UNIT NO. 6

EMERGENCIES IN THE VERY YOUNG PATIENTS – A PRIMER

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ABSTRACT

The family physician has the monumental task of deciding if a pediatric patient can be treated as an outpatient or needs to be referred to the hospital for further acute care. Some common conditions that may be discharged without referral include the stable child with a minor head injury and balanitis. Others may be complicated by decompensated gastroenteritis or serious bacterial infections such as unstable pneumonia and urinary tract infection in the very young. The younger the child, the more subtle the signs and symptoms are. There is also a higher incidence of congenital conditions like pyloric stenosis in the very young that are unique in this population group.

This article summarises such conditions with helpful hints on recognition of abnormal vital signs, and seeks to act as a guide to assist the family physician who may face these patients in his daily practice.

Keywords: Age-dependent vital signs, Congenital abnormalities, very young, unexplained tachycardia, shock, non-accidental injuries

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INTRODUCTION

It is always a challenge at the front line when faced with a young patient, to decide if he can be treated at the family physician's clinic with outpatient medication or if he needs immediate referral to the hospital.

The range and scope of cases that present at emergency medicine departments varies from truly serious and life threatening paediatric emergencies to more mundane ambulatory cases.

In the family medicine clinic, differentiating the very sick from the not-so-sick in paediatrics similarly requires awareness of the differences and subtleties in paediatric ambulatory medicine, particularly in the very young.

There is no strict criteria or age cut-off to differentiate the "very young" from the "young" per se.

MEDICAL AND PHYSIOLOGICAL DIFFERENCES IN THE VERY YOUNG

Some of the important reasons for clinical differentiation are listed as follows:

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A) Medical Conditions In The Very Young

1) There is a higher incidence of congenital as opposed to "acquired" conditions in the very young. This includes hypertrophic pyloric stenosis, congenital diaphragmatic hernia, congenital heart diseases (cyanotic as well as acyanotic) and various genetic syndromes.
2) There are also various medical conditions that only occur in the young – eg febrile seizures, neonatal and prolonged neonatal jaundice, bronchiolitis, croup, pulled elbows and non-accidental injuries.
3) In general, younger children tend to have more emergent and urgent medical conditions that are usually respiratory, infective and gastro-intestinal in nature.

B) Physiological Considerations In The Very Young

The normal vital signs in the very young are different from older children and adults. There are essentially three "age-dependent vital signs":

- Heart / pulse rate
- Respiratory rate
- Blood pressure

Generally, the younger the child is, the heart rate and respiratory rates have a higher normal threshold. Conversely, the younger the child, the blood pressure is generally lower as a norm.

TABLE 1. USEFUL NORMS

Age (in yrs)	Breaths / min	Heart rate / min
< 1	30-40	110-160
2-5	20-30	95-140
5-12	15-20	80-120
>12	12-15	60-100
Expected systolic blood pressure : {70 + (age in years x 2)} mmHh		
Estimated weight : 2 x {age in years + 4} kg		

The younger child has proportionately lower absolute blood volumes compared to an older child or an adult. The estimation blood volume of a child is roughly about 80 mls/kg. A proportionally small degree of blood loss or fluid loss (through a seemingly innocuous event like poor feeding or vomiting) can result in significant haemodynamic compromise.

The haemodynamic response to loss of preload in a child is different from the adult (Figure 1)

Hence, in the very young, there is a tipping point beyond which the "compensated' state of haemodynamic compromise suddenly results in a precipitous drop in the blood pressure.

Therefore, it is very important to appreciate that the first sign of shock in a young child is unexplained tachycardia.

