Ministry of Health



Republic of Rwanda.

Basic Paediatric Protocols

October 2011 Edition

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Foreword

This pocket book is mainly aimed at doctors, clinical officers, senior nurses and other senior health workers who are responsible for the care of sick newborns and young children. We hope it helps people at all levels although its main target is District Hospital Level where basic laboratory facilities and essential drugs are available. The guidelines consider facilities should have:- (1) capacity to do certain essential investigations such as blood smear for malaria parasites, estimation of hemoglobin or packed cell volume, blood glucose, blood grouping and cross matching, basic microscopy of CSF and urine, bilirubin determination for neonates, and chest X-rays and (2) essential drugs available for the care of seriously sick children.

These guidelines focus on the classification of illness severity, criteria for admission, and inpatient management of the major causes of childhood mortality such as pneumonia, diarrhea, malaria, severe malnutrition, meningitis, HIV, neonatal and related conditions. The guidelines focus on management of the seriously ill newborn or child in the first 48 hours of arrival at hospital. The guidelines reflect international best practice advice as found in the WHO IMCI Book, "A Pocket Book of Hospital Care for Children" with guidance adapted from the Kenyan edition of September 2010 by the Rwanda Pediatric Association. We are very grateful to our Kenyan fellow Pediatricians for their commitment in introducing this wonderful program into Rwanda and especially Dr. John Wachira without whom none of this would have been possible. We are also grateful to the Imperial College of London and to the Belgian Technical Cooperation (BTC) for their sponsoring.

This handy pocket sized booklet will also be useful to students in medical schools and other training institutions. The simplified algorithms in this book can be enlarged and used as job aides in casualty, outpatients, pediatric wards, delivery rooms and newborn units.

Guidelines of this nature will require periodic revision to keep abreast with new developments and hence continue to deliver quality care to the children of this nation.

Dr Agnes BINAGWAHO
Minister of Health
President of Rwanda Pediatric Association



Principles of good care:

1) Facilities must have basic equipment and drugs in stock at all times
2) Sick children coming to hospital must be immediately assessed (triage) and if necessary provided with emergency treatment as soon as possible.
3) Assessment of diagnosis and illness severity must be thorough and treatment must be carefully planned. **All stages should be accurately documented.**
4) The protocols provide a minimum, standard and safe approach to most, but not all, common problems. Care needs to be taken to identify and treat children with less common problems rather than just applying the protocols without thinking.
5) All treatments should be clearly and carefully prescribed on patient treatment sheets with doses checked by nurses before administration. *(Please write dose frequency as 6hrly, 8hrly, 12hrly etc rather than qid, tid etc)*
6) The parents / caretakers need to understand what the illness and its treatment are. They can often then provide invaluable assistance caring for the child. Being polite to parents considerably improves communication.
7) The response to treatment needs to be assessed. For very severely ill children this may mean regular review in the first 6 – 12 hours of admission – such review needs to be planned between medical and nursing staff.
8) Correct supportive care – particularly adequate feeding, use of oxygen and fluids - is as important as disease specific care.
9) Laboratory tests should be used appropriately and use of unnecessary drugs needs to be avoided.
10) An appropriate discharge and follow up plan needs to be made when the child leaves hospital.
11) Good hand washing practices and good ward hygiene improve outcomes for admitted newborns and children.

Specific policies:

- ✓ All children admitted to hospital and all newborns requiring medical treatment – even if born in hospital – should have their own inpatient number and set of medical records. Admission should ideally be recorded using a standardized paediatric or newborn admission record
- ✓ Medical records are a legal document and entries should be clear, accurate and signed with a date and time of the entry recorded
- ✓ All paediatric admissions should be offered HIV testing using PITC
- ✓ All newborn admissions aged < 14 days should receive Vitamin K unless it has already been given.
- ✓ Routine immunization status should be checked and missed vaccines given before discharge.
- ✓ All admissions aged >6m should receive Vitamin A unless they have received a dose within the last 1 month. (Malnourished children with eye signs receive repeated doses).

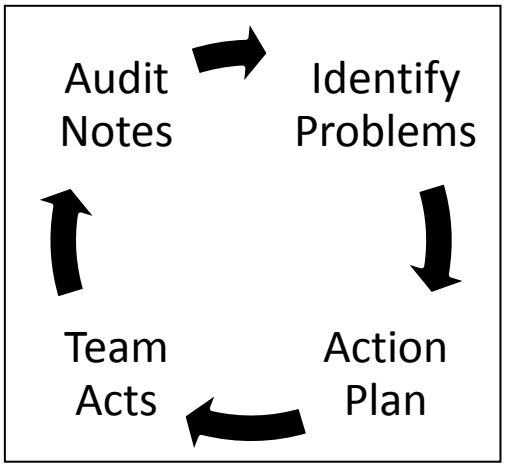
Admission and Assessment:

- ✓ All admitted children must have weight recorded and used for calculation of fluids / feeds and drug doses.
- ✓ Length / Height should be measured with weight for height (WHZ) used to establish nutritional status
- ✓ Respiratory rates must be counted for 1 minute.
- ✓ Conscious level should be assessed on all children admitted using the AVPU scale where:
  - A = **A**lert and responsive
  - V = responds to **V**oice or **V**erbal instructions, e.g. turns head to mother's call. ***These children may still be lethargic or unable to drink / breastfeed (prostrate).***
  - P = responds to **P**ain appropriately. In a child **older than 9 months** a painful stimulus such as rubbing your knuckles on the child's sternum should result in the child pushing the hand causing the pain away. In a **child 9 months and younger** they do not reliably locate a painful stimulus, in these children if they bend the arms towards the pain and make a vigorous, appropriate cry they respond to pain = 'P'. ***Children in this category must be lethargic or unable to sit up or drink / breastfeed (prostrate).***
  - U = **U**nconscious, cannot push a hand causing pain away or fail to make a response at all.
- ✓ Children with AVPU < A should have their blood glucose checked. If this is not possible treatment for hypoglycemia should be given.
- ✓ The sickest newborns / children on the ward should be near the nursing station and prioritized for re-assessment / observations.

Clinical audit and use of the protocols

1. Clinical audit is aimed at self improvement and is not about finding who to blame.

2. The aims are for hospitals to diagnose ***key*** problems in providing care - ***it is essential that*** identifying problems is linked to suggesting ***who needs to act, how and by when*** to implement solutions. Then follow up on whether progress is being achieved with new audits. Identify new problems and plan new actions etc.



3. Hospitals should have an **audit team** comprising 4 to 8 members, led by a senior clinician and including nurses, admin, lab, nutrition etc. 1-2 people, usually MO and nurses should be selected on a rotating basis to perform the audit and report back to the audit team and department staff. Deaths and surviving cases can be audited.
   Records of all deaths should be audited within 24 hours of death

4. Use an audit tool to compare care given with recommendations in these protocols and other guidelines (e.g. for TB, HIV/AIDS) and the most up to date textbooks for less common conditions.

5. Was care reasonable? Look for where improvements could be made in the system of care before the child comes to hospital (referral), on arrival in hospital (care in the OPD / MCH etc), on admission to a ward, or follow up on the ward.

6. Look at assessments, diagnoses, investigations, treatments and whether what was planned was done and recorded. Check doses and whether drugs / fluids / feeds are correct and actually given and if clinical review and nursing observations were adequate – ***if it is not written down it was not done!***

7. Look at several cases for each meeting and summarize the findings ***looking for the major things that are common and need improving.*** Then record the summaries for reporting.

Hand Hygiene

- Good hand hygiene saves lives
- Gloves can easily become contaminated too – they do not protect patients
- Alcohol hand-rubs (or alcohol with glycerine) are more effective than soap and water and are recommended
    - *If hands are visibly dirty they must be cleaned first with soap and water before drying and using alcohol hand-rub*
    - *The alcohol hand-rub must be allowed to dry off to be effective*
    - *If alcohol hand-rub is not available then hands should be washed with simple soaps and water and air-dried or dried with disposable paper towels*
- **Hand hygiene should be performed**:
    - *After contact with any body fluids*
    - *Before and after touching a patient and most importantly before and after handling cannulae, giving drugs or performing a procedure. Suction)*
    - *Before and after touching potentially contaminated surfaces (e.g.. cot sides, dirty mattresses, stethoscopes)*
- Patients and caregivers should wash hands carefully after visits to the bathrooms or contact with body fluids
- Recipients for alcohol and soap should be regularly maintained according to infection control guidelines
- Instruments (e.g. stethoscope) should also be cleaned with chlorate solution

Use of Alcohol Hand rub / gel



Appropriate hand-washing with soap and water



Essential Drugs	Doses
Adrenaline 1 in 10,000	To make this strength dilute 1 ml of 1 in 1000 adrenaline in 9 ml water for injection to make 10mls. Give 0.1ml/kg in resuscitation.
Albendazole	**Age < 2yrs**, 200mg stat, **Age ≥ 2yrs**, 400mg stat
Aminophylline- iv **ONLY used in hospital inpatients!**	**Newborn** Loading dose 6mg/kg IV over 1 hour or rectal, **Maintenance (or oral)**: Age 0-7 days - 2.5mg/kg 12hrly, Age 7-28 days 4mg/kg 12hrly. **Astma:** 6mg/kg IV first dose over 30 mins
Amoxicillin	*Neonate Page 45, other Page 14*
Artemether- Lumefantrine	*Page 25*
Beclomethasone	*Age < 2yrs 50-100 micrograms 12hrly,* ≥ 2yrs 100-200 *micrograms 12hrly*
Benzyl Penicillin (X-pen)	*Neonate Page 45, other Page 13*
Caffeine	20mg/kg loading dosis, from day 2 10mg/kg/d once a day with ngt
Ceftriaxone	*Neonate Page 45, other Page 13*
Chloramphenicol -	*Page 13 and 14*
Ciprofloxacin - oral	**Dysentery dosing:** Page 14
Clotrimazole 1%	Apply paint / cream daily
Dexamethasone	For severe croup 0.6mg/kg stat
Cloxacillin	*Neonate Page 45, other Page 14*
Co-trimoxazole– pneumonia dosing (4mg/kg Trimethoprim & 20mg/kg sulphamethoxazole)	**Weight** / **240mg/5ml syrup** 12hrly / **480mg tabs** 12hrly **2 - 3kg** 2.5mls 1/4 **4 - 10kg** 5mls 1/2 **11 - 15 kg** 7.5ls 1/2 **16 - 20 kg** 10mls 1
Diazepam - iv	0.3mg/kg (=300 mcg/kg) & *See separate chart*
Diazepam - rectal	0.5mg/kg (=500 mcg/kg) & *See separate chart*
Digoxin	5 mics/kg 12 hrly; No loading dose
Furosemide	0.5 to1mg/kg up to 6 hrly
Gentamicin	*Neonate Page 45, other Page 13*
Ibuprofen	5 - 10 mg/kg 8 hourly
Iron	6 mg/kg/day for treatment; 2 mg/kg/day in prophylaxis
Mebendazole (age > 1yr)	100mg 12 hrly for 3 days or 500mg stat
Metronidazole - oral	*Neonate Page 45, other Page 13*
Morphine	**<1 month**, 150mcg/kg, **1-11 months** 200mcg/kg,

	1 - 5yrs 2.5 - 5 mg, **6 – 12 yrs** 5 – 10 mg	
Multivitamins	<6 months 2.5mls daily, >6months 5mls 12 hrly	
Nystatin ***(100,000 IU/ml)***	1ml 6hrly *(2 weeks in HIV positive children)*	
Paracetamol	10-15mg / kg 6 to 8 hrly	
Pethidine, im	0.5 to 1mg / kg every 4- 6 hours	
Phenobarbitone	*Page 12*	
Potassium - oral	1 - 4 mmol/kg/day	
Prednisolone - tabs	Asthma 1mg / kg daily *(usually for 3 days)*	
Quinine	*Page 25*	
Salbutamol *IV therapy should only be used on an HDU, ideally with a monitor, and MUST be given slowly as directed* *Oral salbutamol should ONLY be used if inhaled therapy is not possible and for a maximum duration of 1 week. Use inhaled steroid for persistent asthma*	**IV in hospital only over 5 min** – <2yrs 5 microgram/kg, ≥ 2yrs up to 15 microgram/kg **max dose 250 micrograms** **Nebulized** 2.5mg/dose as req'd (see 'Page 31) **Inhaled** (100 microgram per puff) 2 puffs via spacer repeated as req'd acutely ***– see page 31 for emergency use*** **-** or 2 puffs up to 4-6 hrly for short-term maintenance or outpatient treatment. **Oral** 1mg/dose 6-8hrly aged 2-11 months, 2mg/dose 6-8hrly aged 1 - 4 yrs (1 week only)	
Vitamin A *Once on admission, not to be repeated within 1 month. For malnutrition with eye disease repeat on day 2 and day 14*	**Age**	
	< 6 months	50,000 u stat
	6 – 12 months	100,000 u stat
	> 12 months	200,000 u stat
Vitamin D – Rickets *Low dose regimens daily for 8 – 12 wks or high dose stat. <u>Calcium 50mg/kg/day</u> for first week of treatment.*	**< 6 months**	3,000 u = 75 micrograms
	> 6 months	6,000 u = 150 micrograms
	> 6 months stat regimen	300,000 u = 7,500 micrograms or 7.5 mg **Stat**
Vitamin D – Maintenance *After treatment course*	**< 6 months**	200 - 400 u (5 – 10 µg)
	> 6 months	400 - 800 u (10 – 20 µg)
Vitamin K	**Newborns:** 1mg stat im (<1500g, 0.5mg im stat) **For liver disease:** 0.3mg/kg stat, max 10mg	
Zinc Sulphate	> 6 mths 20mg, ≤ 6mths 10mg once a day, 14 days	

Emergency drugs – Diazepam and Glucose (*NB Diazepam is not used in neonates*).

