PAIRS

PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

Paediatric

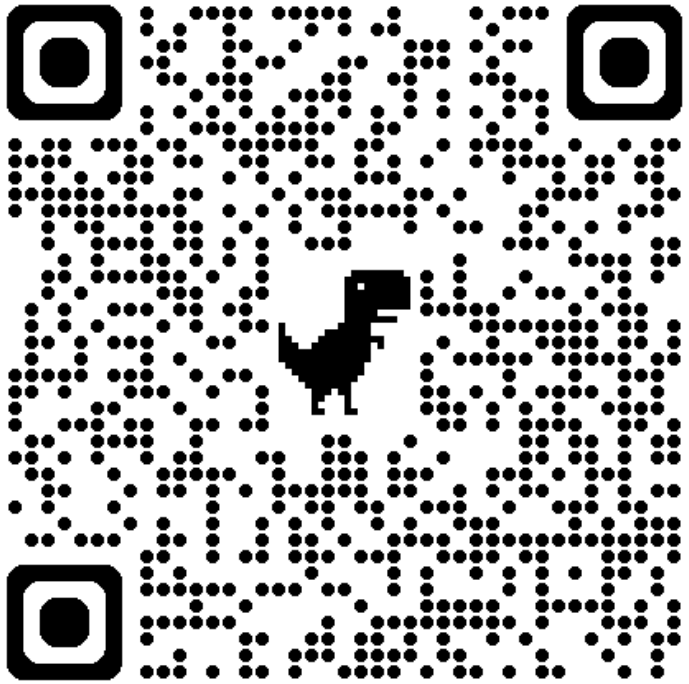
Acute

Intervention

Resuscitation

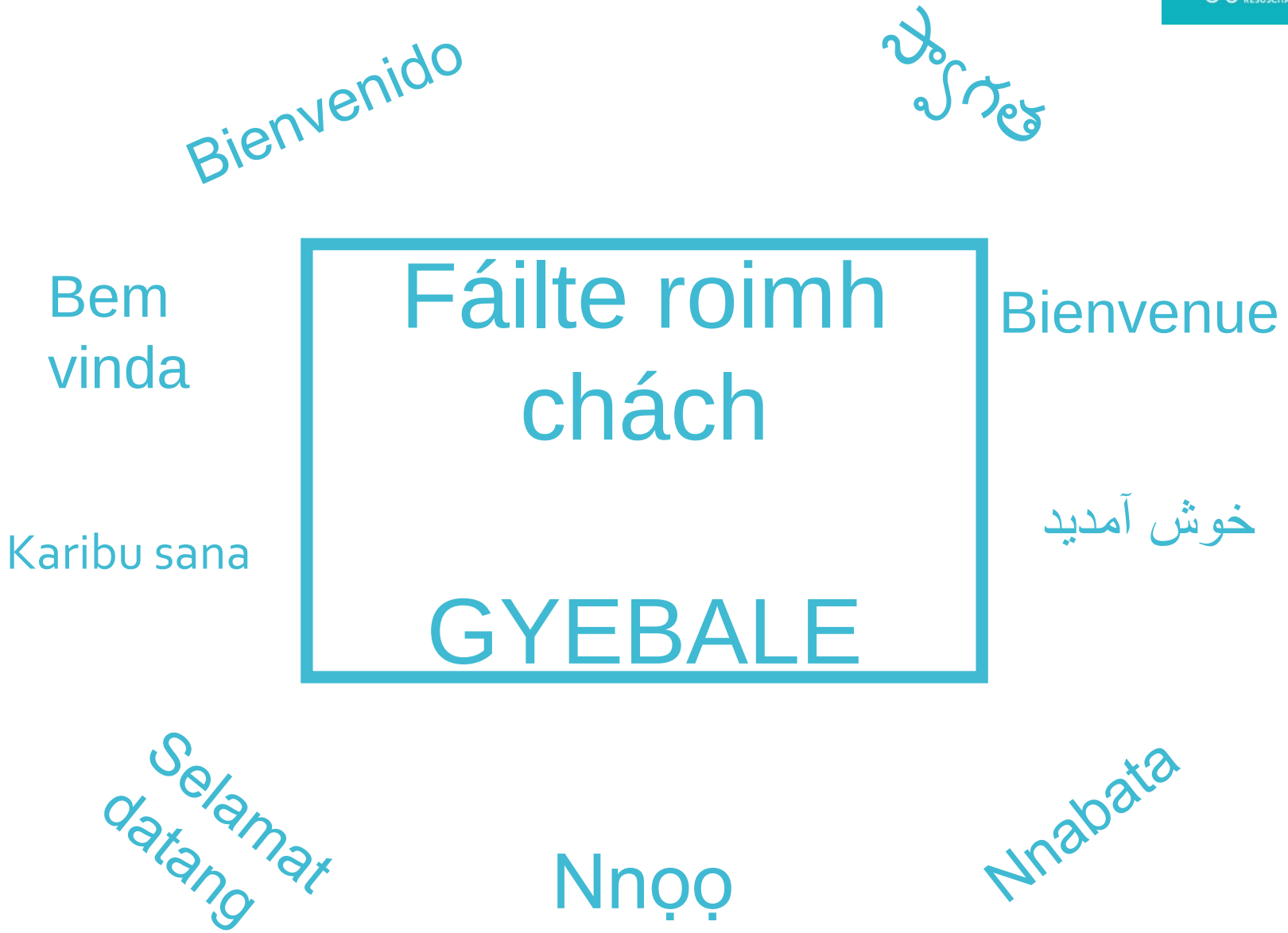
Skills

PAIRS Pre Testing



PAIRS basic MCQ Uganda May 2025

Welcome to PAIRS



Introductions

Housekeeping

Groupings

Telephone use

Break times

Lunch arrangements

Toilet facilities

Background

Every life is precious

Death can often be preventable

Basic knowledge and skills are the best defence

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Why have you come here today?

What motivates you?

Why have you come here today?

What motivates you?

Aims

Improvements in

- Clinical outcomes
- Knowledge, confidence & performance
- Teamwork & communication
- New skills

Learning outcomes

Practice ABCDE structured assessment to aid recognition

Initiate rescue and supportive clinical interventions

Perform basic life support and resuscitation skills

Communicate effectively and work as a team

Course programme

CPR/Collapsed Child

- Individual and team approach to Basic Life Support

Clinical skills

- Assessment theory and practical skills

Cases

- Discussion of real clinical scenarios

Testing

- CPR skills (day 1) & MCQ (day 2)

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Recognising Cardiac Arrest & Starting CPR

4S Approach

ABC

Respiratory failure

Circulatory failure

Causes of cardiac arrest in children

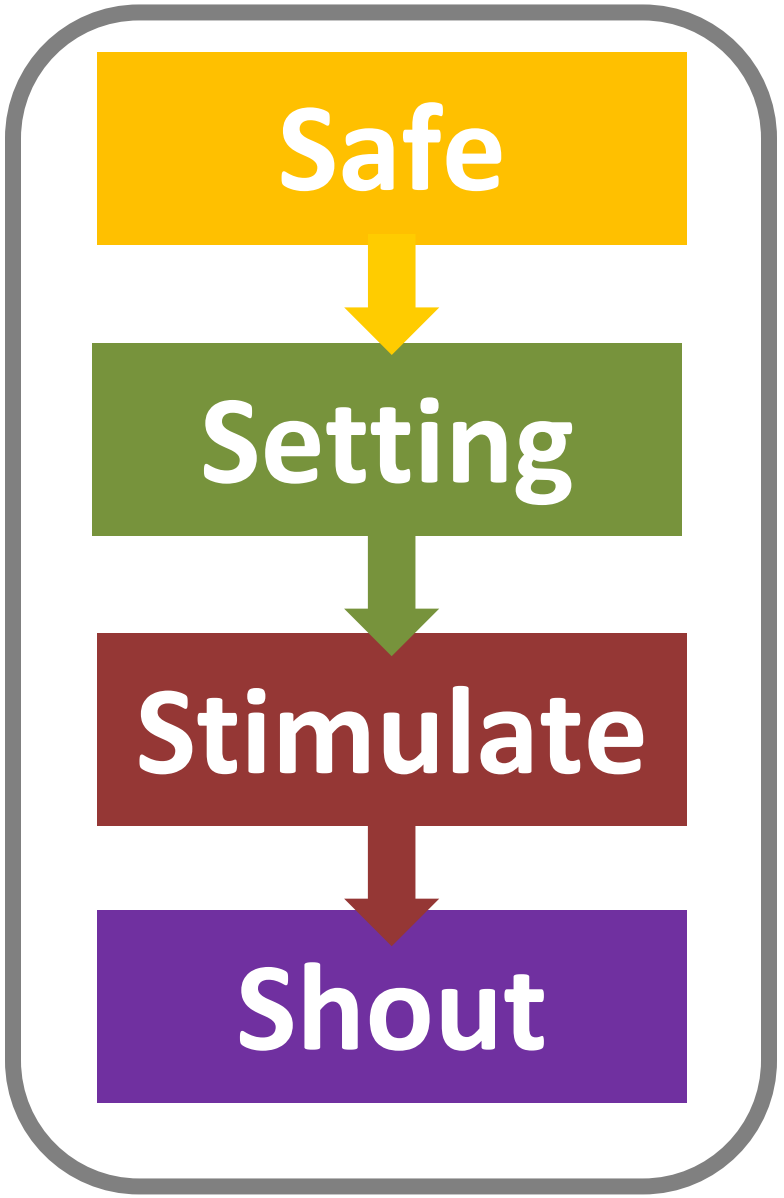
Respiratory failure

- Pneumonia
- Bronchiolitis
- Chest injuries
- Asthma
- Pleural Effusion/Empyema
- Anaphylaxis

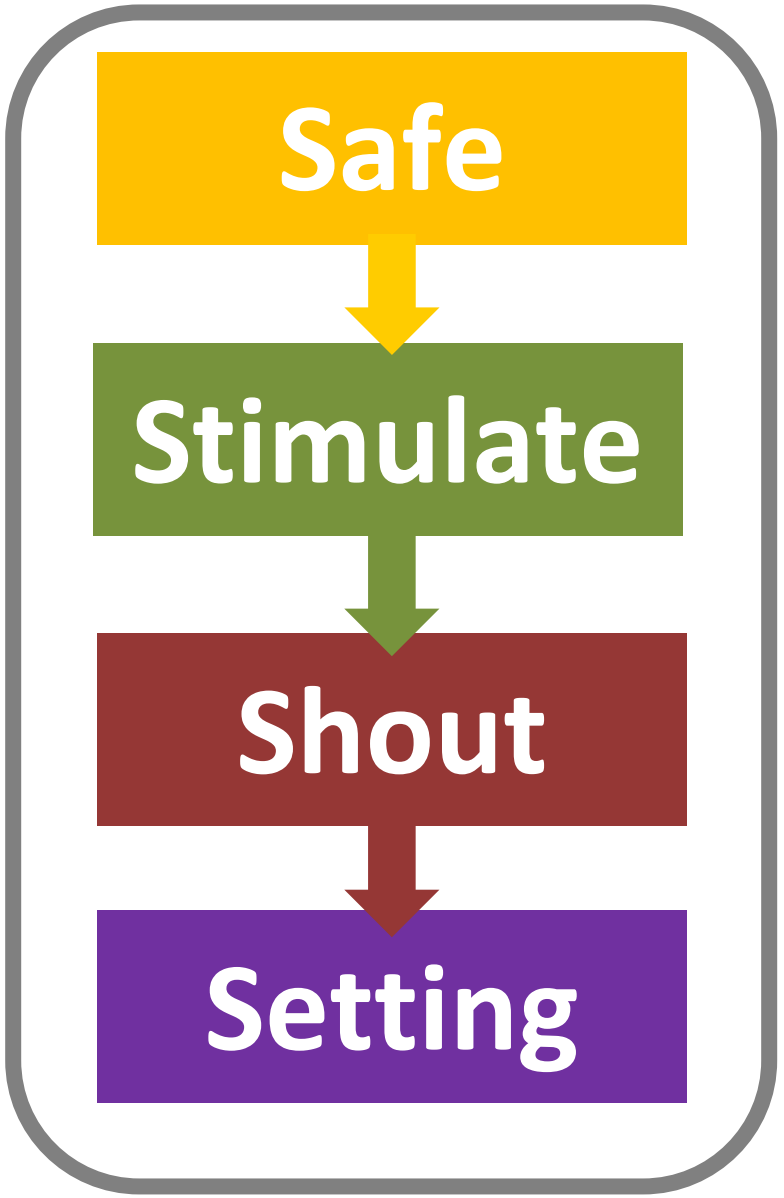
Circulatory failure

- Sepsis
- Malaria
- Gastroenteritis
- Haemorrhage
- Anaemia
- Malnutrition
- Anaphylaxis

4S CPR



4S CPR



Ensure Healthcare Providers and Patient are safe

Assess for responsiveness

Shout For Help

Is the child in the correct setting

Cardiac Arrest first steps

A & B

Check A & B

Open and clear airway

Look, Listen & Feel for breathing

Apnoea or only gasping :
5 rescue breaths

Call

Shout for help if not arriving

C

Check and Compress

Recheck A & B while checking large pulse (signs of life)

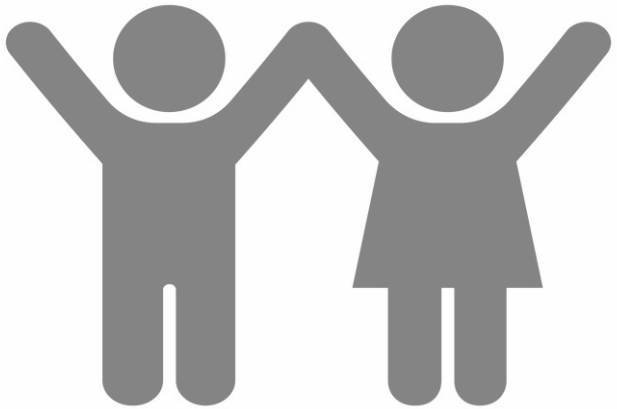
Absent pulse or <60bpm:
Start compressions

Rate of 120 per min
Ratio 15:2

Paediatric CPR

Infant
<1 year or <10kg

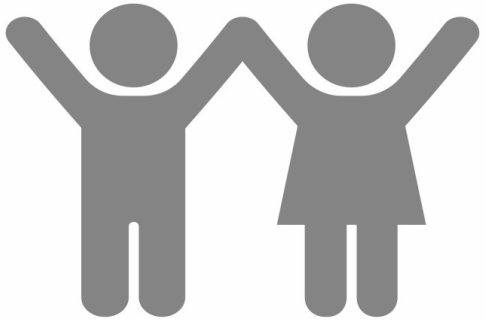
Child
>1 year or >10kg



Airway Position

Airway in neutral position

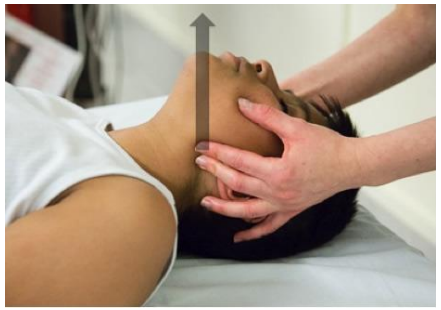
Airway Position



Airway in sniffing position

Jaw Thrust

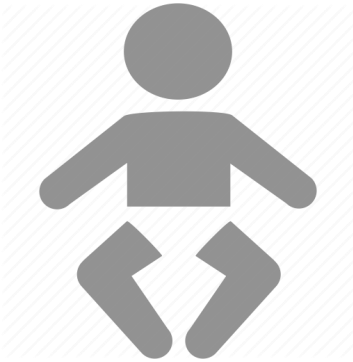
(suspected C-Spine Trauma)