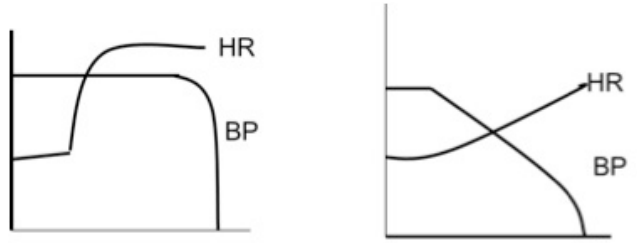
TABLE 2. PRACTICAL DIFFERENCES IN THE PAEDIATRIC AIRWAY

- The relatively large head/occiput flexes the neck and results in airway obstruction in the unconscious child.
- The lower airways are smaller and the supporting cartilage are less well developed in the infant and young child.
- This results in easy obstruction of these passages by mucus, pus, edema, blood and bronchoconstriction from raised airway resistance because resistance is inversely proportional to the 4th power of the radius.
- The ribs are pliable and compliant.The tidal volume in a young child is more dependent on the diaphragmatic function and movement than on intercostal muscles.
- Respiration is easily affected when diaphragmatic movements are impeded (by hyperinflation and pulmonary edema within the lungs or from abdominal distention leading to diaphragmatic splinting).
- During passive expiration, alveolar collapse can aggravate the ventilation/perfusion mismatch.
- Children have higher metabolic rates, with an oxygen consumption of 6-8 ml/kg/min compared to 3-4 ml/kg/min in the adult.This results in hypoxaemia occurring more quickly in a child.
- Hypoxaemia occurs more easily in a child than in an adult.
- Ventilatory compromise can also result from CNS depression from : Hypothermia, Metabolic derangements (from eg hypoglycaemia), Drugs & Head injury.

TABLE 3. TIPS IN ASSESSMENT OF THE VERY YOUNG

- Examine when you can.
- Ensure the ABCs (airway, breathing & circulation) are intact.
- Rule out/Think of congenital conditions, eg pyloric stenosis, volvulus in a vomiting infant.
- Don't be "shy" – strip completely and examine thoroughly, including doing a gentle per rectal examination.
- When there is incongruity between the history & examination, think of "unconventional event(s)": viz
  - Foreign Bodies
  - Poisoning
  - Non-accidental Injuries

FIGURE 1. HAEMODYNAMIC RESPONSE IN CHILD VERSUS ADULT



TEN COMMON CONDITIONS FROM TOP TO TOE

1. FEVERS IN CHILDREN

Fevers are by far the most common reason children seek attention in the paediatric emergency department. Studies have shown that as much as 30% of the daily attendance comprises of children with fever.

Fever is a sign, not a diagnosis. It can be broadly divided into "Infective" and "Non-Infective" causes aetiologically.

There are many ways to further approach an infective febrile children. For practical purposes, an infective febrile children can be divided broadly into a febrile child "with or without toxicity" and a febrile child "with or without an infective source".

The age of the febrile child plays an important part in the initial risk stratification of the child, mainly because in the younger child, the signs and symptoms of a serious illness are more subtle and indistinct[1-16].

Children less than 3 months old with a documented fever have neonatal pyrexia (NNP) or infantile pyrexia. They should be referred to the hospital for further care and management.

a) Fever Without Source (FWS)

This is an acutely febrile illness in which the etiology of fever is not clinically apparent after a careful history and examination[9-14]. The febrile child otherwise remains stable and is NOT toxic. Looking for the source includes taking a history (including contact history) and doing an examination plus carrying out various investigations to determine the source of the fever, such as a full blood count, urinalysis or Xrays.

b) Kawasaki Disease:

A great mimic of many conditions is the syndrome of generalised acute inflammatory conditions known as Kawasaki Disease (KD). This is common in young children under 5 years old and is more difficult to diagnose in infants, in whom there is a higher incidence of cardiac sequelae[17-23]. The classical diagnosis is based on the presence of fever for more than 4 days with 4 out of 5 clinical features: bilateral nonsuppurative conjunctivitis; enlarged cervical lymph node more than 1.5cm unusually unilateral; mucositis eg red/cracked lips, strawberry tongue, injected pharynx; polymorphous rash; swollen hands and feet in the acute phase which start peeling in the convalescent phase.