Weight, (kg)	**Diazepam** (The whole syringe barrel of a 1ml or 2ml syringe should be inserted gently so that pr DZ is given at a depth of approx. 4 - 5cm)				**Glucose**, 5mls/kg of 10% glucose over 5 - 10 minutes	
	iv	iv	Per rectum	Per rectum	iv	
	Dose, 0.3mg/kg	ml of 10mg/2ml solution	Dose, 0.5mg/kg	ml of 10mg/2ml solution	Total Volume of 10% Glucose	To make 10% glucose
3.00	1.0	0.20	1.5	0.3	15	**50% Glucose and <u>water</u> for injection:** **10 ml syringe:** ✓ 2 ml 50% Glucose ✓ 8 ml Water **20 ml syringe:** ✓ 4 ml 50% Glucose ✓ 16 ml Water
4.00	1.2	0.25	2.0	0.4	20	
5.00	1.5	0.30	2.5	0.5	25	
6.00	1.8	0.35	3.0	0.6	30	
7.00	2.1	0.40	3.5	0.7	35	
8.00	2.4	0.50	4.0	0.8	40	
9.00	2.7	0.55	4.5	0.9	45	
10.00	3.0	0.60	5.0	1.0	50	
11.00	3.3	0.65	5.5	1.1	55	
12.00	3.6	0.70	6.0	1.2	60	**50% Glucose and <u>5% Glucose</u>:** **10 ml syringe:** ✓ 1 ml 50% Glucose ✓ 9 ml 5% Glucose **20 ml syringe:** ✓ 2 ml 50% Glucose ✓ 18 ml 5% Glucose
13.00	3.9	0.80	6.5	1.3	65	
14.00	4.2	0.85	7.0	1.4	70	
15.00	4.5	0.90	7.5	1.5	75	
16.00	4.8	0.95	8.0	1.6	80	
17.00	5.1	1.00	8.5	1.7	85	
18.00	5.4	1.10	9.0	1.8	90	
19.00	5.7	1.15	9.5	1.9	95	
20.00	6.0	1.20	10.0	2.0	100	

Anticonvulsant drug doses and administration

Weight (kg)	Phenobarb, Loading dose, 15mg/kg (use 20mg/kg for neonates)	Phenobarb, maintenance, 5mg/kg daily (high dose – chronic therapy)		Phenobarb maintenance 2.5mg/kg daily (starting dose – fits in acute febrile illness)		Phenytoin, loading dose, 15mg/kg	Phenytoin, maintenance 5mg/kg daily
	im / oral	im – mg	oral - tabs	im / oral		iv / oral / ng	iv / oral / ng
2.0	30	10	-	5	-	*Tablets may be crushed and put down ngt if required.*	
2.5	37.5	12.5		6.25			
3.0	45	15	½ tab	7.5		45	15
4.0	60	20		10		60	20
5.0	75	25		12.5	½ tab	75	25
6.0	90	30	1 tab	15		90	30
7.0	105	35		17.5		105	35
8.0	120	40		20	1 tab	120	40
9.0	135	45	1½ tab	22.5		135	45
10.0	150	50		25		150	50
11.0	165	55		27.5		165	55
12.0	180	60	2 tabs	30		180	60
13.0	195	65		32.5	1½ tab	195	65
14.0	210	70		35		210	70
15.0	225	75	2½ tab	37.5		225	75
16.0	240	80		40		240	80
17.0	255	85		42.5		255	85
18.0	270	90	3 tabs	45		270	90
19.0	285	95		47.5	2 tabs	285	95
20.0	300	100		50		300	100

Intravenous / intramuscular antibiotic doses – <u>AGES 7 DAYS AND OLDER</u> (NN doses see Page 45).

Weight (kg)	Penicillin* (50,000iu/kg)	Ampicillin or Flucloxacillin (50mg/kg)	Chloramphenicol (25mg/kg)	Gentamicin (7.5mg/kg) im or iv over 3-5 min	Ceftriaxone iv/im <u>Max 50mg/kg 24hrly for neonates**</u> Mening / V Sev Sepsis 50mg/kg 12 hrly	Metronidazole (7.5mg/kg)
	iv / im	iv / im	iv / im			iv
	6 hrly	8 hrly	6hrly - meningitis	24 hrly	50mg/kg	12 hrly < 1m, ≥ 1m 8 hrly
3.0	150,000	150	75	20	150	20
4.0	200,000	200	100	30	200	30
5.0	250,000	250	125	35	250	35
6.0	300,000	300	150	45	300	45
7.0	350,000	350	175	50	350	50
8.0	400,000	400	200	60	400	60
9.0	450,000	450	225	65	450	65
10.0	500,000	500	250	75	500	75
11.0	550,000	550	275	80	550	80
12.0	600,000	600	300	90	600	90
13.0	650,000	650	325	95	650	95
14.0	700,000	700	350	105	700	105
15.0	750,000	750	375	110	750	110
16.0	800,000	800	400	120	800	120
17.0	850,000	850	425	125	850	125
18.0	900,000	900	450	135	900	135
19.0	950,000	950	475	140	950	140
20.0	1,000,000	1000	500	150	1000	150

***NB. Double Pen doses if treating Meningitis and age > 1 month**

**** Not recommended if jaundiced**

Oral antibiotic doses - For neonatal doses see Page 45.

Weight kg	Amoxicillin, oral, 25mg/kg/dose		Cloxacillin / Flucloxacillin 15mg/kg/dose		Chloramphenicol 25mg/kg/dose		Ciprofloxacin 15mg/kg/dose	Metronidazole 7.5mg/kg/dose
	ml susp 125mg/5ml	250mg caps	ml susp 125mg/5ml	250mg caps or tabs	ml susp 125mg/5ml	250mg caps	250mg tabs	200mg tabs
	12 hrly	12 hrly	8 hrly	8 hrly	6 hrly	6 hrly	12 hrly (for 3 days)	8 hrly
3.0	5	1/2*	2.5	1/4	4	n/a		
4.0	5	1/2*	2.5	1/4	4	n/a	1/4	
5.0	5	1/2*	5	1/4	6	n/a	1/4	1/4
6.0	5	1/2*	5	1/2	6	n/a	1/4	1/4
7.0	7.5	1/2*	5	1/2	8	n/a	1/2	1/2
8.0	7.5	1/2*	5	1/2	8	n/a	1/2	1/2
9.0	7.5	1	5	1/2	8	n/a	1/2	1/2
10.0	10	1	5	1	12	1	1/2	1/2
11.0	10	1	10	1	12	1	1	1/2
12.0	10	1	10	1	12	1	1	1/2
13.0	10	1	10	1	12	1	1	1/2
14.0	15	2	10	1	12	1	1	1
15.0	15	2	10	1	15	1	1	1
16.0	15	2	10	1	15	1	1	1
17.0	15	2	10	1	15	1	1	1
18.0	15	2	10	1	15	1	1	1
19.0	20	2	10	1	15	1	1	1
20.0	20	2	10	1		2	1	1

***Amoxicillin syrup should be used and capsules divided ONLY if syrup is not available**

Initial Maintenance Fluids / Feeds – Normal Renal Function.

- Children should receive 1-2 mmol / kg / day of potassium
- **Feeding** should start as soon as safe and infants may rapidly increase to 150mls/kg/day of feeds as tolerated (50% more than in the chart).
- Add 50mls 50% dextrose to 450mls Ringer's Lactate to make RL/5% dextrose a useful maintenance fluid (or Half Strenght Darrow's in function of what fluid is available).

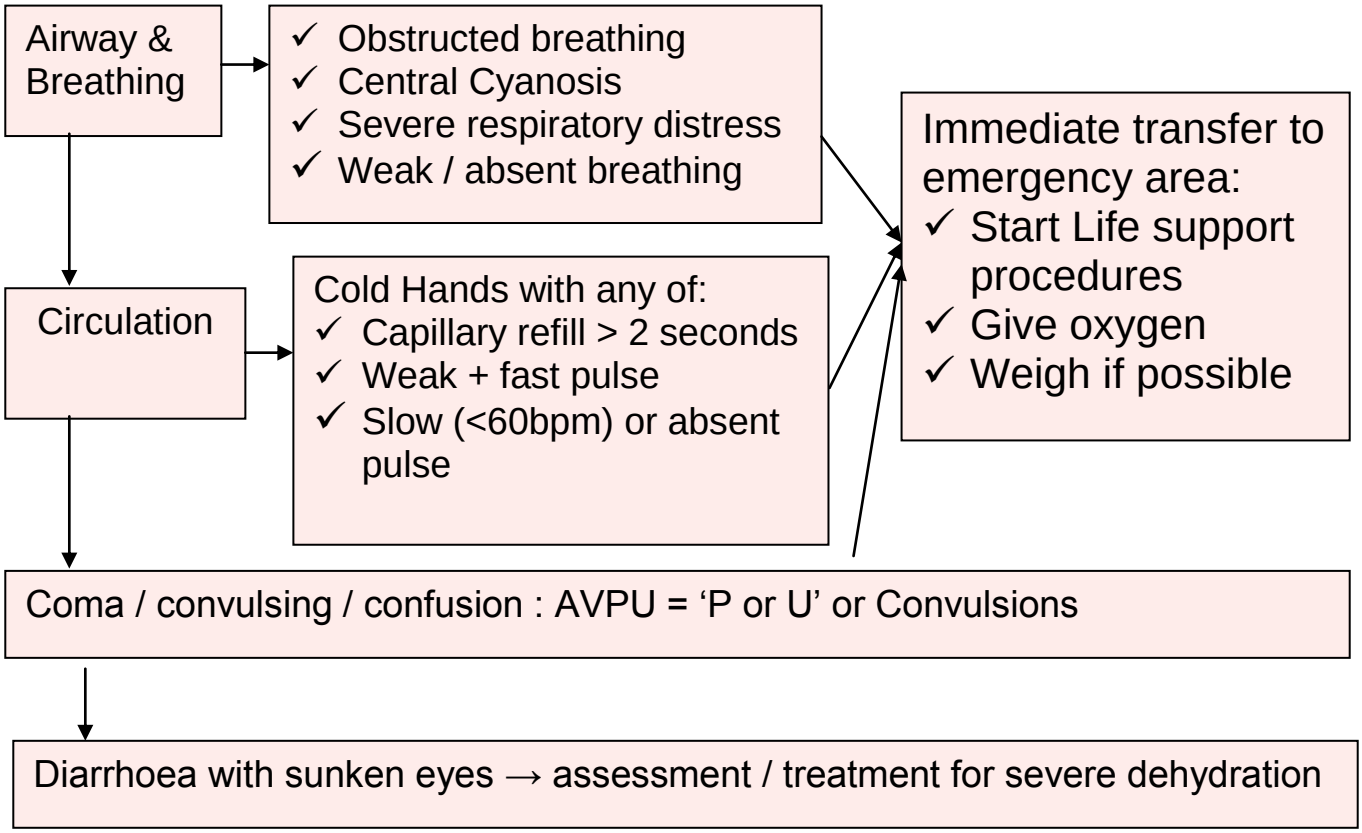
Weight, kg	Volume in 24hrs	Rate in ml / hr	Drip rate* - adult iv set, 20 drops = 1ml	Drip rate* - paediatric burette 60 drops = 1ml	3hrly bolus feed volume
3	300	13	4	13	40
4	400	17	6	17	50
5	500	21	7	21	60
6	600	25	8	25	75
7	700	29	10	29	90
8	800	33	11	33	100
9	900	38	13	38	110
10	1000	42	14	42	125
11	1050	44	15	44	130
12	1100	46	15	46	140
13	1150	48	16	48	140
14	1200	50	17	50	150
15	1250	52	17	52	150
16	1300	54	18	54	160
17	1350	56	19	56	160
18	1400	58	19	58	175
19	1450	60	20	60	175
20	1500	63	21	63	185
21	1525	64	21	64	185
22	1550	65	22	65	185
23	1575	66	22	66	185
24	1600	67	22	67	200
25	1625	68	23	68	200

* Drip rate in drops per minute

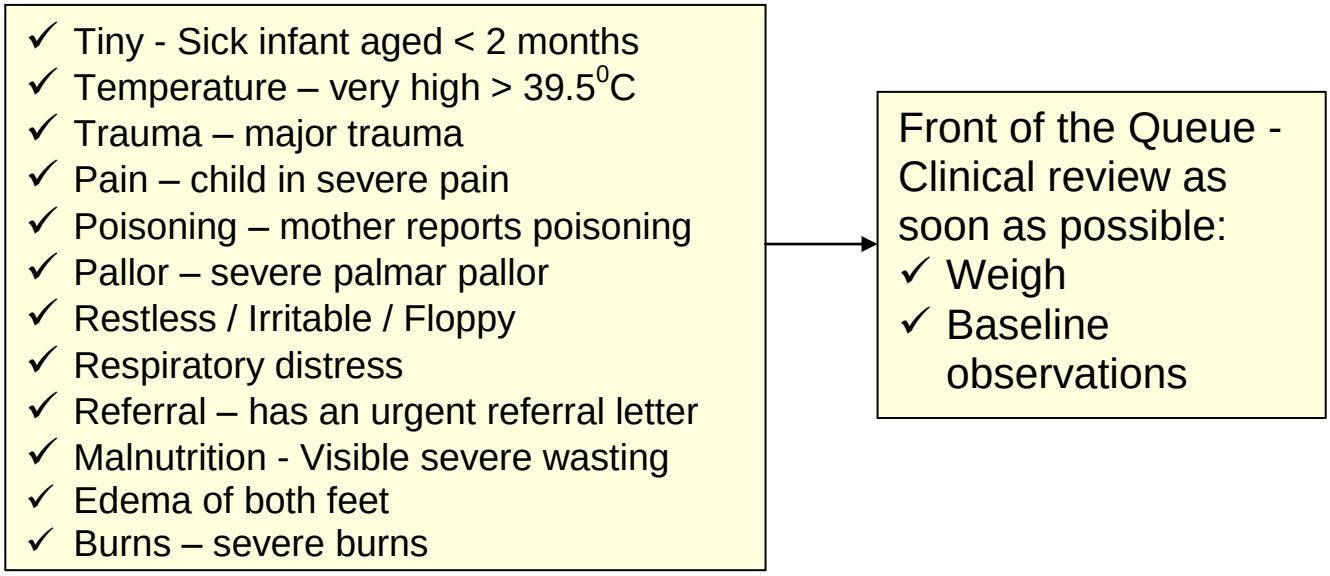
Triage of sick children.

Emergency Signs:

If history of trauma ensure cervical spine is protected.

