SSK

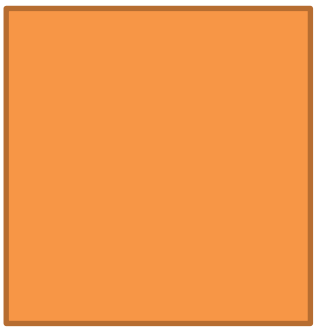
Clinical Management Protocols

Shasthyo Suroksha Karmosuchi (SSK)
Health Economics Unit
Ministry of Health & Family Welfare

Editorial Board

Message

Ministry of Health and Family Welfare



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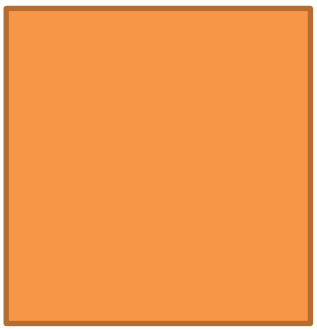

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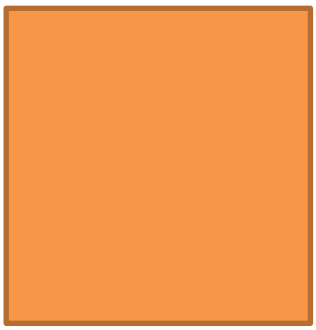
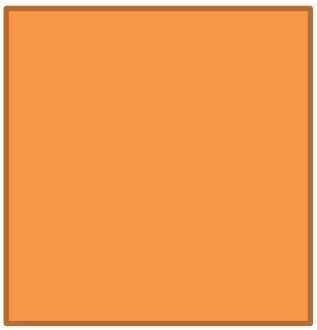


Preface

Ministry of Health and Family Welfare



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   Professor of Medicine and former Director General,
   Directorate General of Health Services (DGHS), Mohakhali, Dhaka

2. **Professor Md. Ridwanur Rahman** — **Member**
   Professor of Medicine, Universal Medical College, Dhaka

3. **Professor Mohammad Ekhlasur Rahman** — **Member**
   Professor of Paediatrics and Principal, Anwer Khan Modern Medical College
   Dhaka

4. **Professor Abdul Wadud Chowdhury** — **Member**
   Head, Department of Cardiology, Dhaka Medical College, Dhaka

5. **Professor ABM Jamal** — **Member**
   Professor of Surgery, Dhaka Medical College, Dhaka

6. **Professor Shikha Ganguli** — **Member**
   Professor of Gynaecology and Obstetrics,
   Dhaka Medical College, Dhaka

7. **Professor Afroza Kutubi** — **Member**
   Professor of Gynaecology and Obstetrics,
   Sir Salimullah Medical College, Dhaka

8. **Associate Professor Prodip Kumar Biswas** — **Member**
   Assoc. Professor of Medicine, Dhaka Medical College, Dhaka

9. **Associate Professor Syed Ghulam Mogni Mowla** — **Member**
   Assoc. Professor of Medicine, Dhaka Medical College, Dhaka

10. **Dr. Mohammad Abul Bashar Sarker** — **Member Secretary**
    Assistant Director, Health Economics Unit,
    Health Services Division,
    Ministry of Health and Family Welfare

Committee for Protocol writing

1. Associate Professor Md. Abul Hossain
   Associate Professor of ENT
   M Monsur Ali Medical College, Shirajgonj

2. Associate Professor A. K. M. Monwarul Islam
   Associate Professor of Cardiology
   National Institute of Cardio Vascular Diseases (NICVD), Dhaka

3. Associate Professor Helal Uddin Ahmed
   Associate Professor of Child Adolescent and Family Psychiatry
   National Institute of Mental Health (NIMH), Dhaka

4. Assistant Professor Md. Shariful Islam Bhuiya
   Assistant Professor of Ophthalmology
   M Monsur Ali Medical College, Shirajgonj

5. Assistant Professor Md. Akteruzzaman
   Assistant Professor of Paediatrics
   Mugda Medical College, Dhaka

6. Assistant Professor Abu Jafar Md Shahidul Hoq
   Assistant Professor of Skin & VD
   Mugda Medical College, Dhaka

7. Assistant Professor Nasim-E-Tasnim
   Assistant Professor of Surgery
   Centre for Medical Education, Mohakhali, Dhaka

8. Assistant Professor Syed Mohammad Ali Romel
   Assistant Professor of Cardiology
   Kurmitola General Hospital, Dhaka

9. Assistant Professor Muhammad Mahbub Hossain
   Assistant Professor of Medicine
   Sir Salimullah Medical College, Dhaka

10. Assistant Professor Muhammad Faizur Rahman
    Assistant Professor of Medicine
    Dhaka Medical College, Dhaka

11. Dr. Kazi Taslima
    Junior Consultant (Gynaecology & Obstetrics)
    Health Economics Unit, Dhaka

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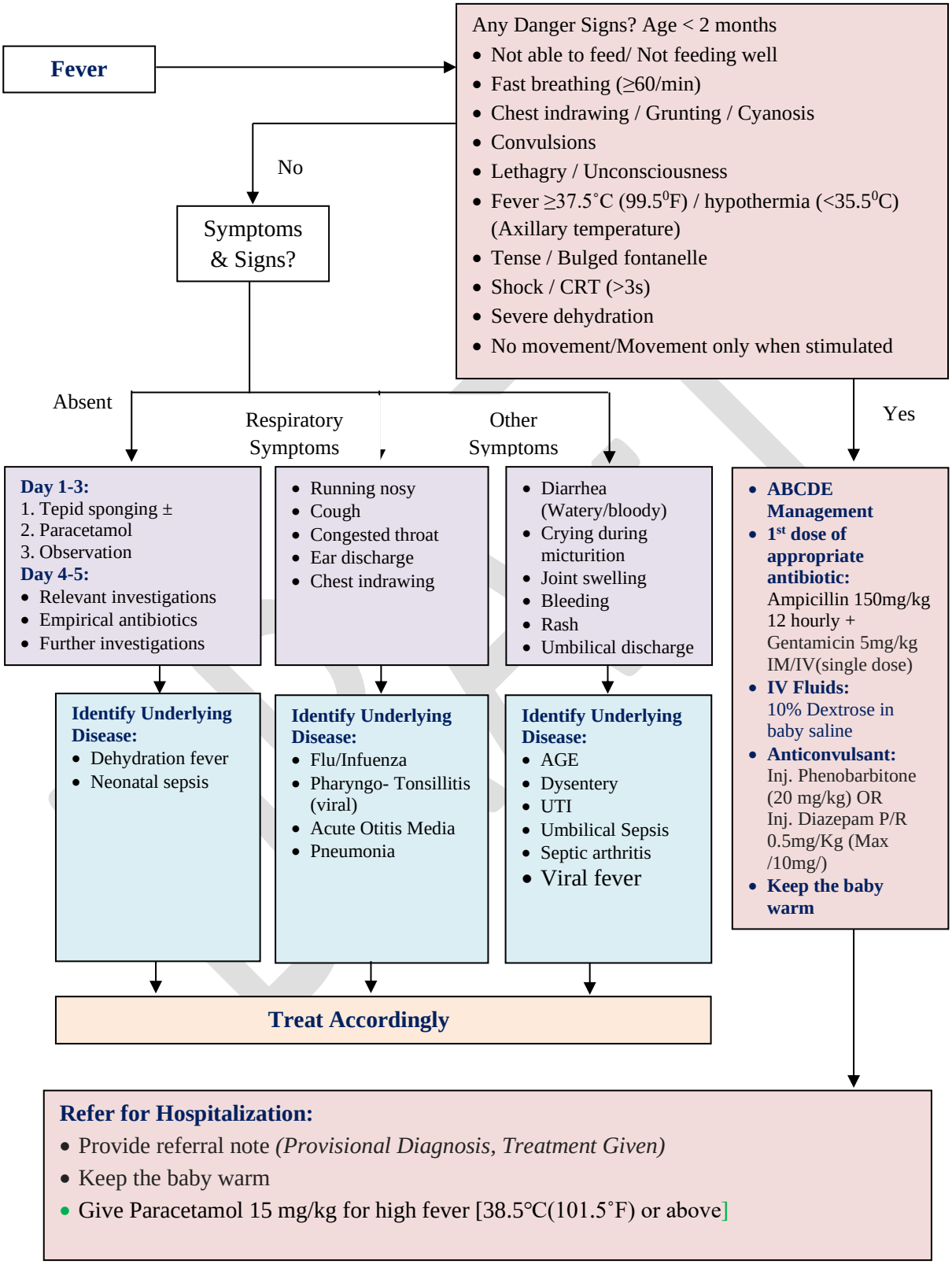
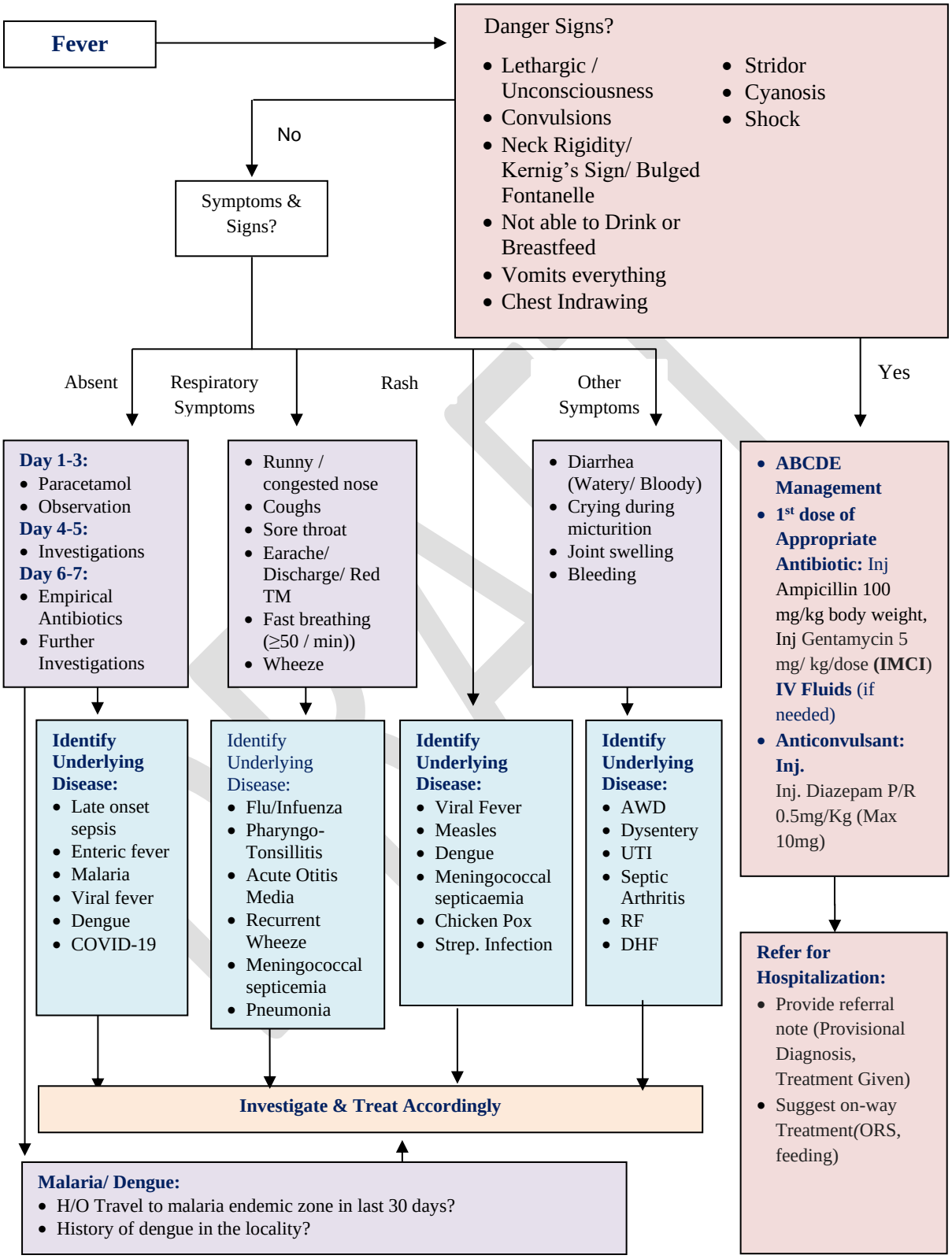
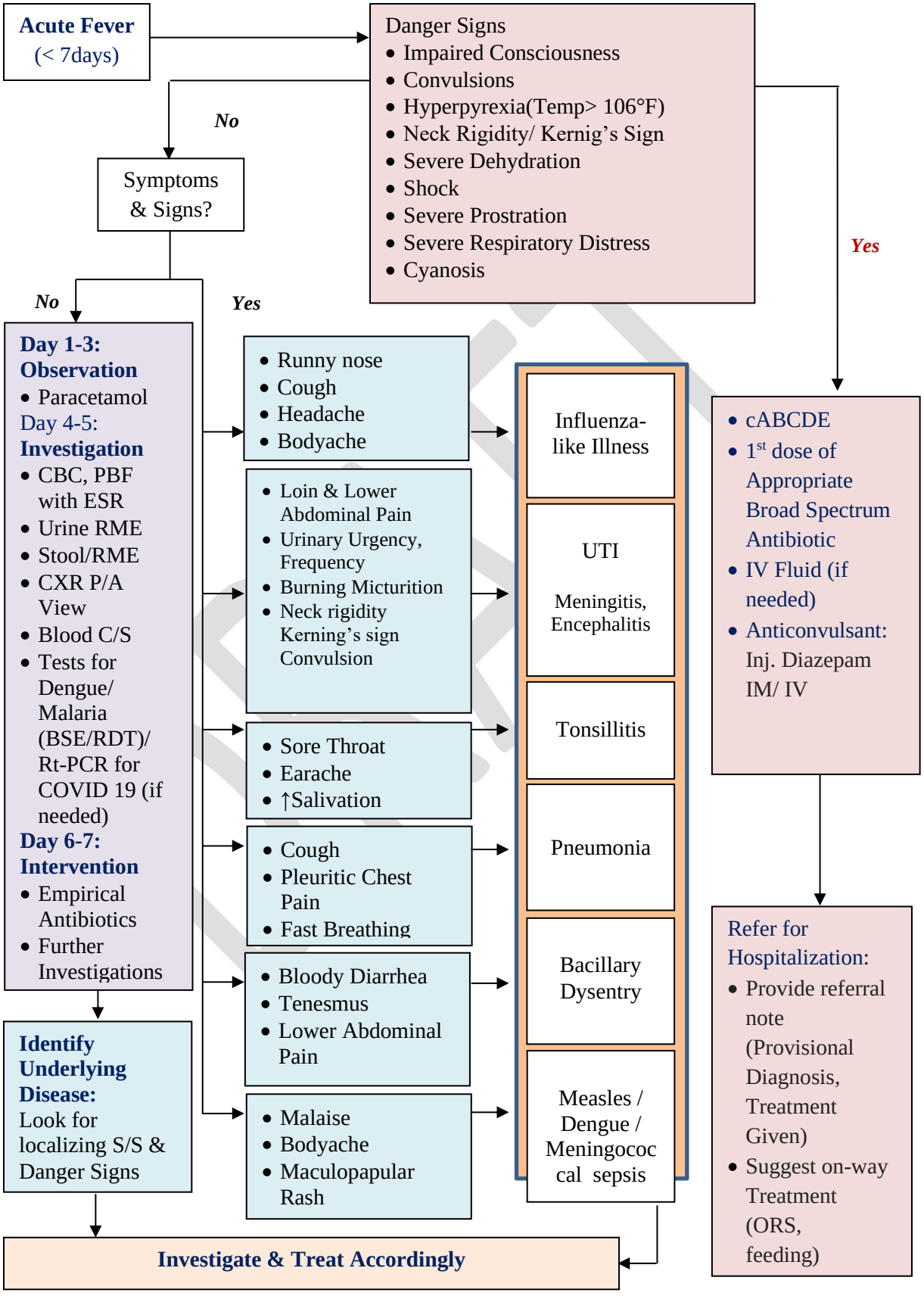


Fever Management Algorithm: Age 2 months – 5years



Fever Management Algorithm: Age > 5years



Acute Malnutrition

Classification:

Moderate Acute Malnutrition (MAM): Home treatment
Severe Acute Malnutrition (SAM)

Uncomplicated SAM:	**Complicated SAM:**
• Clinically well	Appetite lost
• Without S/S of infection	Persistent vomiting
• Retained appetite	Hypothermia/Fever
• No needs for hospitalization	Severe dehydration, Anaemia
	Poor appetite/unable to eat
Diet: Nutritional management	Respiratory distress, dehydration
	No therapeutic diet is available now,
	Diet as in diet MAM

According to WHO Diagnostic Criteria

Parameters	Normal	MAM	SAM
MUAC mm	≥125	115 to<125	<115
WHZ/WLZ	≥ -2	-3 to < -2	<-3
Bipedal oedema	Absent	Absent	Present

***WHZ**: Weight for height Z score; **WLZ**: Weight for length Z score **MUAC**: Mid upper arm circumference.*

WHO Diagnostic Criteria of SAM: Children between 6-59 months

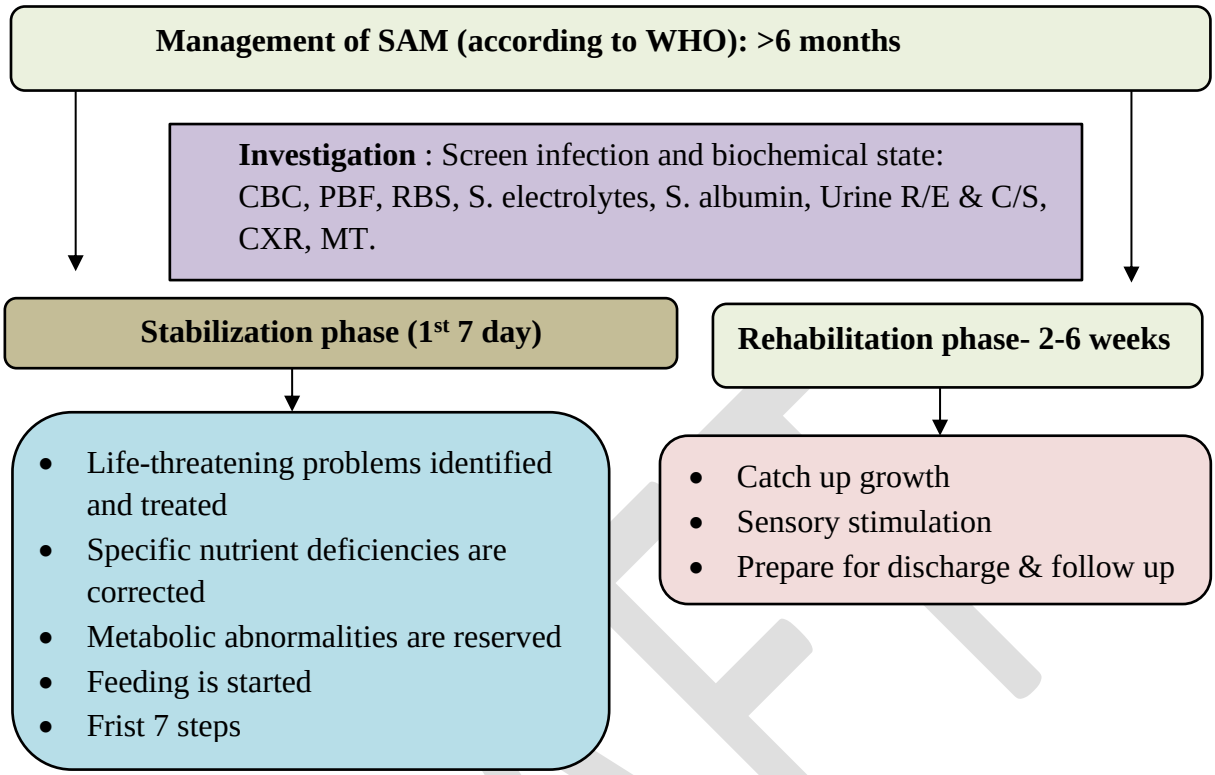
Indicators	Measures	Cut-off
Severe wasting	Weight for height Z score / Weight for length Z score	<-3
	Mid upper arm circumference (MUAC)	<115 mm
Bipedal oedema	Clinical sign	Present

Children <6 months: WHO criteria:

- Weight -for -Length Z score (WLZ) :<-3
- Visible wasting
- Bipedal oedema

Moderate Acute Malnutrition (MAM)

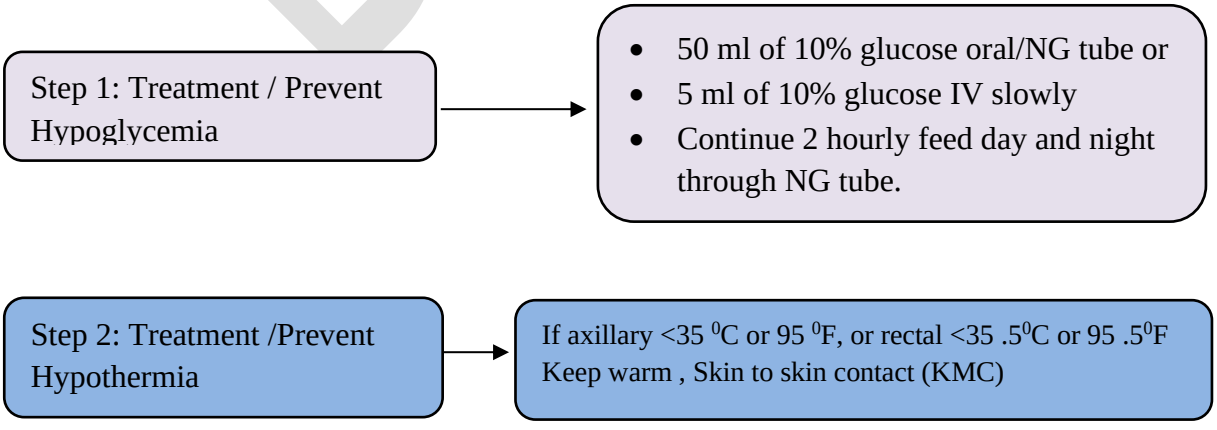
- Home treatment
- One extra meal (to provide additional >25 kcal/kg/day) above the daily requirement
- Up to 2 years **:** IYCF feeding protocol, plus multivitamins micronutrients powder
- 2 – 5 years **:** IMCI feeding protocol
- Give anti-helminthic every 6-month interval & treat any associated infections
- Promote food and other hygiene (e.g. hand washing) to prevent further infection



Principal of Management

1. Ten steps management
2. Treatment of associated condition
3. Treatment of complication
4. Prevention

Ten steps of management



Step 3: Treatment and prevention of dehydration

1st 2 hours: Give ReSomal, 5 ml/kg, orally/through N-G tube, at 30 minutes interval.

Next 4-10 hours: Give ReSomal, 5 -10 ml/kg/hour, alternatively with F-75 therapeutic milk.

Step-4: Correct electrolyte imbalance

- K^+ 3-4 mmol/kg/day (1 ml contains 1.5 mmol)
- Inj. 50% $MgSO_4$: 0.1 ml/kg/day IM for 7 days
- Prepare food without salt
- ReSoMal for rehydration.

Step 5: Treat and Prevent Infection

Uncomplicated SAM- home treatment

- Oral amoxicillin 15 mg/kg 8 hourly for 5 days or Cotrimoxazole (Trimethoprim- 5mg/kg) 12 hourly for 5 days

Complicated SAM-

- IV/IM Ampicillin (50 mg/kg) 6 hourly & IV/IM Gentamycin(7.5 mg/kg) once daily for 7 days.
- Change to Ceftriaxone (50-100 mg/kg/day) ± Inj. Gentamicin (7.5 mg/kg) once daily when-

no improvement e.g. lethargy, persistence of fever by 48 hours or deterioration after 24 hours
Present with septic shock or meningitis.

Step 6: Correct micronutrient deficiencies:

High potency Vit A cap. On day 1,2,14
(0-5 months)- 50,000IU(2 drops),
6-12 months(100,000 IU(4 drops),
>12 months 200000 IU(8 drops)

Give the following for 2 weeks-

- Multivitamin, usually 1-2 tsf/day
- Folic acid 1 tablet (5 mg) on day 1, then1 mg/day
- Syrup Zinc: 2 mg/kg/day (1 tsf = 10mg).
- Copper: 0.3 mg/kg/day (if available)
- Elemental Iron, 3mg /kg/day usually, after 2weeks of starting treatment.

Step 7: Start feeding cautiously:

Allocate daily fluid@120-130 ml/kg. But restrict to100 ml/kg/day, if the child is oedematous with F75.

Step 8: Achieve Catch-up Growth → About 1 week after admission, when appetite returns, oedema disappears-
Change F-75 to F-100 therapeutic milk gradually.

Step 9: Provide sensory stimulation and emotional support

Step 10: Prepare for discharge and follow-up after recovery → if criteria for discharge fulfilled-

- WHZ≥ -2SD
- Oedema has resolved
- Gaining weight
- Eating an adequate amount of nutritious food that the mother can prepared at home
- All infection and complication have been treated
- Provided with micronutrients
- Immunization is updated.

Treatment of associated Condition:

Vitamin A deficiency →

- Vitamin A capsule to all children with SAM (single dose); If photophobia / Xeropthalmia present, give vitamin A on day 1, 2 and 14
- Persistent diarrhea – Give vitamin A on day1
- In case of Measles – Give vitamin A on day1 &2

Dermatosis: → For fungal infections

- Skin lesions: give Clotrimazole cream to apply twice daily for 2 weeks. Or
- 1%potassium permanganate solution soaked gauze over affected area.

Helminthiasis →

- Albendazole single dose for children (12-23 months): 200 mg, Children ≥ 24 months: 400 mg, OR
- Mebendazole: 100 mg twice daily for 3 days(>24 months of age)

Diarrhoea:

Giardiasis- Oral Metronidazole (7.5 mg/kg) 8 hourly for 7 days.

Dysentery- Oral Ciprofloxacin (10 mg/kg/dose) 12 hourly for 5 days or Pivmecillinum

ORS & Zinc

Treatment of complications :

Shock

- Give oxygen 2-4 L/min.**,** Give 10% glucose (5ml/kg) IV
- Antibiotic- Ampicilline & Gentamicine
- Give IV fluid (e.g. 5% dextrosin 0.45% NaCl) or Ringer lactate - 20 ml /kg /hour over one hour,
- AWD- cholera saline 20 ml/kg /hour for 2nd hours, If sign of improvement present repeat IV cholera saline 15 ml/kg over 1 hour(3^{rd} hour). Switch to ReSoMal, 10 ml/ kg / h in alternate hours with F-75 for up to 10 hours, then start F-75.
- If fails to improve- Continue IV fluids (3 ml/kg/hr),wait for blood. Blood transfusion 10 ml/ kg slowly over 3 hours.

Severe anemia Hb < 5 gm/dl → Transfuse blood 10 ml/kg over 3 hr

Follow up: F/U visit-1 wk, 2 wk, 1 month, 3 months, then 3 monthly until WHZ become >-1

- Start feeding with F-75 therapeutic milk 2-3 hourly orally through NG tube

Bronchiolitis

Inflammation and obstruction of the small airway (bronchioles) of the lungs. The children's of 2 months to 2 years are affected commonly, mostly 2-6 months in epidemics

Symptoms

Sudden onset of cough & wheezing
Respiratory distress
Healthy previously
H/O contact with patient having coryza

Signs

Dyspneic, Flaring of alae nasi, Cyanosis (occasional), Head nodding, Occasional grunting. Fast breathing, Chest indrawing, widespread rhonchi, sometimes Crepitation. May have silent chest

Risk Factors:

Prematurity
Underlying lung or heart cause
Non-breast-fed baby
Exposure to smoke
Overcrowded environment
Low socioeconomic status

Causes:

RSV (commonest)
Influenza, parainfluenza
Human metapneumovirus
sometimes Mycoplasma

Diagnosis based on the clinical feature & supported by

Investigations -

- X-ray chest – hyper translucency of lungs field, no pneumonia, atelectasis may be present
- CBC

Treatment:

Severe cases - need hospitalization.
Mainly supportive treatment

-Ensure feeding, head in upright position, nose clear
-if needed, NPO & IV fluid
-Humidified O_2 inhalation, 4-6 L/min
-Nebulization with hypertonic saline e.g., 3% NaCl may be helpful
-Antibiotics when secondary infection
-Budesonide inhaler when atopy present

Prognosis; If untreated, cause death 1%

Febrile Convulsion

Febrile seizures are seizures occurring in febrile children between the ages of 6 and 60 months with rapid rise of temperature

Criteria for diagnosis:

- Febrile seizure is accompanied by fever (100.4^{0} F or 38^{0} C or more).
- Occur between the age of 6 and 60 months of age.
- Without central nervous system infection or metabolic imbalance.
- In the absence of a history of prior afebrile seizure.

Simple febrile seizure:

- The attack is primarily generalized tonic-clonic
- Lasting for <15 minutes
- Not recurrent within a 24-hour period.
- Family history may be present

Complex febrile seizure:

- Seizure with focal manifestation
- Prolonged (15 minutes or more) duration
- Recurrent within 24 hours.
- Febrile seizure lasting longer than 30 minutes is called febrile status epilepticus.

Exclude other causes by History:

- Meningitis
- Encephalitis
- Cerebral malaria
- Metabolic derangement

Examinations:
Level of consciousness
Sign of meningeal irritation
Sign of infection- Otitis media, skin rash, throat tonsil

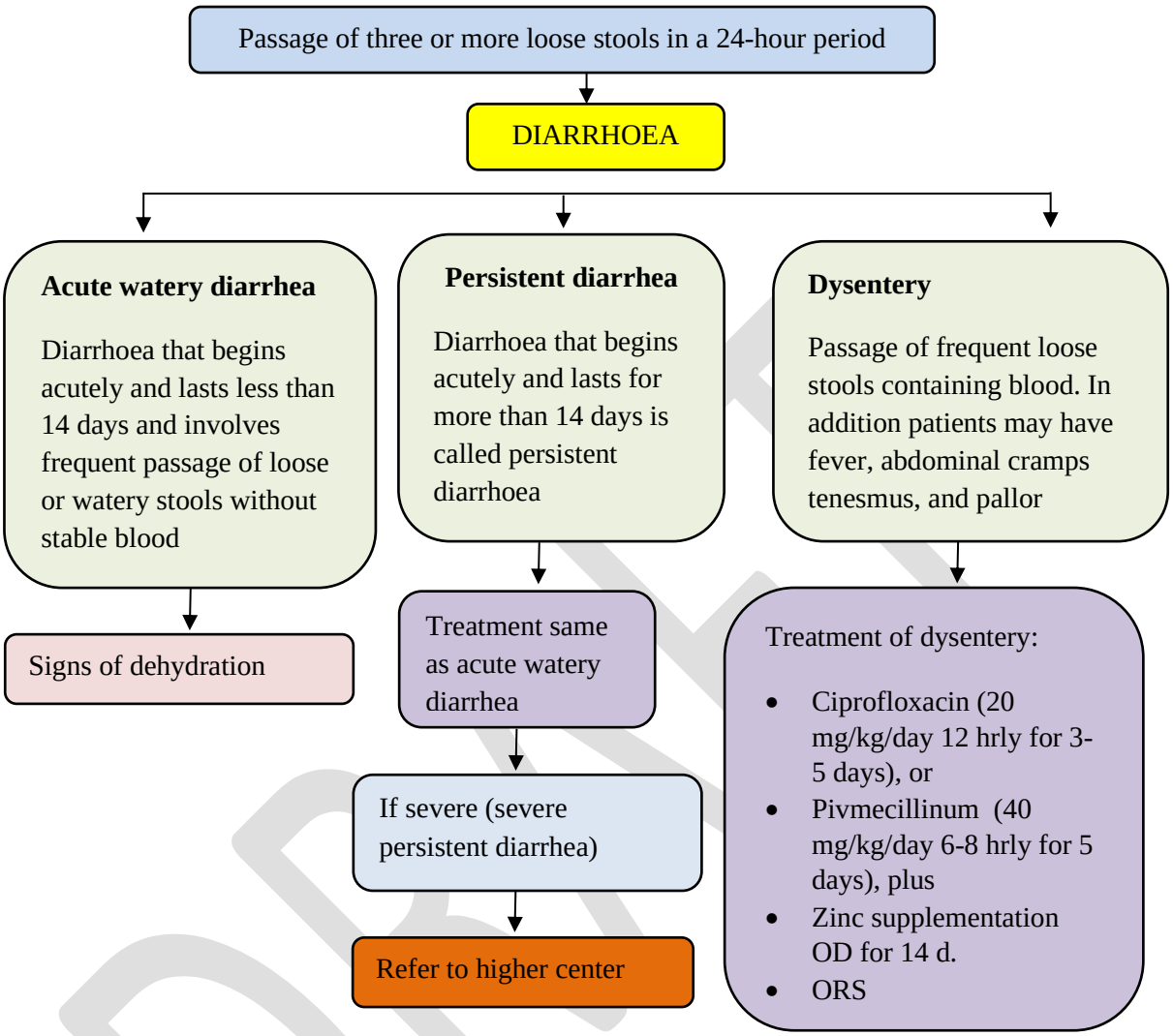
Investigations: CBC, RBS, CXR if indicated

Treatment:

- Per rectal diazepam (0.5 mg/kg)
- Syp. Paracetamol - 15 mg/kg/dose 8 hourly if temperature ≥ 1000F
- Antibiotic- If bacterial infection suspected (e.g., otitis media etc.)
  Syp. Amoxycillin 50-80 mg/kg/day in 3 divided doses (8 hourly) -7 days

Prophylaxis **:** The risk of reverence can be reduced by diazepam 1mg/kg/dl 8 hourly for 2 – 3 days or at clobazam 1mg/kg/d or clonazepam useful for 2-3 days, with paracetamol for fever.

Diarrhoea in Children



Some dehydration (if ≥2 of the following signs are present)	**Severe dehydration (if ≥2of the following signs are present)**
Restless, irritable Sunken eyes Drinks eagerly Skin pinch goes back slowly	Lethargy/unconsciousness Sunken eyes Unable to drink poorly Skin pinch goes back very slowly (>2 sec)

N.B. If the child has not enough signs to classify some or severe dehydration, he or she will be classified as no dehydration.

Treatment

Acute watery diarrhoea :

A. Fluid therapy- Correction of dehydration if present according to plan A/B/C

<table>
<tr>
<th>Plan A (No dehydration</th>
<th>Plan B (Some dehydration)</th>
<th>Plan C (Severe dehydration)</th>
</tr>
<tr>
<td>Choice of fluid:
• ORS
• Others-chira pani
• Cooked rice water (vater mar)
• Yoghurt
• Dab water etc.
Amount of fluid after each stool:
• ＜2 years: 50-100 ml
• ≥2 years:100-200 ml</td>
<td>Choice of fluid:
• ORS
Amount of fluid: 75 ml/kg
Route of rehydration: Oral
Duration of rehydration: 4 hrs</td>
<td>Choice of fluid:
• Cholera saline
• Ringers lactate
Amount of fluid:100 ml/kg
Route of rehydration: Intravenous
Duration of rehydration:
<table>
<tr><th>Age</th><th>First give 30ml/kg over</th><th>Then, give 70ml/kg over</th></tr>
<tr><td>＜12 Months</td><td>1 hour</td><td>5 hours</td></tr>
<tr><td>≥12 months</td><td>½ hour</td><td>2 ½ hours</td></tr>
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</table>

- During rehydration, foods other than breast milk should be withheld
- Reassess state of dehydration after correction of dehydration, then choose again treatment plan A, B or C according to the grade of dehydration

B. Drugs:

Zinc:1-2 mg/kg/day for 14 days.

Antibiotics:

Cholera: Erythromycin (30-40 mg/kg 6 hrly for 3 days) or
Doxycycline (2-5 mg/kg/day 12 hrly for 3 days) or
Ciprofloxacin (10 mg/kg/dose 12 hrly for 5 days)

Amebiasis / Giardiasis: Metronidazole (35-50 mg/kg/day 8 hrly for 7-10 days)

C. Dietary management:

- Breastfeeding should be continued. In case of non-breastfed babies undiluted milk should be given.
- Balanced diet should be given at least 6 times a day. After recovery one additional diet should be given for at least 2 weeks to combat malnutrition

D. Additional therapies:

The use of probiotic for prevention and therapy of diarrhea has been successful in some settings. A variety of organisms (*Lactobacillus, Bifidobacterium*) have a good safety record. *Lactobacillus rhamnosus* is associated with reduced diarrhoeal duration and severity, especially in *Rota* diarrhea

Low Birth Weight (LBW) Babies

Babies with birth weight <2500gm irrespective of the gestational age.
LBW can be-

1. Pre-term: born before 37 completed weeks
2. Small for gestational age: weight below 10^{th} percentile for gestational age

Category of low birth weight:

Low birth weight (LBW)	<2500 gm
Very low birth weight (VLBW)	<1500 gm
Extremely low birth weight (ELBW)	< 1000 gm
Incredibly low birth weight (ILBW)	< 750 gm

Problems of a preterm LBW baby:

Immediate	**Late**
1. Sepsis 2. Hypothermia (< 95^0F) 3. Hypoglycaemia (RBS< 2.6 mmol/L) 5. Hypocalcaemia 4. Respiratory distress syndrome (RDS) 5. Apnoea (cessation of resp. >20 sec.) 6. Feeding difficulty 7. Haemorrhage (minor to fatal) - *intraventricular, GI, pulmonary haemorrhage*. 8. Problems of Gut e.g. necrotizing enterocolitis (NEC), gastroesophageal reflux disease (GERD) 9. Exaggeration of physiological jaundice 10. Patent ductus arteriosus (PDA) 11. Anaemia of prematurity	1. Growth failure 2. Late anaemia of prematurity 3. Retinopathy of prematurity (ROP) 4. Developmental delay 5. Neurological deficit 6. Learning disability 7. Hearing deficit 8. Osteopenia of prematurity

Management of low birth weight (LBW) babies:

Indication for hospital admission:

1. Gestation :<34 weeks
2. Birth weight:<1800 gm
3. Any sick baby

Special aspects of care of LBW babies after admission:

1. Thermal care

- Keep the room warm (26-30^{0}C), Radiant warmer if available
- Wrap with adequate clothing at least 2 layers of cloth (including cap and socks)
- Skin to skin contact (Kangaroo Mother Care)
- Bedding with mother

2. Fluid and nutrition

Choosing initial method of feeding:

- <28 week: IV fluid
- 28-31 week: Orogastric or nasogastric tube feeding
- 32-34 week: Feeding by spoon or cup
- >34 week: Breast feeding

3. Protection against infection:

- Wash hand properly before touching the hand
- Handle the baby as minimum as possible
- Don't give prelacteal feed
- Keep umbilical stamp bare, clean and dry
- Apply 7.1% chlorhexidine to umbilical stump followed by dry cord case
- Avoid overcrowding around the baby

4. Provide vitamins and micronutrient supplements:

Name	**When to start**	**Duration**
Tab. Folic acid; one fourth tablet, every alternate day	Usually by 2 weeks of age	6 months
Multivitamin drop including vitamin D: 400 IU, once daily	Usually by 2 weeks of age	6 months
Iron drop (2×birth weight in kg), once daily	At 6 weeks of age.	6 months
Vitamin K1 , 1 mg is given IM or IV within 4 hrs of birth		

5. Plan for discharge: When-

- Able to maintain body temperature
- Neither apnoea nor bradycardia for 5 days
- Able to take and tolerate full feeding from breast or cup spoon without respiratory discomfort.
- Parents confident enough to take care of the baby at home.
- Has crossed birth weight and shows a steady weight gain for 3 consecutive days (10-20g/kg/d)

Drowning

Hypoxemia is the principal problem in the drowning or submersion injury. Aspiration of water occurs in 90% of cases. The three effects of aspiration are**:**

1. Aspiration pneumonia
2. Hypoxemia &
3. Hypothermia

Hypoxemia for more than 5 minutes causes neurological damage. Drowning may be fatal or nonfatal.

DROWNING

Clinical feature:

- Common age ~3 years
- Anxious appearance of victim
- Respiratory distress
- Altered vital signs eg. tachycardia, low BP
- Cool extremities
- Loss of consciousness
- Acidotic breathing (metabolic acidosis)
- Apnea, Asystole (cardiac arrest)

Complications:

- Cerebral anoxia
- Oedema
- Hypoxemia
- Hypercarbia
- Cardiac arrest
- Renal failure

Refer for treatment of complication & ventilation (if needed)

Investigation:

- CXR P/A view - Consolidations, foreign body, evidence of aspiration, pulmonary oedema
- Serum electrolytes: Hypo or hypernatremia, hyperkalemia
- Creatinine- altered
- CBC
- RBS: decreased
- ECG- Cardiac arrythmia

Treatment:

A. At Community -Basic life support

B. At Hospital

1. Resuscitation (ABC)
   - Assess vital signs (e.g. pulse, BP, respiration, spo_2)
   - Open airway & remove visible debris
   - Initiate rescue breathing (e.g. mouth to mouth)
   - Start chest compression with bag and mask ventilation (CPR). Give oxygen by face mask 5-6 L/min.
   - IV fluid for hypotension –N/S, Ringers lactate,20 ml/kg over 1 hour for volume expansion.
2. Keep child warm, wrap with blanket.
3. Prophylactic antibiotic if contaminated water or sewage
4. If CNS complication-Mannitol, anticonvulsants.
5. If pulmonary oedema- Diuretics.
6. If AKI –Fluid restriction.
7. Correction of dyselectrolytemia
8. Treatment of hypoglycemia.
9. Observed at least 6-12 hours before discharge.

Neonatal Jaundice

Types of neonatal jaundice:

1. Physiological jaundice:

- Jaundice appears 2nd day onward
- Bilirubin level rises slowly
- Level rarely goes above 15 mg/dl
- Baby remains otherwise healthy
- Jaundice cleans spontaneously within 7-10 days
- Stool color is normal

2. Pathological jaundice:

- Jaundice appeared on the 1st day of life
- Jaundice extends up to palm & sole
- Jaundice with any sign of sepsis/ in sick neonate
- Rate of rise in serum bilirubin levels over 0.5 mg/dl/hour or 10 mg/dl/day
- Jaundice lasting longer than 14 days in term & 21 days in preterm
- Jaundice with pale stool

Risk factors:

- Setting of blood group incompatibility (baby of Rh negative mother or type O Positive mother)
- Preterm infant
- Previous sibling receiving exchange transfusion
- Concealed hemorrhage (cephalohaematoma) or extensive bruising

Diagnosis by history, symptoms & signs

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History relevant points

- Age of onset & duration of jaundice
- H/O jaundice in previous child
- H/O death of any baby due to jaundice & intrauterine death
- Blood group & Rh typing of baby & mother

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Symtoms & signs

- Estimate jaundice level by visual estimation (whether extended upto palms & soles)
- General: Anaemia, activity
- Systemic: Hepatosplenomegaly
- Any evidence of sepsis: Lethargy, poor feeding
- Abnormal neurological behavior: Convulsion, rigidity

↓

Investigation:

1. Serum bilirubin- Direct & indirect
   Direct - Increased in sepsis, neonatal hepatitis, biliary atresia
   Indirect - Increased in physiological jaundice, jaundice of prematurity, haemolytic disease of newborn
2. Blood group & Rh typing of baby & mother, Rh antibody titre in mother
3. CBC with PBF: Hb – decreased
   TC, DC, Platelet: To asses for evidence of associated sepsis
   PBF: evidence of haemolysis
4. Coombs test (Direct & Indirect): May be positive in Rh & ABO incompatibility

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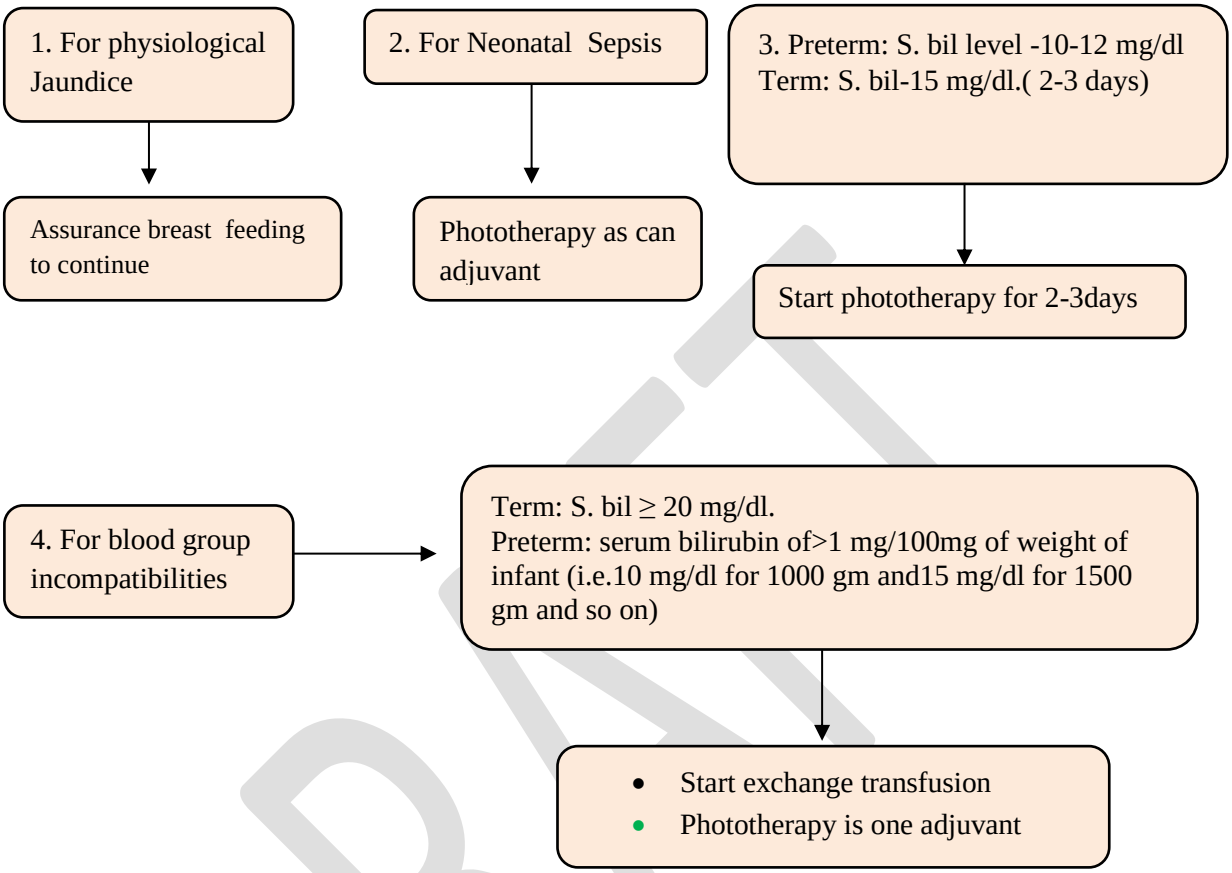
Management

Management:



NB. Treatment of sepsis has been written elsewhere

Perinatal Asphyxia

It is a clinical condition resulting from impairment of gas exchange in the fetus leading to hypoxia; hypercarbia and acidosis. Approximately 10% of newborns require some assistance to begin breathing at birth after drying. About 1% needs extensive resuscitative measure to survive.

Classification:

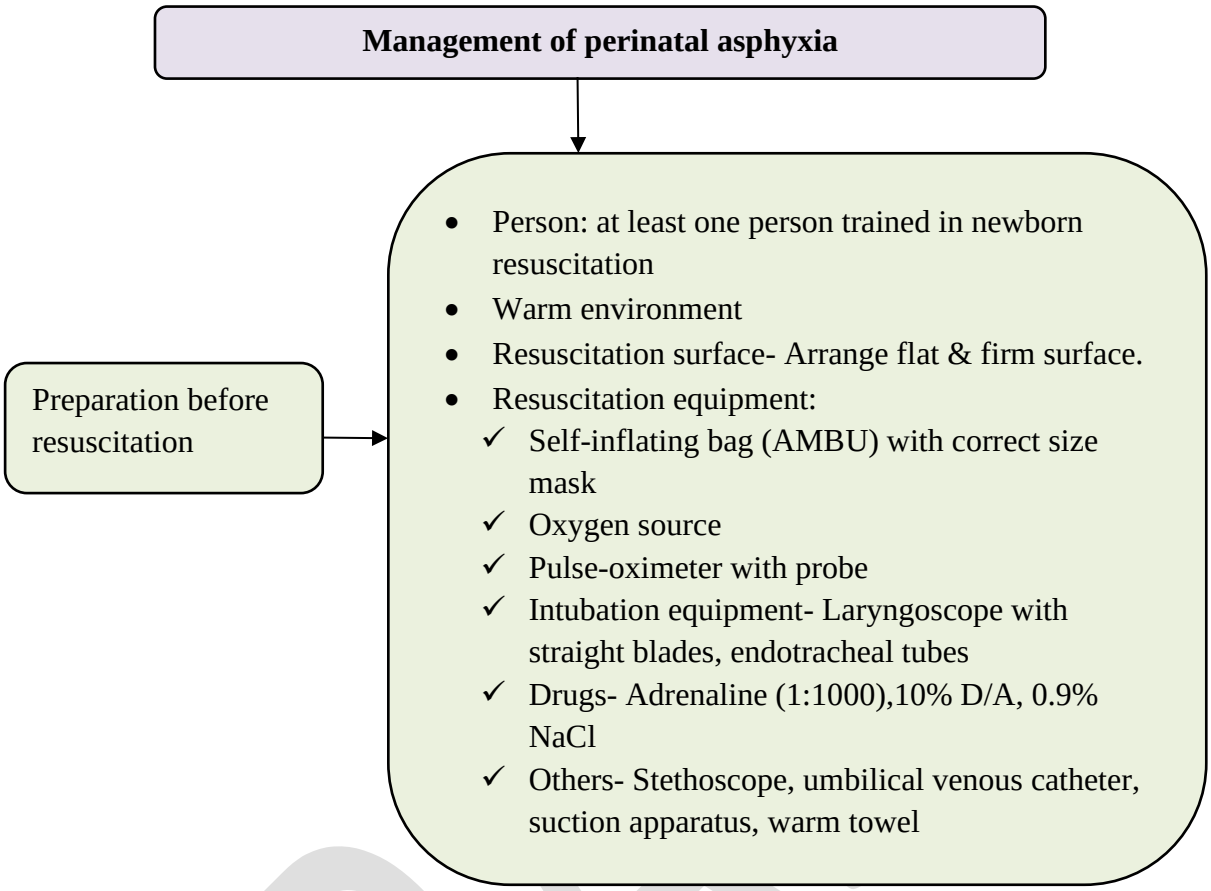
APGAR score	Type
0-3	Severe
4-7	Mild to moderate

Diagnosis by clinical features

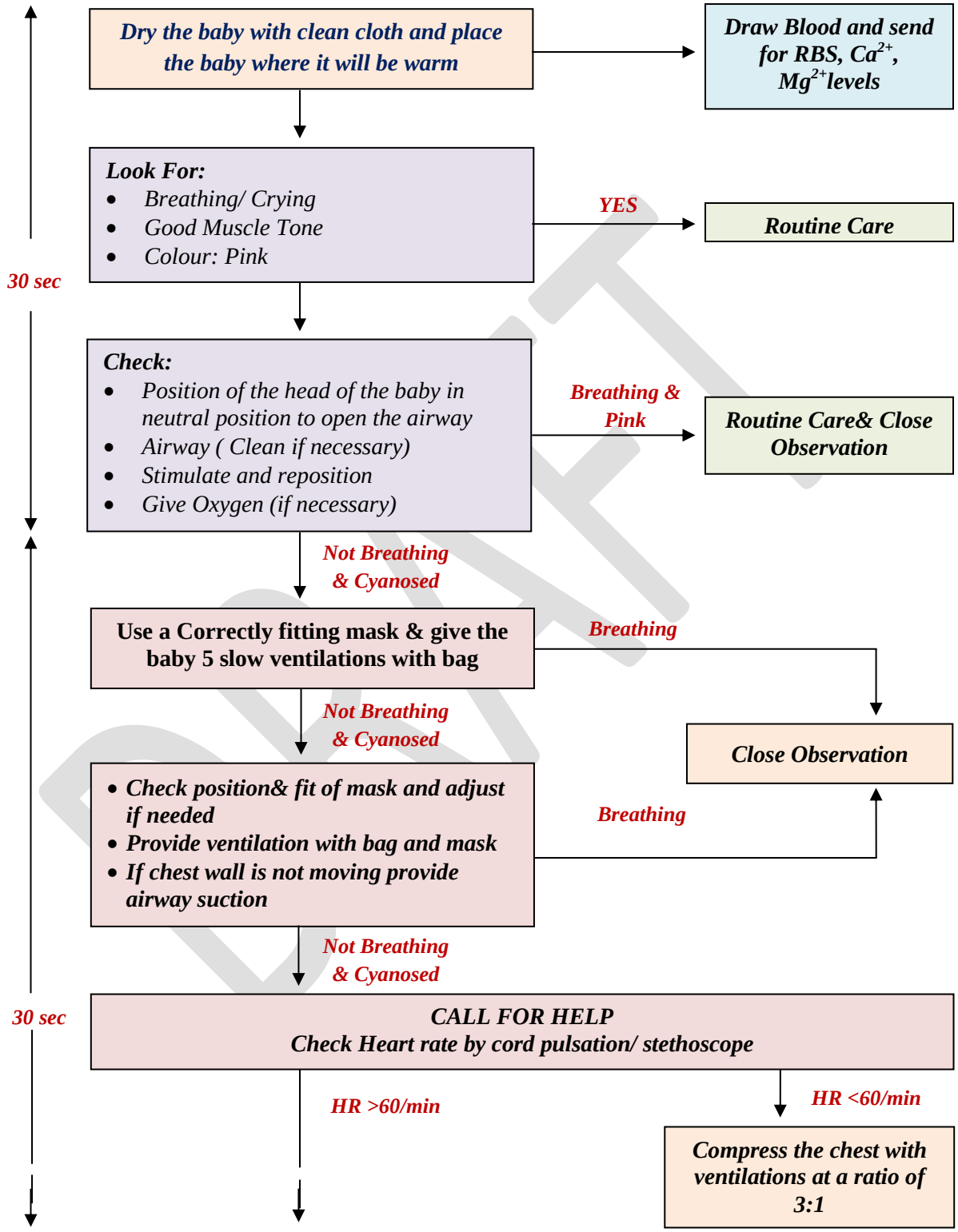
- No respiration, no cry (apnoea)
- Bradycardia (< 100 beats/min)
- Gasping respiration with long pauses
- Cyanosis
- Convulsions
- Skin appears bluish grey (asphyxia livida) or death like pallor (asphyxia pallid)
- Less tissue perfusion (capillary refill time >3 sec)
- Muscular hypotonia
- Oliguria

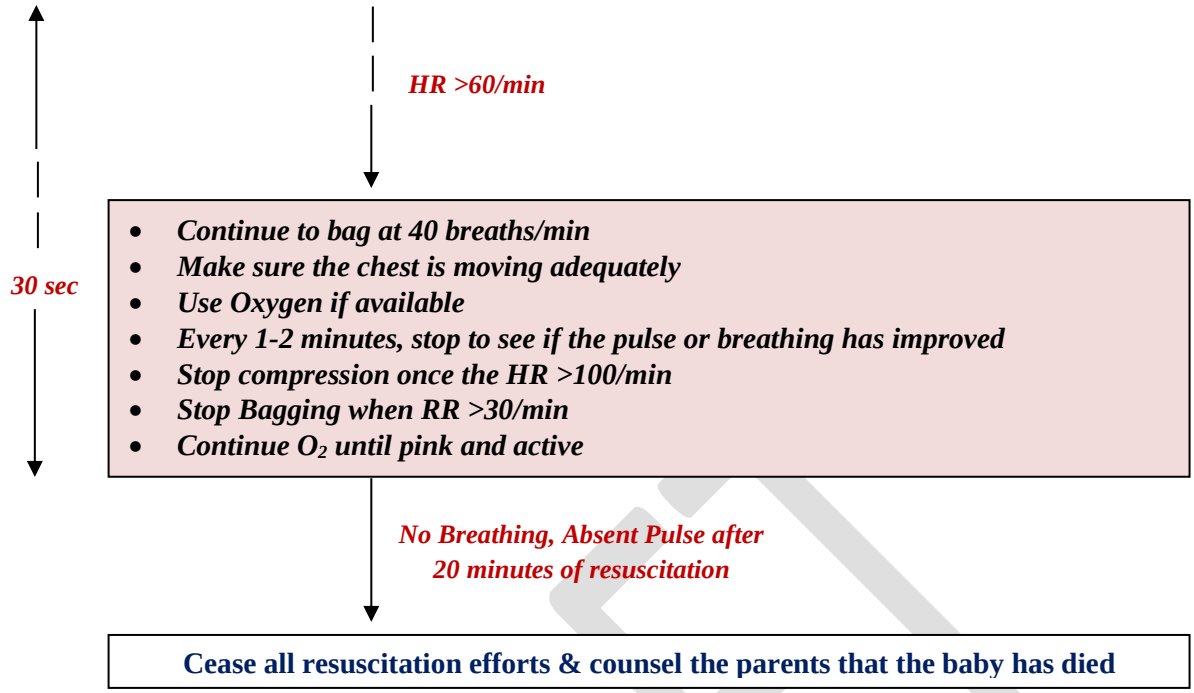
Consequences

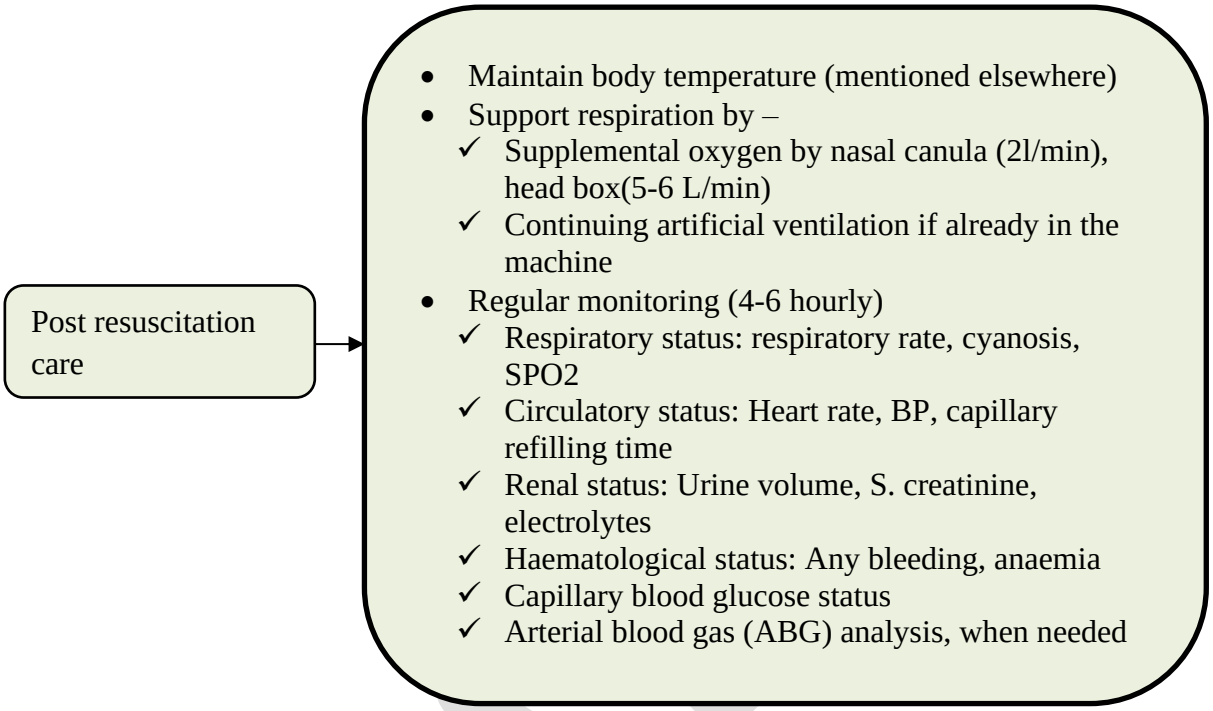
- Brain- Hypoxic ischemic encephalopathy(HIE)
- Kidney-Acute kidney injury
- Heart-Hypoxic cardiomyopathy/CCF
- Lungs- Pulmonary hemorrhage (PPHN), RDS
- Adrenal hemorrhage
- Liver- Hepatocellular necrosis
- SIADH, Hypoglycemia, Hypocalcemia, Hyponatremia
- DIC


Management of perinatal asphyxia
Preparation before resuscitation
Person: at least one person trained in newborn resuscitation
Warm environment
Resuscitation surface- Arrange flat & firm surface.
Resuscitation equipment:
✓ Self-inflating bag (AMBU) with correct size mask
✓ Oxygen source
✓ Pulse-oximeter with probe
✓ Intubation equipment- Laryngoscope with straight blades, endotracheal tubes
✓ Drugs- Adrenaline (1:1000),10% D/A, 0.9% NaCl
✓ Others- Stethoscope, umbilical venous catheter, suction apparatus, warm towel

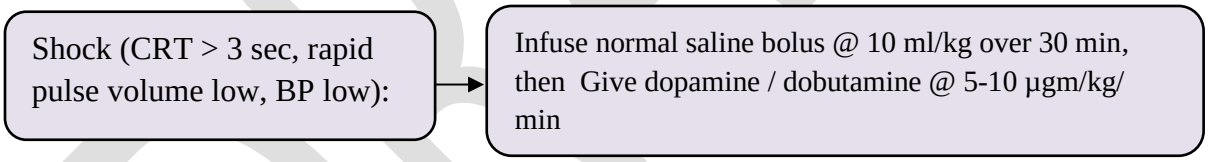
THE STEPS OF RESUSCITATION (WHO 2005) :

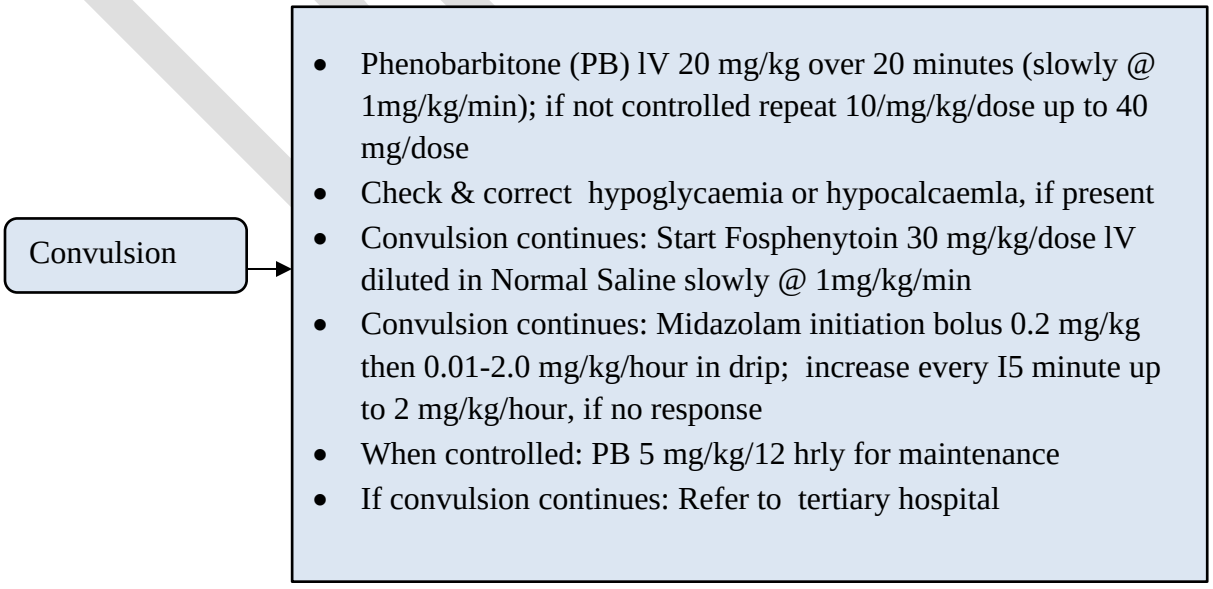


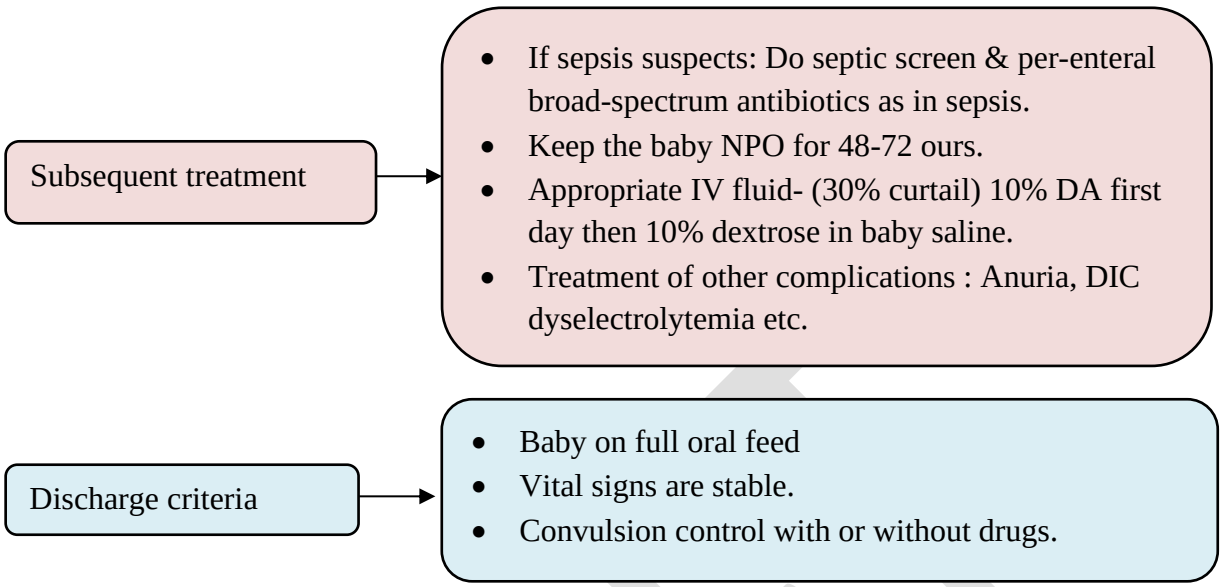

HR >60/min
30 sec
Continue to bag at 40 breaths/min
Make sure the chest is moving adequately
Use Oxygen if available
Every 1-2 minutes, stop to see if the pulse or breathing has improved
Stop compression once the HR >100/min
Stop Bagging when RR >30/min
Continue O2 until pink and active
No Breathing, Absent Pulse after 20 minutes of resuscitation
Cease all resuscitation efforts & counsel the parents that the baby has died



Treatment of complications






Subsequent treatment
If sepsis suspects: Do septic screen & per-enteral broad-spectrum antibiotics as in sepsis.
Keep the baby NPO for 48-72 ours.
Appropriate IV fluid- (30% curtail) 10% DA first day then 10% dextrose in baby saline.
Treatment of other complications : Anuria, DIC dyselectrolytemia etc.
Discharge criteria
Baby on full oral feed
Vital signs are stable.
Convulsion control with or without drugs.