TABLE 4. AETIOLOGICAL APPROACH TO FEVERS IN CHILDREN

Infective fever	Non-infective fever
• Type of Infective Organism – ie viral, bacterial, parasitic and others	• Inflammatory conditions like Kawasaki's Syndrome
• Organ-specific – eg pneumonias, lymphomas, brain tumours etc	• Malignancies like leukemia, urinary tract infections, meningitis etc
• Specific infective conditions – dengue, hand-foot-mouth disease, exanthem subitum, cat-scratch disease etc	• Auto-immune conditions like Systemic Lupus Erythematosus, Juvenile Rheumatoid Arthritis etc
(NB :The above three infective aetiological factors are not mutually exclusive)	• Vaccines and other medications like antibiotics
	• Others – including medications

The treatment is admission for intravenous immunoglobulins to reduce the morbidity of cardiac complications: Inflammation of medium sized vessels including coronary artery can result in aneurysms.

TABLE 5. PITFALLS IN THE DIAGNOSIS OF KAWASAKI DISEASE (KD)

- Atypical Age Groups – in the less than 1 year old and adolescents.
- Rash is mistaken for allergy or viral exanthema or rash is mistaken for bacterial infection and clinician is waiting for blood cultures to be ready
- KD is mistaken for lymphadenitis.
- Pyuria is mistaken for UTI (sterile pyuria in KD).
- Not all signs and symptoms in KD will be present in all cases nor will they all appear at the same time or in the same intensity.

TABLE 6. ADMISSION GUIDELINES FOR CHILDREN WITH FEVER

1) Less than 3 months old who present with fever/symptoms of toxicity.
2) Toxic in appearance: (sepsis syndrome)
   a) lethargic (level of consciousness characterised by poor or absent eye contact or failure of child to recognise parents)
   b) signs of poor perfusion
   c) hypo- or hyperventilation
3) > Day 7 of fever without source
4) Temperature > 41 degrees Centigrade
5) Immunocompromised (eg chronic or cyclical neutropenia; malignancy on chemotherapy; on high- or chronic steroids; post-splenectomy; post-transplantation etc)
6) Dengue Fever with platelet less than 80,000 or unwell
7) Features suggestive of classical or atypical Kawasaki disease

2. THE CRYING CHILD

A child who cries is a child who is uncomfortable, sickly or in pain. The physician must therefore take a comprehensive history and perform a thorough examination to determine the ultimate root cause for the crying. This will involve determining the vital signs of the child and doing a complete holistic physical examination of the child, including looking out for an evolving acute surgical abdomen, incarcerated inguinal hernias as well as for the hair tourniquet syndrome.

If the child has fever, one should also screen the urine to rule out a urinary tract infection especially if the child is preverbal and cannot vocalise dysuria. Infant colic per se is a diagnosis of exclusion.

3. FEBRILE SEIZURES

Children aged between 6 months to 6 years old are at risk of developing simple febrile seizures. The incidence locally is about 3 to 5% in this age group.

The child should be assessed both for the type of febrile seizure as well as to ascertain the actual nature of the fever[1-3, 24-27].

Children who are more than 18 months old, with simple febrile seizures and who are not septic and do not have a serious infective source of fever (eg serious bacterial infection) can be considered for outpatient monitoring and care. Children less than 18 months old with simple febrile seizures should still be admitted for monitoring to rule out evolving meningitis.

TABLE 7. SIMPLE FEBRILE SEIZURES

- In the typical age group (6 months to 6 years old).
- Presence of fever.
- Generalised tonic-clonic seizure.
- Duration of seizure less than 15 to 20 mins.
- Not more than 1 seizure a day.
- Post-ictally, child is drowsy but has no residual neurological deficits.

4. UNEXPLAINED CAUSES OF TACHYCARDIA

Serious unexplained causes of tachycardia, adjusted for the age of the child, include the different forms of shock, ie septic shock, hypovolaemic shock, cardiogenic shock etc and supraventricular tachycardia (SVT) as well as obvious serious medical conditions like pneumonia or severe asthma in significant respiratory distress.

