सत्यमेव जयते

NATIONAL HEALTH MISSION
राष्ट्रीय स्वास्थ्य मिशन

Facility Based Integrated Management of Neonatal and Childhood Illness (F-IMNCI)

Child Health Division
Ministry of Health & Family Welfare
Government of India

2023

Chart Booklet

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CHART BOOKLET

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Chart 1.1: Steps in the management of children brought to hospital

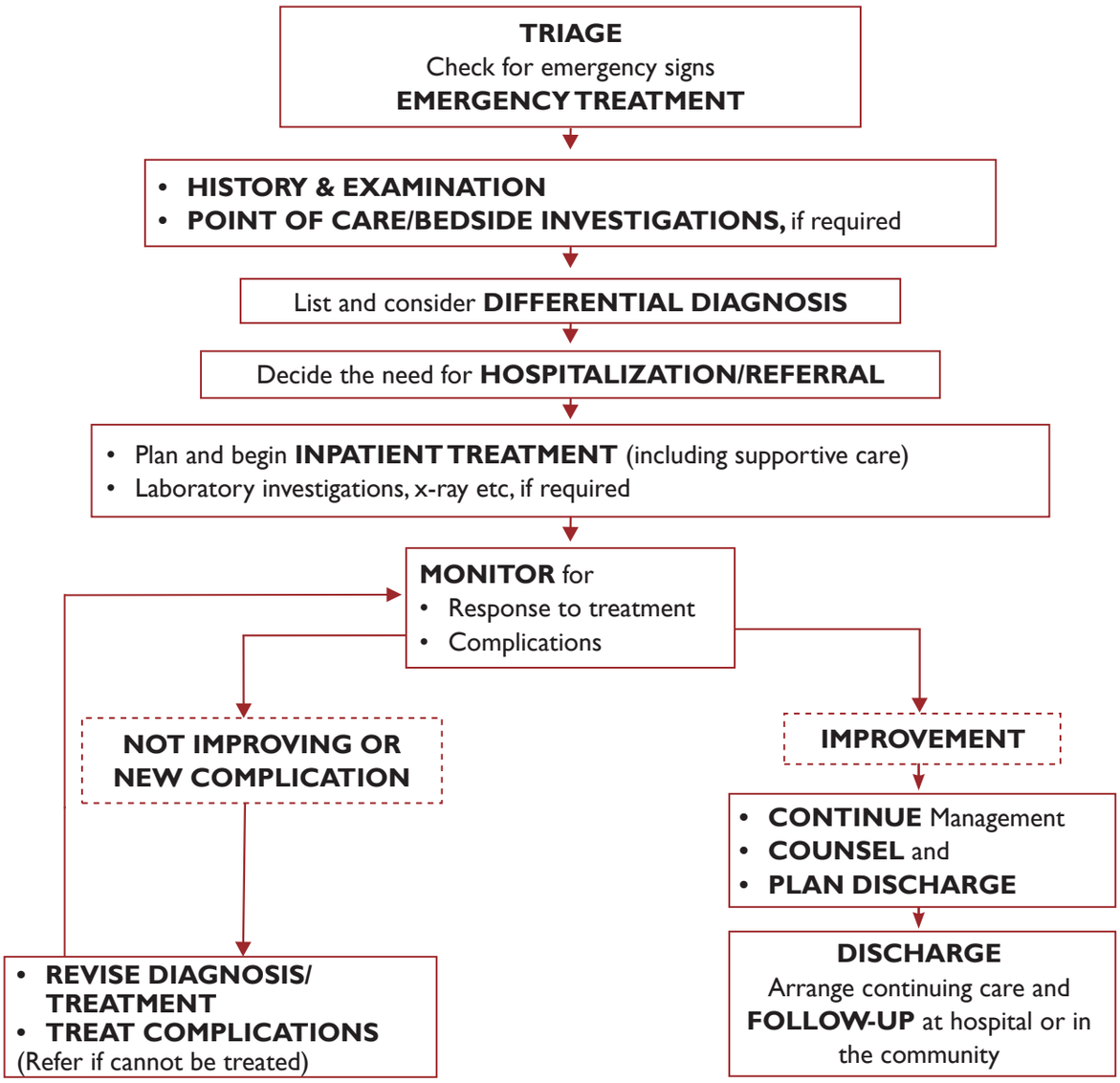


Chart 1.2: Tests for COVID 19

Tests for COVID-19

Reverse transcriptase – Polymerase chain reaction (RT-PCR/CBNAAT/TrueNat) for SARS-CoV-2 RNA are most preferred test. Rapid serology kits may be negative during first 7–10 d of infection and it may stay positive for several weeks following infection.

Preferred sample are upper respiratory tract sample (nasopharyngeal and oropharyngeal swab) and should be transported in viral transport media (VTM) on ice. In mechanically ventilated children, bronchoalveolar lavage (BAL) or endotracheal aspirate would be the preferred specimen. These have to be mixed with the viral transport medium and transported on ice.

Methods of collecting nasopharyngeal and oropharyngeal (Throat) Swab

1. Sample should be collected by trained health care professionals. They should wear appropriate personal protective equipment (PPE) with latex free purple nitrile gloves while collecting the sample from the patient. Proper infection control precautions should be maintained when collecting specimens.
2. Use only synthetic fiber swabs (e.g. dacron or rayon) with plastic shafts. Do not use cotton or calcium alginate swabs or swabs with wooden shafts.
3. For nasopharyngeal swab, tilt patient's head back 70 degrees. Insert the swab in one nostril and push deep along floor and septum of nose until resistance is felt. Rotate the swab several times against nasopharyngeal wall. Place tip of the swab into sterile viral transport media tube and cut off the applicator stick.
4. For throat swab, take a second dry swab, insert into mouth, and swab the posterior pharynx. Avoid touching the tongue, teeth, gums and tonsils. Place tip of swab into the same tube and cut off the applicator tip.
5. Requisition form for each specimen should be completed and submitted.
6. Proper disposal of all waste generated has to be ensured (red container).

Chart 2.1: Triage of all sick children

	ASSESS ABCD		TREAT **Do not move neck if cervical spine injury possible. Keep the child warm.**
AIRWAY AND BREATHING	• Not breathing or Gasping or • Obstructed breathing or • Central cyanosis, or • Severe respiratory distress	→ Any Sign Positive	• **If not breathing or gasping** ◆ Manage airway ◆ Start life support • **Obstructed breathing / central cyanosis or severe respiratory distress** ◆ Manage airway ◆ Give oxygen ◆ Make sure child is warm
CIRCULATION	**Cold hands with:** • Capillary refill longer than 3 seconds, **and** • Weak and fast pulse	→ If Positive Check for severe acute malnutrition	◆ If the child has any bleeding, apply pressure to stop the bleeding. Do not use a tourniquet. ◆ Give oxygen ◆ Make sure child is warm • **If no severe acute malnutrition:** ◆ Insert IV line* and begin giving fluids rapidly • **If severe acute malnutrition** ◆ Give IV glucose ◆ Insert IV line and give fluids slowly
COMA/ CONVULSING	• Coma or • Convulsing (now)	→ If Coma Or Convulsing	◆ Manage airway ◆ Position the unconscious child (if head or neck trauma is suspected, stabilize the neck first) ◆ Give oxygen ◆ Check and correct hypoglycemia ◆ Give IV calcium if infant <3 months ◆ If convulsion continue, give anti-convulsant
SEVERE DEHYDRATION (ONLY IN CHILD WITH DIARRHOEA)	Diarrhoea plus any two of these: • Lethargy • Sunken eyes • Very slow skin pinch	→ Diarrhoea Plus Two Signs Positive Check for severe acute malnutrition	◆ Make sure child is warm • **If No Severe Acute Malnutrition:** ◆ Insert IV line and begin giving fluids (RL/NS) rapidly • **If Severe Acute Malnutrition:** ◆ Do not give IV fluids, give ORS# ◆ Proceed immediately to full assessment and treatment

IF THERE ARE NO EMERGENCY SIGNS LOOK FOR PRIORITY SIGNS:
These children need prompt assessment and treatment

PRIORITY SIGNS

• Tiny baby (<2 months) • Temperature very high • Trauma or other urgent surgical condition • Pallor (severe) • Poisoning • Pain (severe) • Respiratory distress	• Restless, continuously irritable, or lethargic • Referral (urgent) • Malnutrition: Visible severe wasting • Oedema of both feet • Burns (major)

NON-URGENT - Proceed with assessment and further treatment according to the child's priority.

**If not able to insert peripheral IV, insert an external jugular or intraosseous line. # 5 ml/kg every 30 min for 2 hours*

Note: If a child has trauma or other surgical problems, get surgical help or follow surgical guidelines.

Chart 2.2: Providing Life Support

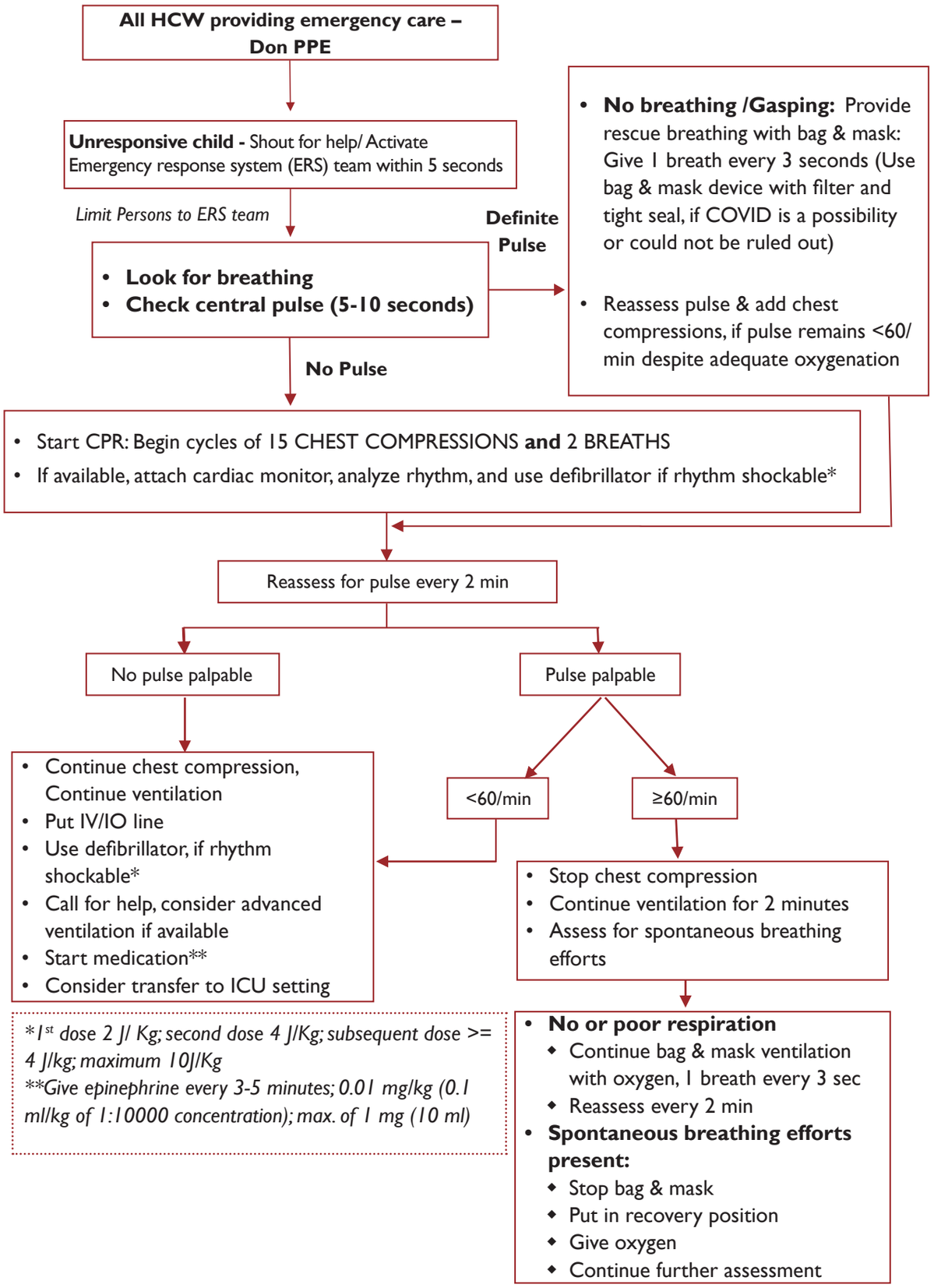
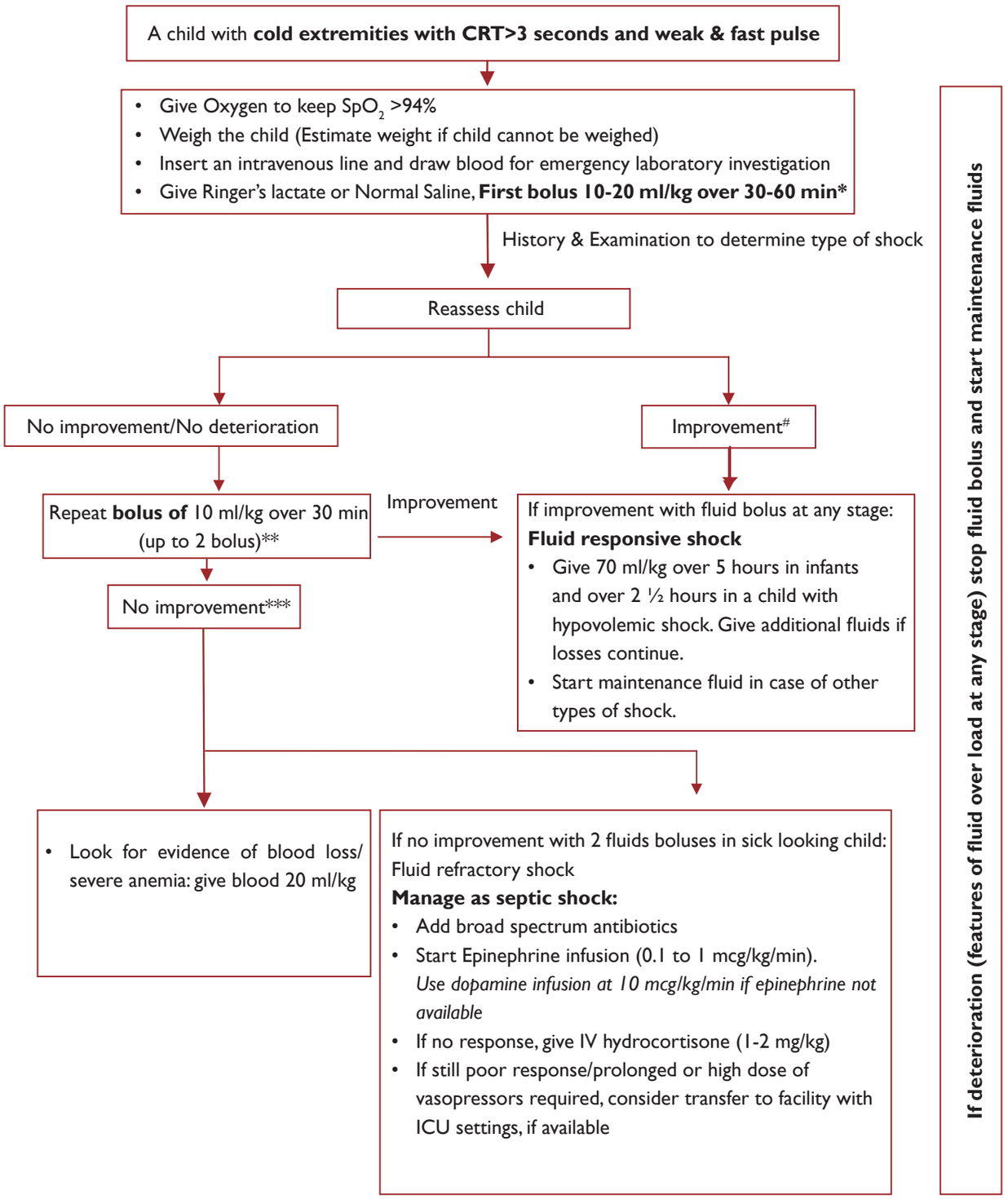


Chart 2.3: How to Give IV Fluids for Shock in a Child without Severe Acute Malnutrition



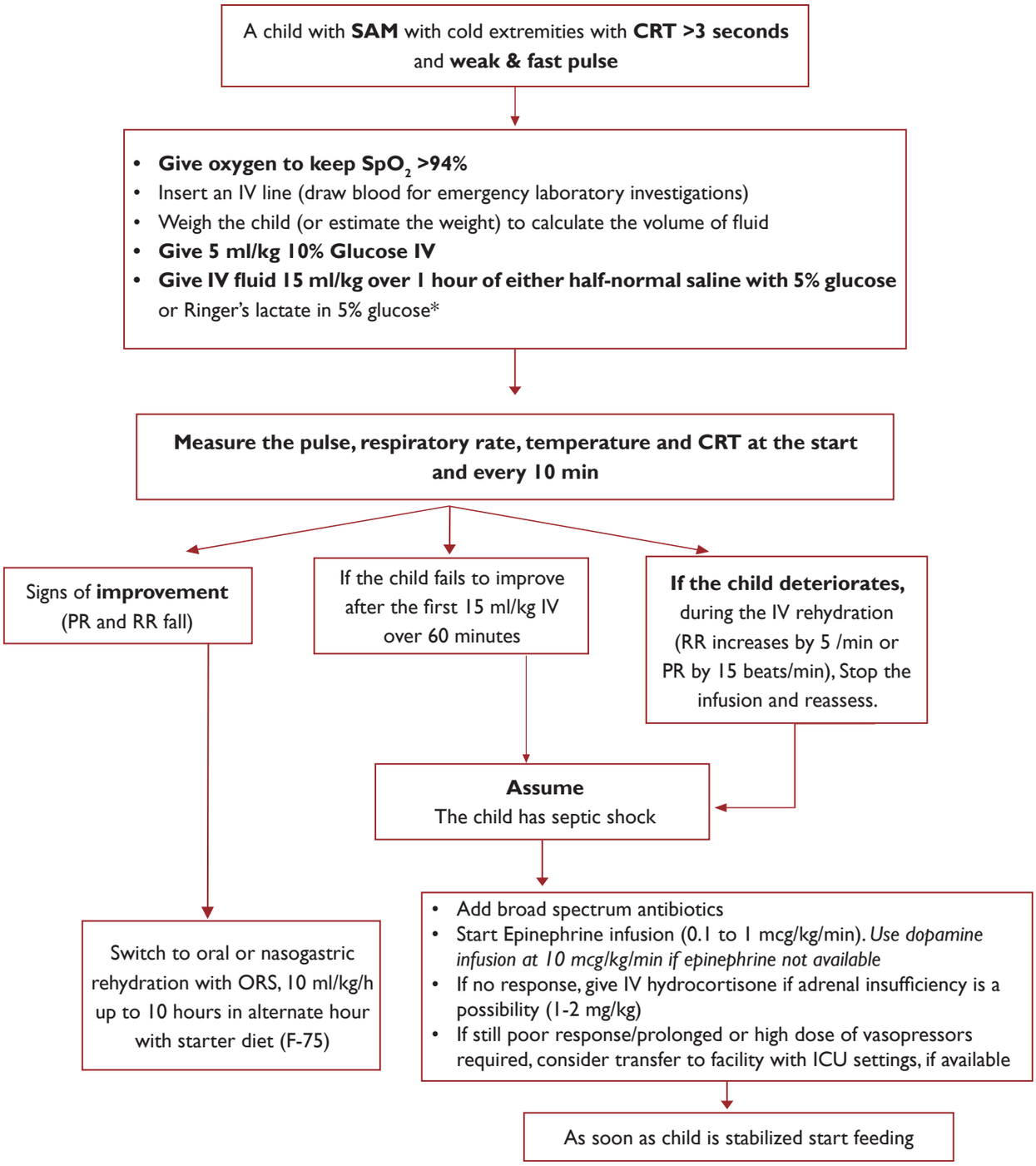
**Give 20 ml/kg IV fluids fast over 15-30 minutes in hypovolemic shock, slow over 60 min if the child has moderate malnutrition or severe pallor or fever*

***Give 20 ml /kg IV fluid bolus in case of hypovolemic shock*

#Signs of improvement: Good volume and slowing pulse rate and faster capillary refill.