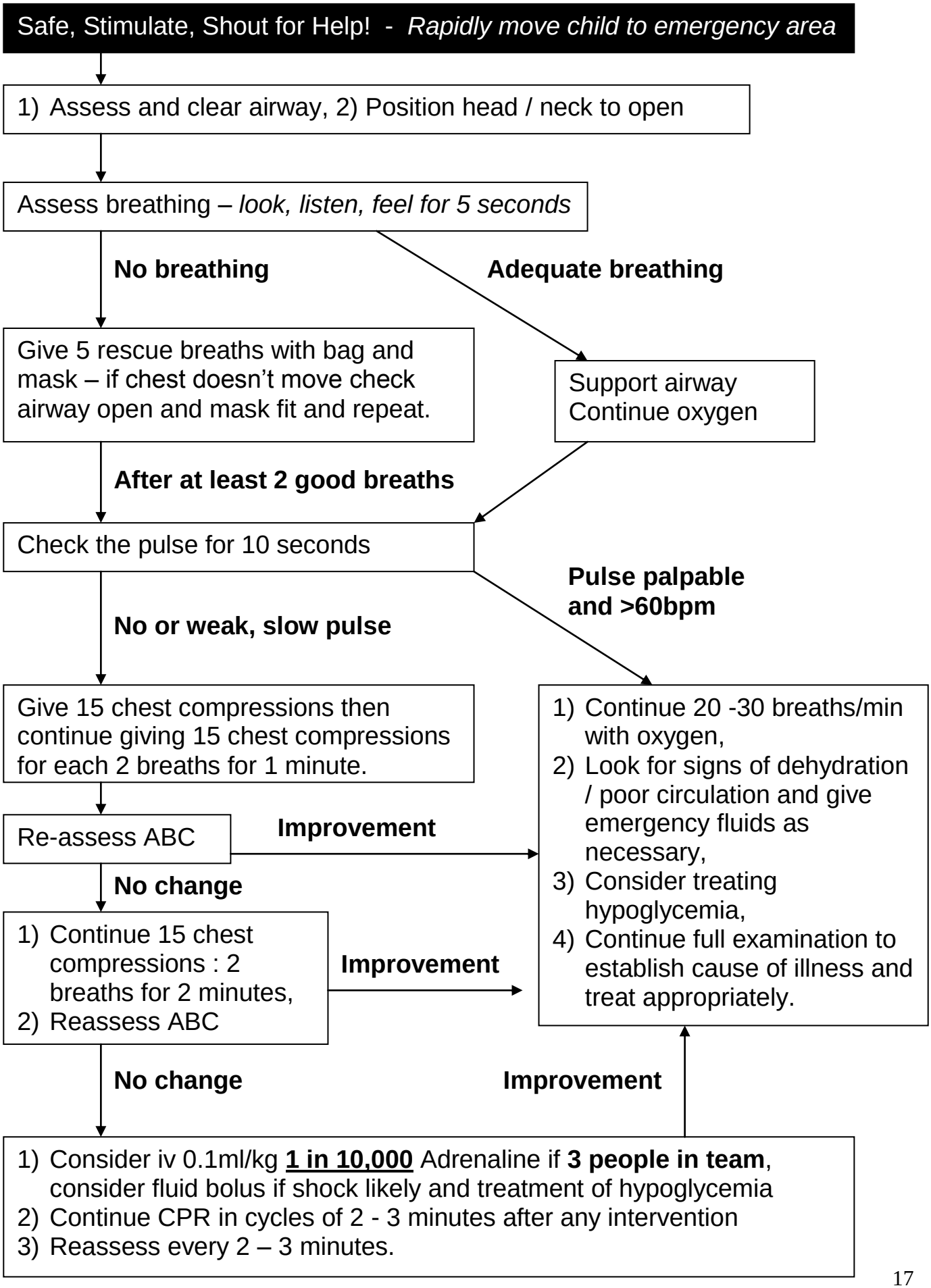


Priority Signs



Non-urgent – Children with none of the above signs.

Infant / Child Basic Life Support – Cardio-respiratory collapse.



M*anagement of the infant / child without trauma WITH SIGNS OF LIFE* – Assessment prior to a full history and examination.

Obs	Safe Stimulate – ***if not Alert*** Shout for Help – ***if not Alert*** Setting for further evaluation	Eye contact / movements Shout unless obviously alert ***If not Alert*** place on rhesus couch ***If alert*** it may be most appropriate to continue evaluation while child is with parent
A	Assess for obstruction by listening for stridor / airway noises. Look in the mouth **if not alert** Position – ***if not Alert*** (appropriate for age)	Position only if not alert and placed on couch Suction (to where you can see) if indicated (**not in alert child)**, Guedel airway only if minimal response to stimulation
B	Assess adequacy of breathing • Cyanosis? • Grunting? • Head nodding? • Rapid or very slow breathing? • Indrawing? • Deep / Acidotic breathing ***If signs of respiratory distress listen for wheeze***	**Decide:** • Is there a need for oxygen? • Is there a need for immediate bronchodilators?
C	Assess adequacy of circulation • Large pulse – very fast or very slow? • Coldness of hands and line of demarcation? • Capillary refill? • Peripheral pulse – weak or not palpable? • (Note initial response to stimulation / alertness) • Check for severe pallor ***If signs of very poor circulation*** • Check for severe malnutrition ***If not shock but significant circulatory compromise*** • Check for severe dehydration	**Decide:** • Does this child need fluids for shock? ***(You do not need to check for dehydration in a shocked child)*** • If shock treatment is required does the child have severe malnutrition? • Does this child need immediate blood transfusion? • ***If there is circulatory compromise but no shock*** does the child need Step 1 fluids for severe dehydration? (If no severe malnutrition)
D	Assess AVPU ***(If a bolus of fluid is being given for shock assess AVPU and prepare glucose to follow bolus)***	**Decide:** • Does this child need 10% dextrose?

Use of intra-osseous lines

- ✓ Use IO or bone marrow needle 15-18G if available or 16-21G hypodermic needle if not available
- ✓ Clean after identifying landmarks then use sterile gloves and sterilize site
- ✓ **Site** – Middle of the antero-medial (flat) surface of tibia at junction of upper and middle thirds – bevel to toes and introduce vertically (90^0)- advance slowly with rotating movement
- ✓ **Stop** advancing when there is a 'sudden give' – then aspirate with 5mls needle
- ✓ Slowly inject 3mls N/Saline looking for any leakage under the skin – if OK attach iv fluid giving set and apply dressings and strap down
- ✓ Give fluids as needed – a 20mls / 50mls syringe will be needed for boluses
- ✓ Watch for leg / calf muscle swelling
- ✓ Replace IO access with iv within 8 hours Antibiotics should be considered if infection control is not optimal
- ✓ Contraindicated if fracture or skin infection on site



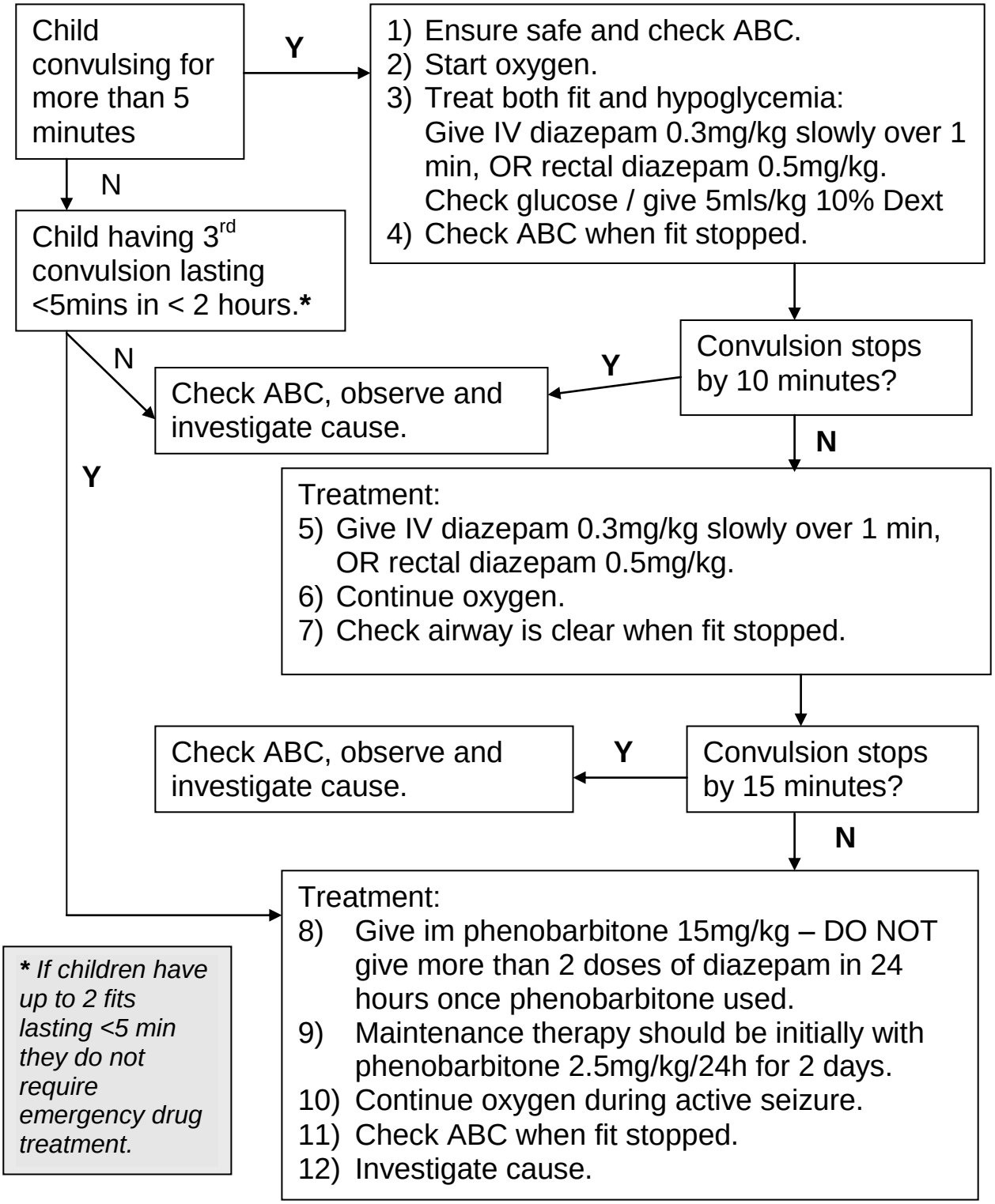
Prescribing Oxygen

Oxygen Administration Device	**Flow rate and inspired O_2 concentration**
Nasal prong or short nasal catheter	**Neonate –** 0.5 L/min **Infant / Child** – 1 – 2 L/min **O_2 concentration** – approx 30-35%
Naso-pharyngeal (long) catheter	**Neonate** – not recommended **Infant / Child** – 1 – 2 L/min **O_2 concentration** – approx 45%
Plain, good fitting oxygen face mask	**Neonate / Infant / Child** – 5 - 6 L/min (check instructions for mask) **O_2 concentration** – approx 40 - 60%
Oxygen face mask with reservoir bag	**Neonate / Infant / Child** – 10 - 15 L/min **O_2 concentration** – approx 80 - 90%

Treatment of convulsions.

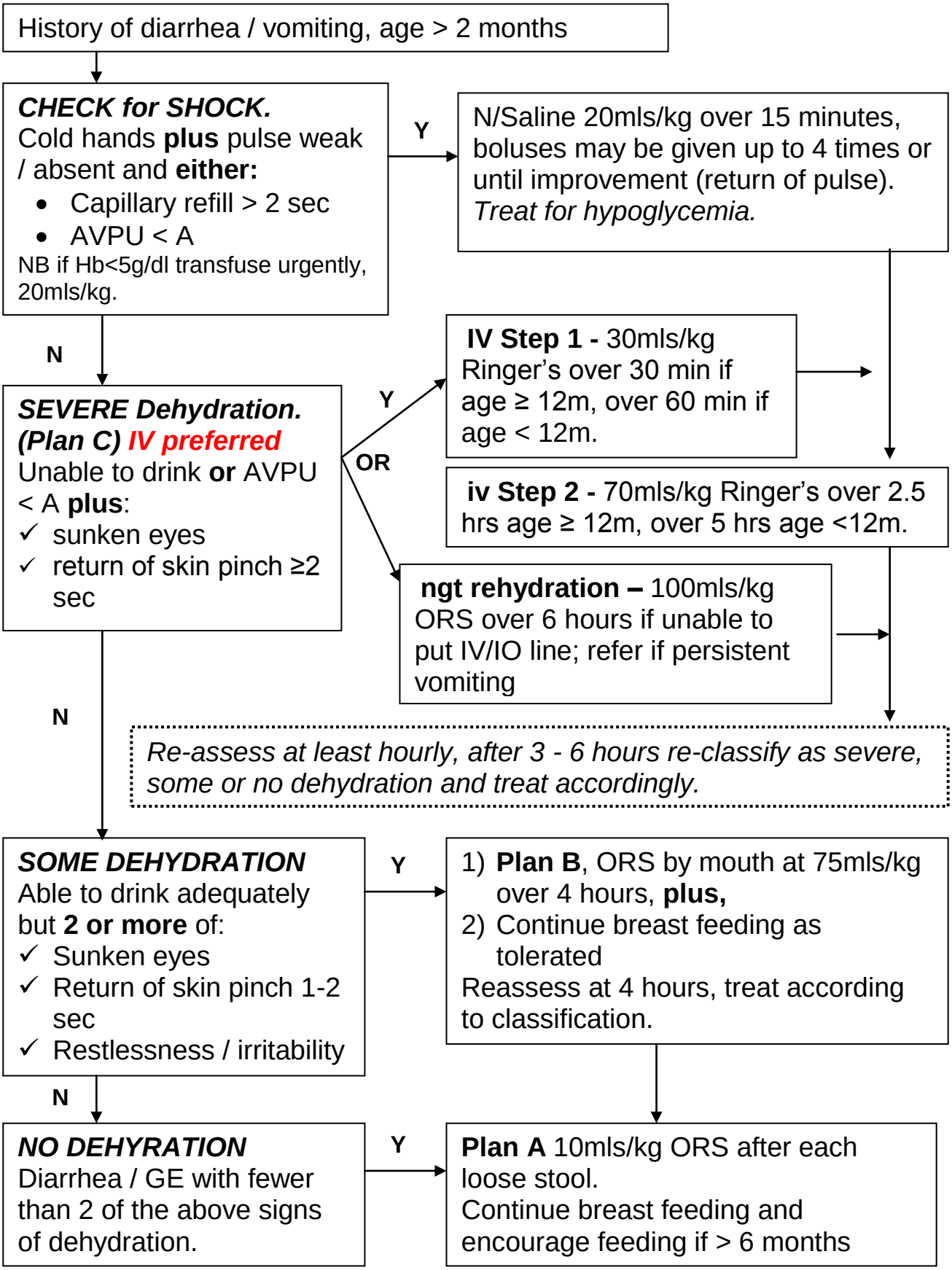
*<u>Convulsions in the **first 1 month** of life</u> should be treated with Phenobarbitone 20mg/kg as loading dose; if no response, a further 5-10mg/kg can be given within 24 hours of the loading dose with maintenance doses of 5mg/kg daily. The maximum dose in the first 24h is 30 mg/kg*

Age > 1 month.