Child is not breathing effectively

- Start giving rescue breaths
- 5 rescue breaths with bag-valve-mask device
- 1 second inspiration – 1 second expiration
- Effective breaths – observe for good chest rise
- Attach oxygen to BVM if available

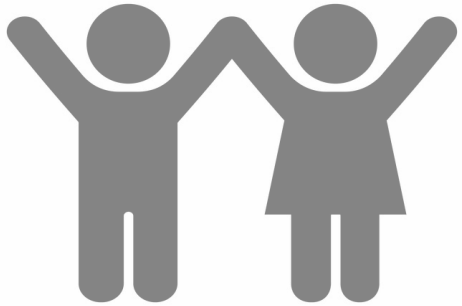
Bag-valve-mask ventilation technique



One person technique

Two person technique

Bag-valve-mask ventilation technique



One person technique

Two person technique

INFANT

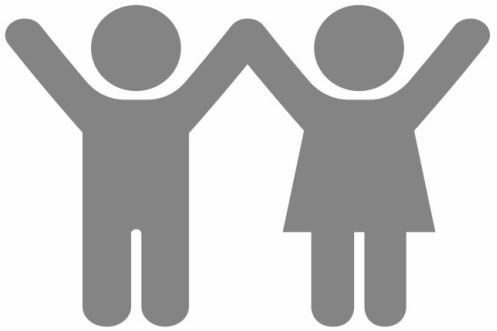
Chest Compressions

Lower half of sternum
120 per min
1/3 chest depth
Ratio 15:2

Encircling hand technique

CHILD

Chest Compressions



Lower half of sternum
120 per min
1/3 chest depth
Ratio 15:2

One or two hands

Compression Only CPR

- If no safe way to provide ventilations – proceed with compression only CPR
  - (e.g. no BVM or barrier device)

- **Remember:** Effective chest compressions are the most important component of CPR

The Choking Infant and Child

- **Effective cough-sounds, vocalisation**
  - Stay with the patient, provide reassurance
- **Ineffective cough-no sounds, no breathing**
  - Infant-5 back blows and 5 chest thrusts
  - Child-5 back blows and 5 abdominal thrusts
- **If the child becomes unresponsive**
  - Start in 4S approach and CPR

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Demonstration

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Questions?

Summary

- Recognise need for CPR
- Intervene immediately – 5 breaths then compress
- Call for assistance early
- Seek senior medical help early
- Continue uninterrupted, high quality CPR

Time to practice!

Break time!

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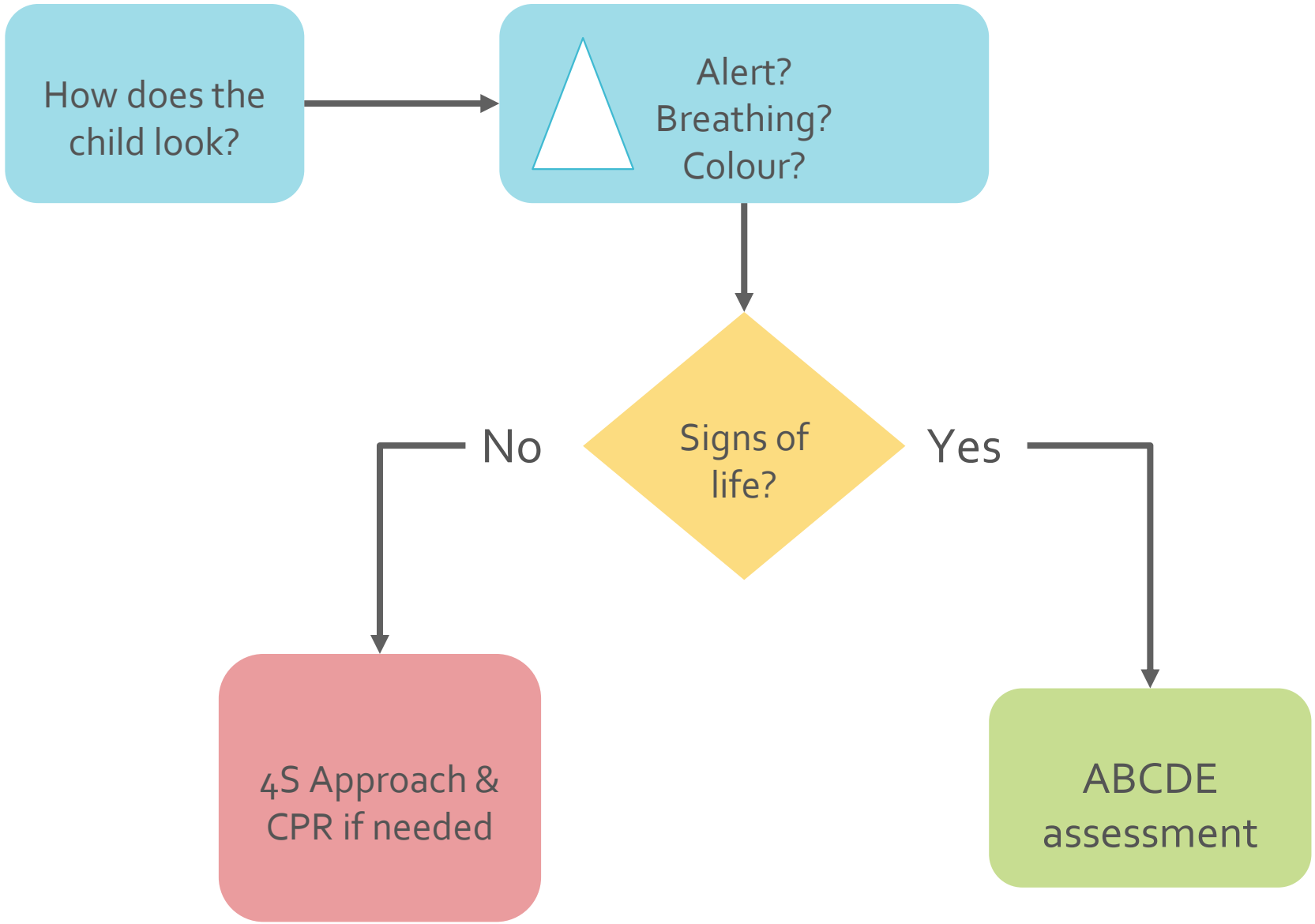
Assessment & Management of the Sick Child

ABCDE

Structured assessment



Structured assessment

What?	How?
Airway	Look
Breathing	Listen
Circulation	Feel
Disability	Check
Exposure & **E**nvironment	

A

Airway

Is the airway patent?

or

Are there signs of partial or full obstruction?

Look	Listen	Feel
Colour Chest movement Secretions Facial/neck swelling or deformity	Abnormal sounds Can the child speak as normal?	Chest movement Abnormal breaths

Signs of airway obstruction

- Cyanosis
- Intercostal recession
- Subcostal recession
- Tracheal tug
- Stridor

Airway management

- Check the airway is open
- Do simple airway manoeuvres
- Jaw Thrust if indicated
- Suction if needed
- Consider using airway equipment
- Give oxygen

B

Breathing

Is the child breathing adequately?

or

Are there signs of respiratory distress?

Look	Listen	Feel
Respiratory rate Depth Symmetry Effort Colour O_2 Saturation	Struggling to speak? Added sounds? Auscultation	For airflow/ breaths at the mouth and nose Chest expansion Percussion (if trained)

Signs of breathing difficulty

(Respiratory Distress)

- Hypoventilation
- Signs of tiredness – decreasing effort with no improvement
- Signs of hypoxia
- Low SpO_2

Breathing management

- Check the airway is open
- Do simple airway manoeuvres
- Suction if needed
- Consider using airway equipment
- Give oxygen

C

Circulation

Is the child perfusing adequately?

or

Are there signs of circulatory compromise?

Look	Feel	Check
Colour Haemorrhage Any evidence of infection? IV access?	Large vs peripheral pulse Pulse rate Pulse volume Temperature - gradient Capillary refill time (CRT) Fontanelle	Sunken eyes Skin pinch Blood pressure Fluid balance - Feeding - Vomiting - Bleeding - Urine output

Signs of circulatory compromise

- Pulses
  - Weak and fast pulse?
  - Large vs peripheral difference
- Delayed capillary refill
- Cool peripheries
- Hypotension
- Drowsiness

Circulation management

- Vascular access
- Blood tests
- Fluid therapy
  - IV fluid bolus 10ml/kg
  - Enteral rehydration if delay in IV access
- Think of all causes of shock:
  - Dehydration
  - Sepsis – antibiotics/ antimalarial
  - Haemorrhage
  - Anaphylaxis
  - Cardiac arrest

D

Disability

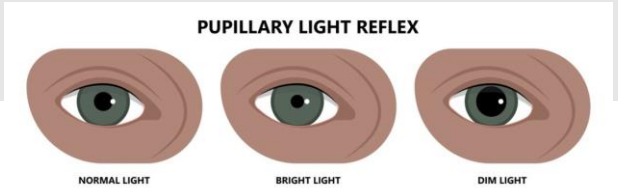
Is the child alert?

or

Are there signs of altered level of consciousness?

Look Listen Feel

Conscious level using AVPU
Blood glucose
Pupil size and reaction
Seizures
Pain assessment



A	Alert
V	Responds to Voice
P	Responds to Pain
U	Unresponsive

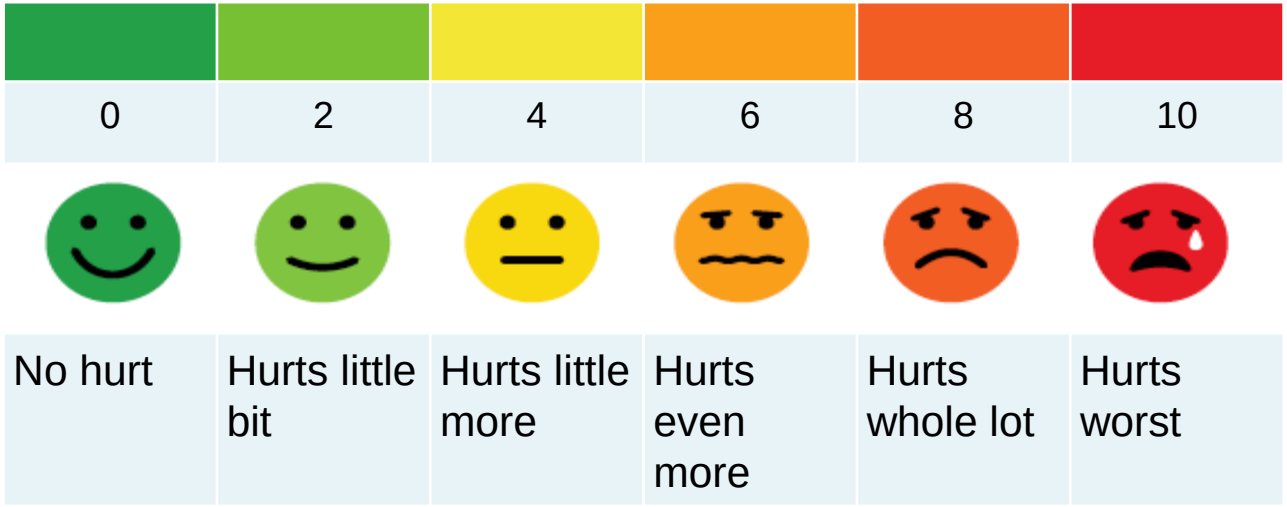
Disability - signs of altered conscious level

- Drowsiness
- Lethargic
- Seizure/Convulsions
- Abnormal reflexes
- Pain assessment

Disability – signs of pain

Look	Listen	Check
Facial expression Body movements	Child or parent says there is pain	Heart rate BP Respiratory rate

Wong-Baker Faces® pain rating scale



Disability management

- Protect and manage the airway
- Correct blood glucose
  - Treat with 5 mL/kg 10% dextrose
  - No glucometer – treat presumed hypoglycaemia
- Control seizures with rectal diazepam
  - Under 2 years: 5mg
  - 2 – 12 years: 5-10mg
  - Over 12 years: 10-20mg
- Manage pain appropriately
- Consider using the Glasgow Coma Scale (GCS)

Manage pain

Try to comfort the child

- Distraction
- Involve the parent
- Play specialist

Don’t delay analgesia

- Relief of pain will not mask clinical signs
- Use local guidelines

E

Exposure

Is the child injured?

or

Are there signs of bleeding, rash or trauma?

Look Listen Feel

Assess from head to toe, front to back:

Check temperature

Check for rashes

Check for injuries

Abdominal distension?

Evidence of haemorrhage?

Complete the assessment

- Review documentation including:
  - Vital signs chart
  - Fluid balance charts
  - Drug prescriptions
  - Fluid prescriptions
  - Medical notes

- Decide what you will do next

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Questions?

Summary

- Assess children using structured **ABCDE** approach
- Identify life threats
- Intervene immediately
- Reassess after each intervention
- Document assessment and interventions

Neonatal Sepsis

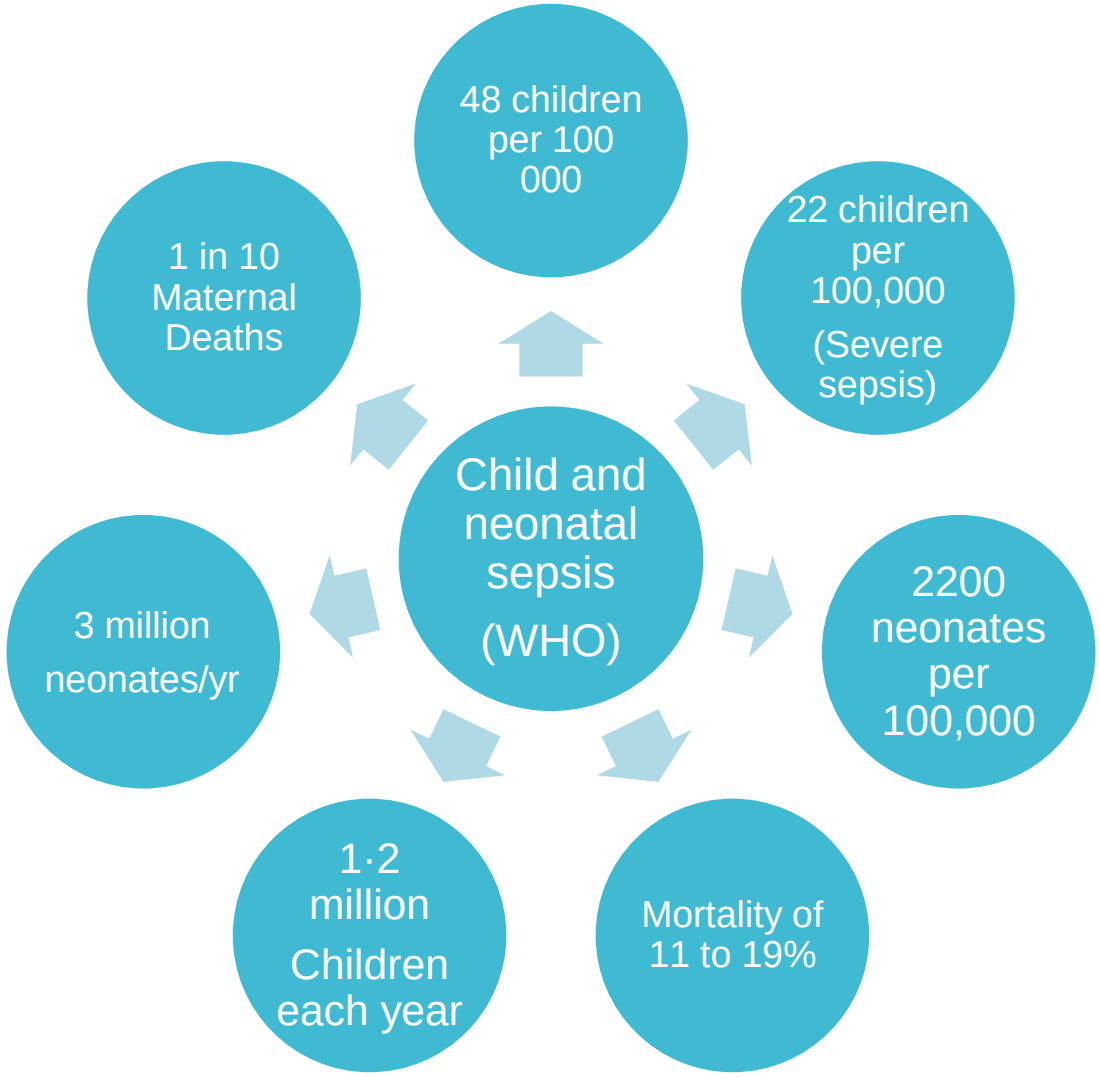
Outline

- Definition of Neonatal sepsis
- Neonatal standards of care
- Management of neonatal sepsis
- Prevention
- Neonatal Sepsis and risk factors

What is Sepsis?

