6: INJURIES AND BURNS

AMRIT Guidelines for management of Burns in a primary care setting

Burns are one of the commonest accidents we see. Every year there are several thousand deaths due to burns in our country. In most cases, burns are accidental, especially in children. In our country there are also incidents of bride-burning where it is deliberate. Sometimes people set themselves on fire in protest.

Causes of Burns

Burns can happen due to many causes:

- Fire
- Hot liquids or steam
- Electrical burns including lightning
- Chemical burns

These guidelines are largely applicable to burns due to fire (Burns) and due to hot liquids (scalds).

Objectives of management of the burns

When the skin is burnt, infection from outside can easily enter our body. A burnt patient can therefore die of infection. In addition, when a person is burnt, they get dehydrated very soon as water from the blood vessels moves into the spaces between cells and also into the cells. Larger and deeper the burn is, more is the water-loss and higher the risk of infection.

The main objectives of treating burns are therefore:

1. Preventing and treating infection
2. Treating and preventing further dehydration
3. Limiting the amount of skin that is destroyed by the burns by prompt treatment.

First Aid and emergency management of all patients presenting with burns

1. If the patient is still burning, ensure your own safety. Cover the patient with a blanket or thick sheet and roll him/her on the ground.
2. In electrical burns, disconnect the person from the source of electricity.
3. Cool the burn: Cool with running tap water for at-least 20 minutes. In chemical burns, wash for at-least one hour.
4. Keep the person warm. If water is very cold, warm it to at-least 15 degrees Celsius.
5. Remove clothing and jewellery.
6. Cover the burn with a soft cloth lightly.
7. Do not apply any anti-infective cream or ointment till the depth of the burns has been assessed.
8. Give an analgesic (Paracetamol, Ibuprofen, Pentazocine)
9. Assess the degree of burns (see below). If more than 10% in children and more than 15% in adults, start IV Fluids: Injection Ringers Lactate 3-4 ml/kg body weight/percent of burns: half of this over next eight hours, and remaining half over next 16 hours.
10. Give Injection Tetanus Toxoid, 0.5 ml IM to prevent tetanus
11. Assess the depth of burns (see below).

Calculating fluid requirements for a patient with Burns:

A simple rule of thumb is 4 mal/kg body weight /per cent of burns over first 24 hours after burns. For example, if an adult weighs 40 kg and has 20% burns, he will need: 4 ml x 40 kg x 20%m or 3200 ml of fluid in the first 24 hours

Of this, half (1600 ml) should be given in the first 8 hours after the burn; the remaining is given over the next 16 hours.

Remember that the time for giving fluids is calculated from the time of the burn, and not after the patient has reached the hospital. If the above patient was burnt at 4 am and brought to the dispensary at 7 am, the 3200 ml must be given by 4 am the next morning and not by 7 am. That is, the same amount of fluids must be given much faster.

Once the patient is stabilized, refer to a hospital.

Referral after first aid and emergency management:

After first aid, if the patient has the following conditions, immediately refer:

1. Burns greater than 10% surface area
2. Burns over face, perineum, hands, major joints
3. Any third or fourth degree burns more than 1 cm wide
4. Burns with associated trauma

Continued Management of those who do not require referral:

If the patient does not have any of the above conditions, manage as follows:

<u>First degree superficial burns:</u>

1. Apply a moisturizer solution. You may use boiled & cooled paraffin wax.
2. Reassess after 2 days.
3. After 2 days, if skin is intact, then continue to apply moisturizer.
4. If skin is not intact, apply an antimicrobial dressing (silver sulfadizine)
5. Review after 72 hours, and look for signs of infection.

<u>Second degree Burns:</u>

1. Using aseptic precautions, apply a thick layer of SSZ and wrap with bandage.
2. If there are blisters, do not puncture. Keep the burn area open.
3. If there is odema, if possible, raise the burnt area.
4. Review daily. Look for signs of infection.
5. If no signs of infection on day-3, apply sterile moist dressing (double layered gauze with paraffin).
6. If signs of infection present, then continue with SSZ dressing.

<u>Third degree Burns</u>

1. If more than 1 cm wide or more than 5% burns, refer after first aid.
2. If less than 5% burns, and less than 1 cm, manage as for second degree burns

Key messages to the family of a patient with burns

- Keep the burnt area clean and free from dirt
- If there are blisters, do not puncture the blisters
- If there is oedema, keep the area elevated if possible
- Must come for follow up every day for deep burns and after 2 days for superficial Burns

AMRIT Protocols for Suturing of lacerated wounds

Determining when to stitch a wound:

Not all injuries require suturing. The wounds that require suturing are:

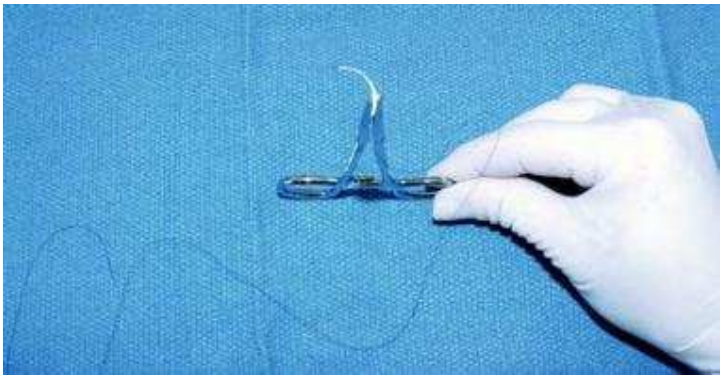
a. Jagged, gaping, or deep cuts. Stitching these types of wounds helps to limit further damage, reduce blood loss, prevent infection and begin the healing process.
b. Cuts feel numb. Nerves may have been damaged and suturing allows the healing process to begin.
c. Cuts that bleed profusely. Suturing will help prevent excessive blood loss.
d. Cuts that are on the face or other sensitive areas. Left unstitched, cuts can leave unattractive scars. However, keep in mind that improper suturing techniques can leave unsightly scars as well.

Before suturing:

Use the standard infection prevention practices. Wear sterile gloves and clean the wound with normal saline or sterile water, and dry using sterile gauze pieces. Disinfect the woundwith spirit, let it dry, and then paint with betadine. Drape the wound using a sterile cloth.

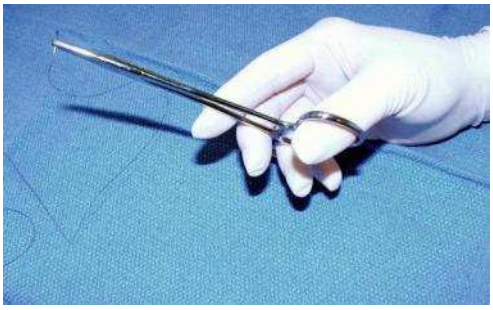
1. Placing the suture:

- Grasp the needle at the distal portion using a needle holder, one half to three quarters of the distance from the tip of the needle.
- Tighten the needle holder by squeezing it until the first ratchet catches. Do not tighen the needle holder excessively, because it may result in damage to both the needle and the needle holder.
- Hold the needle vertically and longitudinally perpendicular to the needle holder (see the image below).

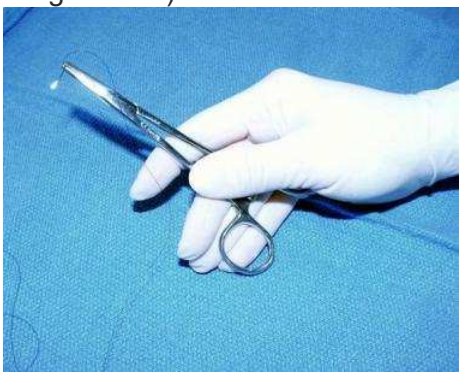


Please note: Incorrect placement of the needle in the needle holder may result in a bent needle, difficult penetration of the skin, or an undesirable angle of entry into the tissue.

- Hold the needle holder by placing the thumb and the fourth finger into the loops and placing the index finger on the fulcrum of the needle holder to provide stability (see the first image below).