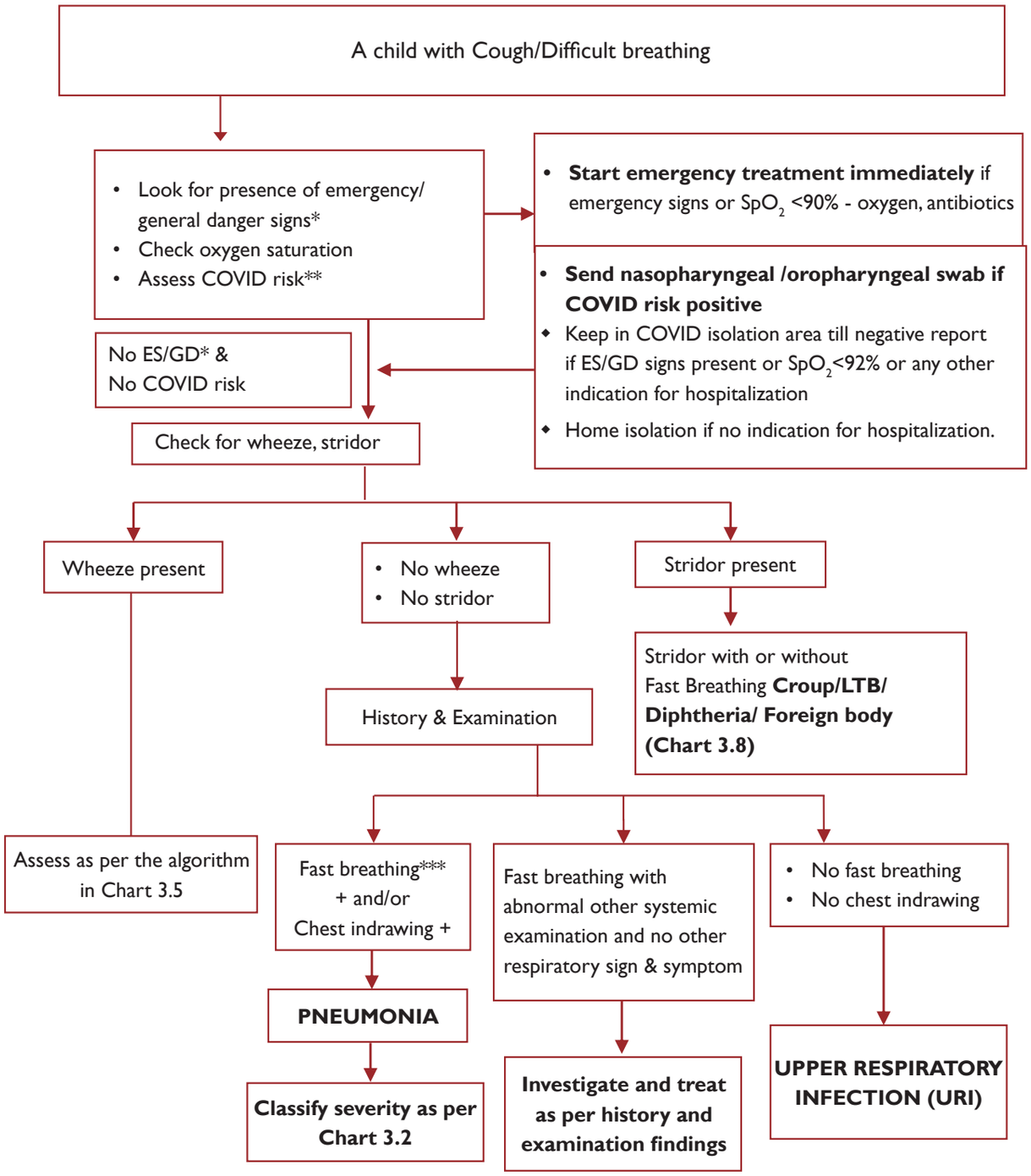
****If deterioration (increase in RR > 5 and HR > 15) stop fluid, consider cardiogenic or septic shock.*

Chart 2.4: How to Give IV Fluids for Shock in a Child with Severe Acute Malnutrition (SAM)



** If profuse diarrhoea (more than 10 loose watery stools in last 24 hours), repeat 15 ml/kg of fluid over 1 hour*

Chart 3.1: Assessment of a child with Cough/Difficult Breathing



**Emergency/General Danger Signs (ES/GD): Not breathing at all or gasping, Obstructed breathing, Central cyanosis, Oxygen saturation <90%, Severe respiratory distress, Shock, Coma, Convulsions, Inability to breastfeed or drink or persistent vomiting (Initial management of children with emergency signs have already been covered in ETAT Section 2).*

*** Fever with cough or loss of smell/taste or difficult breathing of less than 10 days or H/o contact with COVID case in last 2 weeks*

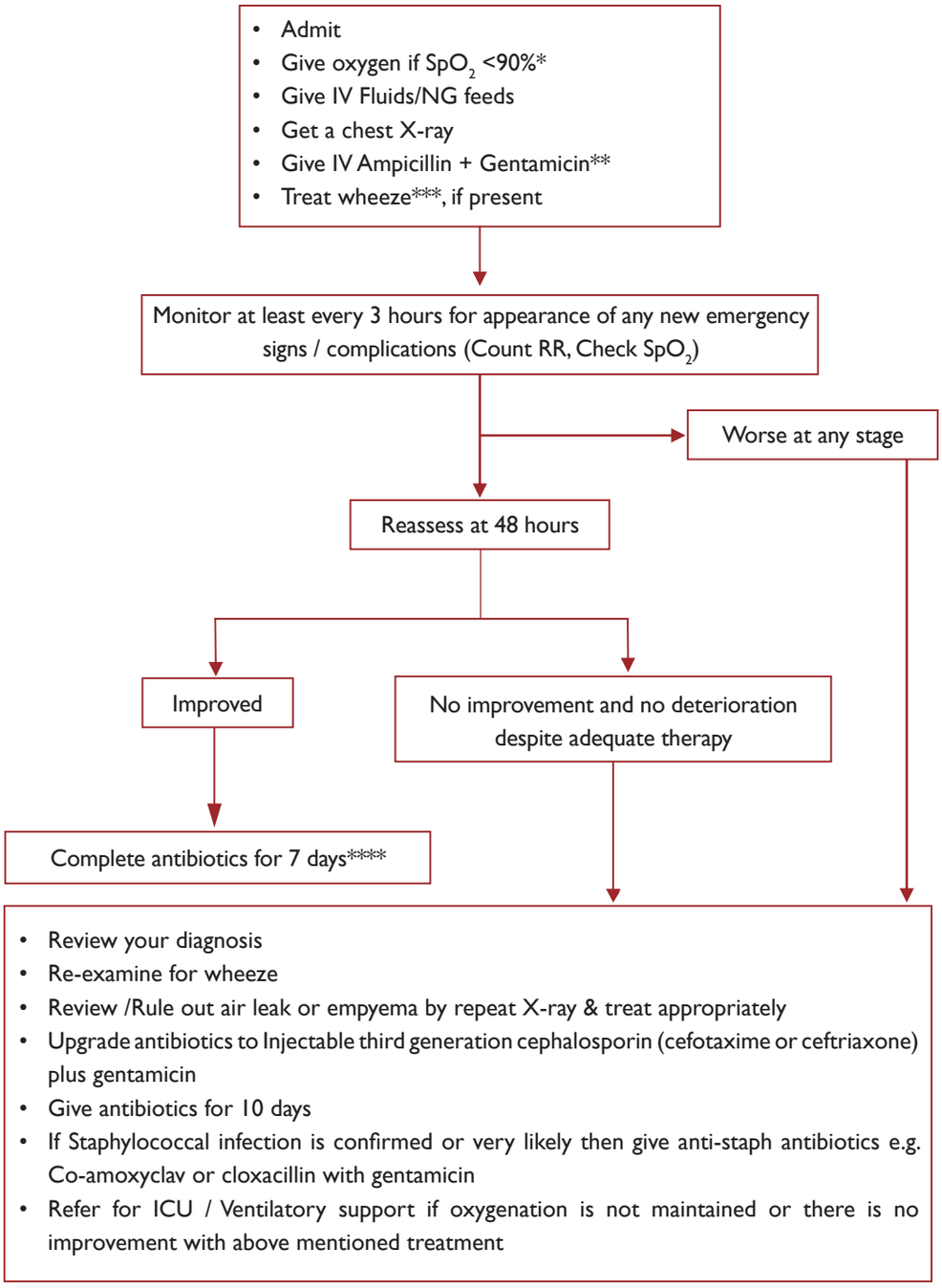
****Fast breathing: ≥ 60 breaths/min in a child aged <2 months; ≥50 breaths/min in a child aged from 2 months up to 12 months; ≥ 40 breaths/min in a child aged from 1year up to 5 years.*

Chart 3.2: Classification of the severity of pneumonia

Sign or symptom	Classification	Treatment
Cough or difficulty in breathing with any of the following signs: • Central cyanosis • Oxygen saturation < 90% • Severe respiratory distress (Laboured or very fast breathing {RR >70} or severe lower chest indrawing or head nodding or stridor or grunting) • Anyother general danger/ Emergency signs*	Severe pneumonia	• Admit. • Manage airway • Give oxygen if saturation < 90% (<94% if other emergency signs) • Give injectable antibiotics
• Fast breathing: ◆ ≥ 60 breaths/min in a child aged <2 months ◆ ≥ 50 breaths/min in a child aged 2 months upto 12 months ◆ ≥ 40 breaths/min in a child aged 1– 5 years • Chest indrawing	Pneumonia	• Give oral Amoxicillin for 5 days • If wheezing (or disappeared after rapidly acting bronchodilator) give bronchodilator for 5 days • Soothe the throat and relieve the cough with a safe remedy • If coughing for more than 14 days or recurrent wheeze, refer for possible TB or asthma assessment • Advise mother when to return immediately • Follow-up in 2 days
• No signs of pneumonia or severe pneumonia	No pneumonia: cough or cold	• Home care • Soothe throat and relieve cough with a safe remedy. • Advise the mother when to return immediately • Follow up after 5 days if not improving

**inability to breastfeed or drink, shock or lethargy/ reduced level of consciousness or convulsions*

Chart 3.3: Algorithm for management of children with severe pneumonia



** < 94 % in presence of other emergency signs*

*** If staphylococcal infection is suspected, give anti-staph antibiotic like Co-amoxyclav or cloxacillin and gentamicin; in case of severe pneumonia with septic shock consider Ceftriaxone and Vancomycin (Box 3.2)*

****In case the child improves significantly with bronchodilator therapy, review the diagnosis*

*****Shift to oral drugs as soon as the child is able to take orally*

Chart 3.4: Systematic assessment of Children with non-severe pneumonia at follow-up

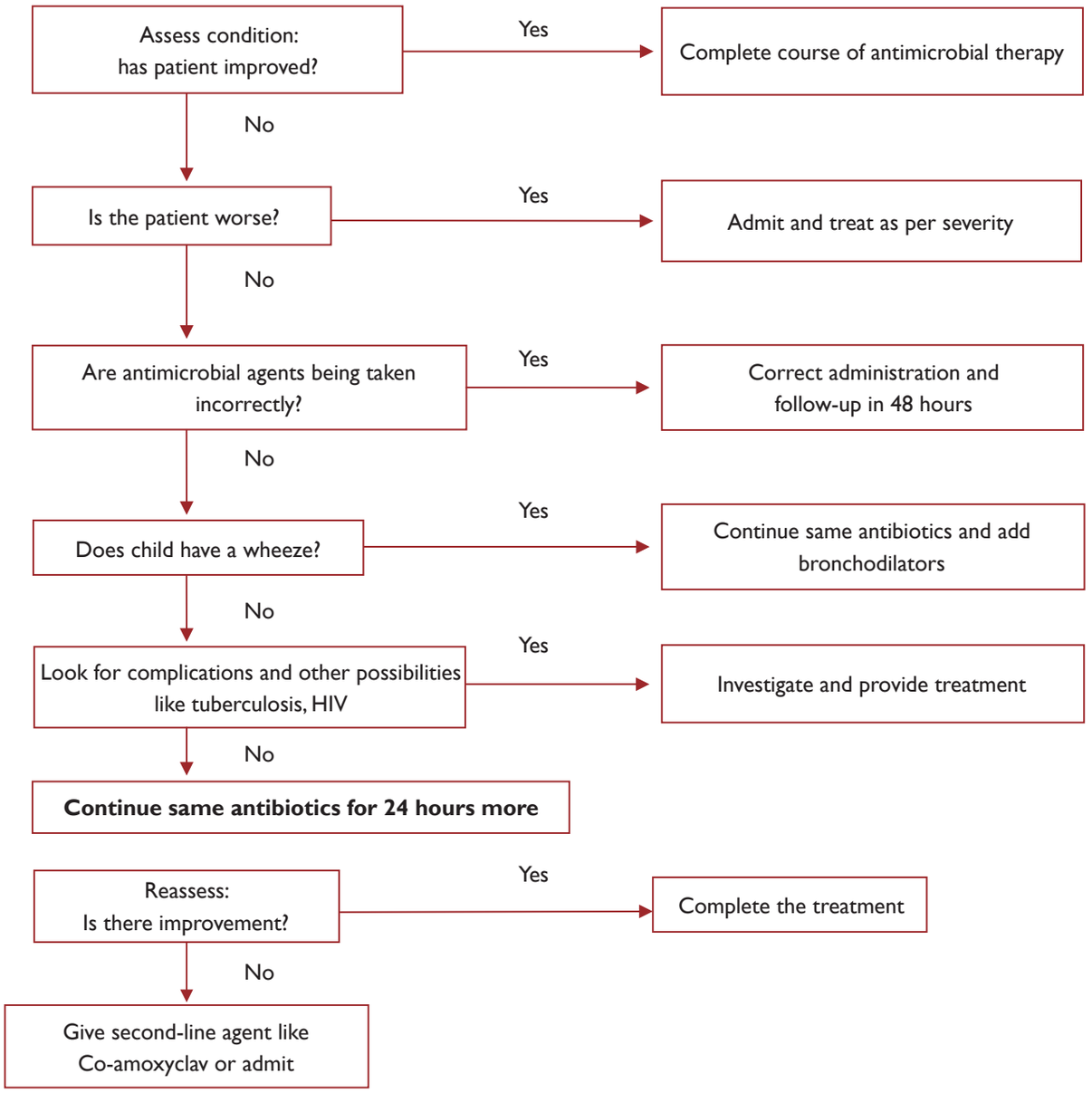


Chart 3.5: Assessment of children with wheezing and respiratory distress

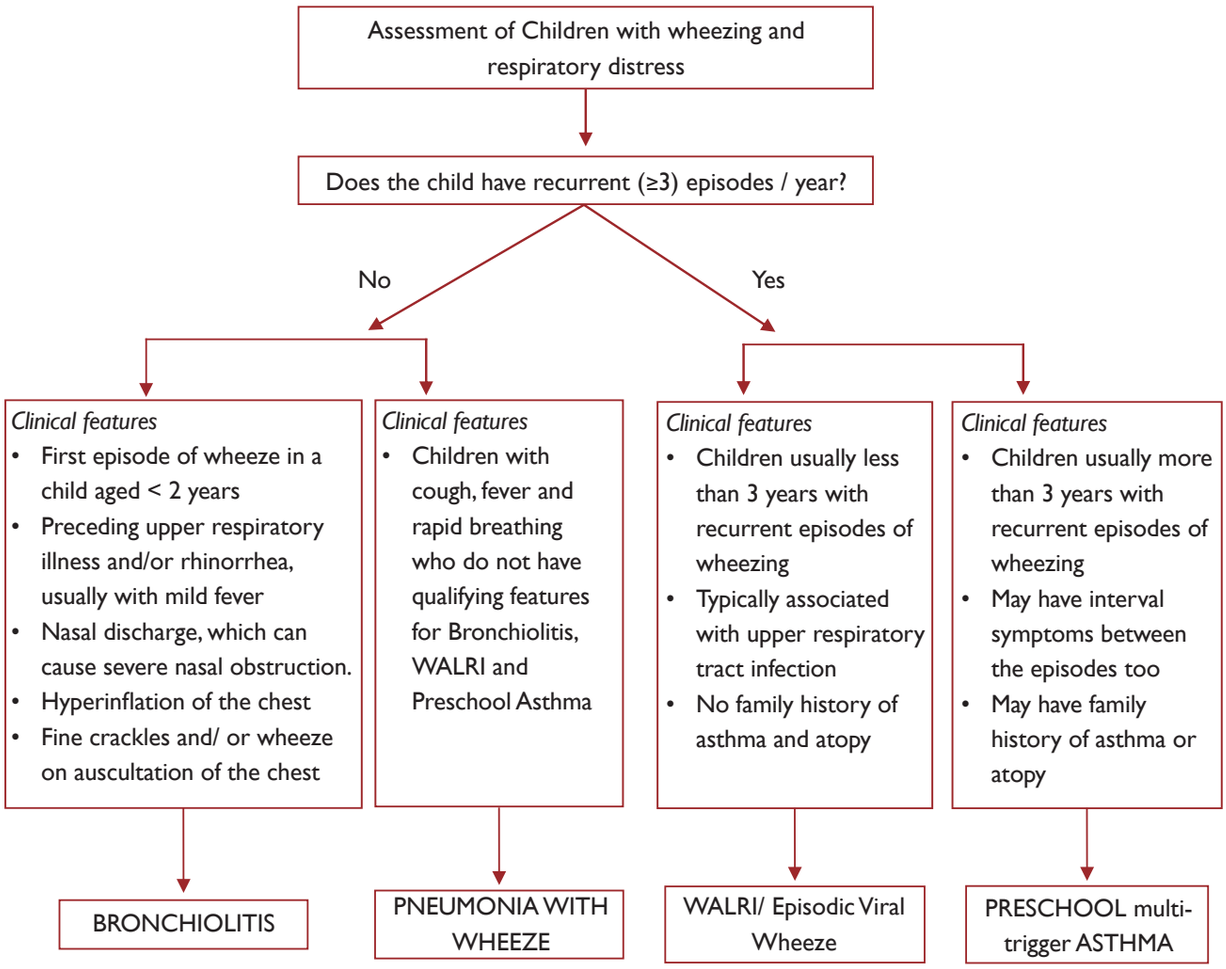
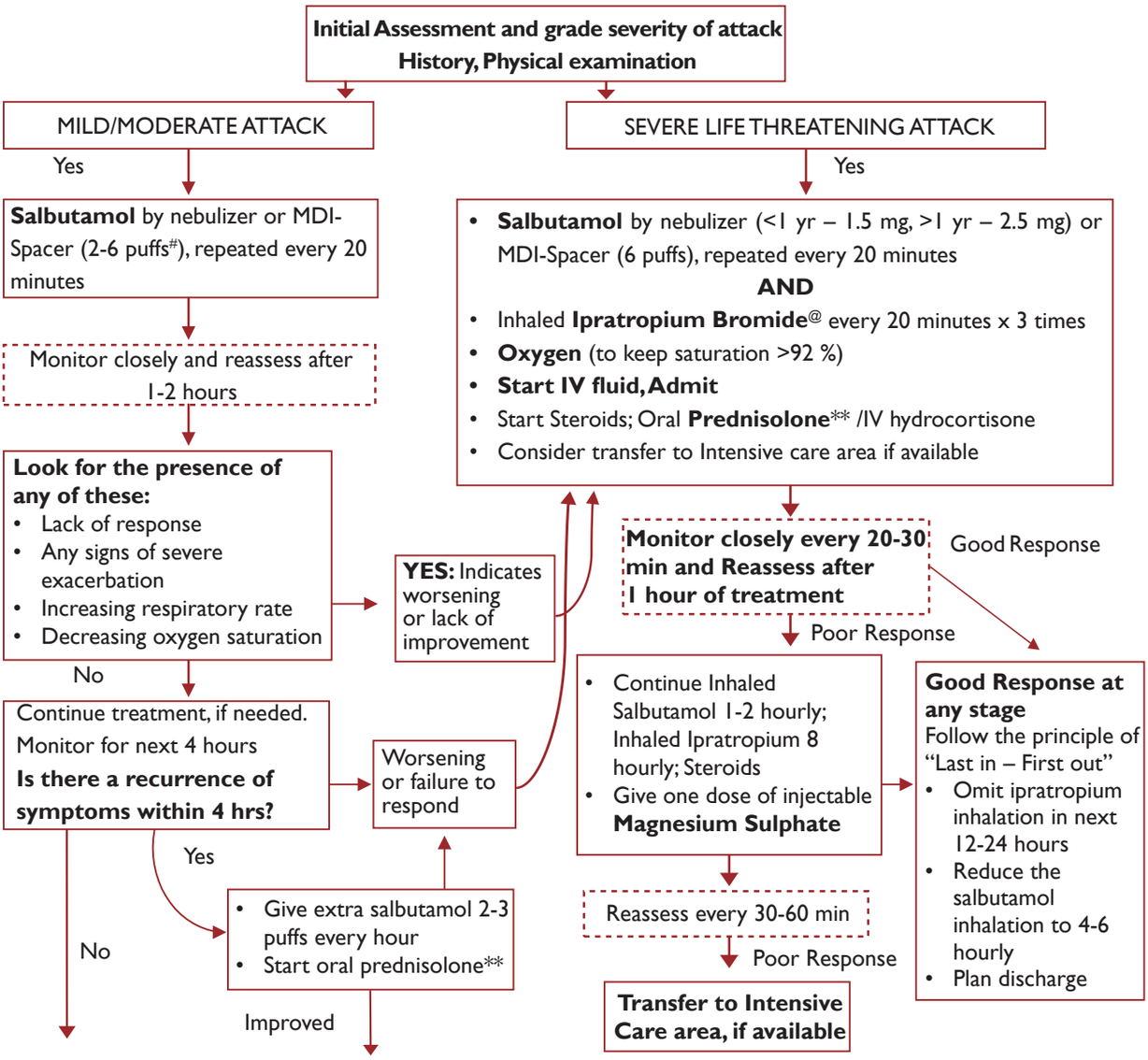