Table 8 summarises the clinical signs and symptoms of myocarditis. SVT is the most common significant arrhythmia in childhood[1-3, 28-31]. Table 9 summarises the main clinical differences between SVT and sinus tachycardia[1-3, 32-35].

Less serious causes of unexplained tachycardia include physiological causes like from a high temperature, stranger anxiety or due to pain or distress.

TABLE 8. CLINICAL SIGNS & SYMPTOMS OF MYOCARDITIS

Presentation of Myocarditis:

- Cardiac failure.
- Arrhythmias.
- Cardiopulmonary collapse.
- Non-specific symptoms.
  - Palpitation, syncope, near-syncope.
  - Chest pain, especially cardiac in nature (ischaemic pain, pericarditis-type pain) and associated with other signs and symptoms; or in a young child.
  - Vomiting.
  - Feeling unwell, malaise, lethargic, "less active" than usual.
  - Poor feeding in infants/young children.
  - Cough.
  - Wheezing, persistent rhonchi despite nebs in "bronchiolitis"/"asthma"
  - Respiratory distress – dyspnoea, grunting, cyanosis.
  - Infant/ child whose overall appearance is inconsistent with the presumptive diagnosis of bronchospasm or URTI.

Physical examination:

1. Signs of cardiac failure
   - Tachycardia (at rest), S3, gallop rhythm.
   - Soft heart sounds.
   - Tachypnoea.
   - Hepatomegaly.
   - Raised JVP.
   - Poor perfusion (pallor, cool extremities), sweatiness.
   - Lung crepitations.
   - Cardiogenic shock.

2. Signs of rhythm abnormality
   - Tachycardia, bradycardia, irregular HR.

TABLE 9. DIFFERENCES BETWEEN SVT & SINUS TACHYCARDIA

	Sinus Tachycardia	Supraventricular Tachycardia
Rate	<180 bpm Consistent with volume loss, fever, infection	>220 bpm Non-specific – irritability, poor feeding, tachypnea, sweating, pallor
Physical examination	Consistent with dehydration, fever, sepsis, blood loss	Poor perfusion Possibly signs of cardiac failure with fine crepitations and hepatomegaly
ECG fixed .	Rarely helpful, usually normal	Monotonous rhythm – fairly rate despite changes in actrivity. Sudden termination/initiation.

5. COMMON RESPIRATORY CONDITIONS

Bronchiolitis: This is a lower respiratory tract infected caused commonly by the respiratory syncytial virus[1-3, 36-43]. It usually affects children aged 18 months to 2 years old and below. They present with cough with fever and get worse from Day 3 to 4 of illness. Management is symptomatic, aimed at managing the respiratory distress and ensuring adequate oral intake. Use of nebulised adrenaline has been shown to reduce admissions for cases of bronchiolitis with moderate respiratory distress.

Acute Laryngo-Tracheo Bronchitis/ALTB (Croup): This is an infection of the upper respiratory tract caused commonly by the parainfluenza virus[1-3, 44-52]. The child present with a barking cough, hoarse voice and inspiratory stridor. Management is again aimed at improving the degree of respiratory distress (which can be gauged by the Wesley Croup Score) with dexamethasone, nebulised adrenaline and moisturised oxygen.

The main differentials for ALTB with respiratory symptoms of stridor and fever include epiglottitis and less common causes like retropharyngeal abscess etc. Epiglottitis is caused by Haemophilus Type B and patients are usually more septic with higher temperatures.

Radiologically, the "thumb" sign is pathognomonic of acute epiglottitis on a lateral neck Xray. In ALTB, an AP neck Xray reveals the "steeple sign"[48].