Alternatively, you may want to hold the needle holder in the palm to increase dexterity (see the second image below).



2. Stabilize the tissue by grasping it gently with toothed or un-toothed forceps. Avoid excessive trauma to the tissue to reduce the possibility of tissue strangulation and necrosis.

3. Use Forceps for grasping the needle as it exits the tissue after a pass, before you remove the needle holder. This maneuver decreases the risk of losing the needle in the dermis or subcutaneous fat.

4. Insert the needle so that it penetrates the skin at a 90° angle. This minimizes the size of the entry wound and promotes eversion of the skin edges.
5. Insert the needle 1-3 mm from the wound edge, depending on skin thickness.
6. The depth and angle of the suture will depend on the particular suturing technique. In general, the two sides of suture should become mirror images, and the needle should also exit the skin perpendicular to the skin surface.

4. Tying the knot

- Once the suture is satisfactorily placed, secure it with a knot.
- First, rotate the tip of the needle holder clockwise around the long end of the suture for two complete turns (see the image below).
- Grasp the short end of the suture with tip of the needle holder. Pull through the loops of the long end by crossing the hands, so that the two ends of the suture are on opposite sides of the suture line.
- Rotate the needle holder counterclockwise once around the long end of the suture.
- Then grasp the short end with the needle holder tip and pull through the loop again.

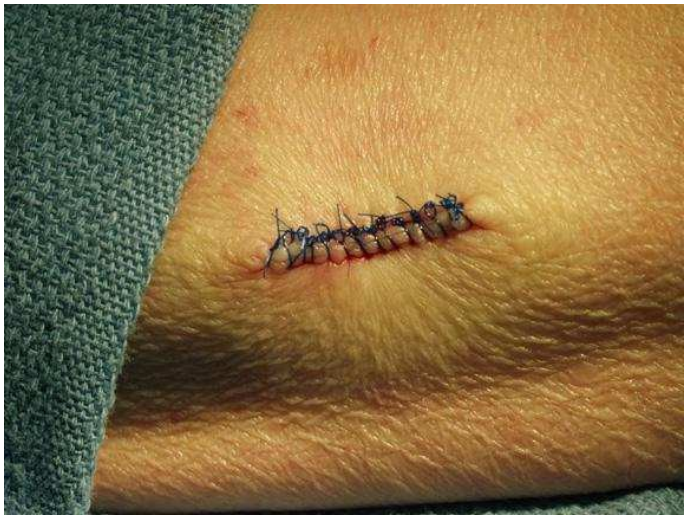
Knot tying.

- Tighten the suture sufficiently to approximate the wound edges without constricting the tissue. Sometimes, leaving a small loop of suture after the second throw is helpful. This reserve loop allows the stitch to expand slightly and is helpful in preventing the strangulation of tissue because the tension exerted on the suture increases with increased wound edema.

- When the desired number of throws is completed, cut the suture material.

5. Subsequent sutures:

- Insert the needle in the skin (epidermis and dermis) again at a distance from the previous suture and repeat the process. s
- Ensure that each suture is parallel to the previous one.



Annexures

Annexure 1.1: Counselling messages for families of severely underweight children presenting at AMRIT Clinics

- We have measured weight of your child. His/ her weight is much less than what should be the weight for a child this age.
- When the child's weight is less, the child becomes weak and there is a risk of severe illness. The development of the brain also becomes slower. The effects of malnutrition at this age continue even when the child grows older.
- Once you start treatment, the weakness improves, the child becomes more active and stronger and development of brain also improves.
- Please take your child to AMRIT Clinic. The doctor and nurse there will check up your child and give medicines and energy rich food. With these, your child will improve a lot.
- I am sharing about children who have taken care from AMRIT Clinic (use Flip book). You can see the improvement with the treatment. Similar improvement can happen with your child as well.

Annexure-1.2: Counselling messages for SAM children who are given RUTF

- We have done a check up of your child and found he/ she is very thin. When a child is so thin, there is a risk of repeated infections, and also the development of the brain is less than that of a child who is healthy. Your child needs to be given treatment for this weakness.
- We are giving this food for your child. This is a special food for the severely malnourished children.
- This food contains peanut paste, milk powder, oil, vitamins and minerals. Even small amounts of this food give a lot of energy. If you feed this to your child nicely, there will be a lot of improvement in your child's nutritional status. Your child will become more active, start playing and eating better.
- You will need to feed this food to your child 5-6 times in a day. Before feeding, wash yours and your child's hands with soap and water.
- Feed this food directly from the packet. Or you can take out a small amount on your finger and feed. Or you can also take it in a clean spoon and feed your child. Do not take out the food in a katori or a plate.
- When the child is eating this food, she/ he feels very thirsty so also offer sips of water.
- You have to feed your child_____packets in a day. Make sure you give the first feed soon after your child gets up in the morning. This is important as the child has not eaten anything throughout the night and his stomach is empty. If you give a feed early in the day, the child has a good appetite throughout the day and eats well. On the other hand, if the child's first feed of the day is delayed, the child becomes irritable and does not eat well throughout the day.
- In addition to this food, give to your child home foods- such as roti and dal, or rice and dal, or roti and subzi, or raab, or egg, or milk with roti. When you prepare vegetables or dal at home, do not add chillies in the beginning. First cook the food with salt, haldi. Once it is cooked, take out a katori of the vegetable/ dal for your child, and then add chillies to the remaining food. Always add 1-2 teaspoons of oil or ghee to whatever food you give to your child.
- Do not give tea or biscuits to your child. Tea decreases the appetite, so the child will eat less food. Biscuits do not give much energy or strength so do not help the child much.
- The treatment will take 2 months. For complete improvement, you must bring the child every 15 days to the clinic, for 2 months. This food has a lot of strength and even in 1 week you will start seeing a change. Some mothers stop bringing the child to the clinic because they feel the child is better and does not need any more treatment. But for full improvement you need to bring the child for complete 2 months.

- Some children have vomiting and diarrhea when they start treatment. But this gets better when treatment is continued. If your child has any problem, please bring him/ her back here and we will treat him/ her.
- I will tell you about 2 children who were also very thin. They came here and we started treatment. Their mothers worked very hard at taking care of them and feeding them and their weakness improved. Would you also like your child to get better as these children did? Show Flip book

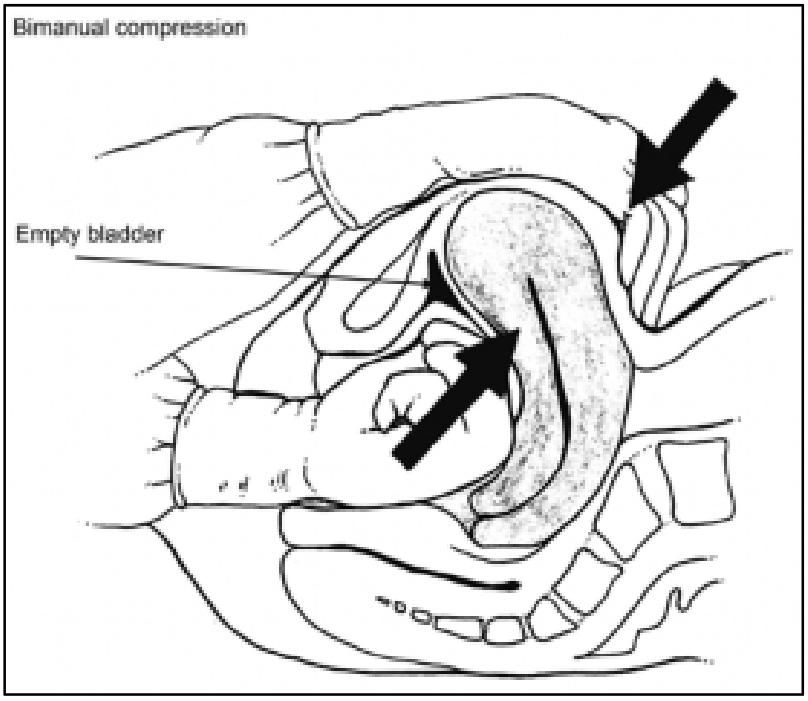
Annexure 1.3: Composition of RUTF:

Nutritional composition of RUTF	
Nutritional value	
Moisture content	2.5% maximum
Energy	520- 550 kcal/100g
Proteins	10% -12% total energy
Lipids	45% - 60% total energy
Minerals	
Sodium	290mg/ 100g maximum
Potassium	1,110 - 1,400mg/100g
Calcium	300-600 mg/100g
Phosphorus (excluding phytate)	300-600mg/100g
Magnesium	10-14mg/100g
Iron	11-14mg/100g
Zinc	11-14 mg/100g
Copper	1.4-1.8 mg/100g
Selenium	20-40 µg
Iodine	70-140 µg/100g
Vitamins	
Vitamin A	0.8 -1.1mg/100g

Vitamin D	15-20 µg/100g
Vitamin E	20mg/100g minimum
Vitamin K	15-30 µg/100g
Vitamin B1	0.5mg/ 100 g minimum
Vitamin B2	1.6mg/ 100 g minimum
Vitamin C	50mg/100 g minimum
Vitamin B6	0.6mg/ 100 g minimum
Vitamin B12	1.6 µg/ 100 g minimum
Folic Acid	200 µg/ 100 g minimum
Niacin	5 mg/ 100 g minimum
Pantothenic acid	3 mg/ 100 g minimum
Biotin	60 µg/ 100 g minimum
n - 6 fatty acids	3% - 10% of total energy
n - 3 fatty acids	0.3% - 2.5% of total energy

Annexure-2.1: Bimanual compression of uterus for management of PPH:

a. Make a fist of the right hand and insert it in the vagina, pressing hard against the uterus in the anterior fornix.
b. With the other hand on the abdomen, pick up the fundus of the uterus and compress it between the right fist and the pubic symphysis as shown below.
c. Maintain pressure for 20 minutes, release and check. If bleeding persists, continue for another 20 minutes.
d. Keep Oxytocin drip ongoing.
e. Long armed gloves may be needed.



Annexue-2.2: Aortic compression for management of PPH

Remember that this will be a painful procedure.

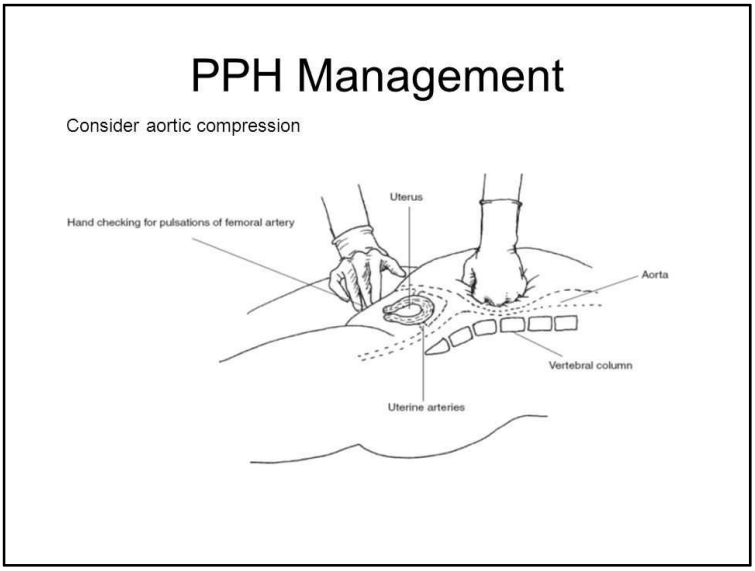
It rests on the fact of compressing the abdominal aorta against the thoraco-lumbar spine will stop the blood flow to the uterine arteries and therefore reduce the bleeding from the uterus.

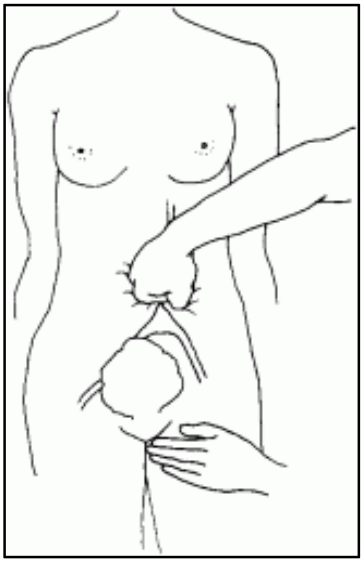
It can be a life-saving measure when the patient is being transferred to a care facility where the PPH can be managed.

Take turns with a colleague if you tire during the procedure.

Steps:

a. With the right arm, keeping the elbow rigid, press vertically down on the woman's abdomen just above the uterine fundus, till your fist is pressing against her spine. This will compress her aorta against her spine.
b. With the left hand palpate her femoral pulse.
c. If the compression is properly done, you will not feel the femoral pulse.
d. Keep the pressure on the aorta, letting up for a few seconds every minute to allow some blood to flow, to avoid gangrene. During such intervals, you should feel the femoral pulse.





Annexure- 3.1: Composition and Nutritive Value of AMRIT Aahar: Nutrient calculation of the food items included in AMRIT Aahar per day

Food item	Amount/d (G)	Energy/d(Kcal)	Protein/d(G)	Iron/d(mg)
Soya nuggets	35	95	12.45	2.9
Whole Moong	35	102	7.84	1.71
Chana	35	100	6.56	2.37
Besan	35	135	7.84	1.75
Oil (ml)	30	270		
TOTAL		**702**	**34.69**	**8.73**

A. Pursed lip breathing exercise

To do purse-lips breathing:

1. Breathe in through your nose (as if you smell something) for about 2 seconds.
2. Pucker your lips like you're getting ready to make the flame of a candle flicker(make sure it's not strong to completely blow the candle)
3. Breathe out very slowly through pursed-lips, two to three times as long as you breathed in.
4. Repeat.

- Make sure expiration phase is longer, almost double the time than inspiration.
- Frequency: thrice a day or SOS
- Each time, 5-7 breaths, with 3 seconds break between two breaths
- Demonstrate how pursed lip breathing can be performed in sitting, lying down and sleeping position and as and when person feels breathless

B. Diaphragmatic (Abdominal/Belly) Breathing

The diaphragm is the main muscle of breathing. It's supposed to do most of the work. When you have COPD, the diaphragm doesn't work as well and muscles in the neck, shoulders and back are used. These muscles don't do much to move your air. Training your diaphragm to take over more "work of breathing" can help.

Importance: Reduces work of breathing by activating the diaphragm and relaxing accessory muscles of Respiration

Procedure:

1. Make sure, patient is relaxed
2. If lying down: place pillows below the knees to avoid any back arch. If sitting, make sure head, neck and shoulders are supported
3. Relax patient's shoulders by making him do shoulder rolls and neck stretches

4. Patient's one hand should be lightly placed on the chest and other one on the abdomen Inhale through your nose for about two seconds.
5. As you breathe in, your belly should move outward. Your belly should move more than your chest.
6. As you breathe out slowly through pursed-lips, gently press on your belly. This will push up on your diaphragm to help get your air out

* Frequency: thrice a day

* Repetition: 10 repetitions with about 5 secs break between two breaths

* Stop, Reset, Continue

* When you are feeling short of breath during exercise or regular activities, use these 3 steps:

a. Stop your activity.

b. Reset by sitting down, relaxing shoulders, and breath with pursed-lips till you regain breath.

c. Continue activity, doing pursed-lips breathing as you go. Go at a slower pace if you need to.

C. Active Cycle of Breathing Technique (ACBT)

Active cycle of breathing technique (ACBT) involves three phases of breathing techniques. The first phase helps you relax your airways. The second phase helps you to get air behind mucus and clears mucus. The third phase helps force the mucus out of your lungs.

1. *Breathing control*

Breathing control helps relax the airways. You should breathe in through your nose and out through your mouth with very little effort. Use normal, gentle breathing with the lower chest while relaxing the upper chest and shoulders.
If breathing out through the mouth is difficult, you can use the "pursed lips" technique. Repeat breathing control for six breaths before moving to chest expansion exercises.