Chart 3.6: Classification of severity & grading of bronchial asthma attack

Mild-Moderate	Severe or Life threatening
• Talks in phrases • Prefers sitting to lying • Respiratory rate increased but accessory muscles not used • Oxygen saturation ≥ 92 % on room air • Agitated	• Talk in words • Central cyanosis • Sits hunched forwards • Accessory muscles in use • Oxygen saturation < 92% on room air • Drowsy, confused or silent chest • Pulse rate > 200 bpm (0-3 years) or > 180 bpm (4-5 years)
Treatment of a child with acute life-threatening asthma	
• Start oxygen. • Simultaneously initiate combined therapy with inhaled Salbutamol and Ipratropium. • Inj. Adrenaline (0.01ml/kg/dose; 1:1000 strength) can be given subcutaneously every 20 min, 3 times. ◆ If there is silent chest or ◆ If inhaled drug treatment is not possible or ◆ If there is associated anaphylaxis or angioedema. • Start maintenance intravenous fluids. • Start systemic steroids (Injection Hydrocortisone 5-10 mg/kg IV). Plan and arrange transfer to a higher facility in case you do not witness a significant response in the first hour. Continue treatment as a severe attack till transfer occurs to a facility with intensive care capacities.	

Chart 3.7: Management and treatment of acute asthma in a hospital



*# **In mild – moderate exacerbation** number of puffs to be given every 20 minutes are: 2 puff in age less than 5years, 4 puffs in age more than 5 yrs. **In severe exacerbation**- Give 6 puffs every 20 minutes. Keep a gap of 15-30 seconds between two puffs. Each puff of Salbutamol has 100 microgram drug.*

*@**Ipratropium bromide:** 2 puffs of 80mcg MDI or 250mcg by nebulizer should be given every 20 minutes during first hour in children in life threatening conditions thereafter if needed it should be repeated every 8 hours.*

*****Prednisolone** 1–2 mg/kg/day, with a maximum of 20 mg/day for children under 2 years of age and 30 mg/day for children aged 2 –5 years, 60 mg/day in older children. Intravenous corticosteroids (Hydrocortisone IV 5-10 mg /kg) can be administered when patients are too dyspnoeic to swallow; if the patient is vomiting; or when patients require non-invasive ventilation or intubation.*

Medications to treat asthma can be classified as controllers or relievers. **Controllers** are medications taken daily on a long-term basis to keep asthma under clinical control chiefly through their anti-inflammatory effects. Controller medications reduce future risks such as exacerbations and decline in lung function. Inhaled glucocorticosteroids are currently the most effective and preferable controller. Other available controllers (less effective and more toxic) are Leukotriene receptor antagonist (LTRA), theophylline or low dose oral corticosteroids.

Relievers are medications used on as-needed bases that act quickly to reverse bronchoconstriction and relieve its symptoms.

Chart 3.8: Differential diagnosis in a child presenting with stridor & Management of Viral Croup

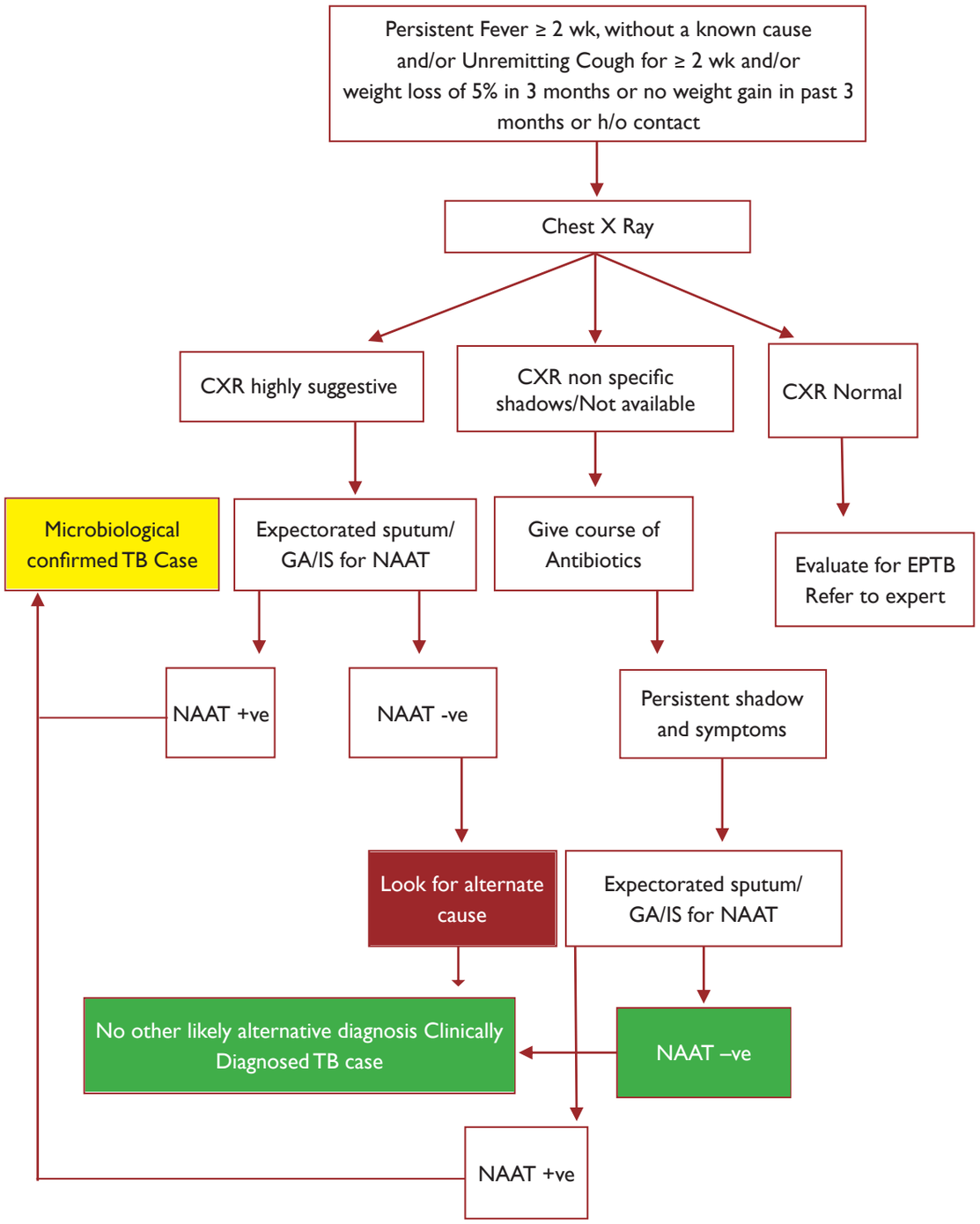
Differential diagnosis in a child presenting with stridor	
Diagnosis	***In favour***
Viral Croup	• Barking cough • Respiratory distress • Hoarse voice
Diphtheria	• Bull neck appearance due to enlarged cervical nodes and oedema • Congested throat • Grey pharyngeal membrane • Blood-stained nasal discharge • Incomplete vaccination /No evidence of DPT vaccination
Retropharyngeal abscess	• Soft tissue swelling in posterior pharyngeal wall • Difficulty in swallowing • Fever • Toxic look
Foreign body	• Sudden history of choking • Respiratory distress
Epiglottitis	• Soft stridor • Toxic look • Little or no cough • Drooling of saliva • Inability to drink
Laryngomalacia	• Stridor starting during first month
Anaphylaxis	• History of allergen exposure • Wheeze • Shock • Urticaria and oedema of lips and face

Diagnosis & Management of Viral Croup		
Type	***Diagnosis***	***Treatment***
Mild croup	• A hoarse voice • A barking or hacking cough • Stridor that is heard only when the child is agitated.	• Home care (fluid, feeding, when to return) • Oral corticosteroids - (single dose of dexamethasone 0.6 mg/kg or equivalent) can be given if patient is brought/referred to hospital.
Moderate to Severe croup	• Presence of any emergency sign (e.g. cyanosis or oxygen saturation ≤90%) and/ or • Stridor when the child is calm • and /or • Rapid breathing and lower chest in-drawing and/or • Drooling of saliva.	• Admit in hospital • Steroid – Single dose Inj. Dexamethasone (0.6 mg/kg) I/M or IV or oral Prednisolone (1-2 mg/kg). • Epinephrine (adrenaline) – Nebulized Epinephrine (1:1000 solution) 2 ml in 2 ml of normal saline. • Antibiotics are not recommended. • Oxygen therapy • Intubation or Tracheostomy in children with incipient obstruction.

Chart 3.9: Differential diagnosis in children presenting with chronic cough

Diagnosis	*In favour*
TB	• Weight loss (>5% loss in last 3 months) • Anorexia • Enlarged liver and spleen • Persistent or intermittent fever • History of contact with tuberculosis case • Abnormal chest X-ray
Asthma	• History of recurrent wheeze • Hyperinflation of the chest • Prolonged expiration • Reduced air entry (in very severe airway obstruction) • Good response to bronchodilators
Pertussis	• Paroxysms of cough followed by whoop, vomiting, cyanosis or apnoea • Sub-conjunctival haemorrhages • Not received DPT vaccination. • No fever
HIV	• Known or suspected maternal or sibling HIV infection • Failure to thrive • Oral or oesophageal thrush • Chronic parotitis • Skin infection with herpes zoster (past or present) • Generalized lymphadenopathy • Chronic fever • Persistent diarrhoea • Finger clubbing

Chart 3.10: Diagnostic algorithm for Pediatric Pulmonary tuberculosis (NTEP)



GA- gastric aspirate, IS- induced sputum

Highly suggestive Chest X-ray- miliary shadows, hilar or mediastinal lymphadenopathy or fibro-cavitatory lesions

Sputum for AFB smear should be done twice but sputum for NAAT should be done once only

Antibiotics like Linezolid and Fluoroquinolones should not be used as they have antitubercular activity

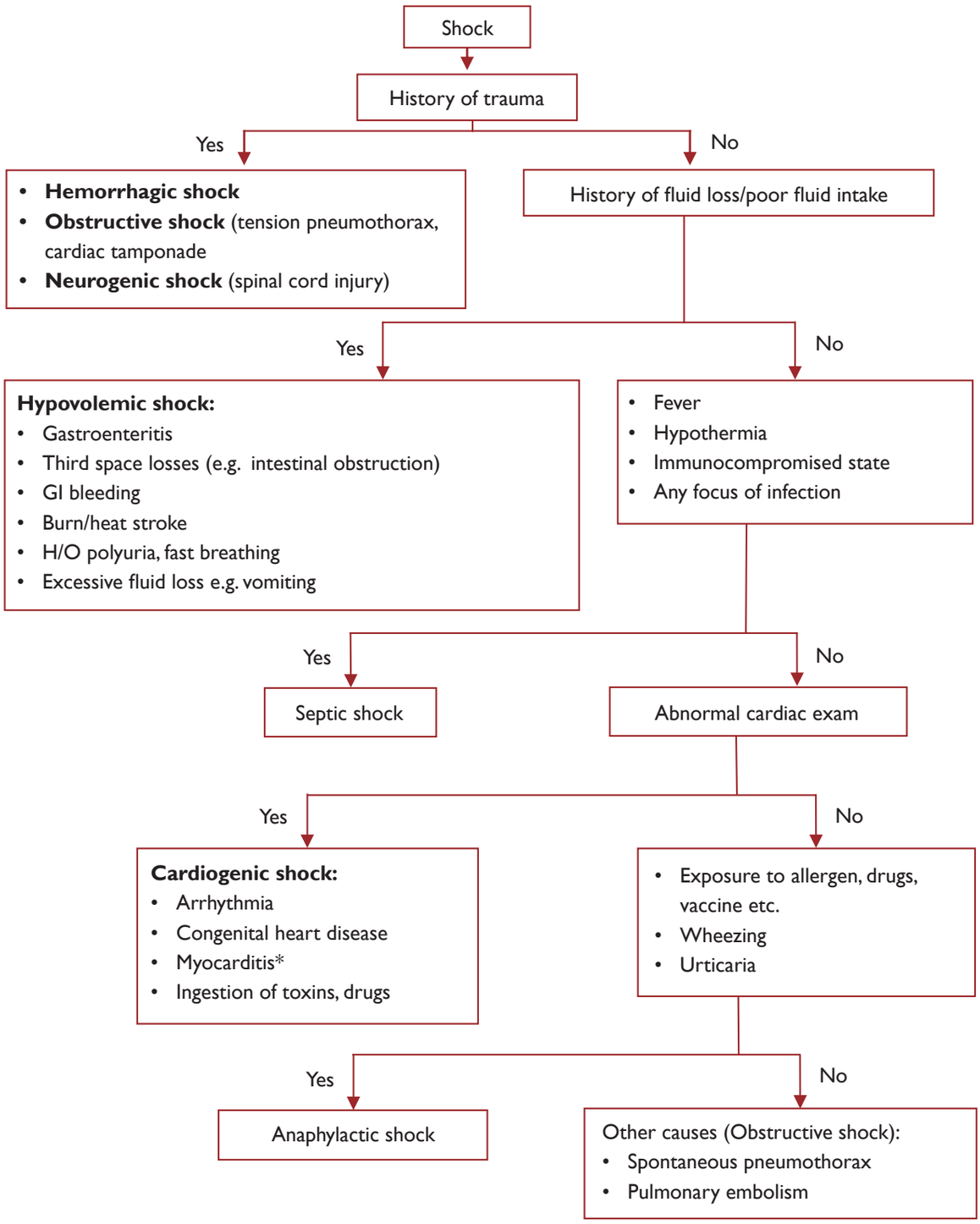
All TB cases should be offered testing for HIV

Chart 3.11: Doses of anti-tuberculous drugs (NTEP)

		Daily	Maximum daily dose
Rifampicin	R	15 mg/kg/day (10-20 mg/day)	600 mg
Isoniazid	H	10 mg/kg (7-15 mg/kg) daily	300mg
Pyrazinamide	Z	35 mg/kg (30-40 mg/kg) daily	2000mg
Ethambutol*	E	20 mg/kg (15-25mg/kg) daily	1500mg
Streptomycin**	S	20 mg/kg (15-20 mg/kg) daily	1000 mg
**Ethambutol is given separately for children to monitor ophthalmic ADR.* ***Streptomycin is administered only in certain situations, like TB meningitis or if any first line drug need to be replaced due to adverse drug reactions (ADR) as per weight of the patient*			
New pediatric ATT FDC bands as per NTEP			
Weight category	Number of tablets (dispersible FDCs)		
	Intensive phase		Continuation phase	
	HRZ	E	HR	E
	50/75/150	100	50/75	100
4-7 kg	1	1	1	1
8-11 kg	2	2	2	2
12-15 kg	3	3	3	3
16-24 kg	4	4	4	4
25-29 kg	3+1A*	3	3+1A*	3
30-39 kg	2+2A*	2	2+2A*	2