Pneumonia

Pneumonia is the most important cause of death in children worldwide

A) Cluster clues to diagnosis of pneumonia: (**age >5 years)**; Mention elsewhere

B) Pneumonia and recommended treatment in children: **2 months - 5 years** (*WHO 2019)*

If cough or difficult breathing e.g. respiratory rate, stridor wheeze then do clinical assessment for pneumonia.

Sign or Symptom	Classification	Treatment
• Any general danger sign (had convulsion during present illness/convulsing now, lethargic or unconsciousness, not able to drink/breast feed, vomits everything) OR • Stridor in a calm child OR • Oxygen saturation SPO <90%	SEVERE PNEUMONIA	• Hospitalization • Give first dose of Inj. Gentamicin 5-7.5 mg/kgIM and oral Amoxillin 50 mg/kg/day 12 hourly as prereferral treatment • Treat to prevent low blood sugar/NG feeding • Give inhaled salbutamol, if wheezing
• Chest indrawing **OR** • Fast breathing ✓ ≥ 60 breaths/min (age <2 months) ✓ ≥ 50 breathes/min (age <12 months) ✓ ≥ 40 breathes/min (age 1-5 years)	PNEUMONIA	• Give Oral Amoxicillin for 5 days • If wheezing, inhaled/oral Salbutomol for 5 days • Soothe the throat and relieve cough with a safe remedy • If coughing >2 weeks or recurrent wheeze, refer to asses for TB or asthma • F/Up after 3 days • Treatment at home

***Note:** If wheezing, fast breathing or chest indrawing **:** give a trial of rapid acting inhaled bonchodilator for upto 3 times- 20 minutes apart, if improves continue bonchodilator treatment. Hydrocortisone may be given when indicated*

Antibiotic use:

Neonate and age <2 months:	Ampicillin and gentamicin 7-10 days or 3rd generation of cephalosporin and Amikacin- 7-14 days.
Age 2 month -5 years	Inj Ampicillin 6 hourly 50 mg /kg/dose plus Inj Gentamicin 7.5 mg /kg/day-7 days If no response within 48 hours, change Ampicillin to Cloxacillin or Inj ceftriaxone (80-100 mg) IM/IV for7-10 days
Age > 5 years:	First line: 3rd generation Cephalosporin (e.g., Ceftriaxone 80 mg /kg day) *plus* Gentamicin (5 mg /kg day) Second line: 3rd generation Cephalosporin *plus* Gentamicin *plus* Vancomycin 40 mg/kg/day Duration of Rx:10-14 days

Neonatal Sepsis

The clinical spectrum of sepsis begins when a systemic infection (eg. Bacteremia, septecaemia) or localised infection (eg. Meningitis, pneumonia, pyelonephritis) progresses from sepsis to severe sepsis (eg. Septic shock, multiorgan dysfunction syndrome or MODS etc.)

Types:

1. **Early onset sepsis (EOS) -** Sepsis that is acquired before or during birth and the manifestations are present within first 72 hours of birth.
2. **Late onset sepsis (LOS) -** Sepsis that is acquired after delivery (in the nursery or in the community) which usually presents after 72 hours of age.

Risk factors:

- Prematurity (<37 weeks)
- Low birth weight (<2500 gms)
- Febrile illness of mother with evidence of bacterial infection within 2 weeks prior to delivery
- Foul smelling and/or meconium stained liquor
- Rupture of membranes >18 hours
- Single unclean or >3 sterile vaginal examinations during labor
- Prolonged labour (sum of 1^{st} & 2^{nd} stage of labor > 24 hours
- Perinatal asphyxia (APGAR score <4 at 1 minute)
- Invasive procedures
- Poor cord care
- Bottle feeding, prelacteal feeds.

Signs & Symptoms:

- Not feeding well/ refusal to suck 2-3 days after birth.
- Lethargy, poor muscle tone, poor cry
- Low body temperature or fever.
- Movement only when stimulated or no movement at all
- Vomiting, Abdominal distension
- Prolonged capillary refill time
- Hypotonia, absent neonatal reflexes
- Brady/tachycardia
- Respiratory distress, apnea and gasping respiration
- Hypo/hyperglycemia
- Bleeding, petechia, purpura
- Irritability, high pitch cry, seizure
- Umbilical redness and discharge
- Multiple pustules, abscess, sclerema

Investigations-

- Septic screen: If 2 (or more) parameters are abnormal, it should be considered as positive screen

Total leukocyte count	$<5000/mm^3$,$>25000/mm^3$
Absolute neutrophil count (ANC)	Low counts $<1500/mm^3$
Immature/total neutrophil ratio(IT ratio)	>0.2
Micro ESR	>15 mm in 1^{st} hour
C-reactive protein(CRP)	≥6 mg/L

- CBC with PBF
- Supportive Investigations
  - ✓ TC- Increase or decrease
  - ✓ Hb- May be decreased
  - ✓ Platelets-May be decreased
  - ✓ PBF: Toxic Granules or band from neutrophil
- Blood for C/S: May reveal the organism
- CSF study: To assess evidence of meningitis
- Urine for R/M/E, C/S : To look for evidence of infection
- X-ray of chest: To look for evidence of pneumonia
- X-ray of abdomen: To look for evidence of NEC
- USG of brain or others as individualized
- RBS
- Serum Electrolytes
- Serum Creatinine

Management

Supportive:

1. **Hypothermia:** Wrap the baby with warm clothes, keep under radiant warmer or in incubator.
2. **Hypoglycaemia:** Correct by 2ml/kg of 10% DA I/V
3. **Hypocalcemia:** I/V by 2ml/kg of 10% Calcium gluconate.
4. **Convulsion:** By I/V Phenobarbitone (described elsewhere)
5. **Hypoxia:** Give oxygen by nasal cannula, face musk or head box-keep SPO_2> 95%
6. **Nutrition:** I/V alimentation, nasogastric or orogastric feeding when indicated with 20% fluid restriction.

Antimicrobial therapy (Empirical):

1st line	Ampicillin + Gentmicin
2nd line	Cefotaxime/Ceftazidime + Amikacin
3rd line	Meropenem,Vancomycin, Ciprofloxacin, Cefepime, Clarithromycin, Netilmicin, Piperacillin + Tazobactum, Colistin
In case of suspected meningitis	Cefotaxime + Amikacin or Meropenem + Amikacin

NB. Antibiotic may be changed after ~ 3days if improvement does not occur or according to c/s

Duration of antibiotic therapy

Diagnosis	**Duration**
Risk factor positive (clinically well, culture negative, screen negative)	2-3 days
Risk factor positive, screen positive (clinically well, culture negative)	5-7 days
Clinically sepsis (screen negative)	7 days
Clinically sepsis, screen positive (culture negative)	7-10 days
Blood culture positive (no meningitis)	14 days
Meningitis (with or without positive blood / CSF culture)	21 days
Osteomyelitis or septic arthritis	3-4 weeks

Adjuvant therapy: (when indicated)

1. Fresh blood transfusion
2. FFP transfusion
3. IVIG
4. Colony stimulating factor (G-CSF)
5. Acyclovir or Amphotericin B
6. Consider Cephalosporine if meningitis is suspected
7. Consider a Carbapenem (e.g. Vancomycin) if 3rd generation Cephalosporin recently received

Dengue

Dengue: Case Definition

A. Dengue Fever: Acute febrile illness with 2 or more of the following
1. Headache
2. Retro-orbital pain
3. Myalgia
4. Arthralgia / bone pain
5. Rash
6. Hemorrhagic manifestations
7. Leucopenia (WBC <5000 cells/mm3)
8. Thrombocytopenia (Platelet count <1,50,000 cells/mm3)
9. Rising hematocrit (5-10% from baseline)

B. Dengue haemorrhagic Fever: All of following:
1. Fever (like Dengue fever)
2. Haemorrhagic manifestations,
3. Platelet count (< 100000 cells/mm3)
4. Plasma leakage:
5. Rising Haematocrit (>20% from baseline ± Pleural Effusion/ Ascites / Hypoproteinaemia/ Hypoalbuminaemia)

DHF	I	Fever and Haemorrhagic manifestation (Positive tourniquet test) and evidence of plasma leakage	Thrombocytopenia <100000/cu mm. Hct rises>20%
DHF	II	As in Grade I and spontaneous bleeding	Thrombocytopenia<100000/cu mm Hct rises>20%
DHF	III	As in Grade II and Circulatory failure	Thrombocytopenia<100000/cu mm Hct rises>20%
DHF	IV	As in Grade III and profound shock Undetectable BP and pulse	Thrombocytopenia<100000/cu mmHct rises>20%

Investigations for diagnosis and management:

1. CBC with Platelet count 2. Haematocrit 3. SGOT/SGPT
2. NS1 antigen-can be positive on the 1st day of fever. Unlikely to be positive after 5 days
3. Anti-dengue antibody: Raised Ig Titre with ELISA or positive in IgM antibody. Commonly Positive after 5 day.

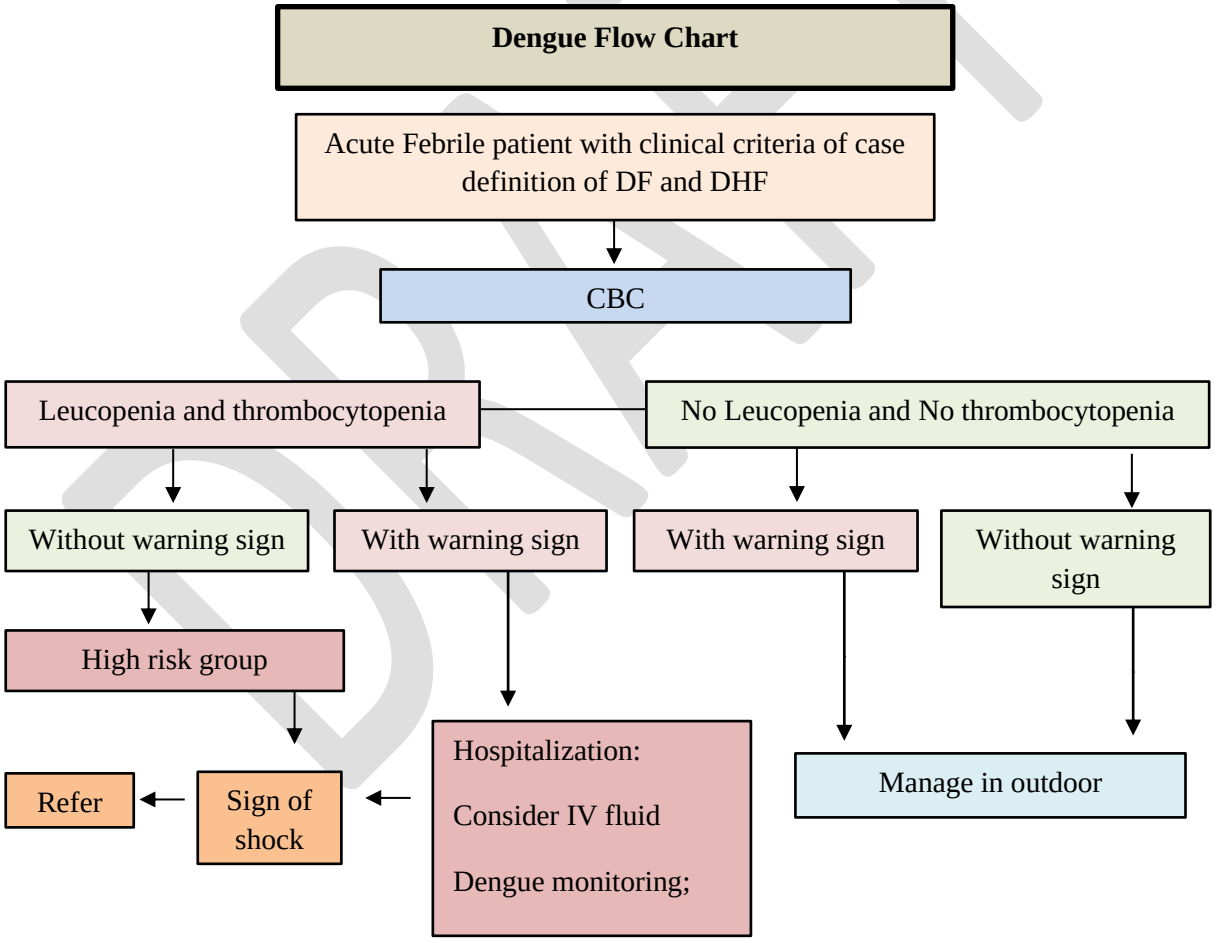
Platelet count and haematocrit need to be repeated in DHF patient daily. Increased SGPT/SGOT more than 5-fold will be commonly seen in DHF patients.

High-risk patients:

1.Infants and the elderly
2.obesity
3.Pregnant women
4.Peptic ulcer disease with history of bleeding
5.Women who have menstruation or abnormal vaginal bleeding
6.Glucose-6PD deficiency
7.Thalassemia and other haemoglobinopathies
8.Congenital heart disease
9.Chronic diseases such as DM, HTN, asthma, IHD, CKD, CLD

Warning signs:

1.No clinical improvement or worsening of the situation just before or during the transition to a febrile phase or as the disease progresses
2.Persistent vomiting, not drinking
3.Sever abdominal pain
4.Lethargy and/or restlessness, sudden behavioural
5.Bleeding: epistaxis, black stool, haematemesis, excessive menstrual bleeding, darkcoloured urine (haemoglobinuria)
6.Giddiness
7.Pale, cold and clammy hands and feet
8.Less/on urine output for 4-6 hours.



During febrile phase:
Paracetamol: 15 mg/kg/dose and should be administered in frequency of not less than six hours. The maximum dose for adult is 4gm/day
In children (1tsf-5ml-120mg)
<1 yr – 1-1.5 tsf
1-4 yrs – 1.5 tsf

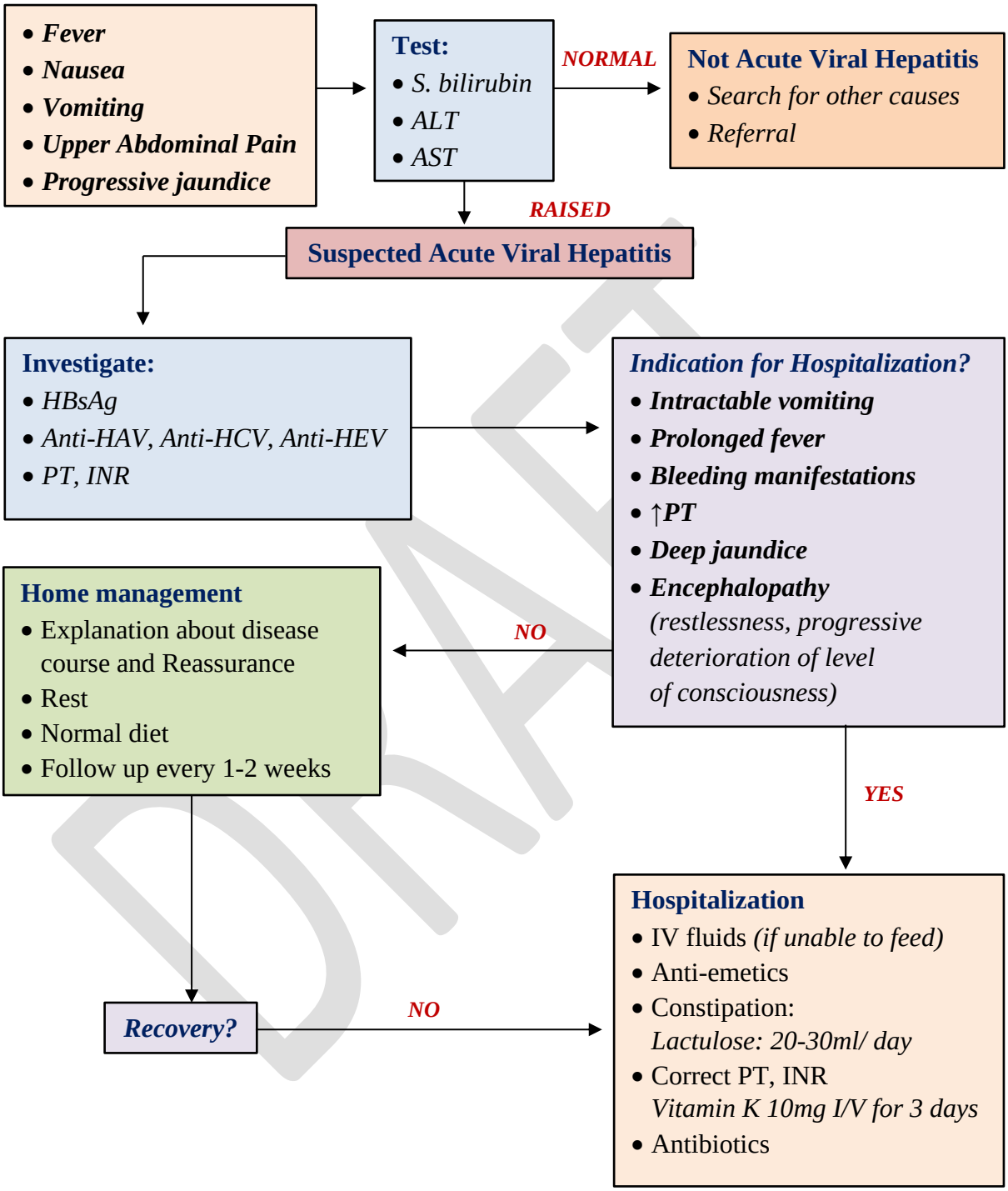
Criteria for discharging patients
1. Absence of fever for at least 24 hours without the use of anti-fever therapy.
2. Return of appetite.
3. Visible clinical improvement.
4. Satisfactory urine output.
5. A minimum of 2-3 days have elapsed after recovery from shock.
6. No respiratory distress from pleural effusion and no ascites.
7. Platelet count of more than 50000/mm3.

In patient with DHF grade I and II:
In general, the fluid allowance (oral + IV) is about maintenance (for one day) + 5% deficit (oral and IV fluid together), to be administered over 48 hours.
For example, in a child weight 20 kg, the deficit of 5% is 50 ml/kg x 20 = 1000ml. The maintenance is 1500 ml for one day. Hence, the total of M + 5% is 2500ml. This volume is to be administered over 48 hours in

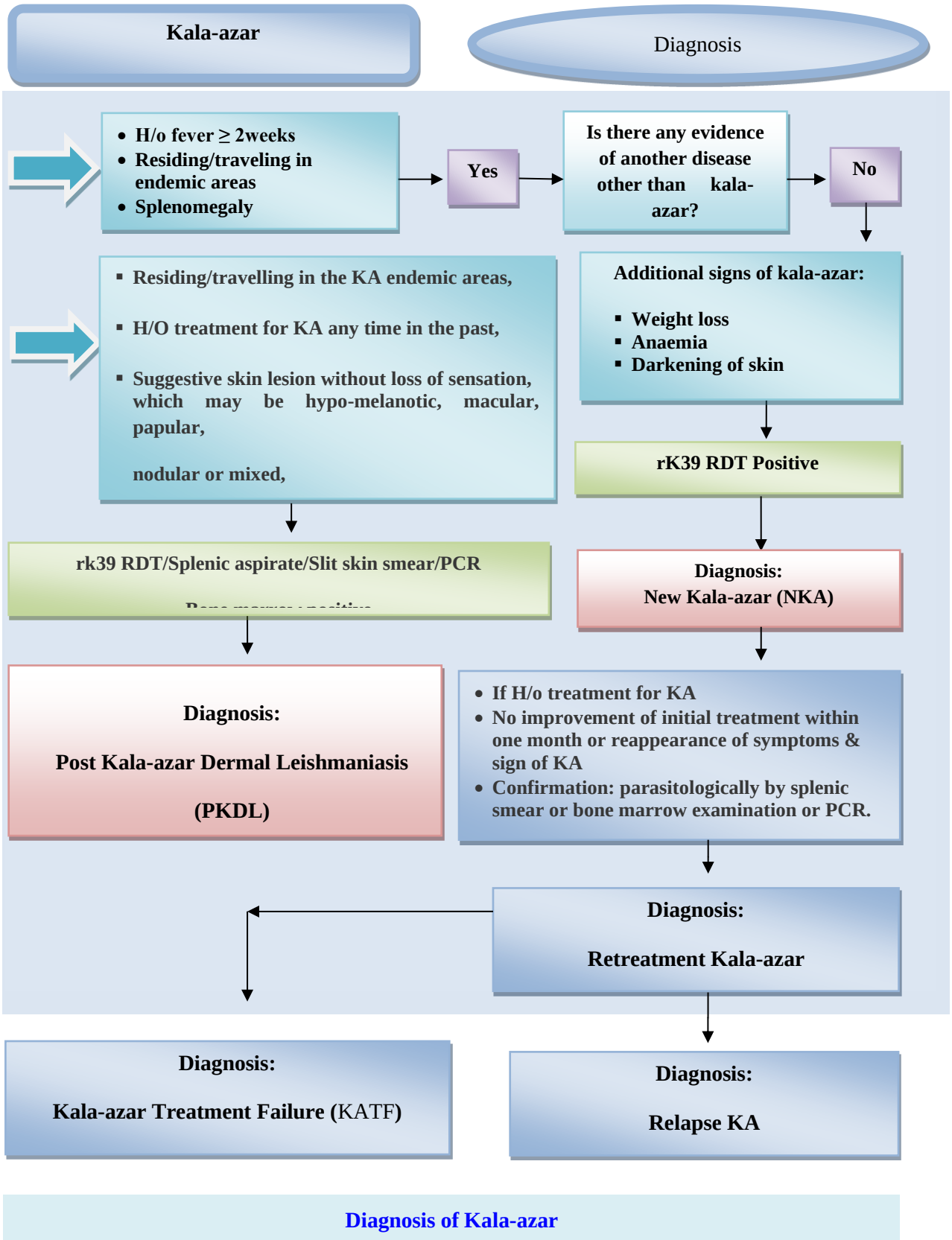
Dos or Don'ts:

1. Do not give aspirin or any NSAIDs for the treatment of any fever
2. Cases of DHF should be observed hourly
3. Avoid giving I/V therapy before there is evidence of hemorrhage or bleeding. ORT with ORS or its equivalent is recommended for patients with moderate dehydration caused by vomiting & high temperature
4. Avoid giving blood transfusion unless indicated, reduction in hematocrit or severe bleeding
5. Avoid giving steroid as these will complicate the situation and there is no sound evidence based indication
6. Food should be given according to appetite. But fresh fruit juice should be given frequently
7. Don't use antibiotics as these don't help
8. Don't change the speed of fluid rapidly

Viral Hepatitis



Kala-azar



Diagnosis of Kala-azar

Treatment Chart

New Kala-azar (NKA)

1st Line of Treatment for NKA

1. **Liposomal Amphotericin B (LAmB):Drug of choice**
   10 mg/kg IV infusion single dose with 5% dextrose

2. **Miltefosine: 1st Alterative Choice**
   a. Age 2-11 years: 2.5 mg/kg twice daily with meal x 28 days (Not exceeding 50 mg/day)
   b. Age ≥ 12 years & wt < 25 kg: 50 mg daily in the morning with meal x 28 days (Total 50 mg/day)
   c. Age ≥12 years & wt 25-50 kg: 50 mg twice daily with meal x 28 days (Total 100 mg/day)
   d. Adult > 50 kg: 75 mg twice daily with meal x 28 days (Total 150 mg/day)

3. **Combination Treatment: 2nd Alternative Choice**

   a. **LAmB** 5 mg/kg IV infusion single dose on day 1 **plus**
   Paromomycin 15mg/kg IM from day 2 to day 11 **OR**

   b. **Miltefosine** oral for 10 days **plus**
   Paromomycin 15mg/kg IM for 10 days **OR**

   c. **LAmB** 5 mg/kg IV fusion single dose on day 1 **plus**
   Miltefosine oral for 7 days (from day 2 to day 8)

2nd Line of Treatment for NKA

1. **Liposomal Amphotericin B (LAmB)**
   3mg/kg/day total 15gm/kg in alternate day 5 doses

2. **Amphotericin B deoxycholate**
   0.75-1.0 mg/kg daily or alternate day for 15 doses

3. **Sodium Stibogluconate (SSG)**
   20mg/kg daily IM injection for 30 days

Note: In several phases, 3 studies done in India, three separate combinations showed 98-99% cure rate.

The 2nd line of treatment including Amphotericin B Deoxycholate and Sodium Stibogluconate (SSG) are no longer used in NKEP of Bangladesh since the 1st line of treatment is found much more superior and effective.

Figure 10: Treatment Chart for NKA

Treatment Chart

RKA, PKDL & CL

TREATMENT FOR RKA

1. **Combination Therapy: 1st Alternative Choice**

   LAmB + Paromomycin:

   LAmB B 5mg/kg IV infusion on day 1
   Paromomycin 15mg/kg IM from day 2 to day 11
   If for any reason this combination cannot be given for intolerance, hypersensitivity or relative contraindication, subsequent choice should be decided

2. **Combination Therapy: 2nd Alternative Choice**

   Miltefosine + Paromomycin

   Miltefosine- oral form, the dose would be same as that of NKA for 10 days
   Paromomycin 15mg/kg IM for 10 days

   LAmB + Miltefosine

   LAmB 5mg/kg IV infusion on 1st day
   Miltefosine oral tablet from 2nd day - 8th day x 7 days

   Liposomal Amphotericin B (LAmB) (When combination fails)

   Dose- 3-5mg/kg/day total 15mg/kg in every alternate day

TREATMENT OF PKDL

1. **First Line of Treatment:**

   a. **Miltefosine**
   Adult dose: 100 mg daily in two divided doses for 12 weeks.
   Children: 2.5 mg/kg/day in two divided doses, not exceeding 50mg/day for 12 weeks.

2. **Second Line of Treatment**

   a. **LAmB**
   5mg/kg/day total 20mg/kg in 4 divided dose once in a week.
   b. **Sodium Stibogluconate (SSG)**
   20-mg/kg/day in intramuscular route. Total 6 cycles and each cycle consists of 20 days of treatment
   and 10 days in between two cycles.
   c. **Amphotericin B deoxycholate**
   Dose: 4 courses of 20 injections IV over 5-6 months in every alternate day dose.

Treatment Chart of RKA and PKDL

Lymphatic Filariasis

Patient with swollen feet, legs, scrotum, vulva, hands, breast, thick irregular skin, lymphangitis, lymphnode enlargement, itching, occasionally fever, rash, warm- tender limbs, cough, breathlessness etc.

↓

Duplex study of vessels

(-) Cellulitis

(+) Deep Vein Thrombosis

(-)

1. Direct visualization of microfilaria in blood at night (10 pm-2 am), lymphatic exudates, hydrocele fluid, chylous urine.
2. ICT/CFT for Filaria
3. Adult worm in lymphnodes

Filariasis elimination Program1) DEC (Diethylcarbamazine) + ALB (Albendazole):

Age group	**Drugs Used**		**Number of tablets**	**Period**
	DEC (100mg)	**ALB (400mg)**		
2-8yr	1	1	2	Successive
>8-12yr	2	1	3	5 years
>12 yr	3	1	4	

(NB: Any cycle can be repeated 3 months interval for 6 cycles.

Supportive care
Hygiene, regular washing, elevation of limbs, crepe bandage, appropriate shoes, exercise, hydration, pain killer (NSAID), antibiotic,antifungal, antihistamine etc.

Special Situations1. ADLA (Acute Dermato - Lymphangio Adenitis): Paracetamol, Amoxycillin / Erythromycin, IV or IM Penicillin. Ceftriaxone IV/IM form can also be used in severe form of ADL. Soaking the affected limb in water of room temperature or rapping the limb with soaked towel. No weight lifting, waking. Take rest. No DEC by mouth during the attack of ADLA.

2. Hydrocele: Surgery (Hydrocelectomy – excision and eversion)

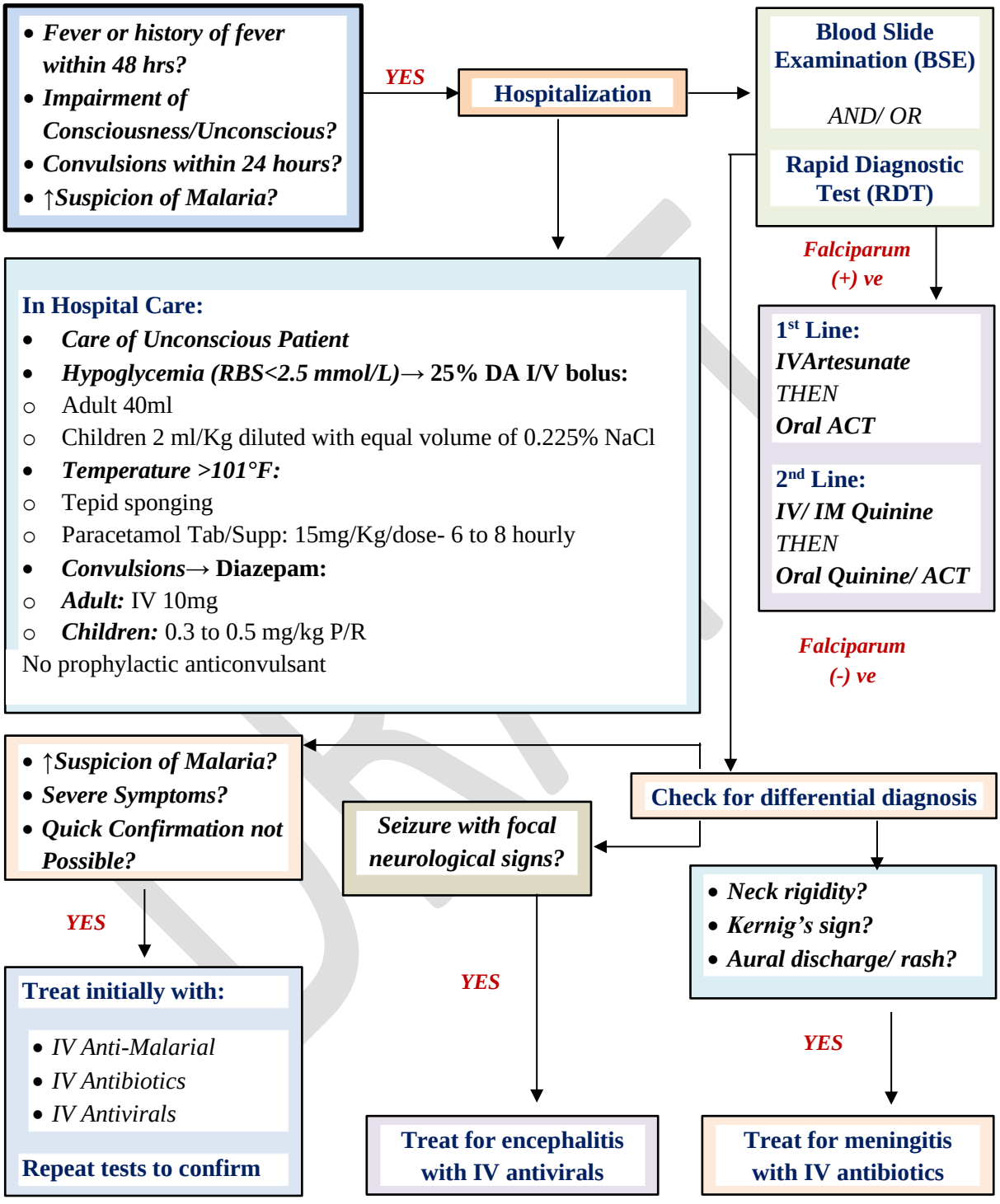
3. Lymphoedema of scrotum or penis: using scrotal sac, antibiotic, antifungal, reconstructive surgery.

4. Lymph Scrotum: Application of Sterile Bandage, repair of leaking, antibiotic, antifungal.

5. Chyluria: Low fat, high protein diet, plenty of water, avoid hard work, lifting, rest.

Malaria

Management of Cerebral Malaria algorithm: (P. falciparum endemic zone)



- Drug history is as important as BSE since it may be false negative. RDT is preferred in urgency.
- Antibiotics should be started in appropriate doses to cover the possibility of meningitis (even if CSF is inconclusive) and other unrecognized infections

Antimalarial Therapy for Cerebral Malaria:

Initial Therapy:

A. Artemisin Derivative: Injection Artesunate – Drug of choice
   - Loading Dose:
     2.4mg/kg IV at 0 hours, 12 hours and 24 hours

   - Maintenance Dose:
     2.4mg/kg IV daily until the patient can tolerate oral medication but not more than 5 days.

     OR 2nd line

A. Quinine
   - Loading Dose:
     20 mg salt/kg IV over 4 hours in 5% DA (5-10 ml/kg) depending on the patient's overall fluid balance

   - Maintenance dose:
     After 8-12 hours of loading dose: 10mg salt/kg IV over 4 hours in 5% DA (5-10 ml/kg) over 4 hours, 8 to 12 hourly until the patient can tolerate oral medication.

     In patients requiring more than 48 hours of parenteral therapy, reduce the quinine or quinine maintenance dose by a third to half (i.e.5-7 mg salt/kg of body weight every 8-12 hourly for future 3 to 4 days.

Follow On Therapy:

A. Co-Artem (ACT) Dosing guidelines in table below:

	Day	Dose No.	Time (Hrs)	5-<15 Kg	15-<25 Kg	25-<35 Kg	>35 Kg
No. of Tablets of ACT	1	1st	0	1	2	3	4
		2nd	8	1	2	3	4
	2	3rd	24	1	2	3	4
		4th	35	1	2	3	4
	3	5th	48	1	2	3	4
		6th	60	1	2	3	4

Single dose primaquine

B. Quinine + Tetracycline/ Doxycycline: (Tetracycline and Doxycycline are contraindicated in children younger than 8 years old and in pregnant and lactating women)

- Quinine 7days + Tetracycline 7days (Q7+T7)
  OR
- Quinine 7days + Doxycycline7 days (Q7+D7)
  OR
- Quinine 7days + Clindamycin 7days (Q7+C7)

Quinine Dosing Guidelines in table below

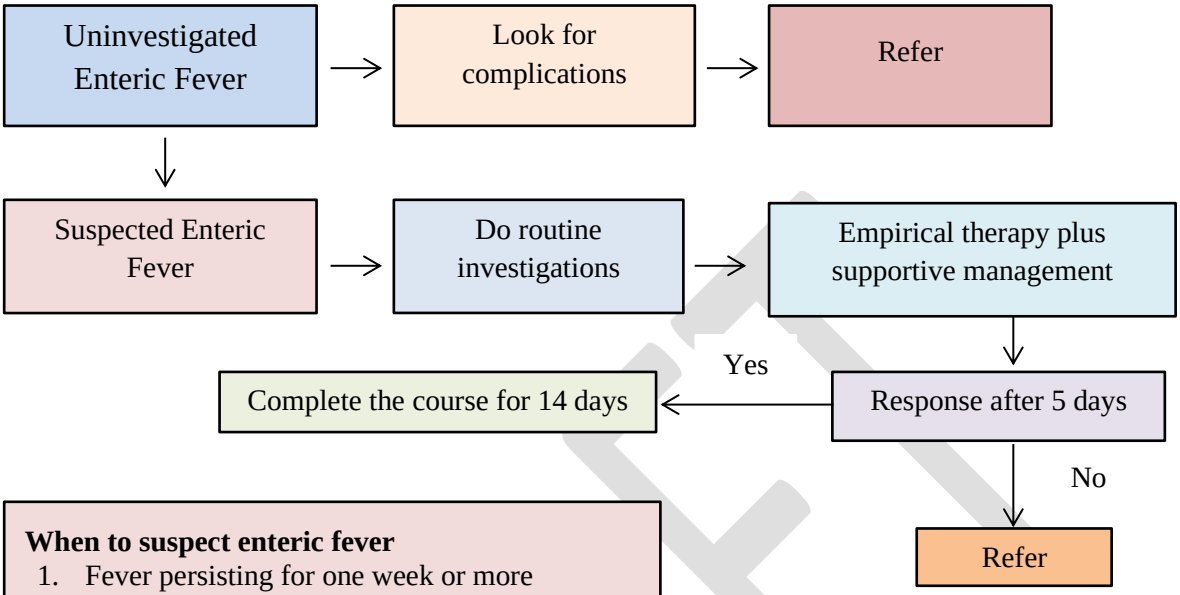
Quinine TDS Tab.300mg Sulphate	Body Weight (Kg)					
	3-9	10-19	20-29	30-39	40+	Duration of Treatment
	1/4	1/2	1	1 1/2	2	7days

Criteria for referral to higher center:

- Persistent Unconsciousness >48 hrs
- Uncontrolled Convulsions
- Respiratory Distress
- Persistent Hypotension despite fluid challenge.
- Severe Anaemia (Hematocrit < 15%, Hb% < 5g/dl)
- Oliguria/ AKI (Urine output <17 ml/hour or <400ml/24hous)
- Black Urine
- Deep Jaundice
- Pregnancy

Enteric Fever (Typhoid and Paratyphoid)

Management Algorithm for uninvestigated Enteric Fever



When to suspect enteric fever

1. Fever persisting for one week or more
2. No organ specific features except GI features

Routine investigations for suspected enteric fever

CBC with ESR, Blood for MP, Urine R/M/E,

Xray Chest P/A view, Blood for C/S if feasible

Antibiotics used in enteric fever:

Empirical Treatment

- Ceftriaxone: 2 gm/day for 10-14 days Plus/Minus Azithromycin: 500 mg BD for 7 days (for inpatients)
- Cefixime: 20 mg/kg/day BD for 14 days or Azithromycin: 500 mg BD for 7 days (for outpatients)

Fully Susceptible

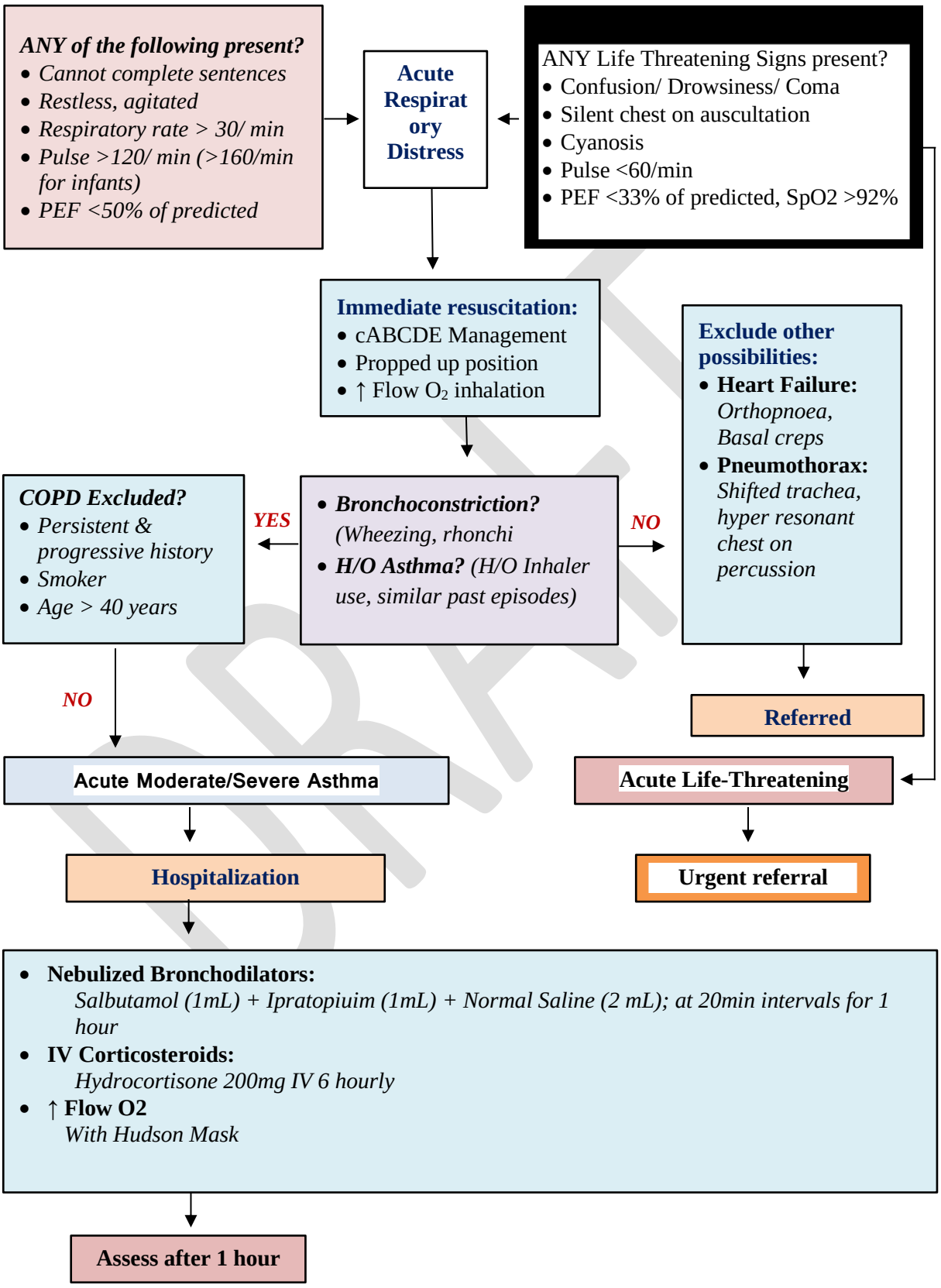
- Ciprofloxacin: 500 mg BD for 7 days OR
- Azithromycin: 1 gm/day for 7 days

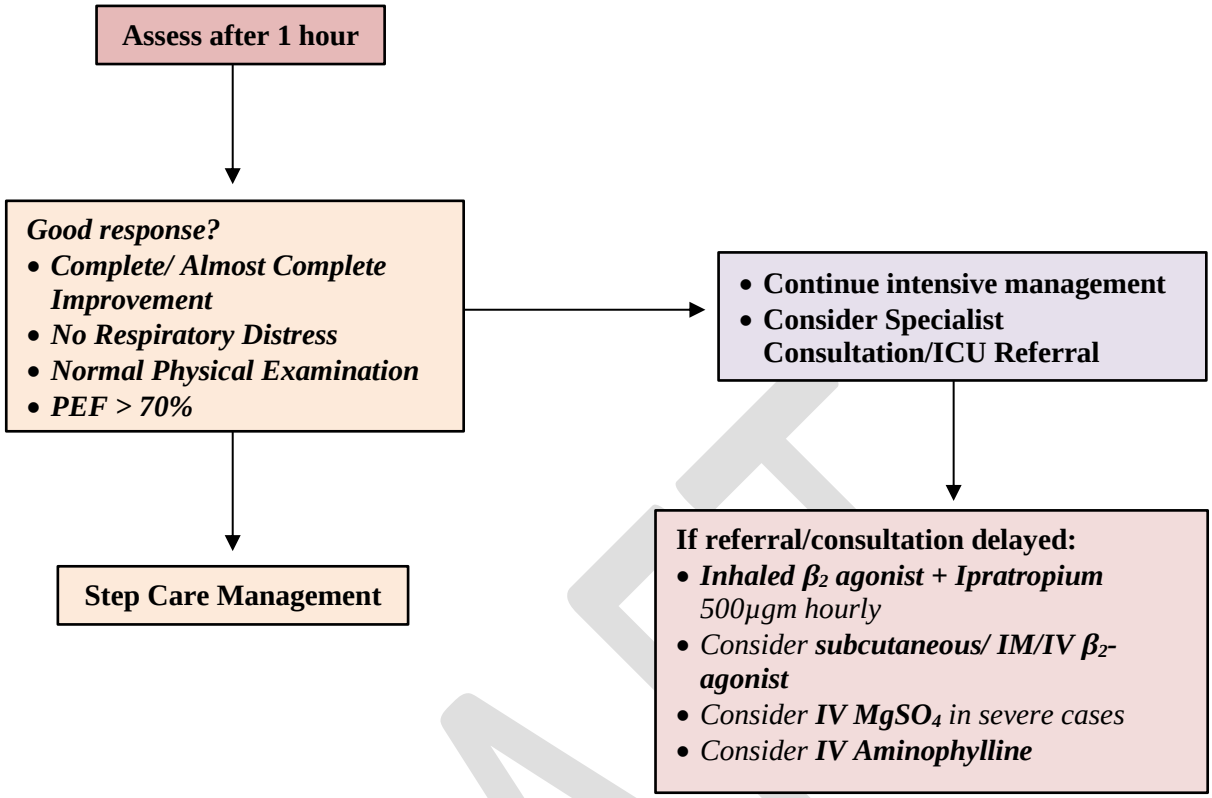
Multidrug Resistant Treatment

- Meropenem: 1 gm IV 8 hourly for 10-14 days

NB. Widal test is of little value in the diagnosis of enteric fever

Asthma (Status Asthmaticus)

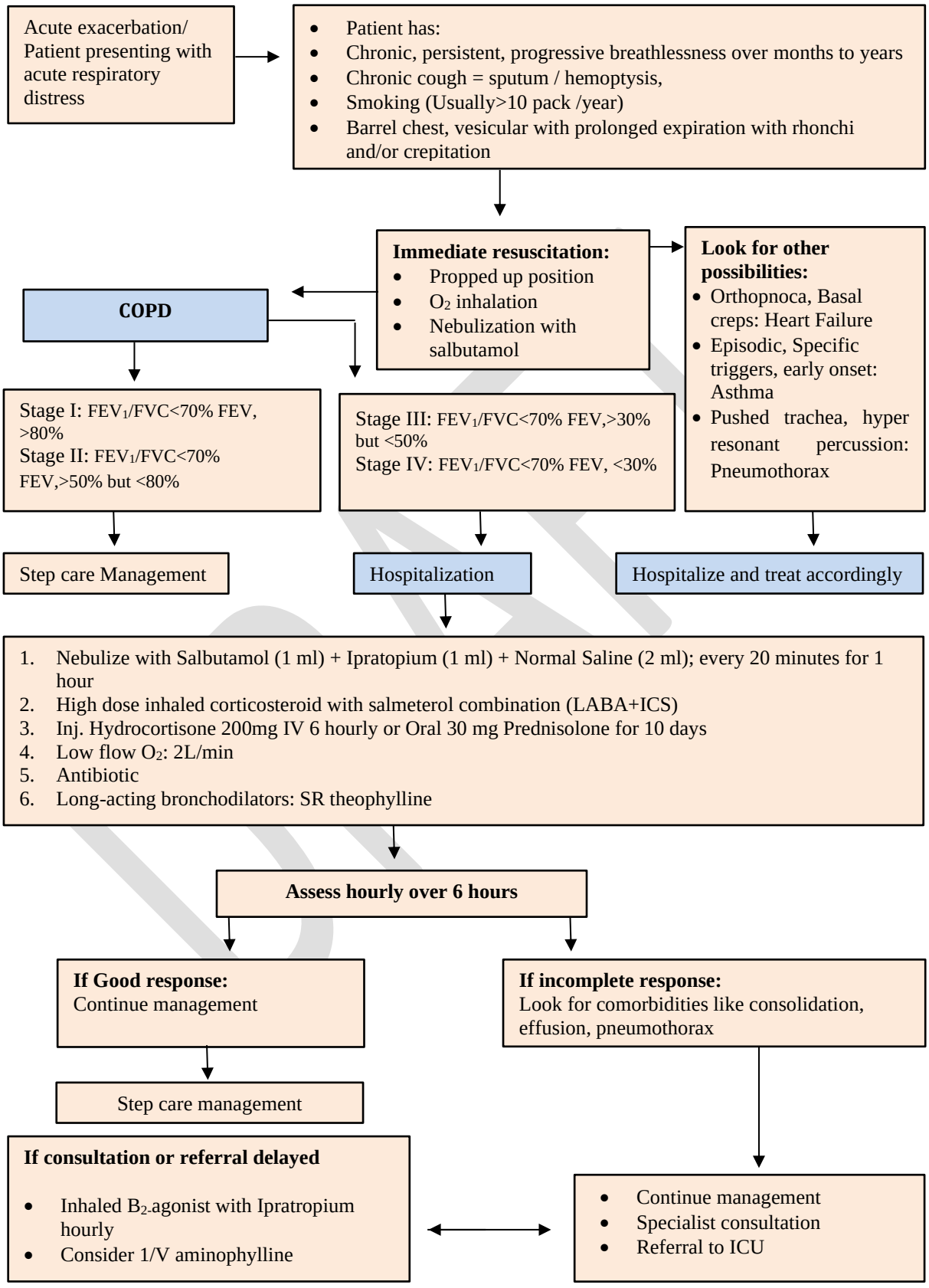




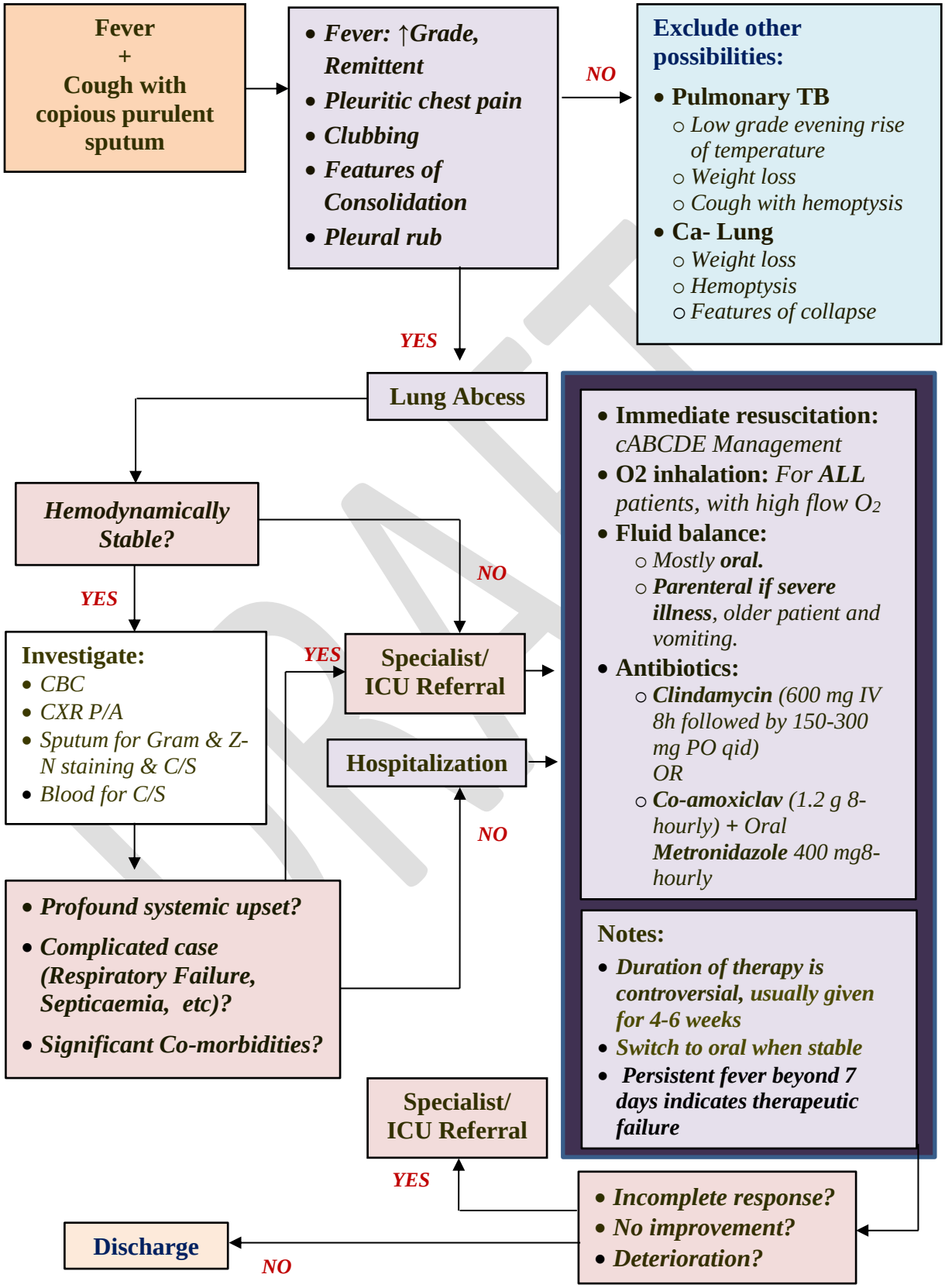
Therapies not recommended during acute attack:

- **Sedatives**
- **Antitussive drugs**
- **Chest physiotherapy** (may increase patient discomfort)
- **Hydration** with large volumes of fluid (may be necessary for younger children and infants)
- **Antibiotics:** *If overt infection*
- **Antihistamines**

Chronic Obstructive Pulmonary Disease (COPD)

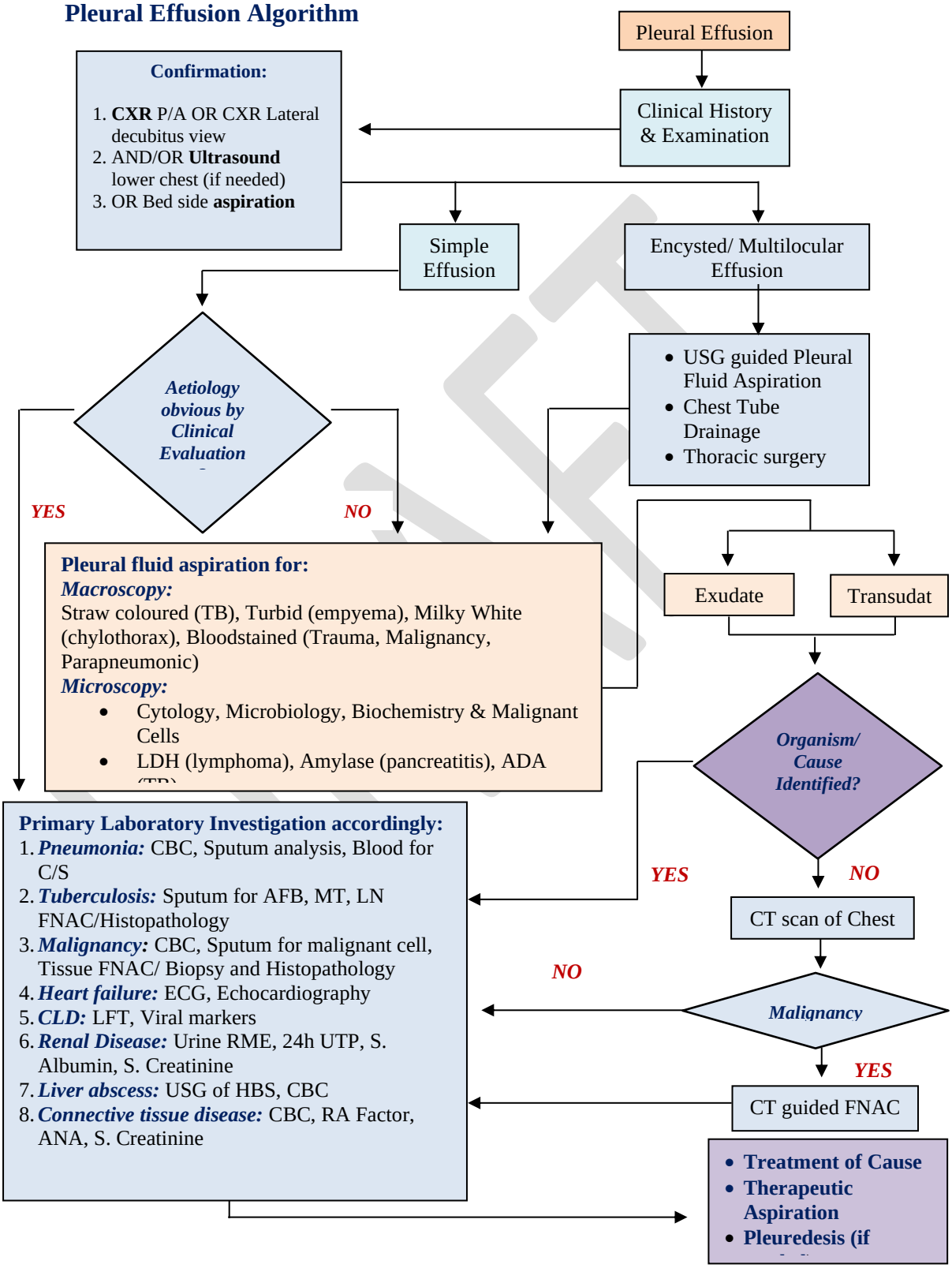


Lung Abscess



Pleural Effusion

Pleural Effusion Algorithm



History:

- ***Parapneumonic:*** Short duration, high fever, productive cough, pleuritic chest pain
- ***Malignant:*** Subacute onset, cough, hemoptysis, persistent chest pain, weight loss, smoker, recurrent
- ***Tubercular:*** Insidious onset, cough > 3wks, hemoptysis, weight loss, TB contact
- ***Other Systemic diseases:*** Present with their specific symptoms

Examination:

F/O Pleural effusion on affected side, plus:

- ***Parapneumonic:*** High temperature, F/O consolidation
- ***Tubercular:*** Low grade evening rise of temperature, lymphadenopathy (may be matted
- ***Malignant:*** Weight Loss, Clubbing, lymphadenopathy (hard, irregular), Feature of (F/O) mass lesion/consolidation/collapse

Systemic diseases: Present with their specific symptoms

Acute Coronary Syndrome

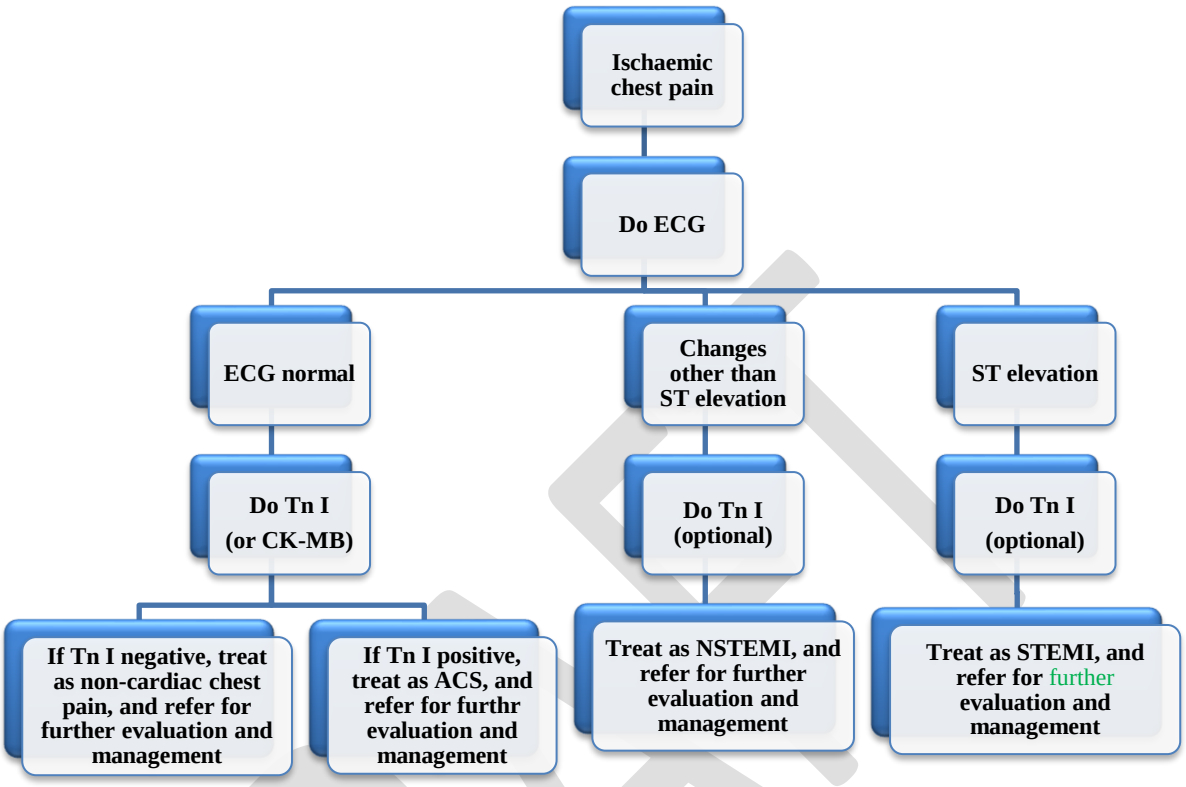
Acute coronary syndrome (ACS includes: unstable angina (UA), non-ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI).

Table 4. Clinical differentiation and approach to chronic stable anginal and acute coronary syndrome.

Trait	Chronic stable angina	Acute coronary syndrome		
		Unstable angina	NSTEMI	STEMI
Chest pain	Yes	Yes	Yes	Yes
Mode of onset	Chronic, on and off	Acute	Acute	Acute
Precipitates by	Exertion	Spontaneous, at rest	Spontaneous, at rest	Spontaneous, at rest
Severity	Less	More	More	More
Relieved by rest	Yes	No	No	No
Relieved by nitrates e.g., GTN	Yes	No	No	No
ECG	Normal, or ST and T wave changes	Normal, or ST and T wave changes	ST and T wave changes	ST elevation, T inversion, Q waves
Troponin I	Normal/ negative	Normal/ negative	Elevated/ positive	Elevated/ positive
Treatment strategy	Medical management followed by CAG ± coronary revascularization	Medical management followed by CAG ± coronary revascularization	Medical management, including LMWH, followed by CAG ± coronary revascularization	Medical management + CAG + Primary PCI. Thrombolysis, if primary PCI not available

Here, NSTEMI= non-ST-segment elevation myocardial infarction, STEMI= ST-segment elevation myocardial infarction, GTN= glyceryl trinitrate, ECG= electrocardiogram, CAG= coronary angiography, PCI= percutaneous coronary intervention.

Figure 1. Approach to a patient with suspected acute coronary syndrome.



Here, Tn I = troponin I, CK-MB = creatine kinase myocardial band

Table 4. Treatment of acute coronary syndrome.

ACS diagnosed

↓

Admit preferably in coronary care unit (CCU)

↓

For all ACS patients:

- Oxygen inhalation, specially if acute left ventricular failure
- Aspirin, 300 mg stat, followed by, aspirin, 75 mg daily
- Clopidogrel, 300 mg stat, followed by, clopidogrel, 75 mg daily
- Atorvastatin, 20-40 mg (or rosuvastatin 10-20 mg) stat, and daily
- Morphine, 3 mg iv stat, and repeated in small aliquot if required
  OR
  Pethidine, 50 – 100 mg iv, specially in right ventricular MI
  PLUS
  Prochlorperazine 25 mg (or, ondansetron 8 mg) iv stat with first dose of morphine or pethidine
- Metoprolol 25-50 mg stat and twice daily (or, equivalent dose of other beta blockers)
- Ramipril 1.25-5 mg daily (or, equivalent dose of ARB)
- Nitroglycerine slow-release tablet, 2.6 mg twice daily
- Proton pump inhibitor and benzodiazepine if needed.

For acute STEMI patients (if primary PCI not feasible), within 12 hours of onset of chest pain:

- Streptokinase, 1.5 million units intravenously over 1 hour. (1 vial of 1.5 million units to be mixed with 100 ml of normal saline).

For acute NSTEMI and unstable angina patients (if early PCI not feasible):

- Enoxaparin, 1 mg/kg twice daily deep subcutaneously for 5-8 days.

Subsequent management of ACS patients

- Discharge after 2-5 days in uncomplicated cases
- Rest at home for 2 weeks, followed by resumption of usual activities over 4-6 weeks.

↓

Refer the patient with acute STEMI for primary PCI, and NSTEMI for early PCI in high-risk patients, if feasible.
Otherwise, after initial management, refer all ACS patients for coronary angiography and revascularization to appropriate center.
Tenecteplase is a better choice than streptokinase as thrombolytic, if available.

Table 5. Approach to a patient with suspected acute rheumatic fever.