- “Life threatening organ dysfunction due to an abnormal host response to infection”
- Leading cause of neonatal morbidity and mortality
- Infection: Bacterial, viral, fungal or parasitic (e.g. malaria)
- Results in organ dysfunction and may lead to failure and death
- It is most effectively treated if recognised early

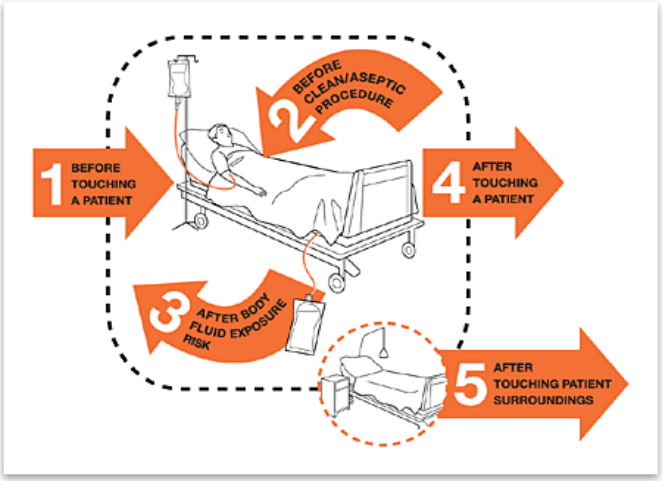
Burden of Sepsis



Sepsis Prevention

- Preventing primary infection
- Preventing the evolution of infection into sepsis

Preventing Primary Infection



- Safe water and sanitation
- Vaccination
- Hand Hygiene
  - WHO 5 moments
- Clean environment and equipment
- Infection prevention and control programmes and teams
- Infection prevention procedures

Preventing Evolution of Infection to Sepsis

- Early detection of infections
- Prompt medical care
- Early antimicrobial / antimalarial treatment
- Assess effectiveness of treatment

Neonatal sepsis

Infection can begin:

- In-utero, called congenital infection
- During the birth process
- After delivery

Early-onset sepsis

- Presents within 1st 72 hr of life
- Usually vertically acquired
- Group B strep, E.coli

Late-onset sepsis

- After 72 hours
- More likely nosocomial

- Risk factors differ from childhood sepsis
- Has a higher mortality rate
- Reduced by good maternal and early neonatal care

Risk factors for neonatal sepsis

- **PROM** – Prolonged rupture of membranes (>18 hours)
- **PPROM** - Preterm premature rupture of membranes (>18hr and <37 weeks)
- Premature onset of labour
- Chorioamnionitis - infection of placenta

  Signs of chorioamnionitis include:
  - Maternal Temperature >38
  - Maternal tachycardia >100 beats per minute
  - Foetal tachycardia > 160 beats per minute
  - Purulent foul smelling amniotic fluid or vaginal discharge

Risk factors for neonatal sepsis

- Previous infant with invasive infection
- Perinatal asphyxia
- Meconium aspiration
- Procedures: e.g. inserting IV lines, intubation
- Maternal factors
  - Maternal sepsis
  - Recent infection or illness
  - Maternal fever in the peripartum period
  - Maternal UTI or STD
  - Poor peri-natal hygiene

Neonatal Standards of Care: Sepsis Prevention

- Clean environment
- Ability to maintain temperature at all times
- Staff and carers with good hand hygiene
- Provision of appropriate nutrition:
  - Promotion of exclusive breastfeeding.
- Vitamin K, TEO, and chlorhexidine

Signs of Neonatal Sepsis

Respiratory Distress:

- Tachypnoea, nasal flaring, grunting, retractions, apnoea, cyanosis

Temperature instability:

- Hypothermia and hyperthermia

Feeding intolerance:

- Poor feeding pattern, vomiting, abdominal distension

Consider sepsis in any unwell neonate

- Wide range of potential presentations
- Look for signs of localised infection

Assessment in suspected sepsis

Airway:	Ensure airway patency and give high flow O2
Breathing:	RR and effort, oxygen saturations, ABG, CXR.
Circulation:	Check **p**ulse rate and volume, BP, CRT, skin temp
	Get vascular access with bloods
	Give antibiotics
Disability:	AVPU, tone, glucose and pupils
Exposure:	Temperature (↓or↑), skin rashes or infections

Organ Dysfunction in Septic Shock

Cardiovascular	• ↓BP (late sign); ↑CRT;↑HR; Acidosis with ↑lactic acid
Respiratory	• Hypoxia, hypercarbia, RDS
Neurologic	• Impaired mental state; ↓GCS
Hematologic	• Anaemia, ↓Platelets, DIC
Renal	• ↓urine output, ↑ Urea and Creatinine
Hepatic	• ↑Bilirubin, ↑Liver enzymes

Management

First 5 minutes

- Call for help
- Monitoring
- Address airway or breathing compromise
- Give O2

Management

First 15 minutes

- Establish vascular access
- Take bloods
- Urine
- Lumbar puncture (if not contraindicated)
- Give IV antibiotics

Management

First 60 minutes

- Inotropes / Vasopressor (contact ICU team)
  - If still in circulatory failure consider peripheral adrenaline
  - Adrenaline 0.05-2mcg/kg/min
- Consider respiratory support
  - Intubation / ventilation

Antibiotics

- Empiric treatment
    - Ampicillin and Gentamicin
- Rationalise based on sensitivities and clinical condition

Meningitis

- Suspect meningitis in all neonates with neonatal sepsis

  Lumbar Puncture (LP) is necessary for confirmation

- Treatment

  Do not delay treatment while awaiting laboratory results

  In confirmed meningitis, give cefotaxime

  For gram-negative organisms: Treat for 21 days

- Most neonates will not have specific clinical signs of meningitis

Summary

- Infection is a leading cause of neonatal mortality
- All newborns should have access to a clean, warm environment during and after delivery
- Hand washing is essential
- Early recognition and treatment improves outcomes

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Skills Stations

Skill stations

- Airway & Breathing
- Circulation
- Vital signs assessment & Communication using ISBAR
- Neonatal Resuscitation

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Paediatric Early Warning System & Effective Communication

PEWS

Objectives

- Understand effective communication
- Practice using a structured communication tool
- Understand the importance of vital signs
- Introduction to a paediatric early warning system

ISBAR communication

What is it?

- ✓ easy to use, structured form of communication that enables information to be transferred accurately between individuals

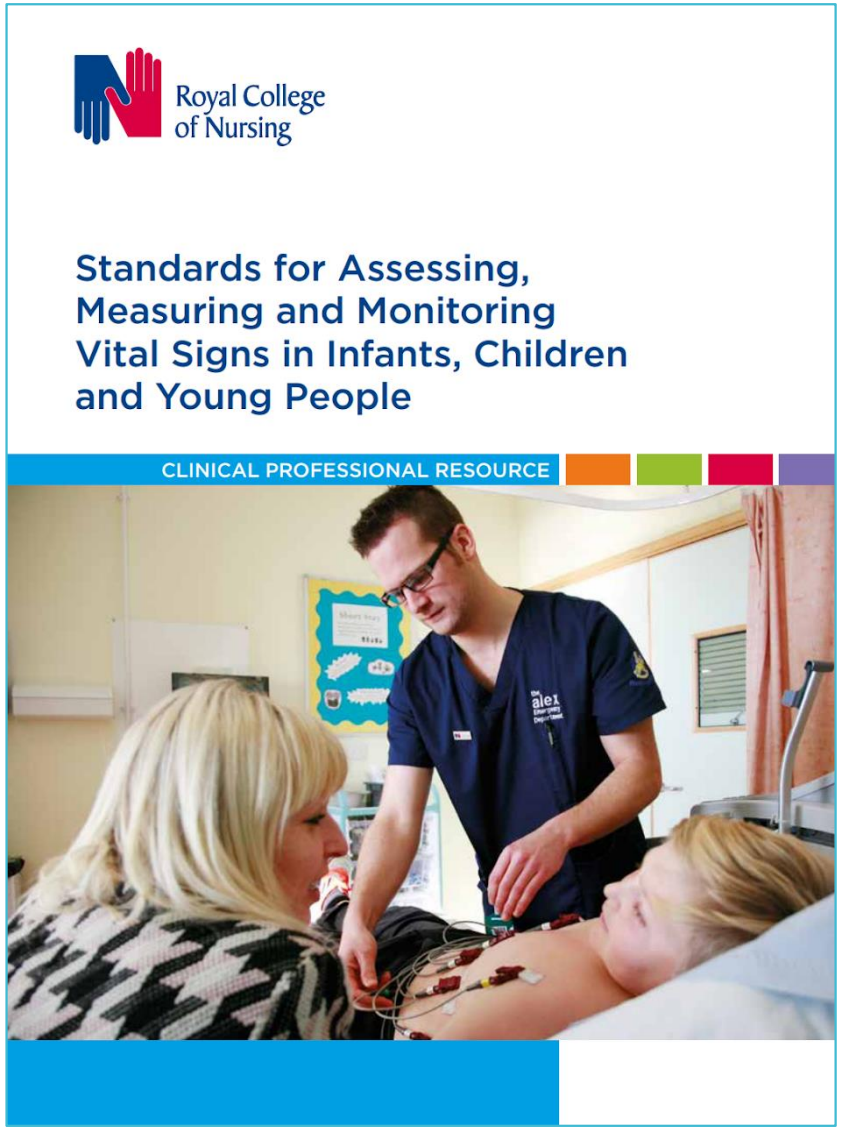
When do we use it?

- ✓ in any clinical setting
- ✓ across different disciplines
- ✓ between different levels of staff

ISBAR communication

Identify	• Hello, my name is… • Am I speaking with…?
Situation	• The situation is…(what is the main reason you are calling?)
Background	• The background (*to this situation*) is…
Assessment	• My assessment (*of the situation*) is…
Recommendation	• I recommend that you/we now…

Vital sign assessment standards



Equipment required for PEWS

What vital signs?

Observations **must** include:

- Temperature
- Respiratory rate
- Respiratory distress
- Heart rate
- Level of consciousness

Observations **may** include

- Oxygen saturation
- Blood pressure

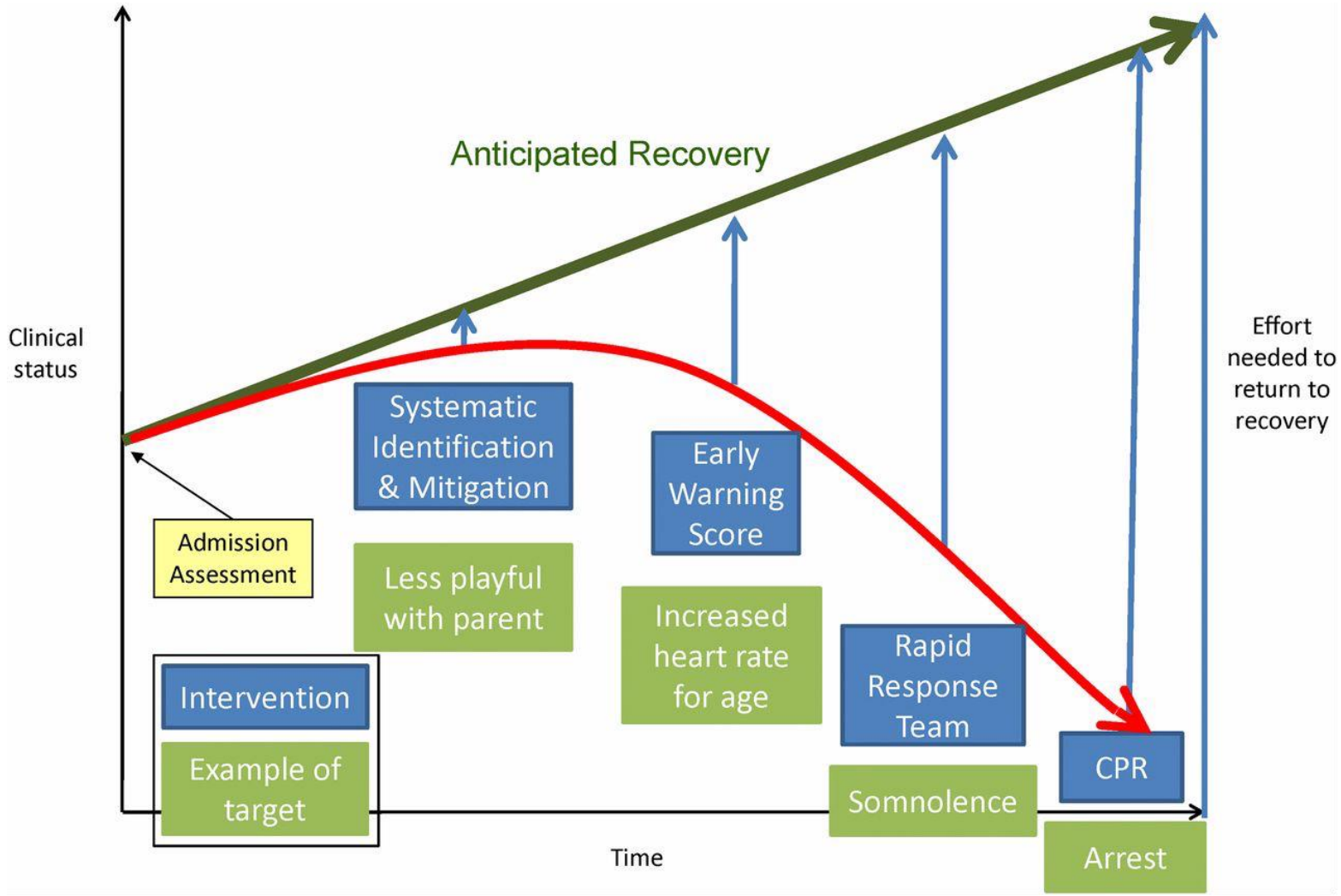
How often?