2. *Chest expansion exercises*

Breathe in deeply.Feel the chest expansion by placing your hands lightly along the ribs

3. *Huffing or huff coughing*

   Also called forced expiration technique, huff cough at different, controlled lengths to move mucus up to the larger airways. This huffing should be repeated until all mucus has been huffed out of the body.

   The Huff Coughing Technique:

- Sit up straight with chin tilted slightly up and mouth open.
- Take a slow deep breath to fill lungs about three quarters full.
- Hold breath for two or three seconds.
- Exhale forcefully, but slowly, in a continuous exhalation to move mucus from the smaller to the larger airways.(as if to create steam on a mirror)
- Repeat this maneuver two more times and then follow with one strong cough to clear mucus from the larger airways.
- Do a cycle of four to five huff coughs as part of your airway clearance.
- REPEAT NORMAL BREATHING

D. CHEST EXPANSION EXERCISES

Steps to be followed:

1. Stand straight with hands beside your body.
2. Bring your hands in front parallel to the shoulders and join the palms.
3. With deep breathing spread hands sidewise and expand chest.
4. Again while breathing out bring your hands to its previous position and be normal.

E. ASSISTED BREATHING

1. Assisted breathing exercise can be taught to the relative
2. Make the relative place the hands along the ribs.
3. Make the patient breathe in deeply
4. During exhalation, make the relative apply mild pressure on the ribs to facilitate complete exhalation

Annexure- 4.1: Muscle strengthening exercises for Osteoarthritis Patients

Exercise-1: Step Ups

1. Do this to strengthen your legs for climbing stairs. Face a stable step, both feet on the ground. Step up with your left foot. Follow with your right foot.
2. Stand tall on the step with both feet flat. Climb down in reverse: right foot down first, then left. Repeat 10 times. Rest, then do another set of 10. Now do two more sets, starting with your right leg.
3. Use a railing or wall for balance. Or try a lower step.

Exercise-2: Sit to Stand

1. Place two pillows on a chair.
2. Sit on top, with your back straight, feet flat on the floor (see left photo).
3. Use your leg muscles to slowly and smoothly stand up tall.
4. Then slowly lower again to sit. Be sure your bent knees don't move forward of your toes.
5. Try with your arms crossed or loose at your sides. Add pillows if finding hard
6. Add pillows.

Exercise -3: Side Leg Raise

1. Stand and hold the back of a chair for balance.
2. Place your weight on your left leg.
3. Lift the right leg out to the side. Keep the right leg straight and outer leg muscles tensed. Don’t slouch.
4. Lower the right leg and relax.
5. Repeat 10 times. Rest.
6. Do another 10, then repeat with the left leg.

Exercise-4: Seated Hip March

1. Sit up straight in a chair.
2. Kick your left foot back slightly but keep your toes on the floor.
3. Lift your right foot off the floor, knee bent.
4. Hold the right leg in the air five seconds.
5. Slowly lower your foot to the ground.
6. Repeat 10 times. Rest and do another set of 10, then switch legs.
7. If find it hard, use your hands to help raise your leg.

Exrcise-5: One Leg Balance

1. First, shift your body weight to one leg without locking your knee straight.
2. Slowly raise the other foot off the ground, balancing on your standing leg.
3. Hold for 20 seconds, then lower.
4. Do this twice, then switch legs. Steady yourself on a chair, if needed.
   Your goal is to do this hands-free

Exercise-8: Hamstring Stretch

1. Stretching improves range of motion and keeps you limber.
2. Warm up with a five-minute walk.
3. To stretch, lie down.
4. Loop a bed sheet around your right foot.
5. Use the sheet to pull the leg up and stretch it.
6. Hold for 20 seconds, then lower the leg.
7. Repeat twice.
8. Switch legs and repeat twice

Exercise-9: Calf Stretch

1. Stretching exercises also help prevent pain and injury.
2. To do a calf stretch, hold onto a chair for balance.
3. Bend your right leg.
4. Step back with your left leg, slowly straightening it behind you.
5. Press your left heel towards the floor.
6. You should feel the stretch in the calf of your back leg.
7. Hold for 20 seconds.
8. Do the stretch twice, then switch legs.

For more stretch: Lean forward, bending the right knee deeper. Don't let the right knee go past your toes.

Annexure-5.1: Calculation of Energy requirements for patients of NIDDM

Energy requirements are calculated based on ideal body weight and not actual weight of the patient.

Ideal weight is (height in cm – 100). If a person's height is 150 cm, their ideal weight is 150 – 100 = 50 kg

Energy requirement = Basal Metabolic Rate + Activity factor

Basal metabolic rate = 22 Kcal / kg / day in women; 25 Kcal / kg / day in men.

Activity factor = 25-30% BMR in a person with a sedentary lifestyle; 35-50% in moderate level; and 50-100% in strenuous activity.

Usually, for a person with a sedentary lifestyle, calorie requirement = Body weight X 30 Kcal / day. So a 60 kg person with a sedentary lifestyle needs 1800 Kcal / day.

How do you get this energy?

Carbohydrates	60%
Proteins	15%
Fats	25%

For a 1800 Cal diet,

- Carbohydrate =60/100 X1800 = 1080 cals

  Or 270 grams of carbohydrates (1080/4), since each gram of carbohydrates provide 4 Cals)

- Protein = 15/100 X1800 = 270 Cal from protein, or 68 grams of protein (since each gram of protein provides 4 Cal)

  270/4 = 68 gm protein

- Fat = 25/100 X 1800 = 450

  Or 50 grams of fats since each gram of fat provides 9 Cals (450/9 = 50gm fat)

Annexure-5.2: Management of patients with Diabetic Ketoacidosis (DKA) and Hyperosmolar Coma

Diabetic Deto-acidosis (DKA)

Diabetic ketoacidosis is characterized by high blood sugar levels (over 300 mg %), acidosis and ketone bodies in urine. It is caused by absolute or relative decrease in insulin, and can happen when insulin doses are missed for some reason, or there is some infection in the body, or in a new patient who does not know he has diabetes.

Signs and symptoms of DKA:

- Increased thirst and urination
- Nausea and vomiting, also abdominal pain
- Generalized weakness; Altered consciousness – mild disorientation to coma
- Symptoms of infection may be present – cough, fever etc
- Signs of dehydration – weak rapid pulse, dry tongue, low blood pressure
- Smell of acetone (fruity odor)
- Shallow rapid breathing or air hunger (Kussmaul breathing)
- Signs of UTI, pneumonia, abscess, heart attack etc may be present.

Hyperglycemic Hyperosmolar State (hyperosmolar coma)

- polyuria,
- weight loss,
- diminished oral intake

culminating in mental confusion, lethargy, or coma.

- The physical examination reflects
    - profound dehydration and hyperosmolality
    - reveals hypotension,
    - tachycardia
    - altered mental status.
- Notably absent are symptoms of nausea, vomiting, and abdominal pain and the Kussmaul respirations characteristic of DKA.

It is often precipitated by a serious, concurrent infection such as sepsis, pneumonia, UTI. A debilitating condition (prior stroke or dementia) or social situation that compromises water intake often contributes to the development of the disorder.

Treatment of DKA and Hyperosmolar coma:

- Start IV fluids (normal saline) and refer. NS – 1000 ml in first 30 minutes; then 1000 ml in 1 hour; then 1000 ml in the next 2 hours. Then 1 litre every 4 hours.

- Administer Plain Insulin at the dose of is 0.3 unit per kg: give half of the dose as an intravenous bolus and the remainder give subcutaneously or intramuscularly
- There would often be a coexistent infection, such as UTI. Start a broad spectrum antibiotic
- **Refer the patient to a hospital for subsequent therapy that requires monitoring of potassium and sodium, and IV infusion of insulin.**
- If the patient does not accept referral, give 0.1 IU/kg of insulin per hour subcutaneously
- Once the blood sugar falls to about 250 mg/ dl, and patient resumes eating
    - Shift the fluids to N/2 in 5% Dextrose, 100-200 ml/ hour
    - Shift insulin to 10 U subcutaneous every 2 hours to maintain bloos sugar between 150-200 mg/dL
    - Once the blood sugar levels are between 150-200 mg/dL, monitor Bl sugar every 4 hours, give sliding scale insulin for every 50 mg rise of glucose above 150 mg/dL

Annexure-6.1: Assessing the depth of burns

The skin has two layers, the epidermis and the dermis. See the cross-section below.