Fever, joint pain, skin rash

↓

Acute rheumatic fever suspected on the basis of history and clinical examination

↓

Do relevant investigations:

- CBC, ESR
- CRP
- ASO titre
- ECG
- Throat culture, if feasible

↓

Apply Revised Jones Criteria

Major criteria

- Carditis (Clinical and/or subclinical (echocardiographic valvulitis)
- Arthritis: Monoarthritis or polyarthritis, polyarthralgia
- Chorea
- Erythema marginatum
- Subcutaneous nodules

Minor criteria

- Monoarthralgia
- Fever (≥38°C)
- ESR ≥30 mm/h and/or CRP ≥3.0 mg/dL
- Prolonged PR interval on ECG

Evidence of preceding group A streptococcal infection:

- Increased or rising ASO titer, or
- Positive throat culture for group A β-hemolytic streptococci

↓

Diagnose:

- Initial acute rheumatic fever: 2 major manifestations or 1 major plus 2 minor manifestations PLUS evidence of preceding group A streptococcal infection
- Recurrent acute rheumatic fever: 2 major or 1 major and 2 minor or 3 minor manifestations PLUS evidence of preceding group A streptococcal infection

Here, CBC = complete blood counts, CRP = C-reactive protein, ESR = erythrocyte sedimentation rate, ASO = Antistreptolysin O, ECG = electrocardiogram

Note: Joint manifestations can only be considered in either the major or minor categories but not both in the same patient.

Table 6. Treatment of rheumatic fever.

Acute rheumatic fever diagnosed

↓

- Offer general management including rest and nutrition
- Eradicate streptococcal infection.
  - Phenoxymethylpenicillin 500 mg (child: 15 mg/kg up to 500 mg) orally 6-hourly for 10 days, OR
  - Azithromycin 500 mg (child: 12 mg/kg up to 500 mg) orally daily for 5 days, if allergic to penicillin.
- Treat arthritis:
  - Naproxen 250-500 mg (child 10–20 mg/kg/day) orally twice daily, up to a maximum of 1250 mg daily, OR
  - Ibuprofen 200-400 mg (child 5-10 mg/kg) orally three times daily, up to a maximum of 2400 mg daily, OR
  - Aspirin 50-60 mg/kg/day orally, in four to five divided doses., up to a maximum of 80-100 mg/kg/day.
- Treat carditis:
  - Prednisone/prednisolone 1 to 2 mg/kg up to a maximum of 80 mg orally, once daily or in divided doses, for severe carditis.
  - Standard management of heart failure, including ACE inhibitor, frusemide spironolactone, and nitrate in symptomatic cases.

↓

Follow up:

- Look for wellbeing of the patient, symptoms and side effect of drugs
- Do investigations: CBC including ESR, CRP, ECG, and echocardiography, if available.
- Look for complications

↓

Offer secondary prophylaxis:

- Benzathine benzylpenicillin G (BPG) 1,200,000 units (child <20 kg: 600,000 units; ≥20 kg: 1,200,000 units) deep IM every 21 days, OR
- Phenoxymethylpenicillin 250 mg orally 12-hourly 1 hour before meal, OR
- Erythromycin 250 mg orally twice daily, if allergic to penicillin.

Duration of secondary prophylaxis (Australian guideline 2020):

- Definite acute rheumatic fever, no cardiac involvement: Minimum of 5 years after most recent episode of acute rheumatic fever, or until age 21 years (whichever is longer).
- Definite acute rheumatic fever, with cardiac involvement: Minimum of 10 years after the most recent episode of acute rheumatic fever or until age 40 years (whichever is longer)

↓

Refer, if: Complications, e.g., refractory heart failure, arrhythmia, or Sydenham's chorea

Hypertension

Table 1. Approach to diagnosis and management of hypertension in adults.

Diagnose hypertension by office or home BP:
Office SBP ≥ 140 and/or DBP ≥ 90 mmHg

↓

Assess severity of hypertension
Look for comorbidities: CVD, DM, CKD
Look for end-organ damage: LVH, proteinuria, retinopathy
Assess global CV risk, if feasible
Do not delay treatment if these cannot be done immediately

↓

Perform basic laboratory investigations, if feasible:
Blood glucose, serum creatinine, urine R/E, ECG, serum lipid profile, serum electrolytes.
Do not delay treatment if laboratory investigations cannot be done immediately

↓

Treat if SBP ≥140 mmHg or DBP ≥90 mmHg in general
OR
SBP ≥130 mmHg for those with CVD, DM, CKD, or end-organ damage

↓

Give lifestyle advice for all
Start 2-drug combination therapy, preferably in a single-pill combination
Initial drugs: ACEi/ARB, CCB, thiazide or thiazide-like diuretic

↓

Treatment targets: BP <140/90 mmHg in general
SBP <130 mmHg for high-risk patients with CVD, DM, CKD

↓

Follow up: Monthly till achievement of target BP, then every 3–6 months when BP is under control

Here, BP= blood pressure, SBP= systolic blood pressure, DBP= diastolic blood pressure, CVD= cerebrovascular disease, DM= diabetes mellitus, LVH= left ventricular hypertrophy, CV= cardiovascular, CKD= chronic kidney disease, R/E= routine examination, ECG= electrocardiogram; Here, ACEi/ARB= angiotensin converting enzyme inhibitor/angiotensin receptor blocker, CCB= calcium channel blocker.

Refer for further evaluation and management, if:	For hypertension in pregnancy, use:
↓ Resistant hypertension ↓ Malignant hypertension ↓ Suspected secondary hypertension ↓ Onset of end-organ damage ↓ Hypertension in pregnancy ↓ Hypertension in children and adolescents	↓ Labetalol ↓ α-Methyl dopa ↓ Nifedipine ↓ Amlodipine ↓ Verapamil (WHO, 2021)

Table 2. Algorithm for initiation of treatment with a single-pill, fixed-dose combination (compliance increases with fixed dose single-pill combination)

Start ARB–CCB at half-maximal doses
(Example: Telmisartan 40–Amlodipine 5 mg once a day)

↓

If BP is not at goal, increase ARB–CCB (e.g., Telmisartan 80–Amlodipine 10 mg daily)

↓

If BP is not at goal, add a thiazide/thiazide-like diuretic at half-maximal dose (hydrochlorothiazide 25 mg, indapamide 1.5 mg or chlorthalidone 12.5 mg once a day)

↓

If BP is not at goal, increase thiazide/thiazide-like diuretic (e.g., hydrochlorothiazide 50 mg or chlorthalidone 25 mg once a day)

↓

If BP is not at goal, refer to a specialist.

↓

- At each step, recheck BP in 4–6 weeks. If BP is at goal, follow up in 3–6 months.
- CCBs include dihydropyridine calcium channel blockers.
- Monitor serum electrolytes and serum creatinine, if feasible when using ACEi/ARB or thiazide/thiazide-like diuretic.
- The medications mentioned can be replaced with any 2 medications from any of the 3 drug classes: ACEis/ARBs, CCBs or thiazide/thiazide-like diuretics. Start 2 individual pills or, if available, both in a single-pill combination (fixed-dose combination).
- **ACEi or ARB is contraindicated in pregnancy.**

Table 3. Algorithm for initiation of treatment not using a single-pill combination (i.e., with monotherapy or free combination therapy)

Start a CCB at half maximal dose (e.g., Amlodipine 5 mg once a day)

↓

If BP is not at goal, increase the CCB (e.g., Amlodipine 10 mg daily)

↓

If BP is not at goal, add an ARB at half maximal dose (e.g., Losartan 50 mg or Telmisartan 40 mg once a day)

↓

If BP is not at goal, increase the ARB (e.g., Losartan 100 mg or Telmisartan 80 mg daily)

↓

If BP is not at goal, add a thiazide/thiazide-like diuretic at half maximal dose (hydrochlorothiazide 25 mg, indapamide 1.5 mg or chlorthalidone 12.5 mg once a day)

↓

If BP is not at goal, increase the thiazide/thiazide-like diuretic (e.g., hydrochlorothiazide 50 mg or chlorthalidone 25 mg daily)

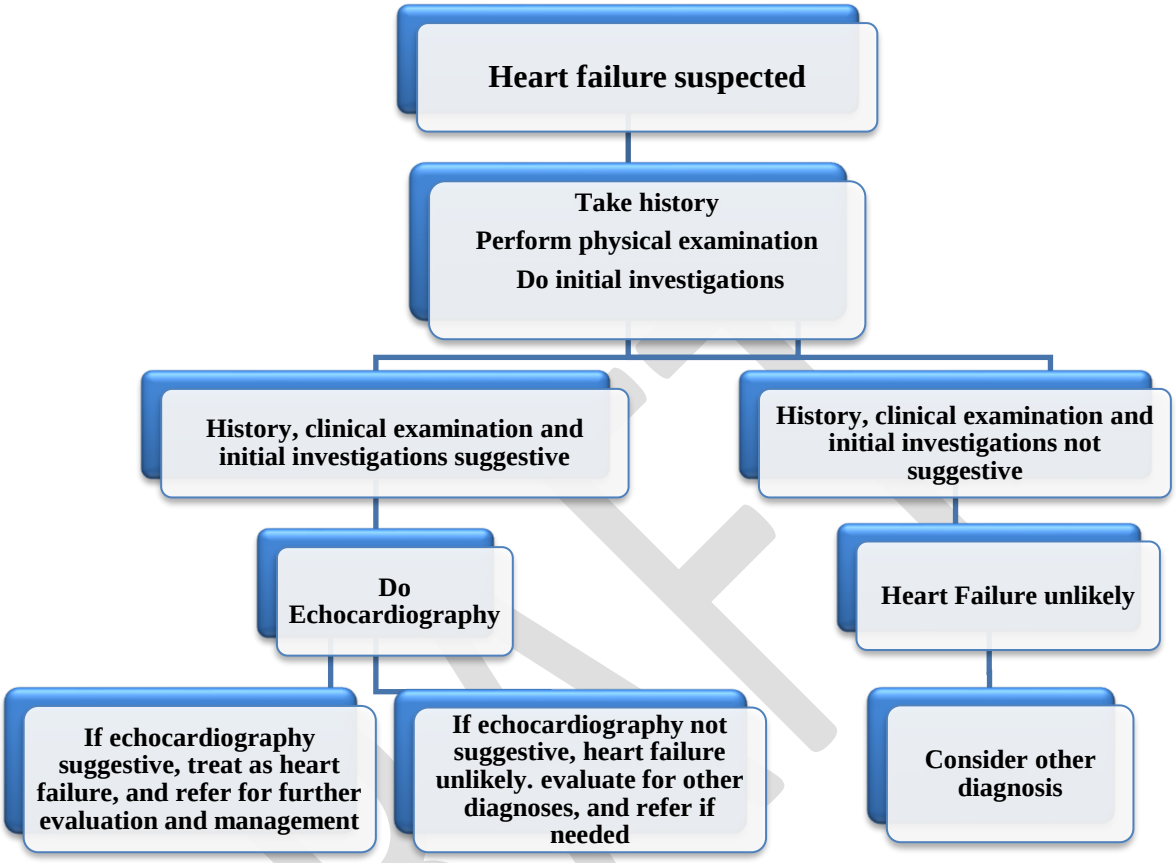
↓

If BP is not at goal, refer to a specialist.

- At each step, recheck BP in 4–6 weeks. If BP is at goal, follow up in 3–6 months.
- A CCB can be replaced with a thiazide/thiazide-like diuretic or an ACEi or ARB.
- Monitor serum electrolytes and serum creatinine, if feasible when using ACEi/ARB or thiazide/thiazide-like diuretic.
- A CCB, rather than a thiazide-type diuretic or ACEi/ARB, may be selected as first-line medication for monotherapy if serum electrolyte and serum creatinine measurement is not feasible.
- **ACEI or ARB is contraindicated in pregnancy.**

Heart Failure

Figure 2. Approach to a patient with heart failure (not acute onset).



History, clinical examination and initial investigations

History

- Effort intolerance
- Exertional dyspnoea, orthopnoea, paroxysmal nocturnal dyspnoea
- Known coronary artery disease, hypertension

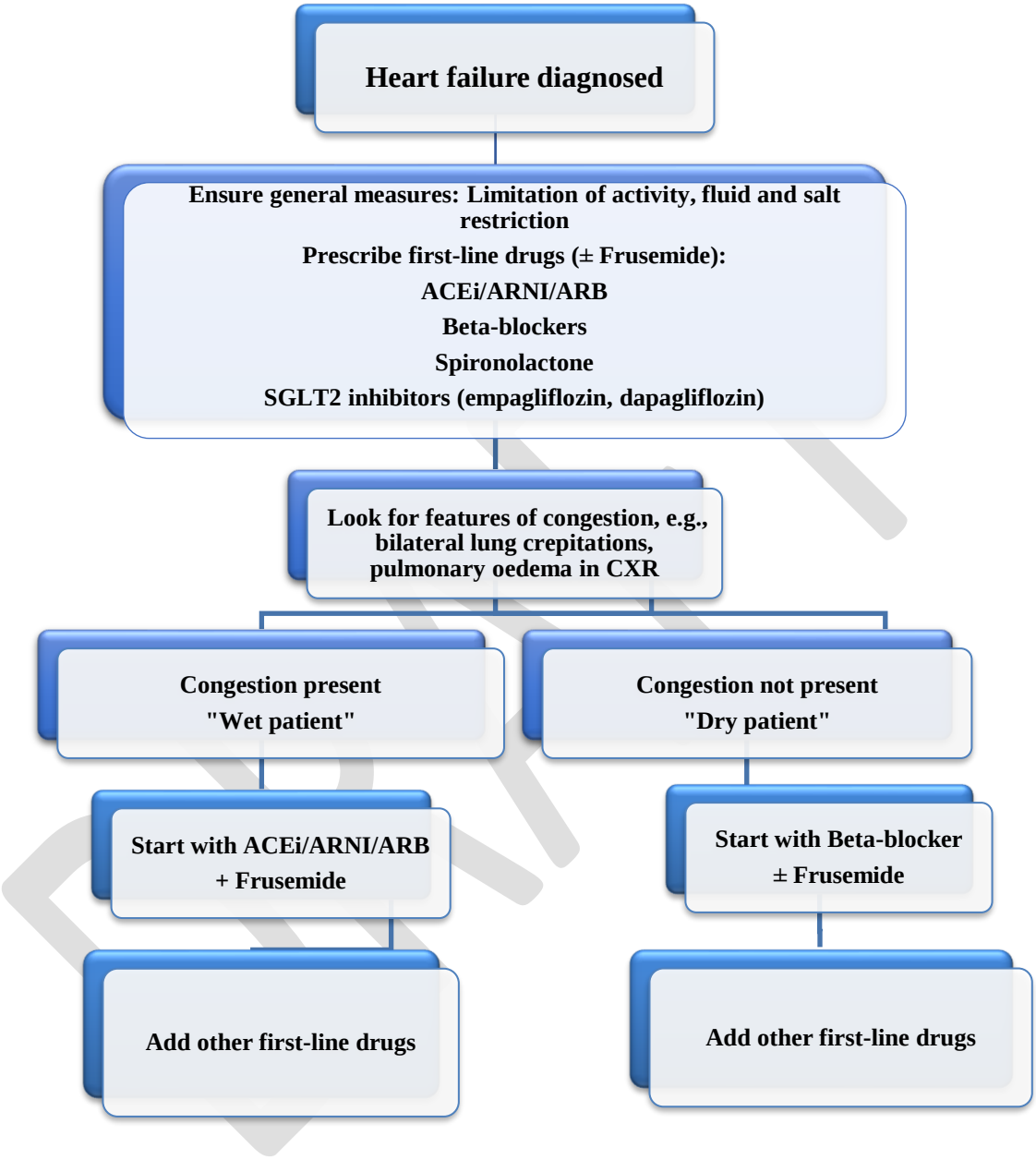
Physical examination

- Dependent oedema
- Raised JVP
- Lung crepitations
- Shifted and diffuse apex beat
- Murmur

Initial investigations

- ECG (any abnormality)
- Chest X-ray (pulmonary oedema, cardiomegaly)

Figure 3. Management of a patient with heart failure (not acute onset).



Here, ACEI = angiotensin-converting enzyme inhibitor, ARB = angiotensin receptor blocker, ARNI = angiotensin receptor-neprilysin inhibitor, SGLT2 = sodium-glucose cotransporter-2.

Table 7. Dose of selected drugs used in heart failure.

Drug	Starting Diose	Target Dose
Ramipril	1.25 mg daily	10 mg daily
Captopril	6.25 mg 3 times daily	50 mg 3 times daily
Losartan	25–50 mg daily	150 mg daily
Valsartan	40 mg twice daily	160 mg twice daily
Valsartan-sacubitril	50 mg twice daily, 25 mg twice daily if low BP	100 mg twice daily
Metoprolol succinate	12.5–25 mg daily	200 mg daily
Carvedilol	3.125 mg twice daily	25 mg twice daily
Bisoprolol	1.25 mg once daily	10 mg once daily
Spironolactone	12.5–25 mg daily	50 mg daily
Empagliflozin	10 mg daily	10 mg daily
Dapagliflozin	10 mg daily	10 mg daily
Frusemide	20–40 mg daily	120 mg daily

Left Ventricular Failure (LVF)

Acute left ventricular failure suspected

↓

Look for symptoms and signs:

- **Symptoms:**
  - Severe breathlessness and cough
  - Pink frothy sputum
  - Chest tightness
  - Orthopnea, paroxysmal nocturnal dyspnea (PND)
- **Signs:**
  - Central cyanosis
  - Pulsus alternans
  - Gallop rhythm
  - Lung base crepitations
- **Initial investigations:**
  - ECG - Abnormal
  - Chest X-ray – Pulmonary oedema

↓

Immediate management:

- Admission in hospital, preferably in CCU
- Bed rest in propped up position
- Oxygen inhalation
- Furosemide, 20-80 mg IV stat and twice daily, 8 am and 4 pm
- Morphine, 3 mg IV stat, and repeated in small aliquot if required, PLUS Prochlorperazine 25 mg (or, ondansetron 8 mg) IV stat with the first dose of morphine
- Glyceryl trinitrate continuous infusion either by infusion pump or in IV drip, 9 – 200 µg/min as required, if blood pressure permits.
- Management of cardiogenic shock if indicated.

↓

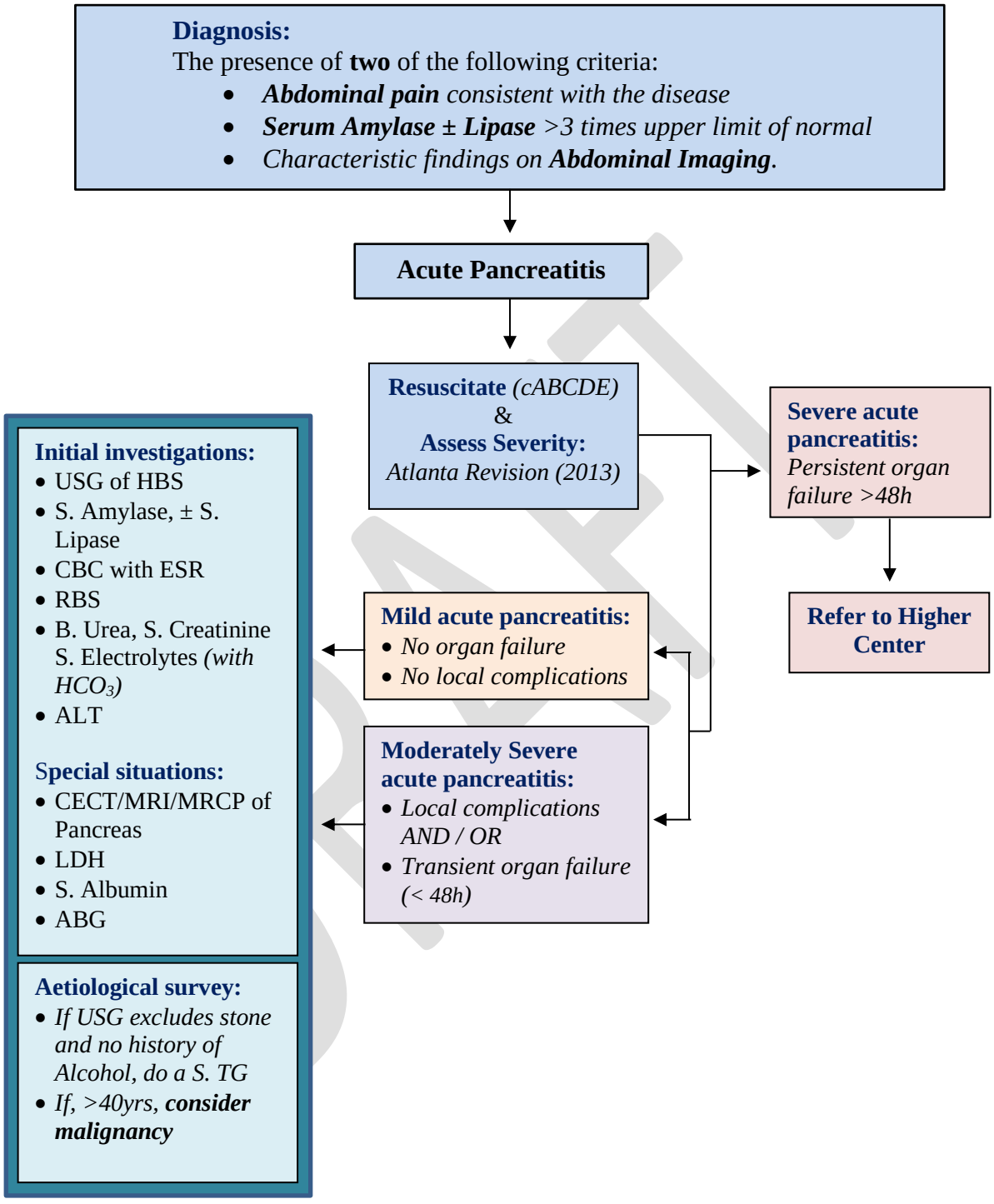
Subsequent management:

- Do further investigations, e.g., echocardiography, and others, if available and as needed
- Diagnose & treat underline causes e.g., revascularization for MI/ischemia control hypertension treat valvular heard disease etc.
- Add ACE inhibitor
- Add other first-line heart failure drugs, if indicated
- Refer to appropriate center for further evaluation and management.

Note:

- Morphine: 1 ampoule contains 15 mg in 1 ml, 1 ml to be mixed with 14 ml distilled water, so the final strength is 1 mg/ml.
- Inj. Nitroglycerin, 50 mg/10 ml: 1 ampoule to be mixed with 40 ml of 5% dextrose in aqua, and to be infused with an infusion pump @ 0.4 ml - 1.4 ml/min, OR
  1 ampoule to be mixed with 500 ml of 5% dextrose in aqua, and to be infused @ 10-30 drop/ min, usually not more than 24 hours.

Acute Pancreatitis



Initial Management:

A. Aggressive hydration:

- IV infusion with 250-500 ml/hr Isotonic Crystalloid Fluid ***(Lactated Ringer's solution preferred)*** within first 12-24 h.
- Fluid requirements should be reassessed at frequent intervals within 6 h of admission and for the next 24 – 48 h
- Should be provided to all patients, unless cardiovascularand/or renal comorbidities exist
- Goal: ↓ BUN.

B. Nutrition:

- **Mild AP:** Oral Feedings *(may be started immediately if there is no nausea and vomiting, and abdominal pain has resolved)*
- **Severe AP:** Enteral nutrition is recommended to prevent infectious complications. *Parenteral nutrition should be avoided if possible. Nasogastric delivery and nasojejunal route appear comparable in efficacy and safety.*

C. Antibiotics:

- Given for an extra pancreatic infection *(such as cholangitis, catheter-acquired infections, bacteremia, urinary tract infections, pneumonia, etc)*
-
- Routine use of prophylactic antibiotics in patients with Severe AP is **not recommended**
-
- **Infected necrosis**: Antibiotics known to penetrate pancreatic necrosis, such as carbapenems, quinolones, and metronidazole, may be useful e.g:
  - ✓ ***Imipenem/Cilastatin:*** *500-1000 mg IV 6hrly, 7-10 days*
  - ✓ ***Ceftriaxone:****1-2gm IV 12 hrly*
  - ✓ ***Ciprofloxacin:*** *400 mg IV 12 hrly, 7-10 days.*

Ascites

- Abdominal distension either exudative or transudative
- Visual signs
- USG findings of ascites

Ascites

Transudative
(SAAG >11gm/L)*

- Cirrhosis of liver
- Cardiac failure
- Protein loosing enteropathy
- Malnutrition
- Budd-Chiari syndrome
- Veno-occlusive diseae
- Meg's syndrome
- Constrictive pericarditis

Exudative
(SAAG<11gm/L)*

- Tuberculosis
- Peritoneal malignancy, eg; Lymphoma
- Hepatic malignancy
- Acute pancreatitis
- Nephrotic syndrome
- Lymphatic obstruction
- Hypothyroidism
- SLE

Potential Investigations for Confirmation of Diagnosis

- Ultrasonogram of whole abdomen
- Liver function tests
- S. albumin
- S. electrolyte, S. creatinine
- Ascitic fluid study
- Viral markers-HBV, HCV
- CBC ESR
- Chest X-ray P/A view, MT, Sputum for AFB & gene X-part
- S. Amylase/Lipase
- Urine R/M/E
- Urinary total protein
- Thyroid function test
- ECG, Echocardiography
- CT scan of abdomen
- ANA, Anti Ds DNA

No Diagnosis/ Complications

General Management: According to cause

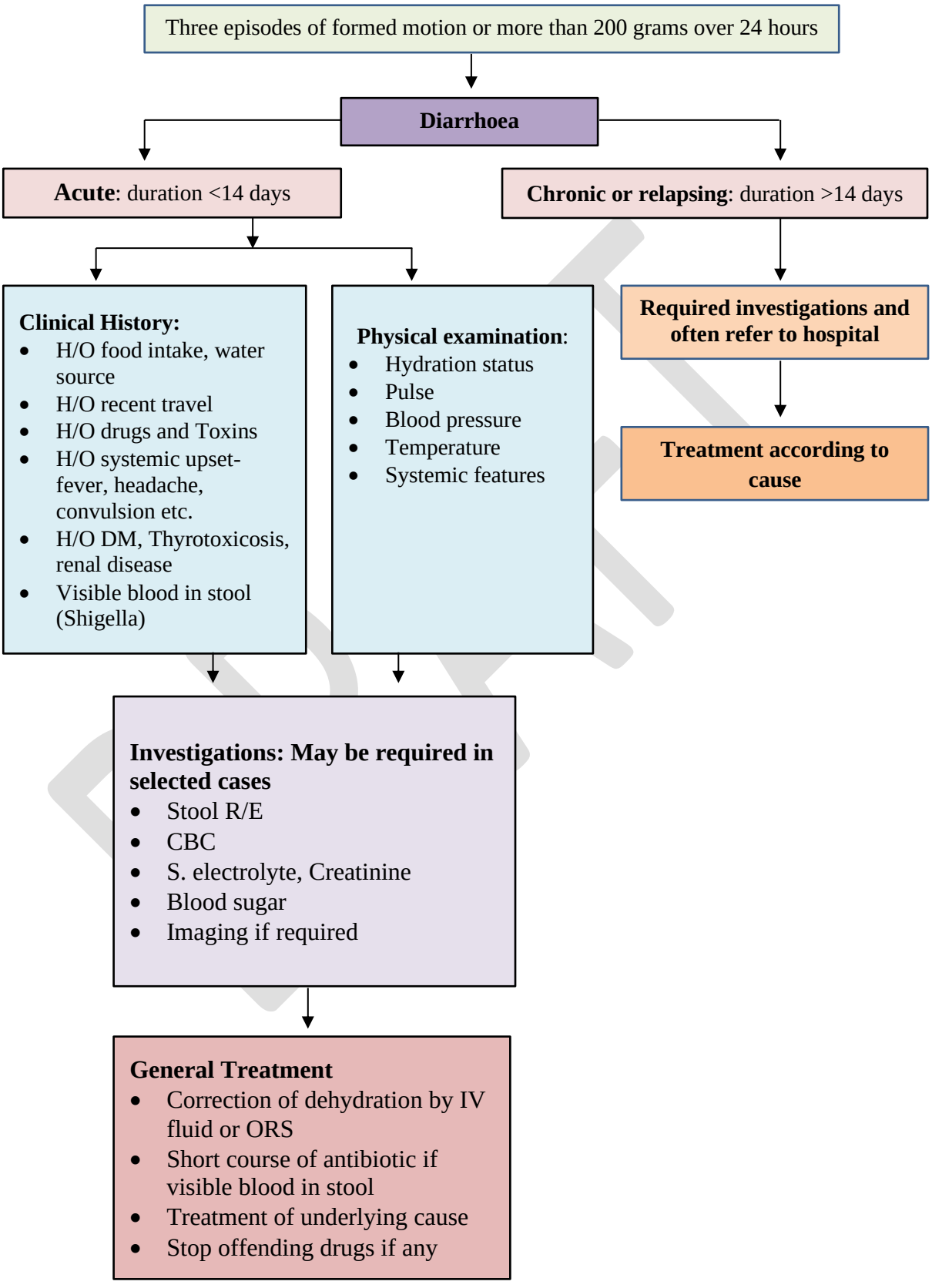
- Salt (100mmol/day) and water restriction.
- Avoid drugs containing sodium or potentiate sodium retention
- Measure daily weight
- Diuretics: Spironolactone, Frusemide
- Paracentesis (with the support of human albumin)
- Trans jugular intrahepatic portosystemic stent shunt (TIPSS)

Complications:

- Renal Failure
- Hepatorenal syndrome
- Spontaneous bacterial peritonitis
- Refractory ascites

Refer to Higher Center

Diarrhoea and Gastroenteritis



Peptic Ulcer Disease (PUD)

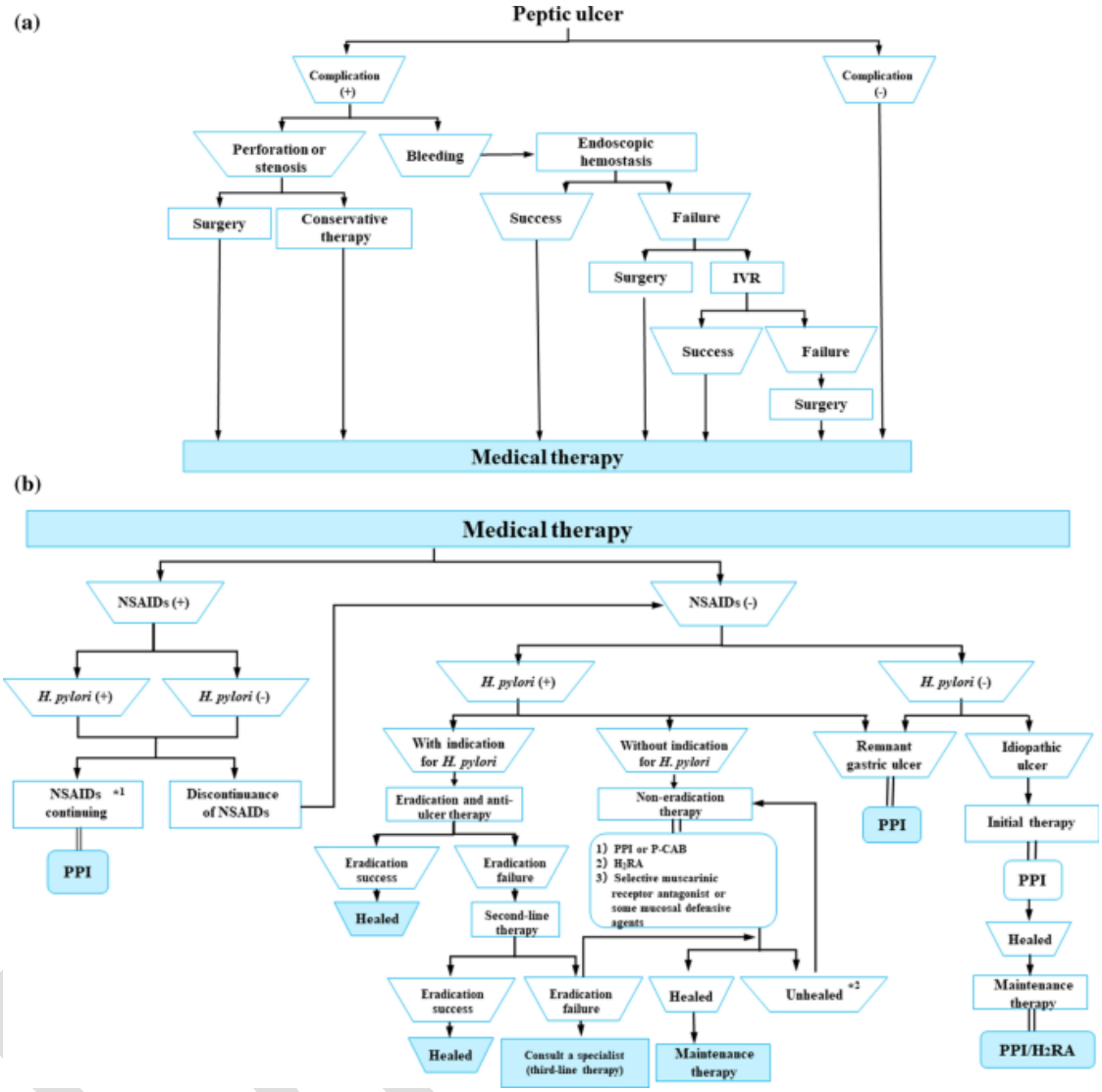
1. Diagnosis:
    a. History:
        i. Recurrent abdominal pain: episodic, epigastric pain, having relations with food
        ii. Vomiting, anorexia, nausea
        iii. Early satiety
        iv. H/O blood vomiting, passage of tarry stool
        v. H/O NSAIDs

    b. Examination:
        i. Anaemia
        ii. Epigastric tenderness
        iii. Duodenal point tenderness.
        iv. Signs of complication: If profuse bleeding
            - Low BP, Rapid feeble pulse
            - Respiratory Rate increased.
            - Skin sweating, cold periphery
            - Urine output: decreased

    c. Alarm features:
        i. Anemia
        ii. Weight loss
        iii. Vomiting
        iv. Hematemesis and/or malaena
        v. Dysphagia
        vi. Palpable abdominal mass

    d. Investigations:
        i. Perform endoscopy if
            - Alarm features present
            - Age > 55 years with any clinical feature
            - Persistent symptom after H. pylori eradication
        ii. Tests for Helicobacter pylori, if age < 55 years

2. Treatment pathway:



IVR: Interventional radiotherapy with transcatheter arterial embolization

Source: Kamada T, Satoh K, Itoh T, et al. Evidence-based clinical practice guidelines for peptic ulcer disease 2020. J Gastroenterol (2021) 56:303–322

3. Drug therapy

i. Anti-H. Pylori treatment (all patients with proven PUD with positive H. Pylori) : PPI, Amoxycillin 1gm and Clarithromycin 500 mg twice daily for 10 days
ii. Maintenance: Usually not required after successful H. pylori eradication. For the minority who do require it, the lowest effective dose of PPI should be used (Ref. Davidson).

General measures: Cigarette smoking, aspirin and NSAIDs should be avoided. No special dietary advice is required.

Acute Liver Failure

Potentially reversible, severe liver injury, with an onset of hepatic encephalopathy and / or coagulopathy (INR>1.5) within 26 weeks of the appearance of the first symptoms and in the absence of pre-existing liver disease

-

ACUTE LIVER FAILURE

Common Clinical Features:

- Jaundice
- Hepatic Encephalopathy
- Fetor hepaticus
- Asterixis (Flapping Tremors)
- Constructional Apraxia

Common Causes:

- Infections:
  - ✓ Viral hepatitis: HBV, HCV, CMV, Yellow fever
  - ✓ Leptospirosis
- Drugs:
  - ✓ Paracetamol overdose
  - ✓ Halothane
  - ✓ Isoniazid
- Toxins:
  - ✓ Amanita phalloides mushroom
  - ✓ Carbon Tetrachloride
- Vascular:
  - ✓ Budd–Chiari syndrome
  - ✓ Veno-occlusive disease
- Others:
  - ✓ Alcohol
  - ✓ Fatty liver disease
  - ✓ Primary biliary cholangitis
  - ✓ Primary sclerosing cholangitis
  - ✓ Haemochromatosis
  - ✓ Autoimmune Hepatitis
  - ✓ α1-Antitrypsin deficiency
  - ✓ Wilson's disease
  - ✓ Fatty liver of pregnancy
  - ✓ Malignancy

Potential Investigations:

- CBC, S. creatinine, S Electrolyte, RBS
- Liver Function test, Prothrombin time
  - ✓ HBsAg, anti HBc IgM, Anti HEV, Anti HAV, Anti HCV
- Serology for CMV, EBV, HSV
- Caeruloplasmin, S. copper, Urinary copper, Slit lamp
- Autoantibodies: ANA, ASMA, LKM, SLA
- Immunoglobulin
- Toxicology screen of blood and urine
- USG of abdomen, Doppler of hepatic & portal vein
- Blood and urine C/S, Ascitic fluid study
- Chest X-ray

Management of Acute liver failure

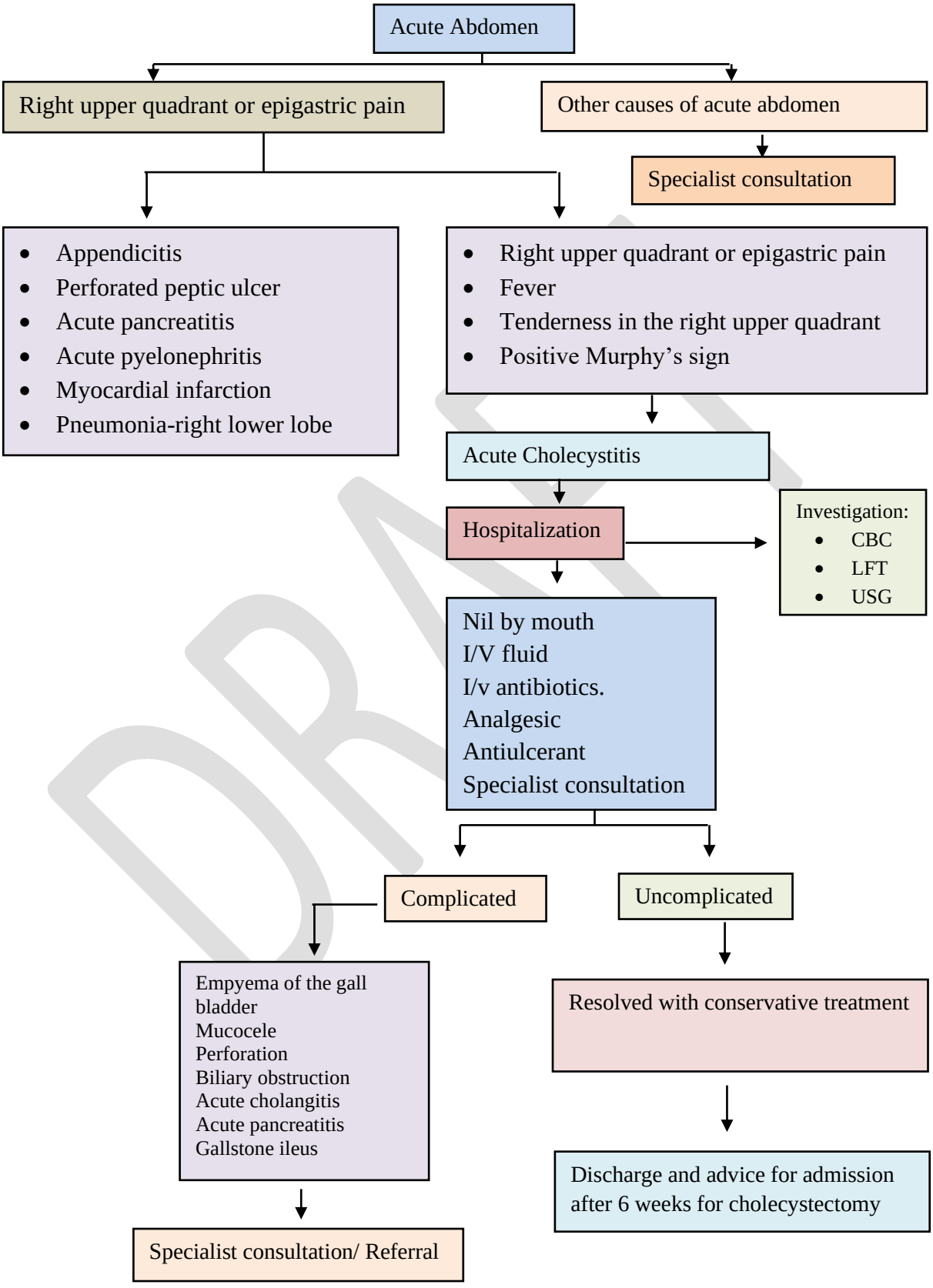
General Management:

- ICU Admission
- 20° head-up tilt
- Protect the airway with intubation
- NG Tube to avoid aspiration and remove any blood from stomach.
- Urinary Catheterization
- Ensure Adequate Nutrition
- Avoid sedative, Hypnotics, Diuretics
- Monitoring

Spesific management:

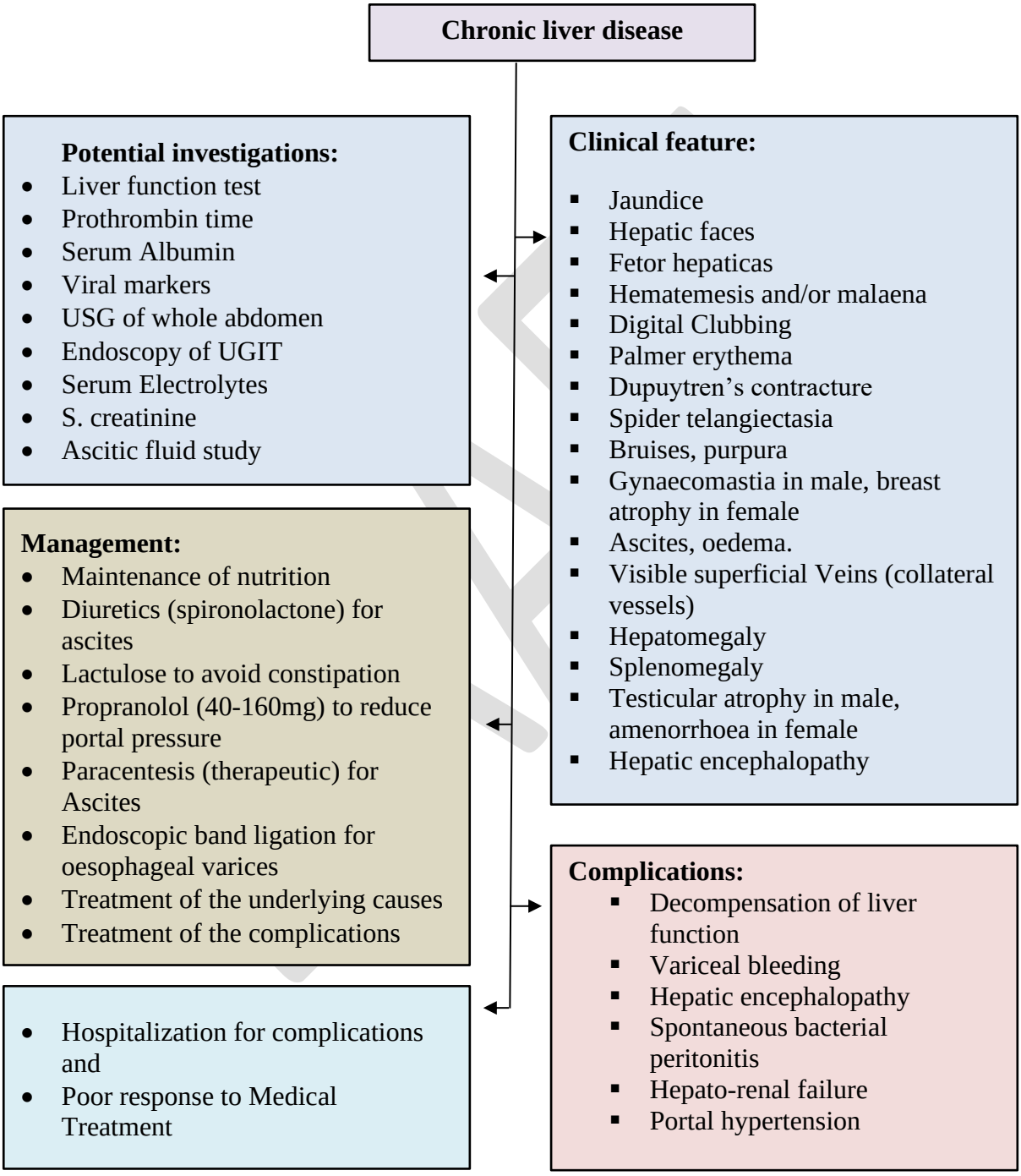
- Syp. Lactulose: 15-30ml 3 times daily
- Inj. Cefotaxim/ Ceftriaxon
- Tab Rifaxamin 400mg TDS
- Thiamine And Folate supplements
- IV PPI for Stress Ulcer Prophylaxis
- N-acetylecysteine , specialy in paracetamol overdose
- Avoid hypoglycemia by IV 10% DA
- Control seizure
- Treatment of underlying cause
- Liver transplantation

Acute Cholecystitis



Chronic Liver Disease (CLD)

CLD may be defined as progressive destruction of the liver parenchyma over a period greater than 6 months leading to fibrosis and cirrhosis.



Hematemesis & Malena

Hematemesis: Vomiting out of Blood
Malaena: Passage of tarry, shiny black stool with a characteristic odour and resulting from upper gastrointestinal bleeding

Hematemesis and / or Malena

Common Causes:
- Peptic Ulcer (35-50%
- Gastric erosion (10-20%)
- Varices (2-9%)
- Oesophagitis (10%)
- Mallory-Weiss tear(5%)
- Vascular malformation (5%)
- Cancer of stomach and oesophagus (2%)
- Aorto- duodenal fistula(0.2%)

Hospitalization and Urgent Resuscitation

Management:
Medical emergency should be managed immediately

Initial assessment:

a. Circulatory status: Pulse, BP, Urine output, Sweating
b. Seek evidence of liver disease: Jaundice, Ascitis, Cutaneous stigmata, Hepatosplenomegaly
c. Identify comorbidity: Cardiorespiratory, renal, Cerebrovascular

Initial investigations:
- CBC, ESR, PBF
- S. urea and electrolyte
- Liver function test
- Prothrombin time, APTT
- Blood grouping, Rh Typing, Cross matching,

Intravenous access at least one wide bore cannula
Resuscitation:
1. IV Crystalloid to raise BP
2. Blood transfusion if active bleeding with low BP and tachycardia
3. Oxygen if patient in shock

- **Further evaluation and**
- **Speciality Treatment**

- **Referral**

Seizure/Epilepsy

- A seizure is any clinical event associated with frequent episode of convulsions (tonic-clonic) and / or impaired consciousness or abnormal motor or sensory phenomena
- Recurrent episode of Seizure is called epilepsy
- More than two episodes of seizure in 24 hrs is called Status Epilepticus (Medical Emergency)

Clinical features:

- Previous history of seizures/ epilepsy
- Aura +/-
- Sudden onset of symptoms
  1. Impairment of consciousness
  2. Sudden fall, injury
  3. Tonic-clonic convulsion
  4. Tongue bite
  5. Incontinence of urine/ faeces
  6. Retrograde amnesia
  7. Visual disturbance
  8. False recognition
  9. Burning, tingling in limbs
  10. Jerking of any part of the body

Epilepsy

Exclude Syncope and Conversion disorder

Initial management:

- Move person away from danger (fire, water, machineries)
- After convulsions cease turn into recovery position (semi-prone)
- Ensure clear airway. Don't put anything inside mouth.
- If convulsions continue more than 5 minutes or recur without person regaining consciousness (status epilepticus) requires urgent medical management .
- Give Oxygen to offset cerebral hypoxia
- Give intravenous anti-convulsant (ex. Diazepam 10 mg) repeat once after 15 minutes
- Draw blood for glucose, urea, electrolytes (including Ca++, Mg++) , liver function test
- Admit the patient if status epilepticus, preferably in ICU, monitor BP , respiration, blood gases (intubation and ventilation if appropriate)

If seizure continues after 30 minutes Hospitalization

- I/V infusion (with cardiac monitoring) with one of the following:
  Phenytoin - 15mg/kg at 50mg per minute
  Fosphenytoin – 15mg/kg at 100mg/min
  Phenobarbital – 10mg/kg at 100 mg/ min
- If seizure still persist or refractory to above measures and patient develops hypoxia, intubation , ventilation and general anesthesia using propofol or thiopental

Once status controlled:

- Commence longer term anti- convulsant with one of the following:
  Sodium valproate- 10mg/kg over 3 to 5 min then 800 to 2000 mg per day
  Phenytoin- 300 mg/day
  Carbamazepine- 400 to 1200 mg / day

Investigations for causes:

- EEG
- MRI of brain if indicated

Metabolic profile:

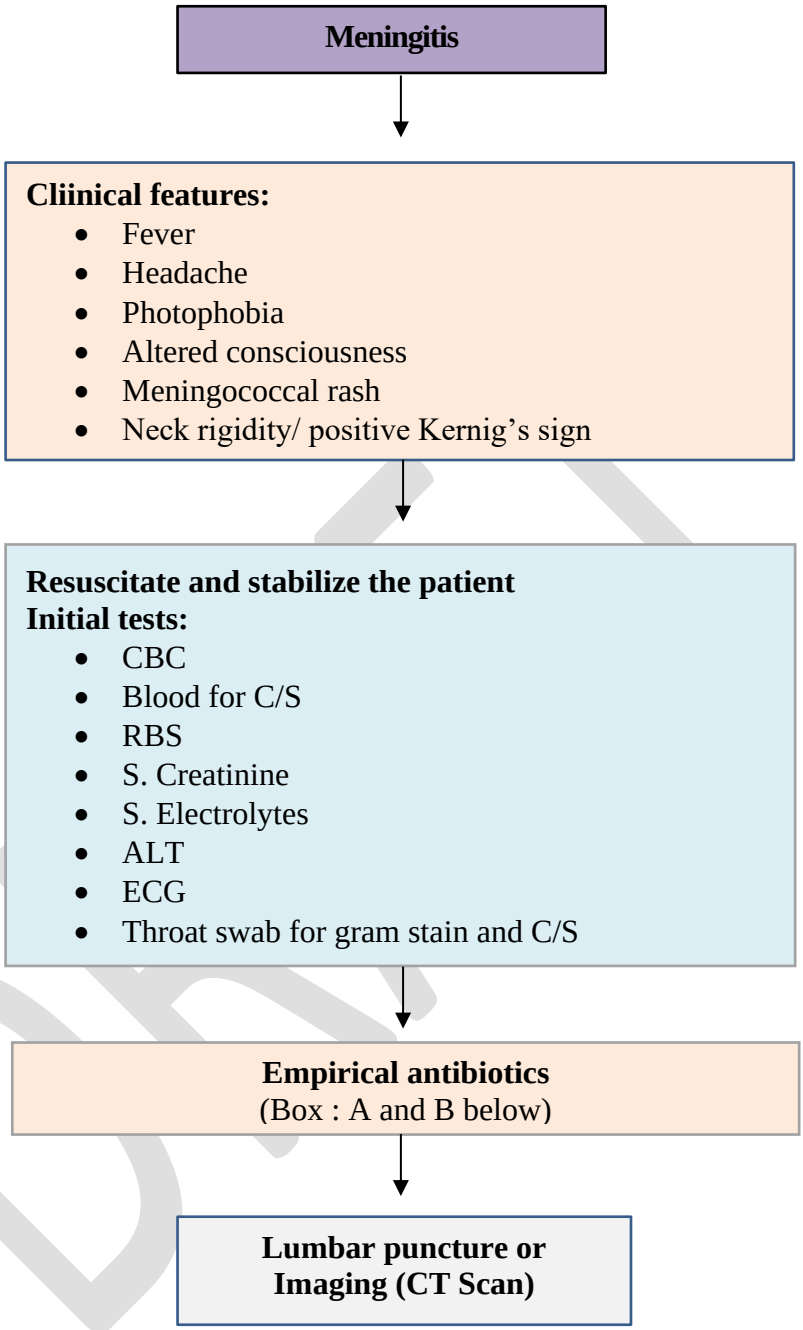
- Blood glucose
- Blood urea, S. Creatinine
- Serum electrolytes (Including Ca ++, Mg ++)
- Liver function test
- TSH

Supplementary inflammatory or infection markers:

- CBC
- CRP
- Chest X-ray P/A view
- CSF study
- Others, screening tests for Syphilis , HIV , Collagen disease if history is suggestive

Referral to appropriate center for further evaluation and management

Meningitis


Meningitis
Cliinical features:
Fever
Headache
Photophobia
Altered consciousness
Meningococcal rash
Neck rigidity/ positive Kernig's sign
Resuscitate and stabilize the patient
Initial tests:
CBC
Blood for C/S
RBS
S. Creatinine
S. Electrolytes
ALT
ECG
Throat swab for gram stain and C/S
Empirical antibiotics
(Box : A and B below)
Lumbar puncture or
Imaging (CT Scan)

Box: A Treatment of pyogenic meningitis of unknown cause
1. Adult aged 18 – 50 years without typical meningococcal rash • Cefotaxime 2g i.v 6-hourly *or* • Ceftriaxone 2g i.v. 12-hourly for 10 – 14 days
2. Patients in whom penicillin-resistant pneumococcal infection is suspected As for (1) but add: • Vancomycin 1g i.v. 12-hourly *or* • Rifampicin 600 mg i.v. 12-hourly
3. Adults aged over 50 years and those in whom *Listeria monocytogenes* infection is suspected (brain-stem signs, immunosuppression, diabetic, alcoholic) As for (1) but add: • Ampicillin 2g i.v. 4-hourly *or* • Co-trimoxazole 5mg/kg i.v. daily in two divided doses
4. Patient with a clear history of anaphylaxis to β-lactams • Chloramphenicol 25mg/kg i.v. 6-hourly *plus* • Vancomycin 1g i.v. 12-hourly
Adjunctive treatment
Dexamethasone 0.15mg/kg 4 times daily for 2 – 4 days.

Box: B Chemotherapy of bacterial meningitis when the cause is known		
Pathogen	**Regimen pf choice**	**Alterative agent(s)**
N. meningitidis	Benzylpenicillin 2.4g i.v. 6-hourly for 5 – 7 days	Cefuroxime, Ampicillin Chloramphenicol*
Strep. Pneumonae	Cefotaxime 2g i.v 6-hourly *or* Ceftriaxone 2g i.v. 12-hourly for 10 – 14 days	Chloramphenicol*
Step. Pneumonae	As for sensitive strains but add Vancomycin 1g i.v. 12-hourly *or* Rifampicin 600 mg i.v. 12-hourly	Vancomycin *plus* Rifampicin Moxifloxacin Gatifloxacin
H. influenzae	Cefotaxime 2g i.v 6-hourly *or* Ceftriaxone 2g i.v. 12-hourly for 10 – 14 days	Chloramphenicol*
Listeria monocytogenes	Ampicillin 2g i.v. 6-hourly *plus* Gentamycin 5mg/kg i.v. daily	Ampicillin 2g i.v. 4-hourly *plus* Co-trimoxazole 50mg/kg i.v. daily in two divided doses
Strep. Suis	Cefotaxime 2g i.v. 6-hourly *or* Ceftriaxone 2g i.v. 12-hourly for 10 – 14 days	Chloramphenicol*

MENINGITIS (TUBERCULAR)

Tubercular meningitis

Symptoms:

- Headache
- Vomiting
- Low-grade fever
- Lassitude
- Depression
- Delirium
- Behaviour changes

Signs:

- Meningism (may be absent)
- Oculomotor palsies
- Papilloedema
- Depression of conscious level
- Focal hemisphere signs

Staging of severity:

- Stage I (early): non-specific symptoms and signs without alteration of consciousness.
- Stage II (intermediate): altered consciousness without coma or delirium plus minor focal neurological signs.
- Stage III (advanced): stupor or coma, severe neurological deficits, seizures and abnormal movement.

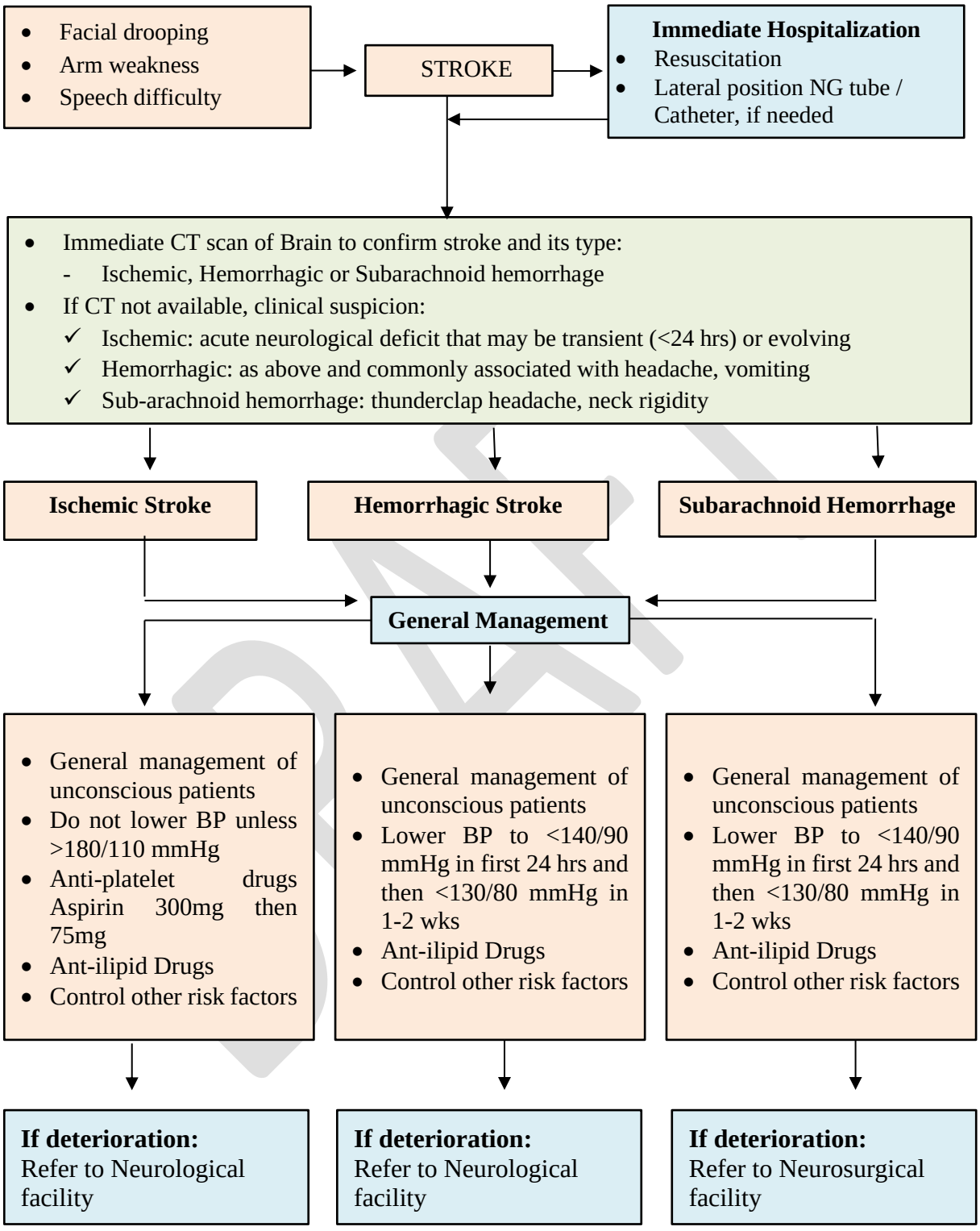
Investigations:

- CBC
- RBS
- S. Creatinine
- S. Electrolytes
- ALT
- TSH
- Chest X-ray P/A view
- CSF study
- CT/MRI of brain

Management:

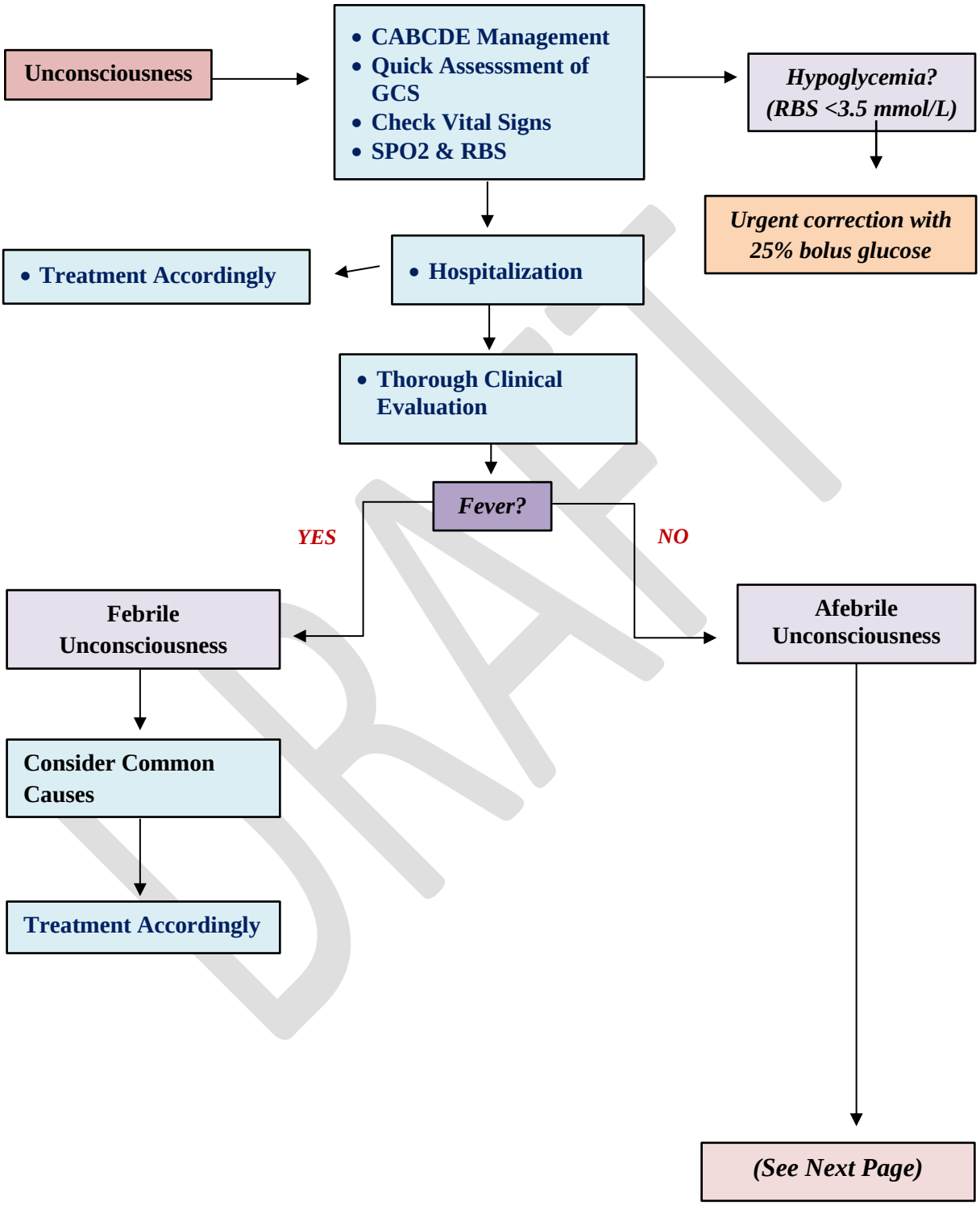
- As soon as the diagnosis is made or strongly suspected, Anti-TB regimen should be started as per National TB guideline that include pyrazinamide.
- The use of glucocorticoids in addition to antituberculous therapy has been controversial. Recent evidence suggests that it improves mortality, especially if given early, but not focal neurological damage.
- Surgical ventricular drainage may be needed if obstructive hydrocephalus develops.
- Skilled nursing is essential during the acute phase of the illness.
- Adequate hydration and nutrition must be maintained.