- At least once per shift

  plus

- When a child is admitted to a ward or returns from theatre/scan
- When a child is on special treatment (e.g. chemotherapy, blood)
- If a child looks unwell
- If a child or parent is concerned
- If you are worried about the child

Early identification and early action can lead to improved outcomes



Tume 2007, Brady 2013, Agulnik 2020

What is a (P)EWS?

Tools used by hospital care teams to monitor patients and recognise the early signs of clinical deterioration to initiate early intervention and management.

Standardised monitoring	• Age-specific observation charts • Structured assessment (ABCDE)
Early recognition	• Colour coded values • Escalation guide
Timely intervention	• Effective communication • Clear documentation

International evidence for PEWS

Cancer

Original Article | Free Access

Improved outcomes after successful implementation of a pediatric early warning system (PEWS) in a resource-limited pediatric oncology hospital

BMJ Open

Paediatric early warning systems for detecting and responding to clinical deterioration in children: a systematic review

Veronica Lambert,[1] Anne Matthews,[1] Rachel MacDonell,[2] John Fitzsimons[3]

Cancer

Original Article

Validation of a pediatric early warning system for hospitalized pediatric oncology patients in a resource-limited setting

Asya Agulnik MD, MPH, Alejandra Méndez Aceituno MD, Lupe Nataly Mora Robles MD,

Successful Implementation of a Pediatric Early Warning Score in a Resource-Limited Pediatric Oncology Hospital in Guatemala

Asya Agulnik, Dora Judith Soberanis Vasquez, Jose Emigdio García Ortiz, Lupe Nataly Mora Robles, Ricardo Mack, Federico Antillón...

Paediatric Early Warning Scoring Systems in Humanitarian Settings: Where is the Evidence? What are the Opportunities?

Stephanie Brown[1], Daniel Martinez Garcia[2], Asya Agulnik[3]

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PEWS successfully implemented can lead to…

- Shorter time between deterioration and medical interventions
- Lower severity of illness on ICU admission
- Shorter ICU LOS for unplanned transfers
- Fewer cardiopulmonary arrests outside the ICU
- Improved interdisciplinary communication
- Lower hospital mortality

Bonafide 2013, Brilli 2007, Olson 2013, Sefton 2014, Chapman 2016

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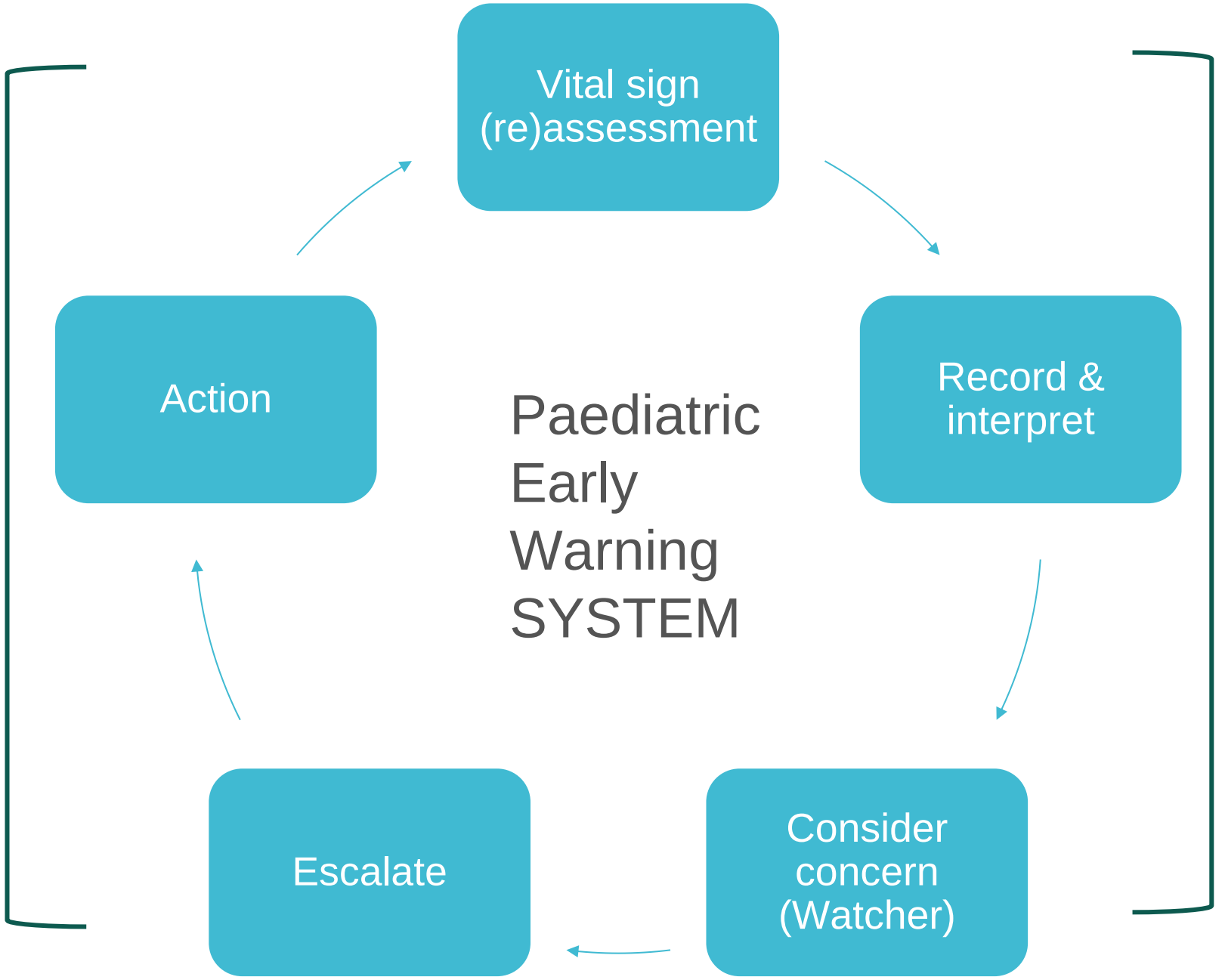
PEWS algorithm



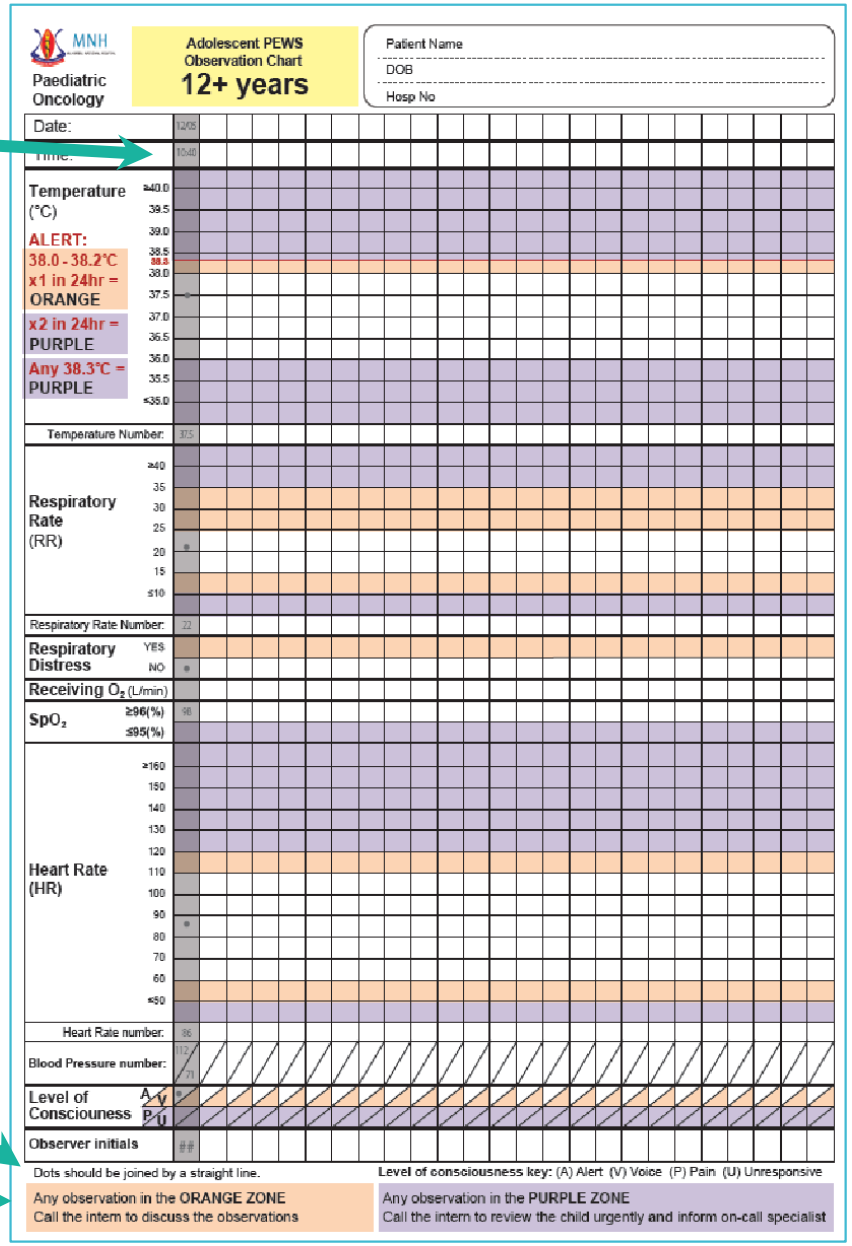
PEWS Scoring tool

Consider other monitoring

- Fluid balance
- Blood glucose
- Other blood tests
- Investigations
  - e.g. ECG, CXR
- Senior review

Front of chart

Example line



Instructions

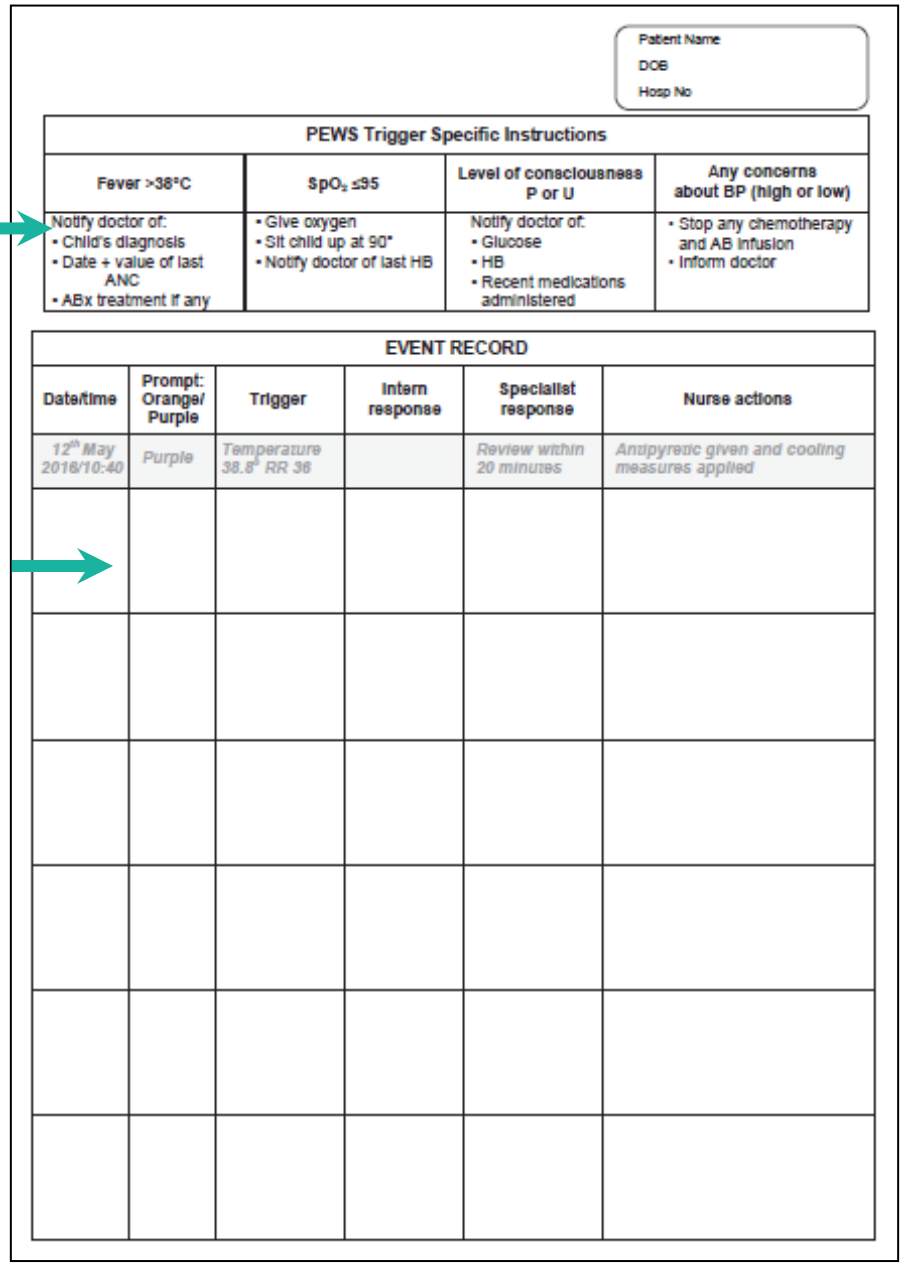
Escalation

Key

Back of chart

Instructions

Documentation



Patient Name
DOB
Hosp No

PEWS Trigger Specific Instructions

Fever >38°C	SpO_2 ≤95	Level of consciousness P or U	Any concerns about BP (high or low)
Notify doctor of: • Child's diagnosis • Date + value of last ANC • ABx treatment if any	• Give oxygen • Sit child up at 90° • Notify doctor of last HB	Notify doctor of: • Glucose • HB • Recent medications administered	• Stop any chemotherapy and AB infusion • Inform doctor

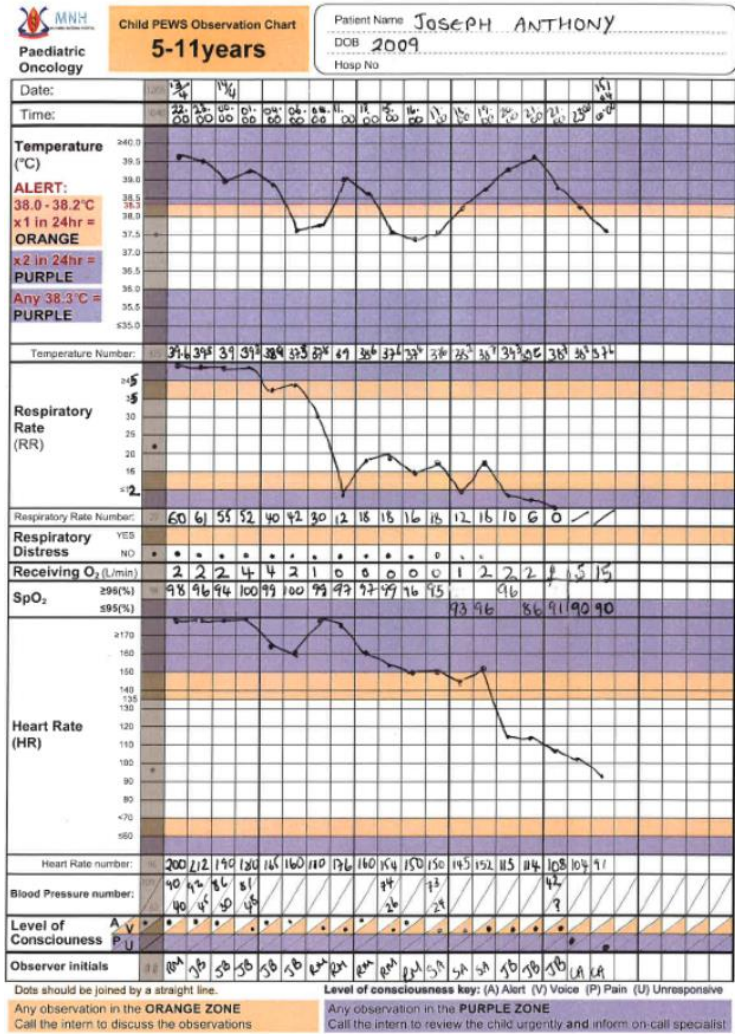
EVENT RECORD

Date/time	Prompt: Orange/ Purple	Trigger	Intern response	Specialist response	Nurse actions
12th May 2016/10:40	*Purple*	*Temperature 38.8° RR 36*		*Review within 20 minutes*	*Antipyretic given and cooling measures applied*

Watch the trends

VITAL SIGNS

Are Vital!