A= Adult FDC (HRZE= 75/150/400/275; HRE= 75/150/275

Chart 4.1: Diagnostic approach to a child with shock



**fever may be present in few infections like enteric fever, COVID etc.*

Chart 4.2: The algorithm for management of hypovolemic shock

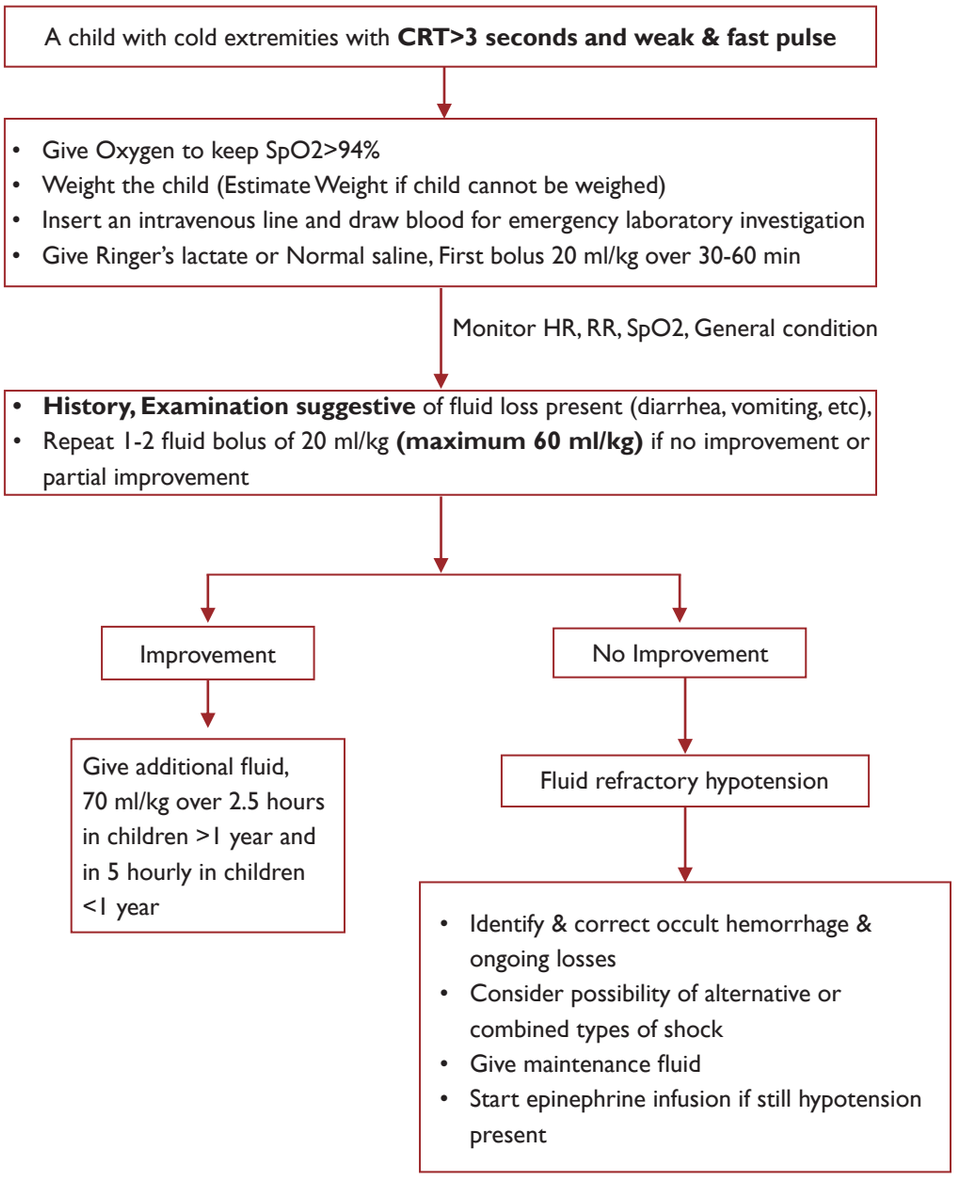
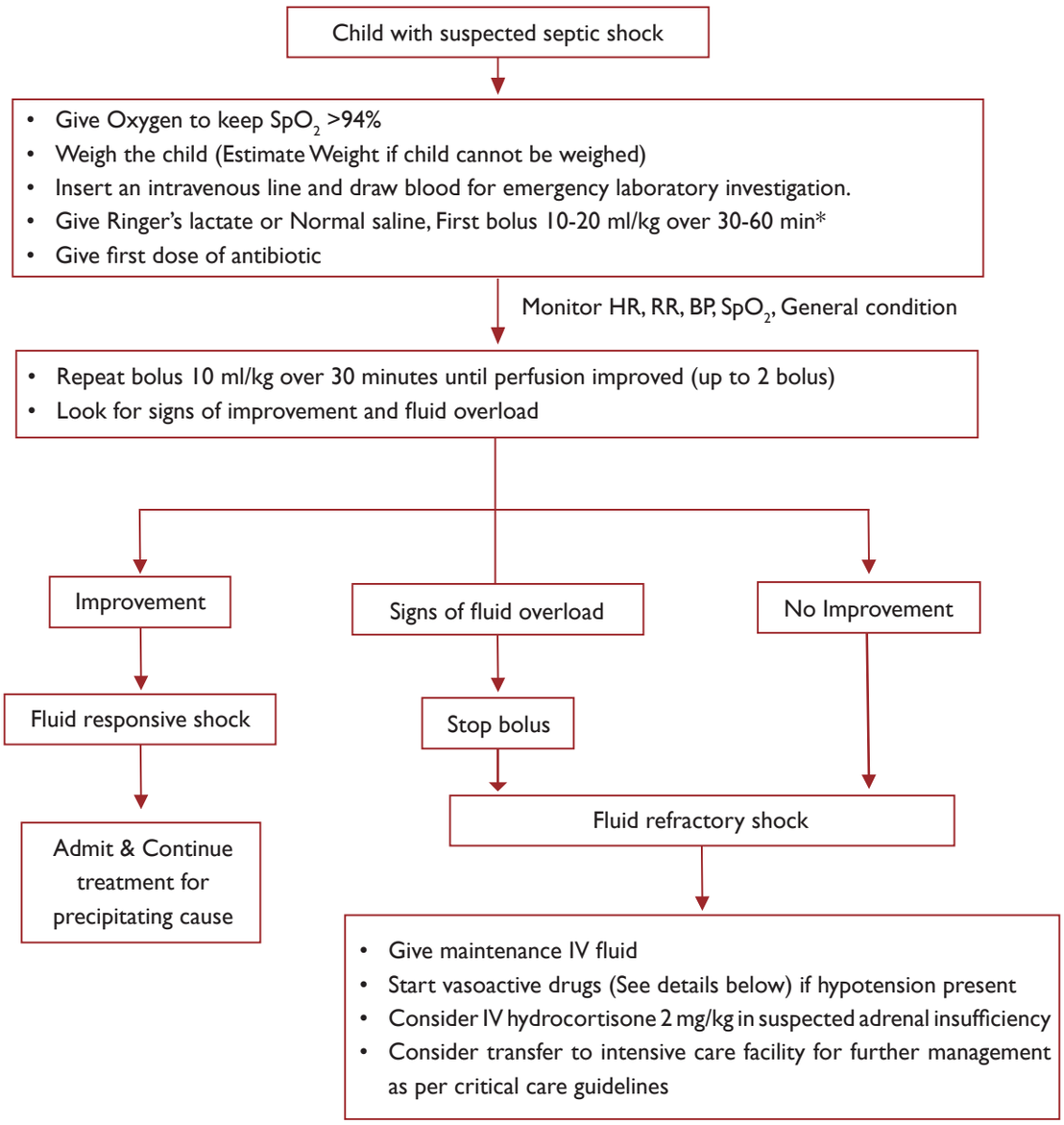
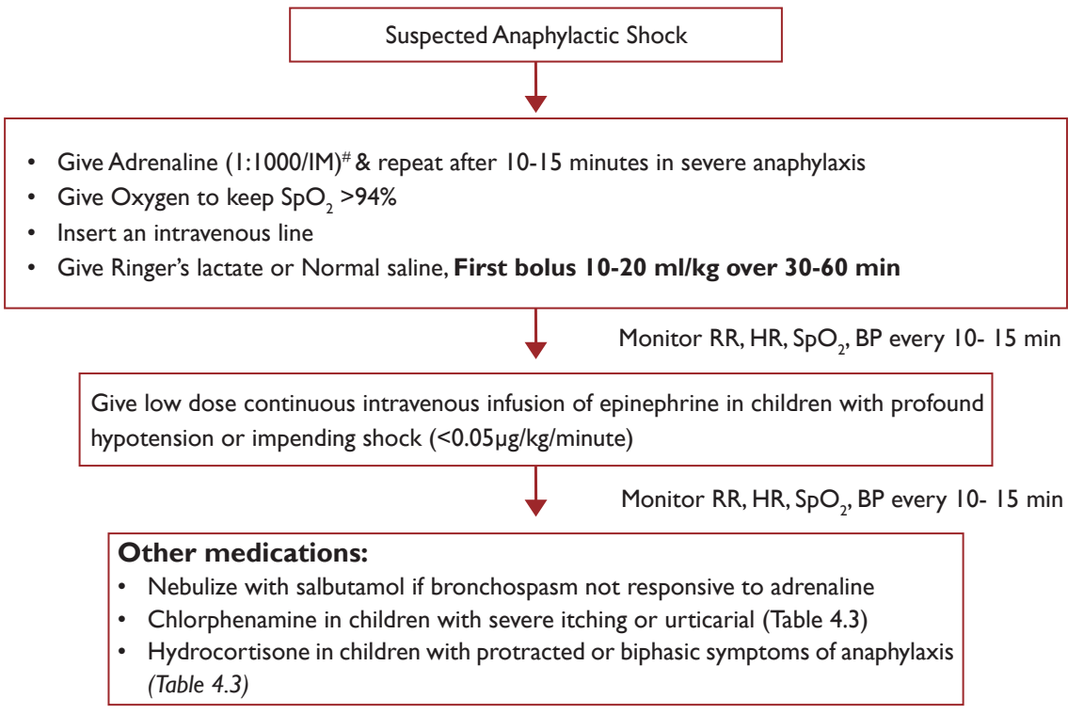


Chart 4.3: Management algorithm for children with septic shock



- ***Begin Epinephrine at 0.1 µg/kg/min and titrate up to 1 µg/kg/min (1st choice) OR Norepinephrine at 0.1 µg/kg/min and titrate up to 2 µg/kg/min (1st choice in case of warm septic shock)***
- *If Epinephrine/norepinephrine not available give dopamine at 10 µg/kg/min and may increase up to 20 microgram*
- *Refer FURTHER READING for infusion preparations*
- *Gradually taper vasoactive drug/s after 24 hours for maintaining normal BP.*

Chart 4.4: Approach to management of anaphylactic shock in children



 # SC is not effective,

IM doses of 1:1000 adrenaline (repeat after 5 min if no improvement) in age appropriate doses

***Child more than** 12 years: 500 micrograms IM (0.5 mL) **10-12 years:** 400 micrograms (0.4ml)*

***Child 7-10 years:** 300 micrograms IM (0.3 mL), **4-6 yrs:** 0.2ml*

***2-3 years:** 150 micrograms IM (0.15 mL), **1-2 years** 0.1 ml, <1 year 0.05-0.1 ml*

Chart 4.5: Management of cardiogenic shock in children

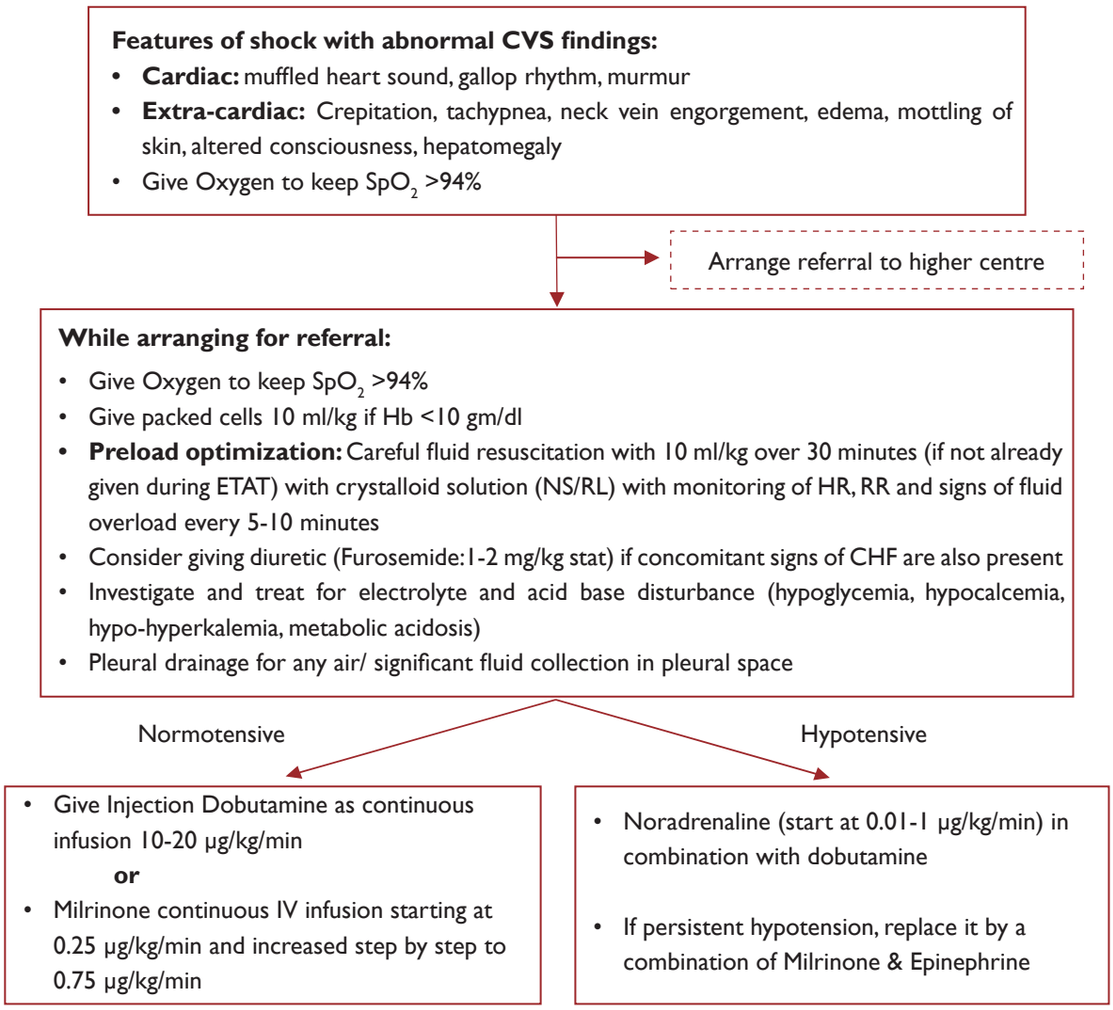


Chart 5.1: Differential diagnosis for a child presenting with coma or convulsions

Diagnosis or underlying cause	In favour
Meningitis*	• Fever, lethargy, refusal to feed • Excessive irritability • Stiff neck or bulging fontanelle • Petechial rash (meningococcal meningitis) • Hypertonia • Headache, vomiting
Cerebral malaria (often seasonal)	• Blood smear or rapid diagnostic test positive for malaria parasites • Associated with fever • Jaundice • Anaemia • Convulsions • Hypoglycaemia • Splenomegaly
Febrile convulsions(not likely to be the cause of unconsciousness)	• Associated with fever • Age 6 months to 5 years • Prior episodes of short convulsions with fever • Tone – normal
Hypoglycaemia	• Blood glucose low (<45 mg/dl &<54 mg/dl in a severely malnourished child) • Responds to glucose treatment
Poisoning	• History of poison ingestion or drug overdose
Shock	• Poor perfusion • Rapid, weak pulse • Absence of convulsion
Acute glomerulonephritis with encephalopathy	• Raised blood pressure • Peripheral or facial oedema • Blood in urine • Decreased or no urine
Diabetic ketoacidosis	• High blood sugar • History of polydipsia and polyuria • Acidotic (deep, labored) breathing
Head injury	• Signs or history of head trauma

**The differential diagnosis of meningitis may include encephalitis, cerebral abscess or tuberculous meningitis. Consult a standard textbook of paediatrics for further guidance.*

Chart 5.2: Aetiology of coma and CSF finding

Aetiology of coma	
Look for	**If present, think of**
Pallor	Cerebral malaria, intracranial bleed, haemolytic uremic syndrome
Icterus	Hepatic encephalopathy, leptospirosis, complicated malaria
Rashes	Meningococcemia, Dengue, Measles, Rickettsial diseases, Arboviral diseases
Petechiae	Dengue, Meningococcemia, Hemorrhagic fevers
Head and scalp hematomas	Traumatic/non-accidental injury
Dysmorphism, Neurocutaneous markers	Post seizure coma
Abnormal Odour of exhaled breath	Diabetic Ketoacidosis, hepatic coma
Endemic area/seasonal	JE, Cerebral malaria

CSF findings in various types of meningitis (for children aged >2months)				
	Appearance	White blood cells/mm^3	Proteins (mg/dl)	Glucose (mg/dl)
Normal	Clear	<6, all mononuclear	<40	40-80 mg/dl(>2/3 of blood glucose)
Bacterial, untreated	Cloudy or purulent*	100-1000, (>85-90% neutrophils)	100-150	<1/2 of blood glucose
Bacterial, partially treated	Clear or slightly cloudy	500->1000 (>60% neutrophils)	70-100	Normal or <1/2 of blood glucose
Viral	Clear or slightly cloudy	<1000 (20-50% neutrophils)**	40-100***	>1/2 of blood glucose
Tubercular	Straw coloured or slightly cloudy	<300, mostly mononuclear	100-300	<1/2 of blood glucose

** May be clear during the first few hours of illness. (Source: Swanson D. Meningitis. Pediatrics in Review 2015; 36:514)*

***Early in the disease, the cells are often polymorphonuclear whereas mononuclear cell predominant later*

****May be high in HSV encephalitis*

Chart 5.3: Summary of management steps for a child with Acute Encephalitis Syndrome/ Meningitis/ Viral Encephalitis/ Cerebral Malaria etc

Rapid assessment and stabilization	• Establish and maintain airway: as described in section 2. ◆ Arrange referral (If the child is showing abnormal respiratory pattern) ◆ Intubate if facility available in presence of raised ICP, oxygen saturation <90% despite high flow oxygen and fluid refractory shock • Give oxygen to maintain oxygen saturation > 94% • Check blood glucose and give 5 ml/kg of 10% Dextrose if hypoglycaemic • Circulation: ◆ Establish IV access, ◆ Give fluid bolus (20 ml/kg NS) if child shows signs of shock ◆ If signs of circulatory impairment, start maintenance intravenous fluids • Take samples (CBC, Blood sugar, KFT, LFT, electrolytes, PS and RDT for malarial parasite). Also, send blood gas, lactate, serology for viruses if facility available. • Identify signs of cerebral herniation or raised ICP • Temperature: treat fever, hypothermia (see section 10) • Treat ongoing seizures with benzodiazepines, followed by Phenytoin loading
Investigation/Samples to be collected	• *See Annexure-6*
Start Empirical treatment* (must be started if CSF cannot be done/report will take time and patient sick)	• Ceftriaxone (100 mg/kg/day once daily or 50 mg/kg every 12 hours) • Acyclovir (10 mg/kg 8 hourly use in all suspected sporadic viral encephalitis) * • Artesunate** • If **Scrub Typhus** is suspected - IV Doxycycline or Chloramphenicol or Azithromycin
Supportive care and treatment	• Maintain euglycemia, maintain hydration *(see Section 10)* • Treat raised intracranial pressure, mild head-end elevation up to15- 30° • Give anticonvulsant if history of seizures or child has features of raised ICT
Prevention/treatment of complications and rehabilitation	• Aspiration pneumonia, nosocomial infections, coagulation disturbances • Psychological support to patient and family