Stroke

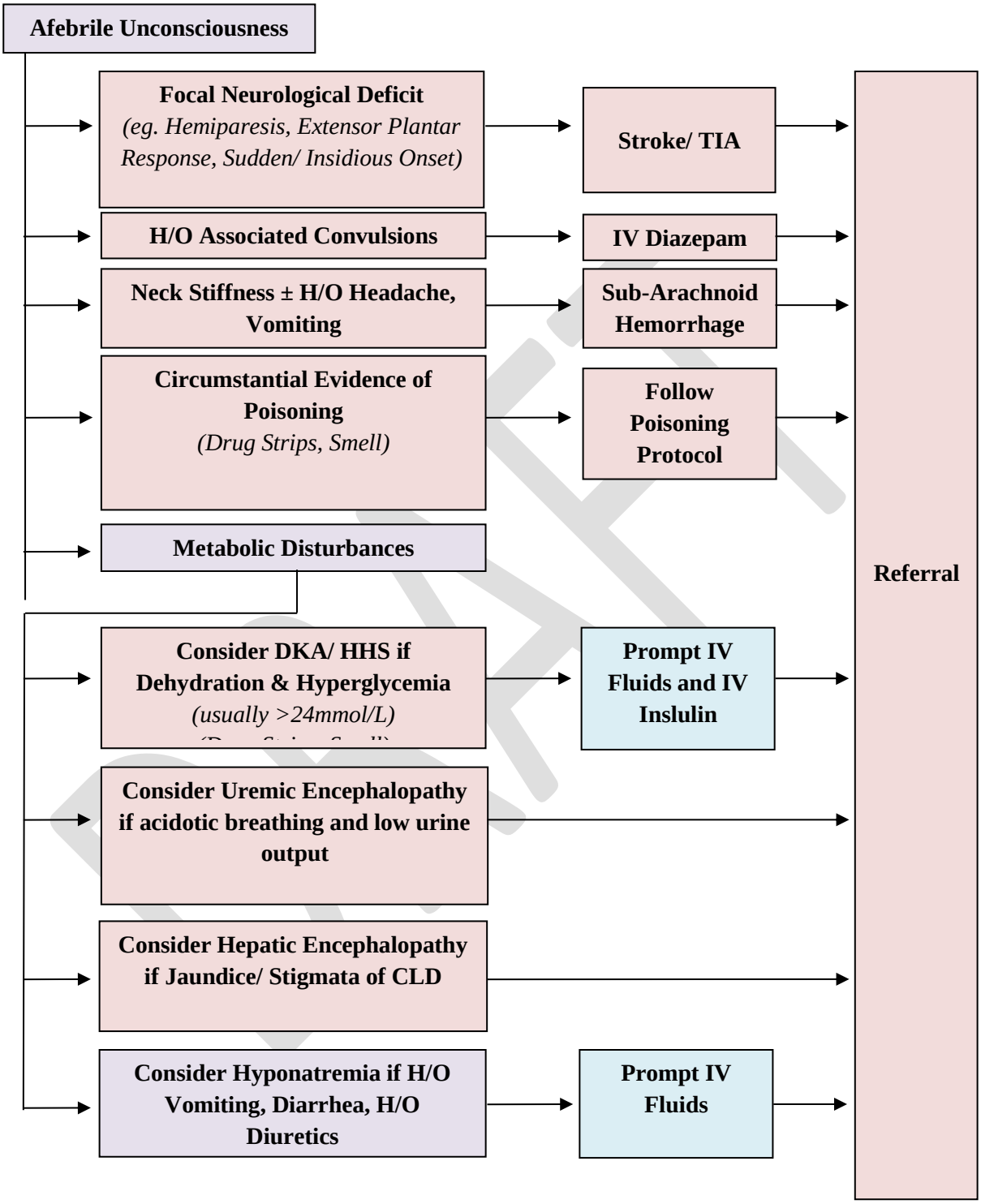

Facial drooping
Arm weakness
Speech difficulty
STROKE
Immediate Hospitalization
Resuscitation
Lateral position NG tube / Catheter, if needed
Immediate CT scan of Brain to confirm stroke and its type:
- Ischemic, Hemorrhagic or Subarachnoid hemorrhage
If CT not available, clinical suspicion:
✓ Ischemic: acute neurological deficit that may be transient (<24 hrs) or evolving
✓ Hemorrhagic: as above and commonly associated with headache, vomiting
✓ Sub-arachnoid hemorrhage: thunderclap headache, neck rigidity
Ischemic Stroke
Hemorrhagic Stroke
Subarachnoid Hemorrhage
General Management
General management of unconscious patients
Do not lower BP unless >180/110 mmHg
Anti-platelet drugs Aspirin 300mg then 75mg
Ant-ilipid Drugs
Control other risk factors
General management of unconscious patients
Lower BP to <140/90 mmHg in first 24 hrs and then <130/80 mmHg in 1-2 wks
Ant-ilipid Drugs
Control other risk factors
General management of unconscious patients
Lower BP to <140/90 mmHg in first 24 hrs and then <130/80 mmHg in 1-2 wks
Ant-ilipid Drugs
Control other risk factors
If deterioration: Refer to Neurological facility
If deterioration: Refer to Neurological facility
If deterioration: Refer to Neurosurgical facility

Unconsciousness

Management of Unconsciousness:



Management of Unconsciousness *(contd.)*:



Diabetes Mellitus (DM)

IDDM (Now Called Type-1 DM):

- Requires Insulin replacement therapy

NIDDM (Now called Type-2 DM):

- Varying degrees of Insulin Resistance not requiring replacement
- >20% develop insulin deficiency requiring replacement therapy through disease course

Table. DM Features by Type:

Features	Type-1	Type-2
Typical Age of onset	<40 yrs	>50yrs
Duration of Symptoms	Weeks	Months to Years
Body Weight	Normal or Low	Obese
Ketonuria	Yes	No
Auto antibodies (GAD/IA-2)	Positive 80-90%	Negative
Rapid death without insulin	Yes	No
Presence of conplication at diagnosis	No	25%
Family history of diabetes	Uncommon	Common
Other Auto immuinl disease	Common	Uncommon

Diagnosis of DM:
Typical symptoms-Polydipsia, Polyuria, Nocturia, Rapid Weight Loss despite Polyphagia

• Blood Glucose Parameters	Mmol/L	Mg/DL
Fasting Blood Sugar	≥7	≥126
RBS/ 2 Hours Post Prandial Blood Sugar	≥11.1	≥200
Glycated Hemoglobin Parameters	mol/mol	
Hb A1c	≥48	

In asymptomatic patients 2 diagnostic tests required to confirm DM
2nd test should be same as 1st one.

'Pre-Diabetes':

- Impaired fasting glucose (IFG):
  - FBS: 6.1-7.0 mmol/L (110-126 mg/dL)
- Impaired glucose tolerance (IGT):
  - FBS: <7.0 mmol/L (126 mg/dL)
  - 2hrs after 75g oral glucose load: 7.8-11.1 mmol/L (140-200 mg/dl)
- HbA1c Criteria (NICE Guidelines, UK):
  - HbA1c: 6-6.4% (42-47 mmol/mol)

Management:

Dietary management of DM:

Aims to dietary management

- Achieve good glycemic control
- Reduce hyper glycemic and hypo glycemic.
- Assist weight management (*weight maintain in type-I DM)
- Reduce the rise of micro-macro vascular disease
- Ensure and get nutritional intake
- Avoid atherogenic diet or there that aggravate complications high protein intake in nephropathy.

Dietary Constituents and recomonded % energy:

- Carbohydrate-50%
- Sucrose -10%
- Fat (total) <35%
  - n-6 polyunsaturated <10%
  - n-3 polyunsaturated -1 portion 140gm
  - Mono-unsaturated -10-20%
  - Saturated -<10%
- Protein-10-15% (not more than 1g/kg/day)
- Fruits/Vegetable-5 portions daily

Lifestyle Advice:

- Physical Activity:
  - Either 150 mins/ week of moderate-intensity exercise or 75 mins/ week of vigorous-intensity exercise (or a combination)
  - Reduce Sedentary Time
  - Muscle strengthening (resistance) exercise $\geq$ 2 days/ week

Pharmacotherapy for Type 1 Diabetes: [source: 1. Diabetes Care 2021. ADA. 2. Insulin Guideline, Bangladesh Endocrine Society]

- Most people with type 1 diabetes should be treated with multiple daily injections of prandial and basal insulin, or continuous subcutaneous insulin infusion. Rapid-acting insulin analogs are preferred to reduce hypoglycemia risk.

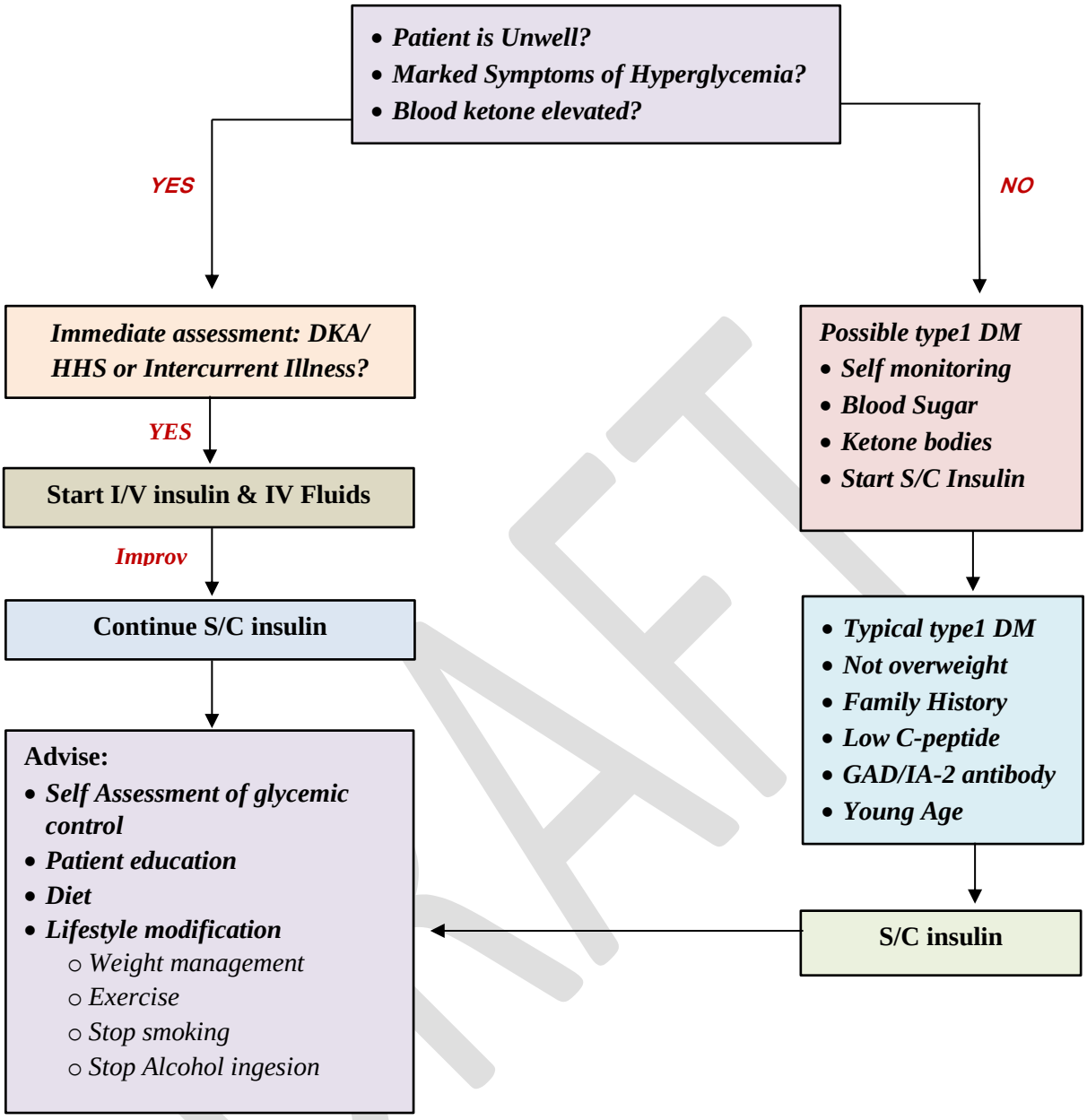
Table: Insulin types [Insulin Guideline, Bangladesh Endocrine Society]

Insulin Type	Onset of Action	Peak	Duration of Action	Appearance
Bolus (prandial) insulins				
Rapid-acting insulin analogues				
• Insulin Aspart	10-15 min	1-1.5 hour	3-5 hours	Clear
• Insulin Glulisine	10-15 min	1-1.5 hour	3-5 hours	Clear
• Insulin Lispro	10-15 min	1-2 hours	3.5-4.75 hours	Clear
Short-acting (Regular) insulins	30 min	2-3 hours	6.5 hours	Clear
Basal insulins				
Intermediate -acting (NPH)	1-3 hours	5-8 hours	Upto 18 hours	Cloudy
Long-acting insulin analogues				
• Insulin Detemir	90 min	N/A	24 hours	Clear
• Insulin Glargine	90 min	N/A	24 hours	Clear
• Insulin Degludec			42 hours	Clear

Table: Insulin Regimen [Insulin Guideline, Bangladesh Endocrine Society]

Regimen	Description
Once daily	NPH or Basal analogue
Twice daily	
• Premixed • Co-formulation • Split-mixed	Less mealtime flexibility
Multiple daily injections • Basal plus	Offers more mealtimeflexibility One long acting analogue at bedtime, plus one injection of rapid acting analogue with the largest meal
• Basal bolus	One long acting analogue at bedtime, plus two or three injections of rapid acting analogue with meal
Continuous subcutaneous insulin infusion	Insulin pump

- Initiation can be done by basal insulin with the dose of 10 units or 0.1-0.2 U/kbw. While with split-mixed or pre-mixed regimen, insulin may be initiated at dose of 0.2-0.3 U/kbw. Basal bolus regimen (MDI) is preferred than pre-mixed regimen in T1DM. Intensification should be done with increase of 10-20% of dose or 2-4 units of insulin as per SMBG records once or twice weekly until glycemic targets are achieved.


Patient is Unwell?
Marked Symptoms of Hyperglycemia?
Blood ketone elevated?
YES
NO
Immediate assessment: DKA/ HHS or Intercurrent Illness?
YES
Start I/V insulin & IV Fluids
Improv
Continue S/C insulin
Advise:
Self Assessment of glycemic control
Patient education
Diet
Lifestyle modification
Weight management
Exercise
Stop smoking
Stop Alcohol ingesion
Possible type1 DM
Self monitoring
Blood Sugar
Ketone bodies
Start S/C Insulin
Typical type1 DM
Not overweight
Family History
Low C-peptide
GAD/IA-2 antibody
Young Age
S/C insulin

Pharmacotherapy for Type-2 Diabetes:

 Metformin is the first line drug. Once initiated, metformin should be continued as long as it is tolerated and not contraindicated; other agents, including insulin, should be added to metformin.

 A sodium–glucose cotransporter 2 inhibitor is the preferred initial drug for patients with established atherosclerotic cardiovascular disease or indicators of high risk, established kidney disease, or heart failure.

 Early combination therapy can be considered in some patients at treatment initiation to extend the time to treatment failure.

 Indications to start insulin early:

Evidence of ongoing catabolism (weight loss),

If symptoms of hyperglycemia are present, or

When A1C levels (>10% [86 mmol/mol]) or blood glucose levels (≥300 mg/dL [16.7 mmol/L]) are very high.

 Choice of pharmacologic agents should be patient-centered. Considerations include effect on cardiovascular and renal comorbidities, efficacy, hypoglycemia risk, impact on weight, cost, risk for side effects, and patient preferences

 In patients with type 2 diabetes, a glucagon-like peptide 1 receptor agonist is preferred to insulin when possible.

 Treatment intensification for patients not meeting treatment goals should not be delayed.

 The medication regimen and medication-taking behavior should be reevaluated at regular intervals (every 3–6 months) and adjusted as needed.

Treatment Targets:

- Blood glucose targets vary according to individual circumstances
- In general:
  - FBS: 5-7 mmol/L (90-126 mg/dL)
  - 2-hour post prandial blood sugar: 8 mmol/L (72-144 mg/d

Hypoglycemic Shock

Definition: Shock produced by a reduction in plasma glucose concentration to a level that induces symptom and signs such as allied mental status and/or symptomatic nervous system stimulation.

Symptoms:

Neurologic Symptoms:	Sweating Shakiness Tachycardia Anxiety & A sensation of hunger
Neuro-glycogenic Symptoms:	Weakness Tiredness Dizziness Confusion Difficulty in concentration Blurred vision In extreme case-coma and death.

Signs:

On G/E:	Hypothermia Tachypnoea Tachycardia HTN & Bradycardia
On S/E:	Blurred vision Pupils fixed and dilated Coma Confusion Fatigue Loss of co-ordination Combative or agitative Shake, tremor, convulsion, diplopia Nausea, vomiting Skin diaphoresis and warm, show sign of dehydration.

Investigation:

- Blood glucose level
- Blood insulin level
- C-peptide level
- LFT e.g in- CLD
- Renal function test: R.F
- Blood culture, Urine culture
- MP, ICT for malaria
- CT scan of abdomen - If Insulinoma/Sarcoma

Treatment:

If patient is semi- consciousness or unconscious, parenteral treatment is required.
IV 75-100 ml 25% dextrose over 15 minutes
Or
I/v 150-200ml 10% dextrose over 15 minutes
Or
I/M glucagon 1 mg is given

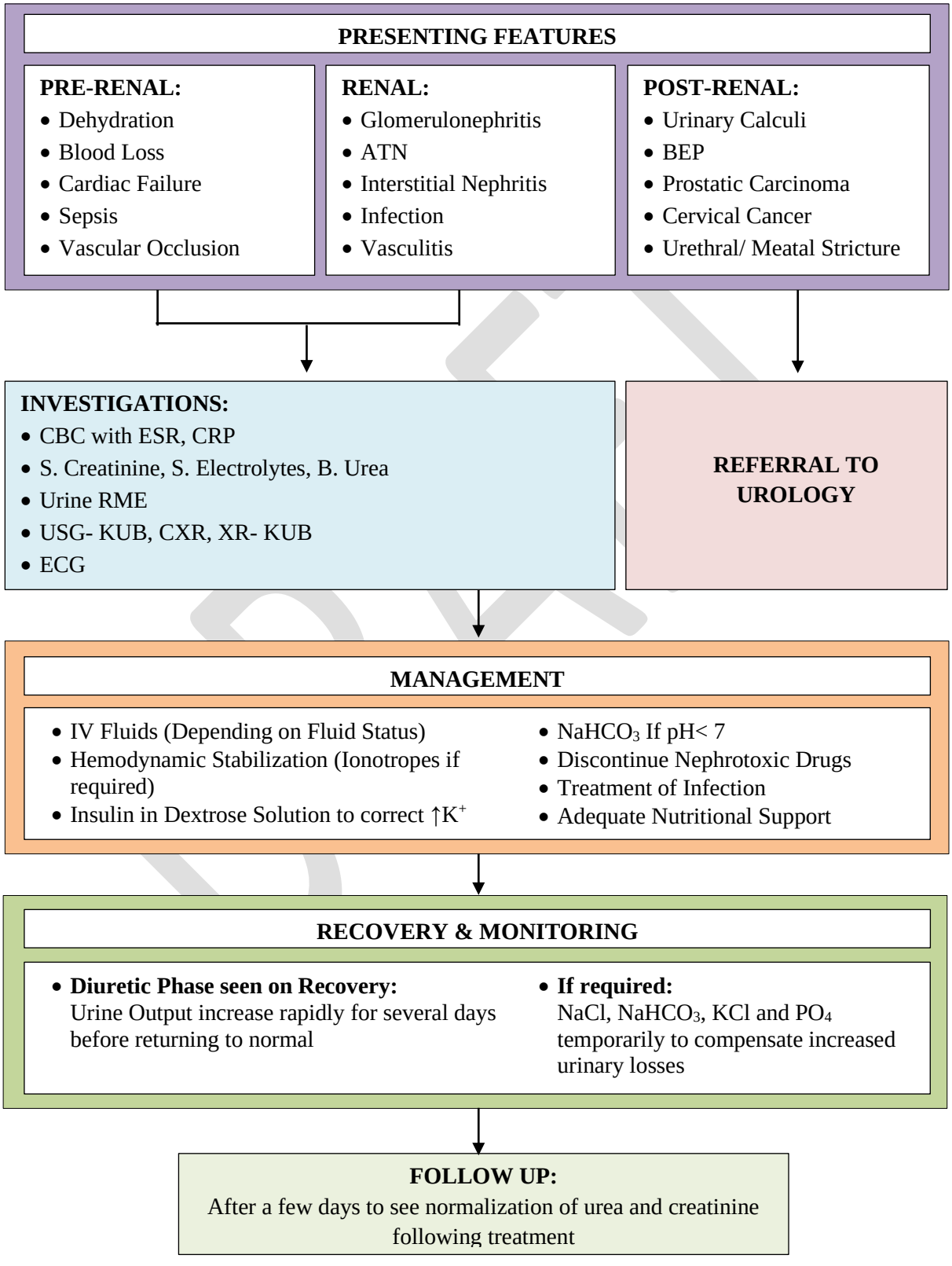
If patient is conscious and able to swallow give oral refined glucose or drink or sweets (~25gm) or apply glucose gel or jam or honey to buccal mucosa.

Follow up: F/U visit after 2 weeks with the following-

- Fasting blood sugar
- Blood sugar 2 hr after meal
- HbA1c

Acute Kidney Injury (AKI)

A medical situation where there is sudden and often reversible loss of renal function which develops over days or weeks and is often accompanied by reduction in urinary volume.



Chronic Kidney Disease (CKD)

CKD refers to on irreversible deterioration in renal function that develops over a period of years. Initially it manifests only as a biochemical abnormality but eventually lead to uraemia as the disease progress.

Common Causes:

- Systemic Disease: DM, Hypertension
- Renal Disease: Glomerular Disease, Interstitial Nephritis, PKD, Renovascular Disease
- SLE, Vasculitis

PRESENTING FEATURES

SYMPTOMS:

- Loss of Appetite
- Nausea, Vomiting
- Lethargy, Drowsiness
- Pallor
- Nocturia
- Pruritus
- Easy Bruising

SIGNS:

- Anemia
- Edema
- Raised JVP
- Pulsus paradoxus

INVESTIGATIONS:

- CBC with ESR, CRP, Iron Profile
- S. Creatinine, B. Urea, S. Electrolytes, S. Calcium, S. Phosphate,
- S. PTH, S. Albumin, Lipid Profile
- Urine RME
- USG- KUB
- ECG

MANAGEMENT

Diet & Lifestyle Modification:

- ↓Excess Protein consumption, Adequate Caloric intake
- Limiting PO_4 & K^+ intake
- Stop Smoking

Rx of Hypertension:

- BP Targets: <130/80mmHg (<125/75 if significant proteinuria> 1g/day)
- Drug of Choice: ACEi, ARB (if S. Creatinine & K^+ is static); CCBs, α-Blockers

Rx of Co-morbidities:

- IHD
- DM
- Dyslipidemia

Rx of Complications:

- Renal Osteodystrophy: Vitamin D_3
- ↑PO_4- Calcium Acetate, Sevelamer
- ↑K^+- Calcium Gluconate, Calcium Resonium

Iron Supplementation:

- Target Hb%- 11g%
- Anemia Correction by EPO/ EPO Analogues/ Darbopoietin (Improves Exercise tolerance and fatigue)

Renal Replacement Therapy:

- The definitive Rx
- Hemodialysis, Peritoneal Dialysis, Renal Transplantation

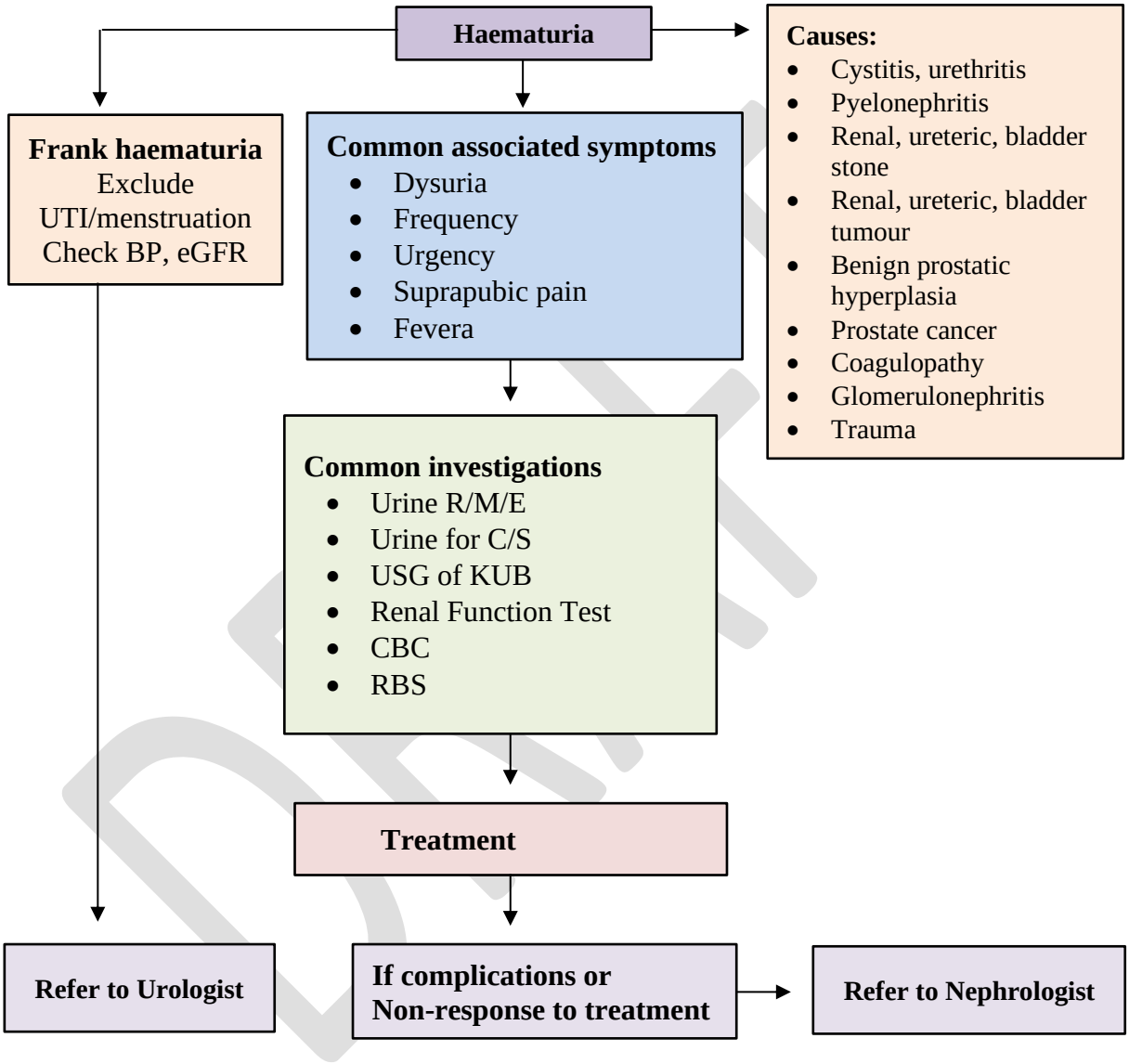
FOLLOW UP:

CBC, B. Urea/ S. Creatinine, S. Electrolytes, Urine RME, UTP

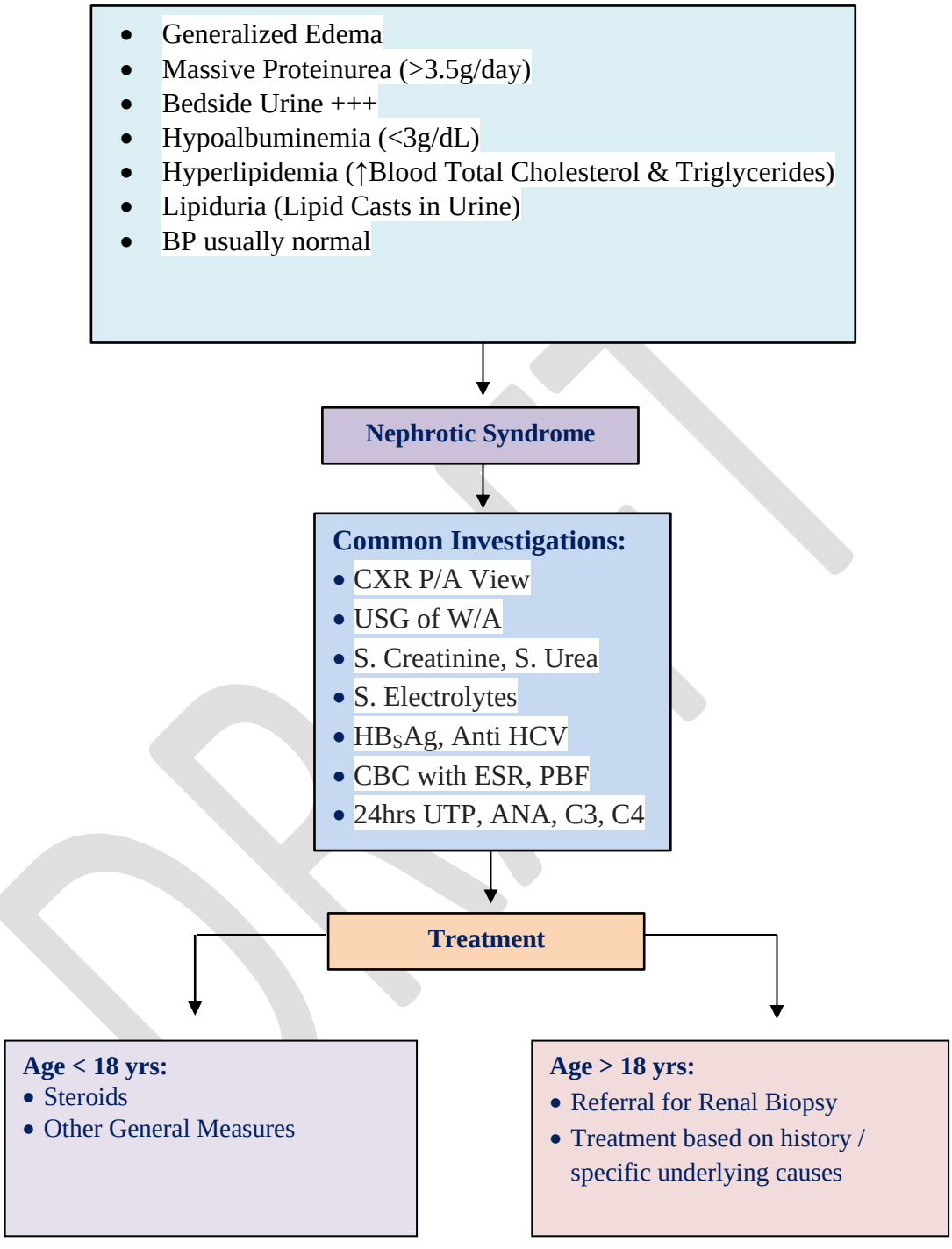
Hematuria (Persistent & Recurrent)

Hematuria is the presence of blood in the urine which can be seen in urine or presence of RBC in urine on microscopy. It is a common symptom of both benign and malignant conditions.

It may be persistent or recurrent.



Nephrotic Syndrome (NS)

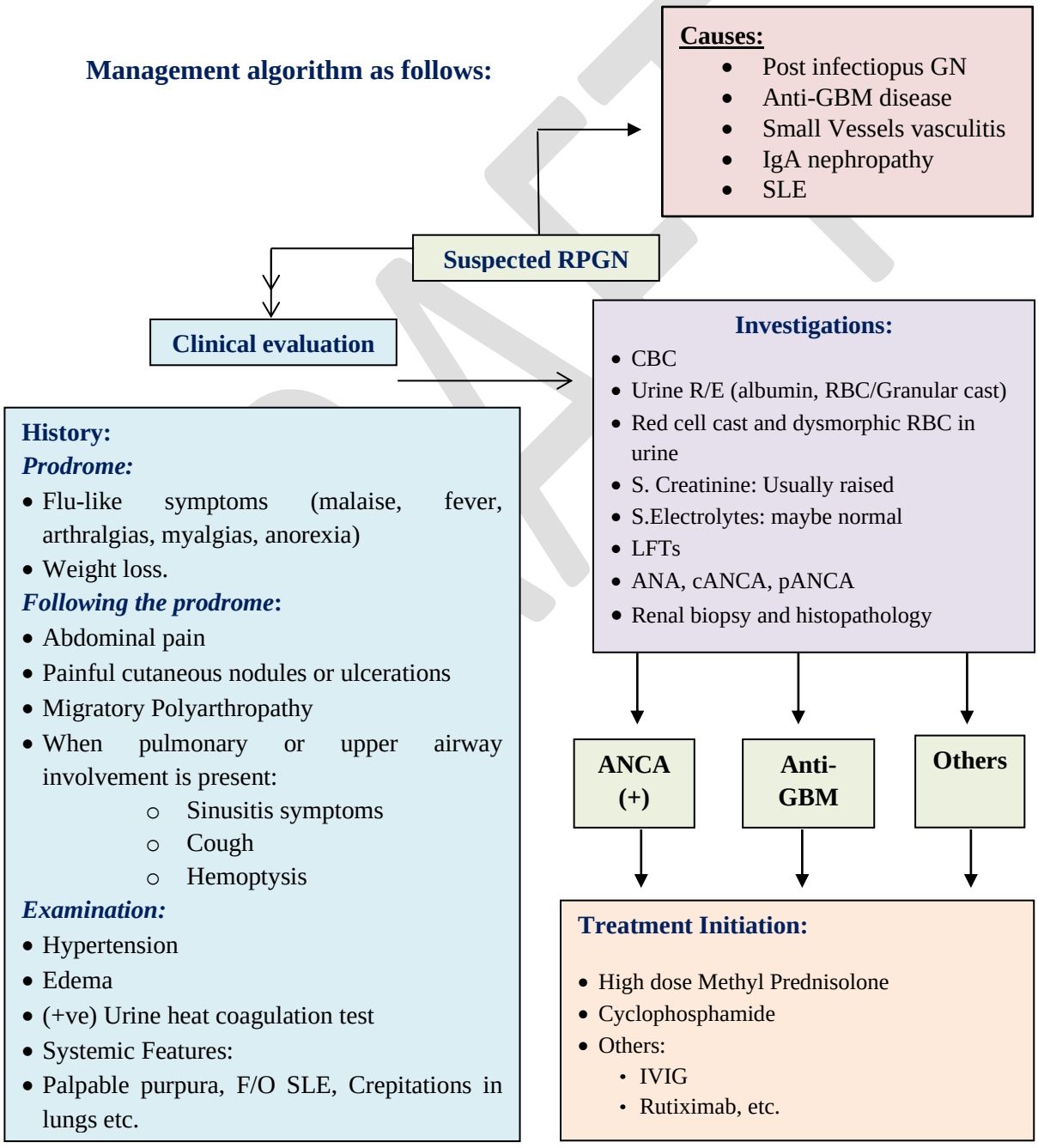


Rapidly Progressive Glomerulonephritis (RPGN)

Rapidly progressive glomerulonephritis (RPGN) is a disease of the kidney characterized clinically by:

- ***Rapid decrease in GFR*** of at least 50% over a period of a few days to 3 months, usually in association with hypertension and oesema.
- Pathologic finding: ***Extensive glomerular crescent formation***.

Management algorithm as follows:



Treatment:

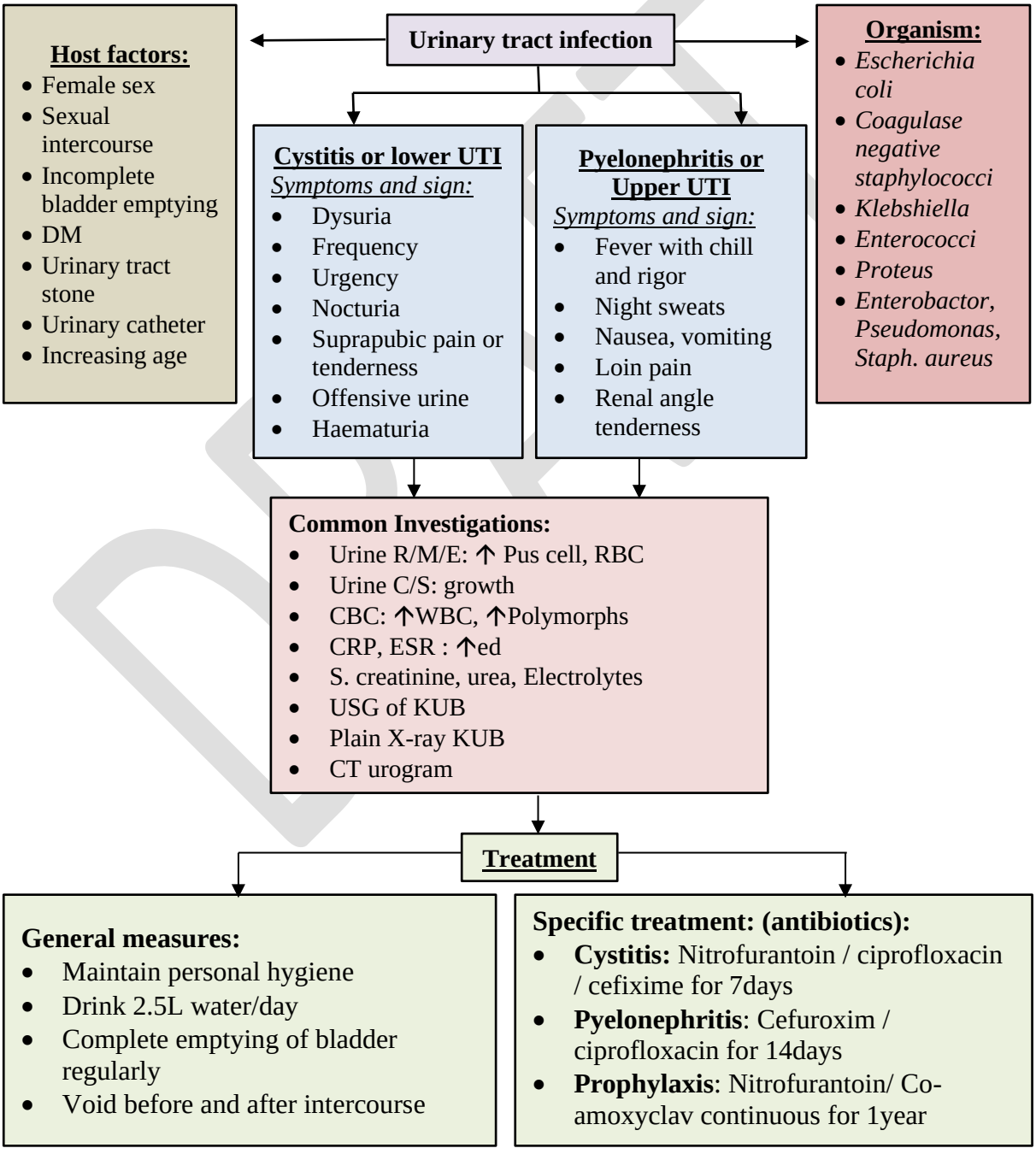
- **Steroids:**
  - ✓ ***IV Methylprednisolone:*** 7 mg/kg/day (not to exceed 1g) for 3 days
  - ✓ **Then *Oral Prednisone:*** 1 mg/kg/day (not to exceed 80 mg) for 3 weeks
  - ✓ **Then *Oral Prednisone:*** 2 mg/kg every other day (not to exceed 120 mg) for 3 months
  - ✓ Then the dose is ***tapered*** by 25% every 4 weeks and discontinued

- **IV/ Oral Cyclophosphamide**
  - ✓ ***IV dose: 0.5 g/m2 bsa (maximum 1 g/m2 body surface area)***
  - ✓ ***Oral dose: 2 mg/kg.***

Both doses adjusted according to a 2weeks leukocyte nadir count (goal 3000-4000/µL).

Urinary Tract Infection (UTI)

- Uncomplicated UTI is a symptomatic bladder infection with a normal urinary tract
- Complicated UTI is a symptomatic infection in any part of the urinary tract with a functional and structural urinary abnormality
- Asymptomatic bacteriuria is the isolation of a significant bacterial count in an asymptomatic patient
- Re-infection is a recurrent UTI with the same or different organism following clearance of the original UTI



Anxiety Disorders

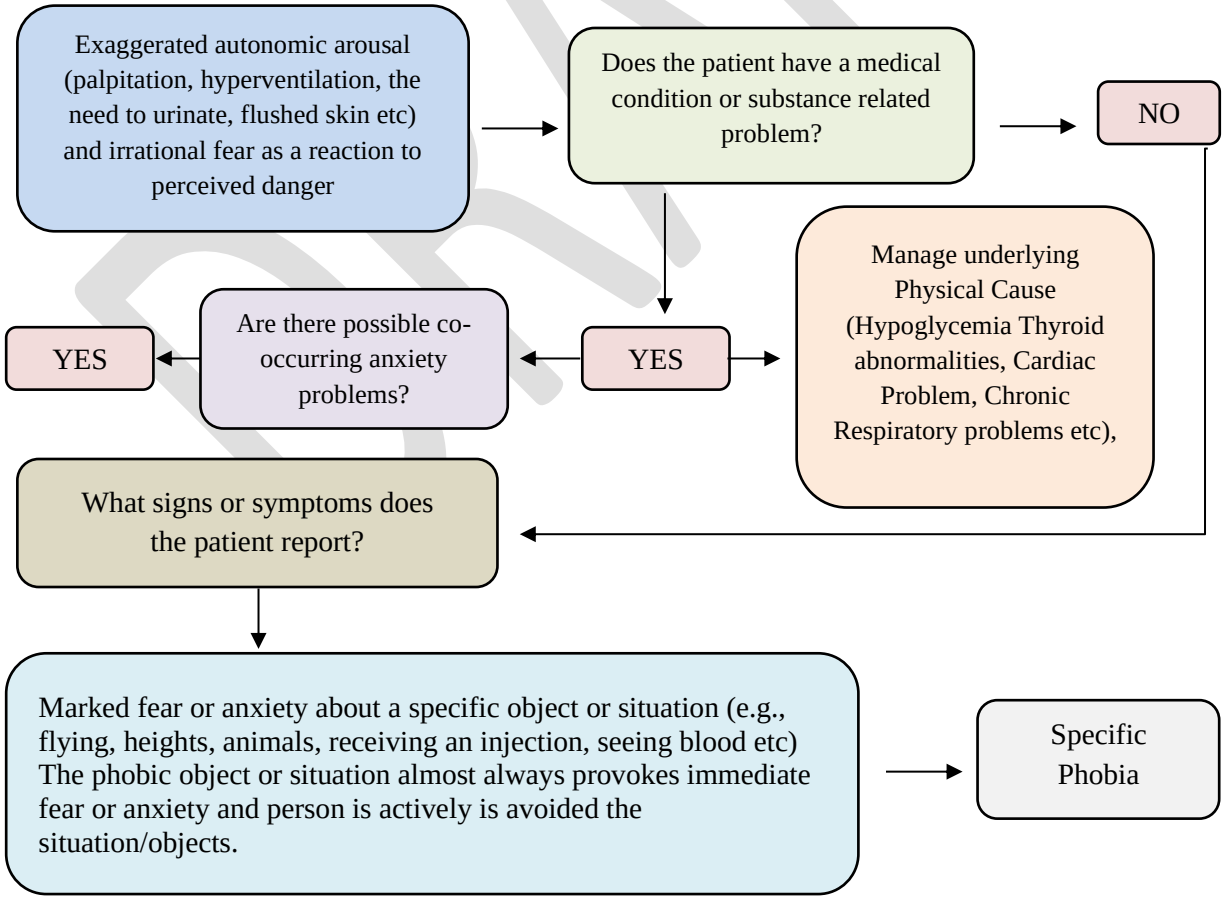
- Anxiety Disorders include disorders that share features of excessive fear and anxiety and related behavioral disturbances.
- Fear is the emotional response to real or perceived imminent threat, whereas anxiety is anticipation of future threat.

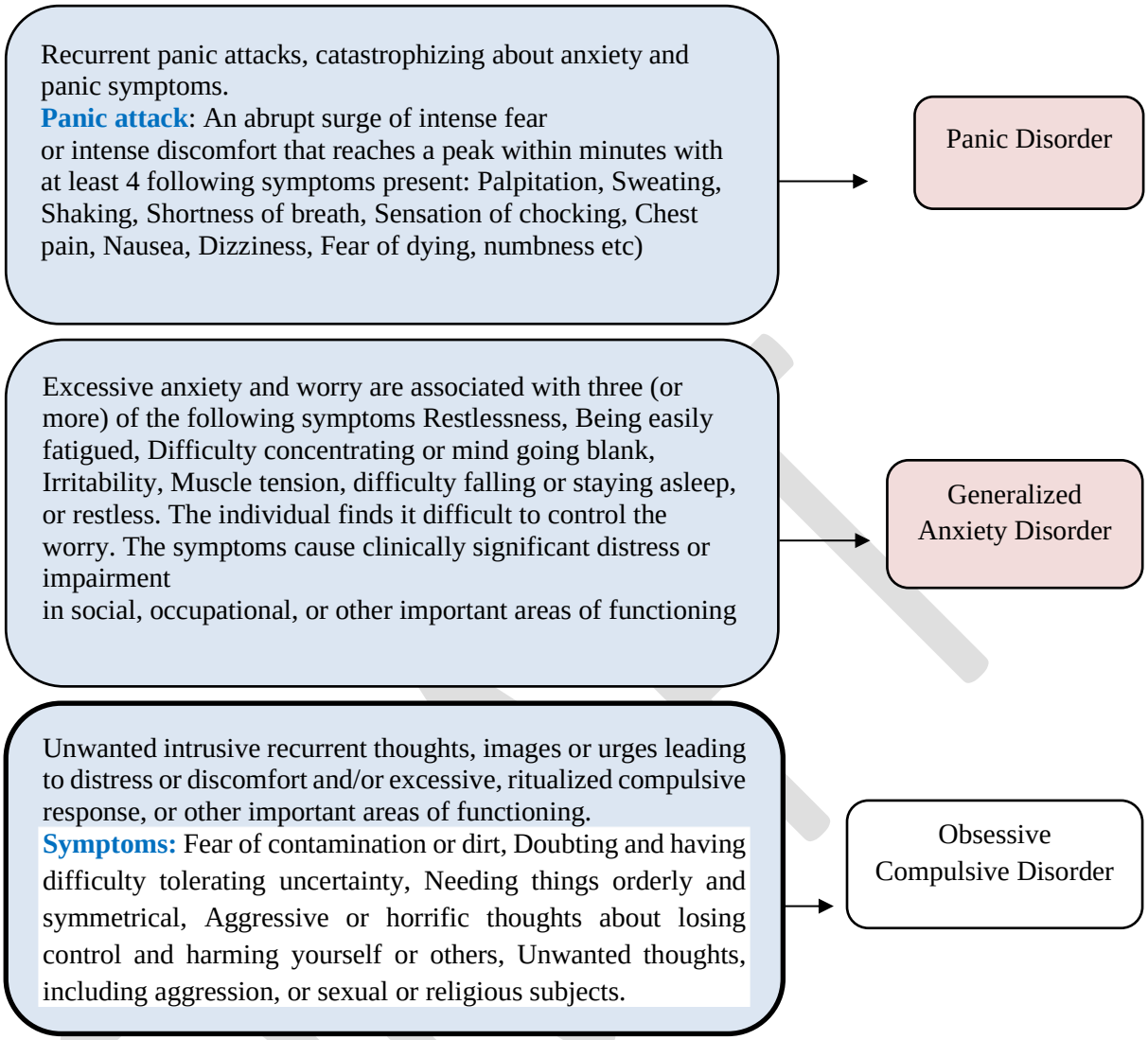
- Anxiety disorders occur when this normal physiological response is associated with high levels of autonomic arousal, erroneous cognitions and dysfunctional coping strategies.

Common Types:

- Phobia (Specific Phobia, Social Phobia, Agoraphobia)
- Panic Disorder
- Generalized Anxiety Disorder
- Obsessive Compulsive Disorder

Diagnostic Criteria and Management of common anxiety disorders





Assessment: History taking, Symptoms and Clinical Examination
Investigations: Only relevant investigations to exclude any physical comorbidities (ECG, CXR, Blood Sugar, TFT etc)
Management:

- Non-Pharmacological: Assurance, Self-help and Psychoeducation, Psychotherapy
- Pharmacological:
  - Anxiolytic (Benzodiazepines) for short duration. Alprazolam (0.25 mg-1 mg/day), Clonazepam (0.5 mg-2 mg/day)
  - SSRI: Escitalopram (5-20 mg/day) morning dose in case of Panic Disorder, Specific Phobia, Generalized Anxiety Disorder. Fluoxetine (20-40 mg); Fluvoxamine (50- 150 mg/day); Clomipramine (25-150 mg/day) for Obsessive Compulsive Disorder
  - Beta adrenergic antagonists: to control anxiety associated with sympathetic stimulation; Propranolol (30-60 mg/day)
  - TCA: Amitriptyline (10-75 mg/day); Nortriptyline (10-75mg/day)

Conversion (Dissociative) Disorder

It is a common mental disorder in which a wide variety of somatic (physical) and mental symptoms develop for some real or imagined gain without being fully aware of the underlying motive.
Three characteristics of the symptoms:

1. They occur in the absence of physical pathology
2. They are produced unconsciously-NOT INTENTIONALLY
3. They are not caused by over activity of the sympathetic nervous system

Clinical syndromes of conversion disorder

A. Conversion symptoms (Physical symptoms)

a. Motor symptoms - These may consist of paralysis, par**esis, fits, tremors, rigidity,** abnormal gait, ataxia, vomiting, fits.
b. Sensory symptom - Anesthesia, paraesthesia, Irrational unexplained pains, complaining loss of vision or hearing or aphonia/ dysphonia or loss of smell or loss of taste.

B. Dissociative symptoms (Mental symptoms)

a. Amnesia - Forgetting a specific or traumatic ep**isode in a clear consciousness and** complains that she or he knows nothing of his earlier life.
b. Fugue state - It is a state of wandering away from the environment and usually to escape from a disagreeable or threatening situation. Emotional conflict or stress is expressed by dissociation of the mind

Difference between epileptic fit and fit from conversion disorder

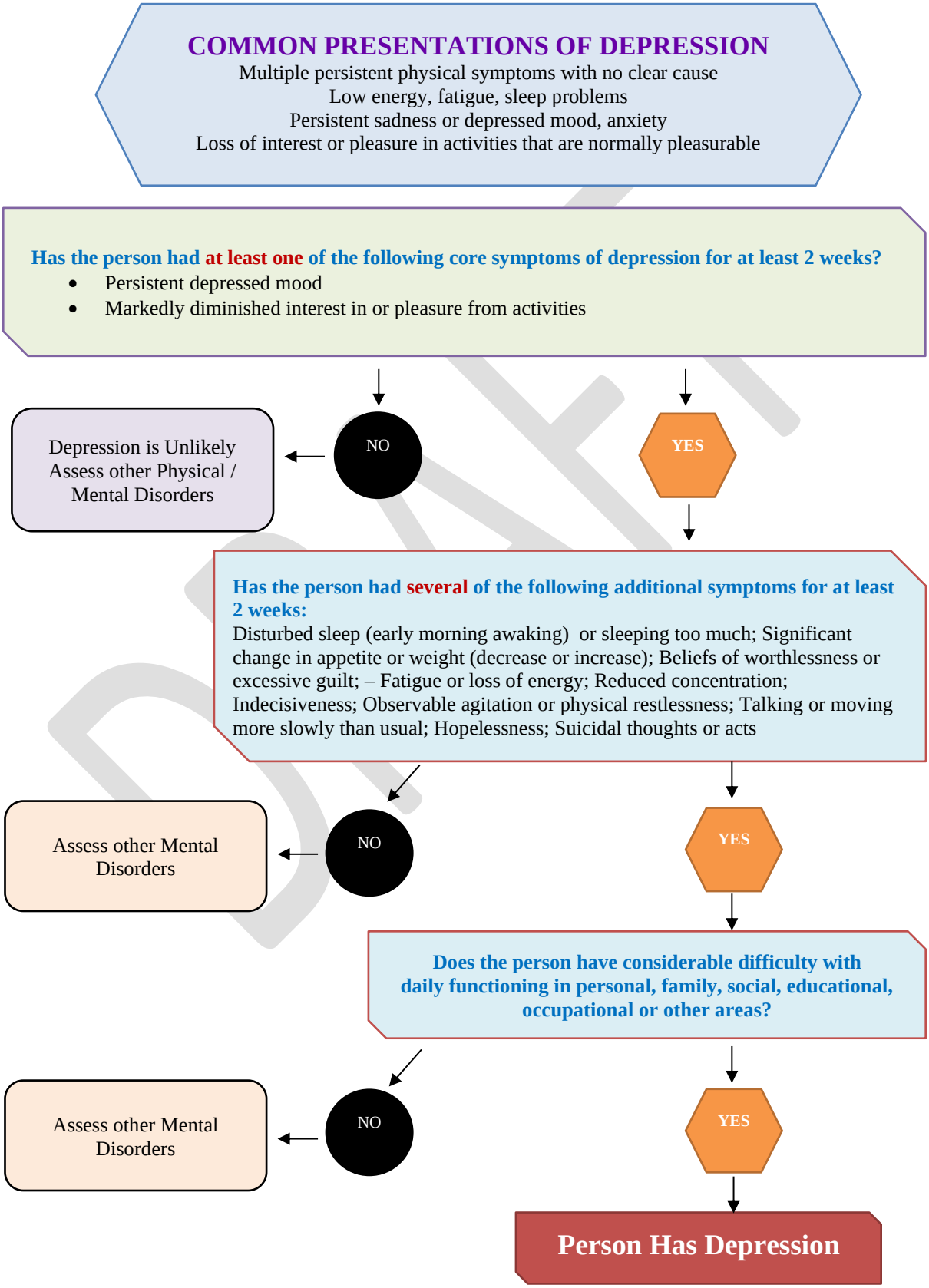
	Epilepsy/True Seizure	Conversion disorder/Pseudoseizure
Consciousness	Real loss	**No real loss, can remember things what happened during fit**
Fits alone / during sleep	Yes	**No**
Every fit same as the other	Same in each situation	**Different in each situation**
Movement of the limbs	Yes, in typical fashion	**Yes, but variable**
Tongue bite	Present	**Absent**
Incontinence of urine and faeces	Present	**Absent**
History of fall and injury	**Present & genuine**	**May be present due to constant friction over the ground**

Assessment: History taking, Symptoms and Clinical Examination
Investigations: – Avoid unnecessary investigations unless there is a clear indication
Non-Pharmacological: Assurance, Self-help and Psychoeducation, Psychotherapy, Not reinforced the symptoms by giving excessive attention to the symptoms.
Address current psychosocial stressors, strengthen support, Teach stress management such as relaxation techniques.
Pharmacological:

- Anxiolytic (Benzodiazepines) for short duration. Alprazolam (0.25 mg-1 mg/day), Clonazepam (0.5 mg-2 mg/day)
- SSRI: Escitalopram (5-20 mg/day) morning dose , Fluoxetine (20-40 mg)

TCA: Amitriptyline (10-75 mg/day); Nortriptyline (10-75mg/day)

Depression


COMMON PRESENTATIONS OF DEPRESSION
Multiple persistent physical symptoms with no clear cause
Low energy, fatigue, sleep problems
Persistent sadness or depressed mood, anxiety
Loss of interest or pleasure in activities that are normally pleasurable
Has the person had at least one of the following core symptoms of depression for at least 2 weeks?
Persistent depressed mood
Markedly diminished interest in or pleasure from activities
NO
YES
Depression is Unlikely
Assess other Physical / Mental Disorders
Has the person had several of the following additional symptoms for at least 2 weeks:
Disturbed sleep (early morning awaking) or sleeping too much; Significant change in appetite or weight (decrease or increase); Beliefs of worthlessness or excessive guilt; – Fatigue or loss of energy; Reduced concentration; Indecisiveness; Observable agitation or physical restlessness; Talking or moving more slowly than usual; Hopelessness; Suicidal thoughts or acts
NO
YES
Assess other Mental Disorders
Does the person have considerable difficulty with daily functioning in personal, family, social, educational, occupational or other areas?
NO
YES
Assess other Mental Disorders
Person Has Depression

Management of Depression:

Assessment: Thorough history taking with mental state examination and exclude any history of Mania to exclude bipolar disorder. If any current /previous history of mania avoid any sort of Antidepressant and follow protocol P1 (see Psychoses chapter) and refer the patient to Psychiatrist.

Mania: ***Have several of the following symptoms occurred simultaneously, lasting for at least 1 week***:
Elevation of mood and/or irritability; Decreased need for sleep; Increased activity; feeling of increased energy; increased talkativeness or rapid speech; Impulsive or reckless behaviours such as excessive spending; making important decisions without planning and sexual indiscretion; Loss of normal social inhibitions resulting in inappropriate behaviors; Being easily distracted; Unrealistically inflated self-esteem

If no features of Mania, provide treatment for depression

Treatment for Depression:

Non-pharmacological:

- Psychoeducation to the person and their carers about treatment options and medications
- Reduce stress and strengthen social supports.
- Promote functioning in daily activities and community life.
- If available, consider referral for one of the following brief psychological treatments:
  - interpersonal therapy (IPT), cognitive behavioral therapy (CBT), behavior activation and problem-solving counselling.

Pharmacological:

- **Antidepressant:** adequate dose and duration
- **DO NOT** manage the symptoms with ineffective treatments, e.g. vitamin tablets / injections
- Offer regular follow-up.

Antidepressants

TCA: Amitriptyline: Start 25 mg at bedtime. Increase by 25-50 mg per week to 100-150 mg daily (maximum 300 mg). Minimum effective dose in adults is 75 mg.
SSRI: Fluoxetine: Start 20 mg daily. If no response in 6 weeks, increase to 40 mg; (maximum 80 mg).
Sertraline: Start 25 mg at morning/daytime. Increase by 25-50 mg per week to 100-150 mg

- Antidepressant works slowly, so patients and doctors both need patience
- Need to continue at least 9-12 months after resolution of symptoms

Psychoses

Psychoses are major mental illness, where person lost his/her insight; unaware about his/her illness. These are characterized by distorted thoughts and perceptions, as well as disturbed emotions and behaviors. Incoherent or irrelevant speech may also be present. **Schizophrenia, Bipolar disorder, Delusional disorder** etc are common psychoses.

COMMON PRESENTATIONS OF PSYCHOSES

- Marked behavioral changes, neglecting usual responsibilities related to work, school, domestic or social activities.
- Agitated, aggressive behavior, decreased or increased activity.
- Delusions – fixed, false beliefs not shared by others in the person's culture.
- Hallucinations – hearing voices, or seeing things that are not there
- Loss of Insight-- Lack of realization that one is having mental health problems.
- Features of Mania (***see Depression management***)

Does the person have at least two of the following?

- Delusions, fixed false beliefs not shared by others in the person's culture
- Hallucinations, hearing voices or seeing things that are not there
- Disorganized speech and/or behavior, e.g., incoherent/irrelevant speech such as mumbling or laughing to self, strange appearance, signs of self-neglect or appearing unkempt

NO

Consider consultation with specialist
to review other possible medical causes of psychoses. Assess: Delirium, Cerebral Malaria, Dehydration, metabolic abnormalities, Medicine side effects etc.

YES

If any symptoms of Mania present follow **Protocol P1** and refer the patient to Psychiatrist.

If no symptoms of Mania follow **Protocol P2** and refer the patient to Psychiatrist.

Protocol: P1 for Mania (Bipolar Disorder)

- Provide psychoeducation to the person and carers.
- Ensure safety of the person and safety of others
- Promote functioning in daily activities
- Reduce stress and strengthen social supports
- Pharmacological Intervention :
  - If patient is on antidepressants – DISCONTINUE
  - Begin treatment with lithium, valproate, carbamazepine, or with antipsychotics if enough support at treatment facilities. . Consider a short term (2-4 weeks maximum) benzodiazepine for behavioural disturbance or agitation.
- Refer to Psychiatrists or Nearby medical college

Protocol: P2 for Psychosis

- Provide psychoeducation to the person and carers.
- Ensure safety of the person and safety of others
- Promote functioning in daily activities
- Reduce stress and strengthen social supports
- Pharmacological Intervention :
  - Start antipsychotics with a low dose within the therapeutic range and increase slowly to the lowest effective dose, in order to reduce the risk of side-effects.
  - Refer to Psychiatrists or Nearby medical college

Antipsychotics (For Psychoses & Mania)			
Medication	**Dosing**	**Common side effects**	**Cautions**
Haloperidol	**Start** 1.5-3 mg daily. **Increase as needed** (maximum 20 mg daily). **Route:** oral (p.o.) or intramuscular (i.m.).	**Common:** sedation, dizziness, blurred vision, dry mouth, urinary retention, constipation	**Caution in patients with:** kidney disease, liver disease, cardiac disease, long QT syndrome or taking QT-prolonging medications. Monitor ECG if possible.
Risperidone	**Start** 1 mg daily. **Increase to** 2-6 mg daily (maximum 10 mg). **Route:** p.o.	**Common:** sedation, dizziness, tachycardia.	**Caution in patients with:** cardiac disease.
Chlorpromazine	**Start** 25-50 mg daily. **Increase to** 75-300 mg daily (up to 1000 mg may be necessary for severe cases). **Route:** p.o	**Common:** sedation, dizziness, blurred vision, dry mouth, urinary retention, constipation, tachycardia.	**Contraindications:** impaired consciousness, bone marrow depression, pheochromocytoma.

Mood Stabilizers (For Mania)			
Sodium Valproate	**Start** 500 mg daily. **Increase** slowly to 1000-2000 mg daily (Maximum 60 mg/kg/day). **Route**: p.o	**Common:** sedation, headache, tremor, ataxia, nausea, vomiting, diarrhea, weight gain, transient hair loss. **Serious:** impaired hepatic function, Drug Rash (Steven Johnson Syndrome)	**Caution** in patients with: underlying or suspected hepatic disease. Monitor liver function tests and platelets if possible.
Lithium *Use only if clinical and laboratory monitoring are available*	**Start** 300 mg daily. Increase gradually every 7 days until target blood level reached (maximum 600-1200 mg daily). Monitor every 2-3 months. **Route**: p.o	**Common:** sedation, cognitive problems, tremor, : impaired coordination, hypotension, leukocytosis, polyuria, polydipsia, nausea, diarrhea, weight gain, hair loss, rash. **Serious**: diabetes insipidus, hypothyroidism,	**Contraindicated** in patients with: severe cardiac or kidney disease. Dehydration can increase lithium level, which may be toxic.

Autoimmune Bullous Disease

Two common types:

1.Pemphigus Vulgaris

2. Bullous Pemphigoid

These are group of autoimmune disorders characterized by intra epidermal or sub epidermal blisters.

Clinical feature- Vesicles, bullae, erosion or crusted plaques on skin or oral erosion and ulcers. Blisters rupture easily to leave behind painful areas of oozing and denuded skin that continue to extend, showing little tendency to heal.

Bedside test- Nikolsky's Sign
Bulla Spread Sign/Lutz Sign

Invetigation- CBC,RBS,SGPT,S.Creatinin, CXR P/A View, USG Of Whole Abdomen, Urine RME
Skin Biopsy for Histopathology
Direct Immunoflourescence Test
Indirect Immunoflourescence test

Treatment:

Mild case(few lesions)

↓

Topical therapy with high potent steroid

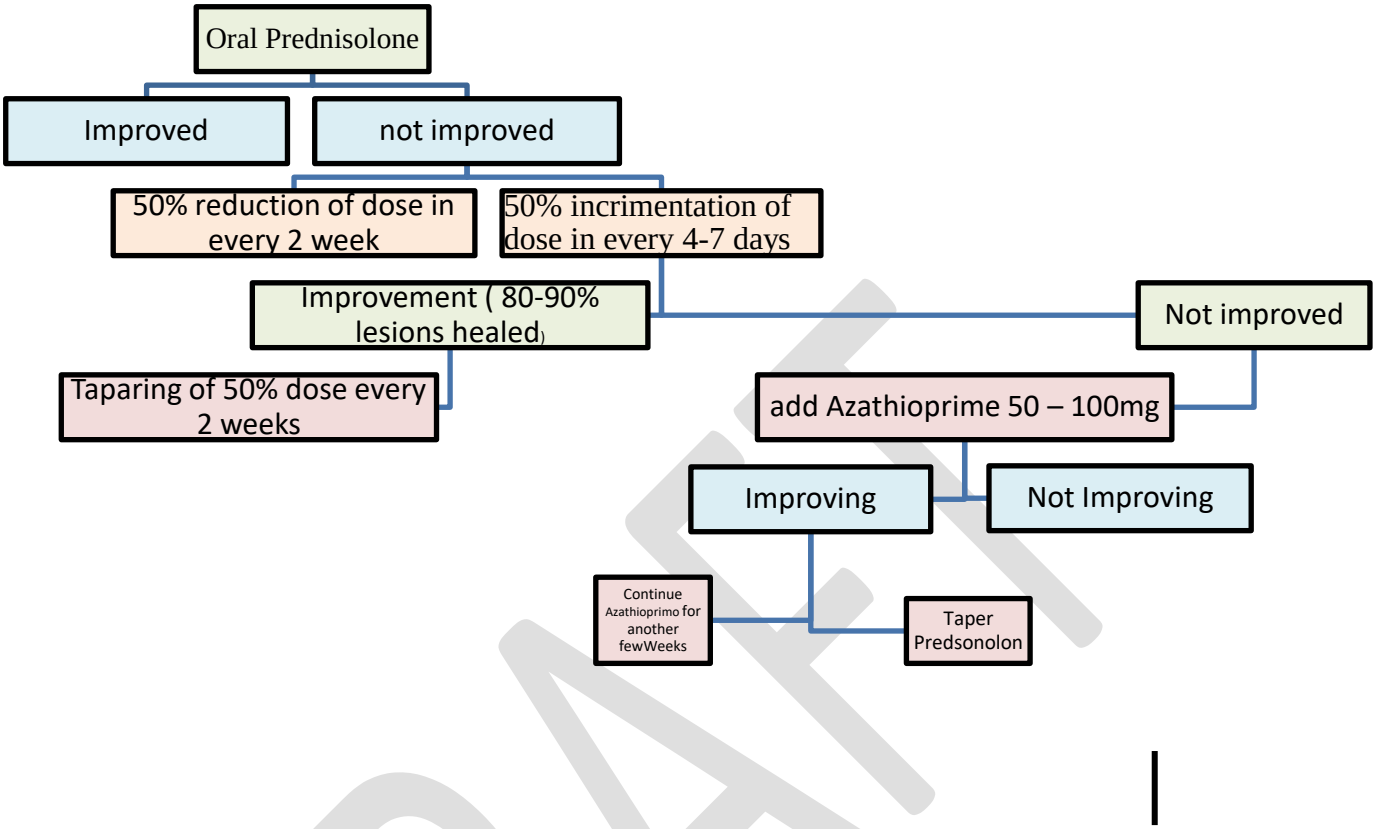
↓

Not Improved

↓

Intra lesional steroid (0.05 -.1ML per site every 1-2 weeks until healing occur

Severe case (Many skin lesions associated with mucosal involvement)



Consider other drugs like cyclosprin, cyclophosphomide, Methotrexate, Dapsone, Biologics, IVIG, Plasmapheresis

Scabies and Tinea Infection

Tinea Infection

Superficial fungal infection affect the keratinized tissue of the skin, nail, hair.
Followings are the traditoional divisionof dermatophytosis

1. Tinea Capitis
2. Tinea Barbae
3. Tinea Corporis
4. Tinea Cruris
5. Tinea Pedis
6. Tinea Manuum
7. Tinea Unguium
8. Tinea Facei
9. Tinea Incognito

Tinea Capitis

Types:

1. Inflammatory (Kerion and Favus) Inflammatory nodule on scalp with woozing
2. Non inflammatory (Grey patches and black dots)

Treatment: Only oral medication is effective

Drugs: Fluconazole 3-6mg/kg/day – 6 weeks
Terbinafine 3-6mg/kg/day – 4-8 weeks
Itraconazoleb 5mg /kg/day 4-6 weeks

Tinea corpories

Involvement of the trunk with annular or polycyclic border. It's border is erythematous and vesicular or scaly but centre is clear. Concentric ring may be present. The clinical feature is often modified.