Referral and escalation

- Always use clinical judgement
- Review child regularly
- Act on concern
- Be aware of non-improvement & the child who is tiring

- Who can you call?
- Record all decisions & actions

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Questions?

Summary

- Vital signs are vital
- Described the use of PEWS
- Must be completed at least once per shift in all children
- And whenever a child's condition is worrying
- Communicate effectively using ISBAR

Lunch time!

Skill stations

- Neonatal Resuscitation
- Airway & Breathing
- Circulation
- Vital signs assessment & Communication using ISBAR

Paediatric
Acute
Illness
Resuscitation
Skills

Newborn Resuscitation

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Objectives

- Core knowledge of newborn resuscitation
- Recognition of newborn who is not breathing
- Practical interventions required
- Focus on ‘Golden Minute’

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Core Knowledge and Skills

- Establish clear airway
- Support adequate ventilation and oxygenation
- Maintain adequate cardiac output
- Reduce heat loss

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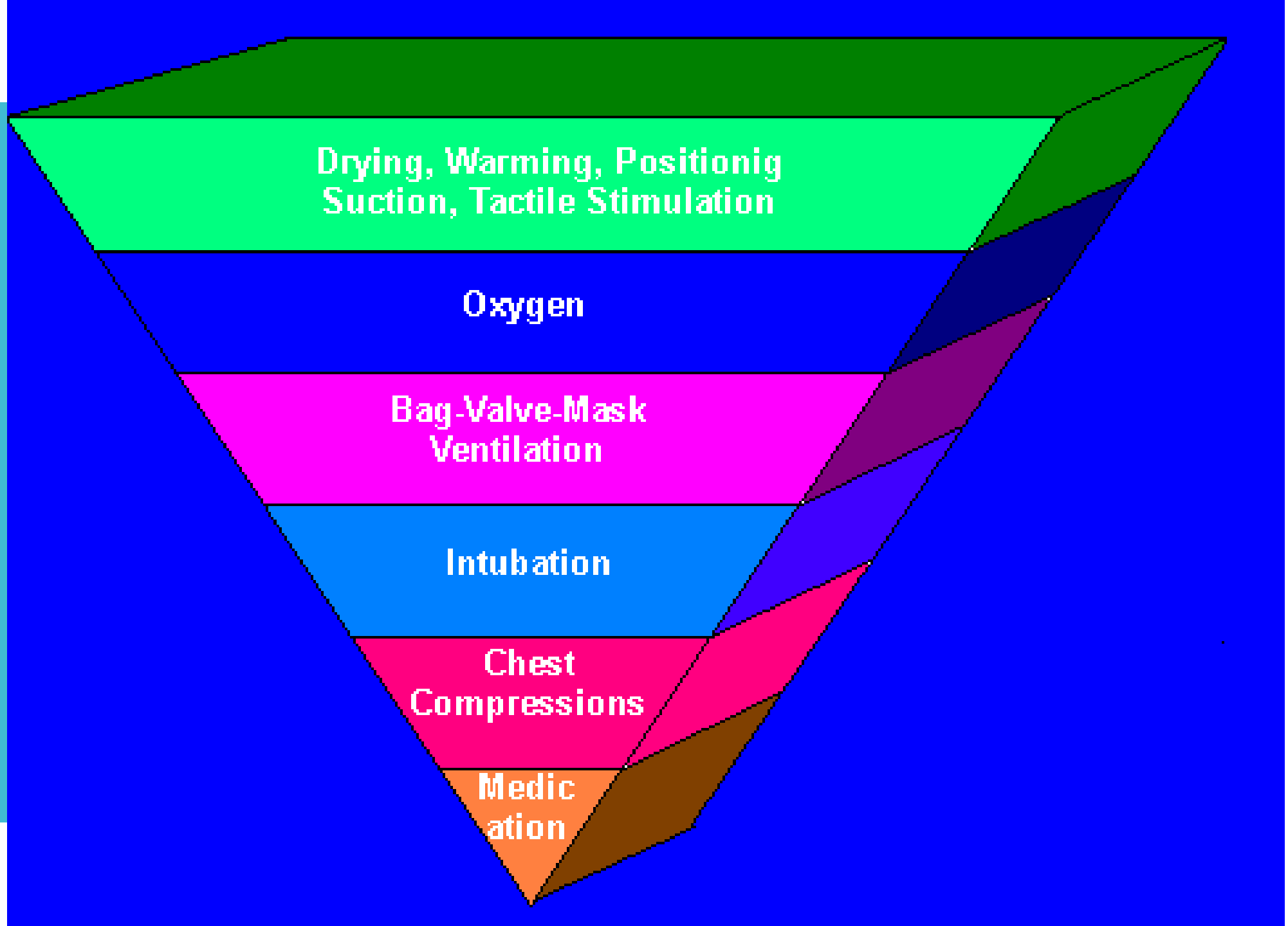
PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

Why do babies need resuscitation – what is the main problem?


Drying, Warming, Positionig
Suction, Tactile Stimulation
Oxygen
Bag-Valve-Mask
Ventilation
Intubation
Chest
Compressions
Medic
ation

Prepareding for Newborn Resuscitation

Essential Equipment

Warmth:

- Overhead Warmer
- Warm, Dry Towels
- Stable Surface and Proper Lighting
- Clock/timer

Other Supplies:

- Gloves

Airway and Breathing:

- Suitable Bag-Valve-Mask (BVM)
- Suction Device
- Pulse Oximeter

Babies & Maintaining Warmth

Heat Loss in Newborns:

- Evaporation
- Convection
- Conduction
- Radiation

Dry the baby immediately after birth

Minimize exposure to cold environments and surfaces and keep it warm

Impact of Cold Stress :

- Surfactant production is reduced or halted
- Increased glucose (energy) requirements

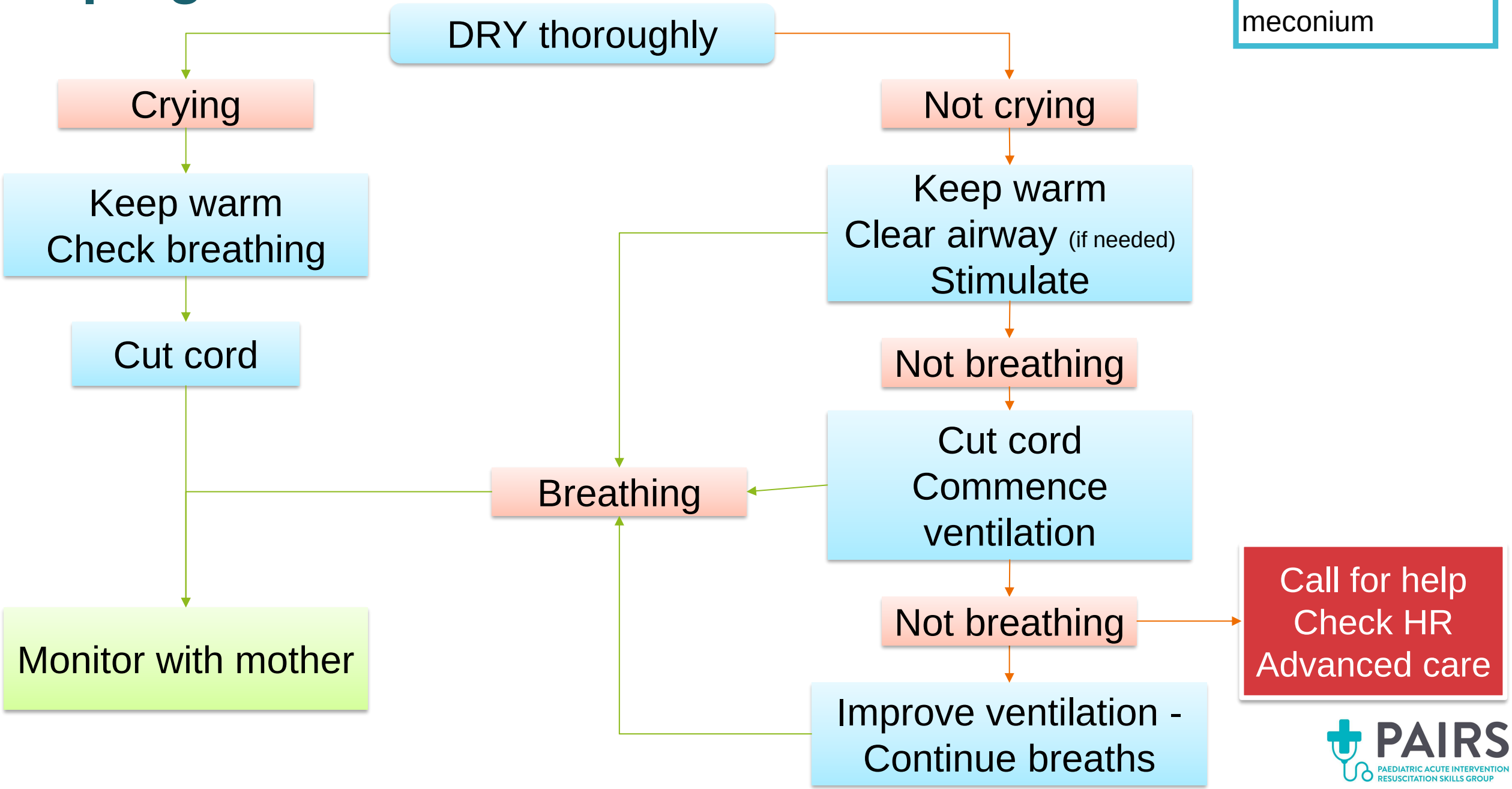
Helping Babies Breathe

Helping Babies Breathe

PAIRS
PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

Helping Babies Breathe

*In the absence of meconium



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Helping Babies Breathe

DRY thoroughly

Crying

Keep warm
Check breathing

Cut cord

Monitor with mother
Routine Care

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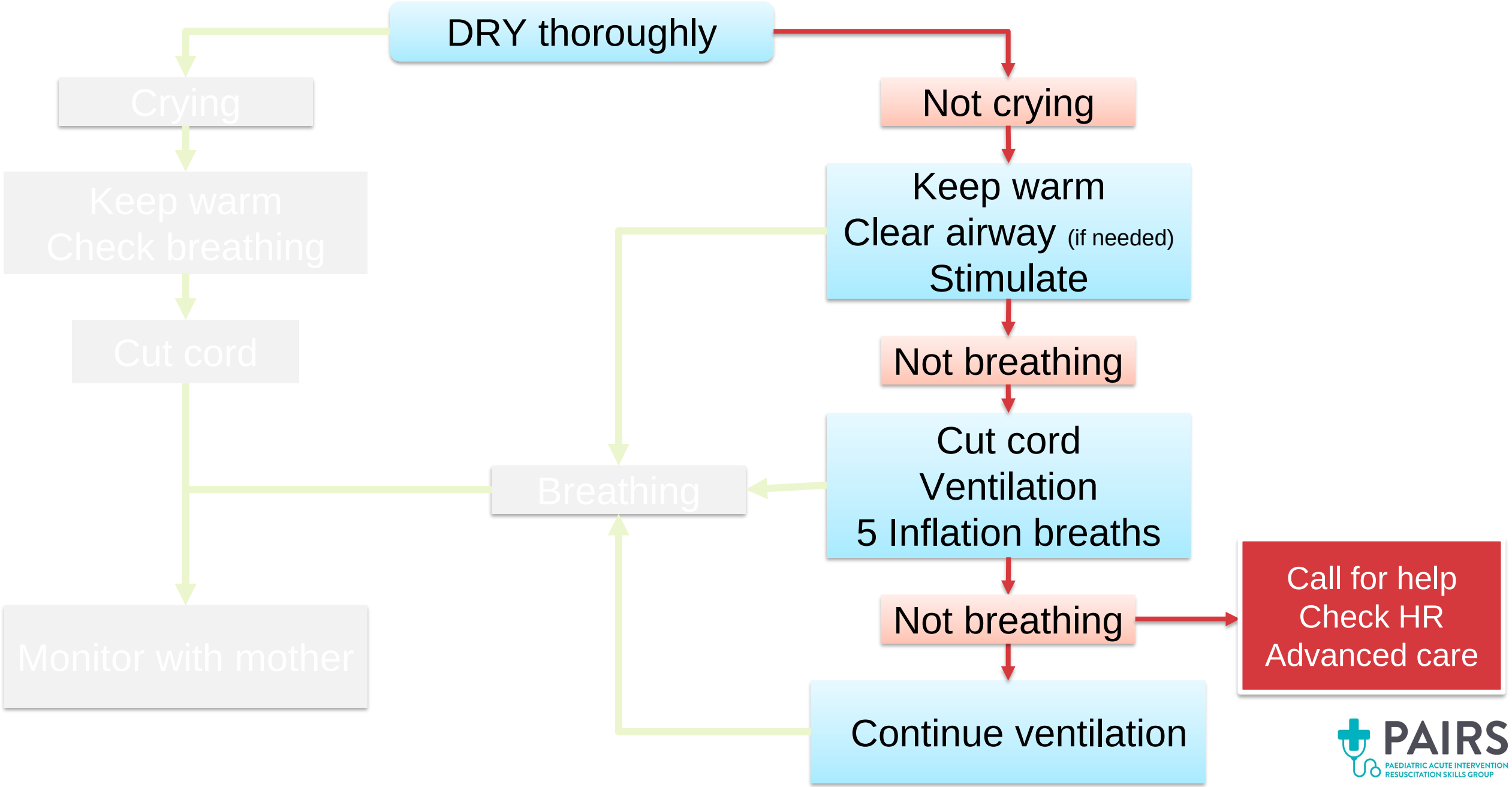
Vitamin K

- Severe Vitamin K deficiency can result in hemorrhage and death.
- To prevent bleeding:
  - Give 1 mg Vitamin K IM for babies of all ages.
  - Give 0.5 mg if the weight is <1.5 kg.