** stop acyclovir, if an alternative diagnosis is confirmed*

*** stop artesunate if peripheral smear and RDT are negative for malaria*

Chart 5.4: Management algorithm for status epilepticus

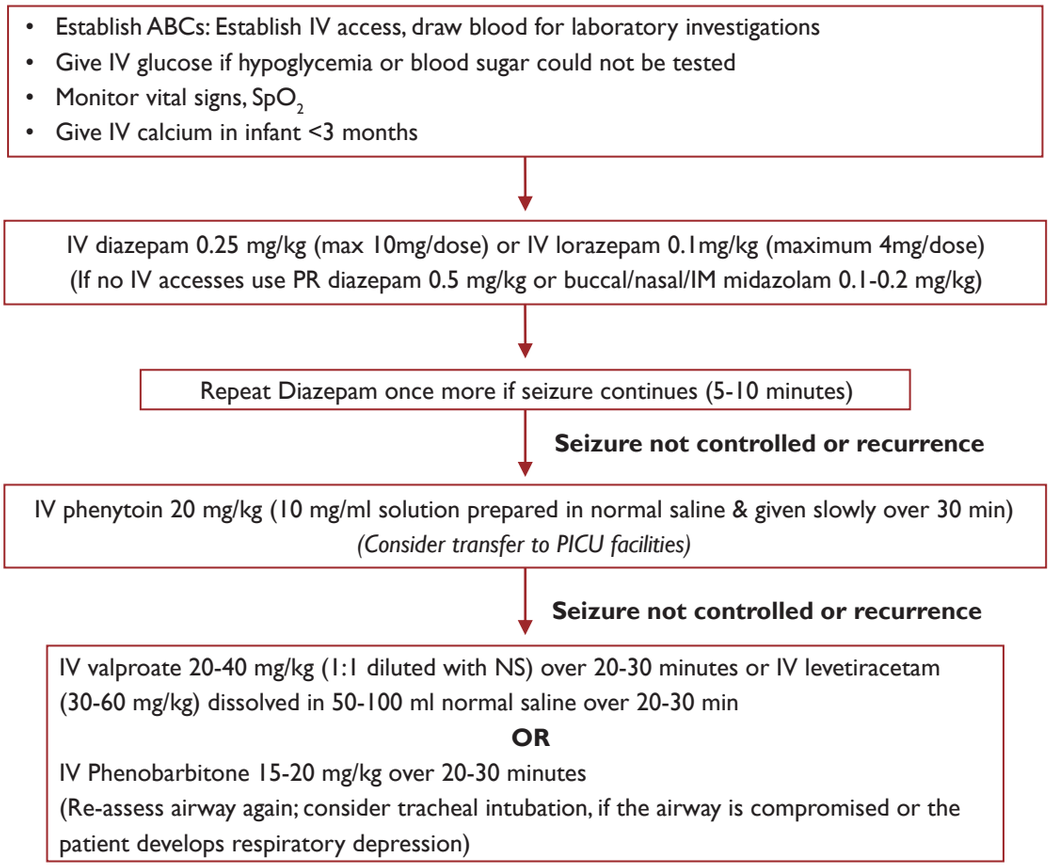
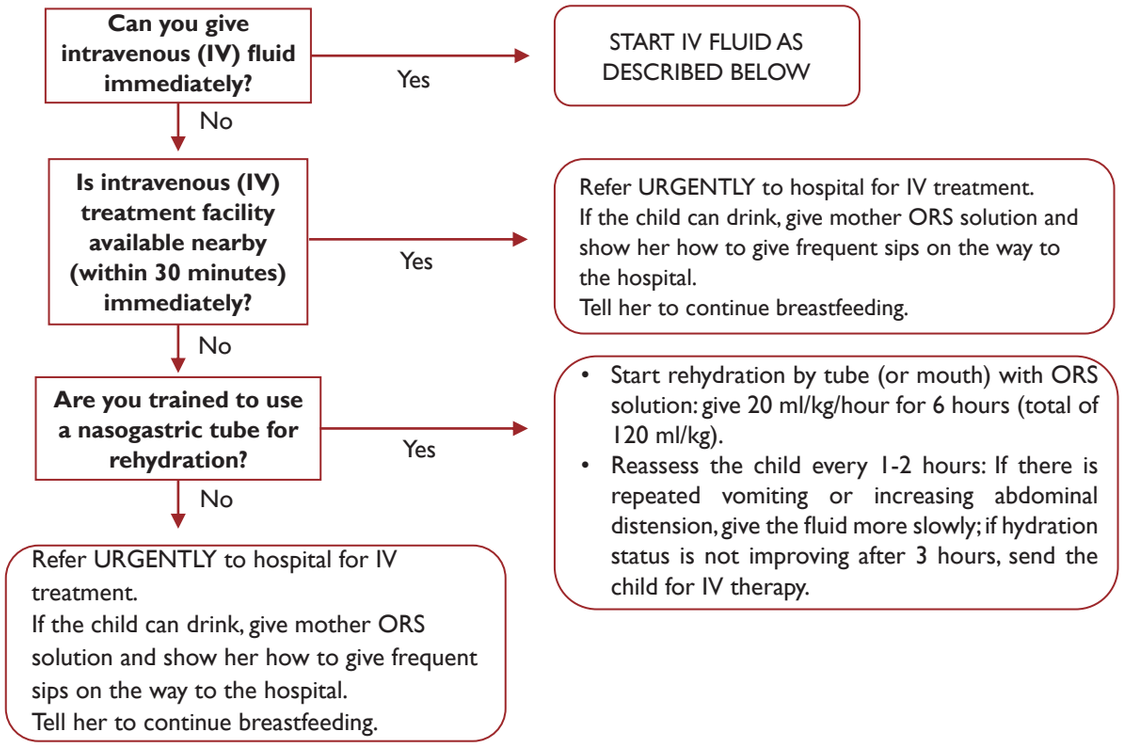


Chart 6.1: Assessment and classification of dehydration

Signs or symptoms	Classification
Two or more of the following signs: • Lethargy/ unconsciousness • Sunken eyes • Unable to drink or drinks poorly • Skin pinch goes back very slowly (>2 seconds)	**Severe dehydration**
Two or more of the following signs: • Restlessness, irritability • Sunken eyes • Drinks (ORS/plain water) eagerly, thirsty • Skin pinch goes back slowly	**Some dehydration**
Not enough signs to classify as some or severe Dehydration	**No dehydration**

Chart 6.2: Algorithm for management of severe dehydration (Plan-C)

START HERE



IV Rehydration

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

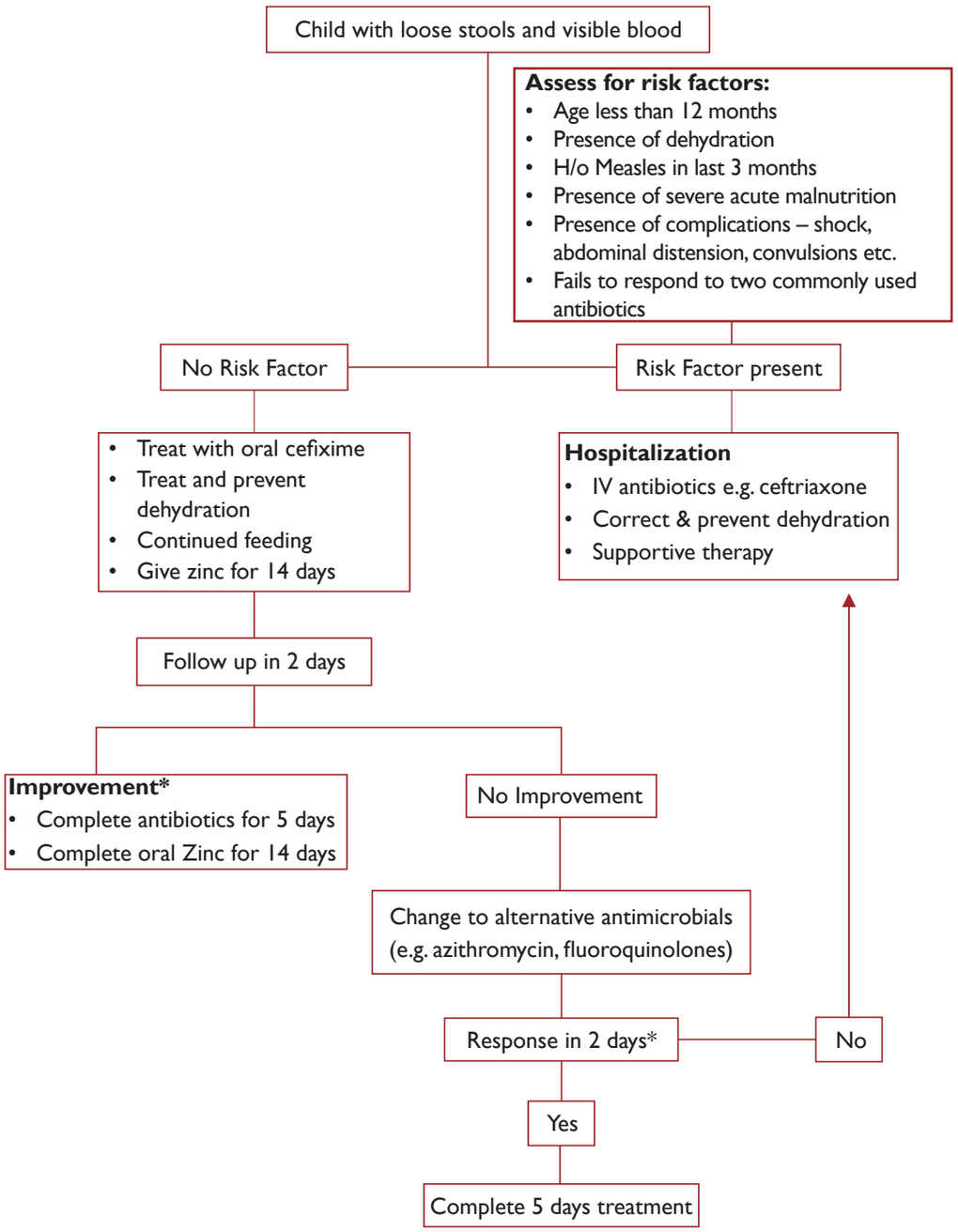
AGE	First give 30ml/kg in	Then give 70 ml/kg in
Infants (under 12 months)	1 hour*	5 hours
Children (12 months up to 5 years)	30 minutes*	2 ½ hours

**Repeat once if radial pulse is still very weak and not detectable*

- Reassess the child every 15-20 min till a strong radial pulse is detectable. Thereafter reassess the hydration status after every 1-2 hours. If hydration status is not improving, give the IV drip more rapidly. Monitor number of stools, vomiting and urine output.
- Also, give ORS (about 5ml/kg/hour) as soon as the child can drink: usually after 3-4 hours (infant) or 1-2 hours (children).
- Reassess an infant after 6 hours and a child after 3 hours. Classify dehydration. Then choose the appropriate Plan (A, B or C) to continue treatment. **
- Observe for signs of overhydration (sudden increase in respiratory rate, chest retractions, heart rate; appearance of crepitations in chest; increase in liver span) throughout IV rehydration

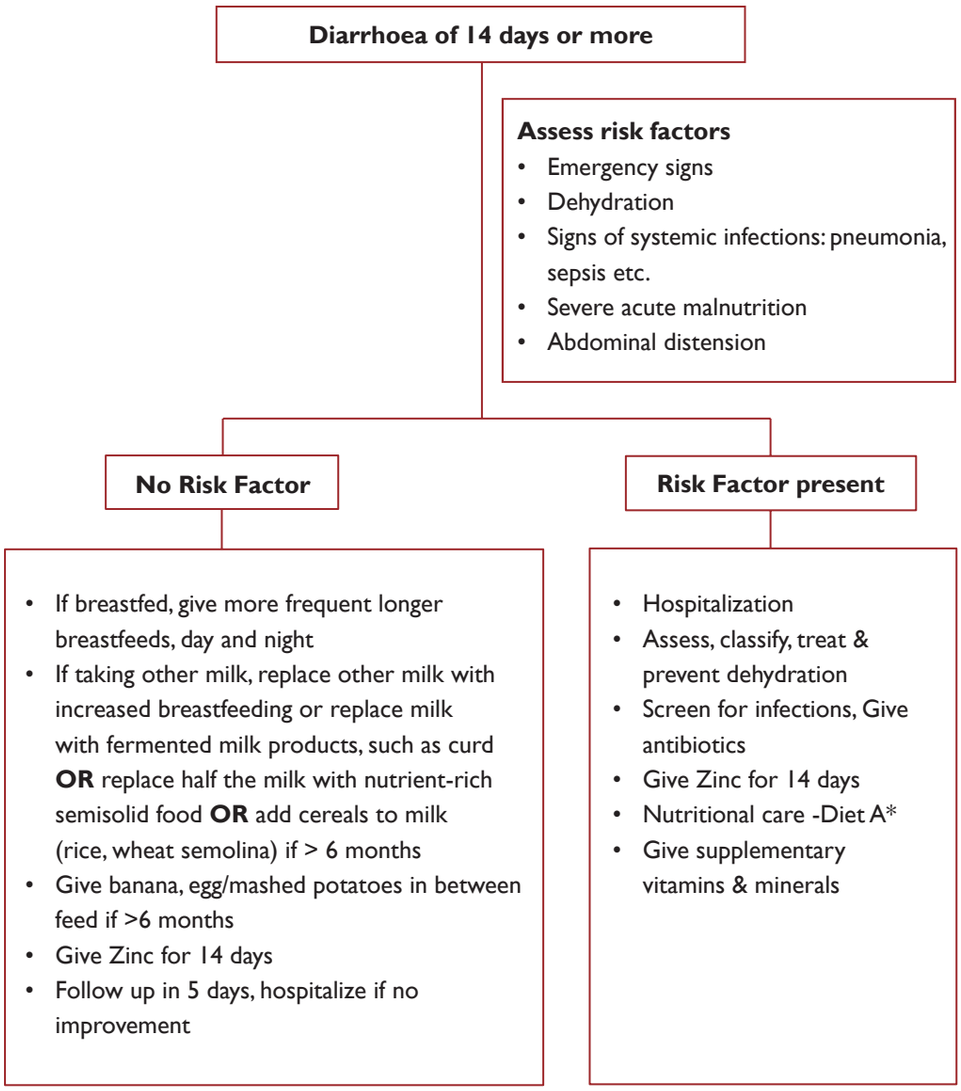
*****All children should be sent home only when maintaining hydration for 6 hours on ORS after rehydration.***

Chart 6.3: Management of children with Dysentery



**disappearance of fever, less blood in stools, fewer stools, improved appetite, decreased abdominal pain & improved activity*

Chart 6.4: Management of Persistent Diarrhoea



**If diarrhoea more than 10 per day on Diet-A for more than 72 hours or no weight gain on Diet A for 7 days, change to Diet-B*

**Change diet after 1- 2 weeks of improvement. Children on Diet-B should be shifted to Diet–A before starting normal diet.*

Chart 7.1: Differential diagnosis of fever without localized signs

Differential diagnosis of fever wihtout localized signs	
Diagnosis	**In favour**
COVID -19	Fever of less than 10 days with any of the following: • H/o contact with COVID- 19 patient • Signs of severe pneumonia • SpO_2 < 92% on room air • Loss of smell/taste
Malaria	• Sudden onset of fever with rigors followed by sweating • Generalized weakness (prostration) or lethargy • Positive blood film or rapid diagnostic test for Malaria parasites • Presence of anaemia • Enlarged spleen
Septicaemia	• Seriously ill with no apparent cause • Purpura, petechiae • Shock • Sick look
Typhoid	• Protracted fever with H/O vomiting/pain • Hepatosplenomegaly, diffuse mild tenderness • Jaundice
Urinary tract infection	• Abdominal pain • Loin or suprapubic tenderness • Crying on passing urine • Passing urine more frequently than usual • Incontinence in previously continent child

Differential diagnosis of fever with localized signs	
Diagnosis	**In favour**
Pneumonia	• Cough with fast breathing • Lower chest wall indrawing • Grunting • Nasal flaring • Coarse crackles, consolidation, effusion
Viral upper respiratory tract infection	• Symptoms of cough or cold • No systemic problem
Meningitis	• Altered level of consciousness • Convulsions • Vomiting, headache • Excessive irritability (excessive crying in infants) • Stiff neck • Bulging fontanelle • Meningococcal rash (petechial or purpuric)
Otitis media	• Pus draining from ear • Ear pain
Mastoiditis	• Tender swelling behind the ear
Osteomyelitis	• Local tenderness • Refusal to move the affected limb • Refusal to bear weight on leg
Septic arthritis	• Joint hot, tender, swollen
Skin and soft tissue infection	• Cellulitis • Skin boils • Pustules • Pyomyositis (purulent infection of muscles)
Hepatitis	• Severe anorexia, vomiting • Abdominal pain • Yellowish discoloration of eyes & urine

Chart 7.2: Differential diagnosis of fever with rash & lasting more than 7 days

Differential diagnosis of fever with rash*	
Diagnosis	**In favour**
Measles	• Generalized maculopapular rash • Cough, runny nose, red eyes • Mouth ulcers • Recent exposure to a measles case
Viral infections	• Fever, myalgia, cough, loose stools • Transient non-specific rash
Dengue haemorrhagic fever	• High grade fever with headache and bodyache • Thrombocytopenia • Bleeding from nose or gums or in vomitus • Bleeding in stools or black stools • Skin petaechiae or purpura • Enlarged liver and spleen • Shock • Positive tourniquet test
Typhus	• Outbreak of typhus in region • Characteristic macular rash • Myalgia
Relapsing fever	• Petechial rash, skin haemorrhages • Jaundice • Tender enlarged liver and spleen • History of previous episode of relapsing fever • Positive blood smear for Borrelia

** fever with rash is a notifiable disease*

Differential diagnosis of fever lasting than 7 days	
Diagnosis	**In favour**
Abscess	• Tender or fluctuant mass • Local tenderness
Rheumatic fever	• Heart murmur, which may change over time • Arthritis or arthralgia • Cardiac failure • Persistent, fast pulse rate • Pericardial friction rub • Chorea
Kala-azar	• Endemic area • Enlarged spleen and/or liver • Anaemia • Weight loss
Tuberculosis	• Weight loss • Anorexia, night sweats • Cough • Lymphadenopathy • Enlarged liver and/or spleen • Family history of TB
Childhood Malignancies	• Weight loss • Anaemia • Bleeding manifestations • Lymphadenopathy • Enlarged liver and/or spleen • Mass or lump in the body
Infective endocarditis	• Weight loss • Enlarged spleen • Anaemia • Heart murmur or underlying heart disease • Petaechiae • Splinter haemorrhages in nail beds • Microscopic haematuria • Finger clubbing

Chart 7.3: Chemotherapy for severe and complicated P. Falciparum malaria (Adapted from NVBDCP 2015 recommendations & WHO Guidelines)

Initial parenteral treatment for at least 24 hours CHOOSE ONE of the following three options:	**Follow-up treatment, when patient can take oral medication following parenteral treatment**
Artesunate: Children <20 kg: 3mg/kg/dose. Children >20 kg 2.4 mg/kg IV or IM given on admission (Time=0), then at 12 hours and 24 hours and then once a day. **OR**	**Full oral course of area-specific ACT:** In North Eastern states: Age-specific ACT-AL[#] for 3 days + Primaquine single dose on second day In other states: Treat with: ACT-SP[$] for 3 days + Primaquine single dose on second day
Artemether: 3.2 mg/kg body weight IM given on admission then 1.6 mg/kg per day. **OR**	
Quinine: 20 mg quinine salt/kg body weight on admission (IV infusion or IM injection in divided doses) followed by maintenance dose of 10 mg/kg 8 hourly; diluted in 5% dextrose and infused over 4 hours. The infusion rate should not exceed 5 mg salt/kg/ h. Loading dose of 20 mg/kg should not be given, if the patient has already received Quinine.	**Quinine 10 mg/kg three times a day with:** Doxycycline 100 mg once a day in children >8yrs **OR** Clindamycin (20 mg/kg/day in three divided doses) in children under 8 years of age, to complete 7 days of treatment.