Pneumonia: The cardinal triad is that of fever, tachypnea and cough but fever may be absent in young infants under 3 months old. Infants under 1 year old may present with non-specific complaints like anorexia, malaise, altered mental status or isolated fever[1-3, 53-63]. Other symptoms may include myalgia, abdominal pain and vomiting especially after coughing. The child should be referred onwards if they are toxic looking or lethargic, are in respiratory distress, have a history of poor feeding or evidence of dehydration, or underlying systemic illness such as congenital heart, leukemia, chronic lung disease, immunodeficiency, neurological disorder eg cerebral palsy or spinal muscular dystrophy.

For young infants with pneumonia, especially if they have not completed their full course of immunisation, one should also rule out possible pertussis as the primary aetiological agent. In those older than 6 months old and for young child less than 5 years, the most common etiology is Streptococcal pneumonia. Outpatient management in uncomplicated pneumonia is high dose amoxicillin 80mg/kg/day in 3 divided doses for 7-10 days. In the older child aged 5 and above, the likely aetiology agents still includes pneumococcus but one should also think of mycoplasma, especially if the blood counts are normal or show a low total white count with interstitial lung markings.

Bachur et al[59] did a retrospective review of records of children 5 years and below with fever without source (see above) with a triage temperature of >/= 39 degrees Celsius and who had a total white count of >/= 20,000 and then who were subsequently diagnosed to have occult pneumonia. Of the 278 patients studied, the prevalence of occult pneumonia was 26% (19% to 34%).

6. GASTROENTERITIS

Gastroenteritis (GE) remains a common problem in children. Most children with mild-moderate dehydration can be treated with oral rehydration using low osmolality oral rehydration solutions since drugs are usually unnecessary and may do harm[1-3, 64-67].

The first is to rule out other more ominous causes of vomiting. This can range from various serious surgical disorders to other more serious medical causes of vomiting, including undiagnosed diabetic ketoacidosis.

Next is to determine the severity of the child's state of dehydration (Table 11).

Small frequent aliquots of clear feeds such as hydralyte are administered to prevent vomiting yet keep the child

TABLE 10. THE WESLEY GROUP SCORE

Signs and symptoms	Grading	
Inspiratory stridor	None	= 0
	At rest with stethoscope	= 0
	At rest without stethoscope	= 0
Retractions	None	= 0
	Mild	= 1
	Moderate	= 2
	Severe	= 3
Air entry	Normal	= 0
	Decreased	= 1
	When agitated	= 1
	At rest	= 2
Cyanosis	None	= 0
	When agitated	= 1
	At rest	= 2
Conscious state	Normal	= 0
	Altered	= 1

Mild to moderate ALTB = Wesley score <3

TABLE 11. DEGREE OF DEHYDRATION IN GE

SIGNS & SYMPTOMS	DEHYDRATION		
	Mild (3-5%)	Moderate (7%)	Severe (10% >>)
FEVER	+/-	+	+
Skin Elasticity	N	Decreased	Markedly decreased
Fontanelle	N	N / depressed	Markedly depressed
Eyes	N	N	Sunken
Skin	N	N	Cold, clammy, mottled
Oliguria	+/-	+	++
Fits	-	-	+/-
Acidotic Breathing	-	+/-	+
Coma	-	-	+/-

TABLE 12. THE GLASGOW COMA SCORE & TRAUMA BRAIN INJURY (TBI)

Parameters	Standard Glasgow Coma Scale (GCS)	Paediatric Glasgow Coma Scale (GCS) – Preverbal (< 2years old)	GCS
Eye opening	Spontaneous	Spontaneous	4
	To verbal stimuli/speech	To verbal stimuli/speech	3
	To pain	To pain	2
	None	None	1
Best verbal response	Oriented	Coos, babbles	5
	Confused	Irritable, cries	4
	Inappropriate words	Cries to pain	3
	Incomprehensible sounds	Moans to pain	2
	None	None	1
Best motor response	Follows commands	Normal spontaneous movement	6
	Localises pain	Withdraws to touch	5
	Withdraws to pain	Withdraws to pain	4
	Flexion to pain	Abnormal flexion	3
	Extension to pain	Abnormal extension	2
	None	None	1
	Severity of TBI	GCS (min 3, max 15)	
	Mild/Minor TBI	13/14 to 15	
	Moderate TBI	9 to 12	
	TBI	< 9	

adequately hydrated. A child who is not suitable for outpatient treatment is one who has at least moderate dehydration. A proportionally small degree of fluid loss (through a seemingly innocuous event like poor feeding or vomiting) can result in significant haemodynamic compromise.