Eye and Cord Care

- Eye Care:
  - Clean eyes immediately after birth from the medial to lateral side with a swab soaked in sterile water.
  - Use separate swabs for each eye.
  - Give TEO (Tetracycline Eye Ointment) within 1 hour of birth.
- Cord Care:
  - If the infant is born stable and active:
    - Clamp the cord 3 or more minutes after delivery.
    - Cut the cord at least 3-finger breadths long.
    - Keep the cord clean and dry.
    - Apply 4% Chlorhexidine to the cord daily.

Helping Babies Breathe



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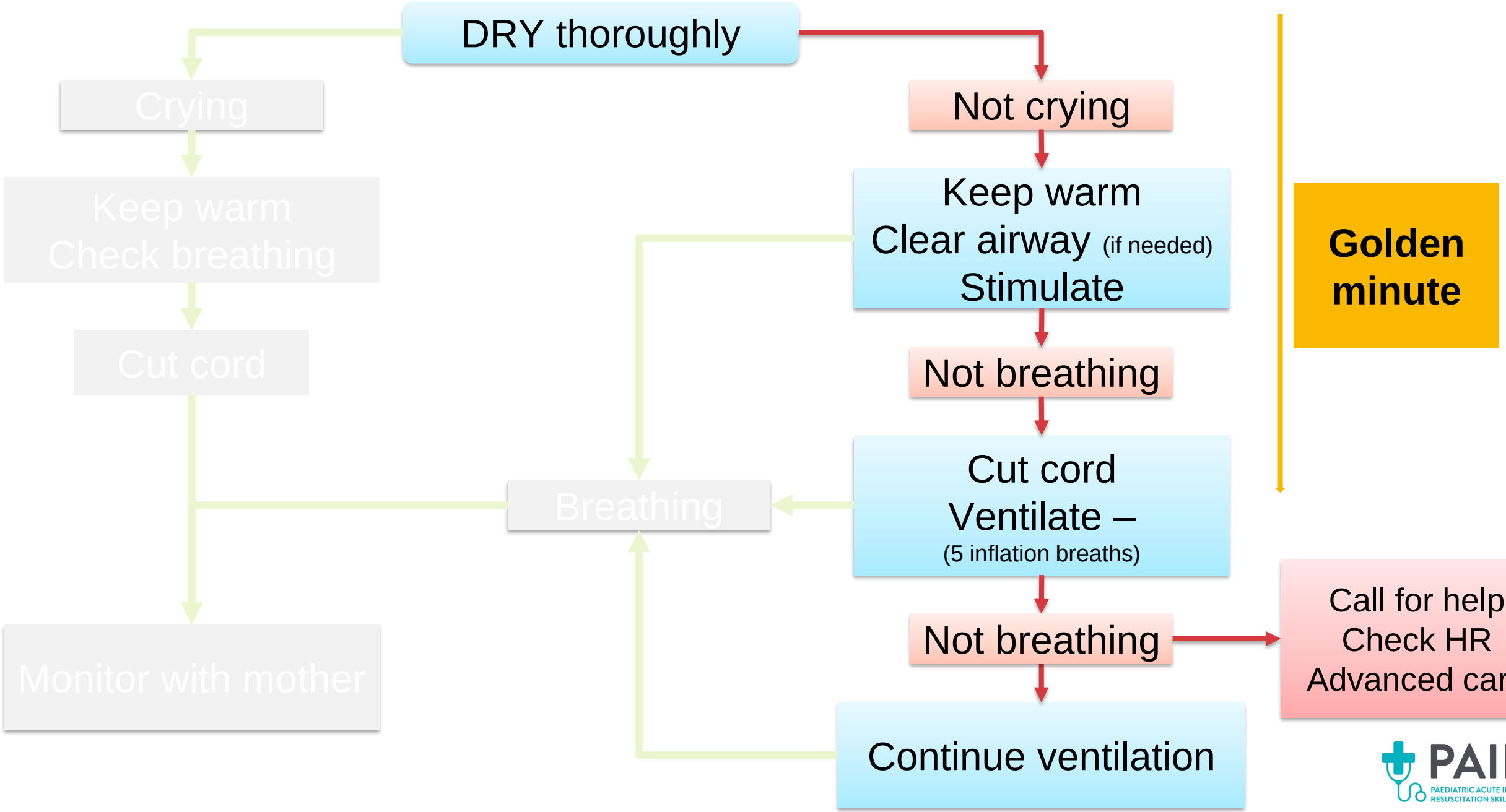
Helping Babies Breathe



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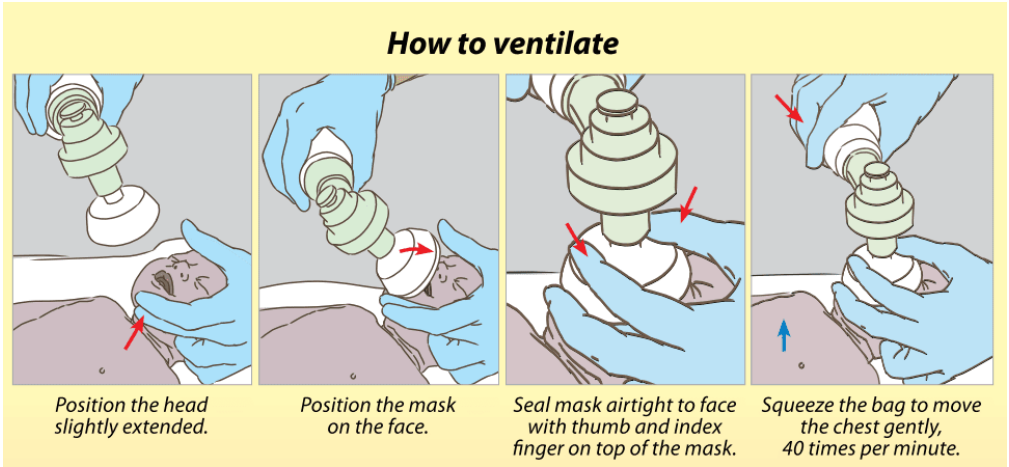
Golden Minute

First 60 seconds of an infants life

The infant should begin breathing on his/her own or interventions must be started e.g. bag-mask ventilation



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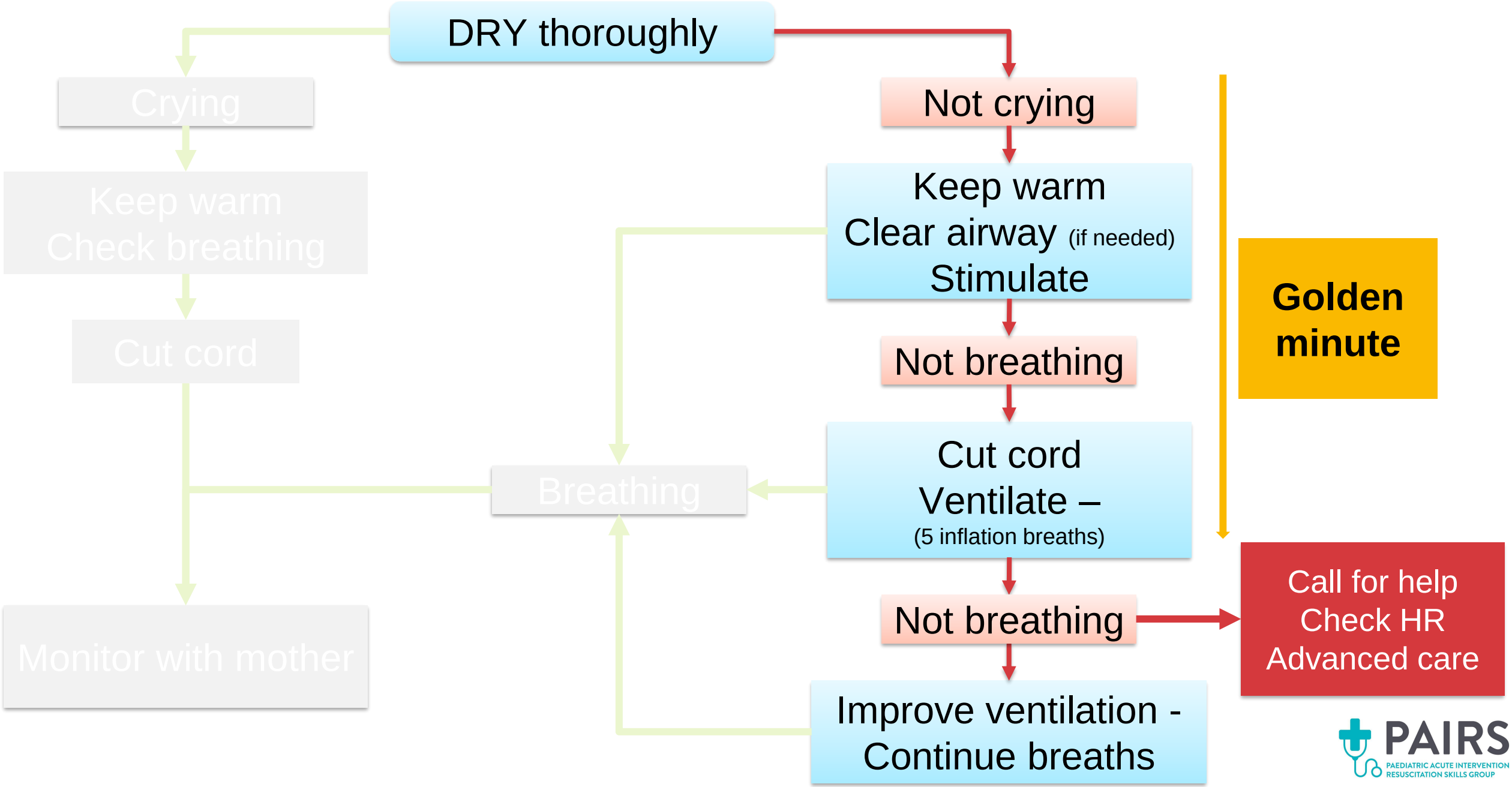
Helping Babies Breathe



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Helping Babies Breathe

DRY thoroughly

Crying

Keep warm

Che

Start the clock

Not crying

Keep warm
Clear airway (if needed)
Stimulate

Not breathing

Golden minute

Initiate ventilation - 5 slow breaths
Continue ventilation at 40-60 breaths/min for 60 seconds
Feel for HR when help arrives

Heart Rate < 60 / min

Advanced Care

Heart Rate > 60 / min

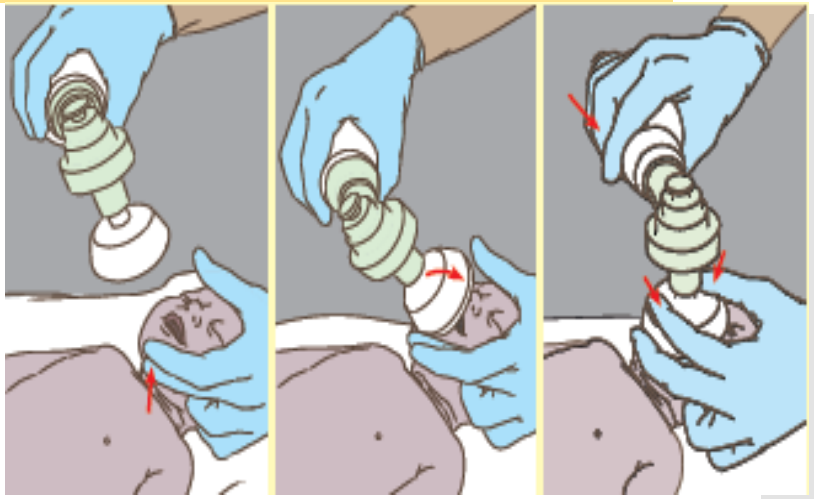
Continue ventilation

Reassess ABC

PAIRS
PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

How to ventilate with bag and mask

- Position the head slightly extended (neutral position)
- Position the mask on the face
- Make a firm seal between the mask and the face while squeezing the bag to produce a gentle movement of the chest
- Give 40-60 breaths per minute.



Alveoli before and after successful inflation

The chest must rise with BVM

Ventilation – corrective steps

MR SOPA

- M = Mask Reposition
- R = reposition the head
- S = Suction
- O = Open mouth
- P = pressure
- A = alternative airway

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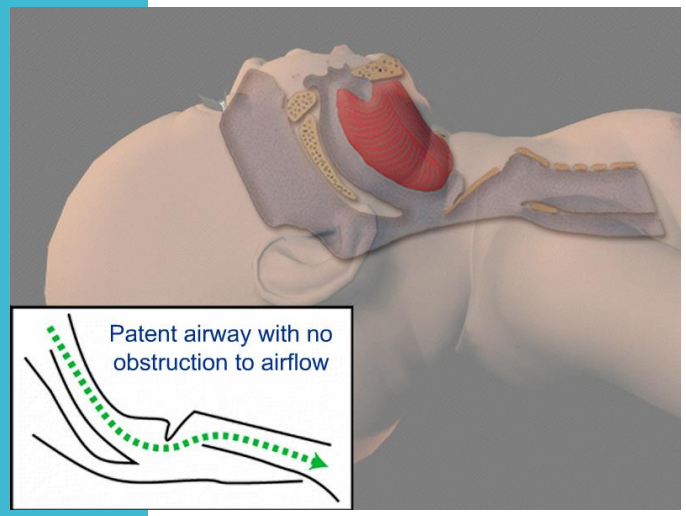
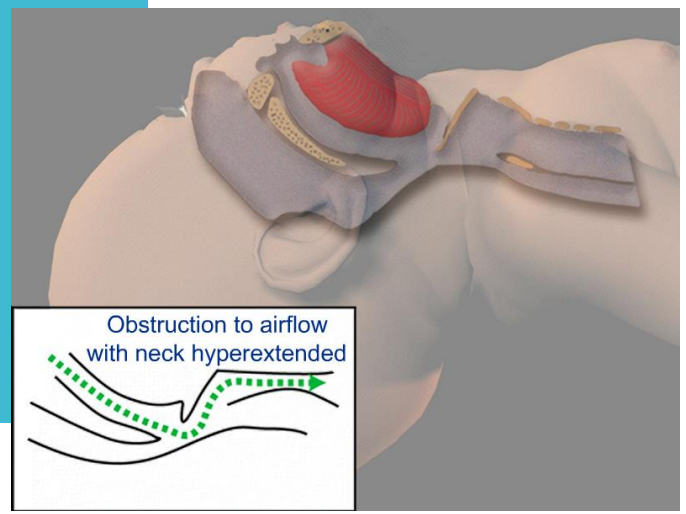
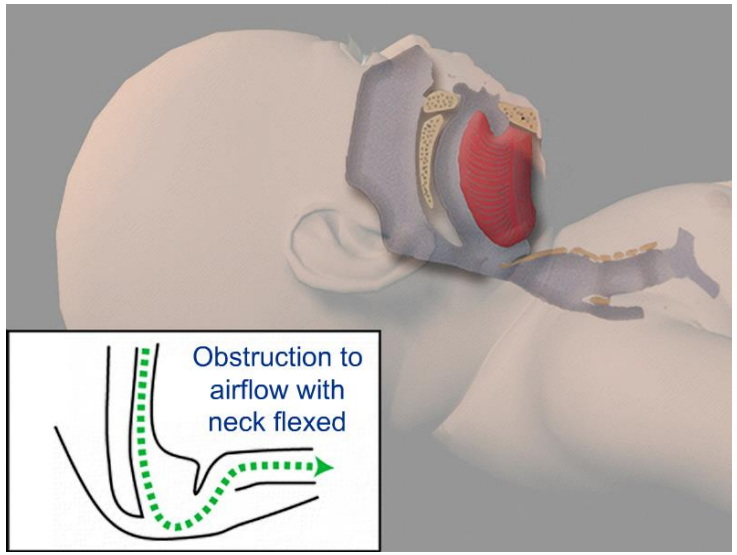
Opening the Airway







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Mask Placement

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To Improve Face-Mask Seal

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What about meconium?