Note: The parenteral treatment in severe malaria cases should be given for minimum of 24 hours once started (irrespective of the patient's ability to tolerate oral medication earlier than 24 hours)

[*]*ACT-Artemisinin based combination therapy*

[#]*AL-Artemether-Lumefantrine combination*

[$]*ACT-SP -Artesunate-Sulphadoxine-Pyrimethamine combination*

Chart 7.4: Dengue Case classification

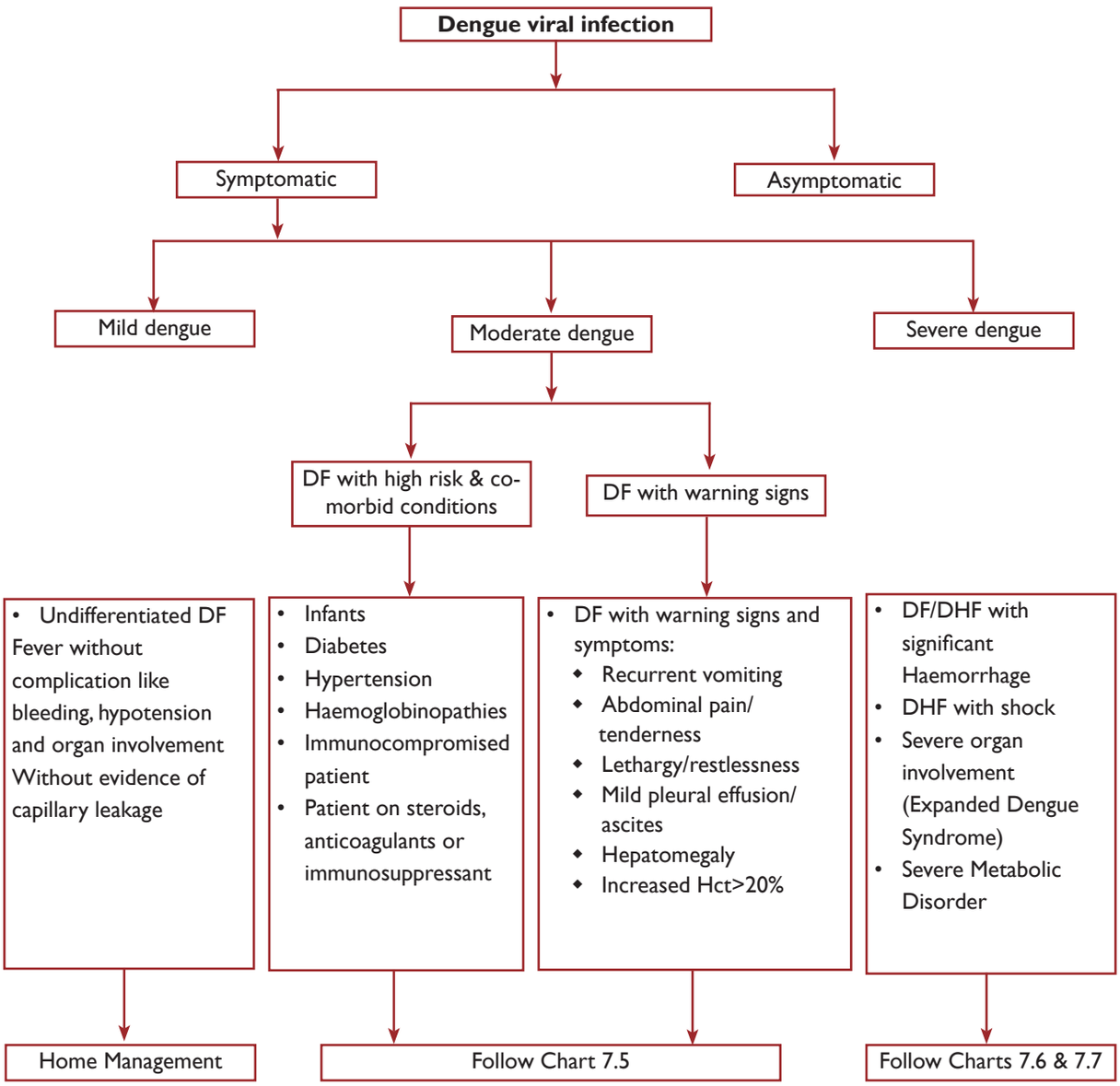
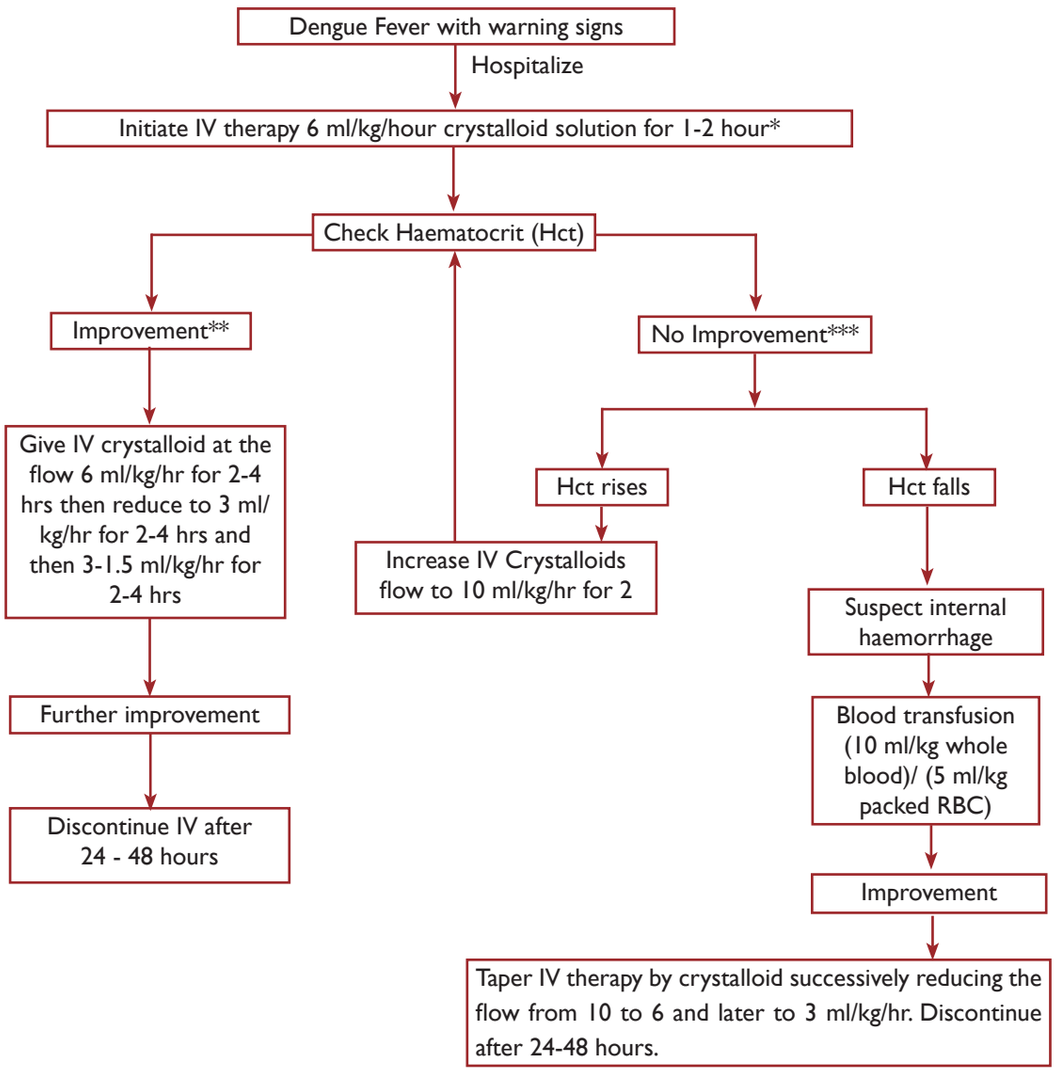


Chart 7.5: Volume replacement algorithm for patients with dengue fever with warning signs



Notes:

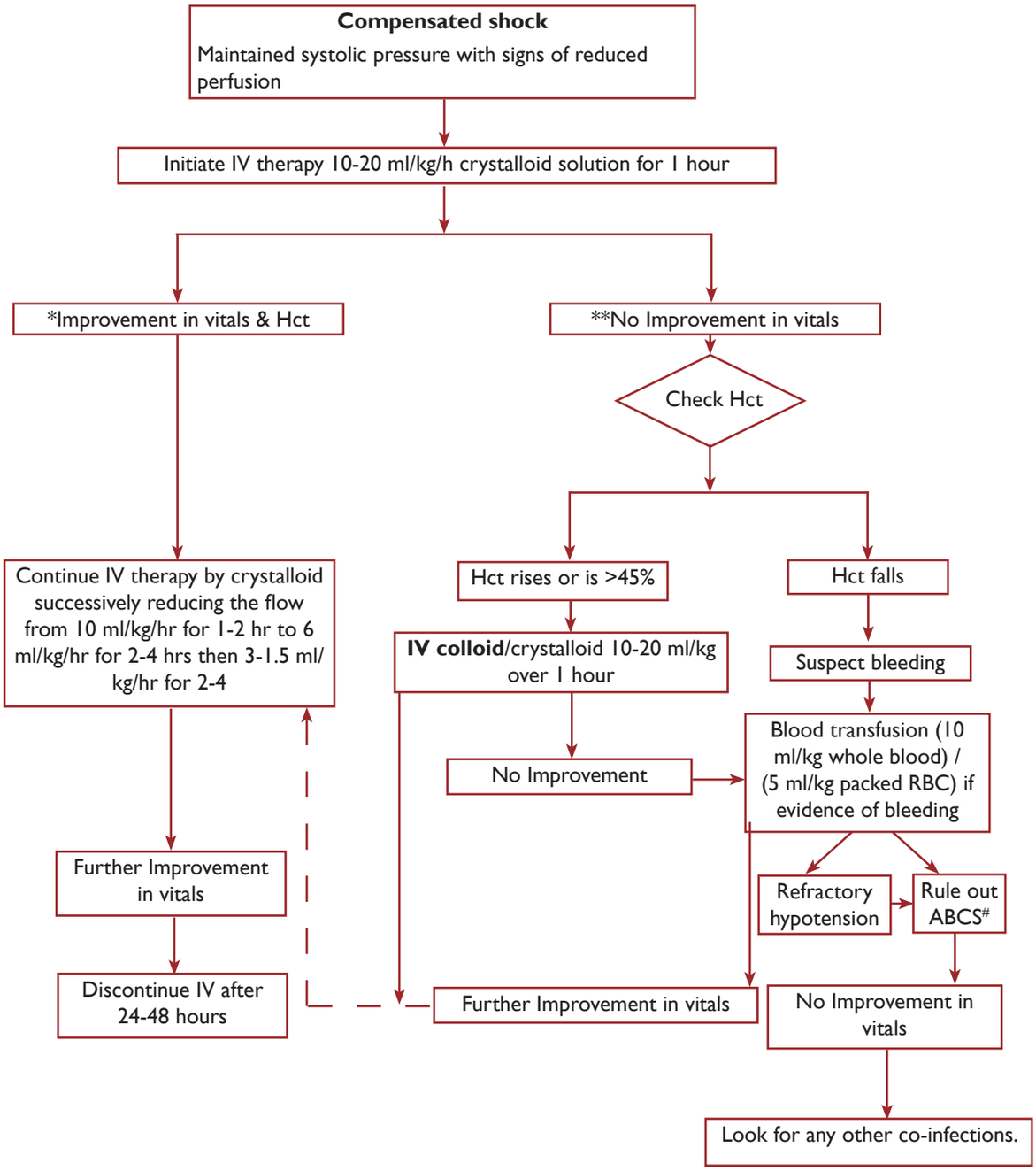
* Fluid requirement should be calculated according to lean body mass

**Improvement: Hct falls, pulse rate and blood pressure stable, urine output rises

*** No Improvement: Hct or pulse rate rises, pulse pressure falls below 20 mmHg, and urine output falls

Co-morbid conditions : If the patient has dengue with co-existing conditions but without warning signs, encourage oral fluids. If not tolerated, start intravenous fluid therapy of 0.9% saline or Ringer's lactate with or without glucose at the appropriate maintenance rate. Use the ideal body weight for calculation of fluid infusion for obese and overweight patients. Patients may be able to take oral fluids after a few hours of intravenous fluid therapy. Thus, it is necessary to revise the fluid infusion frequently. Give the minimum volume required to maintain good perfusion and urine output. Intravenous fluids are usually needed only for 24-48 hours.

Chart 7.6: Volume replacement algorithm for patients with severe Dengue Fever with compensated shock



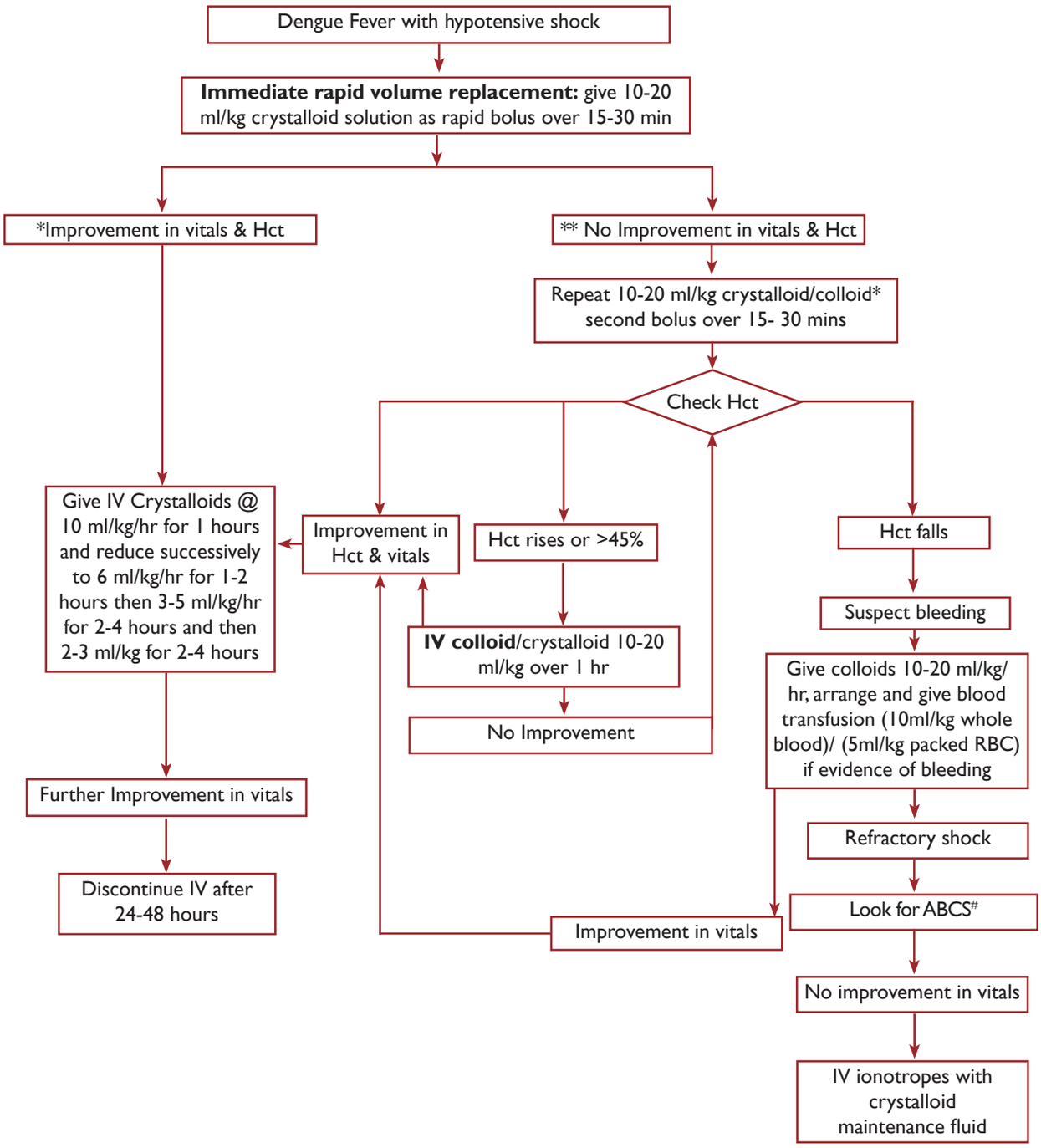
Crystalloid: Normal Saline, ringer lactate
Colloid: Dextran 40/degraded gelatine polymer (polygeline)
#ABCS = Acidosis, Bleeding, Blood sugar, Calcium, Serum sodium and potassium

Notes:

*Improvement: Hct falls, pulse rate and blood pressure stable, urine output rises
** No Improvement: Hct or pulse rate rises, pulse pressure falls below 20 mmHg, urine output falls

- Unstable vital signs: urine output falls, signs of shock
- In cases of acidosis, Ringer's lactate solution should not be used
- Serial platelet and Hct determinations: drop in platelets and rise in Hct are essential for early diagnosis of DHF
- Cases of DHF should be observed every hour for vital signs and urine output

Chart 7.7: Volume replacement algorithm for patients with hypotensive shock (systolic BP <2 SD below normal for the age)



Crystalloid: Normal Saline, Ringer Lactate
Colloid: e.g. Hemaccel, Dextran 40/degraded gelatine polymer (polygeline)
#ABCS = Acidosis, Bleeding, Calcium (also sodium, potassium), Sugar

Notes:

* Improvement: Hct falls, pulse rate and blood pressure stable, urine output rises
** No Improvement: Hct or pulse rate rises, pulse pressure falls below 20 mmHg, urine output falls

- Unstable vital signs: urine output falls, signs of shock
- In cases of acidosis, hyperosmolar or Ringer's lactate solution should not be used
- Cases of DHF should be observed every hour for vital signs and urine output

Chart 7.8: Outpatient management & case definition for diagnosis of dengue fever

Outpatient management of dengue fever

During the febrile phase (may last 2-7 days) and subsequent critical phase (1-2 days):

- Follow CBCs
- Watch for dehydration
- Watch for warning signs, including decreasing platelet count and increasing hematocrit
- Watch for defervescence (indicating beginning of critical phase)

Advise patient or their family to do the following

Control the fever

- Give acetaminophen every 6 hours (maximum 4 doses per day).
- Do not give ibuprofen, aspirin, or aspirin containing drugs.
- Sponge patient's skin with tepid water when temperature is high.

Prevent spread of dengue within your house

- Use bed nets for the patient as well as for others to prevent mosquito bite.
- Kill all mosquitoes in house.
- Empty open water containers.

Prevent dehydration: Dehydration occurs when a person loses too much fluid (from high fever, vomiting, or poor oral intake). Give plenty of fluids (not only water) and watch for signs of dehydration.

Watch for warning signs as temperature declines 3 to 8 days after symptoms began: Return IMMEDIATELY to clinic or emergency department if any of the warning signs appear.

Case definitions for diagnosis of dengue fever

Probable DF/DHF:

A case compatible with clinical description of dengue fever during outbreak:

OR

Non-ELISA based NS1 antigen/IgM positive.

(A positive test by RDT will be considered as probable due to poor sensitivity and specificity of currently available RDTs).

Confirmed dengue fever:

A case compatible with the clinical description of dengue fever with at least one of the following:

1. Isolation of the dengue virus (Virus culture +VE) from serum, plasma, leucocytes.
2. Demonstration of IgM antibody titre by ELISA positive in single serum sample.
3. Demonstration of dengue virus antigen in serum sample by NS1-ELISA.
4. IgG sero-conversion in paired sera after 2 weeks with four-fold increase of IgG titre.
5. Detection of viral nucleic acid by polymerase chain reaction (PCR).