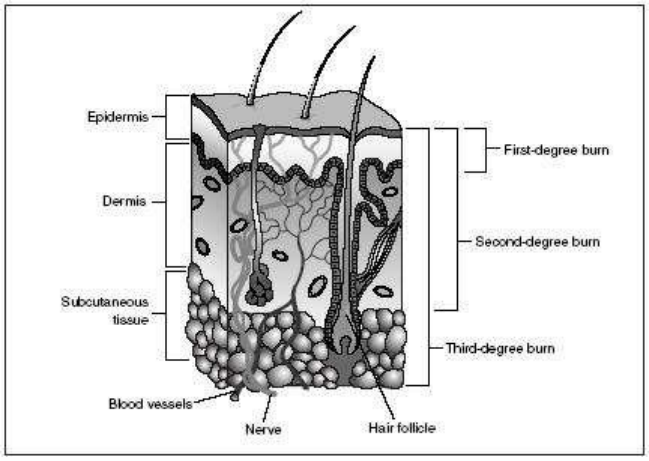
The hair shafts have sebaceous glands that open through them onto the skin and keep the skin oily. Hair follicles, sweat glands , the blood vessels to the skin and nerve endings are located in the deeper part of the dermis. The tissue under the skin is called the subcutaneous tissue and consists of fat, under which are the muscles and bones of the body.

Based on depth, burns are commonly classified as First degree, second degree, third degree and fourth degree burns:

Table-1: Classification of burns by depth of injury

	Description	Injury	Symptoms, signs	Outcome
1	**First degree**	Only epidermis	Reddening of skin, dry, blanch on pressure, painful, no blisters	Heals within a week by itself, no scars left
2.	**Second degree burns**			
2 a	Superficial second degree burns	Entire epidermis, upper part of dermis	Very painful, moist, burn is red. Blisters formed	Heal within 2 weeks, minimal or no scarring
2b	Deep second-degree	Entire epidermis and most of dermis	Pale, dry, not so painful	2-4 weeks to heal, with significant scarring
3	**Third degree burns**	All of epidermis and dermis	Dry, leathery texture, variable colour (grey, white), no sensation as nerve endings destroyed.	Do not heal spontaneously unless very small. Need skin grafting.
4	**Fourth degree burns**	All of epidermis, dermis, subcutaneous tissue/ muscle/tendon/bone	Painless, white or charred	Serious. May need amputation or complex reconstruction

Figure-1: Classification of burns by depth of injury



Annexure-6.2: Estimating the surface area burnt

A useful method that is followed is the rule of nine. Each part of the body is considered to represent 9% of the TBSA: head, each arm, front of lower limbs, back of lower limbs, front of trunk, back of trunk. The perineum has 1% of TBSA. For smaller burns, it is compared to the palm of the hand which is considered to be 1% of body surface area.

In children, because the head is relatively larger compared to the trunk, the proportions are slightly different. (see figures-2 and 3)

Figure-2: Estimating surface area of burns in adults

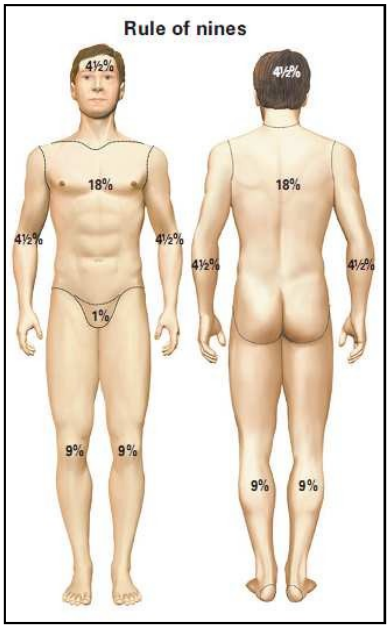
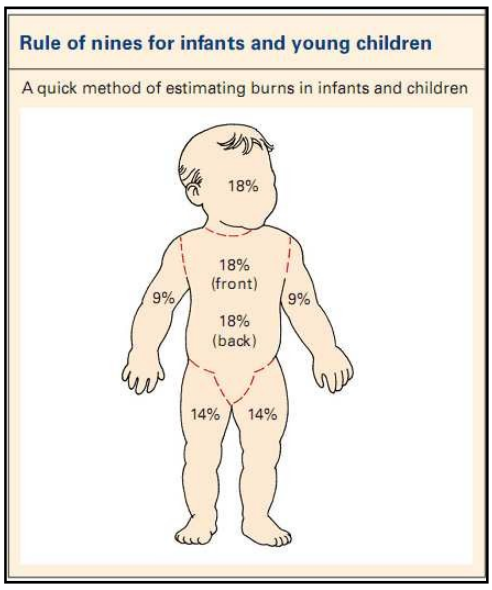


Fig-3: Estimating surface area of burns in children



JOB AIDES

Management of Abnormal Vaginal Discharge

Definition: Change in **amount, colour or smell** of vaginal discharge

Two Syndromes:

- Vaginitis: Infection of vagina alone
- Pelvic inflammatory Disease (PID): result of infection ascending from the endocervix causing endometritis, salpingitis, oophoritis

IMPORTANT TO DIFFERENTIATE BETWEEN VAGINITIS AND PID FOR FURTHER MANAGEMENT

TREATMENT OF VAGNITIS

Tab **Metronidazole**: 2 grams orally single dose

Plus

Clotrimazole **vaginal pessary** 100 mg X 6 days

Or

Tab **Fluconazole** 150 mg once

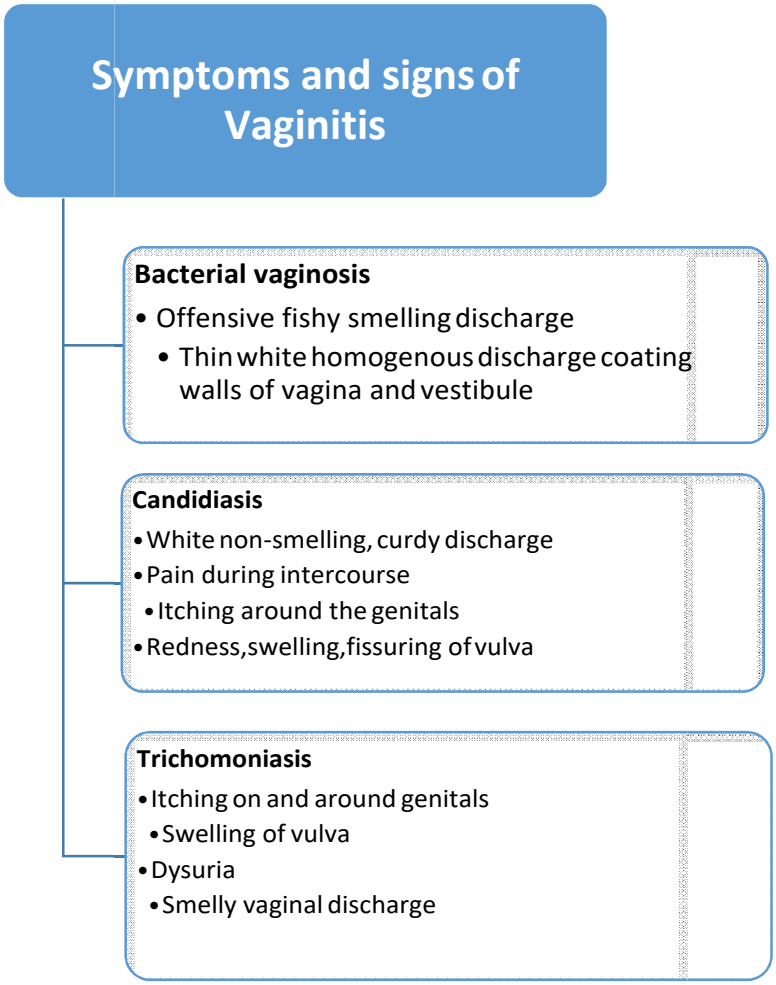
TREATMENT OF PELVIC INFLAMMATORY DISESASE (PID)