Tinea Cruris

Involvement of the groin also medial aspect of thigh and usually bilateral. The may involve the buttock and may spread to scrotum. Penis is occasionally involved.

Tinea Pedis

Type	features
Chronic Intertrigenous type	Fissuring, scaling or maceration of the interdigital or subdigital areas
Chronic papulosquamous	Inflammation and or patchy or diffuse moccasin like scaling over the soles
Vesicular or vesiculobullous	Vesicles and vesiculopustules near insteps and on midanterior planter surface.
Acute ulcerative type	Maceration, weaping, denudation and ulceration of sizeable areason the soles. Pungent odor is characteristics.

Tinea Manuum

Dermatophytosis of palmer skin.

Types: 1.Non inflammation-Squamous from : Hyperkeratosis of the palms and finger. Hyperhidrosis is a common association. Associated with nail involvement.

2. Inflammatory vesicular/ dyshydrotic/eczematious form

Vesicles in cluster form. Lesions are in annular and in cluster form.

Tinea unguium/ onycholysis

Dermatophytosis of nail plate. Common in women. Nail plate becomes yellow, thickened and brittle.

Treatment

Condition	Medication	Dose and regimen	Comment
Tinea pedis			
Topical	Econate nitrate crean Terbinafine hydrochloride	1% cream o.d to b.i.dx1-4 weeks	Antifungul powder or gel formulations of ciclopirox of naftifine for moist web space
	Ciclopirox cream	2% creamo.d to b.i.dx1-4weeks	
	Itaconazole	0.77% cream o.d to b.i.dx1-4weeks	
Oral			
	Flucinazole	400mg o.d1 week or 200mg o.d 2 week	
		150 -300mg x 1 dose/week,repeat for 4-6 weeks	

Condition	Medication	Dose and regimen	Comment
Tinea Corpories			
Topical	Miconazole cream Clotrimazole cream Econazole cream Terbinafine cream hydrochloride	2% cream b.i.d 1% cream b.i.d 1% cream b.i.d 1% cream b.i.dx1week	Continue topical for 7-14 days beyond symptom resolution.
Oral	Itaconazole	200-400mg o.d1 week	
	Flucinazole	150 -300mg x 1 dose/week,repeat for 4-6 weeks	
Tinea cruris	Terbinafine	250mg o.d x 14 days	Continue topical for 7-14 days beyond symptom resolution
Topical			
	Econazole cream Miconazole Ketoconazole cream Terbinafine cream Ciclopirox cream	b.i.d x 2-3 days b.i.d x2-3 weeks b.i.d x2-3 weeks b.i.d x2-3 weeks b.i.d x2-3 weeks	
Oral	Itaconazole	200-400mg o.d x 1 week	Adjunct only; reduces fungal shedding
	Fluconazole	150-300mg x1dose, repeat in 1 week	
	Terbinafine	250mg o.d x 10 days	
Tinea Capitis			
Topical	Ketoconazole cream Ketoconazole shampoo	0.d o.d	
Oral	Itaconazole	5 mg/kg per day x 4-6 weeks	For mild-moderate onychomychosis caused by T.rubum; only 5-8% cure rate
	Terbinafine	3-6mg/kg per day x 4-8 weeks	
	Fluconazole	3-6mg/kg per day x 6 weeks(oral solution)	
Tinea Unguium			
Topical	Ciclopirox 8% nail lacquer	o.d 8 hours before hand washing, remove every week with alcohol	
Oral			

	Terbinafine Itraconazole(continiuos) Itraconazole (pulsed) Fluconazole	finger nail 250mg o.d x >6weeks toe nail 250 mg o.d x 12 weeks finger nail 200mg o.d x 1 month toe nail 200 mg o.d x 1month Finger nail 400mg o.d x 7 days, repeat in 1 month Toe nail 400mg o.d x 7 days, repeat for 3-4 months Fingernail 150-300mg/week x 3-6 months Toenail 150-300mg /week x 6-12 months	

Infected Scabies

Clinical feature:

1. Generalized itching, more at night
2. Family members are usually affected
3. Site of involvement: finger web, flexor of wrist, anterior cubital fossae, nipple, umbilicus, genitalia.

Treatment:

Principles of treatment of scabies

1. Appropriate medication
2. Treat the whole body from head to toes
3. Treat all the contacts
4. Treat secondary infection if present

List of Agents Used in the Treatment of Scabies

Topical Agents: Permathrine 5% cream
Lindane 1% cream or lotion
Benzyl Benzoate lotion 25%
Monosulfiram 25% lotion
Crotamiton 10% cream
Precipitated sulfur 2-10% ointment

Oral Ivermectin

Follow up at 1 and 4 week after treatment.

Instructions to parents/ patients

1.The medicine should be applied to clean dry skin
2. The medication provided should be rubbed into the skin
3. All parts of the body from head downward whether involved or uninvolved should be treated
4. Treatment is best done at night before going to bed.
5. Avoid touching any mucosa(oral or ocular) with hands
6. Change clothing and bed sheets the next day and launder them
7. Everyone in the house should be treated at the same time.
8. Itching may persist for a few days after treatment, but never reapply medication without doctors advice

CDC recommendation for treatment of Scabies

Drugs	Instruction of use
Permathrine 5% cream	Apply to the whole body from neck down and wash off after 8-14 hours
Lindane1% lotion	Apply thinning to the whole body from head to neck down and wash off completely after 8 hours
Crotamiton lotion	Apply thinning to the whole body from head to neck down and wash off completely after 8 hours
Monosulfirum@5% lotion	Apply thinning to the whole body from head to neck down and wash off completely after 8 hours

Treatment in special situation

Situation	Drugs Indicated	Contraindication
1. Pregnancy and lactation	6% Sulfur precipitate Permithrine Benzyl Benzoate	Ivermectin Lindane
2. Scabies in Infant	Sulfur 2-6% in petrolatum >2 month Permathrine 5%	Ivermectin Lindane
3. Scabies in Children	Permathrine 5% cream 12-25% BBL	Lindane

Steven Johnson Syndrome

Introduction: Steven Johnson Syndrome (SJS) is a drug reaction.,

Clinical Assessment:

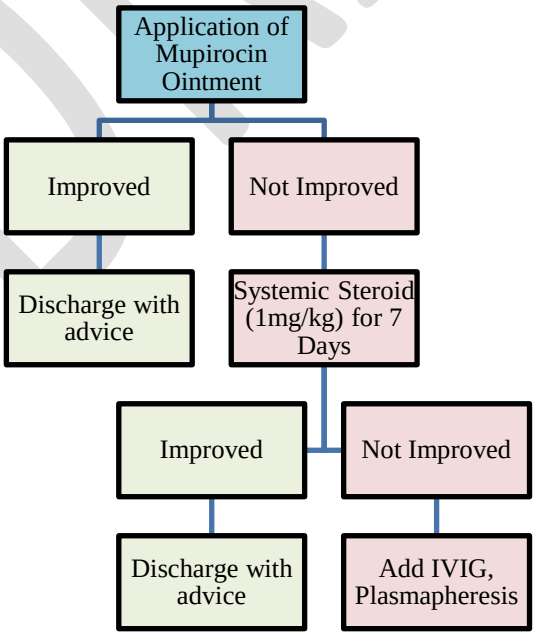
H/O drug Intake

Investigation:

1. CBC, ESR (Raised)
2. RBS, HbA1c
3. SGPT
4. S. Creatinine, S Elcetrolytes, Urine RME
5. CXR P/A View

Management:

1. I/V saline Infusion: Inf. 5% D/A (1L) + Inf. 5% DNS (2L) daily for 7 days
2. Inj. Omeprazole: 1 vial b.i.d for 7 days
3. Oral or Parenteral Azithromycin 500 mg daily for 7 days
4. Plenty of oral fluids
5. High protein diet
6. Application of Mupirocin Ointment



Urticaria

Introduction: Urticaria is caused by localized dermal oedema.

Types:

1. Acute (< 6 weeks)
2. Chronic > 6 weeks)
3. Urticarial Vasculitis

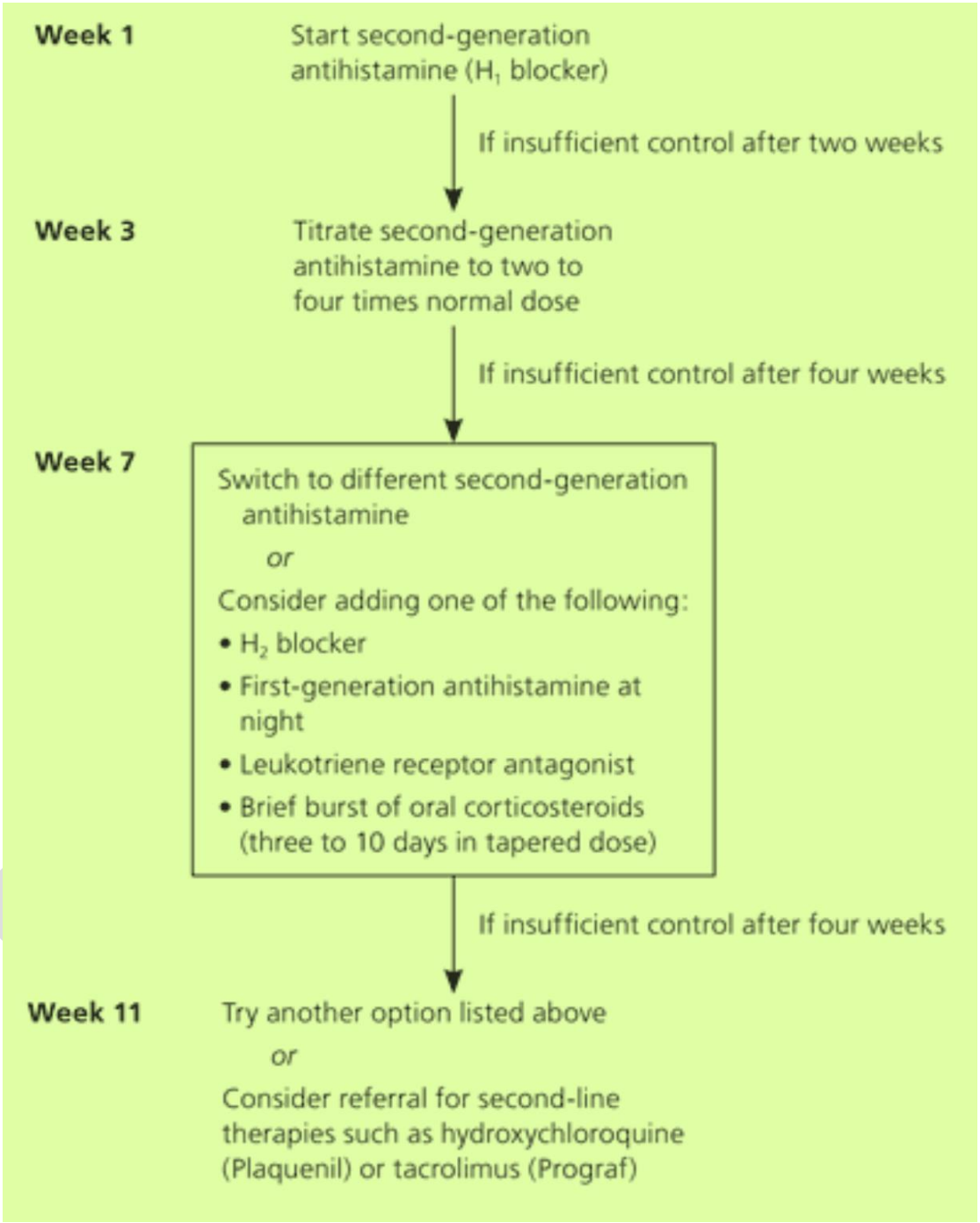
Clinical assessment:

1. H/O Allergies
2. Drugs
3. Contact
4. Infections
5. Exposure to physical elements (Heat, Cold, Sweat, etc.)
6. Others (SLE, Pregnancy, etc).

Investigations:

1. CBC (eosinophilia in parasitic diseases), ESR (high in vasculitis)
2. Total Ig E and specific Ig E (if available) to possible allergens
3. *If systemic diseases suspected:*
    a. Urea and electrolytes
    b. Thyroid Function Tests,
    c. Liver function tests
    d. ANA

Management:


Week 1
Start second-generation antihistamine (H_1 blocker)
If insufficient control after two weeks
Week 3
Titrate second-generation antihistamine to two to four times normal dose
If insufficient control after four weeks
Week 7
Switch to different second-generation antihistamine
or
Consider adding one of the following:
• H_2 blocker
• First-generation antihistamine at night
• Leukotriene receptor antagonist
• Brief burst of oral corticosteroids (three to 10 days in tapered dose)
If insufficient control after four weeks
Week 11
Try another option listed above
or
Consider referral for second-line therapies such as hydroxychloroquine (Plaquenil) or tacrolimus (Prograf)

Poisoning

Alcohol Poisoning

Taking a Brief Alcohol History including:

A. Consumption:
- Consumption in units of alcohol per day/week
- Drinking pattern daily/continuous or episodic/binge drinking?
- Drinking behaviour in last week and last 6 months
- When did patient last drink?

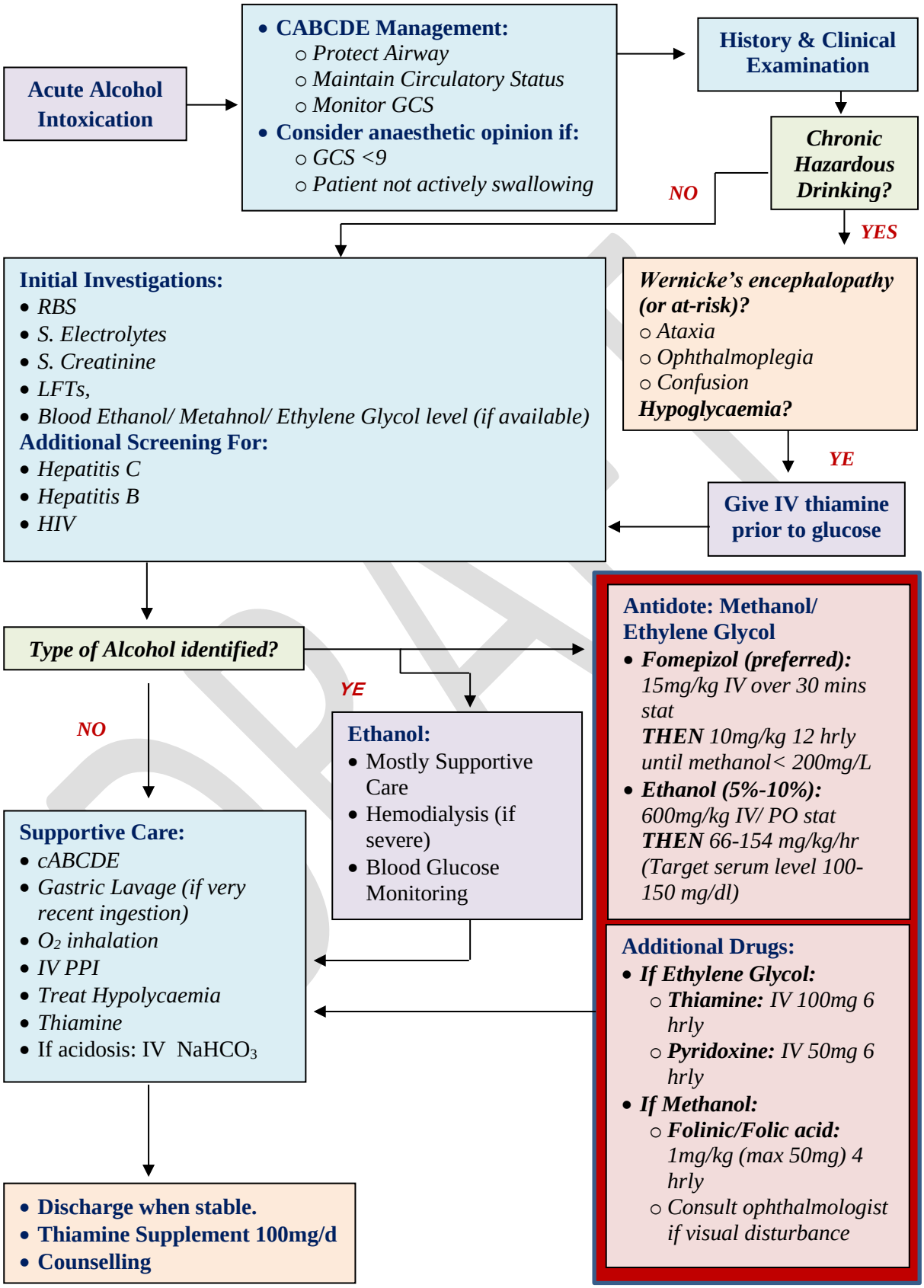
B. Alcohol dependence:
- History of morning/relief drinking?
- Change in tolerance?
- Strong compulsion to drink?
- Continued drinking despite problems?
- Priority of drinking over other pursuits/activities?

All indicative of dependence syndrome.

C. Alcohol-related problems:
- Co-existing health conditions (including co-existing drug and/or mental health problems)?
- Risk of harm to Self ± Others?
- Urgency for treatment?
- Motivation and readiness to change?
- History of withdrawal symptoms (sweating, tremor, nausea/vomiting anxiety, insomnia, seizures, hallucinations, delirium tremens)?

Examination:
Alcohol may affect any Organ/ Organ System
Specific physical signs:
- Spider naevi.
- Palmer erythema
- Dupuyten's contracture
- Gynaecomastia
- Telangiectasia
- Facial mooning
- Parotoid enlargement

Management of Alcohol Poisoning Algorithm:



Poisoning by Drugs

Benzodiazepines (BDZs) are the most commonly used sedative agents in Bangladesh and hence commonly abused. Elderly individuals and very young persons are more susceptible to the toxic effect than people in other age groups

Common BDZ Drugs:

- Diazepam
- Alprazolam
- Clonazepam
- Bromazepam
- Midazolam

History: History should include the time, dose, and intent of the overdose. Determine if co-ingestants are present and the duration of benzodiazepine use. Symptoms include – Dizziness, Confusion, Drowsiness, Blurred vision, Unresponsiveness, Anxiety and Agitation.

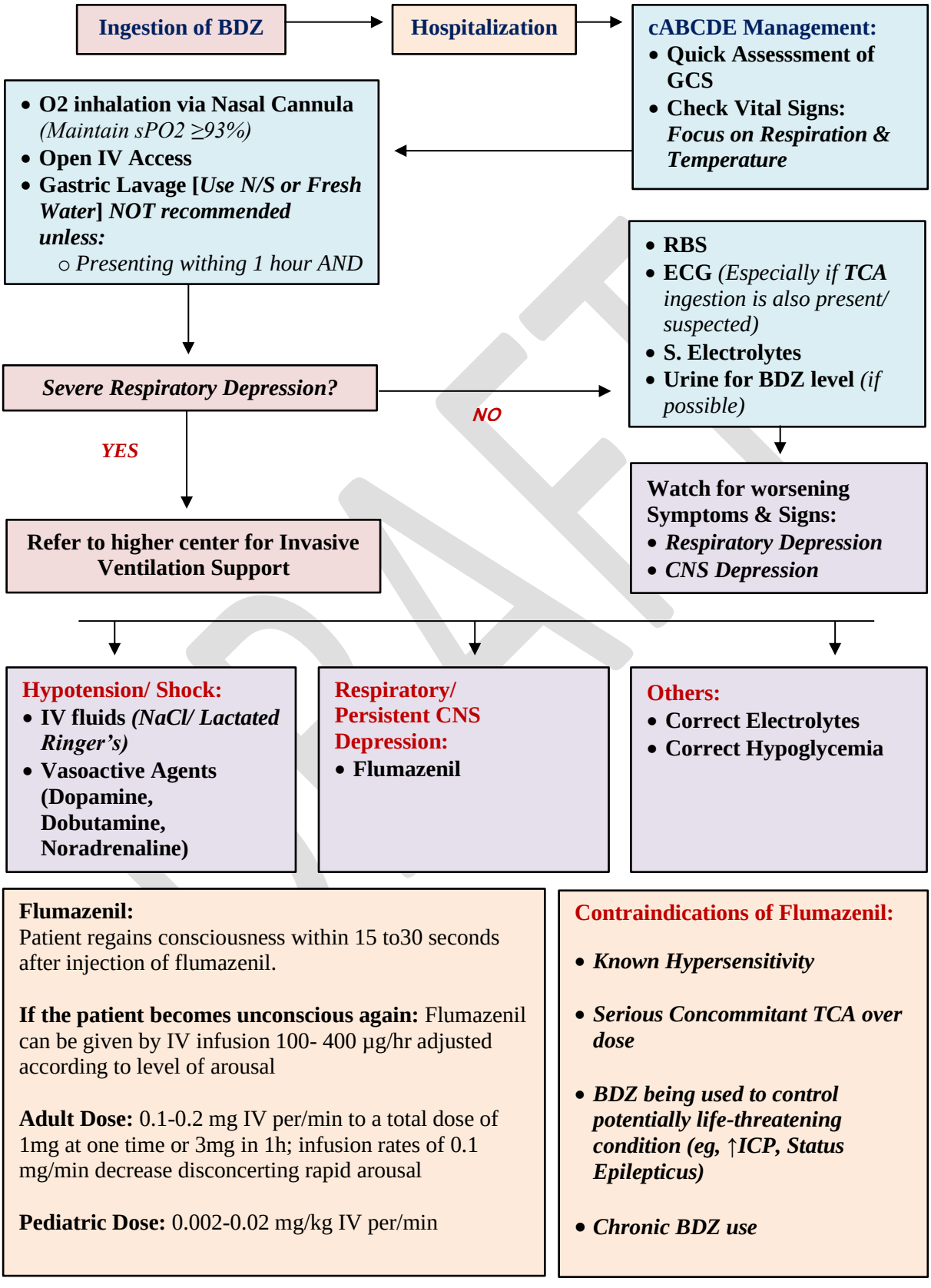
Examination: The physical examination should focus on the patient's vital signs and cardiorespiratory and neurologic function. The frequently found physical signs are- nystagmus, hallucinations, slurred speech, ataxia, coma, hypotonia, weakness, altered mental status, impairment of cognition, amnesia, paradoxical agitation, respiratory depression and hypotension

Management:

- Supportive care: most Patients improve with only supportive care
- Antidote:
  - in severe CNS depression (non-responding) with severe respiratory depression or ineffective respiration

- Referral to a higher centre:
  - Ineffective respiration/ respiratory depression
  - Concommitant TCA overdose
  - CNS depression/ coma persists after 24 hours
  - If antidote is not available when needed

Benzodiazepine (BDZ) Poisoning Management Algorithm:



Flumazenil:
Patient regains consciousness within 15 to30 seconds after injection of flumazenil.

If the patient becomes unconscious again: Flumazenil can be given by IV infusion 100- 400 µg/hr adjusted according to level of arousal

Adult Dose: 0.1-0.2 mg IV per/min to a total dose of 1mg at one time or 3mg in 1h; infusion rates of 0.1 mg/min decrease disconcerting rapid arousal

Pediatric Dose: 0.002-0.02 mg/kg IV per/min

Contraindications of Flumazenil:

- ***Known Hypersensitivity***
- ***Serious Concommitant TCA over dose***
- ***BDZ being used to control potentially life-threatening condition (eg, ↑ICP, Status Epilepticus)***
- ***Chronic BDZ use***

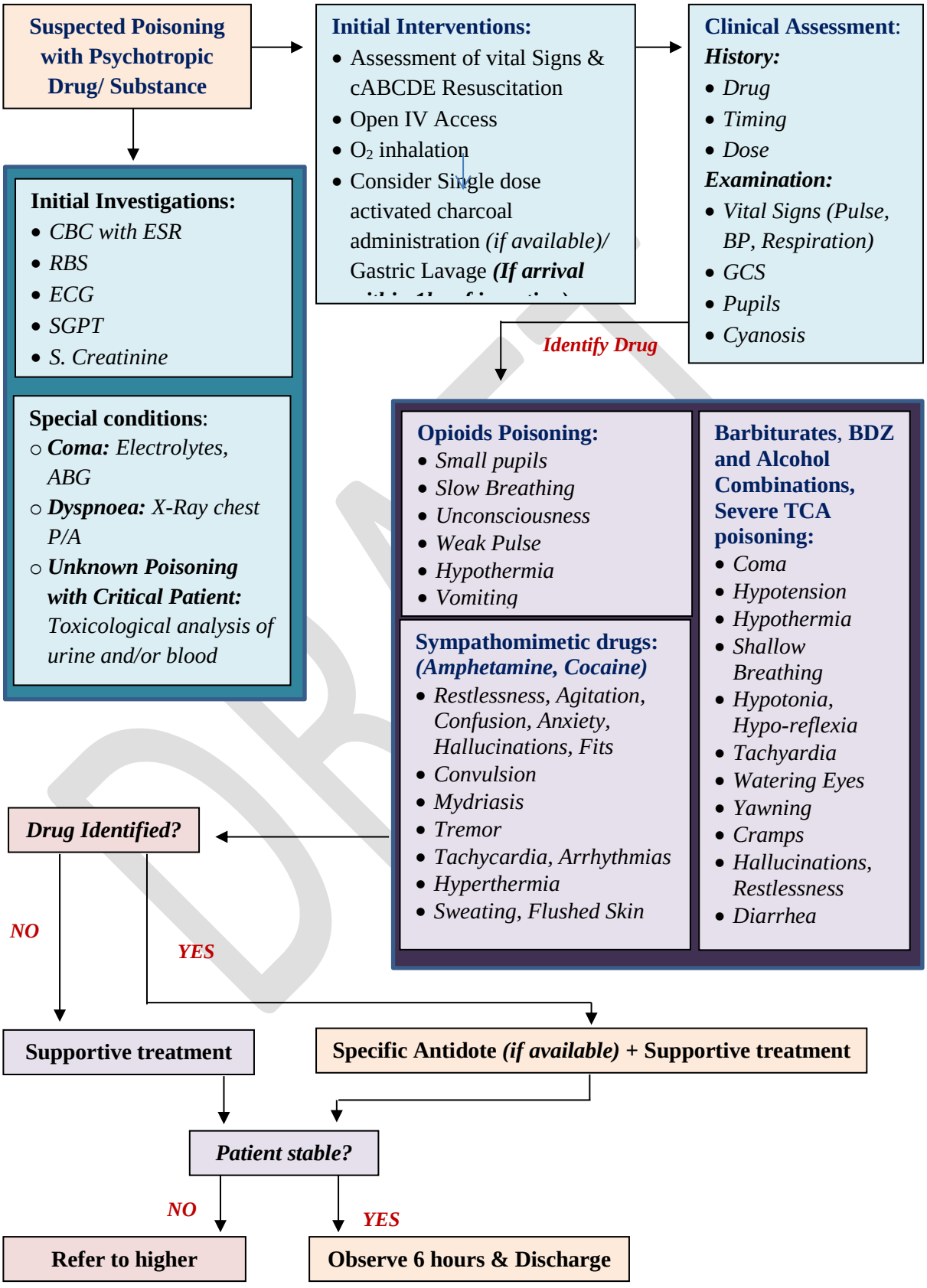
Psychotropic Drugs:
A chemical substance that changes brain function and results in alterations in:

- Perception
- Mood
- Consciousness

These include:

- Psychiatric medications
  - Anxiolytics
  - Antidepressants
  - Mood Stabilizers
  - Anti-Psychotics
- Recreational Substances
  - Alcohol
  - Cocaine
  - LSD
  - Cannabis
- Drugs for pain management:
  - Opiate Narcotics: Morphine, Codeine
  - Pregabaline
  - Anesthetics

Management of Psychotropic Drugs Algorithm (Except Alcohol):



Pesticide Poisoning

Introduction:
It is the most common poisoning found at different level of hospitals of Bangladesh

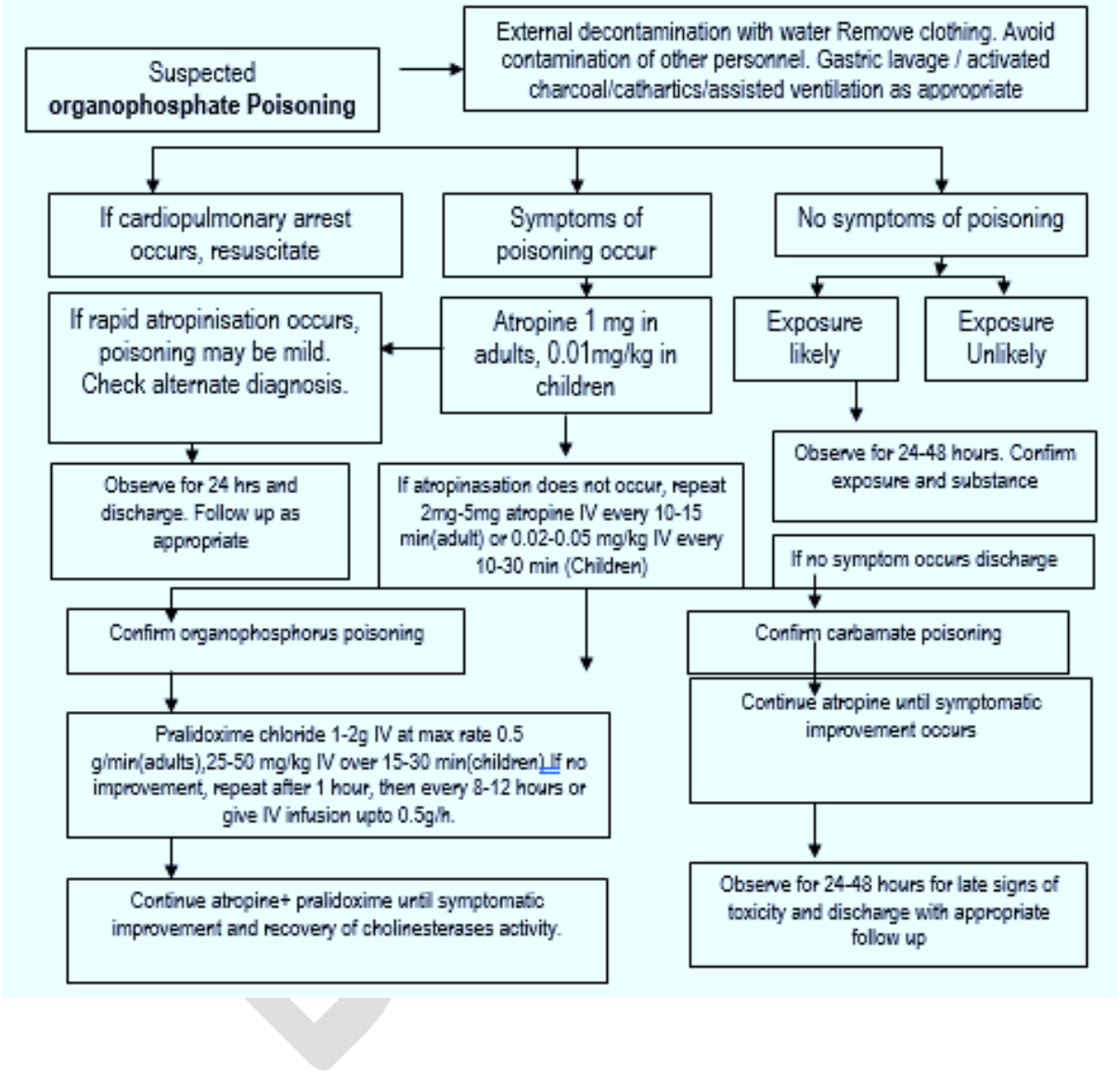
Clinical features:

- Characteristic odour of OPC
- Bradycardia
- Hypotension
- Incontinence of Urine & Stool
- Miosis
- ↑Secretions: ↑Salivation, ↑Sweating, Bronchorrhea

Antidote Dosing for OPC Poisoning:

A. Atropine:
    1. Inj. Atropine 2 amp (1.2 mg) IV stat followed by doubling of doses every 5 mins interval until full Atropinization occurs
    2. Check vital signs at 10 mins intervals
    3. Once atropinized, calculate the total amount required and give 10-20% of calculated dose/ hr with IV N/S as maintenance dose
    4. Check vital Signs at 30 mins intervals for 3 hours, hourly for 6 hours 3-6 hourly for next 24-48 hours
    5. If Atropinizations is lost: (eg; bronchospasm, bradycardia etc.) start giving bolus dose again until they disappear and Add 20% of bolus requirement to infusion/ hours
B. Pralidoxime:(only in cases of moderate- severe OPC poisoning cases)
    1. Inj. Pralidoxime chloride IV
       Adult: 1-2 g/IV stat (Adult)
       Child: 25-50 mg/kg IV over 15-30 mins
    2. If no improvement: Repeat after 1 hour. THEN 8-12 hrly until improvement

ALGORITHM: APPROACH TO THE MANAGEMENT OF POISONING DUE TO ORGANOPHOSPHATE PESTICIDES



Unknown Poisoning

The unknown poisoning are cases which brought to the hospital where there is no clue about the poisoning substance. The physicians are occasionally confused with the diagnosis and management. Commonly travel related poisoning using public transport is found to be the unknown poisoning but there are also cases where the actual agents could not be evaluated through history or circumstances.

The Key Features of unknown poisoning

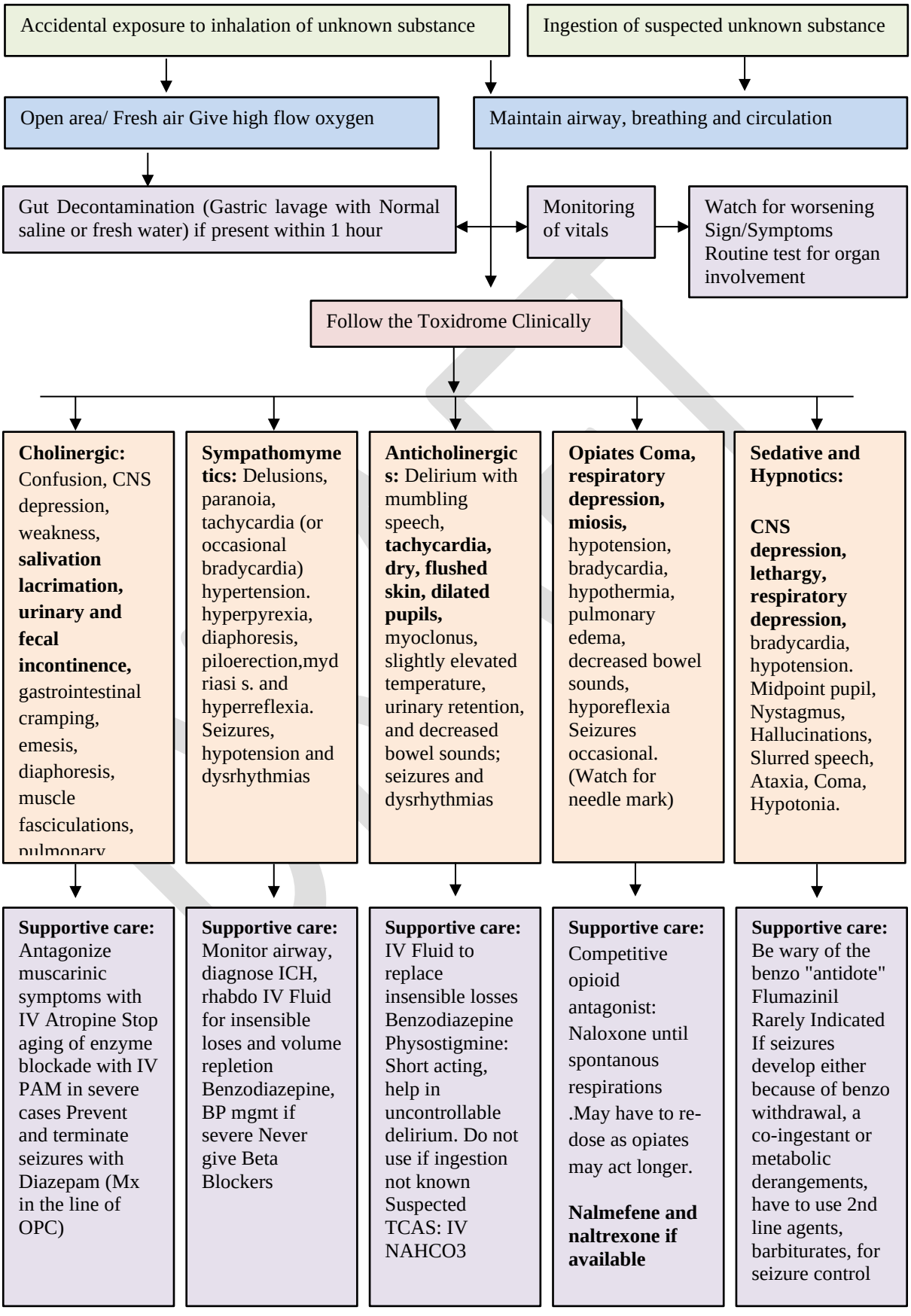
- Victims mostly brought to the hospital by police or attendant in a drowsy state
- Most of the victims had lost their valuables including money
- Fortunately most of the patients are recovered and discharged within 24 hours after admission uneventfully without any specific treatment

Management Protocol must be followed

- Rapid assessment of the vitals. Measure Pulse, BP, Respiration and Temperature immediately
- Assess the state of consciousness by Glasgow Coma Scale (GCS)
- In all cases put the patient in to lateral position with the lower leg straight and the upper leg flexed; in this position the risk of aspiration is reduced
- Clear airway passage by removal of any obstructing object, vomit or dentures, and by backward pressure on the mandible. Patient who are awake and talking- Likely to have intact airway. In obtunded patients check for gag reflex. Nursing care of the mouth and pressure areas should be instituted
- Check for Breathing by observing efforts of ventilation, respiratory rate, cyanosis and use of accessory muscle of respiration. Institute oxygen if required
- Put an Intravenous (IV) cannula but administration of IV fluids is unnecessary unless the patient has been unconscious for more than 12 hours or is hypotensive. Normal saline (0.9% Nacl) will be the fluid of choice

Refer the patient to a higher centre:

- Patient remain sedated or unconscious more than 24 hours
- Patient having co-morbidity
- Patient having respiratory depression
- Patient developing/worsens vital sign


Accidental exposure to inhalation of unknown substance
Ingestion of suspected unknown substance
Open area/ Fresh air Give high flow oxygen
Maintain airway, breathing and circulation
Gut Decontamination (Gastric lavage with Normal saline or fresh water) if present within 1 hour
Monitoring of vitals
Watch for worsening Sign/Symptoms
Routine test for organ involvement
Follow the Toxidrome Clinically
Cholinergic: Confusion, CNS depression, weakness, salivation lacrimation, urinary and fecal incontinence, gastrointestinal cramping, emesis, diaphoresis, muscle fasciculations, pulmonary
Sympathomymetics: Delusions, paranoia, tachycardia (or occasional bradycardia) hypertension. hyperpyrexia, diaphoresis, piloerection,mydriasi s. and hyperreflexia. Seizures, hypotension and dysrhythmias
Anticholinergics: Delirium with mumbling speech, tachycardia, dry, flushed skin, dilated pupils, myoclonus, slightly elevated temperature, urinary retention, and decreased bowel sounds; seizures and dysrhythmias
Opiates Coma, respiratory depression, miosis, hypotension, bradycardia, hypothermia, pulmonary edema, decreased bowel sounds, hyporeflexia Seizures occasional. (Watch for needle mark)
Sedative and Hypnotics:
CNS depression, lethargy, respiratory depression, bradycardia, hypotension. Midpoint pupil, Nystagmus, Hallucinations, Slurred speech, Ataxia, Coma, Hypotonia.
Supportive care: Antagonize muscarinic symptoms with IV Atropine Stop aging of enzyme blockade with IV PAM in severe cases Prevent and terminate seizures with Diazepam (Mx in the line of OPC)
Supportive care: Monitor airway, diagnose ICH, rhabdo IV Fluid for insensible loses and volume repletion Benzodiazepine, BP mgmt if severe Never give Beta Blockers
Supportive care: IV Fluid to replace insensible losses Benzodiazepine Physostigmine: Short acting, help in uncontrollable delirium. Do not use if ingestion not known Suspected TCAS: IV NAHCO3
Supportive care: Competitive opioid antagonist: Naloxone until spontanous respirations .May have to re-dose as opiates may act longer.
Nalmefene and naltrexone if available
Supportive care: Be wary of the benzo "antidote" Flumazinil Rarely Indicated If seizures develop either because of benzo withdrawal, a co-ingestant or metabolic derangements, have to use 2nd line agents, barbiturates, for seizure control

Rheumatoid Arthritis

Definition: It is a chronic auto immune inflammatory destructive & deforming polyarthritis, characterized by bilateral symmetrical involvement of small and large joints with system and extra-articular feature with exacerbation and remission

Rheumatoid Arthritis

Common Symptoms:

- Pain and swelling of the joints
- Prolonged morning stiffness (>30mm) or stiffness after inactivity
- Bilateral, symmetrical involvement, small, joints of hand are almost always involved
- Fever, weight loss, fatigue

General Signs:

- Swelling and deformity of multiple joints in a symmetric fashion and often involving the hands
- May have Erythema
- May have extra articular features
- Anemia and lymphadenopathy are common
- Tenderness of joints on passive movement

Common Investigation:

- S. creatinine
- FBC, ESR
- CRP
- RA, Anti-ccp
- SGPT
- Urine R/M/E
- RBS, HbA1C
- X-ray chest P/A view
- X-ray hand
- MT

Treatment: (Often need specialist referral)

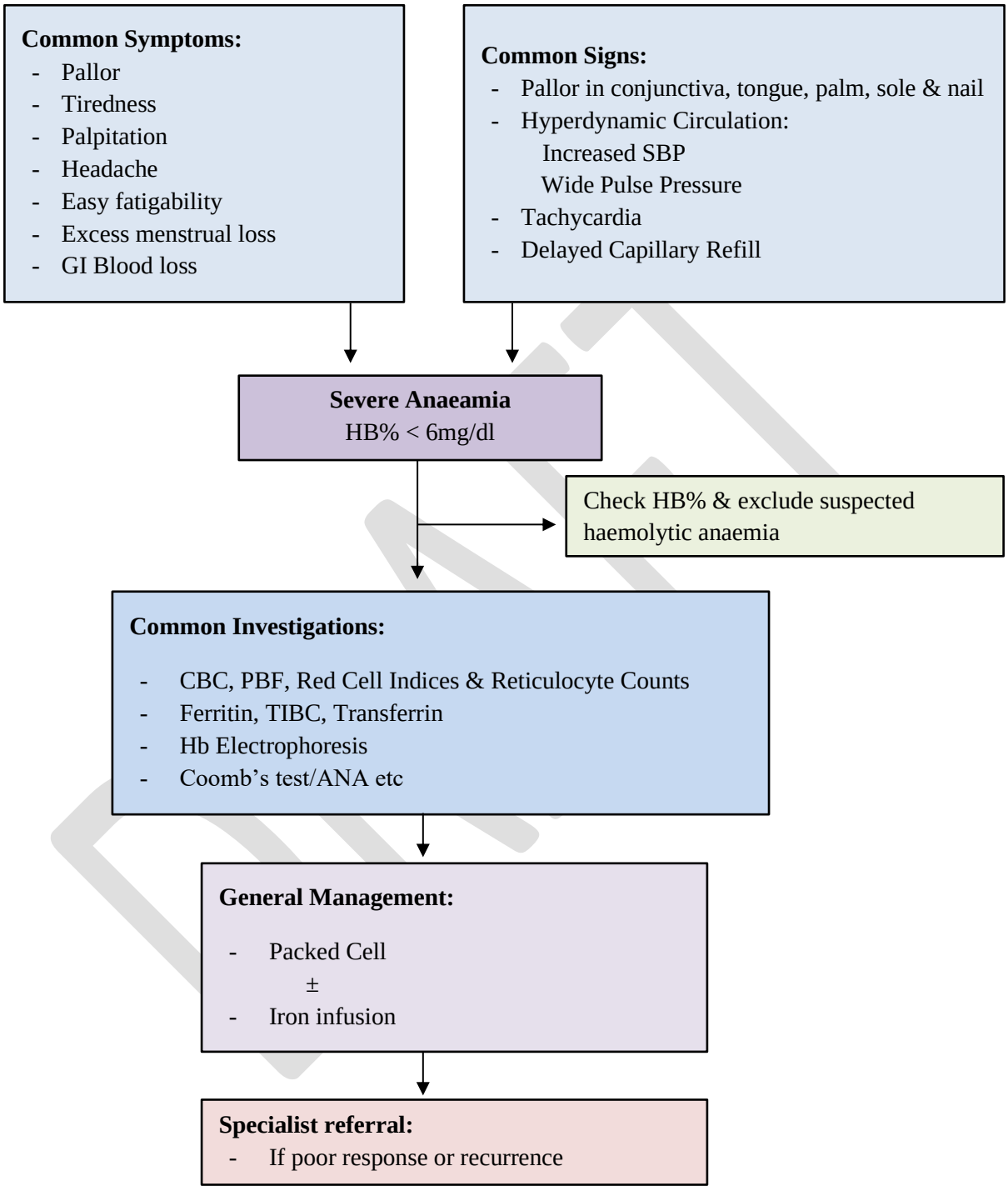
- NSAID: used as necessary
- DMARD:
  - MTX is the drug of choice.
  - Started at a lower, dose of 10-15 mg/week then gradually increased up to 25 mg/week
  - MTX dose is pillowed by tab Folic acid 5mg on the next day.
  - Sulfasalazine
  - Hydroxychloroquine
- Biological agent- abatacept, adalimumab, anakinra, certolizumab etc.
  -most effective with a conventional DMARD, for optimum duration
- Corticosteroids: As a bridge therapy before the onset of full action of DMARD

-Usual dose: 30 mg/day, decrease over 12 weeks

Follow up: Life long

- Monitoring of disease actively
- Escalation of DMARD for non-responders
- Side effects of drugs &
- Complication of disease

Severe Anaemia



Iron Deficiency Anaemia

Iron deficiency anaemia develops when body stores of iron drop too low to support normal need blood cell production. It occurs when losses or physiological requirements exceed absorption.

Common Symptoms:

- Fatigue
- Leg cramps on climbing stairs
- Craving for ice
- Palpitation
- Headache
  - Pallor

Common Signs:

- Impaired growth infants and children
- Anaemia
- Angular stomatitis
- Glory, smooth tongue
- Koilonychia

Iron Deficiency Anaemia

Common Investigations:

- CBC- Decreased Hb
- MCV- Reduced
- MCH/MCHC- Reduced
- RDW > 14%
  - Peripheral Blood Film -Microcytosis, hypochromia
  - Iron Profile
    - Ferritin: Reduced
    - Iron: Reduced
    - TIBC: Increased
    - Transferin saturation: Decreased
    - Soluble transfrerin receptor: Increased
- Bone marrow aspiration for iron store
- To find out the aetiology:
  - Upper GI Endoscopy
  - Colonoscopy with ileoscopy
  - Serum tissue transglutaminase antibody
  - Stool and urine exam for parasite

General Management:

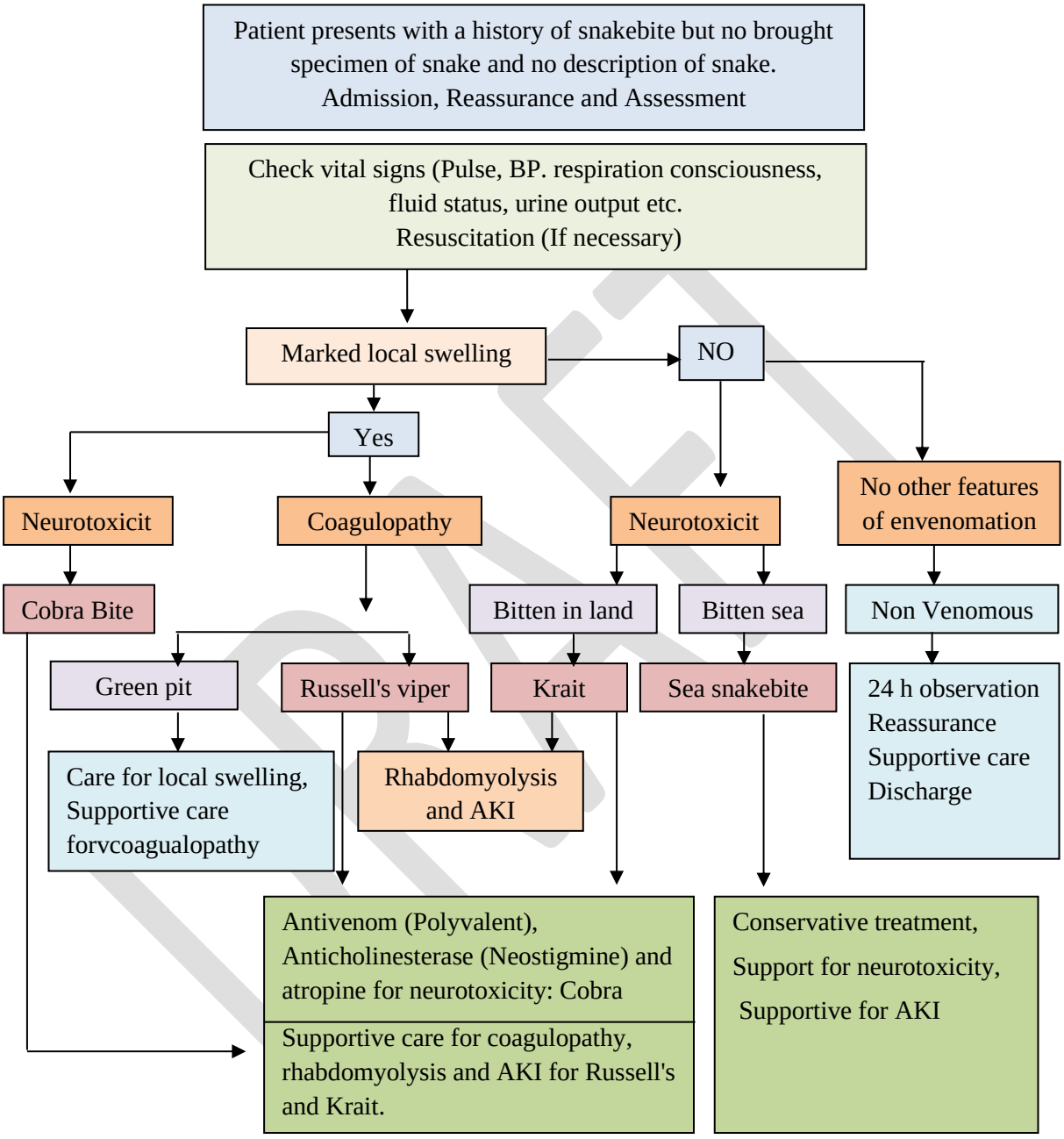
1. Ferrous sulphate - 200mg 3 times daily -3-6 months
2. Ferrous gluconate - 300mg 2 time daily 3-6 months
3. Blood
4. if: Evidence of hypoxia
    - Angina
    - Heart failure
5. Parenteral Iron therapy:
    - Malabsorption ----Iron
    - Chronic gut therapy----Iron sucrose
    - Chronic kidney disease----Iron isomaltose
    - Inability to tolerate oral iron preparation----Iron carbozylntose
6. Treatment of underlying aetiology

Follow up:

- Hb should rise 1.0gm/L in every 7-10days
- Reticulocyte count rises within-7 days
- Clinical response by improvement of symptoms

Snakebite

Approach to identification of common snakebite patients of Bangladesh by clinical syndrome and treatment principle



- **The above clinical syndrome is applied for all areas of Bangladesh**
- **Russell's viper is more common in northern area (Rajshahi, Chapainobabgonj etc).**

Identify the snake by brought specimen, description or by photograph. Identified as venomous, non-venomous, snake not identified, suspected snakebite, treat according.

Antivenom Therapy: If Systemic Envenoming or Local Envenoming

Indications for antivenom (AV): AV treatment is recommended if and when a patient with proven or suspected snakebite develops one or more of the following signs.

Indications of AV therapy		
Systemic signs	Clinical	Laboratory
Haemostatic	Spontaneous systemic bleeding	20WBCT Prothrombin time, Thrombocytopenia (<100 x 109/litre or 100 000/cu mm)
Neurotoxic signs	Ptosis, external ophthalmoplegia, paralysis etc	
Cardiovascular abnormalities	Hypotension, shock, cardiac arrhythmia	Abnormal ECG
Acute kidney injury (renal failure)	Oliguria/anuria	Rising S. creatinine / urea
Haemoglobin-/myoglobin-uria	Dark brown urine, muscle aches and pains(feature of generalized rhabdomyolysis)	Urine dipsticks, Hyperkalemia Low Hemoglobin/ Haematocrit
Local envenoming		
Local swelling involving more than half of the bitten limb (in the absence of a tourniquet) within 48 hours of the bite. Swelling after bites on the digits (toes and especially fingers). Rapid extension of swelling (for example, beyond the wrist or ankle within a few hours of bite on the hands or feet). Development of an enlarged tender lymph node draining the bitten limb		

It is never too late to give AV provided the indications are present: Only if features of **systemic** envenoming are present for bites of snakes mentioned in the above box
Do not give AV for local envenoming alone, except for Cobra and Russell's viper bites when indicated.
Commence AV immediately if indicated for the bites of: Cobra, Krait, Russell's viper
Currently available AV is not recommended for the bites of: Green pit viper, Sea snake

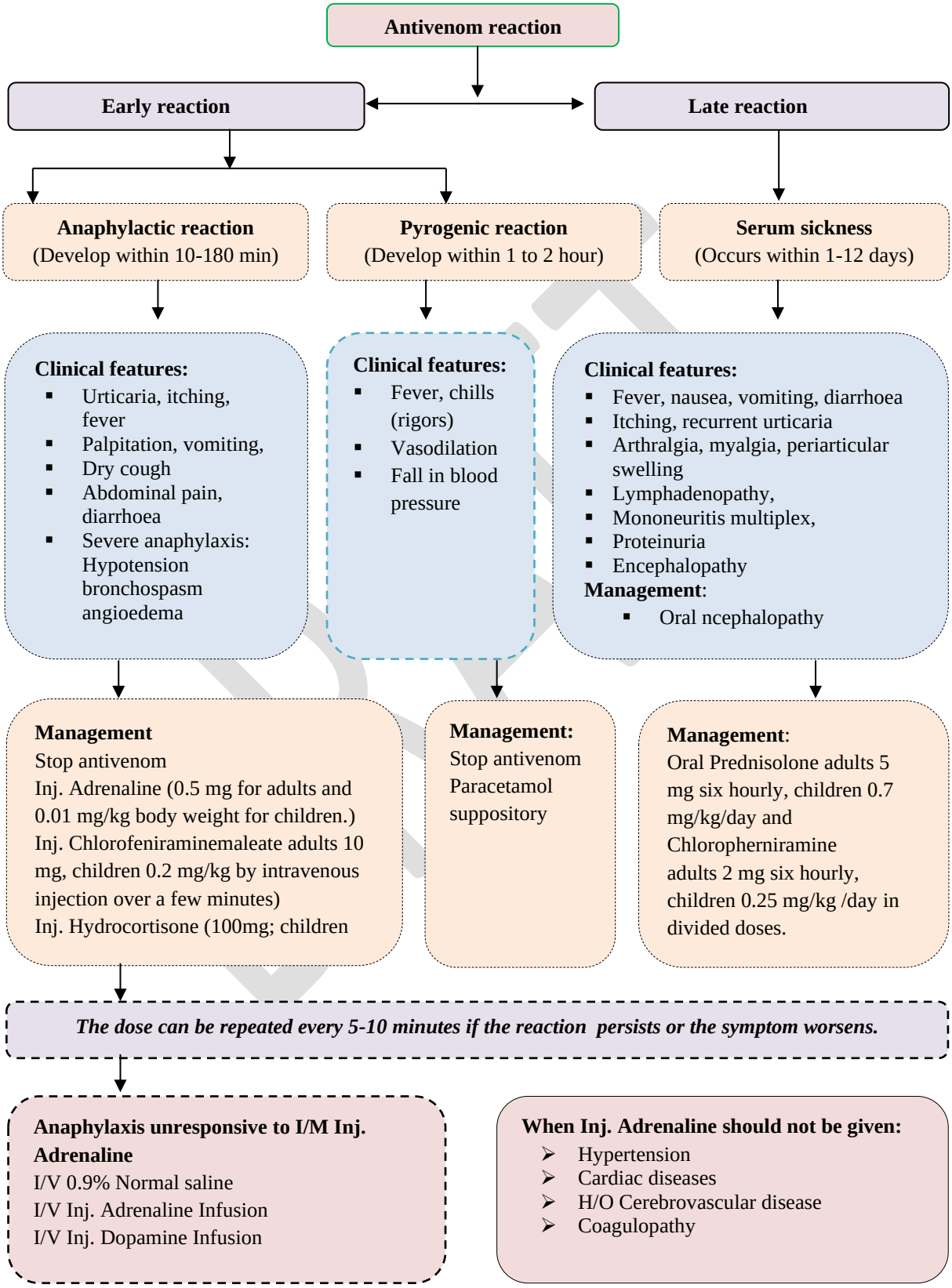
- Dose: 100 ml (10 amp/vials) of polyvalent AV mixed with 100 ml of normal saline should be infused intravenously over one hour.
- Start infusion at a lower rate, monitor for 10-15 minutes.

Adult and children should receive same dose of AV

Before initiating AV, prophylactic subcutaneous adrenaline (dose - adult 0.25 ml of 0.1% solution and in children 0.005 mg/kg) should be given to the victim.
Adrenaline is available as 0.1% (1 in 1000) solution, 1 ampoule containing 1 ml.
Draw adrenaline in an Insulin syringe (100 unit) upto mark 25 (for adult), administer Subcutaneously (in case of premedication).
For treatment of anaphylaxis, draw 0.5 ml of adrenaline (for adult) & give IM.

CAUTION: Have Adrenaline (+Inj. Hydrocortisone, Inj. Anti histamine) available at bedside**.**
Observe the patient carefully during the time of administration of antivenom and upto 3 hours for signs of anaphylaxis.

Antivenom reaction is not un common but rarely fatal. Appropriate timely management of AV reaction.



Lower Uterine Caesarian Section (LUCS)

It is a surgical procedure to deliver the baby through a transverse incision is made in the lower uterine segment above the attachment of the urinary bladder to the uterus.

Types-
1.Elective (planned)
2.Emergency

Time of delivery

- Usually planned between 38- 39 weeks of pregnancy if not otherwise indicated.
- When c/s is indicated prior to 37 weeks' - corticosteroids to the mother should be considered.

Indications for 'elective' Caesarean section:

- Breech presentation (at term)
- Other malpresentations – e.g. unstable lie, face /shoulder presentation, transverse lie or oblique lie. (When can't be corrected conservatively)
- Twin pregnancy – when the first twin is not a cephalic presentation.
- Maternal medical conditions (e.g. cardiomyopathy) – where labor would be dangerous for the mother.
- Fetal compromise (such as abnormal fetal Dopplers) –.
- Transmissible disease of mother (e.g. poorly controlled HIV, HSV etc).
- Placenta previa – Central/ type II posterior
- Maternal diabetes with a baby estimated to have a fetal weight >4.5 kg.
- Previous major shoulder dystocia
- Previous successful repair of 3rd/4th degree perineal tear
- Maternal request –after proper counselling

Management of patient during elective LUCS

Detailed history and Physical examination should be done to asses maternal and fetal condition

Investigations

- CBC
- Blood grouping and cross matching
- VDRL, HBsAg screening
- RBS/ OGTT
- SGPT, S. Creatinine- when needed
- Urine analysis
- Ultrasonography-to asses fetal condition.
- CTG- to asses fetal activity.

Drugs for Anesthesia

Spinal Anesthesia-

- Spinal Needle- 1
- Inj. Bupivacaine (heavy)- 1
- Inj Ephedrine/Atropine- 4

Suture materials &Others-

vicryl -1-0 round body-1
vicryl -2-0 cutting body -1
Catgut 1- round body -1
Foley's catheter 14/16 FR bardia -1
Urobag-1,
Saline set 1,
Blood transfusion set-1
I/V Canulla-2 (18 size)
5 cc disposable syringe-10

Preoperative preparation

- NPO for 6-8 hrs
- Informed Consent
- Ready blood (transfuse if needed)
- Medication

✓ Inj: Ceftriaxone -1
✓ Inj: Omeprazole -1
✓ Inj. Metoclopramide-1

Intraoperative and immediate postoperative Drugs

- I/V fluid - 3 liters
- Inj: Pethidine -1/2
- Inj: Vergen - 2
- Inj: Ceftriaxone -3
- Inj: Metronidazole- 3
- Inj: Omeprazole -3
- Clofenac suppository-3

Post operative Drugs and advice

- Cap. Cefixime 400mg/ Ciprofloxacin 500mg- bd for 7 days
- Tab. Metronidazole (400mg) - tds for 5days
- Cap. Flucloxacilin 500mg qds (6hrly) for 7 days (Selective cases)
- Tab Ketorolac 10mg -tds for 5 days
- Cap Omiprazole 20mg bd for 7 days
- Tab. Calcium with vitamins- 1-tab bd for 1 month
- Normal body movement except heavy weight lifting
- Abstinence for 6 weeks
- Follow up after 7days & at 6 weeks

Eclampsia

Diagnosis of Severe Pre-eclampsia / Eclampsia

- BP > 140/90mmHg
- Proteinuria ≥ 2+
- Severe Headache
- Blurring of vision
- Convulsion/ History of convulsion (single or more)
- Unconsciousness/ ↓ Level of consciousness
- ↓ Urinary output (<30 ml/hr)

Investigations:

- CBC
- Blood Grouping
- S. Electrolytes
- Blood urea, S creatinine.
- SGPT, S. Bilirubin
- Urine RME
- Coagulation profile: BT, CT, PT with INR, APTT, Fibrinogen, FDP, d-dimer
- USG of pregnancy profile with BPP and colour Doppler study (if needed.)

↓

Hospitalization

General Management:

- ***SHOUT FOR HELP***
- **ABCDE Resuscitation**
- **If she is breathing:** give: **O_2** inhalation- 4-6L/min
- **If apneic:** Use Bag & Mask Ventilation
- IV access→**IVfliud:** Normal saline/ Hartman's solution
- Continuous **catheterization**
- Maintain strict fluid balance & intake output chart
- Maintenance **of nutrition:** Ryle's tube or oral feeding
- **Antibiotics:** lnj. Ampicillin 500 mg IM/ IV 6 hrly/Amoxicillin IV 8 hrly
- **Monito**r, Pulse, BP, respiration, reflexes at FHR, urine output/ auscultated lung bases 30 minute intervals.
- Care of the eye, skin and maintain oral hygiene

↓

Specific Management

Prevention/ Control of Convulsion- $MgSO_4$

Control of Blood Pressure:

Obstetric Management: After stabilizing the mother

Specific management of Eclampsia

Prevention/ Control of Convulsion- $MgSO_4$ Therapy:

Pre-Requisites:

1. *Respiratory rate> 16 breaths/min*
2. *Urine output- >30ml/hour*
3. *Knee Jerk Present*

Loading Dose:

1. *I/V & I/M protocol- 3g deep IM in each buttock and 4g in 12 ml d/w i/v over 10-15 min*
2. *Only I/M protocol- 5gm in each buttock*

Maintenance dose:

1. *2.5 gm I/M 4hours after loading dose*
2. *Continue 4 hourly in alternate buttock up to 24 hours after last convulsion or delivery (Whichever is longer)*

OR

Inj. Nalepsin
1 amp / vial = (4gm/100ml)
1 vial I/V @ 60-70 drop/min .
then
1 vial I/V @ 6 drop/min for 24 hours

Control of Blood Pressure:

If Diastolic BP <110mmHg:

Oral drug is prescribed

- *α-Methyl Dopa (500mg-2gm)/day*

OR

- *Calcium Channel Blocker 5mg twice daily*

OR

- *Labetalol 200 mg once or twice daily*

If Diastolic BP >110mmHg mm Hg:

OR

I

- **Labetalol(20mg/amp):**
  - *1-amp I/V slowly every 15 minutes until DBP 90 mm of Hg*

  OR
  - *250 mg in 250 ml Normal Saline, IV @ 20mg/hr*

OR

Hydralazine(20mg/amp):

- *5mg dissolved in 10 ml of DW, slow IV (1ml every 15 minutes) until Diastolic BP is 90 mm Hg*

OR

1amp in 200 ml Normal Saline, IV @ 8-10 drops/min

Obstetric Management: Conduction of delivery within 6-8 hrs of convulsion

Vaginal delivery if:

- *Favorable Cervix*
- *ARM or Oxytocin induction*
- *Avoid prolonged 2nd stage.*
- *Forceps can be used*

LSCS if:

- *Unfavorable cervix(BISHOP score ≤ 3)*
- *Malpresentation*
- *Fetal distress*
- *No progress of labor*
- *Uncontrolled fits*

Choice of Anesthesia

- *Spinal Anesthesia*
- *Indication of G/A*
  - *Repeated fits*
  - *Thrombocyte count <1,00000/mm*
  - *Pulmonary edema with cardiorespiratory instability*

Important Tips

- If convulsion recurs after 30 mins of loading dose. give 2.5 gm inj. MgS04 slowly over **5mins.**
- If skilled provider to use IV/IM protocol is not available, give 5 gm i.m.in each buttock (only IM protocol)
- If MgS04 not available/contraindicated –inj diazepam 10 mg slowly over 2 mins and 40 mg in 500 ml normal saline in IV drip.
- Maintain IV fluids- normal saline over 6 hrs initially and closely monitor to avoid fluid overload.