Chart 9.1: WHO Growth Reference Charts

Weight for length reference card (below 87 cm)

Boy's weight					Length	Girl's weight (Kg)				
-4 SD	-3 SD	-2 SD	-1 SD	Median	(cm)	Median	-1 SD	-2 SD	-3 SD	-4 SD
1.7	1.9	2.0	2.2	2.4	45	2.5	2.3	2.1	1.9	1.7
1.8	2.0	2.2	2.4	2.6	46	2.6	2.4	2.2	2.0	1.9
2.0	2.1	2.3	2.5	2.8	47	2.8	2.6	2.4	2.2	2.0
2.1	2.3	2.5	2.7	2.9	48	3.0	2.7	2.6	2.3	2.1
2.2	2.4	2.6	2.9	3.1	49	3.2	2.9	2.7	2.4	2.2
2.4	2.6	2.8	3.0	3.3	50	3.4	3.1	2.9	2.6	2.4
2.5	2.7	3.0	3.2	3.5	51	3.6	3.3	3.1	2.8	2.5
2.7	2.9	3.2	3.5	3.8	52	3.8	3.5	3.3	2.9	2.7
2.9	3.1	3.4	3.7	4.0	53	4.0	3.7	3.5	3.1	2.8
3.1	3.3	3.6	3.9	4.3	54	4.3	3.9	3.7	3.3	3.0
3.3	3.6	3.8	4.2	4.5	55	4.5	4.2	3.9	3.5	3.2
3.5	3.8	4.1	4.4	4.8	56	4.8	4.4	4.2	3.7	3.4
3.7	4.0	4.3	4.7	5.1	57	5.1	4.6	4.4	3.9	3.6
3.9	4.3	4.6	5.0	5.4	58	5.4	4.9	4.6	4.1	3.8
4.1	4.5	4.8	5.3	5.7	59	5.6	5.1	4.9	4.3	3.9
4.3	4.7	5.1	5.5	6.0	60	5.9	5.4	5.1	4.5	4.1
4.5	4.9	5.3	5.8	6.3	61	6.1	5.6	5.4	4.7	4.3
4.7	5.1	5.6	6.0	6.5	62	6.4	5.8	5.6	4.9	4.5
4.9	5.3	5.8	6.2	6.8	63	6.6	6.0	5.8	5.1	4.7
5.1	5.5	6.0	6.5	7.0	64	6.9	6.3	6.0	5.3	4.8
5.3	5.7	6.2	6.7	7.3	65	7.1	6.5	6.3	5.5	5.0
5.5	5.9	6.4	6.9	7.5	66	7.3	6.7	6.5	5.6	5.1
5.6	6.1	6.6	7.1	7.7	67	7.5	6.9	6.7	5.8	5.3
5.8	6.3	6.8	7.3	8.0	68	7.7	7.1	6.9	6.0	5.5
6.0	6.5	7.0	7.6	8.2	69	8.0	7.3	7.0	6.1	5.6
6.1	6.6	7.2	7.8	8.4	70	8.2	7.5	7.1	6.3	5.8
6.3	6.8	7.4	8.0	8.6	71	8.4	7.7	7.2	6.5	5.9
6.4	7.0	7.6	8.2	8.9	72	8.5	7.8	7.4	6.6	6.0
6.6	7.2	7.7	8.4	9.1	73	8.7	8.0	7.5	6.8	6.2
6.7	7.3	7.9	8.6	9.3	74	8.9	8.2	7.7	6.9	6.3
6.9	7.5	8.1	8.8	9.5	75	9.1	8.4	7.8	7.1	6.5
7.0	7.6	8.3	8.9	9.7	76	9.2	8.5	8.0	7.2	6.6
7.2	7.8	8.4	9.1	9.9	77	9.4	8.7	8.1	7.4	6.7
7.3	7.9	8.6	9.3	10.1	78	9.6	8.9	8.3	7.5	6.9
7.4	8.1	8.7	9.5	10.3	79	9.8	9.1	8.5	7.7	7.0
7.6	8.2	8.9	9.6	10.4	80	10.1	9.2	8.7	7.8	7.1
7.7	8.4	9.1	9.8	10.6	81	10.3	9.4	8.8	8.0	7.3
7.9	8.5	9.2	10.0	10.8	82	10.5	9.6	9.0	8.1	7.5
8.0	8.7	9.4	10.2	11.0	83	10.7	9.8	9.2	8.3	7.6
8.2	8.9	9.6	10.4	11.3	84	11.0	10.1	9.4	8.5	7.8
8.4	9.1	9.8	10.6	11.5	85	11.2	10.3	9.7	8.7	8.0
8.6	9.3	10.0	10.8	11.7	86	11.5	10.5	9.7	8.9	8.1

Weight-for-Height reference card (87 cm and above)

Boy's weight					Height	Girl's weight (Kg)				
-4 SD	-3 SD	-2 SD	-1 SD	Median	(cm)	Median	-1 SD	-2 SD	-3 SD	-4 SD
8.9	9.6	10.4	11.2	12.2	87	11.9	10.9	10.0	9.2	8.4
9.1	9.8	10.6	11.5	12.4	88	12.1	11.1	10.2	9.4	8.6
9.3	10.0	10.8	11.7	12.6	89	12.4	11.4	10.4	9.6	8.8
9.4	10.2	11.0	11.9	12.9	90	12.6	11.6	10.6	9.8	9.0
9.6	10.4	11.2	12.1	13.1	91	12.9	11.8	10.9	10.0	9.1
9.8	10.6	11.4	12.3	13.4	92	13.1	12.0	11.1	10.2	9.3
9.9	10.8	11.6	12.6	13.6	93	13.4	12.3	11.3	10.4	9.5
10.1	11.0	11.8	12.8	13.8	94	13.6	12.5	11.5	10.6	9.7
10.3	11.1	12.0	13.0	14.1	95	13.9	12.7	11.7	10.8	9.8
10.4	11.3	12.2	13.2	14.3	96	14.1	12.9	11.9	10.9	10.0
10.6	11.5	12.4	13.4	14.6	97	14.4	13.2	12.1	11.1	10.2
10.8	11.7	12.6	13.7	14.8	98	14.7	13.4	12.3	11.3	10.4
11.0	11.9	12.9	13.9	15.1	99	14.9	13.7	12.5	11.5	10.5
11.2	12.1	13.1	14.2	15.4	100	15.2	13.9	12.8	11.7	10.7
11.3	12.3	13.3	14.4	15.6	101	15.5	14.2	13.0	12.0	10.9
11.5	12.5	13.6	14.7	15.9	102	15.8	14.5	13.3	12.2	11.1
11.7	12.8	13.8	14.9	16.2	103	16.1	14.7	13.5	12.4	11.3
11.9	13.0	14.0	15.2	16.5	104	16.4	15.0	13.8	12.6	11.5
12.1	13.2	14.3	15.5	16.8	105	16.8	15.3	14.0	12.9	11.8
12.3	13.4	14.5	15.8	17.2	106	17.1	15.6	14.3	13.1	12.0
12.5	13.7	14.8	16.1	17.5	107	17.5	15.9	14.6	13.4	12.2
12.7	13.9	15.1	16.4	17.8	108	17.8	16.3	14.9	13.7	12.4
12.9	14.1	15.3	16.7	18.2	109	18.2	16.6	15.2	13.9	12.7
13.2	14.4	15.6	17.0	18.5	110	18.6	17.0	15.5	14.2	12.9
13.4	14.6	15.9	17.3	18.9	111	19.0	17.3	15.8	14.5	13.2
13.6	14.9	16.2	17.6	19.2	112	19.4	17.7	16.2	14.8	13.5
13.8	15.2	16.5	18.0	19.6	113	19.8	18.0	16.5	15.1	13.7
14.1	15.4	16.8	18.3	20.0	114	20.2	18.4	16.8	15.4	14.0
14.3	15.7	17.1	18.6	20.4	115	20.7	18.8	17.2	15.7	14.3
14.6	16.0	17.4	19.0	20.8	116	21.1	19.2	17.5	16.0	14.5
14.8	16.2	17.7	19.3	21.2	117	21.5	19.6	17.8	16.3	14.8
15.0	16.5	18.0	19.7	21.6	118	22.0	19.9	18.2	16.6	15.1
15.3	16.8	18.3	20.0	22.0	119	22.4	20.3	18.5	16.9	15.4
15.5	17.1	18.6	20.4	22.4	120	22.8	20.7	18.9	17.3	15.6

Chart 9.2: WHO classification of nutritional status & identification of acute malnutrition (wasting)

WHO classification of nutritional status			
SD score	**Growth Indicator**		
	Height/Length-for-age	**Weight-for-age**	**Weight-for-height/length**
+2SD to -2SD	Normal	Normal	Normal
< - 2 SD to - 3 SD	Stunted	Underweight	Wasted or Moderate acute malnutrition
< - 3 SD	Severely Stunted	Severely Underweight	Severely wasted or Severe acute malnutrition
Identification of acute malnutrition (wasting)			
Moderate Acute Malnutrition • Weight-for-height between -2SD and-3SD **AND /OR** • Mid upper arm circumference (MUAC) 11.5 to 12.4 cm **AND** • No Oedema			
Severe Acute Malnutrition			
For infants aged <6 months • Weight for length is < - 3 SD score of median of WHO child growth standards***AND/OR** • Bilateral pitting pedal oedema ******		**For children aged 6-59 months** • Weight for length/height is < - 3 SD score of median of WHO child growth standards **AND/OR** • MUAC<11.5 cm **AND/OR** • Bilateral pitting pedal oedema ******	

**Use visible severe wasting in emergency settings, if measurements not possible and for children who has length <45 cms*

*** No other cause of oedema e.g. nephrotic syndrome, CHF etc.*

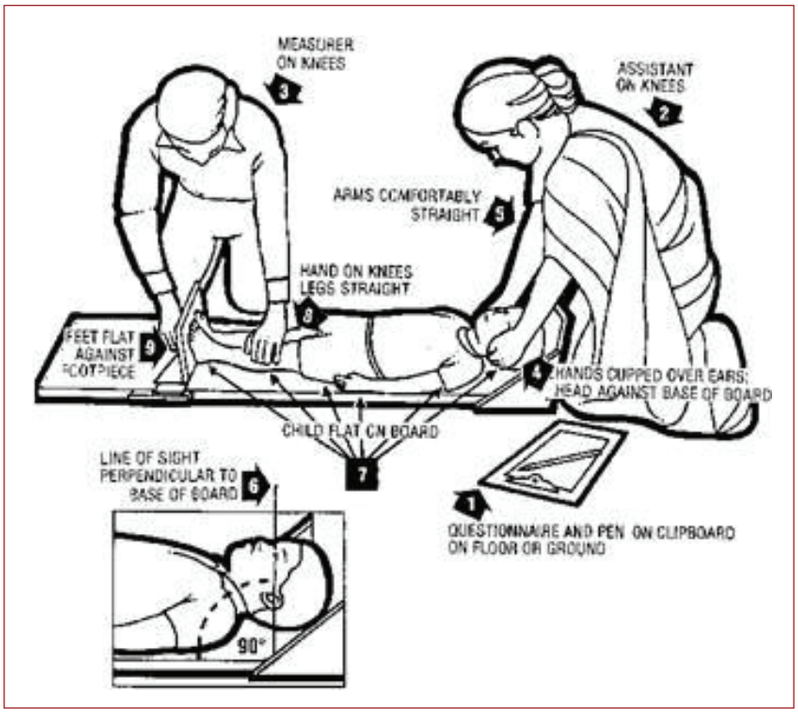
Chart 9.3: Method of measuring weight, length, height & MUAC

Measuring Weight

Key Points to Remember

- Remove the child's clothes, shoes, socks & hair braids, & ornaments to minimum as per weather conditions.
- Cover in a blanket or woollen shawl while carrying to the scale.
- Put a paper / cloth on the pan
- Set the weighing scale to zero before putting the child on the pan
- Place the child on the pan, wait for child to settle and weight to stabilize
- Allow mother/caregiver to stand near weighing scale & make the baby calm.
- Measure weight in gm & enter in the recording Performa immediately.
- Repeat the measurement & record.
- In case the difference of two measurements is more than 10 g, take third measurement and take the average of two nearest measurements.

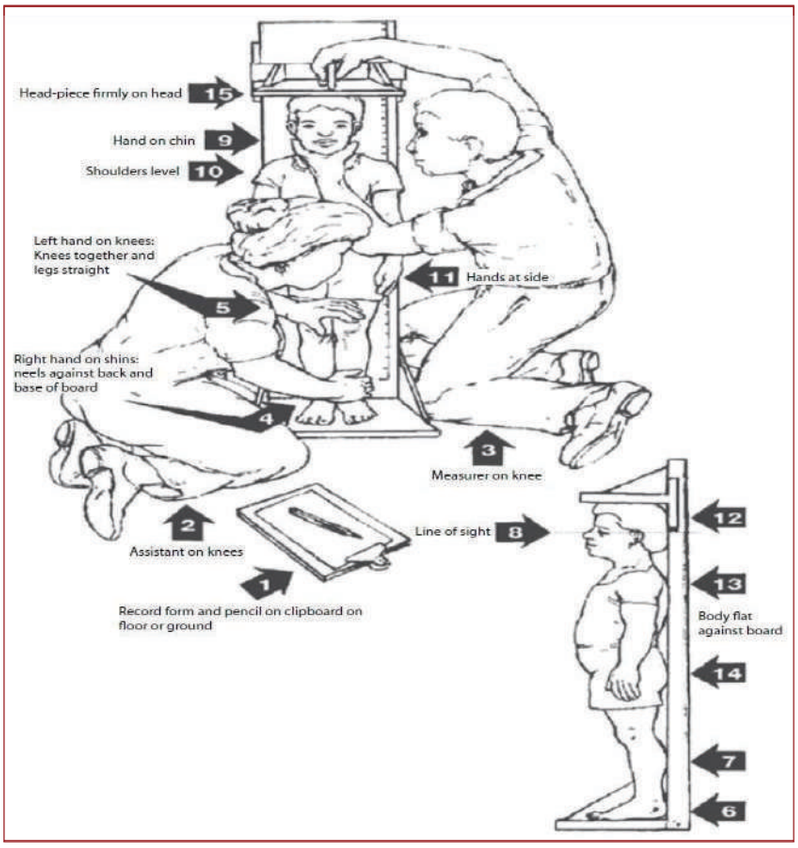
Measuring Length



Key Points to Remember

- Length is measured using a special device known as an infantometer which has a headboard and sliding foot piece. Lay the measuring board flat, on a stable, level table
- One person should stand or kneel behind the headboard and position the child lying on his back on the measuring board, supporting the head and placing it against the headboard.
- The other person should stand alongside the measuring board and Support the child's trunk as the child is positioned on the board.
- Position the crown of the head against the headboard, compressing the hair (Remove hair braids).
- Hold the head with two hands and tilt upwards until the eyes look straight up, and the line of sight is perpendicular to the measuring board.
- Check that the child lies straight along the centre line of the measuring board and does not change position
- Measure length to the last completed 0.1 cm and record immediately on the case recording form.

Measuring Height

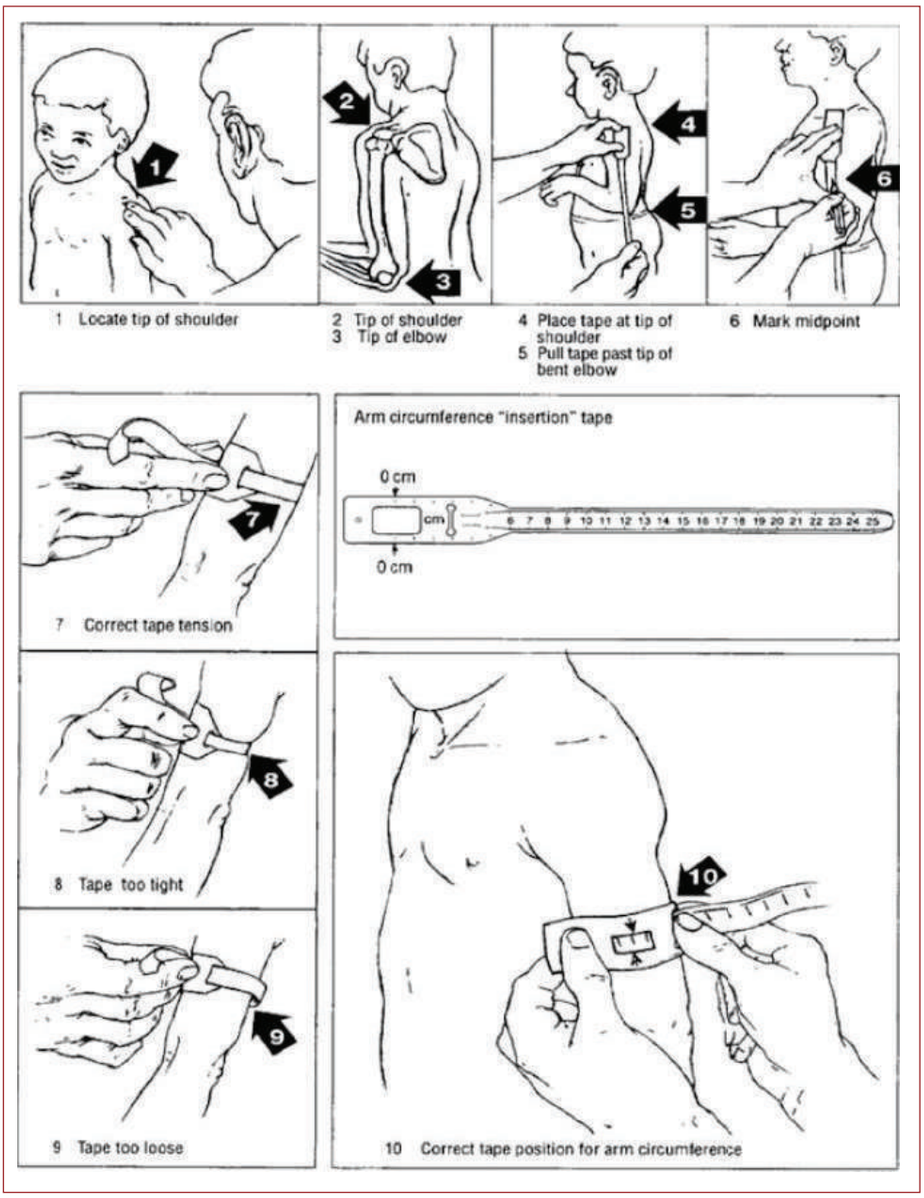


Key Points to Remember

- One person should kneel or crouch near the child's feet and help the child stand with back of the head, shoulder blades, buttocks, calves and heels touching the vertical board.
- Hold the child's knees and ankles to keep the legs straight and feet flat.
- Prevent children from standing on their toes.
- Young children may have difficulty standing to full height. If necessary, gently push the child's tummy to help him stand straight to full height.
- The other person should bend to the level of the child's face and position the head so that the child is looking straight ahead (line of sight is parallel to the base of the board).
- Place thumb and forefinger over the child's chin to help keep the head in an upright position.
- With the other hand, pull down the head board to rest firmly on top of the head and compress hair.
- Measure height to the last completed 0.1 cm and record it immediately on the case recording sheet.

- If a child is less than 2 years old (or less than 87 cm if the age is not available), measure recumbent length.
- If the child is aged 2 years or older (or 87 cm or more if the age is not available) and able to stand, measure standing height.
- If a child less than 2 years old will not lie down for measurement of length, measure standing height and add 0.7 cm to convert it to length. If a child aged 2 years or older cannot stand, measure recumbent length and subtract 0.7 cm to convert it to height.

Measuring Mid Upper Arm Circumference



If using a 3-colour MUAC tape

Color Zones	MUAC Measurement	Nutritional Status
Green	≥ 12.5 cm	No acute malnutrition
Yellow	11.5 cm to 12.4 cm	Moderate acute malnutrition
Red	<11.5 cm	Severe acute malnutrition

Chart 9.4: Therapeutic Diet Preparation

F-75 Starter diets:

Contents (Per 100 ml)	Starter (F-75) diet Amount for 100ml	Starter (F-75) diet (Cereal Based) Amount for 100ml
Milk (ml) (Cow's milk/toned milk)	30	30
Sugar (g)	10	7
Vegetable oil (g)	2	2
Puffed Rice (Murmura) (g)	-	3.5
Water to make (ml)	100	100
Energy (kcal/100 mL)	75	75
Protein (g/100 mL)	0.9	1.1
Lactose (g/100 mL)	1.2	1.2

**Adapted from IAP Guidelines 2006*

***Powdered puffed rice may be replaced by commercial pre-cooked rice preparations (in same amounts)*

*******Important note about adding water****: Add just the amount of water needed to make 100 ml of formula. Do not simply add 100 ml of water, as this will make the formula too dilute. A mark for 100 ml should be made on the mixing container for the formula, so that water can be added to the other ingredients up to this mark.*

F-100 Catch-up diets:

Contents (Per 100 ml)	Catch-up (F-100) diet Amount for 100ml	Catch-up (F-100) diet (Cereal Based) Amount for 100ml
Milk (ml) (Cow's milk/toned milk)	90	75
Sugar (g)	7.5	2.5
Vegetable oil (g)	2	2
Puffed Rice (Murmura) (g)	-	7
Water to make (ml)	100	100
Energy (kcal/100 mL)	100	100
Protein (g/100 mL)	2.9	2.9
Lactose (g/100 mL)	4.2	3

**Adapted from IAP Guidelines 2006*

***Powdered puffed rice may be replaced by commercial pre-cooked rice preparations (in same amounts)*

*******Important note about adding water:*** *Add just the amount of water needed to make 100 ml of formula. Do not simply add 100 ml of water, as this will make the formula too dilute. A mark for 100 ml should be made on the mixing container for the formula, so that water can be added to the other ingredients up to this mark.*

Chart 9.5: Ten Steps of management of SAM children

S.no	Steps	Stabilization Phase		Rehabilitation Phase
		Days 1-2	Days 3-7	Weeks 2-6
1.	Treat/Prevent Hypoglycemia	→		
2.	Treat/Prevent Hypothermia	→		
3.	Treat/Prevent Dehydration	→		
4.	Correct Electrolyte Imbalance	→	→	→
5.	Treat/Prevent Infection	→	→	
6.	Correct micro-nutrient deficiencies	→	→	→
	Iron supplementation	No iron →	→	Iron →
7.	Start Cautious Feeding	→	→	
8.	Achieve Catch-up Growth			→
9.	Provide Sensory Stimulation and Emotional Support	→	→	→
10.	Prepare for Follow up			→

Chart 9.6: Recommended antibiotics for children with SAM

Status	Antibiotics
All admitted case without medical complication and good appetite	• Give Oral Amoxicillin 15 mg/kg /dose three times per day for 5 days
All admitted cases with any complications other than shock, meningitis and dysentery	• Inj. Ampicillin 50 mg/kg/dose 6 hourly and Inj. Gentamicin 7.5 mg/kg once a day for 7 days • Add inj. Cloxacillin 100 mg/kg/day 6 hourly, if Staphylococcal infection is suspected. • Revise therapy based on sensitivity report
For septic shock or worsening/no improvement in initial hours	• Give third generation cephalosporins like Inj. Cefatoxime 150 mg/kg/day in 3 divided doses or Ceftriaxone100 mg/kg/day in 2 divided doses along with Inj. Gentamicin 7.5 mg in single dose for 10-14 days. • Do not give second dose of Gentamicin until child has passed urine.
Meningitis	• IV Cefatoxime 50mg/kg/dose 6 hourly or Inj. Ceftriaxone 50 mg/kg/per dose 12 hourly, plus Inj. Amikacin 15mg kg/day single dose.
Dysentery	• Give cefixime 8-10 mg/kg /day in 2 divided doses/day for 5 days. If the child is sick, give Inj. Ceftriaxone 100 mg/kg once a day or divided in 2 doses for 5 days
On Discharge	• 200 mg albendazole for children aged 12-23 months, 400 mg albendazole for children aged 24 months or more.