In addition, it is not only just that volume is needed but the child's glycaemic status must also be determined. Young children have high metabolic rates and relatively low glycogen reserves. They tend to tip into hypoglycaemia very easily.

For diarrhea, additional fluids should be factored in if there is a large volume of fluid loss per episode. In breastfed infants, we encourage the parent to breastfeed more often. In formula-fed infants, we encourage the parent to continue the usual formula milk unless the diarrhea persists for more than 10 days, then lactose-free formula such as soy milk can be considered to offset possible secondary lactose intolerance. While soy-based preparations are in no way harmful calorie-wise, it is usually the less than palatable taste that might dissuade the already sick GE child from taking easily to it.

7. HEAD INJURIES

The most common minor trauma incident that is seen in the CE is a fall at home. In the very young child, this is often due to a fall from an adult bed and in the ambulant child, this may be due to slipping on a wet surface. The usual injury sustained is that of a cephalohematoma.

If the clinical history reveals loss of consciousness of at least 1 minute, progressive headache and lethargy, confusion, seizures, vomiting at least 4 times or bleeding from the ears & nose in the absence of local injury, it potentially more than just a minor head injury[1-3, 68-75]. The child should be adequately assessed by the Glasgow Coma Score (Table 12).

One would need also to be more careful if the child is extremely young and the mechanism of the fall is worrisome. In addition, a non-accidental nature for the head injury must be ruled out.

Otherwise in the absence of serious clinical indicators of traumatic brain injury and if the child is able to play and feed well, the child can possibly be observed at home with advice to monitor for the next 72 hours and to refrain from

participating in any strenuous activities.

Linear skull fractures by themselves in the absence of impaired GCS heal spontaneously. Only depressed skull fractures need to be admitted.

8. COMMON SURGICAL CONDITIONS

Intussusception: This is usually a spontaneous event with the telescoping of the small intestine into the caecum at the ileo-caecal junction[1-3, 76-82]. The classical triad is bilious vomiting with severe abdominal pain with updrawing of the legs and currant-jelly stools.

Hypertropic Pyloric Stenosis: This also occurs more frequently in males and the presentation is projectile non-bilious vomiting when the baby is about 3 weeks' old or more just after or near the end of a feed[1-3, 83-84]. Progressively they developed hypochloraemic metabolic alkalosis though most cases by far present very much earlier these days.

A pyloric tumour (olive) can sometimes be felt near lateral margin of the right rectus muscle below the liver edge and has been reported to be palpable in 85% of cases. This is best felt right after the bout of vomiting.

9. URINARY TRACT INFECTION (UTI) & BALANITIS

The preverbal child with urinary tract infection often presents with only fever. Children under 6 months with suspected UTI should be admitted because there is an urgent need to effectively curtain potentially aggressive pyelonephritis as well as concomitant sepsis[1-3, 85-93].

While urinalysis is used as an initial screen for possible UTI, a midstream or catherised urine specimen must be obtained for a proper urine culture.

It is important that the final diagnosis is confirmed as UTI by cultures as this will have downstream implications when the child is followed up subsequently to rule out congenital urinary problems such as vesico-ureteric reflux or pelvi-ureteric junction obstruction and the like.