Bed side clotting test: take 5 ml blood in a plain glass test tube, keep it upright, turn it after 5 minutes to see if clot forms. If fails to clot within 10 minutes -test positive (coagulation failure).

$MgSO_4$ Toxicity: (RR<16/ min, urine output <30 ml/hr, absent knee jerk).

- Omit next dose of MgS04
- Give inj. Calcium gluconate 1 gm. (10ml) slow I/V over 10 minutes.
- Assisted ventilation (if needed).

Pre-eclampsia/ Eclampsia with any complications:
(Consult with specialist or refer)

- CVD (Cerebro vascular disease)
- Acute pulmonary edema (severe respiratory distress)
- Acute renal failure (severe oliguria /anuria)
- DIC (bleeding from multiple sites including venipuncture site)
- HELLP syndrome (Hepatitis, elevated live enzymes & low platelet count)
- Hyperpyrexia. (Temperature>104^0 F.)
- Abruptio Placentae

Hemorrhoids in Pregnancy

Hemorrhoids are swollen veins in rectum that can cause itching, burning, pain, or bleeding.
Common in pregnancy, especially in the 3rd trimester.

Risks in pregnancy

- Increased abdominal Pressure causes venous engorgement.
- Growing baby also puts pressure on the large veins behind uterus.
- Constipation very common feature in pregnancy increases risk of hemorrhoids because

Management

Ease Pressure

Avoid prolonged standing or sitting

Prevent Constipation

High fiber foods: whole-grain breads and cereals, fruits , vegetables and beans. '

Taking plenty of water. A glass of prune juice may also help.

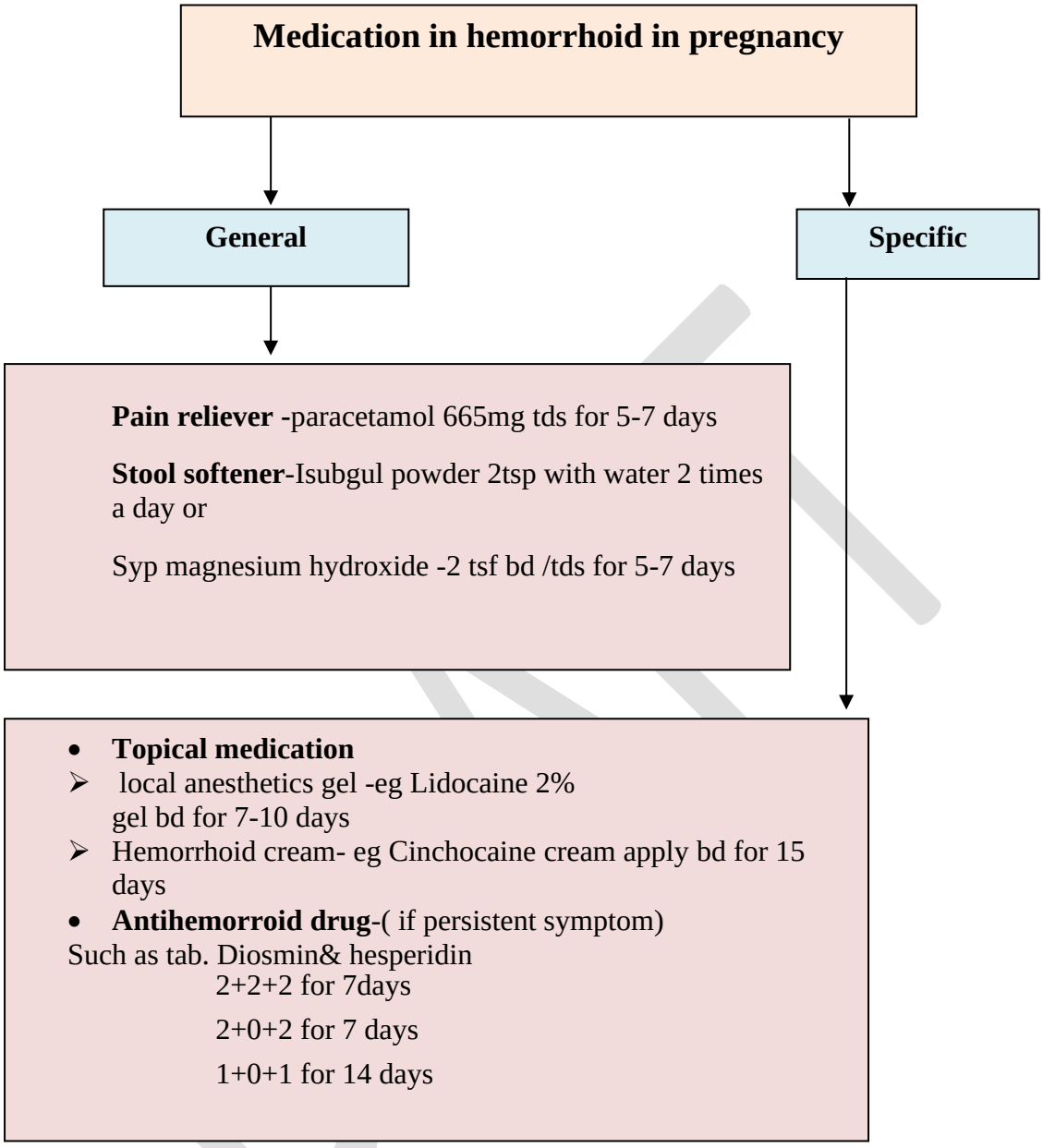
Soothe Irritation

Hip bath-several times a day to relieve pain.

Apply an **icepack or cold compress** for10 minutes up to four times a day to bring down swelling.

Use unscented, non-alcohol wet wipes after defecation.

Medication


Medication in hemorrhoid in pregnancy
General
Specific
Pain reliever -paracetamol 665mg tds for 5-7 days
Stool softener-Isubgul powder 2tsp with water 2 times a day or
Syp magnesium hydroxide -2 tsf bd /tds for 5-7 days
Topical medication
local anesthetics gel -eg Lidocaine 2% gel bd for 7-10 days
Hemorrhoid cream- eg Cinchocaine cream apply bd for 15 days
Antihemorroid drug-(if persistent symptom)
Such as tab. Diosmin& hesperidin
2+2+2 for 7days
2+0+2 for 7 days
1+0+1 for 14 days

Hyperemesis Gravidarum

Hyperemesis gravidarum (HG) is a pregnancy complication that is characterized by severe nausea, vomiting, weight loss, and possibly dehydration.

Diagnosis by medical history, symptoms & signs
low blood pressure or a fast pulse and sign of dehydration
& by exclusion of other causes eg; UTI, Overactive Thyroid, Multiple pregnancy

Investigations

- **CBC and urine R/M/E**
- **S. Electrolytes**. Thyroid test- **FT4, TSH.**
- Liver function test- **sirum bilirubin, SGPT**;
- Renal function test- **Blood urea, S. Creatinine**
- An **ultrasound of whole abdomen-** to exclude trophoblastic diseases, multiple pregnancy and other problem eg cholelithiasis

Risk factors

- Family history
- Multiple pregnancy
- Overweight
- Primigravida
- Trophoblastic disorder
- History of eating disorders.

Treatment

Medications

Diet, Fluid and Nutrition

Electrolyte-replacement

- Na, K replacement
- Fruit juice, ORS etc,.
- Vit B1, B6 and folates
-

- Dry bland food (low residual and oral rehydration.
- Intractable vomiting- NPO usually for 24hrs
- Intravenous rehydration usually like- Hart sol, Normal saline, DNS (3 liters daily)
- Parenteral nutrition (I/V feeding or enteral nutrition via a nasogastric tube /nasojejunal tube).

Antiemetic -Prochlorperazine, dimenhydrinate, ondansetron, Metoclopramide etc.

Combination of vitamin B6 and doxylamine –

Corticosteroids -hydrocortisone and prednisolone in extreme cases.

If Complication-eg-Mallory-Weiss tears, Wernicke's encephalopathy, Renal failure etc → Refer

Perineal Laceration/Tear

It is a laceration of the skin and other soft tissue structures which, in women, separate the vagina from the anus (so called gynaecological perineum)

Degrees and severity of tears

First-degree tears – small, skin-deep **tears** which usually heal naturally.

Second-degree tears – deeper **tears** affecting the muscle and fascia of the perineum as well as the skin.

Third-degree tear is a **tear** that extends into the muscle that controls the anus (external anal sphincter).

Fourth-degree tear- if the **tear** extends further into the lining of the anus or rectum it is known as a **fourth-degree tear**.

Third & **forth degree tear** needs surgical correction.

Second degree tears sometimes need correction if patient demands/ symptom present.

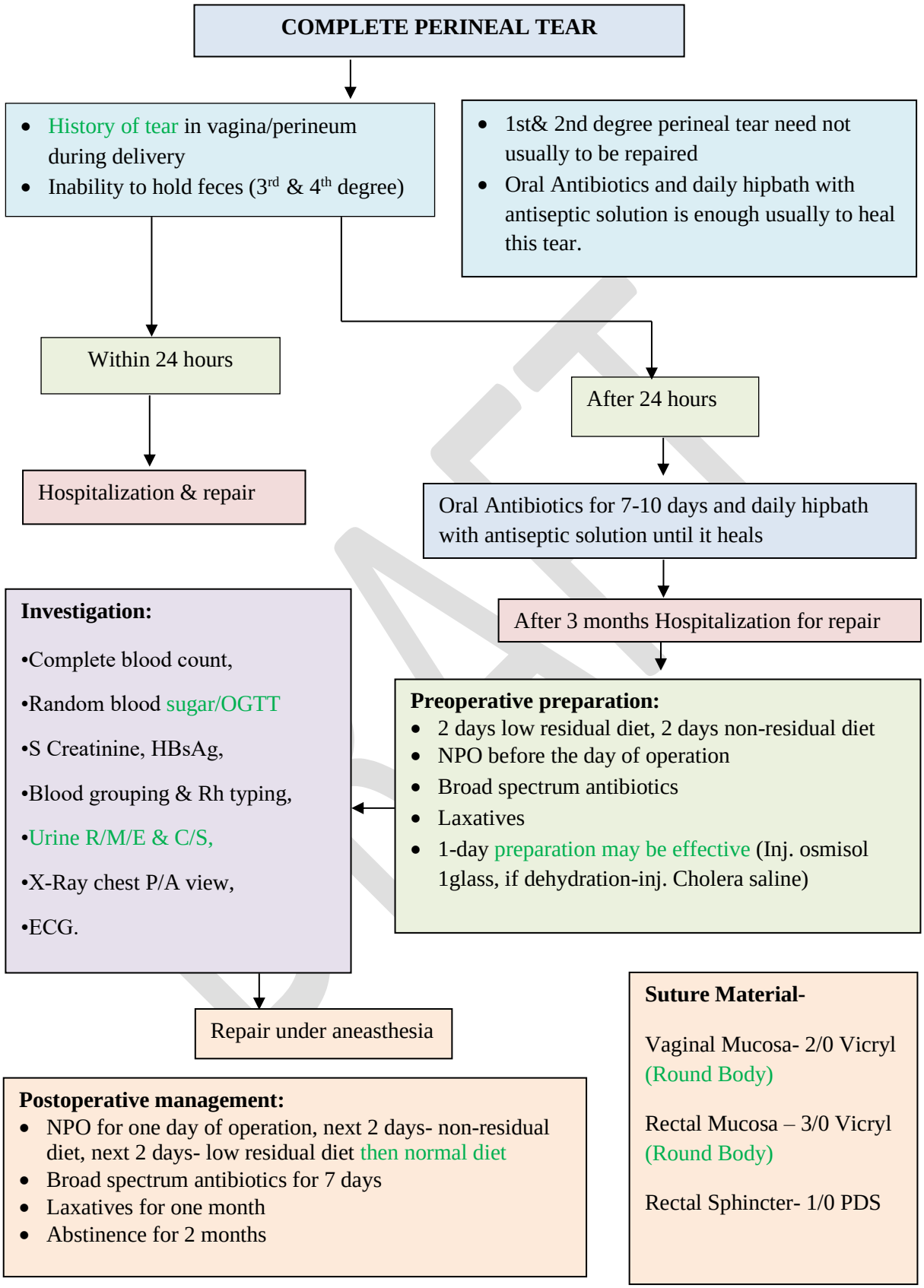
Risks of perineal tear during delivery

- Occiput- posterior position,
- Primigravida
- Large baby
- Precipitate labour
- Rigid perineum
- Breech Presentation
- Inadequate perineal guard during delivery of head

Prevention

Several techniques used to reduce the risk of tearing during labour

- Supporting the perineal tissue when head stretches.
- Regulates the speed of the baby's head during passage .
- the woman giving birth is guided to push along slowly
- Antenatal digital perineal massage in nulliparous women.
- 'Hands on' techniques employed by midwives, in which the foetal head is guided through the vagina at a controlled rate have been widely advocated
- Waterbirth and labouring in water- sometimes advocated.


COMPLETE PERINEAL TEAR
History of tear in vagina/perineum during delivery
Inability to hold feces (3rd & 4th degree)
1st& 2nd degree perineal tear need not usually to be repaired
Oral Antibiotics and daily hipbath with antiseptic solution is enough usually to heal this tear.
Within 24 hours
Hospitalization & repair
After 24 hours
Oral Antibiotics for 7-10 days and daily hipbath with antiseptic solution until it heals
After 3 months Hospitalization for repair
Investigation:
•Complete blood count,
•Random blood sugar/OGTT
•S Creatinine, HBsAg,
•Blood grouping & Rh typing,
•Urine R/M/E & C/S,
•X-Ray chest P/A view,
•ECG.
Preoperative preparation:
2 days low residual diet, 2 days non-residual diet
NPO before the day of operation
Broad spectrum antibiotics
Laxatives
1-day preparation may be effective (Inj. osmisol 1glass, if dehydration-inj. Cholera saline)
Repair under aneasthesia
Suture Material-
Vaginal Mucosa- 2/0 Vicryl (Round Body)
Rectal Mucosa – 3/0 Vicryl (Round Body)
Rectal Sphincter- 1/0 PDS
Postoperative management:
NPO for one day of operation, next 2 days- non-residual diet, next 2 days- low residual diet then normal diet
Broad spectrum antibiotics for 7 days
Laxatives for one month
Abstinence for 2 months

Post-Partum Haemorrhage (PPH)

Diagnosis by Features:

- Excessive vaginal bleeding >500ml
  OR
- Prolonged moderate bleeding
  OR
- Any bleeding which deteriorates maternal condition after childbirth

A. General Management:

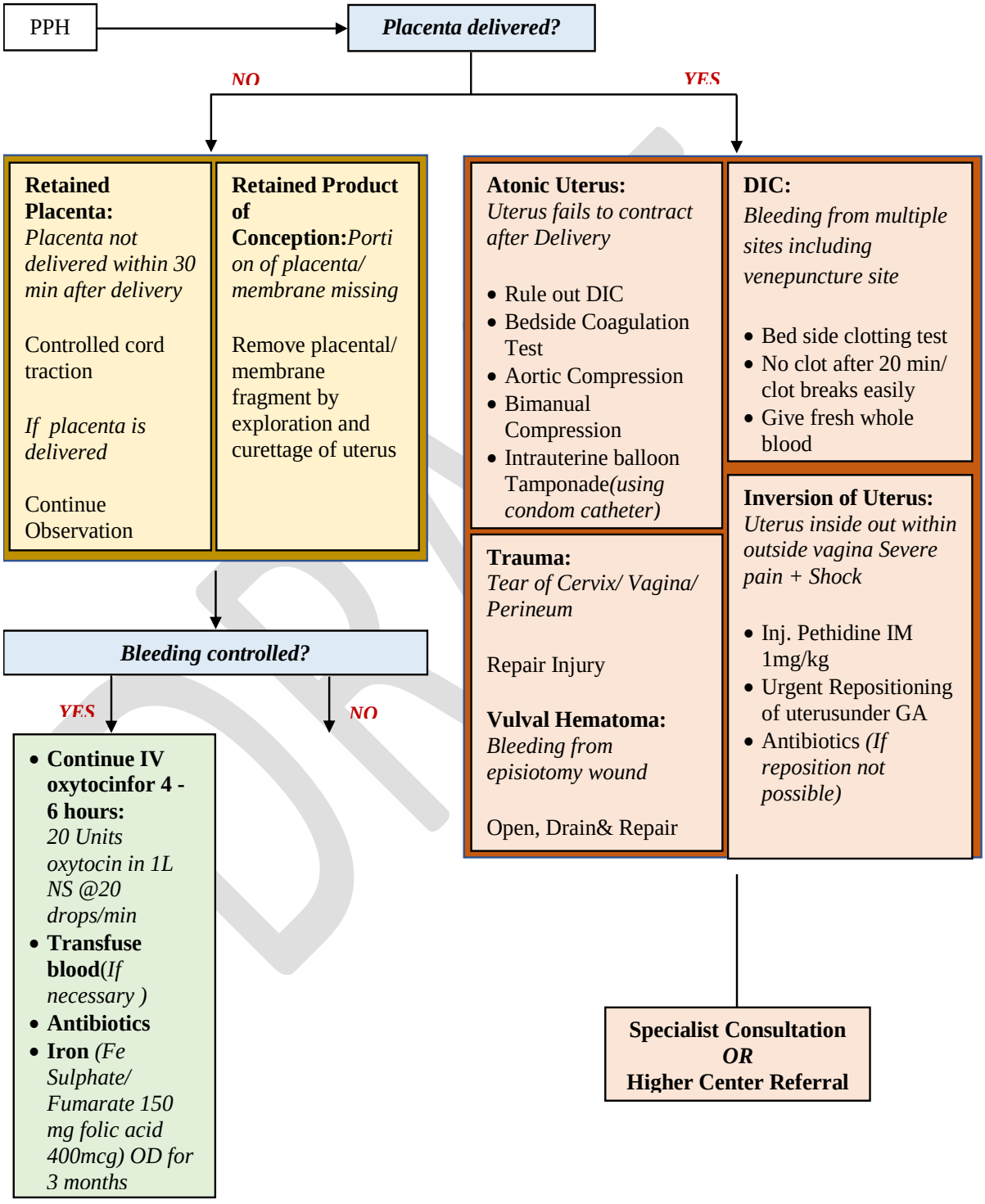
- Shout for Help
- ABCDE Resuscitation
- Massage fundus to expel blood clot
- Give 10 IU Oxytocin IM
- IV access with 2 wide bore cannula & infuse Normal Saline/ Hartmann's Solution with 20 IU oxytocin in 1L
- Inj. Ergometrine 0.2 mg IM + Tab. Misoprostol 800-1000 µgm P/R

Counselling & Specific Management- post partum bundle approach

- **If patient is in shock**:
  - Infuse 1L IV Fluid in 20 min
    Then
  - 1L IV Fluid in 30 min
    Then
  - Titrate rate of infusion according to response *(pulse settle down <100/min and systolic BP > 100 rnmHg)*
  - Urinary Catheterization
  - Assess Vital signs, Monitor blood loss &Urine output until stable
  - Send blood for: Hb%, Blood grouping
  - Arrange blood for transfusion (if needed)

Flow Chart:

Determine the cause of PPH and manage accordingly (Palpate uterus, examine placenta, examine birth canal with good light and adequate exposure)



Hypertensive Disease of Pregnancy

Include pre-eclampsia, pre-eclampsia superimposed on chronic hypertension, gestational hypertension, and chronic hypertension in pregnancy.

Gestational Hypertension

Definition : Gestational hypertension is defined as having a blood pressure greater than 140/90 on two occasions at least 6 hours apart after 20 weeks' gestation without the presence of protein in the urine

Risk factors

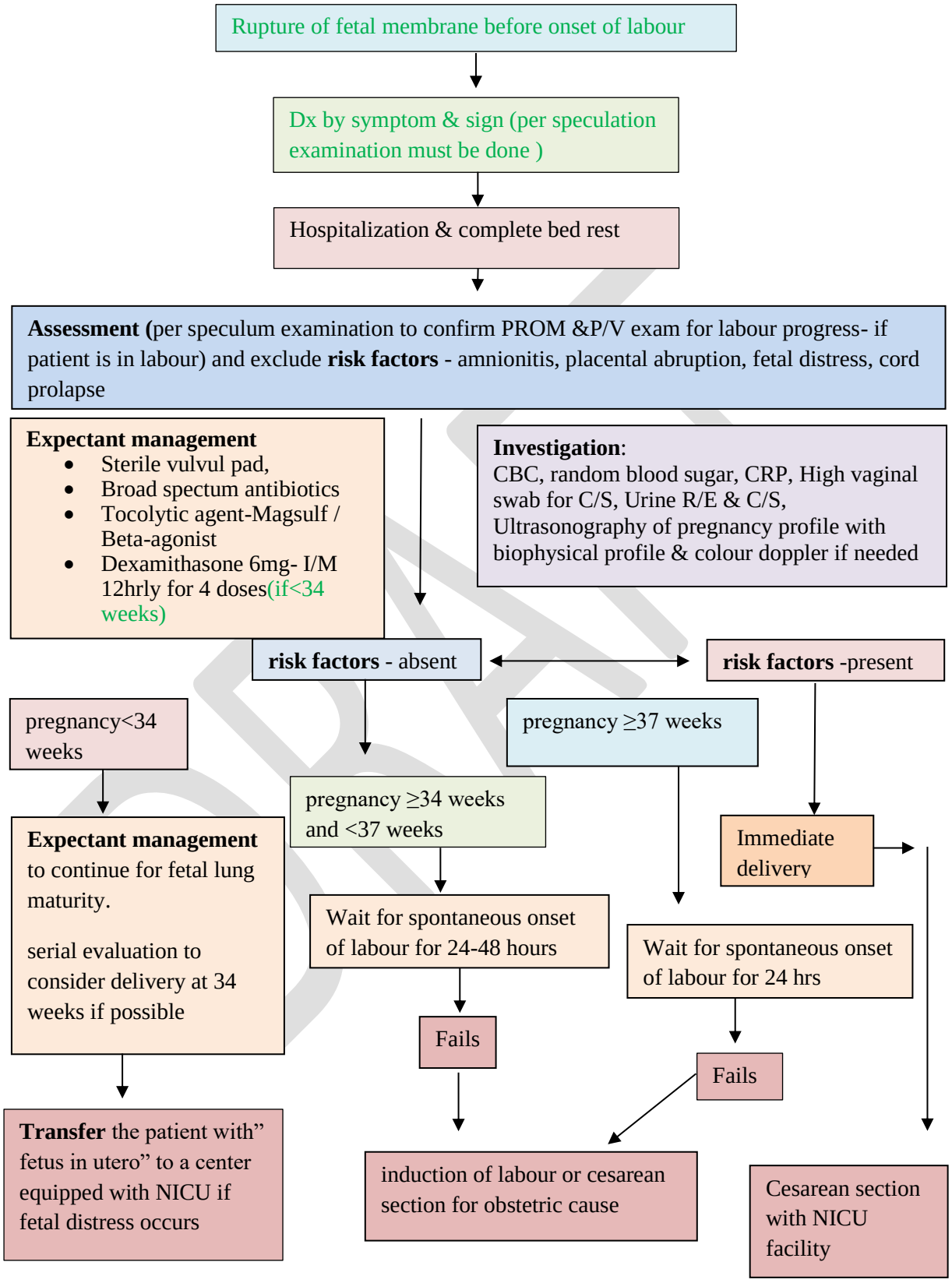
- Obesity, Age- under 20 or over 40 years old
- Pre-existing hypertension
- Past history of diabetes mellitus, hypertension (particularly gestational hypertension) and renal disease, having donated kidney.
- Family history of pre-eclampsia
- Multiple gestation (twins or triplets, etc.)
- Placental abnormalities: Hyperplacentosis, placental ischemia.
- Thrombophilias (anti-phospholipid syndrome, protein C/S deficiency, factor V Leiden deficiency)

Treatment.
Supportive Measures: control of edema (salt restriction in diet, leg rising during rest or sleep), treatment of associated conditions such as diabetes, renal disease thrombophilia etc.

Control of blood pressure: by antihypertensive

Antihypertensive
Labetalol:
Starting oral dose- 100 mg twice daily,
Maintenance dose- 200-400 mg twice daily.
Severely high blood pressure -upto 1.2 to 2.4 g daily
Intravenous dose - 20 mg injected over 2 minutes.
Additional injections -40 or 80 mg every 10 minutes up to 300 mg.
Infusion- 500mg in 250ml N S @ 8-10 d/min.
Methyledopa:
250 mg bid up to 2000mg/day
Hydralazine:
I/V bolus 5-10mg every 20 minutes upto maximum dose of 30mg
Infusion- 20mg in 200ml N S @ 8-10 d/min
Calcium channel blocker (if no other choice)
Nifedipine- 10-20mg tds

Premature Rupture of Membrane (PROM)



Puerperal Pyrexia

Causes of Puerperal Pyrexia with features:

Puerperal Sepsis	Pelvic Abscess	Generalized Peritonitis	Breast Abscess	UTI	RTI	Wound Infection
• *Lower Abd. Pain* • *Foul Smelling Lochial Discharge* • *Tender Uterus*	• *Lower Abd. Pain* • *Abd. Distension* • *Vomiting* • *Diarrhea* • *Tender Uterus* • *Swelling in Adnexa/ POD*	• *Abd. Pain* • *Vomiting* • *Abd. Tenderness & rigidity* • *Abd. Distension* • *Absent Bowel Sound*	• *Breast Pain* • *Firm, Enlarged, Tender Breast* • *Fluctuant Swelling in Breast*	• *Dysuria* • *↑ Urinary Frequency & Urgency* • *Tender Supra Pubic Region* • *Tender Renal Angle*	• *Productive Cough* • *SOB* • *Chest Pain* • *Creeps /Ronchi in Lung*	• *Discharge from wound site* • *Pain at/ around wound site*

Diagnosis: Fever with features of SIRS (Systemic Inflammatory Response Syndrome) within 6 weeks after delivery: excluding 1st 24 hours within 1st 10 days

Fever with any 2 of the following criteria:

- Respiratory Rate >20/min
- Heart rate >90/min
- Temp> 100.4°F or <96.8°F
- WBC count >12,000/mm3 or<4,000/mm3

Assessment of cause by detailed history, clinical examination and investigation

Investigations:

- CBC, Blood grouping &Rh typing
- Blood sugar (2 hours post-prandial)
- S. Creatinine, S. Electrolytes,
- Blood culture, HVS, wound swab for C/S
- Urine R/E, C/S
- USG whole abdomen

General Management → **Specific management**

General Management of Puerperal Pyrexia

- Reassurance & Counselling
- 1/V fluid , maintenance of nutrition
- Anti-spasmodic, anti-pyretic and cold sponging
- Broad spectrum injectable Antibiotic
- Catheterization if needed &strict fluid balance
- Monitoring: pulse, BP, temp, respiration, I/0 chart
- Analgesic: NSAIDS

Specific management of Puerperal Pyrexia

UTI

RTI Antibiotic, bronchodilato

Wound Infection

Puerperal Sepsis

Pelvic Abscess

Generalized Peritonitis

Breast Abscess / Mastitis

If fever doesn't subside after 3 days **reevaluate-**

Antibiotic and symptomatic treatment

drainage of abscess followed by antibiotic and daily dressing

Retained product – Evacuation of uterus
POD full- Colpotomy

colpotomy or laparotomy with peritoneal toileting

Antibiotic, bronchodilator, steroids

NPO, I/v fluid, injectable antibiotic,

Wound debrightment, analgesic, vitamins, transfusion of blood if needed.

Laparotomy, peritoneal toileting and TAH with or without BSO

Antibiotic Choice:
1.Ceftriaxone + Metronidazole or
2. Ciprofloxacin + Metronidazole or
3. Amoxycillin + Metronidazole + Gentamycin or
4. According to C/S

Vaginal Delivery

Normal Vaginal Delivery (NVD)

When a lady present with labour pain:

- Diagnosis and confirmation of labour & review of previous documents
- Diagnosis of stages & phases of labour
- Assesment of presentation, position, engagement and descent of foetus.

Diagnostic criteria of labour pain :

- Lower abdominal pain associated with intermittent uterine contraction
- Progressive effacement & dilatation of cervix
- Show / watery per vaginal discharge

Assessment of the patient

Uterine contraction - weak or absent
Cervix - closed /<5cm

Latent phase/false pain

- Pain relief -Inj Visceralgin- (3-4) amp.
- Relief of constipation - glycerin suppository/ enema.
- History & check current & previous records
- Antibiotic- If UTI suspected

If False pain relieved → Discharge with advice for regular ANC

Strong uterine contraction >2 in 10 min.
Cervical dilatation 5cm.
Progressive descent of head

Active phase of labour

If progress to active phase → Start Partograph plotting and follow OGSB protocol of labour management

Drugs used in Normal Delivery

Inf. Hartsol-1-2 liters
Inj. Visceralgin- (3-4) amp
Inj.Amoxycillin(2) or Inj. Ceftriaxone (1)
Inj.Metronidazole (1)
Inj.Oxytocin – 40 unit
Tab.Misoprostole- 200 microgram- (3-4) tab
Inj Carbetocin- 1 amp
Inj. Lignocaine – 1
Catgut 1/0 ---1

Look for danger sign

- P/V Bleeding
- Malpresentation
- Severe headache
- Blurring of vision
- Convulsion/coma

→

- See specific protocol
- Consult with Gynae Specialist
- Refer if necessary

Assisted Vaginal Delivery:
Vacuum delivery

Indication :

1.To cut short 2nd stage of labour if it is prolonged/maternal exhaustion.

2. Foetal distress/ a non-reassuring fetal heart rate tracing,

3.Maternal heart disease &Severe anaemia when vaginal delivery is safer than c/s

Contraindication:

- Premature baby
- Non-Vertex presentation
- Increased risk of mother to child transmission of infection e.g, HIV, HSV etc.
- Intra uterine foetal death.

Prerequisite:

- Must be a clear-cut indication
- Term pregnancy
- Presentation must be vertex
- Cervix must be fully dilated (small rim of cx if head is small (may be allowed)
- Foetal head must not be more than 1/5th palpable abdominally
- Urinary bladder must be empty, if retain catheter ballon must be deflated
- Foetal membrane must be ruptured
- Mother must be cooperative & conscious
- No CPD.

Drugs &materials Required:

I/ V fluid -1 litre (Hartsol)

2% Lignocaine—(1)

Inj.Pethidine(1),Inj.vergon (1)

Inj.ceftriaxone- 1gm stat

Inj. Omeprazole-1

Cap. Amoxycillin(500mg)- 21 cap

Tab.Metronidazole(400mg)– 21 tab

Tab. NSAID— ketorolac 10mg-21 tab

Cap Omeprazole—(bd for 7 days)-14

Atraumatic Vicryl 1-0/2-0 (round body) (1) (if Episiotomy given)

Clofenac suppository-1

Syringe (5cc)—5

Sterile gloves- 3 pairs

Plain rubber catheter/ folley's catheter with urobag-1

Betadine solution -100ml

Cord clamp-1

Procedure: Patient is in 2nd stage of labour

↓

Check all prerequisite fulfilled

↓

Asses position of foetal head by feeling suture lines & fontanelle

↓

Apply largest possible cup at the flexion point (2-3)cm in front of the posterior fontanelle along the midline

↓

Prepare for episiotomy & do (if necessary)

↓

Check application of the cup & ensure that no soft tissue is trapped

↓

Create vacuum 0.2 kg. / sq.cm. & re-check

↓

Create vacuum 0.8 kg./sq.cm. & recheck

↓

Wait for uterine contraction & ask mother to push when contraction

↓

Start traction in line & perpendicular to cup , downwards & backwards & then upwards in between contraction check FHR during application of the cup

↓

When head delivered release vacuum & complete delivery as usual

↓

Do active management of 3rd stage of labour

Post procedure:

- Dispose all the wastes instruments
- Wash hands & inform the mother
- Newborn resuscitation if needed
- Documentation of the procedure.

Forceps Delivery

Indication:

- Premature baby.
- After coming head of breech
- As Vectis for high head in C/S
- Cord prolapsed in 2nd stage of labour
- Assisted vaginal delivery when mother is HIV + ve.
- To cut short the 2nd stage of labour

Pre-requisite:

- Cervix must be fully dilated
- Presentation must be suitable
- Bladder must be empty
- Foetal membrane must be ruptured

Pre procedure:

Clean hands

↓

Perineal wash & draping

↓

Pudendal block /perineal infiltration

↓

Check forceps align there on the table & lubricate well

Procedure:

Insert two fingers of the right hand in the vagina & slide in left blade

↓

Repeat on the other side, depress handle & lock forceps

↓

Apply traction downwards & backwards

↓ Check FHR & application of forceps

Give episiotomy if needed & complete delivery of baby as usual

Manage 3rd stage of labour by active management.

Failed vacuum/ Forcep :

- Procedure lasted for upto 20 minutes without delivery of the baby
- Significant descent does not occurred in three pulls
- Cup detaches twice

↓

Stop the procedure and do C/S

Drugs & materials Required in Foceps delivery :

- IV fluid -1 litre (Hartsol), Inj.Pethidine(1),Inj.vergon (1)
- 2% Lignocaine—(1), Clofenac suppository-1
- Inj.ceftriaxone- 1gm(1),Inj. Omeprazole-1
- Cap. Amoxycillin(500mg)- 21 caps, Cap Omeprazole—(bd for 7 days)-14
- Tab.Metronidazole(400mg)– 21 tab, Tab. NSAID—tab. ketorolac 10mg-21
- Atraumatic Vicryl 1-0/2-0 (round body) (1) (if Episiotomy needed)
- Syringe (5cc)—5, Sterile gloves- 3 pairs
- Plain rubber catheter/ folley's catheter with urobag-1
- Betadine solution -100ml, Cord clamp-1

Abnormal Uterine Bleeding (AUB)

Definition: AUB is bleeding from uterine corpse that is abnormal in volume, regularity and /or timing and has present for the majority of the past 6 months (FIGO).

AUB diagnosed by History, Execution

- Spotting between periods
- P/V bleeding for longer days than normal
- Heavier/Lighter than normal period
- P/V bleeding after menopause
- Unusual amenorrhea
- Anemia may be present
- Per abdominal, per-speculum & per vaginal exam- should be done properly
- Exclusion of cervical pathology
- Pregnancy & pregnancy related complication should be extruded

Diagnosis conferenced by investigation

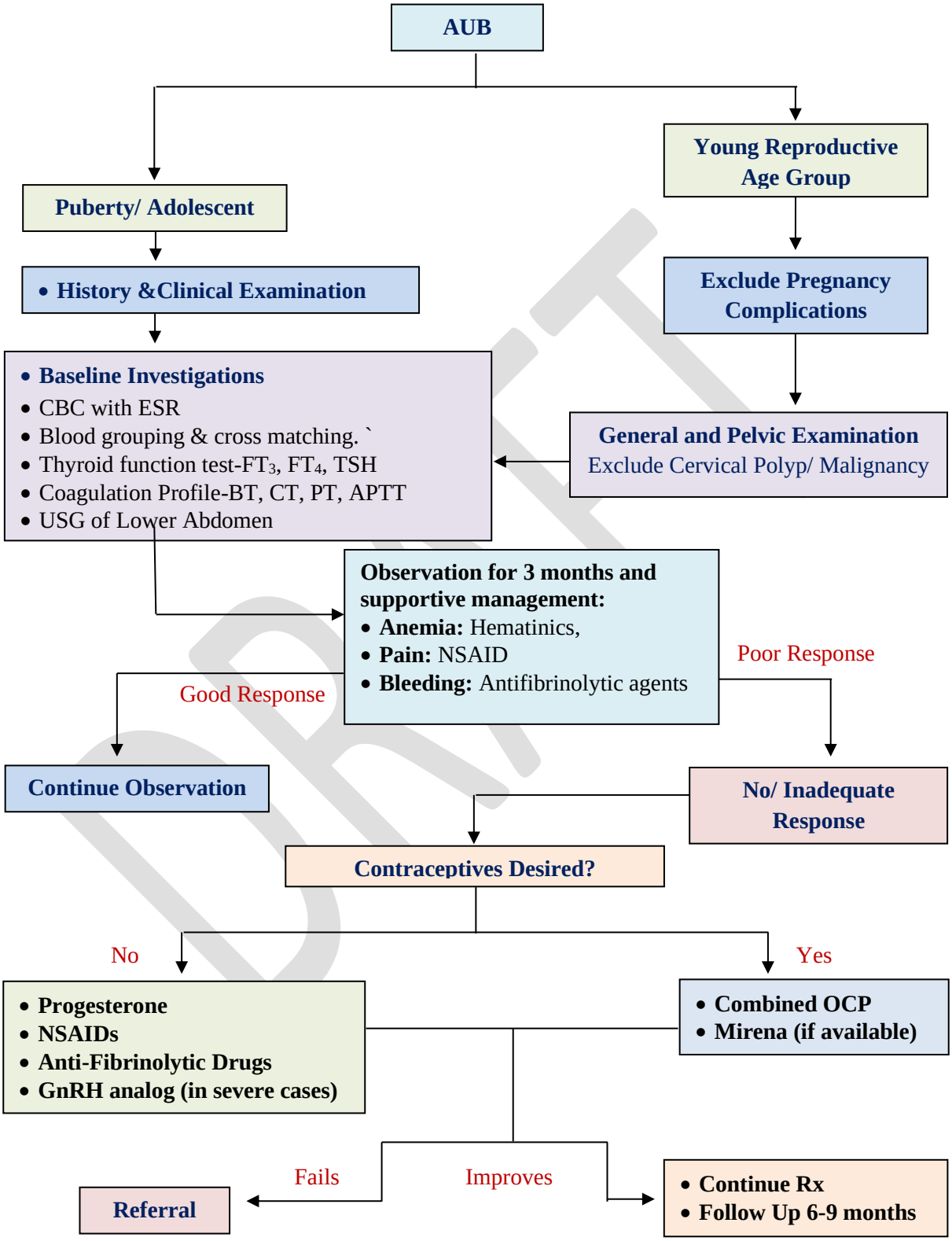
- USG of lower abdomen (L/A)
- TVS (if needed)
- Coagulation profile
- Hormone assay:-FSH, LH, prolactin ,TSH
- Pap's smear
- Histopathology of biopsy material

Management – According to cause

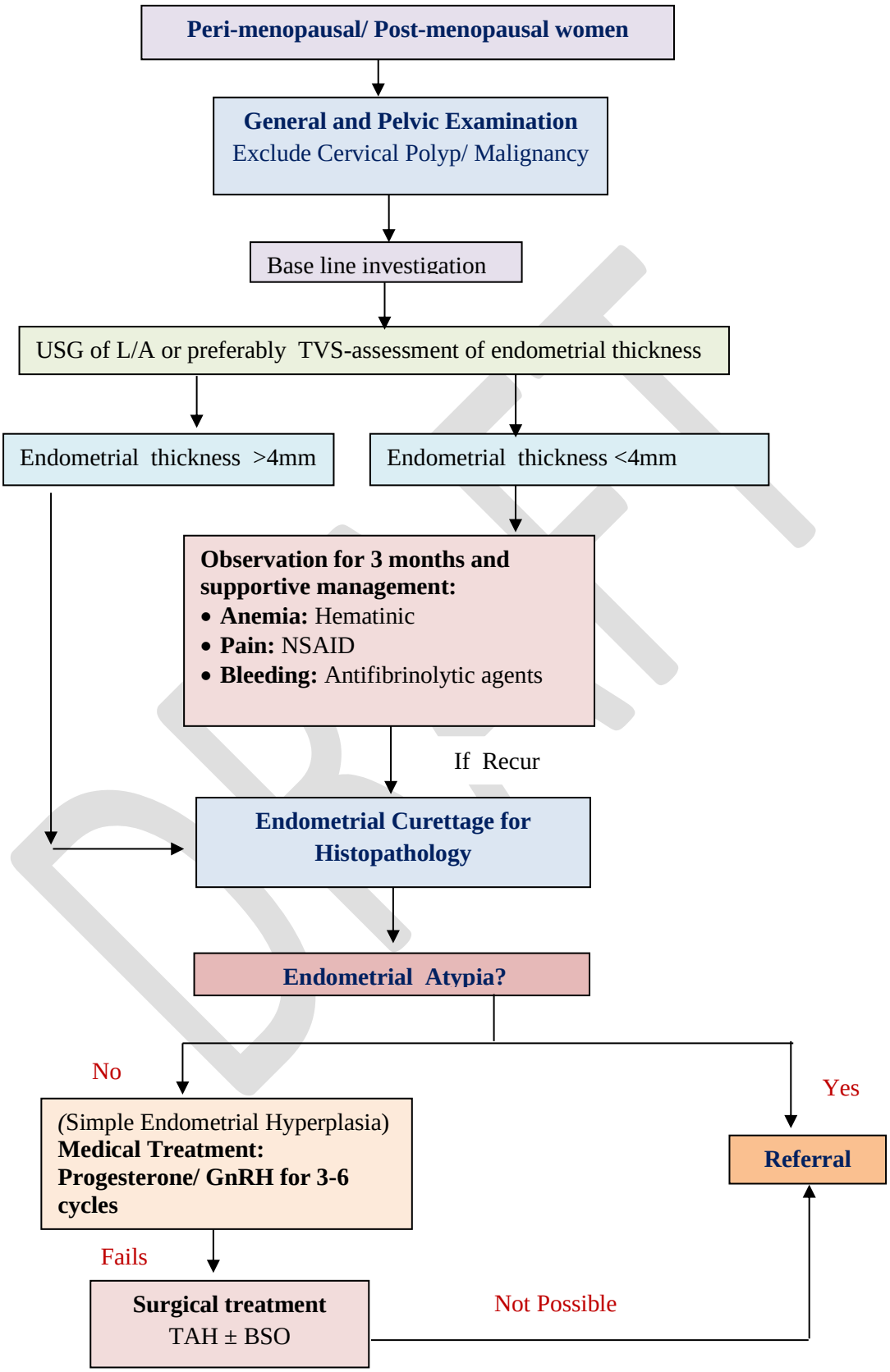
Classify as PALM-COEIN :

- AUB-A-Adenomyosis
- AUB-L-Leiomyoma
- AUB-M- Malignancy & hyperplasia
- AUB-C-Coagulopathy
- AUB-O-Ovulatory dysfunction
- AUB-E- Endometrial dysfunction
- AUB-I- Iatrogenic
- AUB-N- Not otherwise classified

Management – According to age groups



Management of AUB *(Contd.)*



Drugs and Materials needed in AUB

Hormonal drugs

- Progesterone-.Norethisterone/Dydrogesterone- 5- 10mg tds for (1-3) cycles
- OCP- combined pill for 3 cycles.
- GnRH analog- Inj.Luporin– one inj monthly for 6 months
- Tab. Thyroxine 50 microgram– if hypothyroidism, dose – according to hormone level

NSAID:
Mefenemic acid-(250-500) mg bd for 5days
or
Ketorolac 10mg tds for 5days
or
Naproxen 500mg bd for 5 days

Antifibrinolytic agents:
Inj. Tranexamic acid – 500mg tds for 24hrs (If severe bleeding)
Cap.Tranexamic acid- 500mg tds for 2-3days

Hematinics:

- Inj. Feric Carboxymaltose 500mg – weekly for 2-3 weeks- If Hb level < 9gm or iron absorption is disturbed. Or;
- Oral Iron -polymaltose with folic acid and zinc with/without vit B complex –(1-2)cap daily for 3month

Intraoperative Drugs

- I/V fluid - 3 liters
- Inj: Pethidine -1
- Inj: Prochlorperzine
- Inj: Ceftriaxone -3
- Inj: Metronidazole- 3
- Inj: omiprazole -3
- Clofenac suppository-3

Drugs for **Anesthesia(**Spinal):

- Inj. Bupivacaine (heavy)- 1 amp
- Inj Ephedrine/Atropine- 4 amp
- Spinal Needle- 1

Suture materials& Others

- Vicryl -1-0 round body-2
- Vicryl -2-0 cutting body -1
- Catgut 1-0 round body -1
- I/V Canulla-2 (18 size)
- 5 cc disposable syringe-10
- Foley's catheter -1
- Urobag-1,
- Saline set 1,
- Blood transfusion set-1

Post operative Drugs-

- Cap. Cefixime 400mg/ Ciprofloxacin 500mg- bd for 7 days Tab: Metronidazole(400mg)- tds for 5days
- Tab ketorolac 10mg -tds for 5 days
- Cap Omeprazole 20mg bd for 7 days
- Tab. Calcium with vitamins- 1-tab bd for 1 month

Advice

- Normal body movement except heavy lifting
- Abstinence for 6 weeks
- Follow up after 7days

Ectopic Pregnancy

Ectopic pregnancy means implantation of fertilized ovum in any places other than normal uterine cavity.
Common site- Fallopian tubes. Other sites- ovary, mesentery, abdomen etc.

Diagnosis by Clinical Feature:

- Short period of amenorrhea
- Severe abdominal pain
- Fainting attack
- Shock
- Tender abdomen
- Tender fornixes, bulky uterus
- Tender adnexal mass
- P/V bleeding / spotting

↓

Investigation:

- **U**rine for pregnancy test
- USG of whole abdomen and/or TVS
- β-hCG level
- CBC, Blood grouping and cross matching, HBs Ag, S creatinine, OGTT/RBS
- X-ray chest (PA view)
- ECG

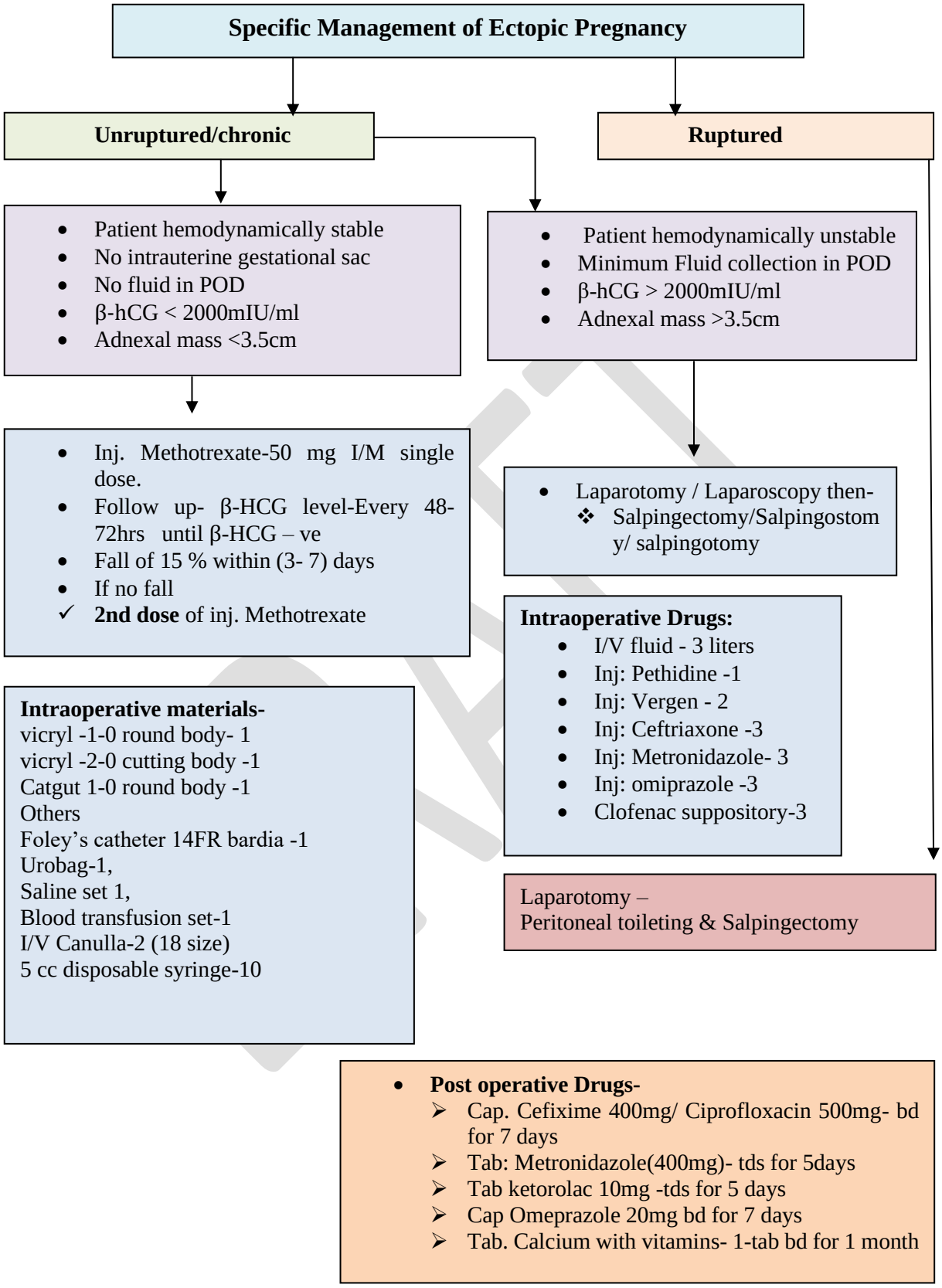
↓

General management:

- Rapid evaluation: vital signs
- Resuscitation if shock is suspected/ diagnosed
- IV access & IV fluid- normal saline/ Ringers' solution,
- blood transfusion-2-3 bags
- Analgesic:
  - Inj: Pethidine/ nalbun – (1-2), if necessary
  - Inj.Visceralgin – (4-6) amp

↓

Specific Management


Specific Management of Ectopic Pregnancy
Unruptured/chronic
Ruptured
Patient hemodynamically stable
No intrauterine gestational sac
No fluid in POD
β-hCG < 2000mIU/ml
Adnexal mass <3.5cm
Patient hemodynamically unstable
Minimum Fluid collection in POD
β-hCG > 2000mIU/ml
Adnexal mass >3.5cm
Inj. Methotrexate-50 mg I/M single dose.
Follow up- β-HCG level-Every 48-72hrs until β-HCG – ve
Fall of 15 % within (3- 7) days
If no fall
2nd dose of inj. Methotrexate
Laparotomy / Laparoscopy then-
Salpingectomy/Salpingostomy/ salpingotomy
Intraoperative Drugs:
I/V fluid - 3 liters
Inj: Pethidine -1
Inj: Vergen - 2
Inj: Ceftriaxone -3
Inj: Metronidazole- 3
Inj: omiprazole -3
Clofenac suppository-3
Intraoperative materials-
vicryl -1-0 round body- 1
vicryl -2-0 cutting body -1
Catgut 1-0 round body -1
Others
Foley's catheter 14FR bardia -1
Urobag-1,
Saline set 1,
Blood transfusion set-1
I/V Canulla-2 (18 size)
5 cc disposable syringe-10
Laparotomy –
Peritoneal toileting & Salpingectomy
Post operative Drugs-
Cap. Cefixime 400mg/ Ciprofloxacin 500mg- bd for 7 days
Tab: Metronidazole(400mg)- tds for 5days
Tab ketorolac 10mg -tds for 5 days
Cap Omeprazole 20mg bd for 7 days
Tab. Calcium with vitamins- 1-tab bd for 1 month

Genital Prolapse

Genital prolapse is the descent of the pelvic organs secondary to the rupture or weakness of the pelvic floor support. It is usually associated anteriorly with prolapse of the urethra or bladder (urethrocele, cystocele) or posteriorly with rectal mucosa (rectocele) or both.

Diagnosis Clinically:
Symptoms:

- Something coming down P/V
- Usually postmenopausal & multipara
- Difficulty in micturition – Iincomplete voiding, dysuria, frequency
- Difficulty in defecation – Pt may have to push the prolapsed area up for completion of defecation.
- Backache – Dragging sensation in back
- P/V reddish discharge – if decubitus ulcer

Signs: **Per abdominal exam visually normal**
Bimanual exam- prolapsed area can be seen on inspection and /or on cough reflex test, stage can be assessed also.

Categories / Classification
1st degree (I) – the uterus is in the upper half of the vagina. (only can be felt in bimanual exam)
2nd degree (II) – the uterus has descended nearly to the opening of the vagina. (+ve cough reflex test)
3rd degree (III) – the uterus protrudes out of the vagina.
Procidentia (IV) – the uterus is completely out of the vagina.

Operative treatment: Usually needed in 3rd degree (III) & Procidentia (IV) and also in 2nd degree (II) prolapse (in symptomatic cases)

Management:

- Pre-anesthetic checkup for fitness to surgery
- Surgery –**vaginal hysterectomy with pelvic floor repair** under spinal anesthesia (G/A rarely needed)

Pre-operative Investigation:

- Complete Blood count
- Blood sugar – post prandial/ OGTT
- S. creatinine
- HBs Ag
- Blood grouping & Rh typing
- Urine R/M/E
- X-ray Chest PA view
- USG of lower abdomen
- ECG
- Echocardiography – If needed
- VIA/pap's smear test

Intraoperative Drugs

- I/V fluid - 3 liters (Hartsol , DA, DNS)
- Inj: Pethidine -1
- Inj: Prochlorperazine - 2
- Inj: Ceftriaxone (1 gm)-3
- Inj: Metronidazole (500 mg)- 3
- Inj: omeprazole -3
- Clofenac suppository-3

Suture materials- & Others

- Vicryl -1-0 round body-(3)
- Catgut 1-0 round body -1
- Vicryl 1/0 cutting body -1
- Foley's catheter 14FR bardia -1
- Urobag-1,
- Saline set 1,
- Blood transfusion set-1
- I/V Canulla-2 (18 size)
- Disposable syringe (5cc)-10

- **Post-operative management**
  - Cap. Cefixime 400mg/ Ciprofloxacin 500mg- bd for 7 days
  - Tab: Metronidazole(400mg)- tds for 5days
  - Cap. Flucloxacilin 500mg qds (6hrly) for 7 days
  - Tab ketorolac 10mg -tds for 5 days
  - Cap Omeprazole 20mg bd for 7 days
  - Continuous catheterization -3-5 days.
  - Oral antibiotic after 24 hrs
  - Patient can be discharged on $4^{th}/5^{th}$ P.O.D
  - Tab. Calcium with vitamins- 1-tab bd for 1 month

Molar Pregnancy

Diagnosis by Clinical Feature:

- Vaginal bleeding during the first/second trimester
- Passage of fleshy mass / grape like structure P/V
- Pain in lower abdomen
- Signs of shock may present
- Severe nausea / vomiting- Hyperemesis gravidarum
- Uterus larger & softer than gestational period- in 50% of cases
- Fetal part is not palpable
- Early onset pre-eclampsia may occurs

↓

Investigation:

- Complete Blood count, RBS
- X-ray Chest PA view- to exclude lung involvement
- USG of pregnancy profile:
  - Snow storm appearance
  - No foetus; (in partial mole-fetus with mole)
- Blood grouping & Rh typing
- Serum β-hCG - (β-hCG) /Urinary pregnancy test +ve in high dilution (may need to be repeated at several times)
- Histopathology of evacuated product (after suction evacuation)

↓

General Management:

- Rapid evaluation of vital signs
- Resuscitation if shock is suspected / diagnosed
- IV access & IV fluid: normal saline / Ringers' solution– (1-2 litre)
- Blood transfusion – if necessary
- Analgesic: Inj: Pethidine -1 amp, if necessary
- Counselling: Pre-procedure / during procedure/ post procedure and assurance

↓

Specific Management

Specific Management of Molar Pregnancy

- Start MVA / suction evacuation under spinal or general anesthesia
- When uterus becomes smaller - start Oxytocin infusion
- 20 IU in 1litre normal saline @60 drops/min
- Keep blood ready & transfuse if necessary
- Send evacuated product for histopathology
- Strict follow up spatially with pulse oximeter
- Evacuated

- Ensure immediate follow up- oxygen saturation to early diagnosis of embolism
- Contraception- Barrier methods until β-hCG (-) ve, then hormonal contraceptive for at least 1 yr

Follow up;

- History – Amenorrhea / irregular bleeding, cough (warning signs)
- Exaamination - size of uterus, adnexa (to exclude luteal cyst), metastasis in vulva, vagina cervix, urethra etc
- Serum beta HCG – weekly until 3 consecutive negative result then monthly for 1 yr
- X-ray chest if necessary (heu)

- If β HCG does not fall to normal / remains plateau / rises within or after 6 wks of evacuation refer the patient to tertiary center for suspected choriocarcinoma

Drugs used-

- IV access & IV fluid: normal saline / Ringers' solution – (1-2) liters
- Inj: Pethidine-1 amp
- Oxytocin infusion 20 IU in 1liter normal saline for at least 6-8 hours
- Drugs used in Anesthesia
- Antibiotic- inj Ciprofloxacin & inj Metronidazole for 24 hrs then oral therapy for 7 days

Ovarian Tumour

Definition: New growth in the ovaries are called ovarian tumor (benign/malignant).

Diagnosis by symptoms, Signs, Investigation

Symptoms:

- Sometimes asymptomatic
- Bloating /Vague
- Abdominal pain/discomfort
- Back pain, Fatigue, Heartburn
- Loss of appetite, Diarrhea, Indigestion
- Constipation, Nausea, Feeling full abdomen
- Frequency, urgency etc.

Signs:

General examination

- Anaemia, Cachexia (in advanced carcinoma)
- LN -Palpation of the supraclavicular, axillary, and inguinal lymph nodes- (palpable in metastasis)
- Pleural effusion- in lung metastasis

Per abdominal exam

- Increased abdominal girth and/or ascites
- Abdominal mass: usually palpable if >5cm

Benign-well-defined, smooth, mobile, non-tender, **Malignant**-Irregular, nodular, not well defined, fixed, tender.

Per vaginal/ bimanual exam

Consistency, surface, mobility etc. should be evaluated to differentiate benign & malignant growth.

Investigations:

- CBC, RBS, HBsAg
- S Creatinine, Urine RE
- Blood group & Rh typing
- CA-125, (CA 19-9, B-HCG, alpha-
- Fetoprotein, LDH-when needed)
- USG of W/A- with colour doppler
- TVS may be needed
- Ascitic fluid- biochemical and serological
- X-Ray chest P/A view
- ECG
- CT scan of abdomen- if needed.

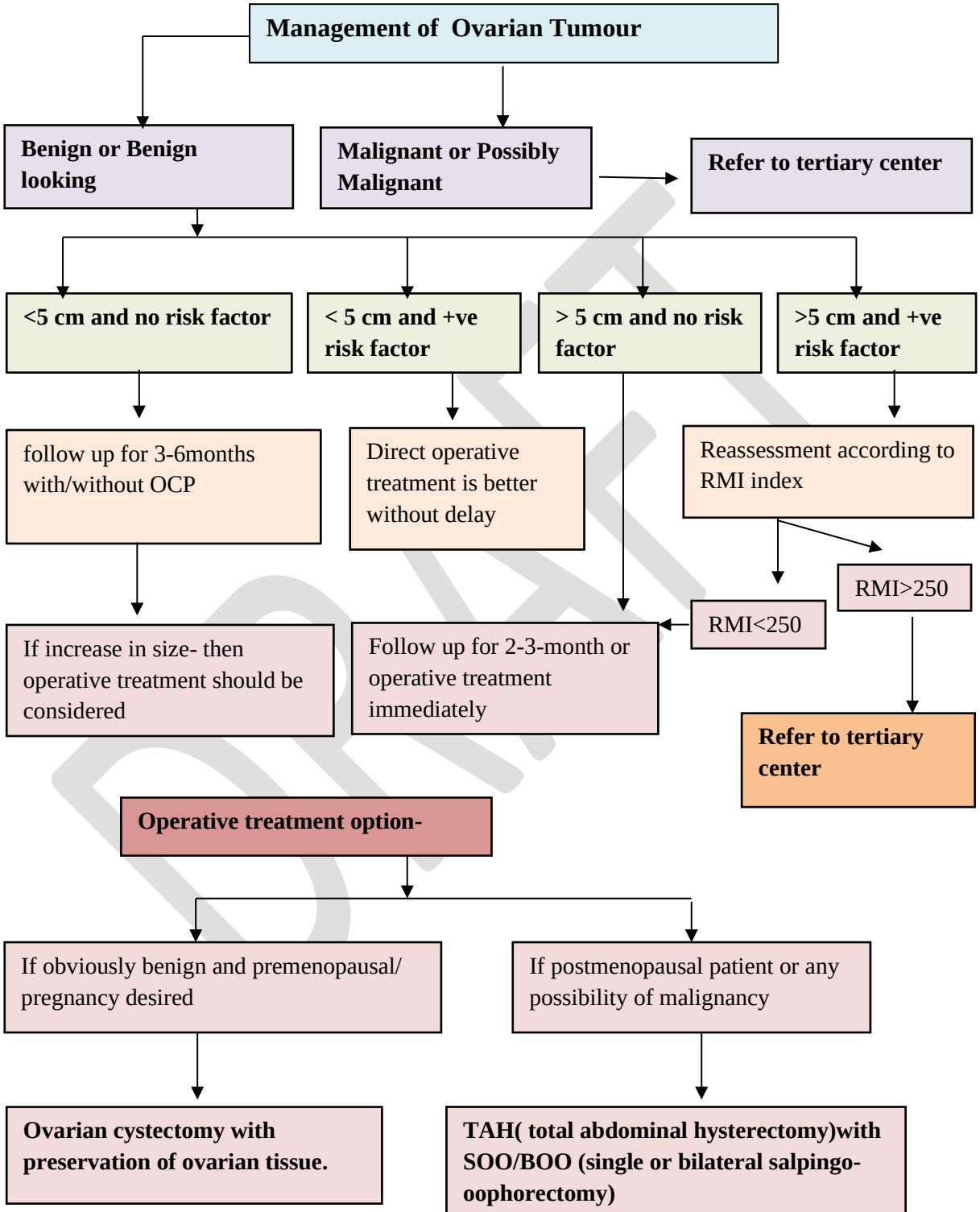
Risk factors

Nulliparity, HRT, Fertility medication
Family history of gut/ovarian/breast malignancy
Early menarche & late menopause, Obesity
Presence of *BRCA1* or *BRCA2* genes
Polycystic ovary syndrome and endometriosis
Caucasian are at a (30–40) % higher risk
Excess ingestion of red meat and processed meat
Excess use of talc, pesticides, and herbicides

Decrease risk:

Hormonal pill, tubal ligation, and breast feeding.
Lot of carotene, fiber, and vitamins & low fat
Higher caffeine- more than two cups of tea a day
Hysterectomy

Management – Conservative/Surgical/ Referral



- RME=Risk of malignancy Index

Pelvic Inflammatory Diseases (PID)

- Infection ascending from the endocervix causing **endometritis, salpingitis, para metritis, oophoritis, tubo-ovarian abscess and/or pelvic peritonitis**.

Usual Symptoms

- Pain around the pelvis or lower abdomen
- Discomfort or pain during sex
- Dleeding between periods and after sex
- Heavy periods
- Painful periods
- Unusual vaginal discharge, especially yellow or green
- In acute cases
  -Severe lower abdominal pain & high temperature
  -feeling and being sick

Indications for in patient management

- Severe clinical symptoms
- Surgical emergencies cannot be excluded
- Failure to respond to outpatient therapy
- Unable to follow or tolerate an outpatient oral regimen

Minimum criteria for diagnosis include:

- Cervical motion tenderness and/or
- Uterine tenderness and/or
- Adnexal tenderness:

Plus any of the following criteria:

- Temperature greater than 38° C
- Abnormal cervical discharge
- Pelvic abscess or inflammatory complex on bimanual examination
- Leukocytosis >10 x 10' WBC/L
- Elevated ESR or elevated C-reactive protein

Definitive criteria

- Histopathologic evidence of endometritis
- Imaging showing thickened fluid-filled tubes with or without free pelvic fluid or tubo-ovarian complex mass
- Laparoscopic abnormalities consistent with PID.

Treatment :

General measures:

- Antipyretic and NSAID- for fever and pain
- Counselling and contract tracing
- Abstinence and contraceptive

Specific treatment:

- Antibiotic therapy
- Surgical Intervention-
- ✓ Laparotomy and peritoneal lavage
- ✓ TAH ± BSO (may be needed)

Follow Up

Standard Antibiotic therapy

Ceftriaxone 500 mg IM as one dose plus
Doxycycline 100 mg orally twice a day for 14 days plus
Metronidazole 400 mg orally 12 hourly for 14 days

Metronidazole may be discontinued after 5 days in mild to moderate PID where the woman fails to tolerate it

Alternate therapy (limited evidence)

Ceftriaxone 500 mg IMI as one dose plus
Azithromycin 1 g weekly for 2 weeks plus
Metronidazole 400 mg orally 12 hourly for 14 days

Other Antibiotic Regime

1.Cefoxitinor /cefotetan (1 gm 12hrly)

plus doxycycline- 100mg bid for 14 days

2.Ceftriaxone or cefoxitin- single dose plus doxycycline for 14 days.