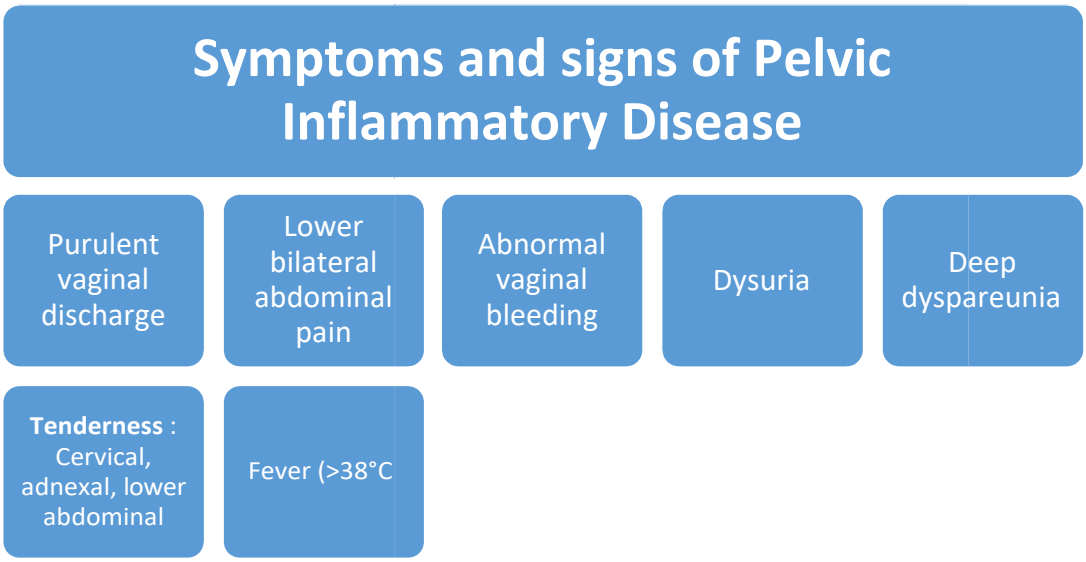
- Injection **Ceftriaxone** 500 mg IM stat

Plus Tab **Metronidazole** 2 gm Orally single dose

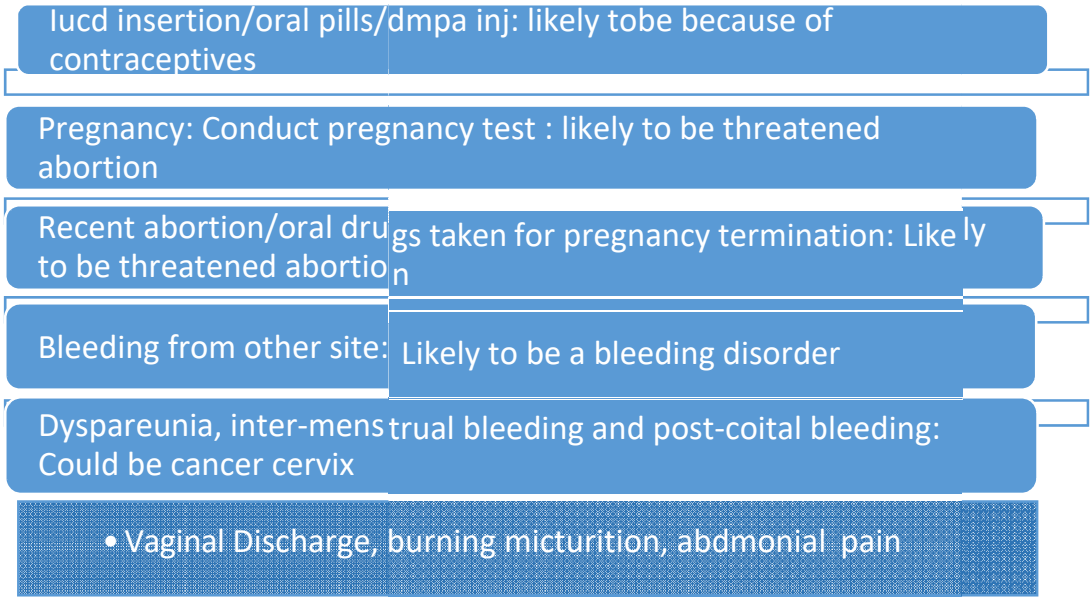
Plus Tab **Doxycycline** 100 mg BD X 14 days

- Always call husband and provide treatment
- Provide Condoms , and ask to abstain as far as possible.

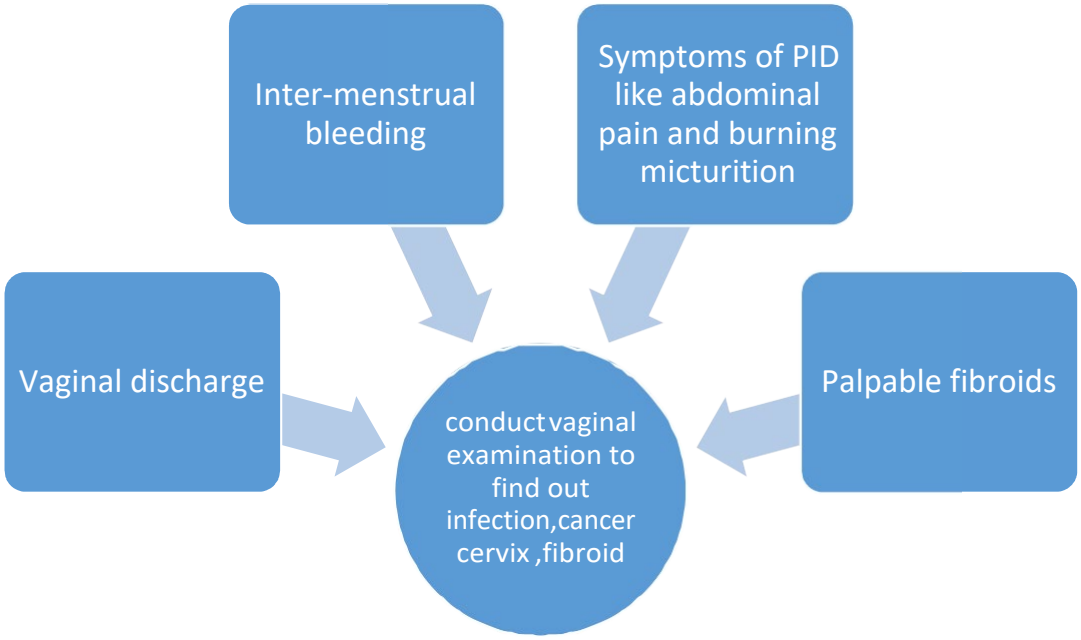

Symptoms and signs of Vaginitis
Bacterial vaginosis
• Offensive fishy smelling discharge
• Thin white homogenous discharge coating walls of vagina and vestibule
Candidiasis
• White non-smelling, curdy discharge
• Pain during intercourse
• Itching around the genitals
• Redness,swelling,fissuring of vulva
Trichomoniasis
• Itching on and around genitals
• Swelling of vulva
• Dysuria
• Smelly vaginal discharge


Symptoms and signs of Pelvic Inflammatory Disease
Purulent vaginal discharge
Lower bilateral abdominal pain
Abnormal vaginal bleeding
Dysuria
Deep dyspareunia
Tenderness : Cervical, adnexal, lower abdominal
Fever (>38°C

Ask for following symptoms



If following symptoms present, conduct vaginal examination



If based on history, and if required, vaginal examination, there is a specific cause, manage accordingly

If there is no apparent cause of the excessive bleeding, manage as follows:

- **Conduct haemoglobin estimation and give Iron Folic Acid: 1 tab bd for 14 days**

<u>If active bleeding:</u>

- **Traxenamic Acid Plus Mefenamic Acid** (Chromostat or Flocheck: 500 mg + 250 mg): 2 tablets three times a day for 4 days

<u>Followed by</u>

- **Oral contraceptives** (combined**, Mala-D**): from day 5- day 26 of the menstrual cycle; especially if the woman does not want to conceive

<u>Or</u>

Injection DMPA: if no contra-indications for DMPA exist

<u>If no active bleeding</u>

- **Oral contraceptives** (combined**, Mala-D**): from day 5- day 26 of the menstrual cycle; especially if the woman does not want to conceive

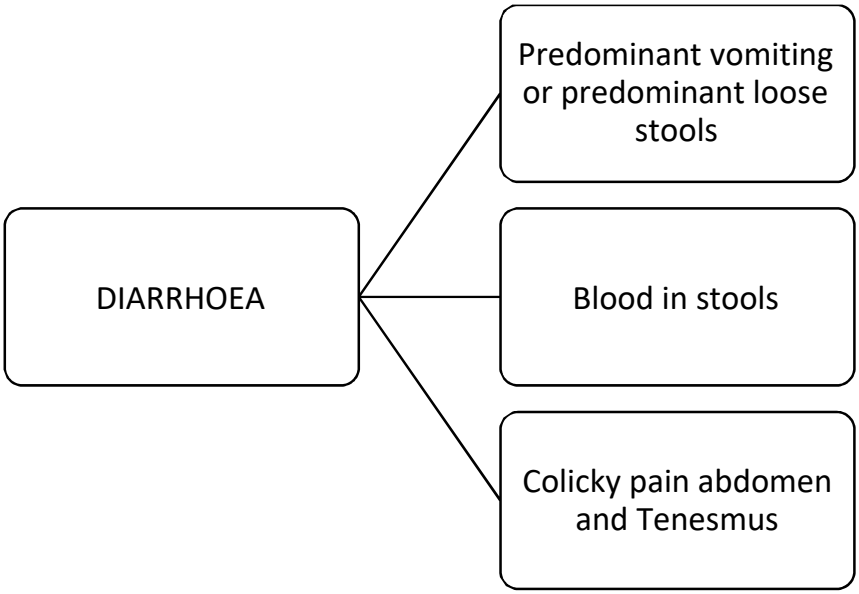
<u>Or:</u> **Injection DMPA**: if no contra-indications for DMPA

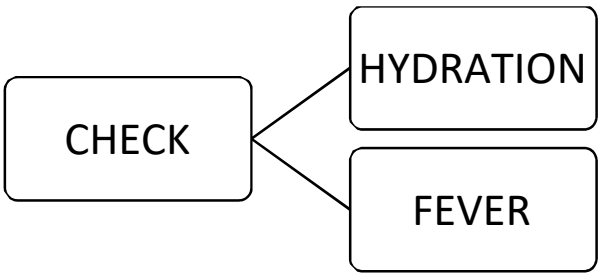
If no improvement by above, refer for investigations

Management of Diarrhea among Adults

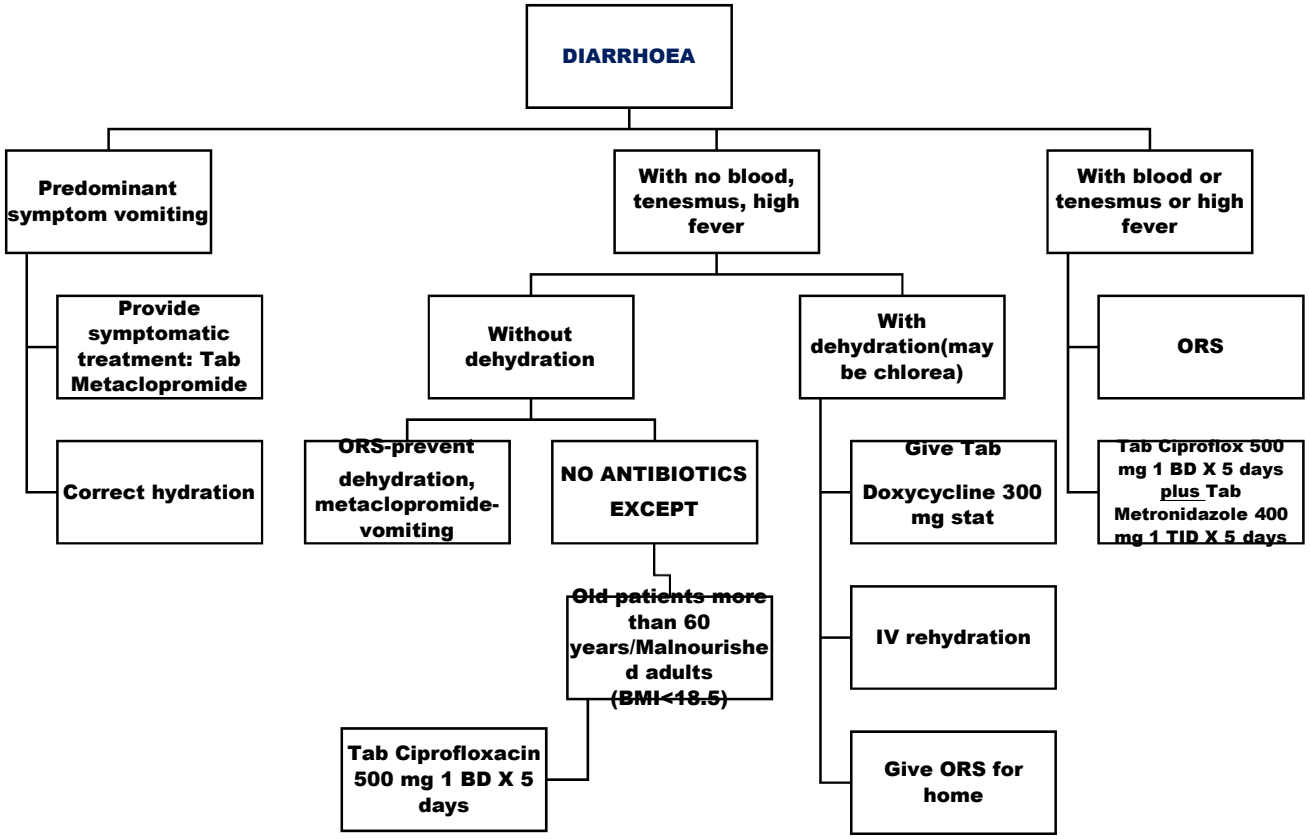
Definition of Diarrhea: **Three or more** loose stools in 24 hours, or one **large bloody** stool

ASK and ASSESS:

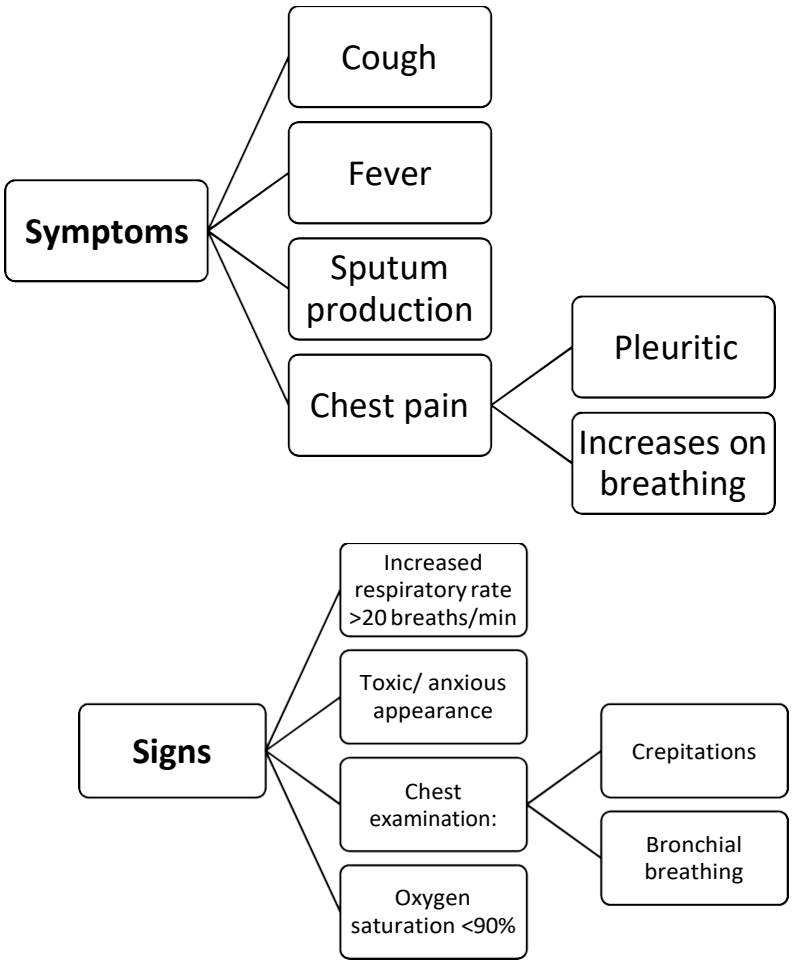




Classify and Treat



LOOK FOR FOLLOWING SYMPTOMS AND SIGNS



REFER if more than one of the following signs present

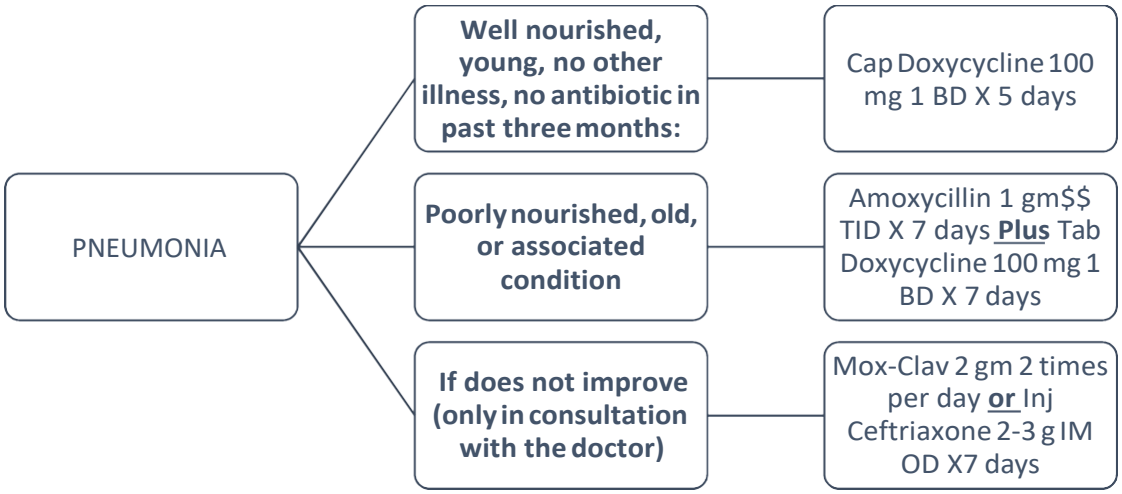
* **Confusion or disorientation** to person, place, or time

* Respiratory rate **>=30 breaths/min**(*Even after controlling fever and salbutamol inhalation)*

* Low blood pressure (**systolic <, 90 mm Hg; or diastolic <60 mm Hg**), and

* Age **> 65 years**

TREATMENT of PNEUMONIA AMONG ADULTS



$$ May replace Amoxycillin with Injection Procaine Penicillin 8 lac units IM after sensitivity test

Duration of Treatment

Give antibiotics for 7 days. Discontinue if there are following signs of clinical stability for at-least two days, else continue:

* Temperature **< 37.8 C***Ability to maintain **oral intake**

* Heart rate **<100 beats/min*** Normal mental status

* Respiratory rate **<24 breaths/min**

* Systolic blood pressure **> 90 mm Hg**

* Arterial oxygen saturation **> 90%**

Steps for Prevention of Pneumonia

4. In all patients, assess **smoking** and counsel on cessation
5. In all patients, assess **cooking (indoor and use of bio-mass fuels**), counsel on outdoor cooking
6. For prevention of spread in the clinic
    - Wash hands after touching the patient
    - Use the face mask

Management of NIDDM

Suspect Diabetes Mellitus in patients with following

- Excessive thirst and excessive urination
- Unexplained abscesses and non-healing wounds
- Recent onset of increased appetite with loss of weight
- In any comatose patient with no apparent infectious reason

Confirm it with Blood glucose test:

It is confirmed if blood glucose levels are higher than the cut-offs (with or without above symptoms):

4. Fasting glucose > 126 mg % (no calorie intake for >=8 hours)
5. 2 hours post-prandial glucose > 200 mg %
6. Random plasma glucose > 200 mg %

Criteria for defining Pre-Diabetes

*Impaired fasting glucose (IFT): Fasting glucose > 100 mg % and < 126 mg%

* Impaired glucose tolerance (IGT): 2 hour postprandial glucose >140 mg % and <200

When RBS is above the cut-offs

Assess the following

- ☐ Symptoms of Ischemic Heart Disease
- ☐ Blood Pressure
- ☐ Visual acuity
- ☐ Cataract

Conduct following tests

Essential:

Fasting and PP Blood sugar

Desirable:

HbA1C, S Cholesterol, LDL, HDL

Management of diabetes

Aim : Keep blood sugars in a normal range:

- Fasting glucose 90-130 mg %
- Post-prandial <180 mg%

BP levels of diabetic patients should be maintained at <130/80 mm Hg.

Elements of Management

DIET

* Reduce cereal intake
* Avoid simple sugars
* Avoid fruit juices
* Increase use of vegetables
* Eat meals at regular interval
* Eat 3 meals &3 snacks / day

EXERCISE

* Start with 10 minutes of walk/day
* Increase to 30-40 minutes per day
* Walk briskly

DRUGS

* **Start with:** Tab Metformin: 500 mg with breakfast

*Monitor fasting blood sugar weekly

* If blood sugar **not controlled after one week,** add 500 mg at dinner

* **If still not controlled**, add 500mg at lunch time after one week.

* Increase to a maximum of 2250/day by increasing 500mg per week.

* **If still uncontrolled**, add Glimepride 1 mg once a day

* **If still uncontrolled,**stop Glimiperide &

* Add Insulin (Mixed: 70/30) at dose of 0.3-to 0.4 IU/kg day in two divided dose in ratio of 2: 1 (morning: evening)

* Counsel on signs of hypoglycemia & need for regular meals

FOOT CARE

* Wear comfortable footwear
* Keep the feet clean and dry at all times.
* Do not walk without slippers even in the house.
* Examine the feet daily, especially between the toes for evidence of fungal infection
* Cut toenails carefully and cut them flat.

MONITOR

In the beginning when the doses are being titrated (1-2 months)

- Weekly fasting blood sugar:
- Elicit history of hypoglycemia
- Elicit dietary history and reinforce dietary counseling

Subsequently: Once every 2 months

- Fasting and PP blood sugar
- HbA1C
- Examine feet
- Look for cataract
- Take Blood Pressure

Management of Pre-diabetes

* Counsel diet and exercise as recommended for diabetics

* Assess them monthly for 3 months and then every 3 monthly.

* Check F.B.S , 2 hr PP sugar, B.P and vision essentially in every check up

Summary of advice for all patients with Diabetes Mellitus

8. This is a lifelong disease and would require treatment and care lifelong.
9. Eat three meals and three snacks every day. Do not eat refined sugars. Eat lot of roughage.
10. Walk for 30 minutes everyday
11. Wear comfortable footwear. Do not cut toe nails short.
12. Recognize signs of hypoglycemia: anxiety, dizziness, excessive hunger, sweating. Keep sugar in person, and consume whenever signs of hypoglycemia are present.
13. Take drugs in prescribed doses everyday