Chart 9.7: Starter (F-75) Diet Reference Card

Weight of child (kg)	Volume of Starter diet per feed (ml)[a]			Daily total 130 (ml/kg)	80% of daily total (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
2.0	20	30	45	260	210
2.2	25	35	50	286	230
2.4	25	40	55	312	250
2.6	30	45	55	338	265
2.8	30	45	60	364	290
3.0	35	50	65	390	310
3.2	35	55	70	416	335
3.4	35	55	75	442	355
3.6	40	60	80	468	375
3.8	40	60	85	494	395
4.0	45	65	90	520	415
4.2	45	70	90	546	435
4.4	50	70	95	572	460
4.6	50	75	100	598	480
4.8	55	80	105	624	500
5.0	55	80	110	650	520
5.2	55	85	115	676	540
5.4	60	90	120	702	560
5.6	60	90	125	728	580
5.8	65	95	130	754	605
6.0	65	100	130	780	625
6.2	70	100	135	806	645
6.4	70	105	140	832	665
6.6	75	110	145	858	685
6.8	75	110	150	884	705
7.0	75	115	155	910	730
7.2	80	120	160	936	750
7.4	80	120	160	962	770
7.6	85	125	165	988	790
7.8	85	130	170	1014	810
8.0	90	130	175	1040	830
8.2	90	135	180	1066	855
8.4	90	140	185	1092	875
8.6	95	140	190	1118	895
8.8	95	145	195	1144	915
9.0	100	145	200	1170	935
9.2	100	150	200	1196	960
9.4	105	155	205	1222	980
9.6	105	155	210	1248	1000
9.8	110	160	215	1274	1020
10.0	110	160	220	1300	1040

[a]*Volumes in these columns are rounded to the nearest 5 ml*

[b]*Feed 2-hourly for at least the first day. Then, when little or no vomiting, modest diarrhoea (<5 watery stools per day), and finishing most feeds, change to 3-hourly feeds*

[c]*After a day on 3-hourly feeds. If not vomiting, less diarrhoea, and finishing most feeds, change to 4-hourly feeds.*

Chart 9.8: Starter (F-75) Diet Reference Card for Children with Severe Oedema (+++)

Weight (kg)	Volume of Starter diet per feed (ml)[a]			Daily total 100 (ml/kg)	80% of daily total (minimum)
	Every 2 hoursb (12 feeds)	Every 3 hours (8 feeds)	Every 4 hours (6 feeds)		
3.0	25	40	50	300	240
3.2	25	40	55	320	255
3.4	30	45	60	340	270
3.6	30	45	60	360	290
3.8	30	50	65	380	305
4.0	35	50	65	400	320
4.2	35	55	70	420	335
4.4	35	55	75	440	350
4.6	40	60	75	460	370
4.8	40	60	80	480	385
5.0	40	65	85	500	400
5.2	45	65	85	520	415
5.4	45	70	90	540	430
5.6	45	70	95	560	450
5.8	50	75	95	580	465
6.0	50	75	100	600	480
6.2	50	80	105	620	495
6.4	55	80	105	640	510
6.6	55	85	110	660	530
6.8	55	85	115	680	545
7.0	60	90	115	700	560
7.2	60	90	120	720	575
7.4	60	95	125	740	590
7.6	65	95	125	760	610
7.8	65	100	130	780	625
8.0	65	100	135	800	640
8.2	70	105	135	820	655
8.4	70	105	140	840	670
8.6	70	110	145	860	690
8.8	75	110	145	880	705
9.0	75	115	150	900	720
9.2	75	115	155	920	735
9.4	80	120	155	940	750
9.6	80	120	160	960	770
9.8	80	125	165	980	785
10.0	85	125	165	1000	800
10.2	85	130	170	1020	815
10.4	85	130	175	1040	830
10.6	90	135	175	1060	850
10.8	90	135	180	1080	865
11.0	90	140	185	1100	880
11.2	95	140	185	1120	895
11.4	95	145	190	1140	910
11.6	95	145	195	1160	930
11.8	100	150	195	1180	945
12.0	100	150	200	1200	960

[a]Volumes in these columns are rounded to the nearest 5 ml. [b]Feed 2-hourly for at least the first day. Then, when little or no vomiting, modest diarrhoea (<5 watery stools per day), and finishing most feeds, change to 3-hourly feeds
[c]After a day on 3-hourly feeds. If not vomiting, less diarrhoea, and finishing most feeds, change to 4-hourly feeds.

Chart 9.9: Catch up (F-100) Diet Reference Card for Rehabilitation Phase

Weight of child (kg)	Range of volumes per 4-hourly feed of Catch up diet (6 feeds daily)		Range of daily volumes of Catch up diet	
	Minimum (ml)	Maximum (ml)[a]	Minimum (150 ml/kg/day)	Maximum (220 ml/kg/day)
2.0	**50**	**75**	**300**	440
2.2	55	80	330	484
2.4	60	90	360	528
2.6	65	95	390	572
2.8	70	105	420	616
3.0	75	110	450	660
3.2	80	115	480	704
3.4	85	125	510	748
3.6	90	130	540	792
3.8	95	140	570	836
4.0	100	145	600	880
4.2	105	155	630	924
4.4	110	160	660	968
4.6	115	170	690	1012
4.8	120	175	720	1056
5.0	125	185	750	1100
5.2	130	190	780	1144
5.4	135	200	810	1188
5.6	140	205	840	1232
5.8	145	215	870	1276
6.0	150	220	900	1320
6.2	155	230	930	1364
6.4	160	235	960	1408
6.6	165	240	990	1452
6.8	170	250	1020	1496
7.0	175	255	1050	1540
7.2	180	265	1080	1588
7.4	185	270	1110	1628
7.6	190	280	1140	1672
7.8	195	285	1170	1716
8.0	200	295	1200	1760
8.2	205	300	1230	1804
8.4	210	310	1260	1848
8.6	215	315	1290	1892
8.8	220	325	1320	1936
9.0	225	330	1350	1980
9.2	230	335	1380	2024
9.4	235	345	1410	2068
9.6	240	350	1440	2112
9.8	245	360	1470	2156
10.0	250	365	1500	2200

[a]*Volumes in these columns are rounded to the nearest 5 ml.*

[b]*If the child's weight is between the weights given on the Catch-up diet Reference Card, use the range for the nearest lower weight.*

Chart 10.1: Maintenance fluid requirements

Weight (kg)	Volume in 24 hrs	Rate (ml/hr)	Drip rate drops/ minute) adult IV set (20 drops = 1 mL)	Drip rate (drops/minute) pediatric burette (60 drops= 1 mL)
3	300	13	4	13
4	400	17	6	17
5	500	21	7	21
6	600	25	8	25
7	700	29	10	29
8	800	33	11	33
9	900	38	13	38
10	1000	42	14	42
11	1050	44	15	44
12	1100	46	15	46
13	1150	48	16	48
14	1200	50	17	50
15	1250	52	17	52
16	1300	54	18	54
17	1350	56	19	56
18	1400	58	19	58
19	1450	60	20	60
20	1500	63	21	63
21	1525	64	21	64
22	1550	65	22	65
23	1575	66	22	66
24	1600	67	22	67
25	1625	68	23	68

Note: *Give the sick child more than the above amounts if he or she has fever (increase by 10% for every 1°C of fever).*

The total daily fluid requirement of a child is calculated from the following formula:

- First 10 Kg - 100 ml/kg
- Next 10 kg - 50 ml/kg (1000ml+50 ml x weight in kg above 10 kg)
- Next each additional kg -25 ml/kg (1500ml +25 ml x weight in kg above 20 kg)

Chart 10.2: Key feeding problems and possible solutions

Feeding Practices	Possible Solution
Complementary Feed started too early (<6 months of age)	• Build mother's confidence that she can produce all the breast milk that the child needs • Suggest giving more frequent, longer breastfeeds day or night, and gradually reducing other milk or foods
Complementary Feed is Delayed	• Offer small amounts of soft mashed cereals, pulses, vegetables and fruits • Try one new food at a time for 2-3 days • If a child refuses a particular food, try again after a week
Complementary feeds that are introduced are too thin or lack variety	• Offer mashed soft foods and gradually increase the consistency (thicker) as the child gets older • Offer chopped fine family foods to 10-12 months old children • Offer locally available variety of foods such as cereals, pulses, seasonal vegetables, green leafy vegetables and fruits • Add 1 teaspoon of cooking oil to the food
Child eating inadequate amounts of foods	• Feed frequently as the child gets older • Feed 6-9 months old babies at least ½ a katori/sitting 4 times a day (total at least 2 katoris a day) • Feed 10-12 months old babies at least ½ a katori/sitting 5 times a day (total at least 2½ katori a day) • Breastfeed before offering food to the baby
Child does not show interest in eating	• Encourage the child to eat • Talk to child by describing the texture, smell and taste of the food. • Be patient and affectionate while feeding the child • Discourage from threatening, forcing or showing anger at the child who refuses to eat
Child eats from a common plate with older sibling	• Feed the child from a separate bowl • Sit with the child and feed the child attentively without distraction • Monitor the amount of food the child eats • Supervise the child while feeding
If the child is not eating well during illness	• Continue to breastfeed more frequently and for longer time, if possible • Use soft, varied, appetizing, favorite foods to encourage the child to eat as much as possible • Offer frequent small feedings • Clear a blocked nose if it interferes with feeding • Expect that appetite will improve as child gets better
Child is fed from a bottle	• Recommend substituting a cup for a bottle • Inform the mother that a cup is easier to clean and does not interfere with breastfeeding. • Show the mother how to feed the child with a cup

Chart 10.3: Feeding recommendations during sickness and health*

Up to 6 months of age
• Breastfeed as often as the child wants, day and night, at least eight times in 24 h. Frequent feeding produces more milk. • If child is < 1 week and is low birth weight, feed at least every 2 to 3 h. Wake the baby for feeding after 3 h. • Do not give other foods or fluids.
6–12 months
• Breastfeed as often as the child wants day and night, at least eight times in 24 h. ◆ Give adequate servings of locally appropriate nutrient-dense foods, well mashed or finely chopped, increasing gradually (see Table 10.3 for examples) ◆ three times per day if breastfed ◆ five times per day if not breastfed, plus 1-2 cups of milk
12 months to 2 years
• Breastfeed as often as the child wants. • Give a variety of adequate servings of locally appropriate nutrient-dense foods or family foods five times a day. • Offer one or two snacks between meals and continue to encourage and patiently feed the child during meals.
≥ 2 years
• Give family foods at three meals each day. Also, twice a day, give nutritious food between meals. • Talk with your child during meals and keep eye contact.

** A good daily diet should be adequate in quantity and include an energy-rich food (for example, thick cereal with added oil), meat, fish, eggs or pulses and fruit and vegetables.*

Chart 10.4: Guiding Principles for Complementary Feeding of the Breastfed Child

- Practice exclusive breastfeeding from birth to 6 months of age, and introduce complementary foods at 6 months of age (180 days) while continuing to breastfeed.
- Continue frequent, on-demand breastfeeding until 2 years of age or beyond.
- Practice responsive (active) feeding, applying the principles of psychosocial care.
- Practice good hygiene and proper food handling.
- Start at 6 months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding.
- Gradually increase food consistency and variety as the infant grows older, adapting tothe infant's requirements and abilities.
- Increase the number of times that the child is fed complementary foods as the child gets older.
- Feed a variety of nutrient-rich and energy-dense foods from the family pot to ensure that all nutrient needs are met.
- Use iron rich complementary foods or vitamin-mineral supplements for the infant, as needed.
- Increase fluid intake during illness, including more frequent breastfeeding, and encourage the child to eat soft, favourite foods. After illness, give food more often than usual andencourage the child to eat more.

Case Recording Forms

PAEDIATRIC TRIAGE & EMERGENCY PATIENT RECORD

Inpatient Number/ID	
Name	
Mother's name	
Age	**Years** ☐☐ **Months** ☐☐ **Days** ☐☐ **(if < 1 month)**
Sex	**Male** ☐ **Female** ☐
Address (including Block, District, State)	
Date of presentation to emergency	**--/--/----**
Whether this is repeat visit to emergency within 48 hours of discharge/assessment	☐ **Yes** ☐ **No**
Time of presentation to emergency	
Time when first assessment made	

ASSESS (tick against those seen in the patient)

• Check for head/neck trauma before treating child – do not move neck if cervical spine injury possible

AIRWAY & BREATHING

☐ Not breathing at all or gasping

☐ Obstructed breathing

☐ Central cyanosis

☐ Severe respiratory distress

(Respiratory rate ≥ 70/min, Severe lower chest in-drawing, Grunting, Head nodding, Apnoeic spells, Unable to feed due to respiratory distress, Stridor in a calm child)

CIRCULATION

☐ **Shock**

Cold hands with

- Capillary refill longer than 3 seconds and
- Weak and fast pulse

COMA, CONVULSING

☐ Coma (AVPU) or

☐ Convulsing (now)

SEVERE DEHYDRATION (ONLY IN CHILDREN WITH DIARRHOEA)

Diarrhoea plus any two of these:

☐ Lethargy

☐ Sunken eyes

☐ Very slow skin pinch

Priority signs (tick against those seen in the patient)

☐ Tiny baby (young infant)

☐ Temperature (very high)

☐ Trauma or other urgent surgical condition

☐ Pallor (severe)

☐ Poisoning (history of)

☐ Pain (severe)

☐ Respiratory distress

☐ Restless, continuously irritable, or lethargic

☐ Referral (urgent)

☐ Malnutrition: visible severe wasting

☐ Oedema of both feet

☐ Burns (major)

PATIENT CATEGORISED AS: (tick against one category)

☐ Emergency ☐ Priority ☐ Non-urgent

EXAMINATION			
Temperature	Pulse	Resp. Rate	Spo2
Weight	Weight for Length/height		
Sensorium	Neck Rigidity		
Pallor	Jaundice	Pedal oedema	

Investigations	**Results**
☐ **Blood glucose**	
☐ **Hb**	
☐ **RDT for typhoid**	
☐ **RDT for dengue**	
☐ **RDT for malaria**	
☐ **Serum bilirubin**	
☐ **Chest X ray**	
☐ **Any other (specify)…….....** **……**	

TREATMENT DETAILS (circle the treatment given)	
Resuscitation performed (yes/no)	
Oxygen	
IV Fluids	
Oral medications	
IV medication	
Other interventions	

OUTCOME	
Admitted to ward	☐ **Yes** ☐ **No**
Referred to higher facility (government)	☐ **Yes** ☐ **No**
Referred to private facility	☐ **Yes** ☐ **No**
Died	☐ **Yes** ☐ **No**
Left against medical advice	☐ **Yes** ☐ **No**

Signature of the doctor on duty:.....

Name:.....

Designation:.....

PEDIATRIC INPATIENT RECORD

Name of the health facility:.....

State:.....

District.....

Inpatient registration number:.....

Name:..... Age:..... Sex:.....Unit/Ward:.....

Father's Name:..... Mother's Name:.....

Address .....

Pin Code:..... Telephone No:.....

Date of birth:.....

Date & Time of admission:.....

Date & Time of Discharge/Death:.....

Provisional Diagnosis at admission:.....

Result: Discharged /Death /LAMA /Referred to

.....

Final Diagnosis at discharge/death:.....

Chief Complaint:.....

Number of days for which complaint is present:.....

Past History:.....

Developmental milestones: Age appropriate:..... Delayed:.....

Immunization Status: Fully Immunized:..... /Partially Immunized:..... /Unimmunized:.....

At Birth	6 weeks	10 weeks	14 weeks	9 - 12 months	16 - 24 months	60 months
BCG	OPV - 1	OPV - 2	OPV - 3	Measles-rubella (MR-1)	OPV - booster	DPT booster - 2
OPV - 0	Penta - 1	Penta - 2	Penta - 3	JE - 1	JE - 2	
Hep B - 0	Rota - 1	Rota - 2	Rota - 3	PCV booster	MR - 2	
	fIPV - 1		PCV - 2	fIPV - 3	DPT booster - 1	
	PCV - 1		fIPV - 2		Deworming	

General examination:

Weight:..... Height:..... MUAC:.....

Weight for age:..... (SD score):.....

Height for age:..... (SD score):.....

Weight for Height/Length SD Score: .....

Severe Acute Malnutrition PRESENT/ABSENT:.....

Pulse:..... BP:..... RR:..... Spo2:.....

Hydration status:.....

Pallor:..... Jaundice:..... Cyanosis:.....

Sensorium:..... Neck rigidity:.....

Lymphadenopathy:.....

Pedal oedema.....

Eye- pus/bitots spots/corneal involvement.....

Skin- depigmentation/desquamation/petichae/purpura/ecchymosis.....

Systemic examination:.....

Respiratory:.....

CVS:.....

Abdomen:.....

Nervous system:.....

Investigations	Date	Results				
Blood glucose						
CBC		HB	TLC	DLC	ESR	ANY OTHER
Urine analysis (routine/ microscopy)						
Renal function test						
Liver function test						
Malaria						
Widal test						
Dengue						
CSF analysis						
Culture (Blood, Urine etc.)						
Others (Specify)						
Imaging						

TREATMENT ADVISED: DAILY SHEET

Date	Daily notes	Treatment orders

NURSE'S DAILY MONITORING CHART

Date of admission:		**Inpatient Id No.**	
Child Name:		**Age:**	
Diagnosis:			
Vital Signs		**Day 1**	**Day 2**
a. Consciousness level (AVPU)			
b. Temperature			
c. Respiratory rate			
d. Pulse rate			
Treatment given at the time of Shift			
Name of treatment	Dose, (where applicable)		
i.			
ii.			
iii.			
iv.			
v.			
Feeding/Nutrition			
a. Breast feeding/other feeds (no. of times)			
a. Urine passed (no. of times)			
Investigations sent:			
Remarks			

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