Diarrhea / GE protocol (excluding severe malnutrition).

*Antibiotics are NOT indicated unless there is **dysentery** or **persistent diarrhea** and proven amoebiasis or giardiasis. Diarrhea > 14 days may be complicated by intolerance of ORS – worsening diarrhea – if seen change to IV regimens.* ***All cases to receive Zinc.***



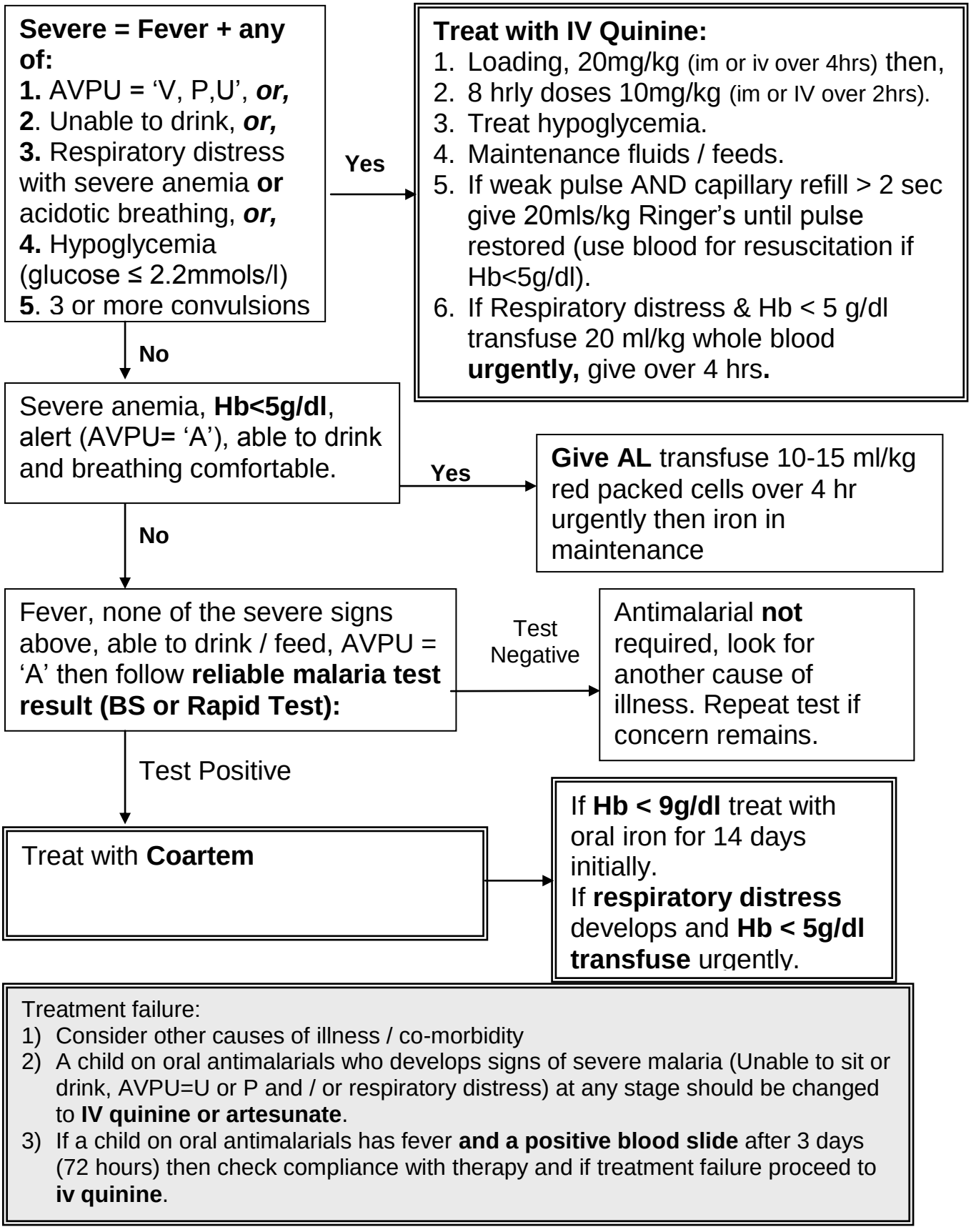
Urgent Fluid management – Child WITHOUT severe malnutrition.*

Weight kg	Shock, 20mls/kg Ringer's or Saline Immediately	Plan C – Step 1	Plan C – Step 2			Plan B - 75mls/kg
		30mls/kg Ringer's	**70mls/kg** Ringer's or ng ORS			Oral / ng ORS
		Age <12m, 1 hour **Age ≥1yr,** ½ hour	**Age <12m,** over 5 hrs = drops/min**	**Volume**	**Age ≥ 1yr,** over 2½ hrs = drops/min**	Over 4 hours
2.00	40	**50**	*10*	**150**	** ***Assumes 'adult' iv giving sets where 20drops=1ml***	**150**
2.50	50	**75**	*13*	**200**		**150**
3.00	60	**100**	*13*	**200**		**200**
4.00	80	**100**	*20*	**300**		**300**
5.00	100	**150**	*27*	**400**	*55*	**350**
6.00	120	**150**	*27*	**400**	*55*	**450**
7.00	140	**200**	*33*	**500**	*66*	**500**
8.00	160	**250**	*33*	**500**	*66*	**600**
9.00	180	**250**	*40*	**600**	*80*	**650**
10.00	200	**300**	*50*	**700**	*100*	**750**
11.00	220	**300**	*55*	**800**	*110*	**800**
12.00	240	**350**	*55*	**800**	*110*	**900**
13.00	260	**400**	*60*	**900**	*120*	**950**
14.00	280	**400**	*66*	**1000**	*135*	**1000**
15.00	300	**450**	*66*	**1000**	*135*	**1100**
16.00	320	**500**	*75*	**1100**	*150*	**1200**
17.00	340	**500**	*80*	**1200**	*160*	**1300**
18.00	360	**550**	*80*	**1200**	*160*	**1300**
19.00	380	**550**	*90*	**1300**	*180*	**1400**
20.00	400	**600**	*95*	**1400**	*190*	**1500**

**Consider Immediate blood transfusion if severe pallor or Hb <5g/dl on admission*

Malaria Treatment in malaria endemic areas.

*If a high quality blood slide **is negative** then only children with severe disease or those with severe anemia should get presumptive treatment.*
Rapid test should be confirmed



Treatment failure:
1) Consider other causes of illness / co-morbidity
2) A child on oral antimalarials who develops signs of severe malaria (Unable to sit or drink, AVPU=U or P and / or respiratory distress) at any stage should be changed to **IV quinine or artesunate**.
3) If a child on oral antimalarials has fever **and a positive blood slide** after 3 days (72 hours) then check compliance with therapy and if treatment failure proceed to **iv quinine**.

Anti-malarial drug doses

Weight kg	Quinine loading, 20mg/kg iv infusion Once only	Quinine, maintenance, 10mg/kg iv infusion 8 hrly
3.0	60	30
4.0	80	40
5.0	100	50
6.0	120	60
7.0	140	70
8.0	160	80
9.0	180	90
10.0	200	100
11.0	220	110
12.0	240	120
13.0	260	130
14.0	280	140
15.0	300	150
16.0	320	160
17.0	340	170
18.0	360	180
19.0	380	190
20.0	400	200

Artemether (20mg) + Lumefantrine (120mg) - Give with food Stat, +8hrs, every 12 hrs on Day 2 and Day 3		
Weight	**Age**	**Dose**
<5kg	-	1/2 tablet
5 – 15 kg	3 – 35mth	1 tablet
15 – 24 kg	3 - 7 yrs	2 tablets
25 – 34 kg	9 - 11 yrs	3 tablets

Symptomatic severe malnutrition.

Admit to hospital if there is a history of illness and either of:

- ✓ Visible **severe wasting** (buttocks) (WHZ < -3SD or W/A <-3z score or MUAC < 11cm under 5y of age)
- ✓ **Edema** or other signs of Kwashiorkor (flaky paint skin / hair changes).

Step 1 → Check glucose and treat if <3mmol/l (5mls/kg 10% dextrose). If glucose test unavailable treat for hypoglycemia if not alert. Oral / ngt glucose or feeds should as soon as possible (not >30 min after admission.)

Step 2 → Check for hypothermia, axillary temperature <35^{0}C. If present warm with blankets, warm bags of fluid or a heater.

Step 3 → Check for dehydration – use Diarrhea / Dehydration flowchart to classify then **USE** fluid plans for severe malnutrition. (Transfuse if Hb < 5g/dl, 10mls/kg packed cells in 3hrs + furosemide 1mg/kg - for shock see next page,)

Step 4 → Electrolyte imbalance. **Use commercial F75.** If not available mineral mix **OR** 4mmol/kg/day of oral potassium may need to be added to feeds, ***Never use Furosemide for edema!***

Step 5 → Treat infection. All ill children with severe malnutrition should get IV Penicillin (or Ampicillin) **AND** Gentamicin **AND** oral Metronidazole. Add:

- ✓ Nystatin / Clotrimazole for oral thrush
- ✓ Mebendazole after 7 days treatment.
- ✓ Tetracyclin eye ointment (+ atropine drops) for pus / ulceration in the eye

Step 6 → Correct micronutrient deficiencies. Give:

- ✓ Vitamin A on admission (and days 2 and 14 if eye signs).
- ✓ Multivits for at least 2 weeks if no Plumpy-nut or F75/F100
- ✓ Folic acid 2.5mg alt days if no Plumpy-nut or F75/F100
- ✓ Start iron ONLY when the child is gaining weight.

Step 7 → Prescribe feeding needed (see chart) and place ngt.

Steps 8, 9 & 10: Ensure appetite and weight are monitored and start catch-up feeding **with Plumpy-nut** (usually day 3 – 7). Provide a caring and stimulating environment for the child and start educating the family so they help in the acute treatment and are ready for discharge.

Emergency Fluid management in Severe Malnutrition

Shock: Reduced consciousness, absent, slow (<60 bpm) or weak pulse.
15 ml/kg in 1 hr of Ringer's Lactate (RL) in 5% dextrose.

If improves

- Repeat this bolus over another 1 hour.
- Then switch to oral or ng fluids using Resomal at 10mls/kg/hour for up to 10 hours.
- As soon as conscious introduce F75 and appropriately reduce amount of Resomal given.

If does not improve

- Give maintenance iv fluid at 4mls/kg/hr
- Transfuse 10mls/kg whole blood over 3 hours as soon as it is available
- Introduce F75 after transfusion complete.

	Shock		**Oral / ngt Resomal**	**Emergency Maintenance**
	15mls/kg		10mls/kg/hr	4mls/kg/hr
	Ringer's Lactate (RL) in 5% Dextrose		Resomal	RL in 5% Dextrose
	iv		Oral / ngt	iv
Weight kg	**Shock** = over 1 hour	**Drops/min if 20drops/ml giving set**	**10mls/kg/hr** for up to 10 hours	Hourly until transfusion
4.00	60	*20*	40	15
5.00	75	*25*	50	20
6.00	90	*30*	60	25
7.00	105	*35*	70	30
8.00	120	*40*	80	30
9.00	135	*45*	90	35
10.00	150	*50*	100	40
11.00	165	*55*	110	44
12.00	180	*60*	120	46
13.00	200	*65*	130	48
14.00	220	*70*	140	50
15.00	240	*80*	150	52

	Dried Skimmed Milk	Vegetable Oil	Sugar	Water
F 75*	25g	27g	100g	Make up to 1000mls
F 100*	80g	60g	50g	Make up to 1000mls

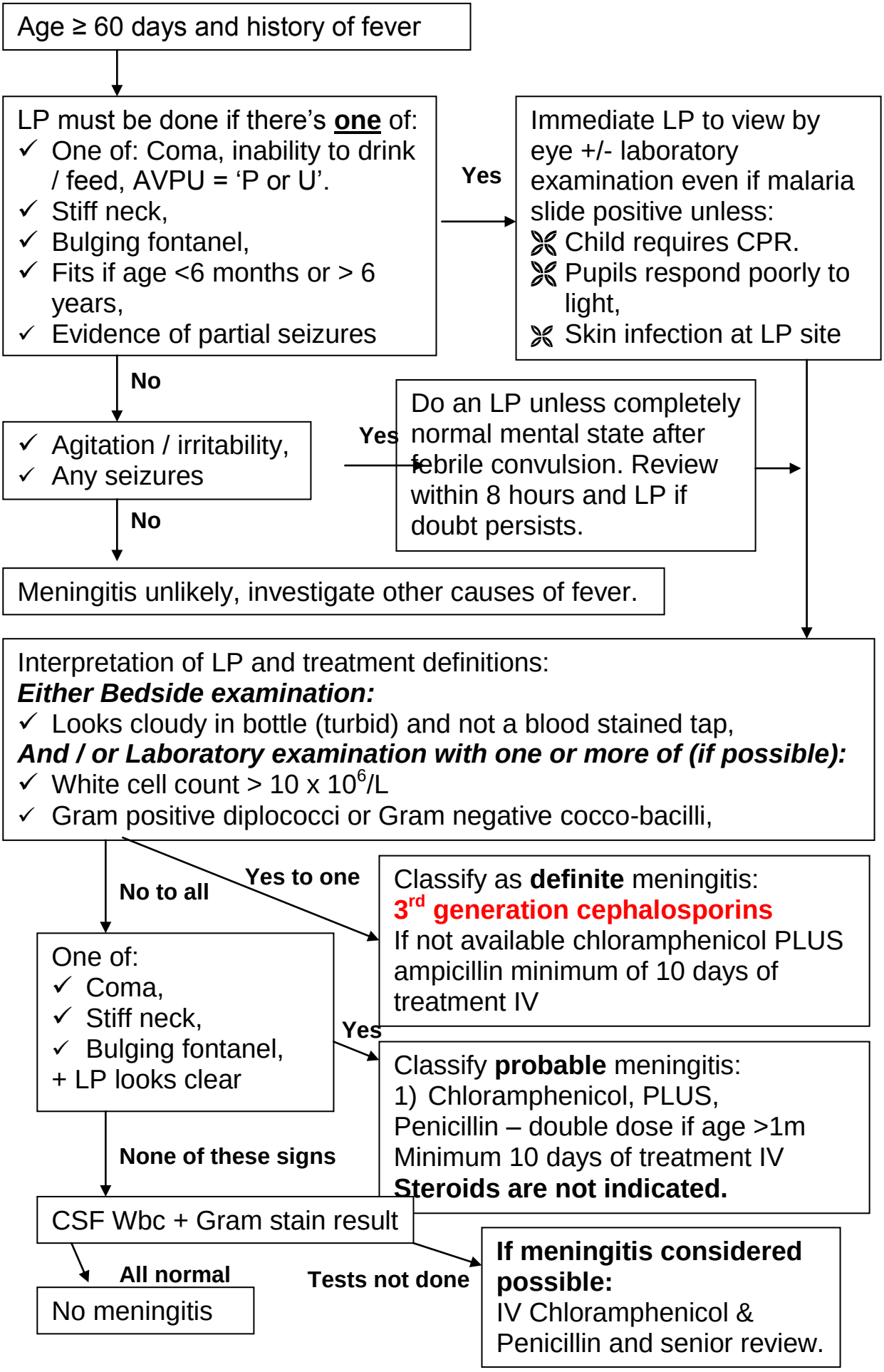
* Ideally add electrolyte / mineral solution and **at least** add potassium

Feeding children with severe malnutrition – use EBM & / or infant formula if aged < 6 months.