3. Ampicillin/sulbactam plus doxycycline for 14 days

Follow up

Close follow up is required at 72 hours or earlier if symptoms are failing to settle.

Review at 2 weeks to assess for response to treatment and the development of any recent complications (eg- tubo-ovarian abscess.)

Complications

- Infertility
- Chronic pelvic pain
- Increased incidence of ectopic pregnancy
- Increased risk of further episodes of PID
- Tubo-ovarian abscess and pelvic abcess.

Polyp of Female Genital Tract

Polyps are usually diagnosed in a routine pelvic examination or clinically by symptoms and signs

Symptoms

- Heavy menstrual bleeding or bleeding/spotting between periods
- Bleeding after coitus
- Bleeding after menopause
- Excessive vaginal discharge (foul smelling in case of infection)

Signs: Cervical polyps are growths on the cervical canal (on per speculum examination)

- Reddish/ Purplish/ Grayish
- Finger/bulb/thin stem-like
- Few mm to several cm

Management

If polyps are found in a routine Pelvic Examination:

Biopsy for Histopathology→ **Exclude malignancy**
Pap's Smear for cytopathology also should be done

If polyps are diagnosed by symptoms and signs

Preoperative Investigations
CBC, HBsAg, blood grouping & Rh typing
RBS, S Creatinine
Chest X-ray, ECG

Operative Treatment- Excision of polyp with D,E & C under G/A

Specimen send for histopathology

Further Rx according to histopathology report

Postoperative management

- Antibiotic - Cap. Cefixime(400mg)/ Cefuroxime (500mg)-bd for 7 days
- Analgesic- Ibuprofen(400mg) /Ketorolac 10mg- bd/tds for 4-5 days
- Antiulcerent- Cap.Omeprazole(20mg)- bd for 7 days
- Abstinence for 15 days

Septic Abortion

Abortion complicated with infection is called septic abortion

Diagnosis by history & examination

- History of amenorrhea
- H/O induced abortion / MR
- Vaginal bleeding or foul-smelling discharge
- Abdominal pain
- Fever
- Features of shock
  - Rapid pulse, low BP
  - Oliguria
  - Reduced level of consciousness

Local exam (Per-vaginal:)

- Enlarged uterus
- Foul smelling per vaginal discharge
- Cervical motion tenderness positive
- Full POD (pouch of Douglas)
- Tender pelvic mass may be felt

Features of peritonitis / Internal Hemorrhage / Intra-abdominal injury

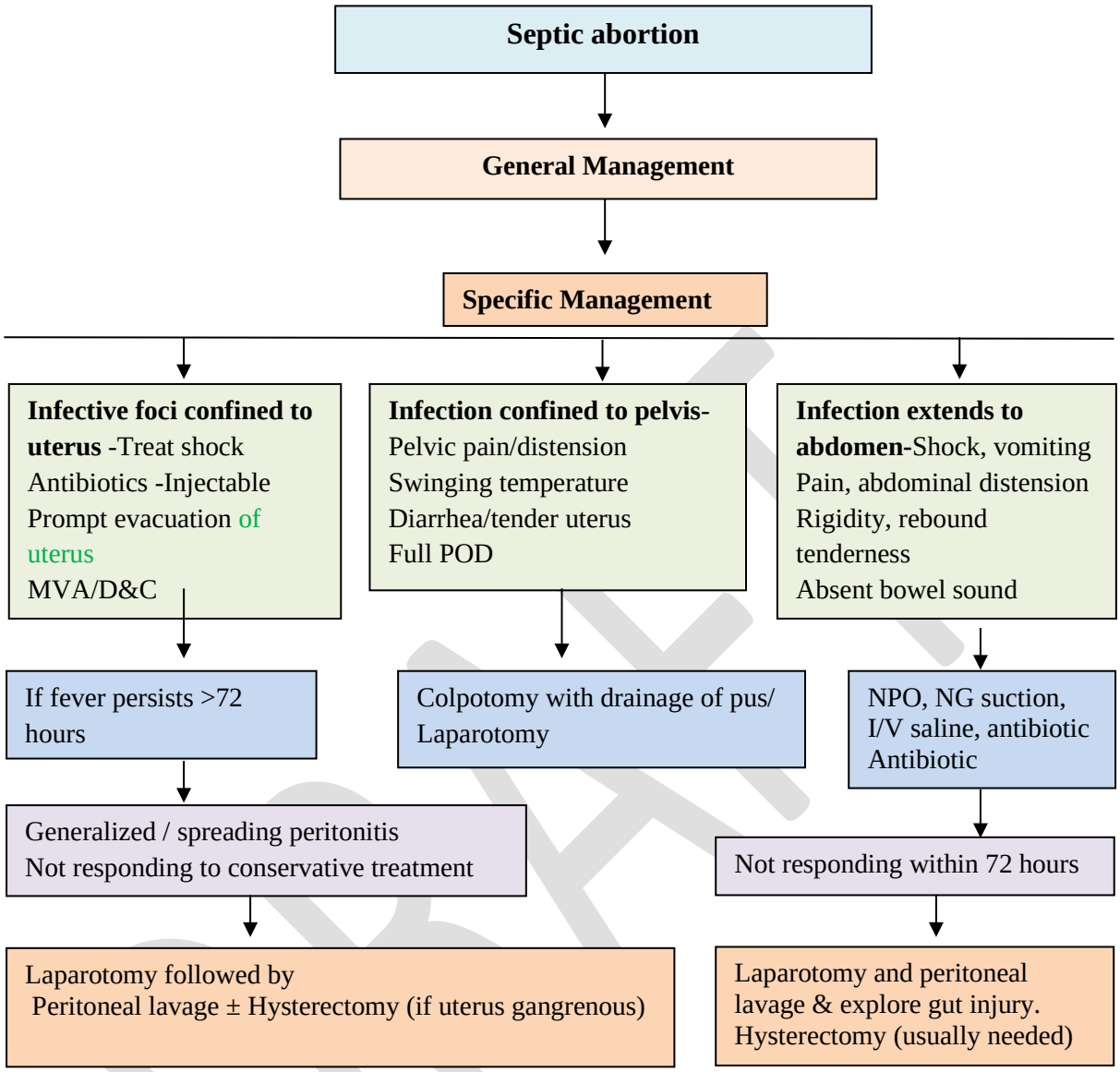
- Vomiting
- Temp high or sub normal
- Dehydration
- Raised pulse, low BP
- Abdominal distension'
- Rebound tenderness
- Rigid abdomen
- Absent bowel sound

Investigation

- CBC, RBS, HBsAg
- Blood grouping & cross matching
- Urea, Electrolytes
- HVS/Pus/Urine/Blood C/S
- USG of whole abdomen
- X-ray abdomen - erect posture, as necessary

General Management

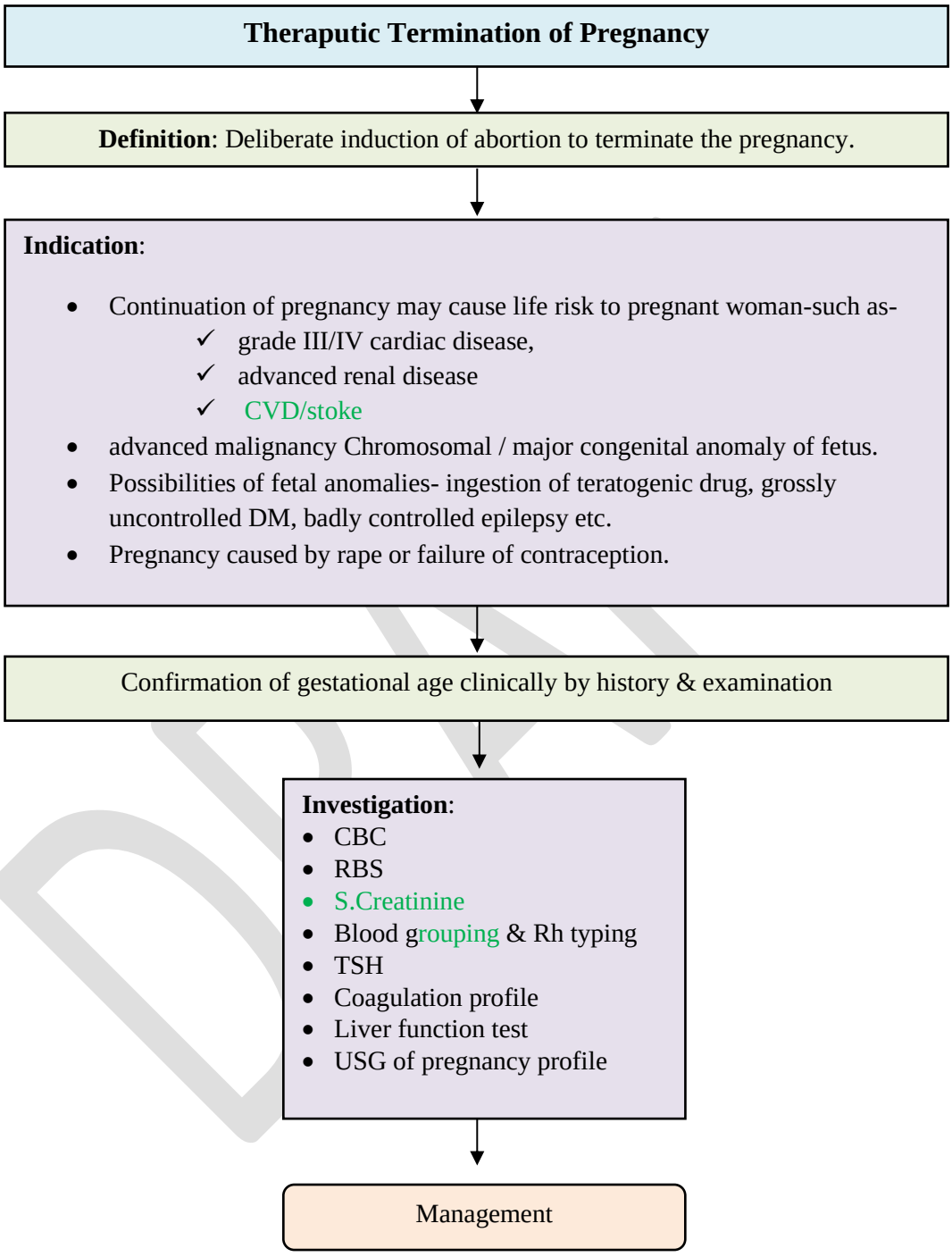
- Reassurance / confidentiality
- IV access, IV fluids-Normal saline / Ringer's lactate, Maintenance of nutrition
- Antibiotics: Parenteral, broad-spectrum combination of antibiotics e.g.- triple antibiotic (amoxycillin, metronidazole, gentamycin)or, ceftriaxone +metronidazole
- Pain relief: Inj: Pethidine
- Antipyretic and cold sponging: in high temperature
- Inj: tetanus toxoid I/M ±Tetanus Immunoglobulin I/M
- Catheterization
- Strict fluid balance, Maintain intake output chart
- Monitor: Temp, Pulse, BP, Respiration

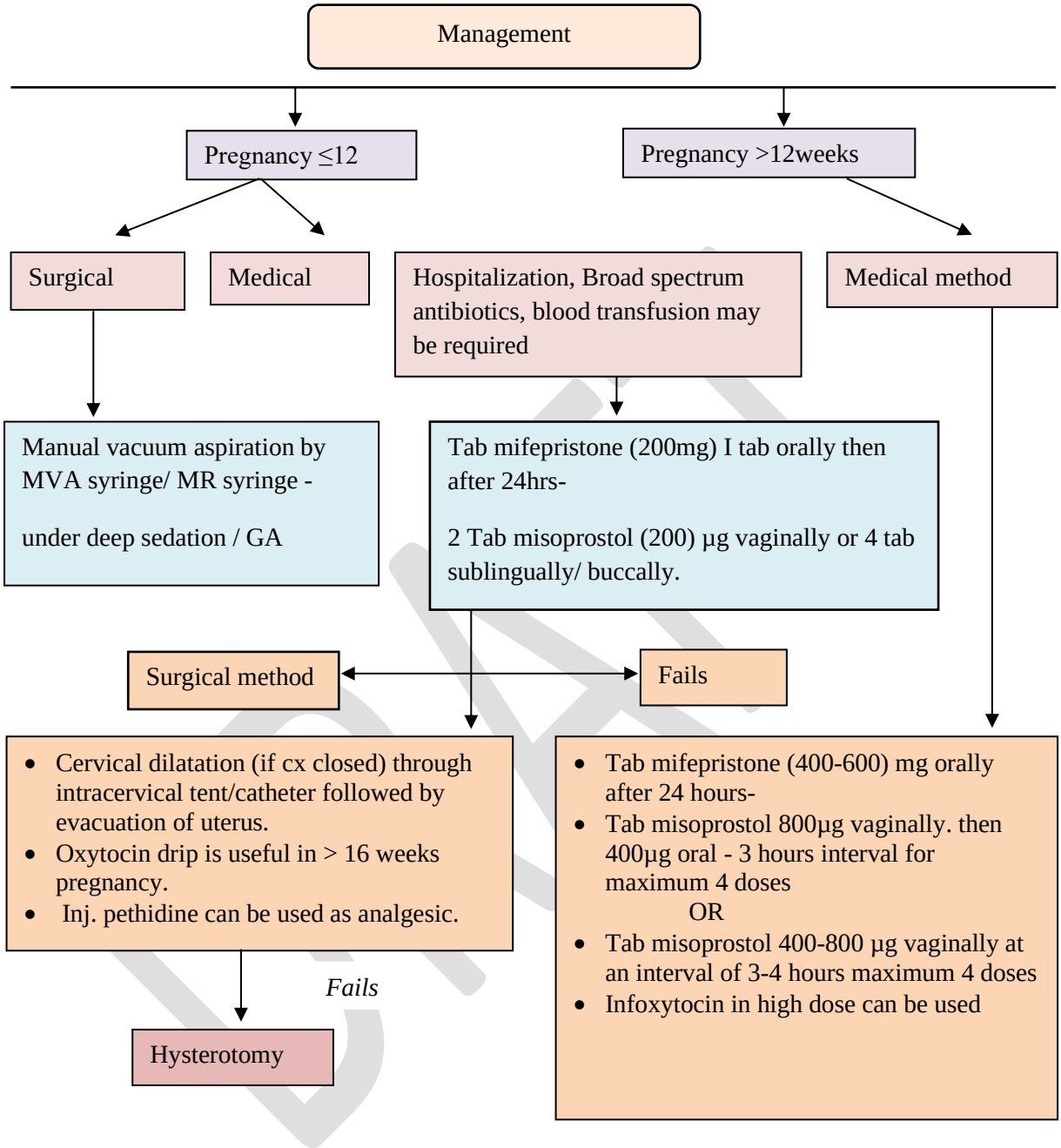


Drugs and others used in septic abortion

- I/V fluid eg Ringer lactate/ Normal saline- (2-3) liters
- Antibiotics - Immediate parenteral broad-spectrum combination antibiotics-
  - Inj. Ceftriaxone - 3/ Inj. Amikasin-3
  - Inj. Metronidazole-3
  - Inj. Gentamycin-3
- Inj: Pethidine-1
- Antipyreic and analgesic- Inj.Diclofen -3/Diclofen suppositories-3/ paracetamol suppositories-(3-4)
- Inj: Tetanus toxide 0.5 ml ± Tetanus Immunoglbulin
- Blood Transfution- if necessary
- Saline set & Blood set, NG tube (if needed)
- I/V canula (1) Disposible syringe (5).
- Catheter & Urobag

Theraputic Termination of Pregnancy





**** Note-** Surgical method can be the first option if patients desire

Uterine Fibroids (Leiomyoma)

Definition; Uterine Fibroid/ Leiomyomas are benign smooth muscle tumors of the uterus

Diagnosis by Symptom & Signs:

- Heavy Periods ± Pain / Heavy menstrual bleeding
- Urinary Frequency / Urgency (If large & push over the bladder base)
- Pain during coitus
- Sub fertility / Recurrent abortion
- Abdominal Mass- firm, mobile, midline lower abdominal mass with negative get below the swelling. (when large > 12 weeks size)
- Anemia (secondary to increased p/v bleeding)
- Sometime asymptomatic

Risk factors:

- Obesity
- Reproductive years
- Early menarche & late menopause
- Osteogenic hormone therapy
- ↑Intake of Red Meat
- Family history of Fibroids
- Differing pregnancy/ infertility

Adverse pregnancy outcomes:

- ❖ Miscarriage
- ❖ Threatened abortion
- ❖ Premature labor (if large tumor)
- ❖ Malpresentation
- ❖ IUGR
- ❖ Prolonged obstructed labour
- ❖ PPH

Investigations

For Diagnosis –

- ➢ USG of L/A
- ➢ TVS- sometimes needed when small fibroids or submucous type

For Management

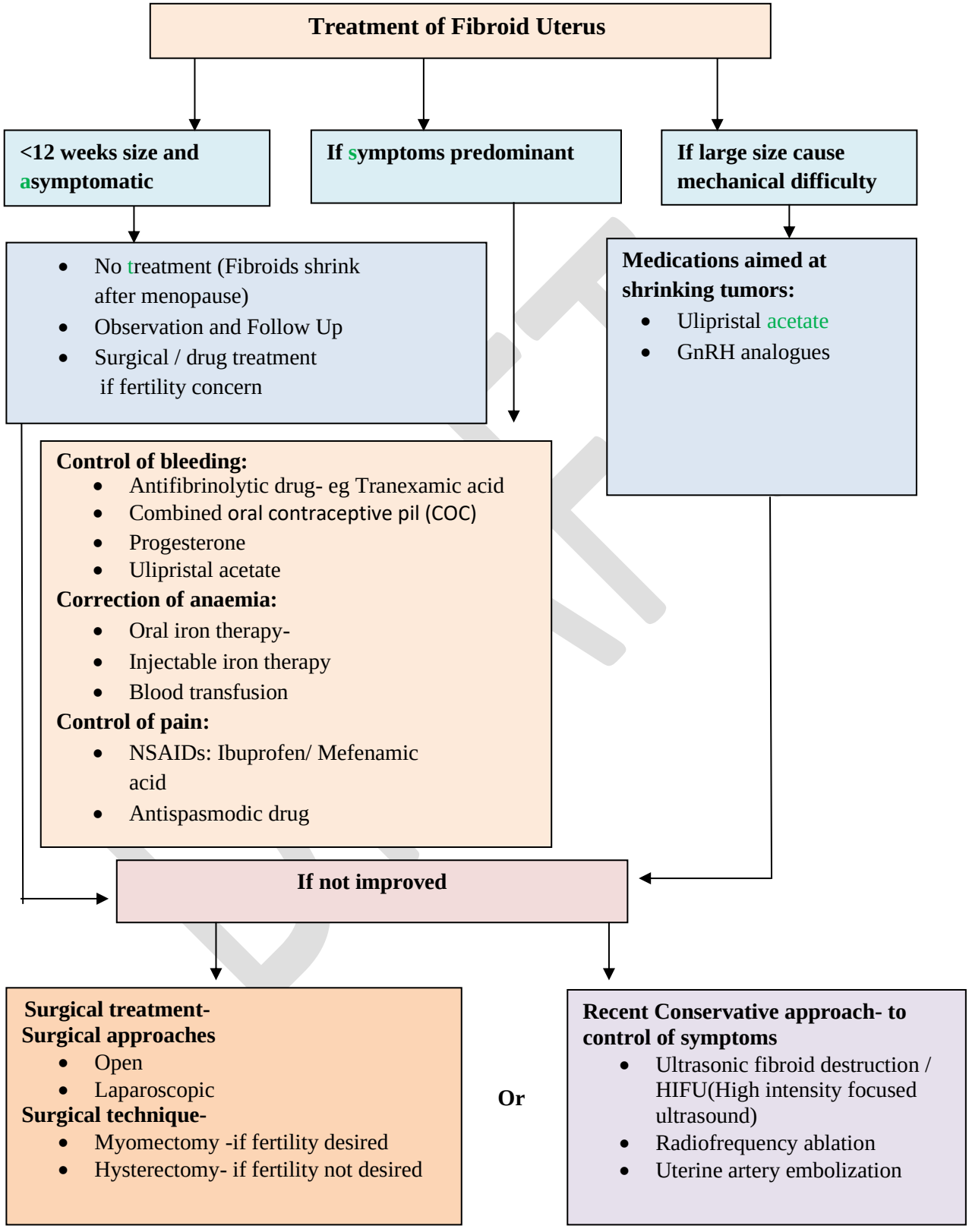
- CBC, RBS/OGTT, HBs Ag
- S. creatinine
- Blood grouping & Rh typing
- Urine R/M/E
- X-ray Chest PA view
- ECG

↓

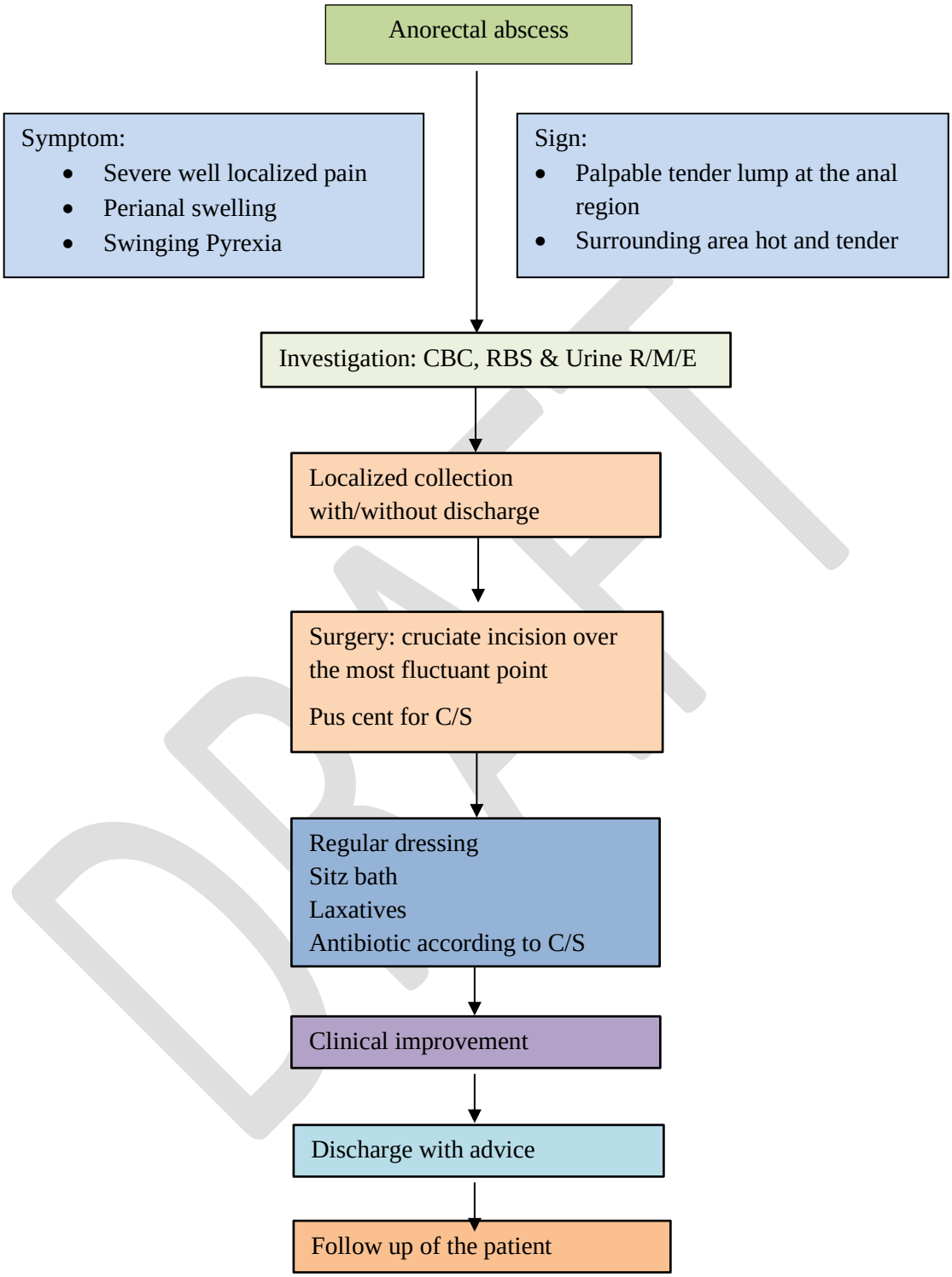
Treatment

Doses of some important drugs

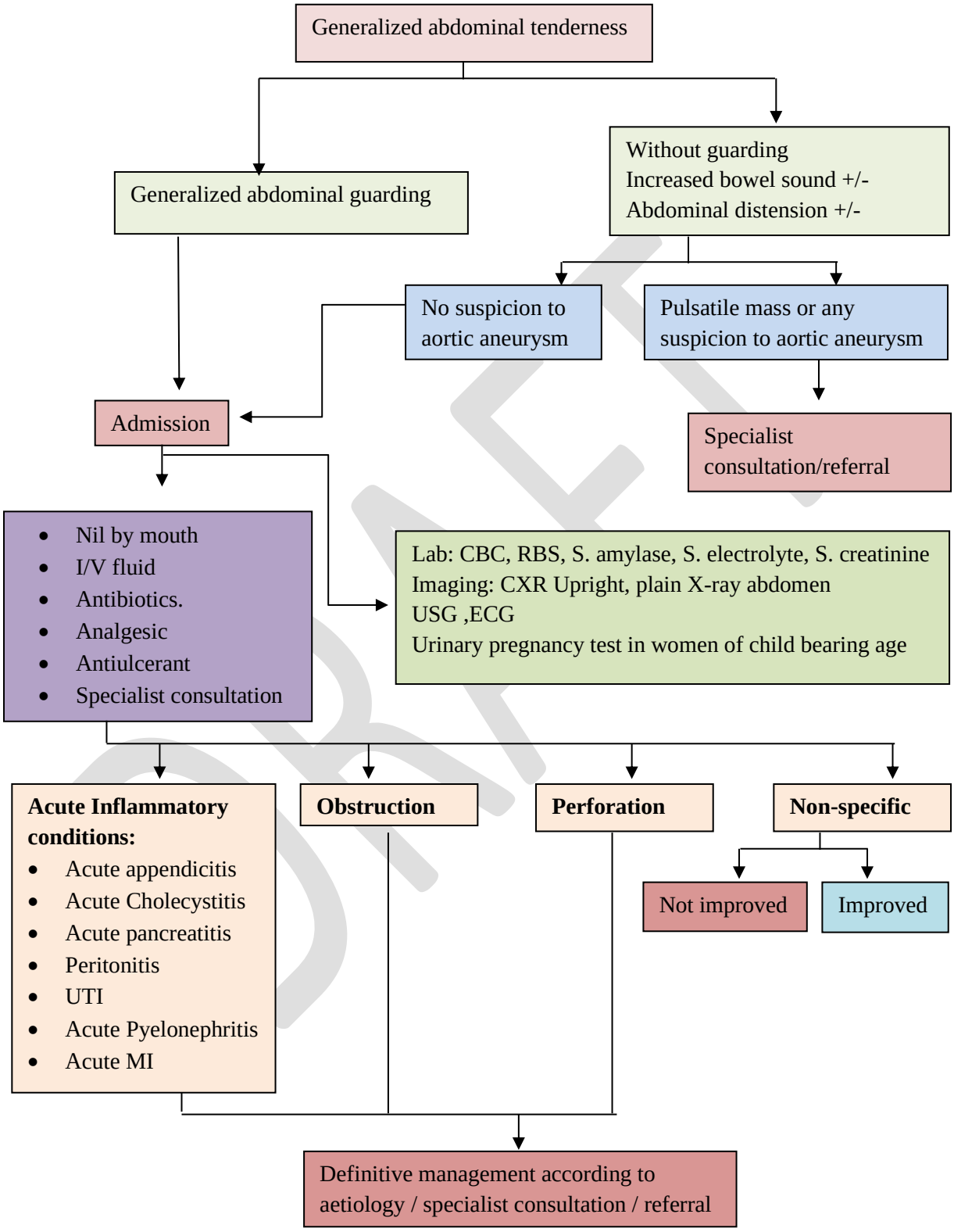
Ulipristal acetate- (5mg)
1 tab daily for 3 months (check SGPT & S.creatine before and after treatment)
Cabergoline (0.5mg)
one-tab weekly for 2-3 months
Danazol (200mg)
1-tab bd for 3-6 months
Aromatase inhibitor - tab Letrozole 2.5mg/day for 3-6 months
GnRH analog- eg- Inj. Lucrin -3.75mg monthly for 6 month/ 11.25mg 3 monthly for 2 doses
Combined oral contraceptive pile (COC)


Treatment of Fibroid Uterus
<12 weeks size and asymptomatic
If symptoms predominant
If large size cause mechanical difficulty
No treatment (Fibroids shrink after menopause)
Observation and Follow Up
Surgical / drug treatment if fertility concern
Medications aimed at shrinking tumors:
Ulipristal acetate
GnRH analogues
Control of bleeding:
Antifibrinolytic drug- eg Tranexamic acid
Combined oral contraceptive pil (COC)
Progesterone
Ulipristal acetate
Correction of anaemia:
Oral iron therapy-
Injectable iron therapy
Blood transfusion
Control of pain:
NSAIDs: Ibuprofen/ Mefenamic acid
Antispasmodic drug
If not improved
Surgical treatment-
Surgical approaches
Open
Laparoscopic
Surgical technique-
Myomectomy -if fertility desired
Hysterectomy- if fertility not desired
Or
Recent Conservative approach- to control of symptoms
Ultrasonic fibroid destruction / HIFU(High intensity focused ultrasound)
Radiofrequency ablation
Uterine artery embolization

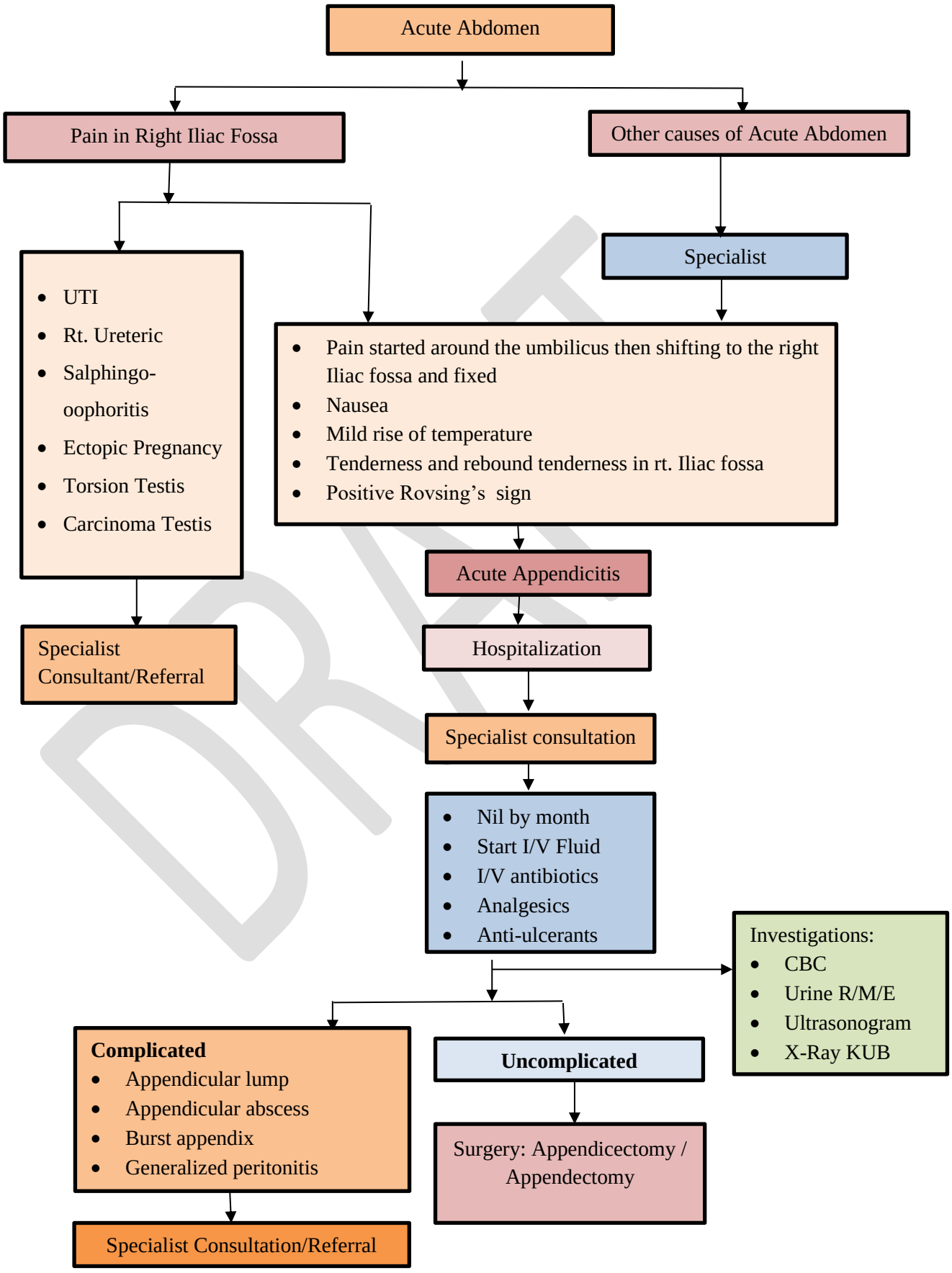
Abscess of Anorectal Region



Acute Abdomen



Acute Appendicitis



Appendicectomy

Surgical removal of vermiform appendix

Clinical features:

- Pain started around the umbilicus then shifting to the right iliac fossa and fixed there.
- Nausea rather than vomiting
- Mild rise of temperature
- Tenderness & rebound tenderness in right iliac fossa
- Positive Rovsing's Sign

Investigations:

- Complete blood count: neutrophilic leucocytosis (TC 11,000-18,000 per cmm, more than 18,000 per cmm likely other diagnosis or complicated).
- Urine RME: a few pus cells and no RBC are usual (more pus cell or presence of RBC is likely urological diagnosis).
- X-ray KUB: no radio opaque shadow along the kidney, ureter or urinary bladder region.
- USG of lower abdomen: Kidney, ureter and urinary bladder region normal. In case of female patient: ovary, fallopian tube or uterus is normal. A small collection in right iliac fossa or edematous appendix may be diagnostic.
- RBS and serum creatinine level if possible or required.

Management:

- Hospitalization
- Nil by mouth
- Start I/V fluid (Hartman's solution, 5% DNS or 5% DA) according to need of the patient by body weight or status of hydration
- I/V antibiotics (Ceftriaxone or Ciprofloxacin with Metronidazole) according to the body weight of patient
- Analgesics: injectable/ suppository (Diclofenac/Ketorolac/Tramadol HCL)
- Anti-ulcerant: injectable Omeprazole or Ranitidine if pain
- If diagnosis consistent with acute appendicitis:
  - Emergency appendicectomy through Grid Iron or Lanz incision under general or spinal anesthesia according to age of the patient after 6 hours nil by mouth

Post-operative treatment: Nil by mouth for 12-24 hours. IV fluid, antibiotics, analgesics and anti-ulcerant as mentioned before. Switch to oral therapy as early as possible. Patient may be discharge on 2nd or 3rd POD after check dressing.

If diagnosis otherwise:

Consult accordingly or refer to the hospital according to the protocol.

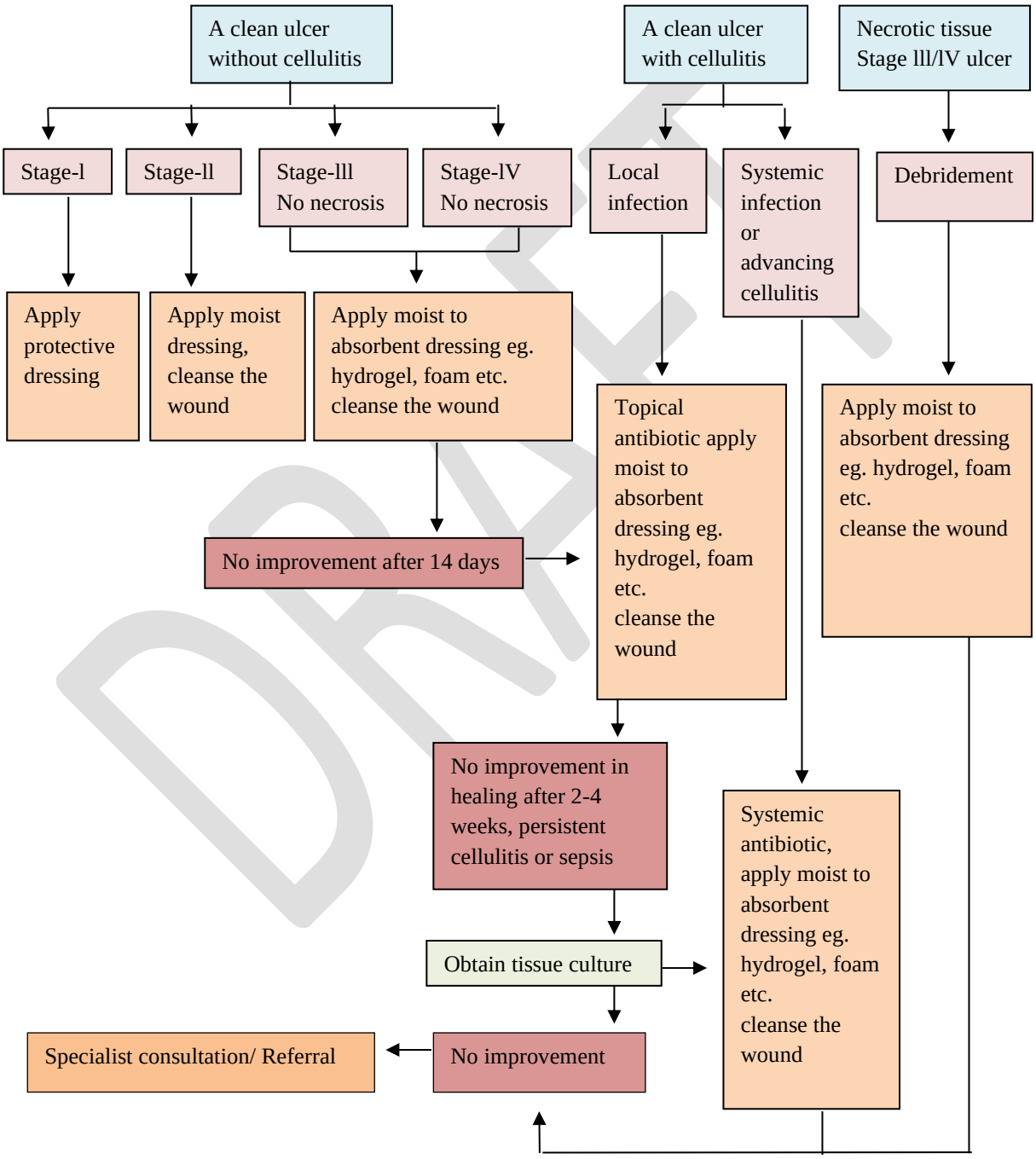
If complications:

Generalized peritonitis, appendicular lump or abscess, previous H/O high fever or high fever, moderate or huge pelvic collection, H/O missed period in case of female (15-45 years of age), pregnancy or diagnostic dilemma-refer the patient to the hospital according to referral protocol with above mentioned treatment.

Bed Sore (Pressure Ulcer)

The Four Stages of Pressure Injuries

- Stage 1 Pressure Injury: Non-blanchable erythema of intact skin.
- Stage 2 Pressure Injury: Partial-thickness skin loss with exposed dermis.
- Stage 3 Pressure Injury: Full-thickness skin loss.
- Stage 4 Pressure Injury: Full-thickness skin and tissue loss.



Benign Lipomatous Neoplasm

Benign Lipomatous Neoplasm or Lipomas are the most common soft-tissue tumor. These are slowly growing, benign fatty tumors form soft, lobulated masses enclosed by a thin, fibrous capsule.

Clinical features

- Lipomas are small mobile soft swelling in undersurface of skin and subcutaneous tissue
- Usually not painful
- Remain same size for long period
- Sometimes very large

Physical Examination

- Typical appearance of lipoma is soft, well demarcated, smooth surfaced, lobulated swelling with slip sign
- Sometimes shows pseudoflactuation

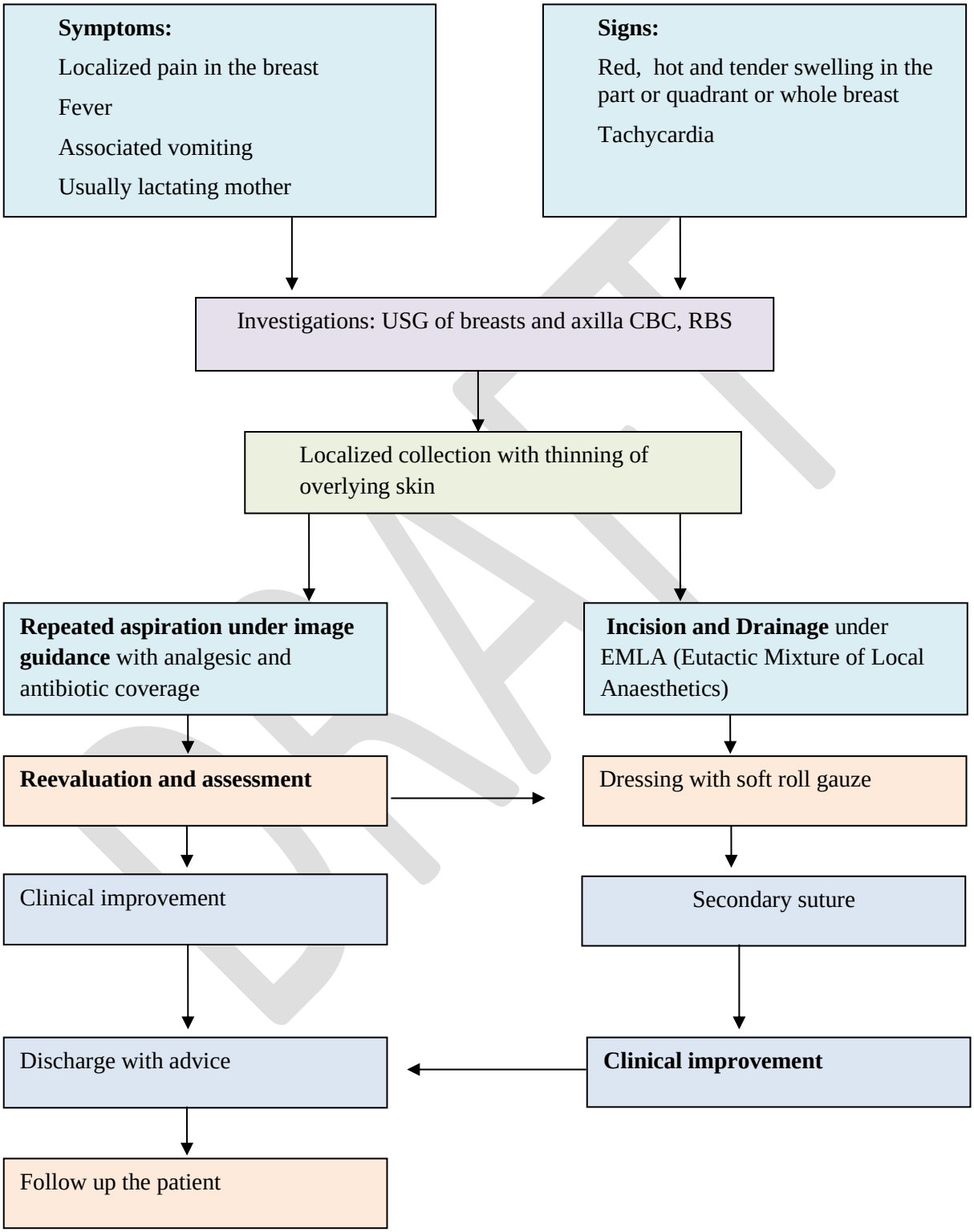
Investigations:

- No special investigation needed;
- Usually, clinical diagnosis is confident but deep lipoma needs ultrasonography

Management:

- Small lipoma needs observation
- If lipoma is large, symptomatic then needs-
    - Excision and Biopsy followed by closure of the wound under L/A or G/A, followed by
    - Histopathological Examination
- **Anaesthesia:** General/local
- **During surgical procedure (where general anesthesia needed)**
    - **Suture materials:**
        - ✓ 1/0 vicryl round body-(1)
        - ✓ 2/0 vicryl round body-(1)
        - ✓ 3/0vicryl round body-(1)
        - ✓ 1/0 prolene cutting body- (2)
- Inf. Hartsol/5% DNS/5% DA – 1000 ml 8 hourly for 24 hours (3 bags)
- Administration of analgesics. (Inj. Pethedine 100 mg followed by Inj.Ketorolac 30 mg/Inj Tramadol 100 mg 8-12 hourly per day-for 2 days (2 doses)
- Administration of antibiotics. (Inj.Ceftriaxone 1gm I/V 12 hourly daily) (2 doses)
- Administration of antiulcerant (Inj. Omeprazole 40 mg 12 hourly) (2 doses)
- **Where local anesthesia needed**
    - Inj. Lidocaine 2% or Inj. Lidocaine + Adrenaline
    - Inj.Ketorolac 30 mg/ Inj. Diclofenac 75 mg
- **Treatment after surgery:**
    - Cap. Flucloxacillin 500mg, 1+1+1+1 for 7 days
    - Cap. Omeprazole 20mg, 1+0+1 for 7 days
    - Tab.Diclofen 50mg, 1+0+1 for 5days

Breast Abscess



Burn

BURN

Admission Criteria:

- Burns greater than 10% of total body surface Area (TBSA) in pediatric (<14 years) & geriatric group (>60 years)
- >15% TBSA in adults (partial thickness)
- Full thickness burns >5% TBSA
- Burns involving special areas: face, hands, feet, genitalia, perineum & major joints
- Electrical burns
- Chemical burns
- Inhalation burns
- Circumferential burns of the limbs, trunk or neck
- Burns in people with pre-existing medical or psychological disorders that could complicate management, prolong recovery or increase mortality
- Burns associated with trauma
- Burns with pregnancy
- Burns in patients who will require emotional, rehabilitative intervention

Criteria of burn patients to be called "CRITICAL" :

- >15% in a child
- >30% in adult with partial thickness or full thickness burn
- All inhalation burn
- All chemical burn
- Patients presenting late with inadequate resuscitation and / or in a state of sepsis
- All electric burn
- Burns with severe co-morbid disease

Primary Survey :

Airway:

- Check airway, maintain patency
- Remove foreign body
- Stabilize neck for suspected spine injury

Breathing:

- Administer 100% O2
- Expose chest & observe expansion

Circulation:

- Insert 2 I/V cannula or a central venous catheter preferably through unburned skin
- Draw blood for essential studies: CBC, S. electrolyte & urea, S. creatinine, Liver function test, Blood grouping & Rh typing, S albumin, Arterial blood gas analysis
- Keep patient warm

Next page

Primary Survey (Continued) :

Disability:

- EstablishlLevel of consciousness

Exposure:

- Remove all clothing & dwelling
- Keep patient warm

Fluid resuscitation: (>10% in children, >15% in adults need Fluid)

- Estimate burn area
- Commence iv fluid (Hartmann's saline)
- Parkland formula (4 * % of TBSA burn * weight in kg burn)

Pain relief:

- Morphine / Nalbuphine / Tramadol in small incremental dose according to pain score

Nutrition:

- Insert nasogastric tube within 10-14 hours for larger burns (>20%. TBSA in adult, >13% in children)

Antibiotics:

- For first week - Gram positive coverage (empirical), if already infected, both gram positive & negative

Tetanus Prophylaxis :

- Both TT & TIG, if not immunized
- Anti-ulcer & anti-histamine drugs
- Vitamins:
  - ✓ Vitamin A (50000 IU), twice daily for 5 days
  - ✓ Vitamin C (500 mg), three times daily for 1 month
  - ✓ Vitamin E (400 mg), three times daily for 1 month
  - ✓ Zinc sulphate (20mg), two times daily, 10 days

Activity:

- Head and of bed raised at 20°

Investigations for burn patient on admission:

Routine investigations:

- CBC
- B. urea, S. creatinine
- S. albumin
- S. bilirubin, SGPT, SGOT
- Urine R/M/E
- Blood grouping & Rh typing
- HBsAg, Anti HCV, HIV 1 & 2
- X-ray chest P/A view, lateral cervical spine, pelvis AP (according to scenario)

If septicemia suspected:

- Wound swab for C/S
- Blood culture
- Fibrin Degradation Product (FDP), D. Dimer

If electric burn

- ECG
- Cardiac enzymes

Assessment of depth of burn wound:

- Epidermal burn (1st degree): involves only the epidermis
- Superficial dermal (superficial 2nd degree): epidermis & some of the dermis
- Deep dermal (deep 2nd degree): epidermis & a larger part of dermis
- Full thickness (3rd degree): involves epidermis & dermis, also may penetrate the underlying structures

Initial wound care:

- Adequate analgesia
- Adequate explanation of procedure
- Maintain warm environment
- Wash and dry within 30 minutes
- Remove loose devitalized tissue, exudate, old dressing
- Blisters are opened and all dead skin removed across the joints
- Reassess the depth & extent of burn
- Dress with silver sulfadiazine cream and cover with fresh sterile gauze & cotton or apply hydrocolloid dressing & cover with fresh gauze
- Reassess 24/48 hours after for any change
- Plan the strategy for further management
- Consider Escharotomy for circumferential full thickness or deep dermal burns of the limbs, chest, abdomen, or neck

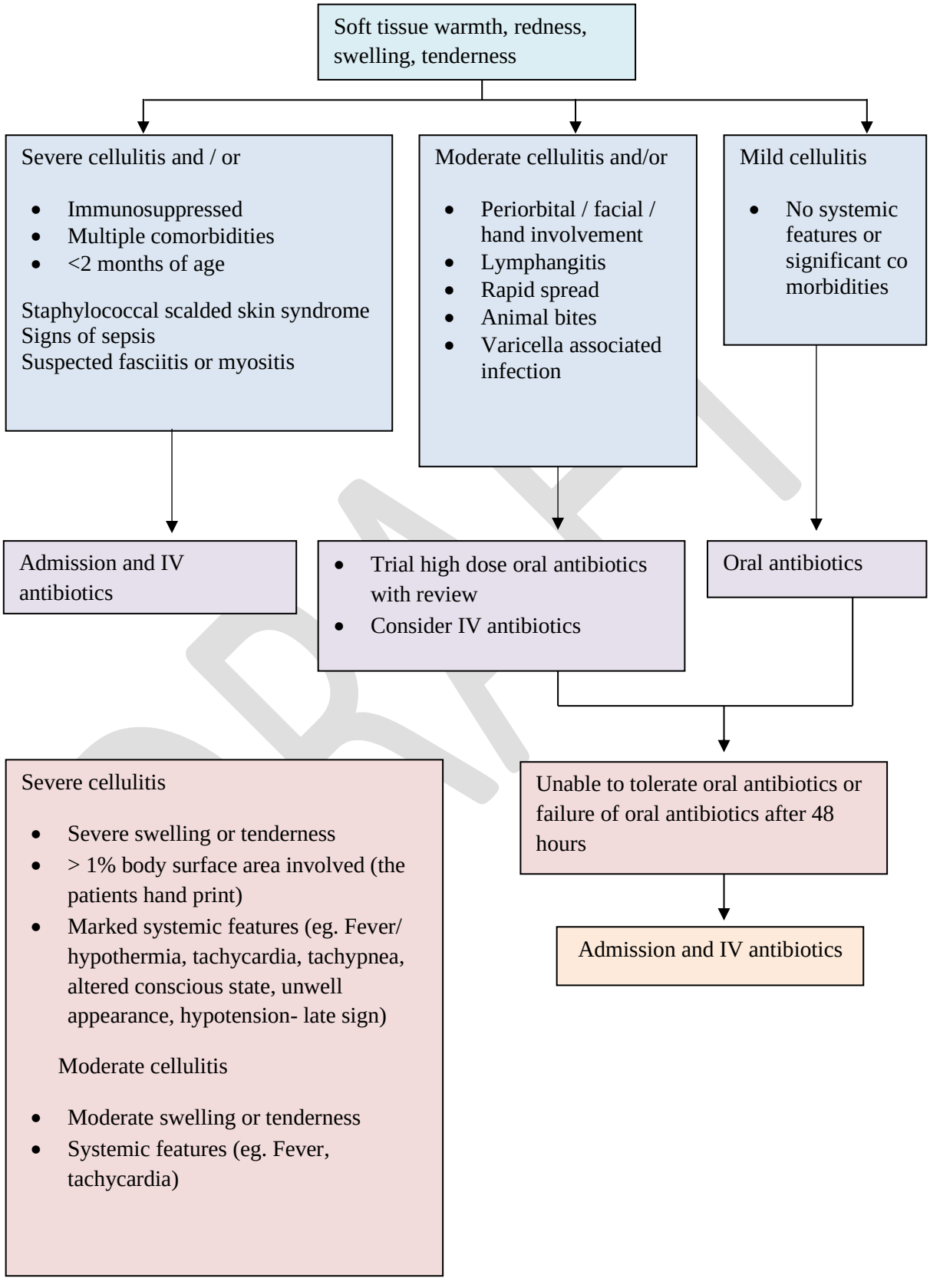
Management of the burn wound from a second day onwards:

- Give maintenance fluid
- Nutritional management
  - ✓ Early enteral feeding is encouraged on it to prevents paralytic ileus
  - ✓ Reduce rise of catabolism
  - ✓ Maintenance integrity and
  - ✓ Reduce rink of bacterial translocation
- Pharmacological management:
  - ✓ Mild: Paracetamol, Ibuprofen
  - ✓ Moderate: Codeine, Tramadol
  - ✓ Strong: Morphine, Diamorphine
- Non pharmacological management:
  - ✓ Positioning (comfortable positioning reduces pain)
  - ✓ Elevation (elevation of limb & head reduces pain & edema)
  - ✓ Dressing (open wounds are more painful than dressed wound)
  - ✓ Communication (reassurance & explanation reduce anxiety)

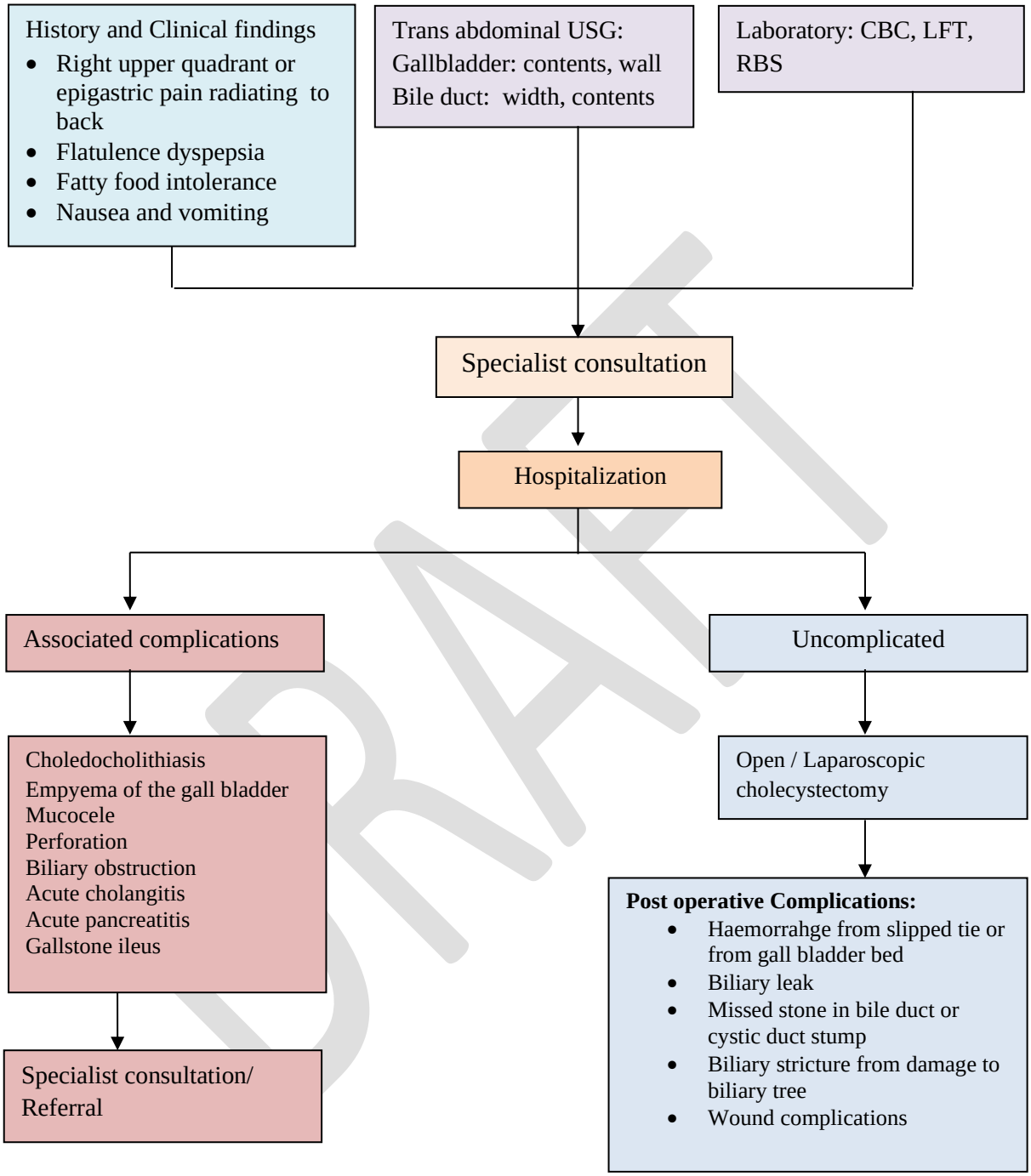
Referral:

- CRITICAL conditions (mentioned above)
- Deteriorate / Not respond to treatment
- Complications

Cellulitis



Cholelithiasis



Disorders/Infection of Skin and Subcutaneous tissue (Ulcer, Pyoderma, Erythrasma etc)
Chronic Skin Ulcer

Diabetic Ulcer

Characteristic trophic ulcer in an uncontrolled diabetic patient

Commonly in foot with sero-purulent discharge

Investigations

Wound swab for C/S

X-ray local part- To see bony involvement

FBS and 2 Hours after 75g glucose

Diagnosis

Characteristic moist ulcer with Charcot joint

Management

- Strict glycemic control
- Regular foot care
- Wound debridement and soft dressing
- Coverage of wounds and limited amputation
- *Anaesthesia:* Regional (Spinal)

During surgical procedure
Suture materials: 1/0 vicryl round body-(1)
1/0 prolene cutting body- (2)

- Inf. Hartsol / DNS/5% DA – 1000 ml 8 hourly for 24 hours (3 bags)
- Administration of analgesics. (Inj. Pethedine 100 mg followed by Inj.Ketorolac 30 mg/ Inj Tramadol 100 mg 8-12 hourly per day-for 2 days (2 doses)
- Administration of antibiotics. (Inj.Ceftriaxone 1gm I/V twice daily) (2 doses)
- Administration of antiulcerant (Inj. Omeprazole 40 mg 12hourly) (2 doses)

- **Treatment during discharge**
- Cap. Cefixime 400mg, 1+0+1 for 7 days
- Cap. Omeprazole 20mg, 1+0+1 for 7 days
- Tab. Ketorolac 10mg, 1+0+1 for 7 days
- Regular dressing with Povidone Iodine 10% solution for 2 weeks

Venous Ulcer

Poorly healing ulcer in gaiter area of lower limb in patient with varicosity and prolonged standing

Investigations

Wound swab for C/S

Wedge biopsy to exclude malignancy

Check DM

Duplex scan

Diagnosis

According to CEAP classification of Venous Disorder (C=/>4)

Management

- ❖ Identification and treatment of cause- arterial or venous
- ❖ Improve nutrition, good hygiene and limb elevation
- ❖ Wound debridement and Layered Dressing with elastocrep
- ❖ Meshed skin graft of wound

Anaesthesia: General/ Regional (Spinal)/Local according to involved area

During surgical procedure

Suture materials: 1/0 vicryl round body-(1)
2/0 vicryl round body-(1)
3/0vicryl round body-(1)
1/0 prolene cutting body- (2)

Inf. Hartsol/5% DNS/5% DA – 1000 ml 8 hourly for 24 hours (3 bags)

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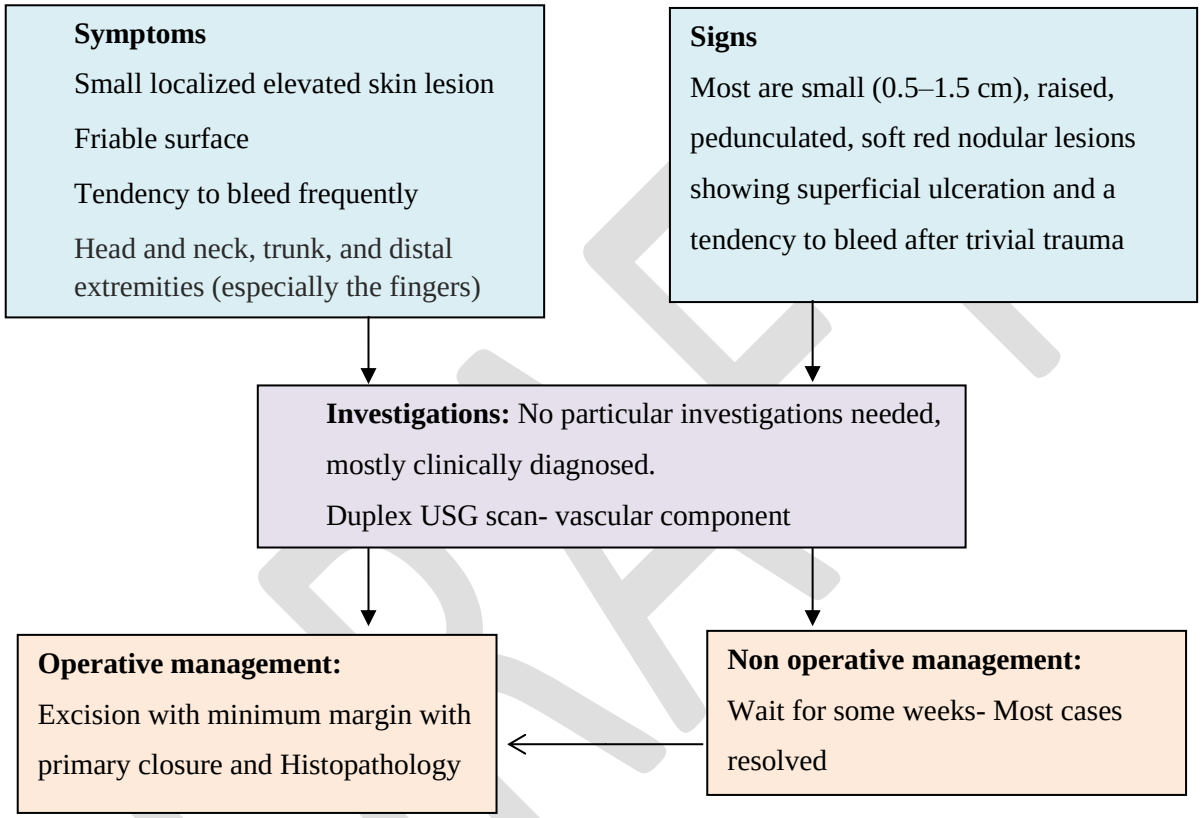
Treatment during discharge

Cap. Cefixime 400mg, 1+0+1 for 7 days
Cap. Omeprazole 20mg, 1+0+1 for 7 days
Tab. Ketorolac 10mg, 1+0+1 for 7 days
Regular dressing with Povidone Iodine 10% solution for 2 weeks

Pyogenic Granuloma

Pyogenic granulomas are skin growths that are small, round, and usually bloody-red in color. They tend to bleed because they contain a large number of blood vessels. They're also known as lobular capillary hemangioma or granuloma telangiectaticum.



Pyoderma Gangrenosum

Pyoderma or Pyoderma gangrenosum is characterized by cutaneous ulceration with purple undermined edges. It is secondary to heightened immunological reactivity, usually from another disease process such as inflammatory bowel disease; rheumatoid arthritis, non-hodgkin's lymphoma or wegener's granulomatosis

Clinical features

Pyoderma gangrenosum usually starts with a small, red bump on your skin which may resemble a spider bite. Within days, this bump can develop into a large, painful open sore

Risk Factors

Age and Sex: More common among women. Usually occurs between the ages of 40 and 50

Inflammatory bowel disease. Patient with ulcerative colitis or Crohn's disease are at increased risk

Rheumatoid arthritis

Haematological malignancy

Investigations: No particular investigations needed, exclude secondary causes of the condition

Management: Aim of treatment is at reducing inflammation, controlling pain and promoting wound healing. Specialized wound care in a burn treatment center.

A) Medications: Corticosteroids, Immune suppressants, Analgesics.