- If the baby has already cried then **do not suck** unless there is something in the airway
- If the baby has **never taken a gasp / cried** then check the airway **before drying** and suction the oropharynx ‘to where you can see’ and **then dry the baby**
- Routine suction of the lower airway is not recommended
- If there is **no meconium** then the first action is **to dry the baby**

Questions

PAIRS
PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

Summary

- Keep the newborn warm
- Correct management of Airway and Breathing will save most babies.
- *When doing newborn ventilation-Make sure the chest moves!*

Dehydration
&
Fluid Management in Children

Objectives

- Define dehydration and recognize its impact in children
- Identify signs, symptoms, and severity classification
- Outline management strategies including fluid therapy
- Review IV fluid management for shock and dehydration
- Discuss prevention and electrolyte balance maintenance

Dehydration

A condition brought about by the loss of significant quantities of fluids and salts from the body

(Uganda Clinical Guidelines, 2023)

Causes of Dehydration in Children

Gastrointestinal Losses:

- Diarrhoea (leading cause in children under 5)
- Vomiting
- Nasogastric drainage

Excessive Fluid Loss:

- Fever
- Excessive sweating
- Extensive burns

Reduced Intake:

- Illness, post-operative conditions, neglect.

Medical Conditions:

- Diabetes
- Renal disease
- Heart failure

Prevention of Dehydration in Children

Good Hygiene Practices

- Handwashing, safe drinking water

Early Oral Rehydration Solution (ORS) use

- At first sign of dehydration

Exclusive Breastfeeding

- Reduces dehydration risk in infants

Health Education

- Teach caregivers to recognize dehydration early

Signs and Symptoms

- Airway- Patent?
- Breathing- changes to RR, WOB
- Circulation- changes to HR CRT and later BP
- Disability- change in AVPU
- Exposure- skin pinch, fontanelle

Assess

- Reduced intake, reduced output, increased losses through vomiting/diarrhoea

Classification

Plan A - no dehydration and for prevention

- Child is alert and drinks normally
- Normal skin turgor, normal fontanelle

Plan B - some dehydration

- Restless, irritable
- Sunken eyes, thirsty, sunken fontanelle

Plan C - severe dehydration

- Lethargic or unconscious
- Sunken eyes, poor drinking ability, sunken fontanelle

Plan A

No dehydration

Aim is to prevent dehydration

1. Give extra fluids-
   - ORS or safe clean water in addition to breastmilk

2. Continue feeding-
   - Do not stop breastfeeding or solid foods

3. Zinc supplementation-
   - Reduce severity/duration of diarrhoea

4. When to return to the clinic:
   - The child cannot drink or is worsening
   - Diarrhoea worsens or lasts more than 3 days
   - Signs of dehydration persist

Plan A

If vomiting occurs, wait 10 minutes, then restart ORS slowly

Give ORS after each loose stool:

- Child under 2 years: 50-100 ml per stool
- Child 2-5 years: 100-200 ml per stool

Zinc tablets:

- Child under 6 months: 10 mg daily for 10 days
- Child over 6 months: 20 mg daily for 10 days

Guidance for Families

- Teach family how to prepare ORS
- Instruct on the correct amount of ORS to complete the 4-hour treatment
- Provide additional ORS packets for home use and continuation of Plan A
- Educate on red flags

Plan B

Some Dehydration

- Give ORS during the first 4 hours

Age (mths)	<4	4-12	13-24	25-60
Weight (kg)	<6	6-9.9	10-11.9	12-19
ORS (mls)	200-400	400-700	700-900	900-1400

- ORS amount can also be calculated as:
  Total amount over 4 hours weight (kg) × 75 ml

- Re-assess after 4 hours
  - Reclassify level of dehydration and change plan if necessary

Plan C

Severe Dehydration

IV fluids preferable

- If not available, start ORS

  Plan C Step 1 and Step 2 as per Ugandan Paediatric Protocols

ORS via NGT or orally, if tolerated

- 20 ml/kg/hour for 6 hours (Total: 120 ml/kg)

Reassess every 1-2 hours

- Repeated vomiting or abdominal distension – slow administration
- No improvement within 3 hrs – refer for IV treatment

Shock

First-line treatment:

- Ringer's lactate or Normal Saline 20 ml/kg IV bolus, given as rapidly as possible

If no improvement:

- Repeat bolus IV fluids before proceeding to Plan C Step 2
- Consider immediate blood transfusion of severe pallor or Hb <5g/dL on admission
- If signs of septic shock, administer antibiotics and consider vasopressors

*Special consideration for malnourished child – see p20 Uganda Clinical Guidelines 2023

IV Fluids

(Maintenance fluids)

- 100ml/kg for the first 10 kg of body weight
- 50 ml/kg for the second 10kg of body weight.
- 25 ml/kg for each additional kg

Example:

IV fluids for a 26kg child = 1,650mls/24hours.

100mls x 10kg=1000ml

50mls x 10kg=500mls

25mls x 6kg=150mls

Documentation for the dehydrated child

- Vital signs
- Input and output
- IV site or NGT position
- PEWS chart

Case Study:

Ivan

- 8-year-old boy
- 3-day history of diarrhoea
- Lethargic, sunken eyes

Case Study:

Assessment:

- A – patent
- B – Normal RR and WOB
- C – Tachycardia, CR 3-4 seconds weak pulses, increased skin pinch
- D – Responds to voice, sugar 3.8
- E – Normal

Case Study:

Management

- Plan C
- Rapid IV fluids
- Followed by maintenance fluids
- Consider sepsis or antibiotics for sepsis concern

Case Study:

Outcome

- Gradual improvement, switched to ORS

Learning points

- Early detection, rapid intervention, WHO guidelines

PAIRS
PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

Questions?

Summary

- Dehydration is common in children and needs early intervention
- Identify signs, symptoms and classify (Plan A, B or C)
- Use appropriate management strategy based on classification
- Prevention is key through hydration, hygiene, and education

Management of Malaria

Objectives

- Recognise the clinical features or malaria
- Define severe malaria and cerebral malaria
- Assessment and management of the child with malaria

Clinical Features

- Mild illness may be asymptomatic
- Intermittent fever
  - Cold stage, hot stage, sweating stage
- Tiredness/ fatigue, myalgia
- Headache, confusion
- Pallor
- Loss of appetite
- Vomiting and diarrhoea, abdominal pain
- Jaundice, dark or bloody urine
- Enlarged Spleen
- Abnormal bleeding

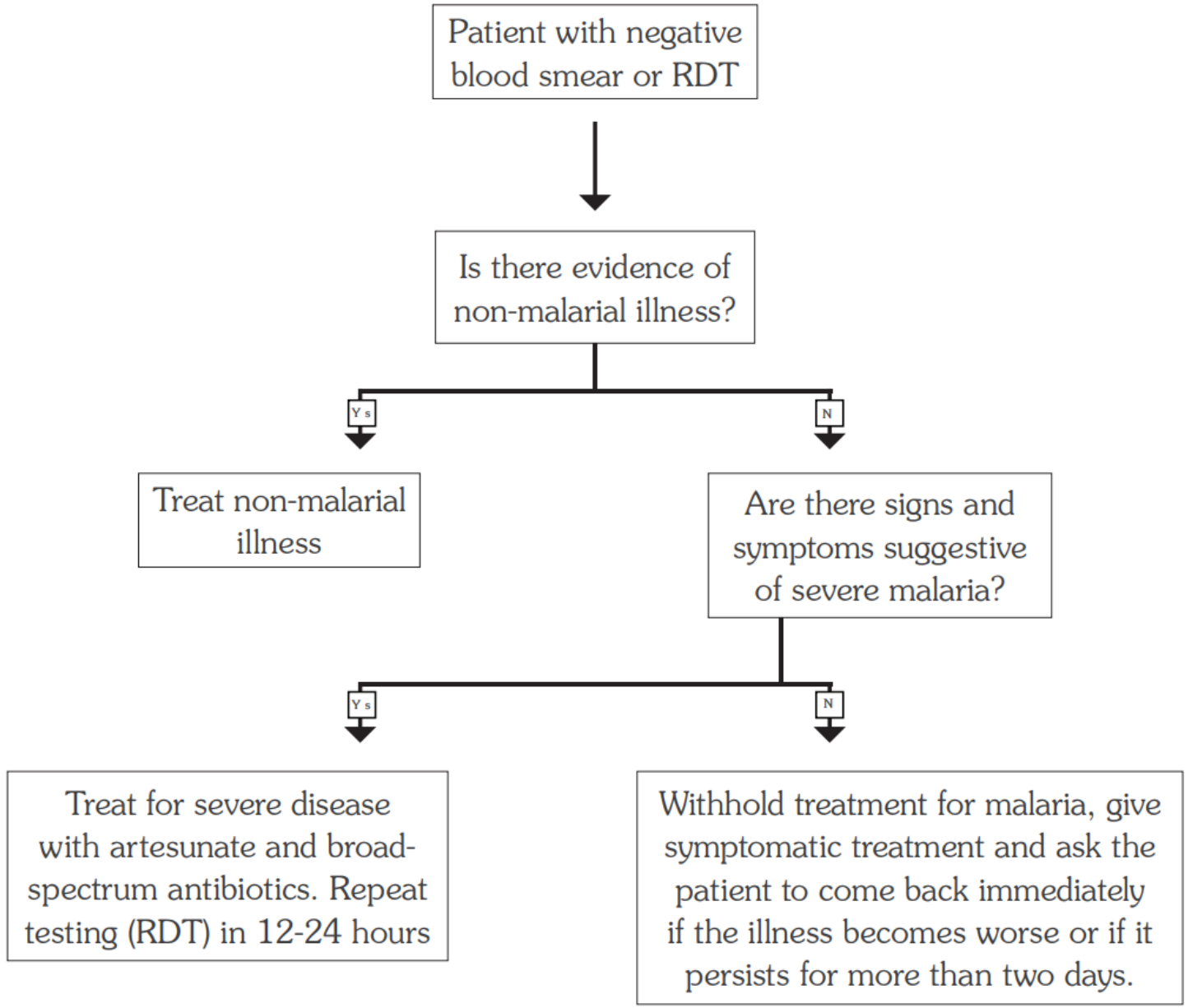
Assessment

- **A:** Ensure patent
- **B:** RR, effort, SPO_2
- **C:** HR, pulse volume, CRT, BP
- **D:** AVPU, pupils, posture, glucose, ?convulsion
- **E:** Temperature, pallor, jaundice, skin

Malaria Testing & Diagnosis

- Preferred: Blood film microscopy for severe malaria
- Alternative: High-quality RDT (HRP2 or pLDH detection)
- If negative test but severe symptoms, repeat test after 6-12 hrs

Negative Smear or RDT in Suspected Malaria



Other Investigations

- Blood glucose
- Hb
- Electrolytes
- LFTs
- LP if cerebral malaria or meningitis suspected

Severe Malaria

Positive diagnostic test

Fever plus one of:

1. AVPU = “V, P, U” **or**
2. Unable to drink **or**
3. Respiratory distress with severe anaemia or acidotic breathing **or**
4. RBG glucose ≤ 2.2mmol/L **or**
5. 3 or more convulsions

Severe Malaria Treatment

1. IV / IM Artesunate (preferred over Quinine)
2. Treat hypoglycaemia
3. Maintenance IV fluids / feeds
4. Assess and manage hydration – DO NOT give bolus IV unless severe dehydration
5. If respiratory distress and Hb <5g/dL, transfuse 20ml/kg whole blood or 10ml/kg packed cells

Non-Severe Malaria Treatment

- Preferred: Oral ACT (AL/DHA-PPQ)
- More effective than Quinine in children who can drink
- ACTs rapidly clear parasites and reduce fever

QUESTIONS

Summary

- Recognise clinical features of malaria
- Base treatment on test results for accurate management
- Artesunate is preferred for severe malaria
- Oral ACTs are best for non-severe malaria

PAIRS
PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

PAIRS case study
Putting it all together

This is Joseph

- Joseph is 9 years old
- Admitted with abdominal pain and vomiting

Treatment plan

- IV cannula
- IV fluids

Day 2

4am

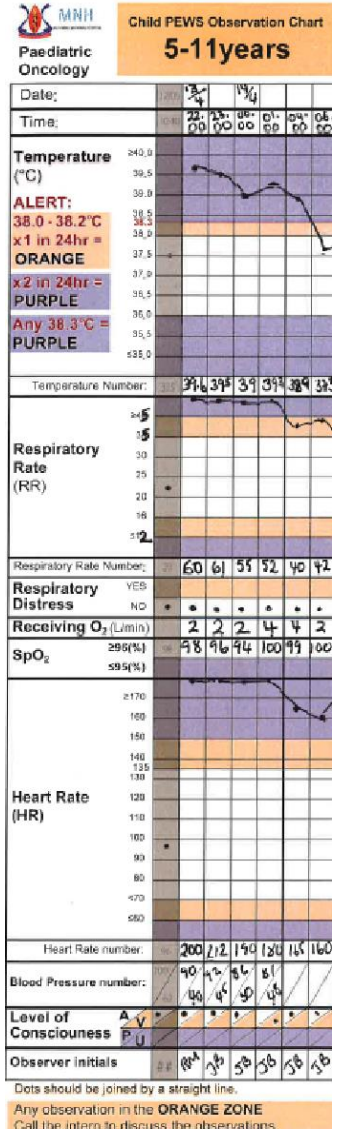
Joseph is less responsive and more lethargic