1) If respiratory distress or edema get worse or the jugular veins are engorged reduce feed volumes.
2) When appetite returns (and edema much improved) **change from F75 to Plumpy-nut**, <u>if Plumpy-nut not available change to F100</u> for the first 2 days use 130-150mls/kg of F100.
3) When using Plumpy-nut allow the child to nibble very frequently, the child can drink liberally and additional solid foods can be introduced slowly in the first days and Plumpy-nut can be mixed into uji or other foods

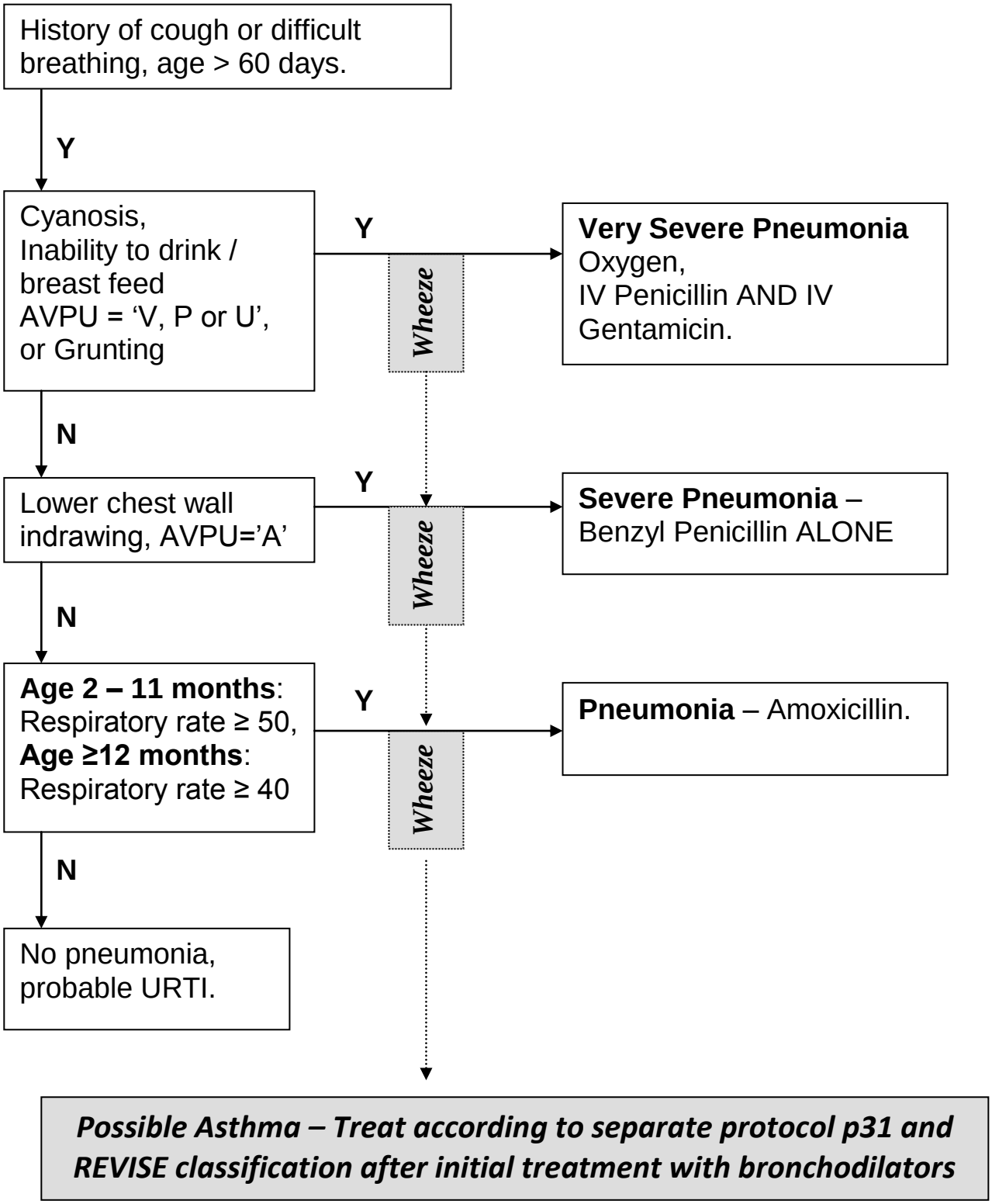
	F75 – acute feeding					RTUF (if on solids)	F100 if no RTUF	
	No or moderate edema (130mls/kg/day)		Severe edema, even face (100mls/kg/day)				F100 @ 150mls/kg/day	
Weight (kg)	Total Feeds / 24 hrs	3 hourly feed volume	Total Feeds / 24 hrs	3 hourly feed volume		20g/kg/day	Total Feeds / 24 hrs	3 hourly feed volume
4.0	520	65	400	50		-	600	75
4.5	585	75	450	60		-	675	85
5.0	650	80	500	65		100	750	95
5.5	715	90	550	70		110	825	105
6.0	780	100	600	75		120	900	115
6.5	845	105	650	85		130	975	125
7.0	910	115	700	90		140	1050	135
7.5	975	120	750	95		150	1125	140
8.0	1040	130	800	100		160	1200	150
8.5	1105	140	850	110		170	1275	160
9.0	1170	145	900	115		180	1350	170
9.5	1235	155	950	120		190	1425	180
10.0	1300	160	1000	125		200	1500	190
10.5	1365	170	1050	135		210	1575	200
11.0	1430	180	1100	140		220	1650	210
11.5	1495	185	1150	145		230	1725	215
12.0	1560	195	1200	150		240	1800	225

Meningitis – investigation and treatment.



Pneumonia protocol for <u>children aged 2 - 59 months</u>.

For HIV exposed / infected children see page 33



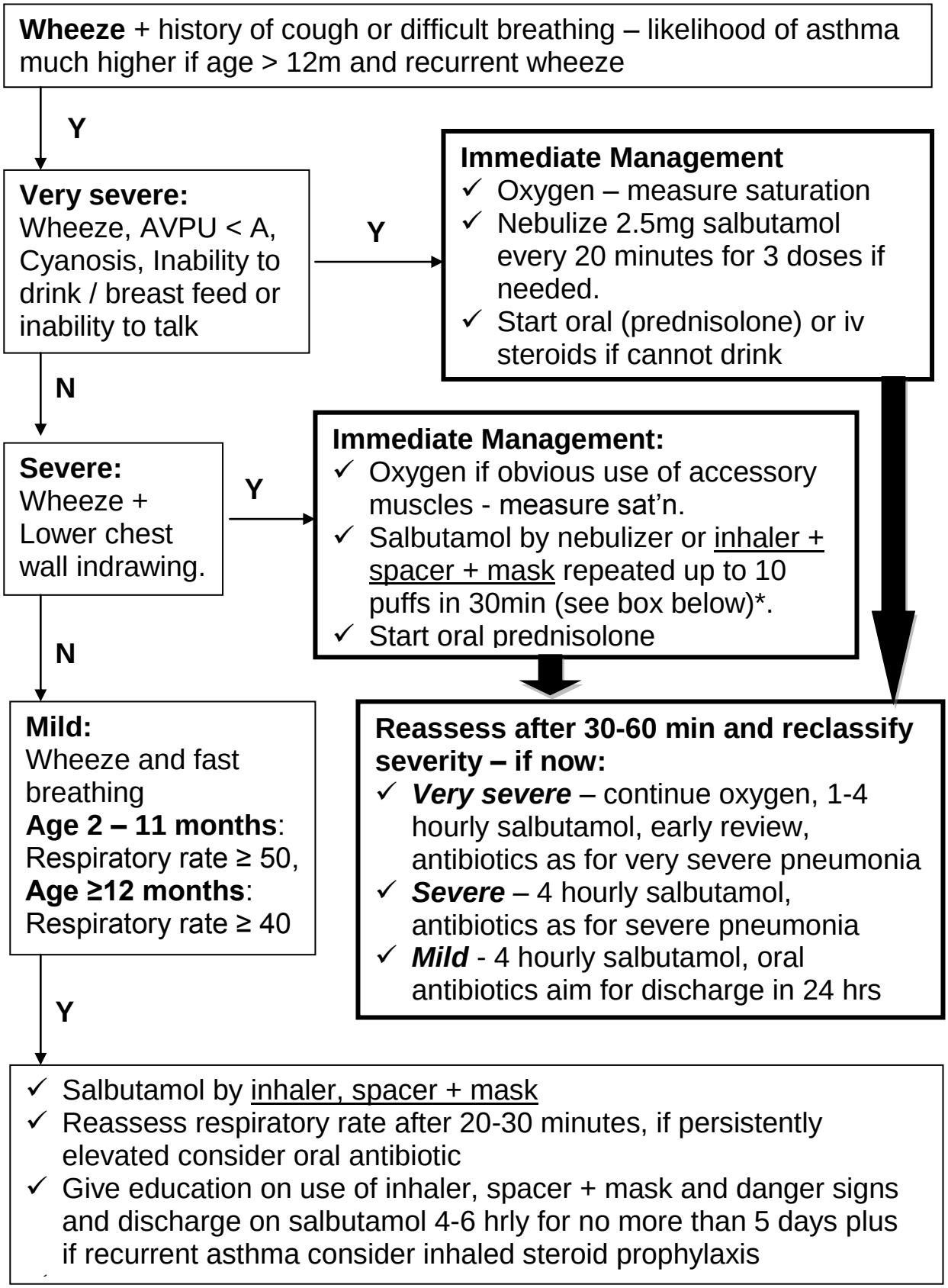
Pneumonia treatment failure definitions.

HIV infection may underlie treatment failure – testing helps the child.

See HIV page for indications for PCP treatment.

Treatment failure definition	Action required
Any time.	
Progression of severe pneumonia to very severe pneumonia (development of cyanosis or inability to drink in a child with pneumonia without these signs on admission)	Change treatment from Penicillin alone and add gentamicin.
Obvious cavitation on CXR	Treat with Cloxacillin and gentamicin iv for Staph. Aureus or Gram negative pneumonia. **Investigate for TB**
48 hours	
Very severe pneumonia child getting worse, re-assess thoroughly, get chest X ray if not already done (looking for empyema / effusion, cavitation etc).	Switch to Ceftriaxone / Cefotaxime unless suspect Staphylococcal pneumonia then use Penicillin, Cloxacillin and Gentamicin. Suspect PCP especially if <12m, an HIV test **must** be done - treat for Pneumocystis if HIV positive
Severe pneumonia <u>without</u> improvement in at least **one** of: ✓ Respiratory rate, ✓ Severity of indrawing, ✓ Fever, ✓ Eating / drinking.	Change treatment from Penicillin alone and **add** Gentamicin.
Day 5.	**Transfer to higher level hospital**
At least 3 of: ✓ Fever, temp >38^{0}C ✓ Respiratory rate >60 bpm ✓ Still cyanosed or saturation <90% and no better than admission ✓ Chest indrawing persistent ✓ Worsening CXR	a) If on Penicillin + Gentamicin change to ceftriaxone or cefotaxime b) Suspect PCP, an HIV test **must** be done - treat for Pneumocystis if HIV positive. c) Consider TB, perform mantoux and check TB treatment guidelines

Possible asthma – admission management of the wheezy child.



** If a nebulizer is not available then 1 puff of salbutamol into a spacer followed by 5-6 breaths can be repeated up to 10 times in 20-30 min (shake inhaler every 2 puffs)*

HIV – Provider Initiated Testing and Counseling (PITC), Treatment and Feeding.

It is government policy that **ALL SICK CHILDREN** presenting to facilities with unknown status should be offered HIV testing using ***PITC***

PITC is best done on admission when other investigations are ordered. All clinicians should be able to perform PITC and discuss a positive / negative result

Below is quick guide to PITC:

- ✓ As much as possible find a quiet place to discuss the child's admission diagnosis, tests and treatment plans
- ✓ After careful history / examination plan all investigations and then inform caretaker what tests are needed and that HIV is common in Rwanda
- ✓ Explain MoH guidance that ALL sick children with unknown status should have an HIV test – so their child is not being 'picked out'
- ✓ That in this situation it is **normal** to do an HIV test on a child because:
    - o You came to hospital wanting to know what the problem was and find the best treatment for it,
    - o Knowing the HIV test result gives doctors the best understanding of the illness and how to treat it
    - o The treatment that is given to the child will change if the child has HIV
    - o If the child has HIV s/he will need additional treatment for a long time and the earlier this is started the better
- ✓ That the HIV test will be done with their approval and not secretly
- ✓ That the result will be given to them and that telling other family / friends is their decision
- ✓ That the result will be known only by doctors / nurses caring for the child as they need this knowledge to provide the most appropriate care.
- ✓ Give the parent / guardian the opportunity to ask questions.

The person asking permission for HIV testing should then write in the medical record that permission was given / refused.

Any child < 18 months with a positive rapid test is HIV exposed. The first PCR is requested and the child is given Cotrimoxazole prophylaxis.

Ongoing Treatment / Feeding.