Balanitis: Young boys are commonly referred for painful red penile tips or balanitis. Balanitis is inflammation of the glans penis only while balanitis involving the foreskin and prepuce is termed balanoposthitis. Though uncommon, a complication of balanitis is constricting phimosis, or inability to retract the foreskin from the glans penis. They do not need a urine dipstick if there are no other clinical signs or symptoms suggestive of UTI. If grossly inflamed and locally infected, treatment is with oral cephelexin plus topical analgesia such as lignocaine gel and an antiseptic wash as well as hygiene advice.

10. FRACTURES

While accidental injuries usually cause more fractures in the young, one must also rule out non-accidental fractures[94-96]. Young children, especially if they have just started ambulating like for toddlers do fall accidentally and sustain injuries including fractures. Toddler fractures typically occur between 9 months and 3 years of age, and are believed to be the result of new stresses placed on the bone due to recent and increasing ambulation. Toddlers often present as limping children and Xrays of the tibia/fibula may reveal an undisplaced spiral fracture. Should these fractures occur in a non-ambulatory child, or if there is any delay in presentation, inconsistent history from the caregiver, multiple bruises or fractures of different ages, the diagnosis of a non-accidental injury (NAI) should be considered[1-3, 97-106].

The typical skeletal fracture in cases of NAI is the Classical Metaphyseal lesion.

Table 13. Suspicious Aspects in History and examination in NAI

Suspicious aspects in the history :
* Delay in seeking consult
* Account of accident is vague & inconsistent
* Discrepancy between history & degree of injury
* Parental behaviour is abnormal, lack of concern for child
* Interaction between child & parents is abnormal

Suspicious aspects in the physical examination:
Injuries not consistent with history
Multiple injuries in different stages of healing
Unusual and specific injuries

Table 14. SPECIFICITY OF NAI TO TYPE OF SKELETAL INJURY[99]

Specificity	Fracture
High	Classic metaphyseal lesions
	Rib fractures (esp posteromedial)
	Scapular fractures
	Spinous process fractures
	Sternal fractures
Moderate	Multiple fractures (esp bilateral)
	Fractures of different ages
	Epiphyseal separations
	Vertebral body fractures and subluxations
	Digital fractures
	Complex skull fractures
Low	Subperiosteal new bone formation
	Clavicular fractures
	Long Bone shaft fractures
	Linear skull fractures