- Vomits x 7
- He starts to cough

Day 2

7.30pm

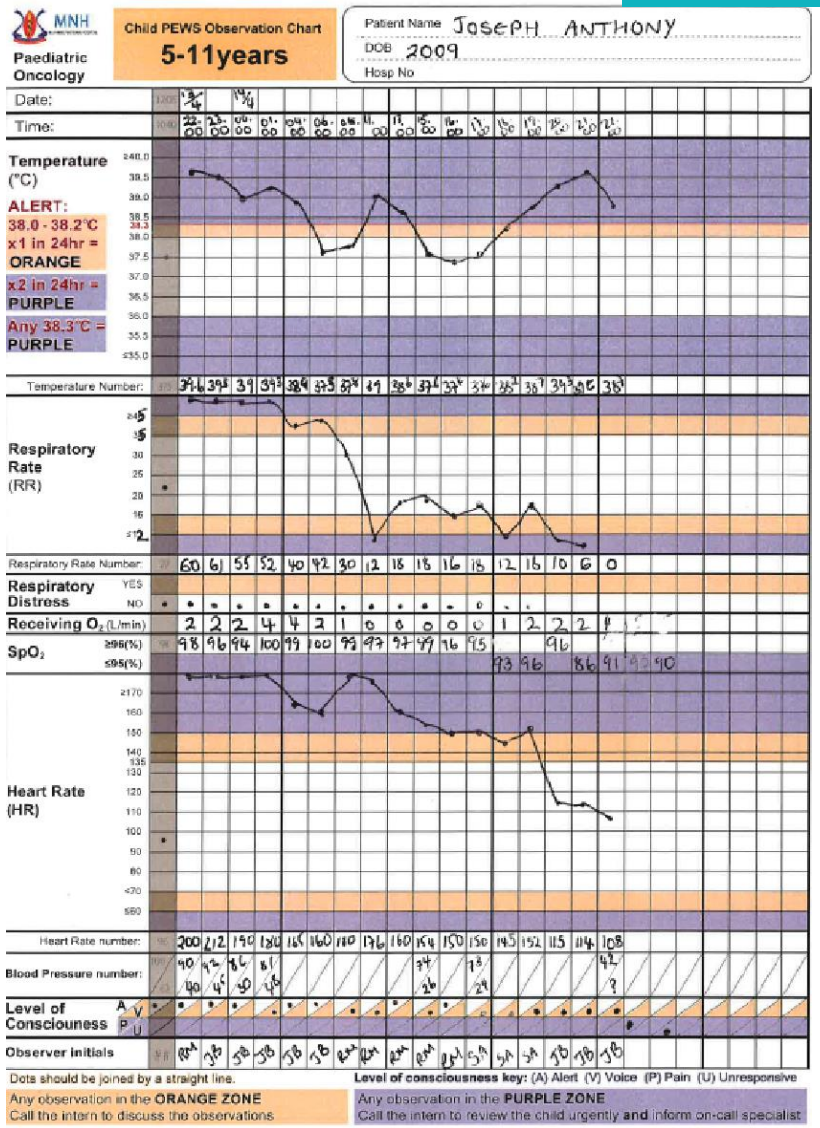
- RR 60 bpm
- O2 sats: 89%
- HR 130 bpm
- BP 93/22 mmHg
- Passed 190 ml urine



Day 2

11.55pm

- RR 10 bpm
- HR 95 bpm
- BP 54/20 mmHg
- Absent peripheral pulses
- Weak central pulses



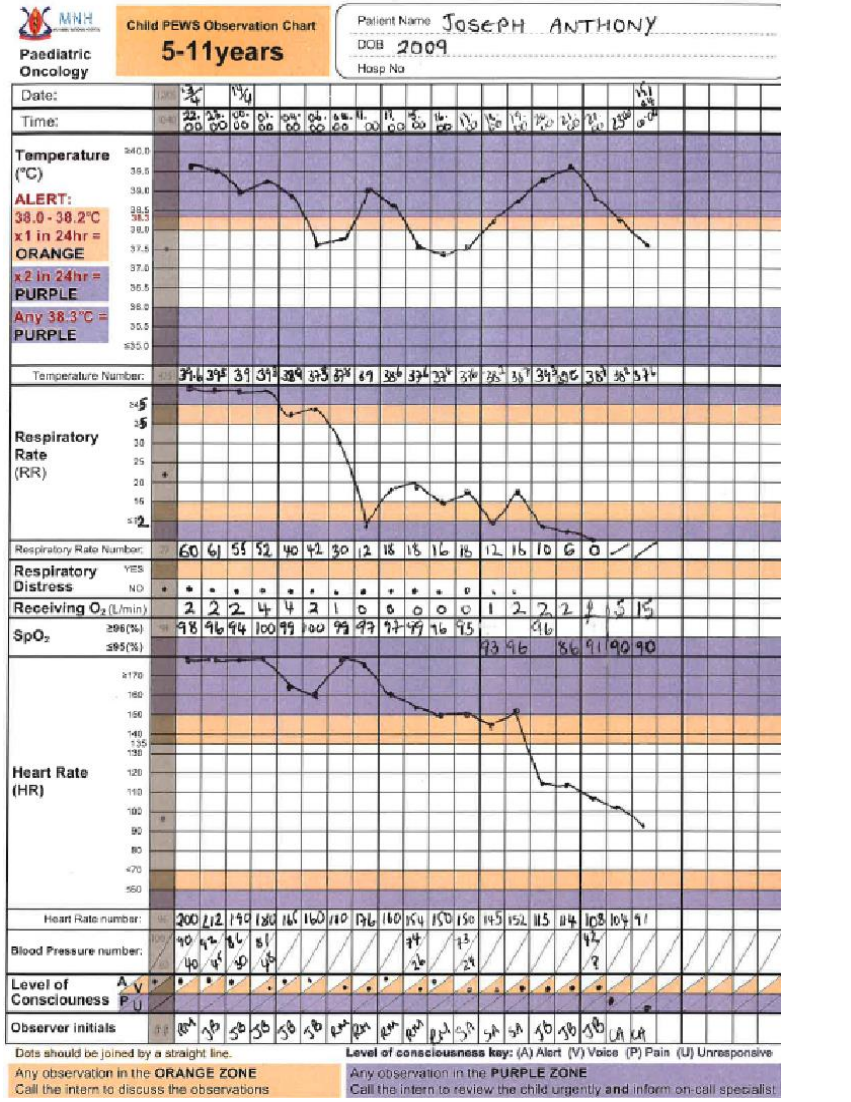
Day 3

12.15am

Specialist still present

- ↓Respiratory effort
- Ventilated with BVM
- Cardiac arrest → CPR

Resuscitation was Unsuccessful



What Would we do differently?

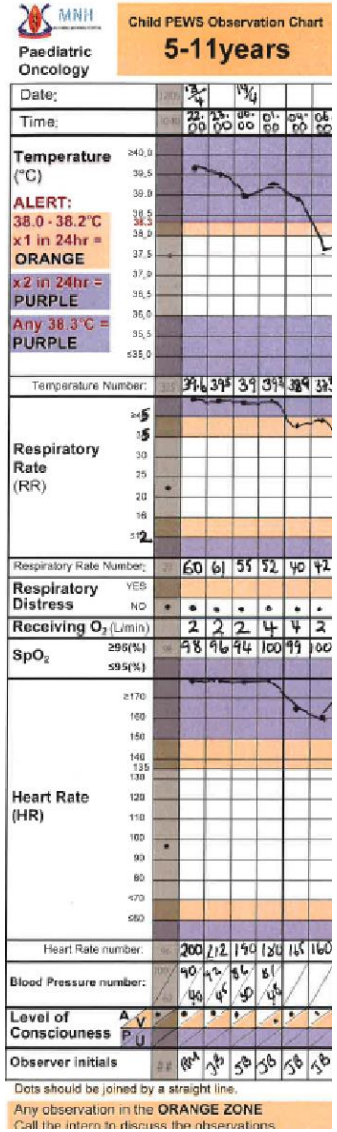
- Identify the seriousness of the deterioration in Joseph's clinical condition
- Intervene early
- Communicate effectively
- Fully implement the PEWS
- Plan appropriate management
- Escalate care promptly

Let's Rewind to the Start of Joseph's Deterioration

Day 2

7.30pm

- RR 60 bpm
- O2 sats: 89%
- HR 130 bpm
- BP 93/22 mmHg
- Passed 190 ml urine



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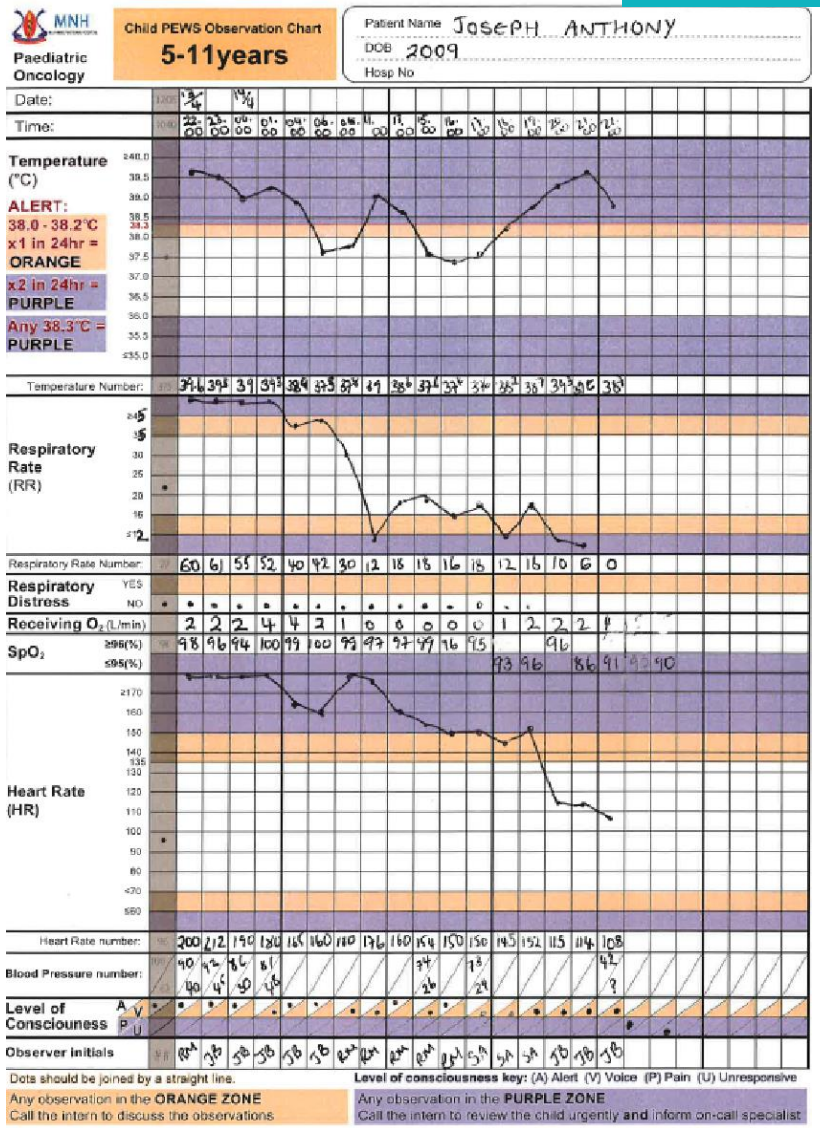
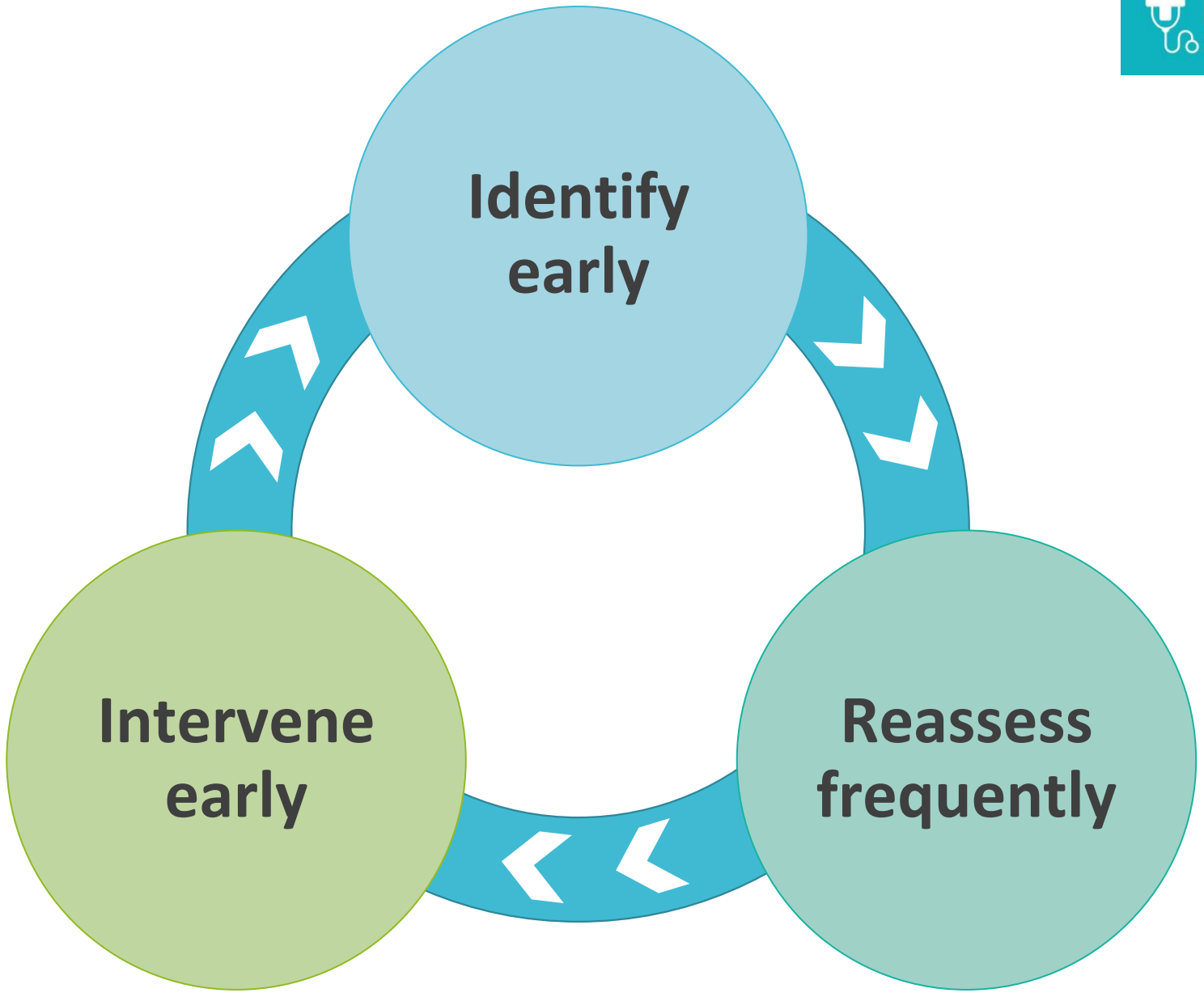


Improvement ideas

- Education and training must be provided to ensure staff are competent
- Vital signs must be recorded using PEWS
- Timely call for help should occur when indicated

Acute Illness Intervention Cycle



Summary

- PEWS provides opportunities for early recognition and management of acutely ill children
- Training and continued good practices are required to maintain clinical standards
- Follow the acute illness intervention cycle to **identify**, **intervene** and **reassess**

Summary

- Recognise Cardiac Arrest & start CPR.
- Use Structured Approach for assessment
- Use PEWS & continue Monitoring
- Communicate using ISBAR
- Give clinical treatment
- Agree care plan and review

PAIRS
PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

Questions?

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PAEDIATRIC ACUTE INTERVENTION RESUSCITATION SKILLS GROUP

Case discussions

Summary

- Recognise Cardiac Arrest & start CPR.
- Use Structured Approach for assessment
- Use PEWS & continue Monitoring
- Communicate using ISBAR
- Give clinical treatment
- Agree care plan and review


thank you
danke
謝謝
ngiyabonga
teşekkür ederim
gracias
merci
dziękuję
bedankt
obrigado
go raibh maith agat
sukriya
kop khun krap
terima kasih
dakujem
arigatô
takk
grazie
tapadh leat
mochchakkeram
hvala
mauruuru
спасибо
рахмат
Баярлалаа
dank je
merci
мерси
감사합니다
ευχαριστώ

Weebale