1) If breast fed encourage exclusive breast feeding until 6 months. If an alternative to breast feeding is affordable, feasible, accessible, safe and sustainable (AFASS) discuss this option before delivery.
2) Do not abruptly stop breast feeding at 6m, just add complementary feeds and continue ARV's for mother until 1 week after breast feeding stops
3) Refer child and carers to an HIV support clinic – HAART should start in all HIV infected children age < 18 months as soon as first PCR comes positive then perform second PCR to confirm the diagnosis.

4) All HIV exposed / infected infants should start CTX prophylaxis from age 6 wks
5) All HIV exposed infants should start Neviparine since birth. If exposition is discovered after birth, perform PCR. If PCR is negative, start ARV's in mother. If PCR is positive, start ART.

Managing the HIV exposed / infected infant – Please check for updates – ARV doses change fast!

PMTCT Nevirapine Prophylaxis : Give nevirapine for first 6 weeks only

1. < 2 weeks : 2 mg/kg/day 2. 2-4 weeks: 4 mg/kg/day 3. > 4 weeks: 8 mg/kg/day		Daily dosis of **nevirapine** <u>in one dosis</u> (10 mg /ml solution)
BODY WEIGHT (kg)		
From	To	ml
1	2	1
3	3 ,5	1
3,6	4,9	2
5	5,9	4
6	6,9	5
7	7,9	6
8	8,9	7
9	9,9	8
10	10,9	9
11	11,9	9
12	13,9	11
14	16,9	13

Pneumonia - All HIV exposed / infected children admitted with signs of severe / very severe pneumonia are treated with:

1. Penicillin and gentamicin first line, Ceftriaxone reserved as second line therapy
2. High dose cotrimoxazole if aged <5yrs *(see below).*
3. Steroids shall be given in patients who have severe *P carinii* pneumonia (PCP) as defined by a room air arterial oxygen pressure of less than 70 mm Hg or an arterial-alveolar O_2 gradient that exceeds 35 mm Hg. The recommended regimen for **intravenous methyl prednisolone is 1 mg/kg/dose twice daily for 5 days, then 0.5 mg/kg/dose twice daily for 5 days then 0.5 mg/kg/dose once daily for 5-10 days**. This can be changed to oral prednisolone in the same doses when oral feeding starts.

Treat and prevent Pneumocystis pneumonia with Co-trimoxazole (CTZ)

Weight	**CTX syrup 240mg/5mls**	**CTX Tabs 120mg/tab**	**CTX Tabs 480mg/tab**	**Frequency**
1-4 kg	2.5 ml	1 tab	1/4	***24hrly*** for prophylaxis, ***6 hrly*** for 3wks for PCP treatment
5-8 kg	5 ml	2 tabs	1/2	
9-16 kg	10 ml	-	1	
17-50 kg		-	2	

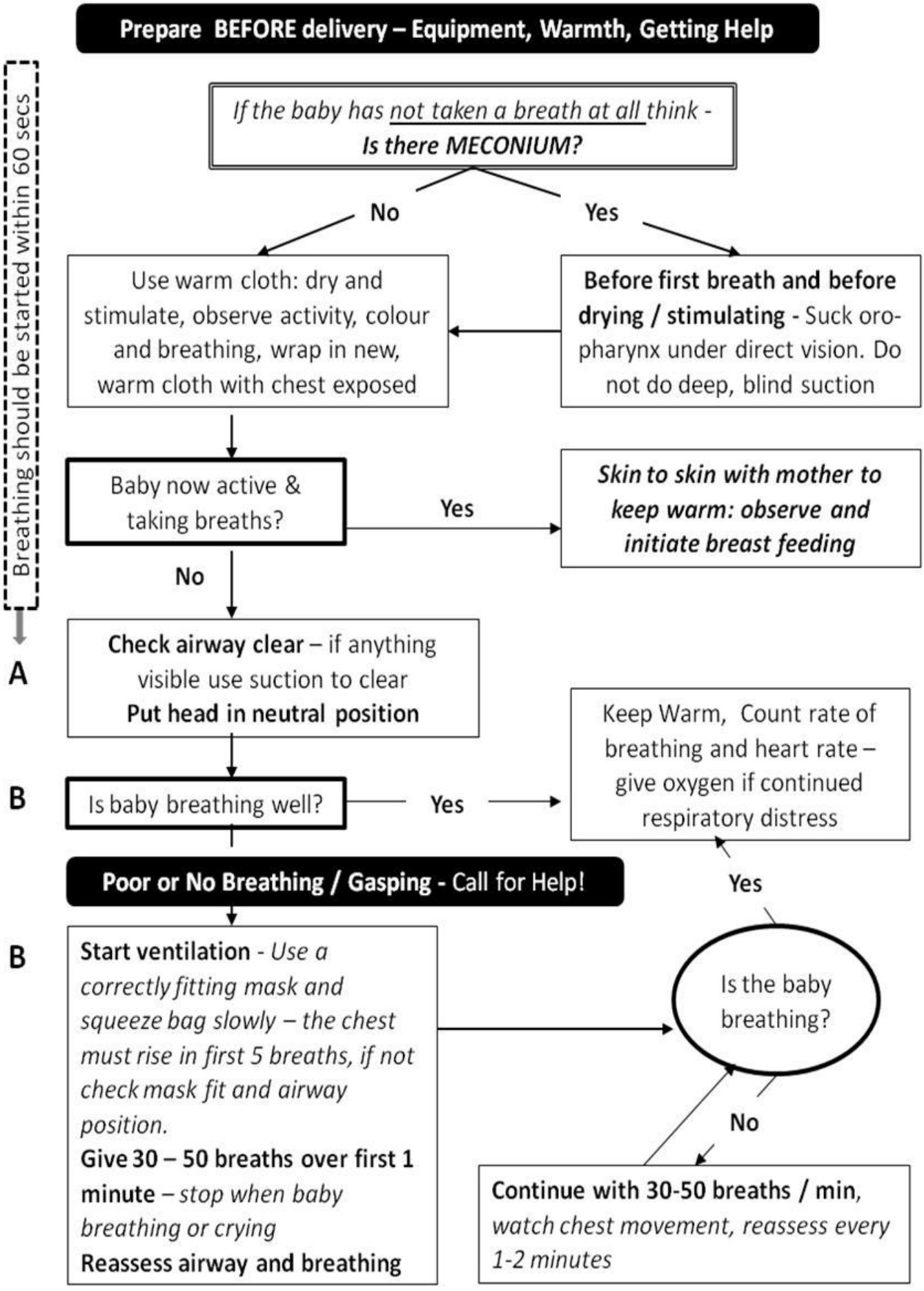
Diarrhea - All HIV exposed / infected children admitted with acute diarrhea are treated in the same way as HIV uninfected children with fluids and zinc. For persistent diarrhea (≥14days) low-lactose or lactose free milks are recommended ***if the child is ≥ 6 months of age***

Meningitis – Request CSF examination for cryptococcus as well as traditional microscopy and culture for bacteria.

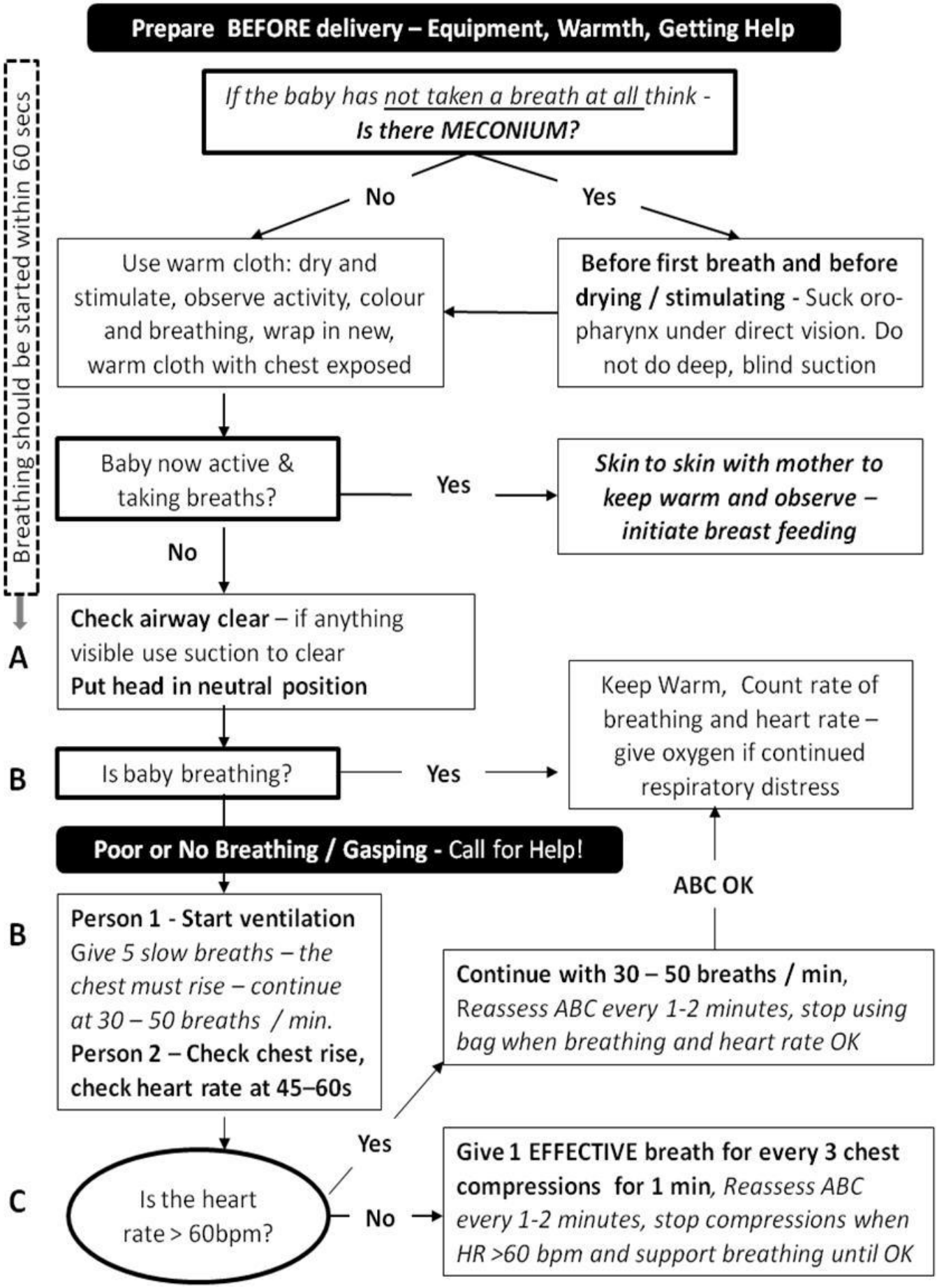
HAART – See national guidelines for latest regimens

TB – See national guidelines for TB treatment in an HIV exposed / positive child

Newborn Resuscitation – for SINGLE Health Worker – Be Prepared!



Newborn Resuscitation – for TWO trained Health Workers – Be Prepared!



Neonatal Sepsis / Jaundice – see Page 45 for NN Antibiotic Doses

Age < 60 days

One or more of:
- ✓ ***Change in level of activity***
- ✓ ***Bulging fontanel***
- ✓ ***History of convulsions***
- ✓ ***Feeding difficulty***
- ✓ Temperature ≥37.5^{0}C or <35.5^{0}C
- ✓ Fast breathing / respiratory rate ≥ 60 bpm
- ✓ Severe chest indrawing
- ✓ Grunting
- ✓ Cyanosis

Yes → Do LP unless severe respiratory distress

Yes →
1) Check for hypoglycemia, treat if unable to measure glucose.
2) Start gentamicin and penicillin (see chart),
3) Give oxygen if cyanosed / RR > 60 bpm.
4) Give Vitamin K if born at home or not given on maternity.
5) Keep warm.
6) Maintain feeding by mouth or ngt, use IV fluids only if respiratory distress or severe abdominal distension (see chart).

Also check
- ✓ Jaundice (see page 37 & 38)
- ✓ Capillary refill
- ✓ Severe Pallor
- ✓ PROM >18hrs if aged < 7d
- ✓ Weight loss

Use information to decide - does baby need fluids, feeds (Page 40/41) or blood?

No signs of serious illness

Is there:
- ✓ Pus from eye
- ✓ Pus from ear
- ✓ Pus from umbilicus and redness of abdominal skin
- ✓ Multiple, **large**, pus-filled blisters / septic spots.

Yes →
Where appropriate:
1) Treat for neonatal ophthalmia
2) Treat with oral antibiotic – one that covers Staph aureus if large, pus-filled septic spots
3) Give mother advice and arrange review.

None of the above

No sign of severe illness, review if situation changes.

NB. *A Newborn with weight <2kg & premature delivery or small size for gestational age with reduced ability to suck as the only problem may only require warmth, feeding support and a clean environment.*

Neonatal Jaundice

- ✓ Assess for jaundice in bright, natural light if possible, check the eyes, blanched skin on nose and the sole of the foot
- ✓ Always measure serum bilirubin if age < 24 hours and if clinically moderate or severe - Any jaundice if aged <24hrs needs further investigation and treatment
- ✓ **Refer early if jaundice in those aged <24hrs and facility cannot provide phototherapy and exchange transfusion**
- ✓ See next page for guidance on bilirubin levels
- ✓ ***If bilirubin measure unavailable*** start phototherapy:
  - In a well baby with jaundice easily visible on the sole of the foot
  - In a preterm baby with ANY visible jaundice
  - In a baby with easily visible jaundice and inability to feed or other signs of neurological impairment ***and consider immediate exchange transfusion***

Stop phototherapy – when bilrubin 50 micromol/L **lower** than phototherapy threshold (see next page) for the baby's age on day of testing

Phototherapy and Supportive Care - Checklist

1. ***Shield the eyes with eye patches.*** - Remove periodically such as during feeds
2. ***Keep the baby naked***
3. ***Place the baby close to the light source*** – 45 cm distance is often recommended but the more light power the baby receives the better the effect so closer distances are OK if the baby is not overheating especially if need rapid effect. May use white cloth to reflect light back onto the baby making sure these do not cause overheating.
4. ***Do not place anything on the phototherapy devices*** – lights and baby need to keep cool so do not block air vents / flow or light. Also keep device clean – dust can carry bacteria and reduce light
5. ***Promote frequent breastfeeding.*** Unless dehydrated, ***supplements or intravenous fluids are unnecessary***. Phototherapy use can be interrupted for feeds; allow maternal bonding.
6. ***Periodically change position supine to prone*** - Expose the maximum surface area of baby to phototherapy; may reposition after each feed.
7. ***Monitor temperature*** every 4 hrs and weight every 24 hrs
8. ***Periodic (12 to 24 hrs) plasma/serum bilirubin test***. Visual testing for jaundice or transcutaneous bilirubin is unreliable.
9. ***Make sure that each light source is working*** and emitting light. Fluorescent tube lights should be replaced if:
   a. More than 6 months in use (or usage time >2000 hrs)
   b. Tube ends have blackened
   c. Lights flicker.