FIGURE 2. CLASSICAL METAPHYSEAL SKELETAL LESION OF NAI

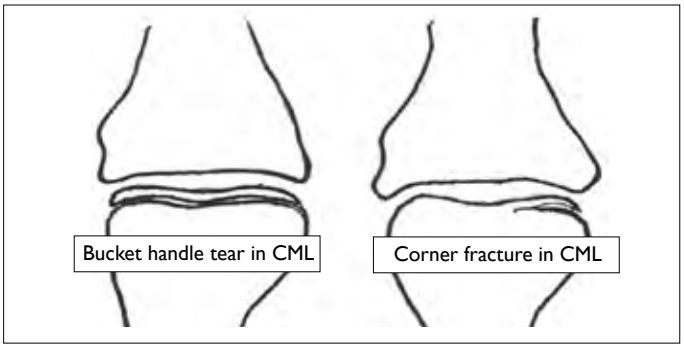


TABLE 15. COMMON EMERGENCIES IN THE VERY YOUNG

Condition	Pointers & Plan of Action	
Neonatal Pyrexia / Infantile Pyrexia	• Check for perinatal red flags – Maternal Group B Srep infection? • Mode of delivery • APGAR Score	• Admit for observation if less than 2 to 3 months – with partial or full septic workout to rule out evolving sepsis
Fevers	• Look actively for an infective source • Consider less common but important non-infective causes of fever	• Consider role of various ambulatory point-of-care tests like FBC, urinalysis and xrays in cases of "Fever Without Source".
Crying baby	• This is a child in distress • Examine thoroughly including taking a complete set of vital signs	• Infant colic is a diagnosis of exclusion not a default diagnosis linked to "crying baby"
Suprventricular Tachycardia (SVT)	• Think of SVT if sudden onset and heart rate is very high (>220 bpm)	• Assess for haemodynamic stability
Prolonged NNJ	• Important to rule out biliary atresia • Also linked to evolving UTI – check urine to rule out UTI pneumonia, asthma and upper respiratory tract infections	• Determine if the hyperbilirubinaemia is conjugated • Breastmilk jaundice is a diagnosis of exclusion
Common Respiratory problems	• Includes bronchiolitis, croup & other causes of inspiratory stridor, pneumonia, asthma and upper respiratory tract infections	• Ensure patient is not in respiratory distress • Ensure feeding is adequate
Vomiting & Diarrhoea Child with Bloody Diarrhoea	• Assess clinical condition of the • Determine hydration	• Rule out other less common medical/surgical causes of vomiting • Rule out dysentery (blood and mucus with loose stools) • Rule out local causes from bloody excoriation
Urinary Tract Infections (UTI)	• How urine is collected is important • Urinalysis is a screen for UTI • Urine culture is the gold standard	• Admit suspected UTIs less than 6 months old • Specialist followup for UTIs less than 2 years of age with prophylaxis
Poisonings	• Check on the potential toxicity of the agent – it can be medicines or simple, common household products and even household plants	• Attend to the ABCs first • Monitor the child • Consider the role of decontamination before dispatch to the hospital
Common Surgical emergencies in the very young	• Hypertrophic Pyloric Stenosis • Intussusception • Appendicitis • Volvulus • Congenital diaphragmatic hernia • Meckel's • Torsion of the testes • Foreign Bodies • Head Injuries Pulled elbows • Fractures and cuts • Non-Accidental Injuries	

TABLE 16. TEN COMMANDMENTS OF A PAEDIATRIC CONSULTATION

TEN COMMANDMENTS OF A PAEDIATRIC CONSULTATION

1. The **YOUNGER** the child, the more non-specific the signs and symptoms.

2. **MEDICATIONS:** Always check the weight/ possible allergies of the child before prescribing any treatment.
   Medications To Avoid/Minimise Administering In The Very Young:
   - Promethazine (less than 24 months old)
   - Stemetil/chlorpromazine – can cause oculogyric crisis
   - Paracetamol less than 3 months old/Ibuprofen less than 6 months to 1 year old
   - Hyoscine and metoclopromide in the young as they can lead to functional ileus

3. **EXAMINE WHEN YOU CAN:** In a fretful child, always exam the child when opportunity knocks, preferably in the arms of the caregiver.

4. **EXPOSE FULLY:** Expose the abdomen fully and examine the perineum/genitilia (+/- cremasteric reflex) and do a per rectum exam particularly in child with vomiting and other suspected acute abdominal complaints

5. **A&B:** Airway and Breathing are usually the most important essentials to maintain and stabilise - remember to rule out hypercarbia in hypoventilation

6. **TACHYCARDIA:** The first sign of impeding shock may just be tachycardia rather than overt depressed BP

7. **BLOOD SUGAR:** Always check the blood sugar of a sick child to rule out hypoglycaemia

8. **RULE OUT NAI:** One must also consider Non-Accidental Injuries (NAI) when faced with an unusual set of complaints or serious of injuries

9. **RULE OUT INGESTIONS/POISONINGS & FBs:** Especially in the young and inquisitive, rule out accidental ingestions including foreign body (FB) ingestion/insertions

10. Always give **CLEAR, CONCISE ADVICE** to parents.

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LEARNING POINTS

- **The family physician has the monumental task of deciding if a pediatric patient can be treated as an outpatient or needs to be referred to the hospital for further acute care.**
- **Common conditions that may be discharged without referral include the stable child with a minor head injury and balanitis.**
- **Decompensated gastroenteritis, serious bacterial infections such as unstable pneumonia and urinary tract infection in the very young need admission.**
- **The younger the child, the more subtle the signs and symptoms are, so the threshold of referral needs to be low.**
- **Congenital conditions like pyloric stenosis in the very young are unique in this population group and need referral.**