Treatment of Jaundice if Gestational Age < 37 wks

- ✓ Initiate phototherapy earlier than for full term neonates – ideally consult a gestational age specific chart
- ✓ **Exchange transfusion if baby has gestational age < 37 wks AND age is 72 hours or more if:**

  Bilirubin in micromol/litre ≥ gestational age × 10

Treatment if 37 weeks or more gestational age

Bilirubin measurement in micromol/L				
Age (in hours - round age up to nearest threshold given)	**Repeat measurement in 6 hours**	**Consider phototerapy** - especially if risk factors - and **repeat in 6 hours**	**Initiate phototherapy**	**Perform an exchange transfusion** unless the bilirubin level falls below threshold while the treatment is being prepared
0	**-**	**-**	**>100**	**>100**
6	**> 100**	**> 112**	**> 125**	**> 150**
12	**> 100**	**> 125**	**> 150**	**> 200**
18	**> 100**	**> 137**	**> 175**	**> 250**
24	**> 100**	**> 150**	**> 200**	**> 300**
30	**> 112**	**> 162**	**> 212**	**> 350**
36	**> 125**	**> 175**	**> 225**	**> 400**
42	**> 137**	**> 187**	**> 237**	**> 450**
48	**> 150**	**> 200**	**> 250**	**> 450**
54	**> 162**	**> 212**	**> 262**	**> 450**
60	**> 175**	**> 225**	**> 275**	**> 450**
66	**> 187**	**> 237**	**> 287**	**> 450**
72	**> 200**	**> 250**	**> 300**	**> 450**
78	**-**	**> 262**	**> 312**	**> 450**
84	**-**	**> 275**	**> 325**	**> 450**
90	**-**	**> 287**	**> 337**	**> 450**
96+	**-**	**> 300**	**> 350**	**> 450**

Duration of Treatment for Neonatal / Young Infant Sepsis.

Problem	Days of treatment
Signs of Young Infant Infection in a baby breast feeding well.	• Antibiotics could be stopped after 48 hours if all the signs of possible sepsis have resolved and the child is feeding well **and** LP, if done, is normal. • Advise the mother to return with the child if problems recur.
Skin infection with signs of generalized illness such as poor feeding	• IV antibiotics could be stopped after 72 hours if the child is feeding well without fever and has no other problem **and** LP, if done, is normal. • Oral antibiotics should be continued for a further 5 days.
Clinical or radiological pneumonia.	• IV antibiotics should be continued for a minimum of 5 days or until completely well for 24 hrs. • For positive LP see below.
Severe Neonatal Sepsis	• The child should have had an LP. • IV antibiotics should be continued for a minimum of 7 days or until completely well if the LP is clear
Neonatal meningitis or severe sepsis and no LP performed	• IV antibiotics should be continued for a minimum of 14 days. • If Gram negative meningitis is suspected treatment should be IV for 21 days.

Fluids, Growth, Vitamins and Minerals in the Newborn:

Babies should gain about 10g / kg of body weight every day after the first 7 days of life. If they are not check that the right amount of feed is being given.

All infants aged < 14 days should receive Vitamin K on admission if not already given.

Vitamin K

- All babies born in hospital should receive Vitamin K soon after birth
- If born at home and admitted aged <14d give Vitamin K unless already given
- ***1mg Vitamin K IM if weight > 1.5kg, 0.5mg IM if weight <1.5kg***

All premature infants (< 36 weeks or < 2kg) should receive:

- 2.5 ml of multivitamin syrup daily once they are on full milk feeding at the age of about 2 wks plus folate 2.5mg weekly
- 2.5mls of ferrous fumarate suspension daily ***starting at 4-6 weeks of age*** for 12 wks***.***

Newborn Feeding / Fluid requirements: TERM BABY	Age	Total Daily Fluid / Milk Vol.
✓**Well baby** - immediate milk feeding - **Table A**. For first feed give 7.5ml and increase by this amount each feed until full daily volume reached ✓**Day 0 - Sick baby or Weight <1.5kg** start with 24hrs iv 10%D – **Table B** ✓**From Day 1** unless baby very unwell start NGT feeds - Begin with 5mls each 3hrly feed if <1.5kg; 7.5ml 3hrly if ≥1.5kg <2kg; and 10ml 3hrly if ≥ 2kg. Increase feed by the same amount **every day** and reduce iv fluids to keep within the total daily volume until IVF stopped – **Table C** ✓For IVF **from Day 1** use 2 parts 10% dextrose to 1 part Ringer Lactate (RL) (e.g.. 200 ml 10% D + 100 ml RL) if not able to calculate or give added Na+ (2-3mmol/kg/day) and K+ (1-2mmol/kg/day) to 10% D. ✓***Please ensure sterility of iv fluids when mixing / adding*** ✓Always use EBM for NGT feeds unless contra-indicated ✓If signs of poor perfusion or fluid overload please ask for senior opinion on whether to give a bolus, step-up or step-down daily fluids.	Day 0	60 ml/kg/day
	Day 1	80 ml/kg/day
	Day 2	100 ml/kg/day
	Day 3	120 ml/kg/day
	Day 4	140 ml/kg/day
	Day 5	160 ml/kg/day
	Day 6	180 ml/kg/day

A. Nasogastric 3 hrly feed for well TERM babies on full volume feeds on Day 0 and after

Weight (kg)	1.5 to 1.6	1.7 to 1.8	1.9 to 2.0	2.1 to 2.2	2.3 to 2.4	2.5 to 2.6	2.7 to 2.8	2.9 to 3.0	3.1 to 3.2	3.3 to 3.4	3.5 to 3.6	3.7 to 3.8	3.9 to 4.0
Day 0	12	14	15	17	18	20	21	23	24	26	27	29	30
Day 1	15	18	20	22	24	26	28	30	32	34	36	38	40
Day 2	19	23	25	28	30	33	35	38	40	43	45	48	50
Day 3	24	27	30	33	36	39	42	45	48	51	54	57	60
Day 4	28	32	35	39	42	46	49	53	56	60	63	67	70
Day 5	32	36	40	44	48	52	56	60	64	68	72	76	80
Day 6	36	41	45	50	54	59	63	68	72	77	81	86	90

B. IV fluid rates in ml / hr for <u>sick TERM newborns who cannot be fed</u> on FULL volume IV fluids.

Weight (kg)	1.0 - 1.1	1.2 - 1.3	1.4 - 1.5	1.6 - 1.7	1.8 - 1.9	2.0 - 2.1	2.2 - 2.3	2.4 - 2.5	2.6 - 2.7	2.8 - 2.9	3.0 - 3.1	3.2 - 3.3	3.4 - 3.5	3.6 - 3.7	3.8 - 3.9
Day 0	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10
Day 1	4	4	5	6	6	7	8	8	9	10	10	11	12	12	13
Day 2	5	5	6	7	8	9	10	10	11	12	13	14	15	15	16
Day 3	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Day 4	6	8	9	10	11	12	13	15	16	17	18	19	20	22	23
Day 5	7	9	10	11	13	14	15	17	18	19	21	22	23	25	26
Day 6+	8	10	11	13	14	16	17	19	20	22	23	25	26	28	29

C. Standard regimen for introducing NGT feeds in a VLBW or sick newborn after 24hrs IV fluids

Weight (kg)	1.0 - 1.1		1.2 - 1.3		1.4 - 1.5		1.6 - 1.7		1.8 - 1.9		2.0 - 2.1		2.2 - 2.3		2.4 - 2.5	
	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed
Day 0	3	0	3	0	4	0	4	0	5	0	5	0	6	0	6	0
Day 1	2	5	3	5	3	5	3	8	4	8	4	10	4	10	5	10
Day 2	1	10	2	10	3	10	2	15	3	15	2	20	3	20	4	20
Day 3	1	15	2	15	3	15	1	22	2	22	0	30	2	30	3	30
Day 4	0	18	1	20	2	20	0	30	1	30	0	36	0	39	1	40
Day 5	0	21	0	25	2	25	0	34	0	38	0	42	0	45	0	50
Day 6+	0	24	0	30	0	33	0	38	0	42	0	48	0	51	0	56

C. IV fluid rates in ml / hr for sick PRETERM newborn (cannot be fed) : on FULL volume IV fluids.

Weight (kg)	1.0 - 1.1	1.2 - 1.3	1.4 - 1.5	1.6 - 1.7	1.8 - 1.9	2.0 - 2.1
Day 0 (80 ml/kg/day)	3	4	4	5	6	6
Day 1 (100 ml/kg/day)	4	5	5	6	7	8
Day 2 (120 ml/kg/day)	5	6	7	8	9	10
Day 3 (140 ml/kg/day)	5	7	8	9	10	11
Day 4 (150 ml/kg/day)	6	7	8	10	11	12
Day 5 (150 ml/kg/day)	6	7	8	10	11	12
Day 6+ ((150 ml/kg/day)	6	7	8	10	11	12

D. Standard regimen for introducing NGT feeds in a PRETERM after 24hrs IV fluids

Weight (kg)	1.0 - 1.1		1.2 - 1.3		1.4 - 1.5		1.6 - 1.7		1.8 - 1.9		2.0 - 2.1	
	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed	IVF ml per hr	NGT 3hrly feed
Day 0 (80 ml/kg/day)	3	0	4	0	4	0	5	0	6	0	6	0
Day 1 (100 ml/kg/day)	3	3	4	3	4	3	4	7	5	7	6	7
Day 2 (120 ml/kg/day)	3	6	4	6	5	6	3	14	5	14	5	14
Day 3 (140 ml/kg/day)	2	11	3	11	4	11	2	22	3	22	4	22
Day 4 (150 ml/kg/day)	0	17	1	17	3	17	0	26	0	33	1	33
Day 5 (150 ml/kg/day)	0	18	0	22	2	26	0	30	0	33	0	37
Day 6+ (150 ml/kg/day)	0	18	0	22	0	26	0	30	0	33	0	37

Intravenous / intramuscular antibiotics aged < 7 days, easy to use chart (adapt dose if necessary)

Weight kg	Penicillin (50,000iu/kg)	Ampicillin * / Cloxacillin (50mg/kg)	Gentamicin (3mg/kg <2kg, 5mg/kg ≥ 2kg)	Ceftriaxone (50mg/kg)	Metronidazole (7.5mg/kg)	Acyclovir (20mg/kg)
	iv / im	**iv / im**	**iv / im**	**iv / im**	**iv**	**iv**
	12 hrly	**12 hrly**	**24 hrly**	**24 hrly**	**12 hrly**	**8 hrly**
1.00	50,000	50	3	50	7.5	20
1.25	75,000	60	4	62.5	10	25
1.50	75,000	75	5	75	12.5	30
1.75	100,000	85	6	75	12.5	35
2.00	100,000	100	10	100	15	40
2.50	150,000	125	12.5	125	20	50
3.00	150,000	150	15	150	22.5	60
4.00	200,000	200	20	200	30	80

Weight kg	Amoxycillin Ampicillin Cloxacillin
	25mg/kg
	125mg/5mls
	12 hrly
2.00	2
2.50	3
3.00	3
4.00	4

Ophthalmia Neonatorum:
Swollen red eyelids with pus should be treated with a single dose of:

- ✓ Kanamycin or Spectinomycin 25mg/kg (max 75mg) im, or,
- ✓ Ceftriaxone 50mg/kg im (dilute to 350mg/ml, max dose 0.5ml= 175 mg)

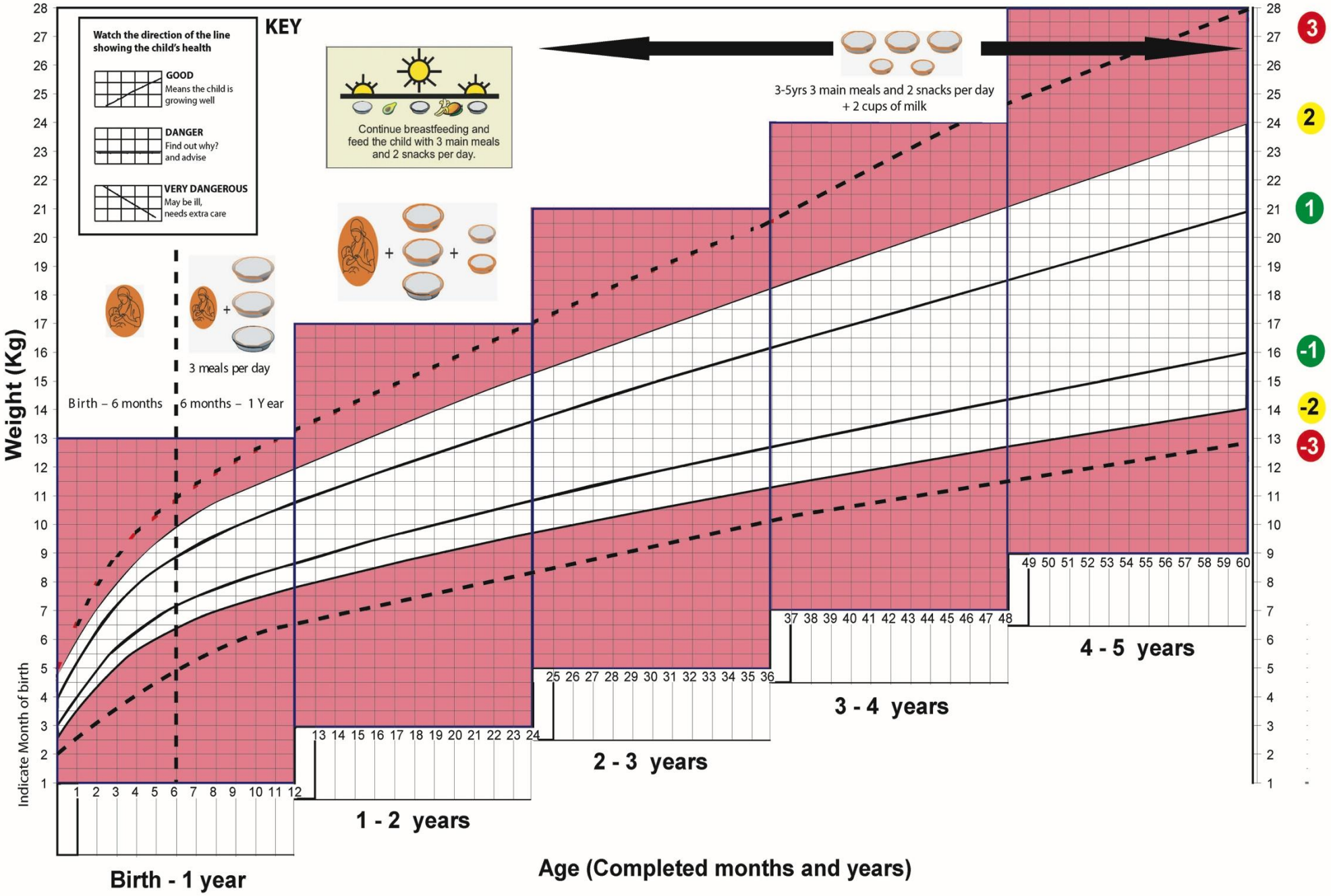
Warning:

- ✓ **Gentamicin** – Please check the dose is **correct for weight and age in DAYS**
- ✓ **Gentamicin** used OD should **be given im or as a slow IV push** – over 2-3 min.
- ✓ If a baby is not obviously passing urine after more than 24 hours consider stopping gentamicin.
- ✓ **Penicillin** dosing is **twice daily** in babies aged < 7 days
- ✓ **Chloramphenicol should not be used** in babies aged < 7 days.
- ✓ **Ceftriaxone** is not recommended in obviously jaundiced newborns – Cefotaxime is a safer cephalosporin in the first 7 days of life
- ✓ **Ampicillin * 150 mg/kg/d if meningitis, 12hrly**
- ✓ **Acyclovir** 20 mg/kg 12 hrly if weight < 2 kg; 14d if localized herpes, 21d if general.

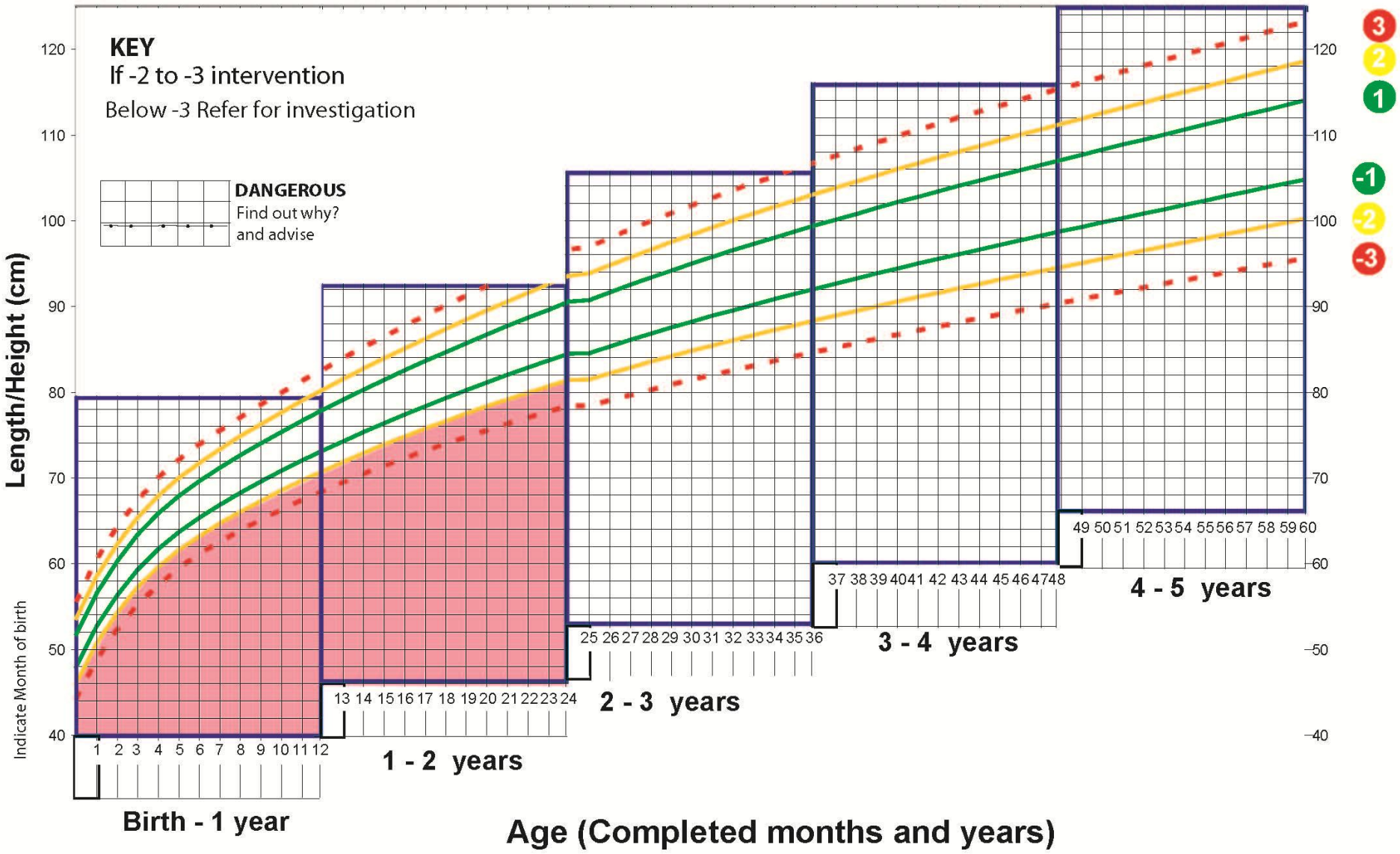
Weight-for-Age GIRLS

±3 Refer for further investigations

±2 to±3 Refer for nutritional counselling



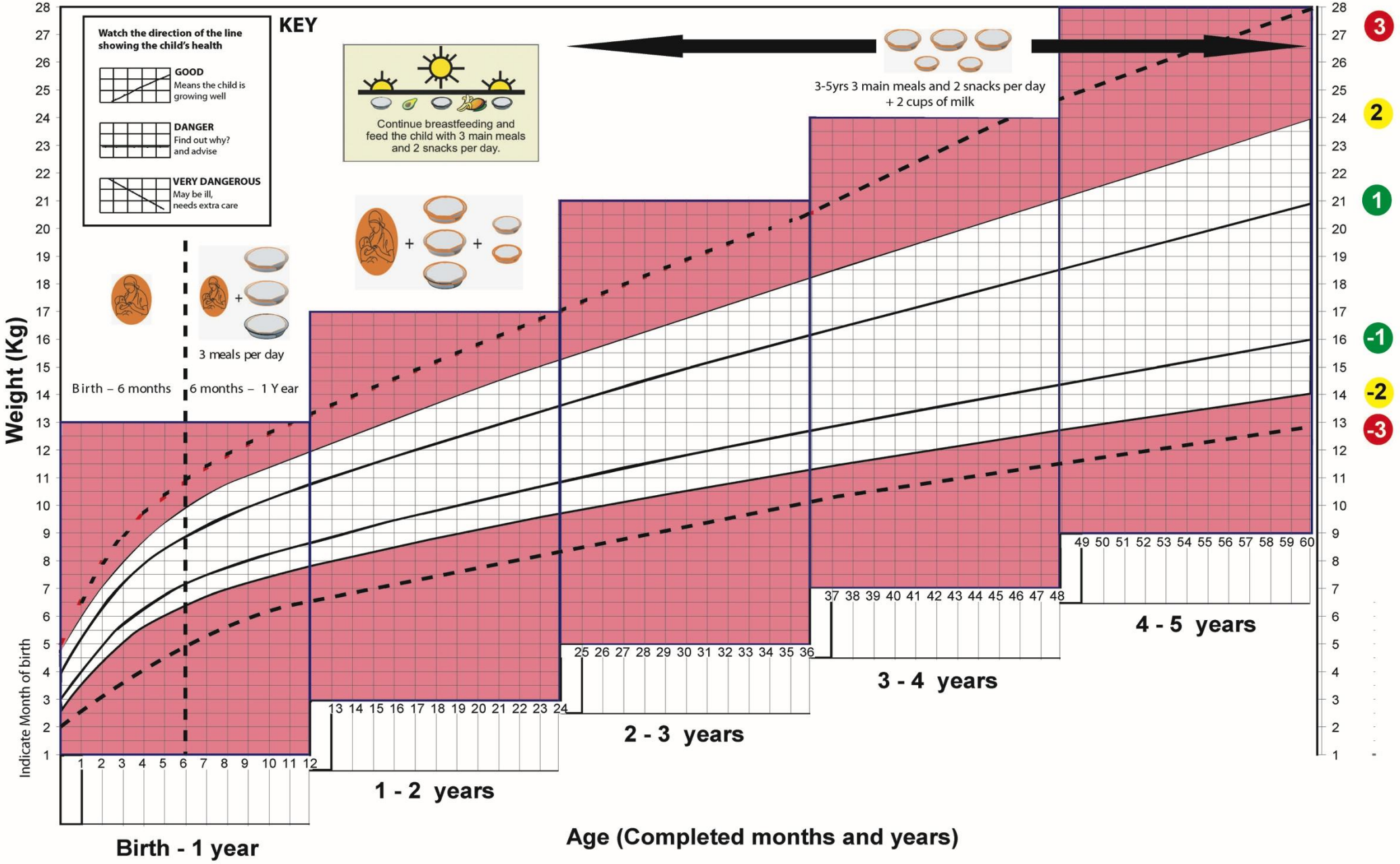
Length/Height-for-Age GIRLS



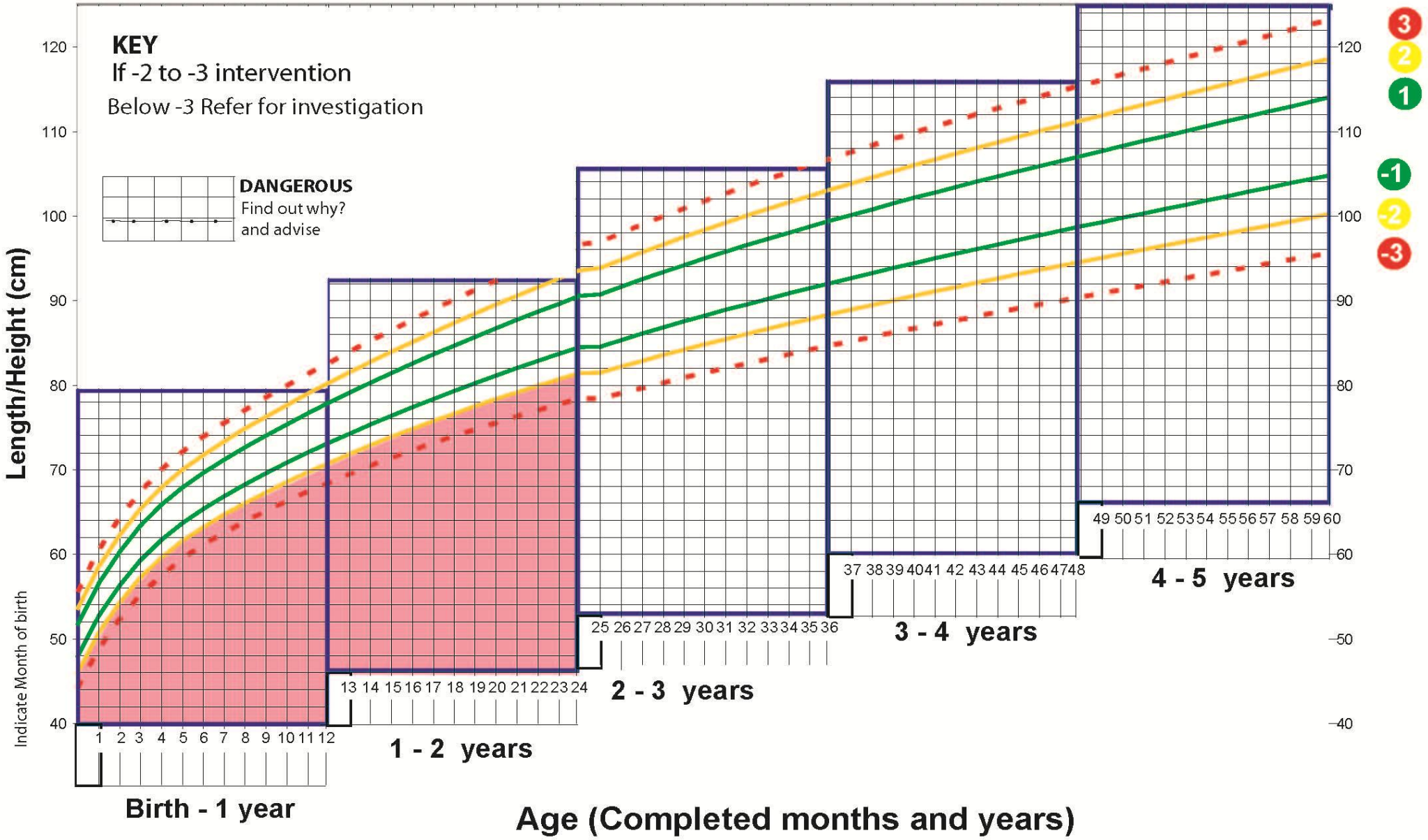
Weight-for-Age BOYS

±3 Refer for further investigations

±2 to±3 Refer for nutritional counselling



Length/Height-for-Age BOYS



Emergency estimation of child's weight from their age.

All babies and children admitted to hospital should be weighed and the weight recorded in the medial record and in the Maternal Child Health Booklet.

Estimate the weight from the age only if immediate life support is required or the patient is in shock – then check weight as soon as stabilized.

All other children should have weight measured.

Child looks well nourished, average size for age	**Estimated Weight (kg)**	**Child looks obviously underweight – find age but <u>step back 2 age/weight categories</u> and use the weight appropriate for this younger age-group.** **Eg. Child thin and age 10 months, use the weight for a 4-6 month well nourished child.** **If there is <u>severe malnutrition</u> this chart will be inaccurate.**
Age		
1 – 3 weeks	3.0	
4 - 7 weeks	4.0	
2 - 3 months	5.0	
4 - 6 months	7.0	
7 to 9 months	9.0	
10 to 12 months	10.0	
1 to 2 yrs	11.0	
2 to 3 yrs	13.0	
3 to 4 yrs	15.0	
4 to 5 yrs	17.0	

NOTES

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