B) Wound care: wound cover with a moist dressing with elasticized wrap. Affected area elevation

If large defect: Needs flap

Erythrasma

Erythrasma is a chronic superficial infection of the intertriginous areas of the skin. The incriminated organism is *Corynebacterium minutissimum,* which usually is remains as a normal human skin inhabitant

Clinical features:

- Dark discolored area of skin limited to body folds that are naturally moist
- Itching
- Immunosuppressed patients are in risk Suspect diabetes

Physical Examination:

- Typical appearance of erythrasma is well-demarcated, brown-red macular patches
- The skin has a wrinkled appearance with fine scales

Investigations:

Wood light examination: the porphyrins produced by the bacteria fluoresce with a coral pink color

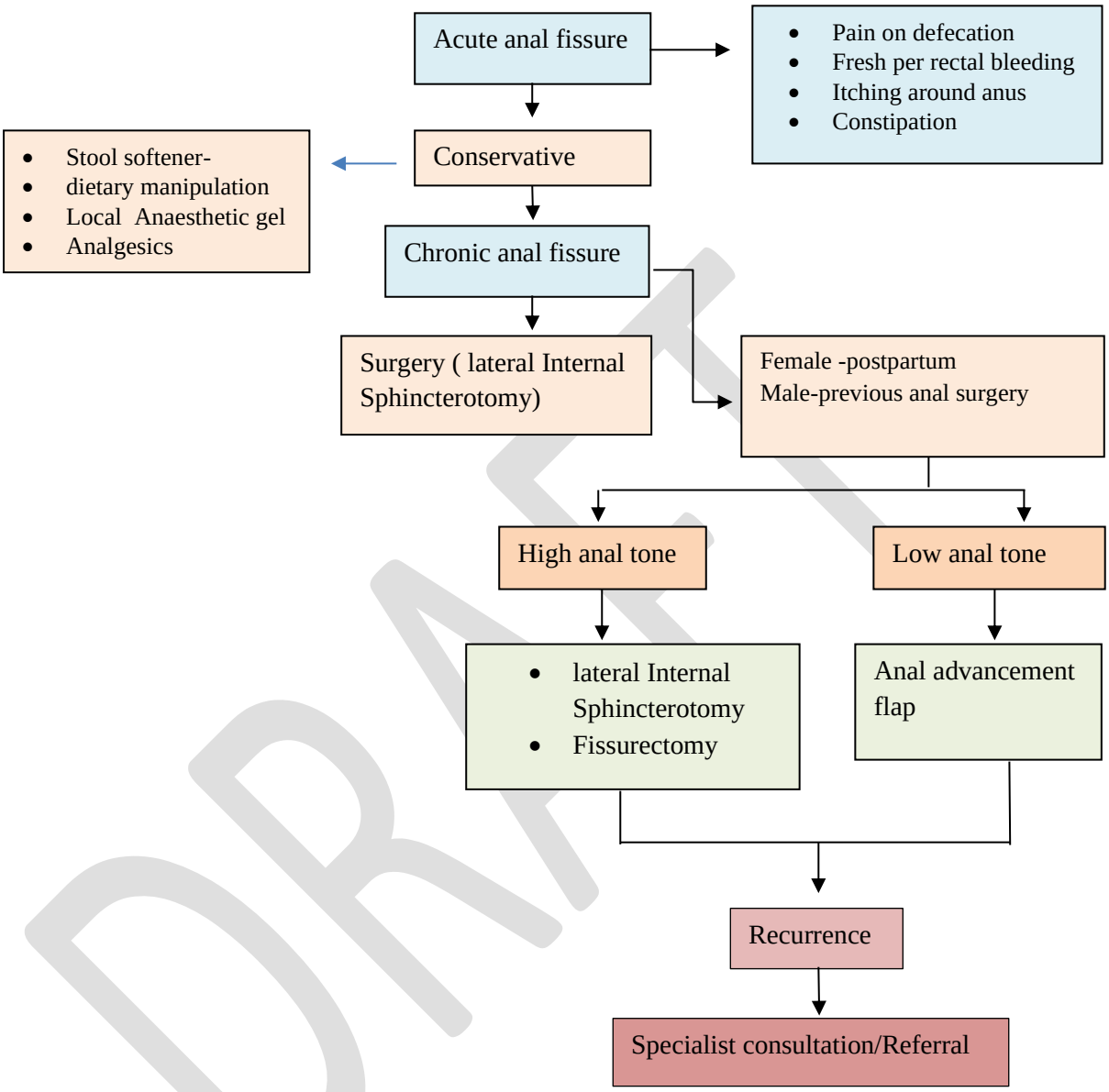
Gram staining reveals of erythrasma lesions gram-positive filamentous rods

Management:

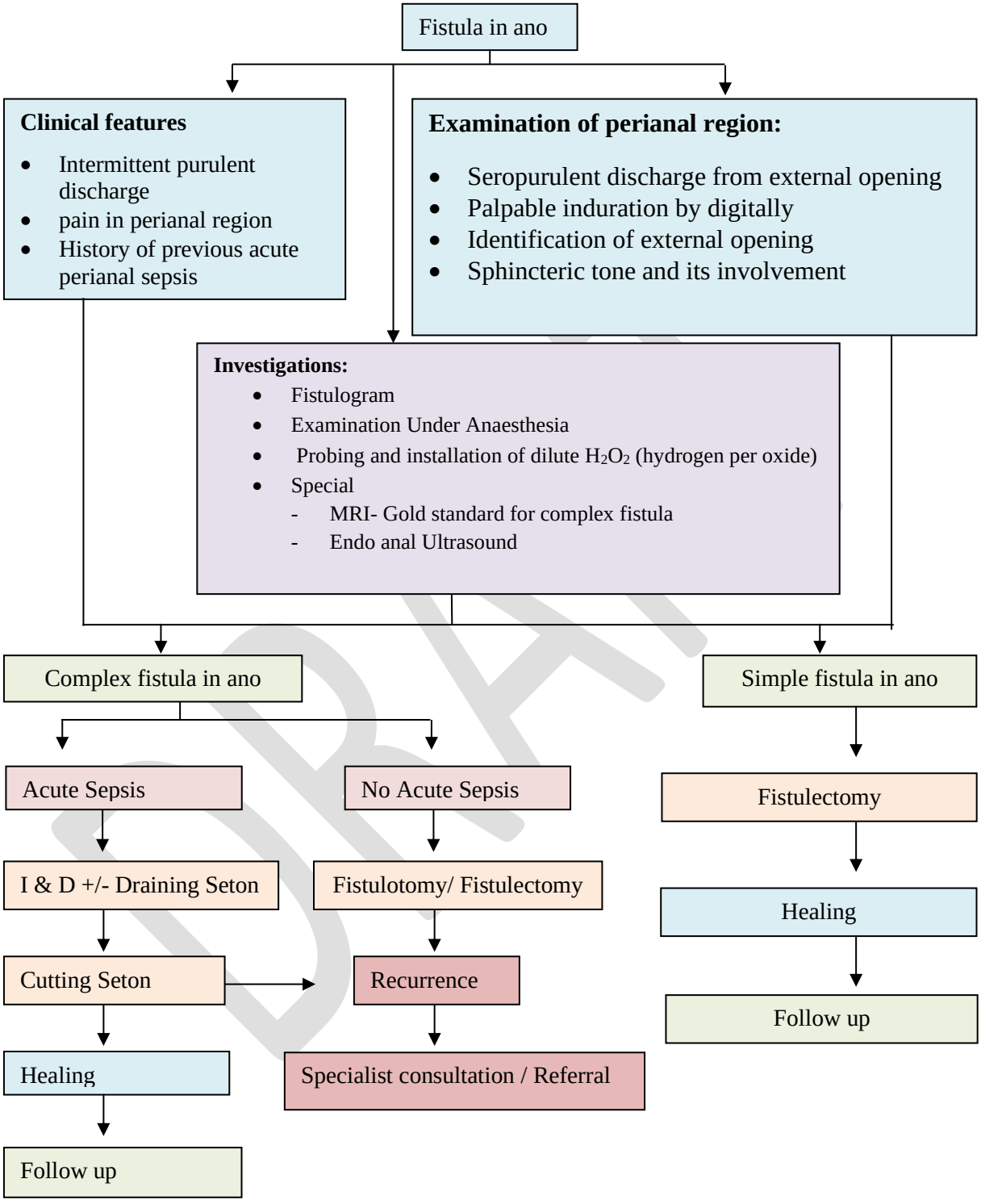
- Maintenance of good personal hygiene
- Medical Care - Infection may be treated with topical or oral agents
  - Topical:
    Erythromycin or clindamycin or fusidic acid cream or miconazole cream
  - Systemic:
    Single-dose clarithromycin or amoxicillin-clavulanic acid for systemic illness

Anal Fissure and Fistula

Anal Fissure



Fistula in Ano



Follicular Cyst of Skin and Subcutaneous Tissue

These are cystic lesions of skin and subcutaneous tissue involving follicular occlusion followed by folliculitis and secondary infection with skin flora.
These include

- Pilar cyst
- Sebaceous cyst
- Epidermal inclusion cyst etc.

Clinical features

- Small swelling within the skin and subcutaneous tissue
- Usually not painful but not when infected
- Remain same size for long period.
-

Physical Examination:
Typical appearance of follicular cystic lesion is

- firm,
- well demarcated,
- smooth surfaced lesions that fixed with skin but freely mobile from underlying structures,
- Often punctum present over the lesion.

Investigations:

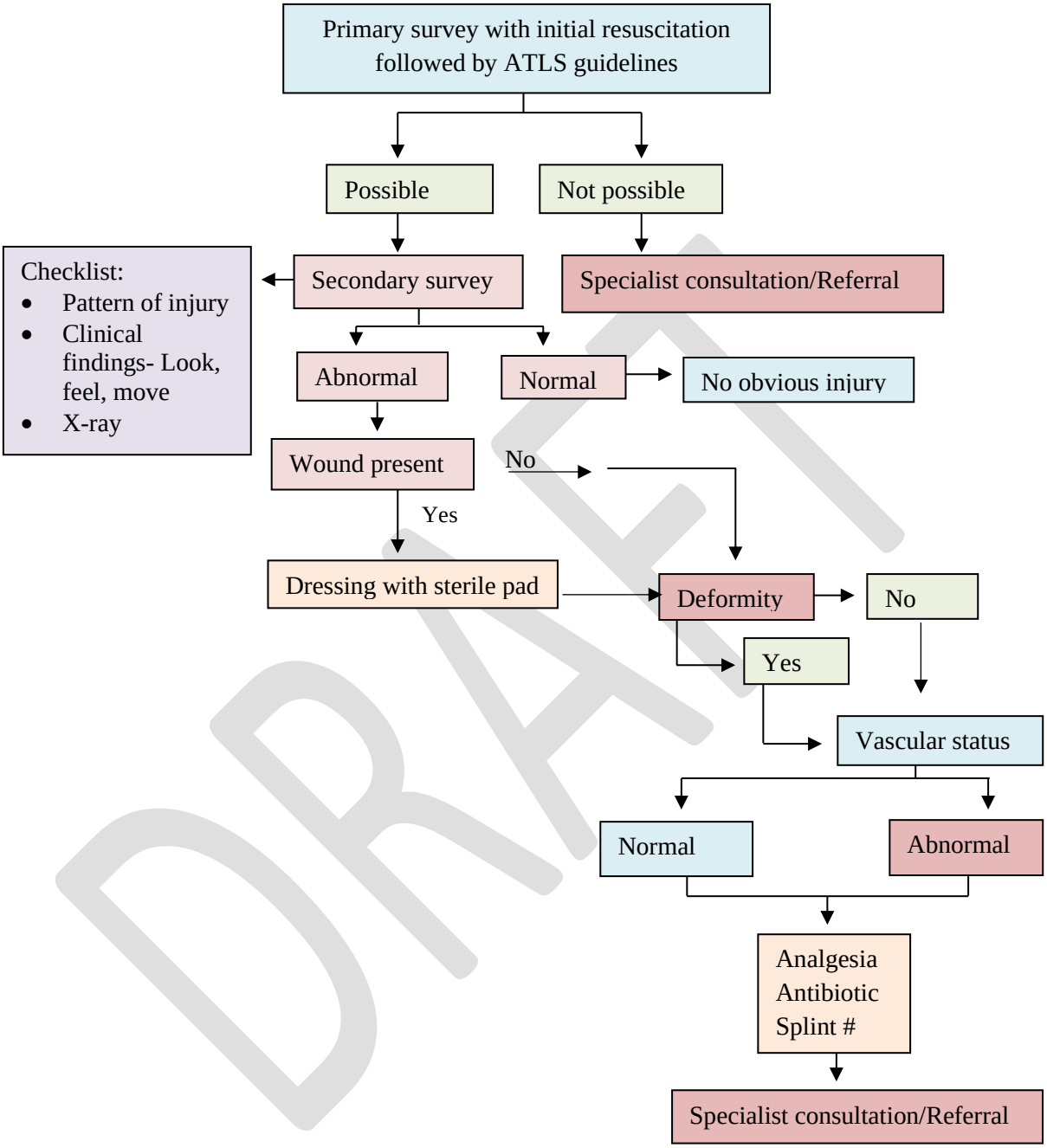
- No special investigation needed;
- Usually, clinical diagnosis is confident but deep lipoma needs ultrasonography.

Management:

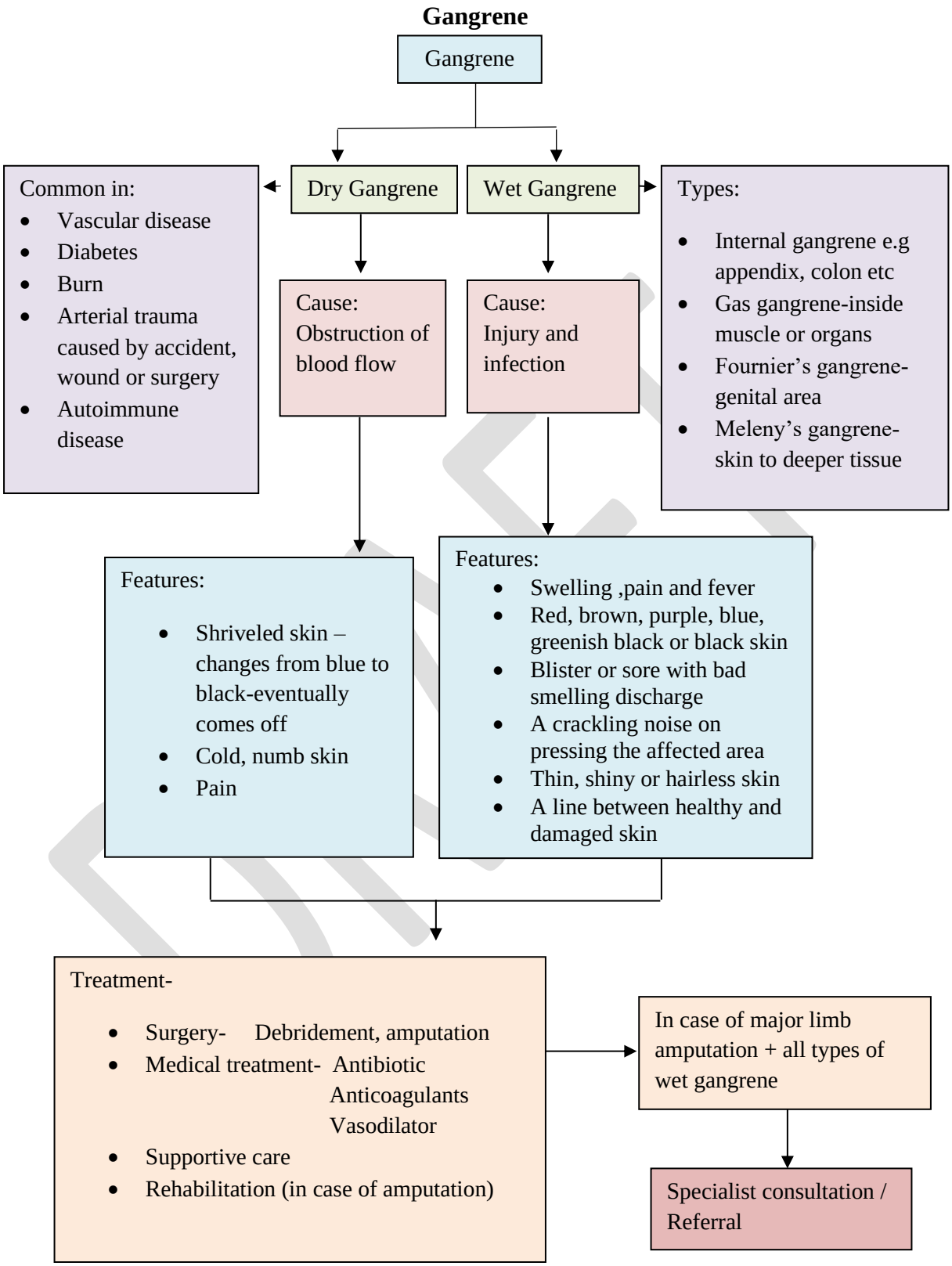
- Small longstanding lesions may rupture into surround tissue and infected.
- Needs wound debridement and dressing
  - Inj/Cap Flucloxacillin 500mg 6 hourly for 3-5 days.
- Other symptomatic cases need Excision and Biopsy under local anesthesia followed by Histopathological Examination and closure of the wound
- Where local anesthesia needed
  - Inj. Lidocaine 2% or Inj. Lidocaine + Adrenaline
- Inj.Ketorolac 30 mg/ Inj. Diclofenac 75 mg
- Suture materials:
  - 1/0 vicryl round body-(1)
  - 2/0 vicryl round body-(1)
  - 3/0 vicryl round body-(1)
  - 1/0 prolene cutting body- (2)
- **Treatment after surgery:**
  - Cap. Flucloxacillin 500mg, 1+1+1+1 for 7 days
  - Cap. Omeprazole 20mg, 1+0+1 for 7 days

  Tab.Diclofen 50mg, 1+0+1 for 5days

Fracture (involving multiple body regions)



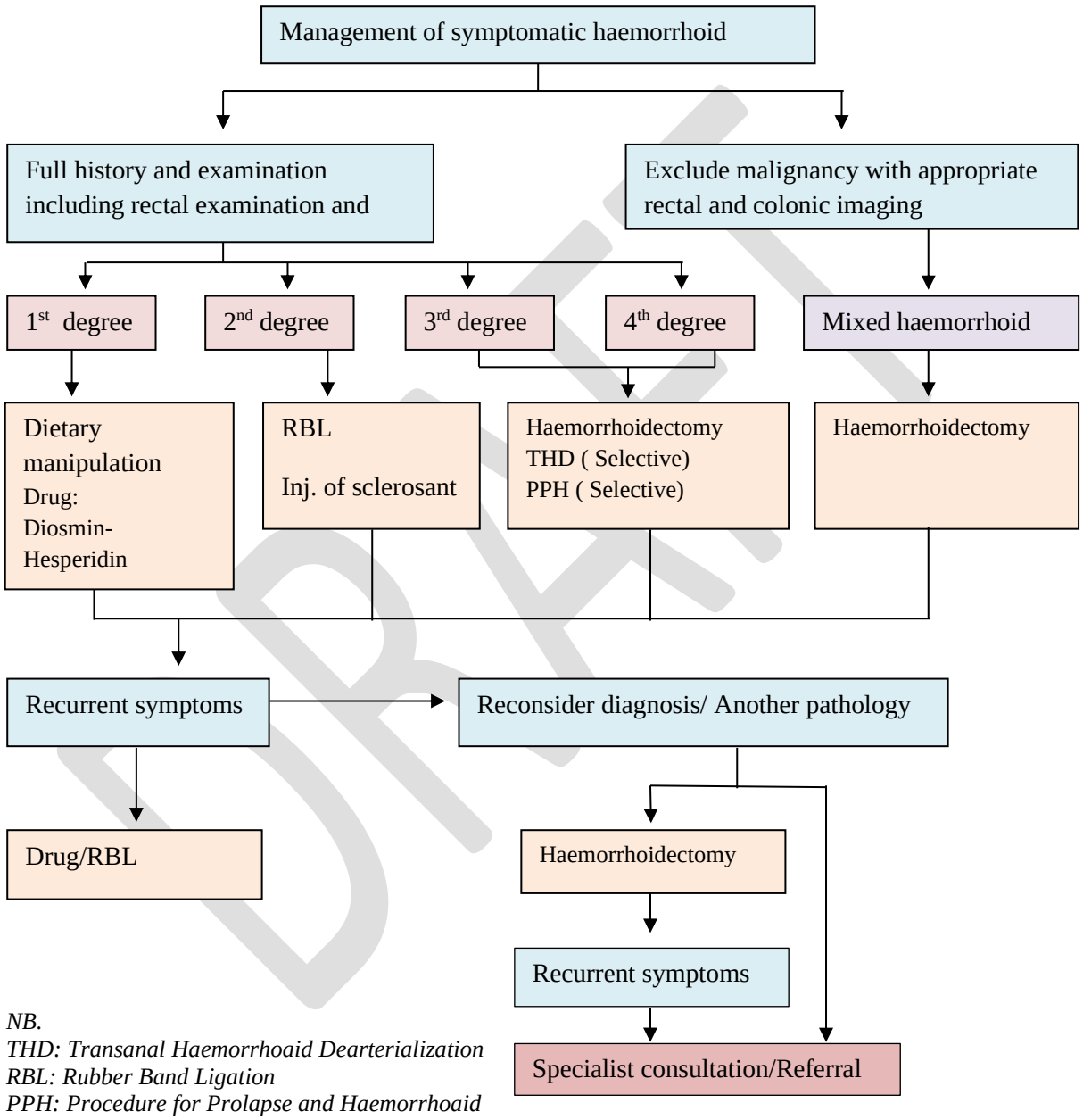
Gangrene


Gangrene
Dry Gangrene
Wet Gangrene
Common in:
Vascular disease
Diabetes
Burn
Arterial trauma caused by accident, wound or surgery
Autoimmune disease
Types:
Internal gangrene e.g appendix, colon etc
Gas gangrene-inside muscle or organs
Fournier's gangrene-genital area
Meleny's gangrene-skin to deeper tissue
Cause: Obstruction of blood flow
Cause: Injury and infection
Features:
Shriveled skin – changes from blue to black-eventually comes off
Cold, numb skin
Pain
Features:
Swelling ,pain and fever
Red, brown, purple, blue, greenish black or black skin
Blister or sore with bad smelling discharge
A crackling noise on pressing the affected area
Thin, shiny or hairless skin
A line between healthy and damaged skin
Treatment-
Surgery- Debridement, amputation
Medical treatment- Antibiotic
Anticoagulants
Vasodilator
Supportive care
Rehabilitation (in case of amputation)
In case of major limb amputation + all types of wet gangrene
Specialist consultation / Referral

Haemorrhoid

Four degrees of haemorrhoids

First degree- bleed only, no prolapse
Second degree- prolapse, but reduce spontaneously
Third degree- prolapse and have to be manually reduced
Fourth degree- permanently prolapsed



NB.
THD: Transanal Haemorrhoaid Dearterialization
RBL: Rubber Band Ligation
PPH: Procedure for Prolapse and Haemorrhoaid

Hydrocele

Hydrocele may be defined as Collection of aseptic fluid in between two layers of tunica vaginalis. Among different types of hydrocele, vaginal Hydrocele is most common. Mainly it is diagnosed clinically but testicular tumor must be excluded if any suspicion remains.

Step1: Taka History

Whether scrotal or inguinoscrotal swelling
How long?
Any pain?
Any H/O trauma?
Is swelling decrease in size during supine position?

Step 2: Examination

Whether scrotal or inguinoscrotal
Cough impulse
Get above swelling
Whether testes palpable separately
Examination of swelling:
- -size
- -Surface
- -Consistency
- -Fluctuation
- -Transillumination

Must examine opposite testes

Step 3: Investigation

Usually no laboratory investigation is necessary for diagnosis
If any suspicion-must do USG of scrotum to exclude testicular pathology

Step: 4 Treatment

a. Observe & Follow Up
b. Surgery

Step 5: Referred to higher level or consult with consultant

a. If any suspicion regarding testicular pathology

b. Any complication develop

Hyperplasia of Prostate

Lower urinary tract symptoms:

Voiding:
Hesitancy
Poor flow
Intermittent stream
Dribbling
Sensation of poor bladder
Emptying episodes of near retention
Storage:
Frequency
Nocturia
Urgency
Urge incontinence
Nocturnal incontinence

Features of bladder outflow obstruction:

Acute retention of urine
Chronic retention
Overflow incontinence
Impaired bladder emptying

General examination: signs of chronic renal impairment with anaemia and dehydration.
Abdominal examination: in patients with chronic retention, a distended bladder will be found on palpation, on percussion.
Rectal examination: the posterior surface of the prostate is smooth, convex and typically elastic but the fibrous element may give rise to firm consistency
Investigation:

- USG of KUB and prostate
- Urine analysis for blood, glucose, protein and pus cell
- Urine culture for infection
- Serum creatinine
- Urinary flow rate and residual volume measurement
- PSA

Management

- Conservative: Drugs- Cap. Tamsulosin plus Dutasteride, daily for 6 months
- Surgery: Trans-urethral resection of the prostate (TURP)

Indication for TURP - combination of severe symptoms and a low flow rate <12ml/s.
Anaesthesia: Regional (Spinal) anaesthesia
During surgical procedure and postoperatively

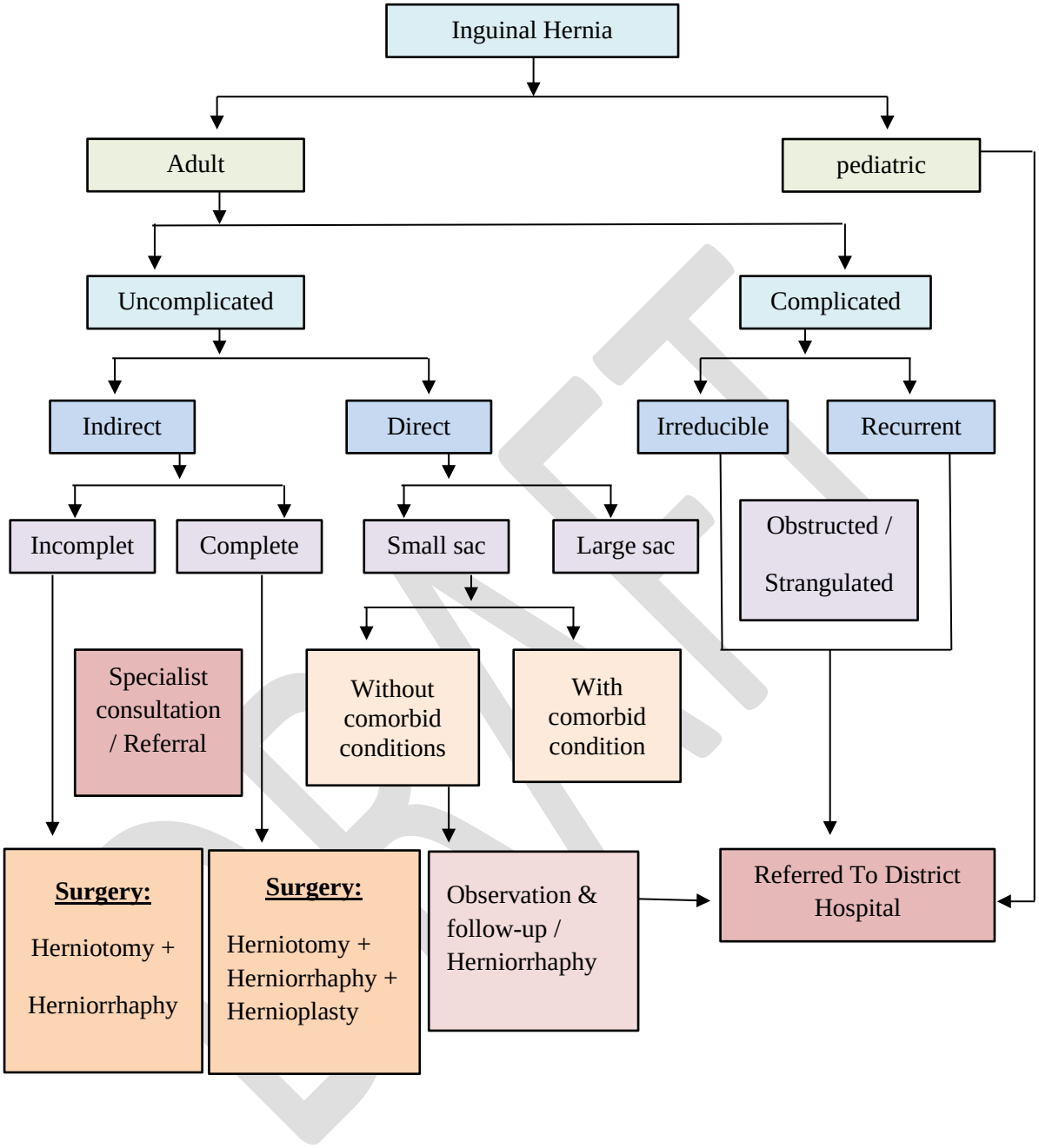
- Inf. Hartsol/5% DNS/5% DA – 1000 ml 8 hourly for 24 hours (6 bags)
- Administration of analgesics. (Inj. Pethidine 100mg followed by Inj.Ketorolac 30 mg/ Inj Tramadol 100 mg 8-12 hourly per day-for 2 days (4-6 doses)
- Administration of antibiotics. (Inj.Ceftriaxone 1gm I/V twice daily) (4 doses)
- Administration of antiulcerant (Inj. Omeprazole 40 mg 12 hourly for 2 days) (4 doses)

- Glysine solution -1000ml (30 bags)
- Normal Saline -1000ml (10-15 bags) for irrigation
- Catheterization till discharge
- Laxatives- Syp. Avolac 3tsf 8-12 hourly (2 bottles)
- From 1st POD patient should be on oral diet and medication except Inj.antibiotic for 2 days.

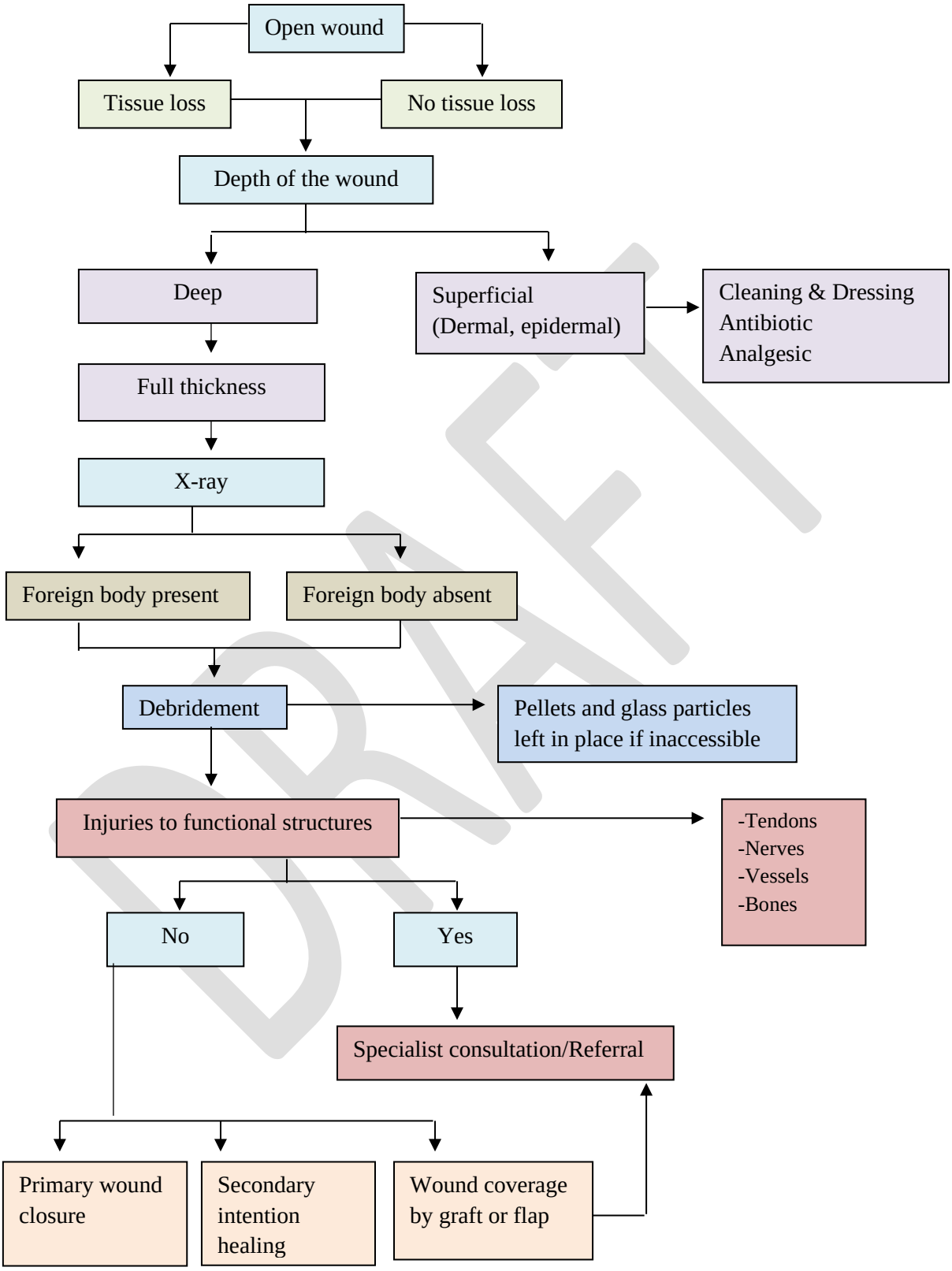
Treatment during discharge on 5th POD

- Cap. Cefixime 400mg, 1+0+1 for 7 days
- Cap. Omeprazole 20mg, 1+0+1 for 7 days
- Tab. Ketorolac 10mg,1+0+1 for 7 days
- Laxatives -Syp. Avolac 3tsf 8-12 hourly for 7 days

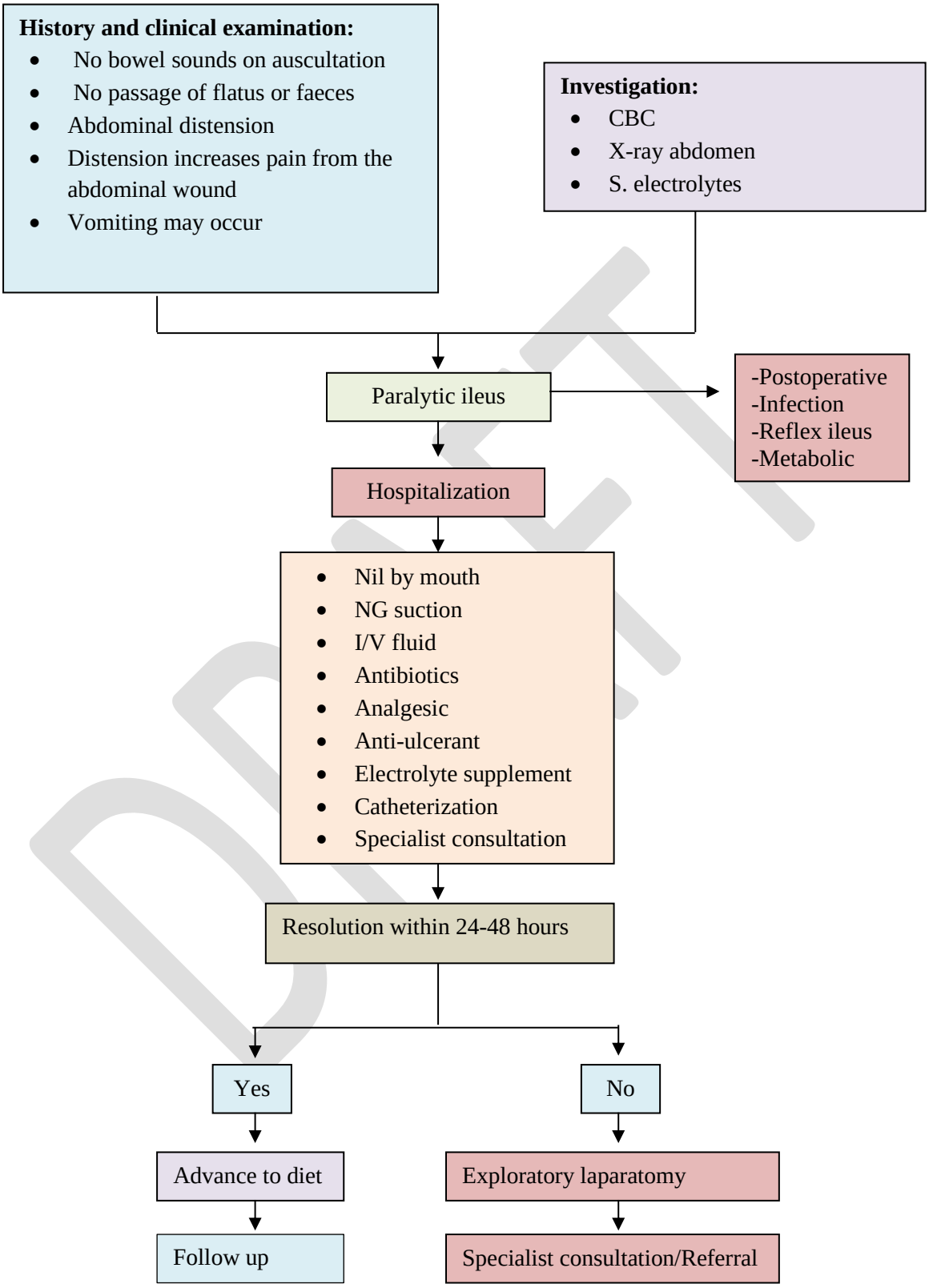
Hernia (Inguinal)



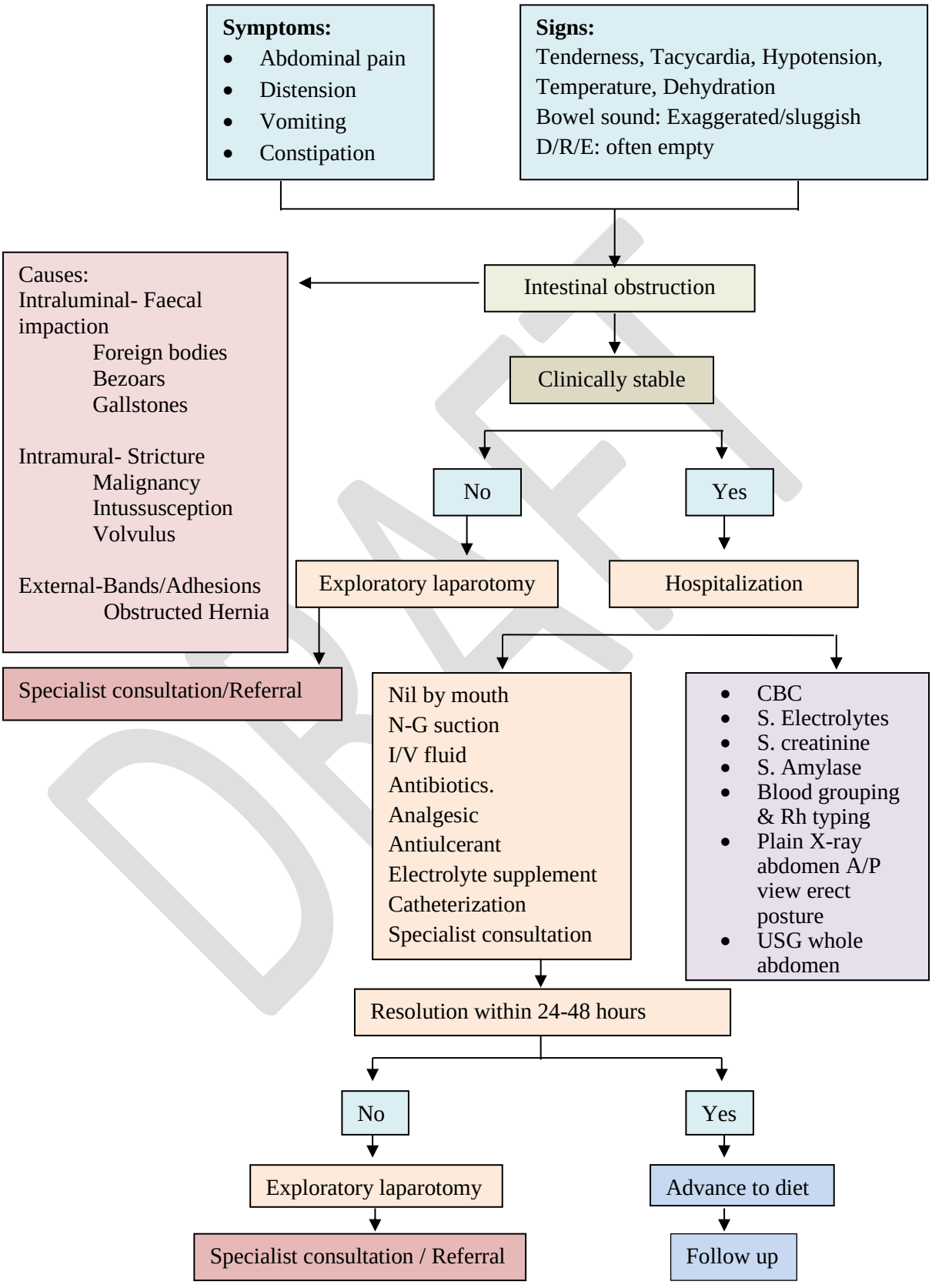
Open wound involving multiple body regions



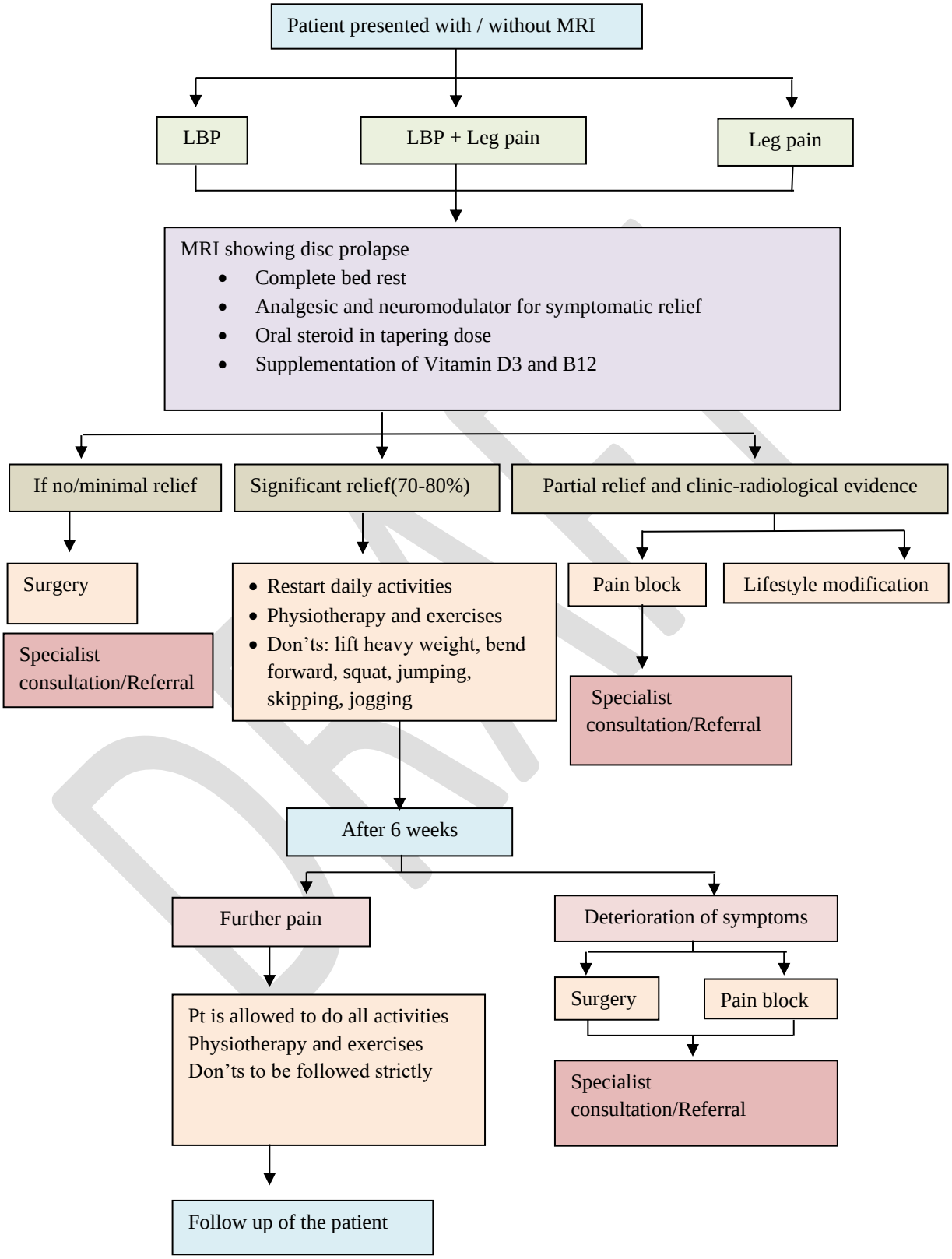
Intestinal Obstruction and Paralytic Ileus



Intestinal obstruction



Prolapsed Lumbar Intervertebral Disc (PLID)



Retention of Urine

Types:

- Acute
- Chronic

Clinical presentation of acute urinary retention:

- Inability to pass urine and severe lower abdominal discomfort
- Bladder is usually palpable and tender

Management of acute urinary retention:

- Urgent catherterisation: either per urethra or suprapubically

Clinical presentation of chronic retention of urine:

- Patients often have no pain
- Low pressure retention may present with overflow incontinence
- High pressure retention often presents with renal failure

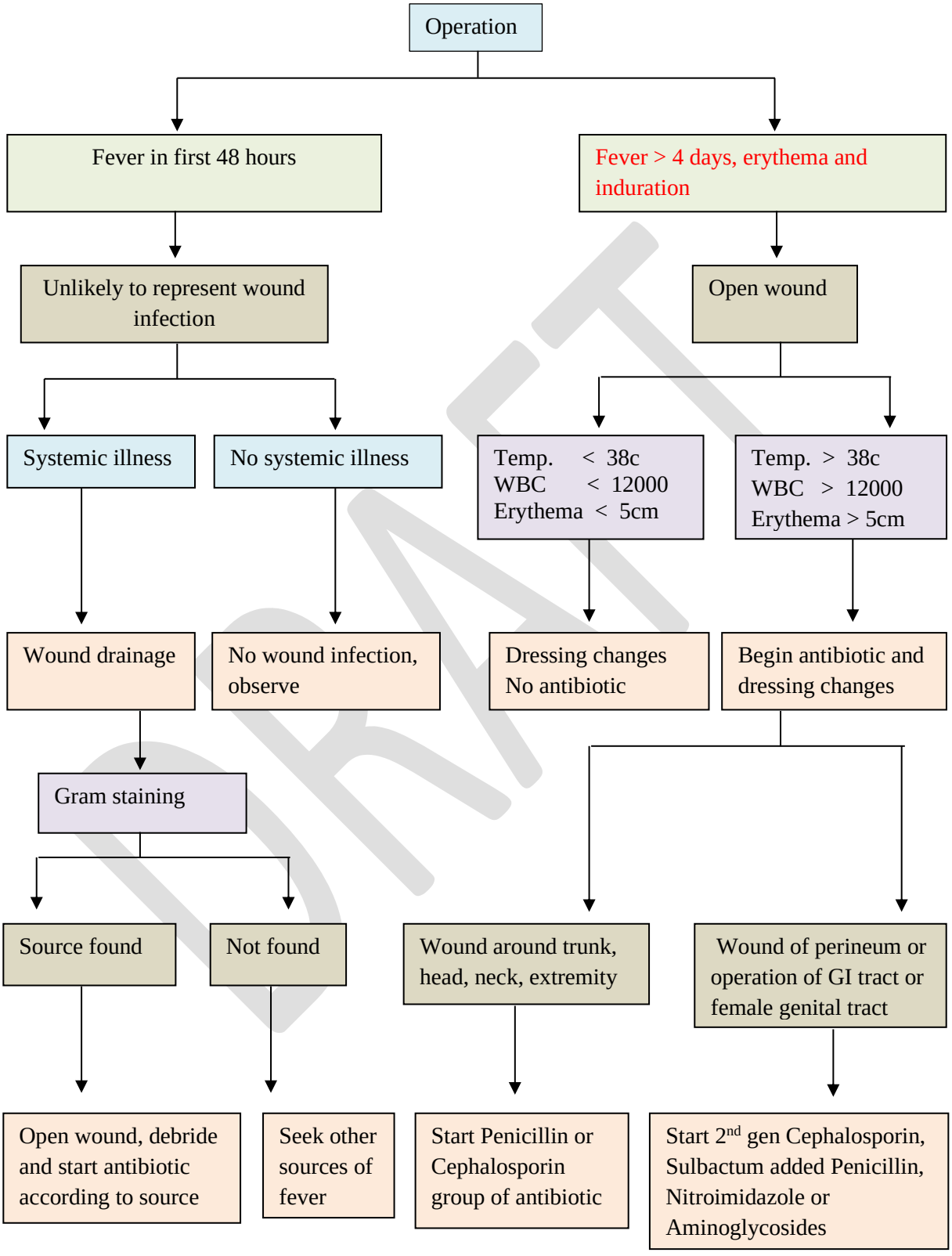
Management of chronic urinary retention:

- Catheterization: Standard treatment
- Monitor diuresis

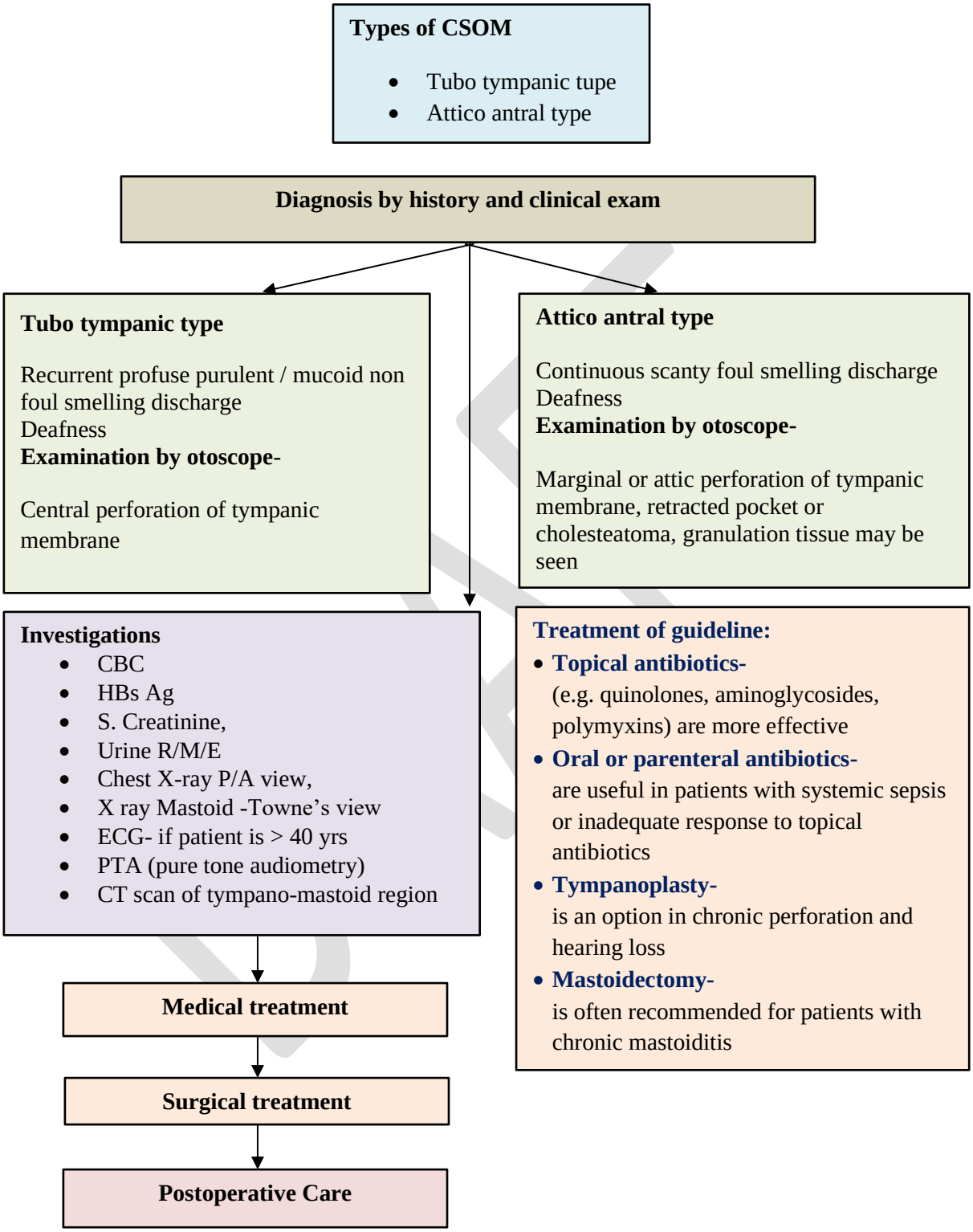
Treatment during discharge

- Tab. Ciprofloxacin 500 mg, 1+1+1 for 7 days
- Cap. Omeprazole 20 mg, 1+0+1 for 7 days

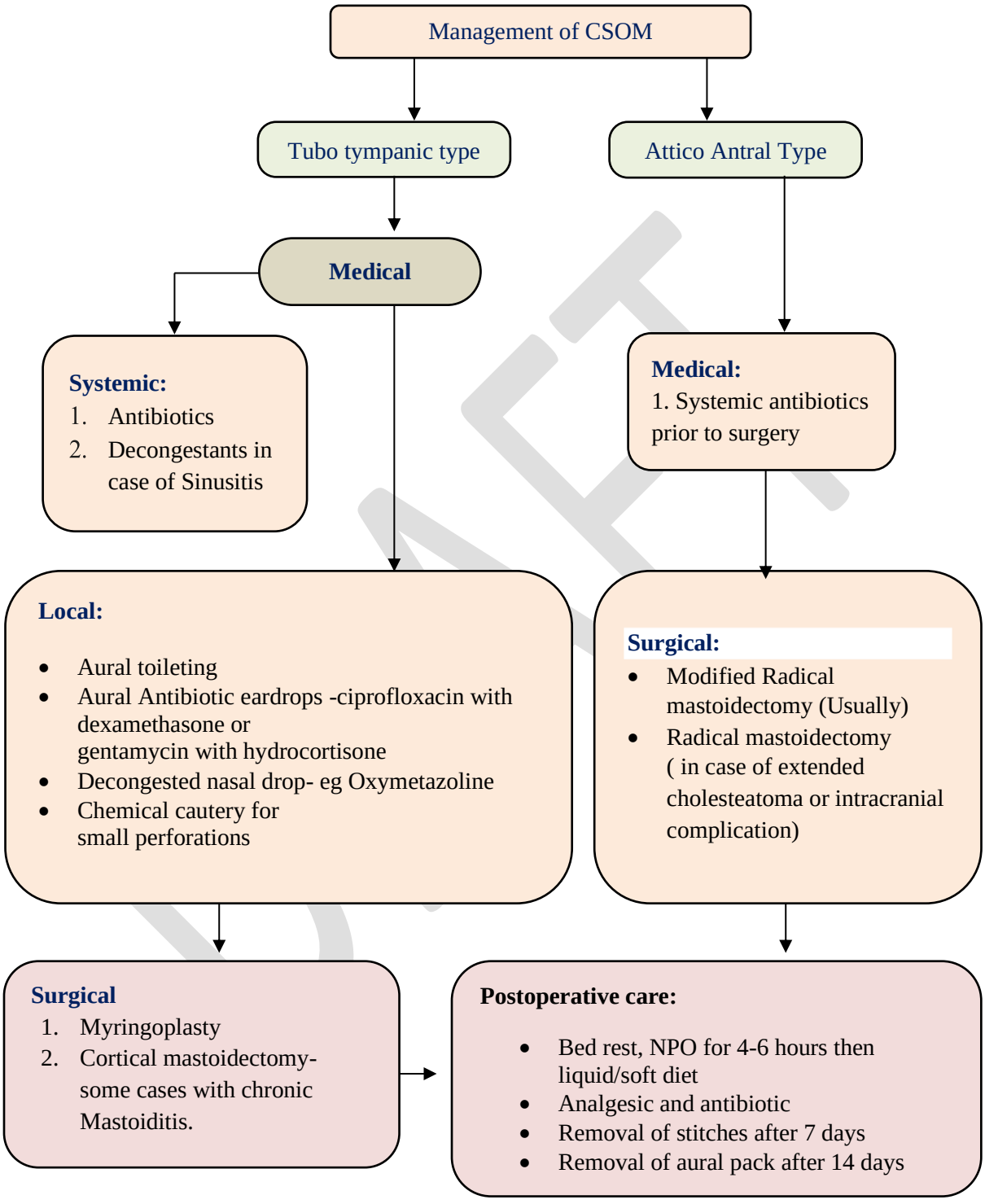
Wound infection



Chronic Suppurative Otitis Media (CSOM)



Chronic Suppurative Otitis Media (CSOM)



Deviated Nasal Septum (DNS)

DNS: Deviation of cartilage and/or bony framework of nasal septum from midline associated with nasal symptoms

Diagnosis by clinical features:

- Nasal obstruction
- Headache, usually frontal
- Recurrent Upper Respiratory Tract Infections
- Epistaxis
- Hyposmia/Anosmia
- External deformity-may present
- Septum deviated to right or left
- Nasal cavity- narrow or roomy

Types of DNS:

- Deviation - C Shaped, S Shaped
- Anterior Dislocation
- Spurs - Angulation at the bony-cartilaginous junction
- Thickening of septum'

On Anterior Rhinoscopy:
Shows the deviations and its type. Compensatory hypertrophy of inferior terminate is seen opposite to deviated side

Investigations:

1. CBC
2. Random blood sugar
3. BT, CT
4. Serum Creatinine
5. Chest X-ray P/A view
6. X-Ray PNS O/M view (to see associated sinusitis)
7. ECG - if age >40yrs

Treatment:

Minor degrees - no treatment.
Surgical treatment includes:

- Septoplasty ± SMD/Cautery of inferior turbinate under G/A (All Ages)
- SMR under G/A (>17 years)

Post operative follow up:

1. Patient kept in left lateral position
2. Monitoring of P/T/R & bleeding
3. Nothing per oral for about 4 hours then soft cold diet
4. Adequate analgesics & antibiotics should given
5. ANS pack is usually removed after 24 hours
6. Nasal splint usually removed after 7 days
7. Patient is advised for nasal cleansing by saline water

Post operative complications:

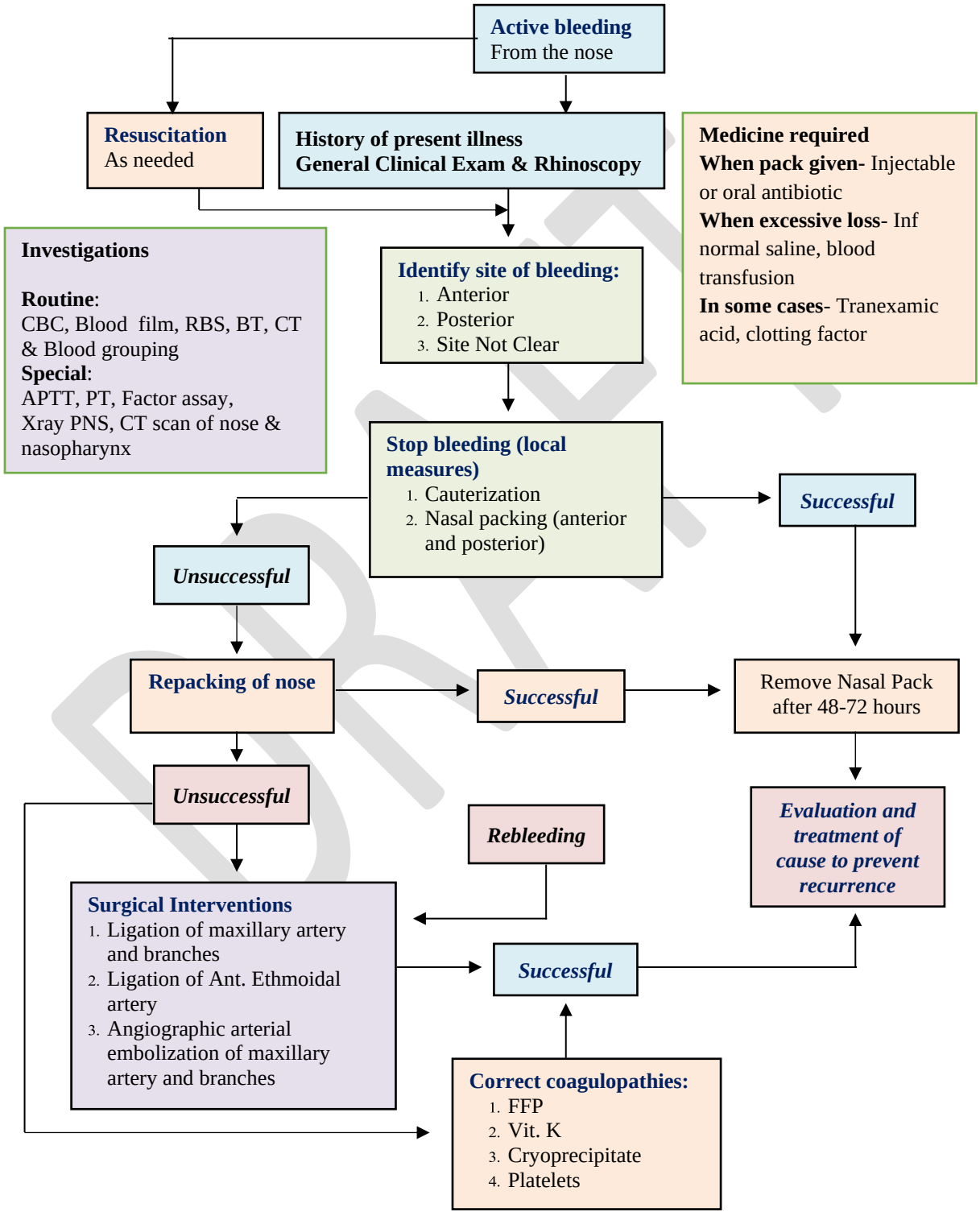
- Bleeding
- Septal hematoma
- Septal abscess
- Septal perforation
- Synechiae/adhesions
- Depression of nasal bridge
- Retraction of columella
- Saddle nose deformity

Treatment of Post-operative complications: If any

Epistaxis

Epistaxis: Bleeding from interior of nasal cavity and nasopharynx

Epistaxis Algorithm



Chronic Tonsillitis

Diagnosis by history and clinical examination

History
- H/O recurrent attack of sore throat
- Discomfort in the throat
- Unpleasant teste and bad smell in the mouth

Examination
General- Anaemia, Pulse, BP, Respiration, Heart, Lung
Local – Tonsil- enlarged or fibrosed
Anterior pillar – congested
Inspissated pus in tonsillar crypts
Jugulodigastric LN – palpable, non-tender

Investigations
- CBC
- BT, CT, Blood grouping
- HBs Ag, S. Creatinine
- Urine R/M/E
- Chest X-ray P/A view
- X ray Nasopharynx (lateral view)- in children
- ECG- if patient is > 40yrs

Indication of tonsillectomy:

- ✓ Repeated attacks of sore throat- 4-5 times/year- for >2 consecutive years.
- ✓ Huge enlargement of tonsil with interference to swallowing & respiration
- ✓ History of peritonsillar abscess (4 to 6 weeks after 2nd attack)
- ✓ Ulcer over tonsil suspected for malignancy
- ✓ Huge enlargement of tonsil producing sleep apnea syndrome

Medical treatment-

- ✓ Improvement of general health
- ✓ Treatment of coexisting infection of mouth, teeth, nose and sinuses by **antibiotic and analgesic**

Contraindications of tonsillectomy:

- ✓ Active infection/Acute exacerbations (e.g Acute Tonsillitis)
- ✓ Bleeding & clotting disorders
- ✓ Cervical spine pathology
- ✓ Endemic of Poliomyelitis
- ✓ Failure to control systemic disease like Hypertension, DM, Bronchial Asthma

Surgical Treatment- Tonsillectomy under G/A

Postoperative management

Treatment of complication- if present

Postoperative management-

- Please keep the patient in left lateral position
- Frequent check of vital signs- pulse, BP, respiration, temperature etc.
- Look for swallow reflex- if present indicates bleeding in tonsillar fossa
- Nothing by mouth for 4 hours- then soft cold diet
- Antibiotic- Inj. Ceftriaxone- 1-2 gm daily for 3 days then cap. Cefixime (200-400)mg bd for 7 days
- Analgesic and antiulcerant – Inj. Ketorolac / Clofenac suppository followed by tab Ketorolac or diclofenac orally for 5-7 days & Cap. Omeprazole 20 mg bd for 7 days
- Diluted hydrogen peroxide gurgling may be advised to keep the operation area clean
- Maintain good hydration

Complication of tonsillectomy:

- Hemorrhage:
  - ✓ Reactionary hemorrhage - within 24 hours of surgery
  - ✓ Secondary hemorrhage - within 2-14 days of surgery, Commonly within 5-7 days
- Aspiration of blood or saliva
- Injury to teeth, lips, gum, palate

Management of haemorrhage:

Reactionary haemorrage:

- Inspection of tonsillar fossa for any clot or bleeding point.
- Remove the clot & apply pressure with small pack held in artery forceps.
- Monitoring of the vital signs like-pulse, respiration, BP etc.
- Gurgle with hydrogen peroxide

✓ **If bleeding Stops:** Patient is kept under watch, hypovolemia and blood loss are treated

✓ **If bleeding persists:** call for consultant for Ligation or Cauterization of bleeding vessel under GA.

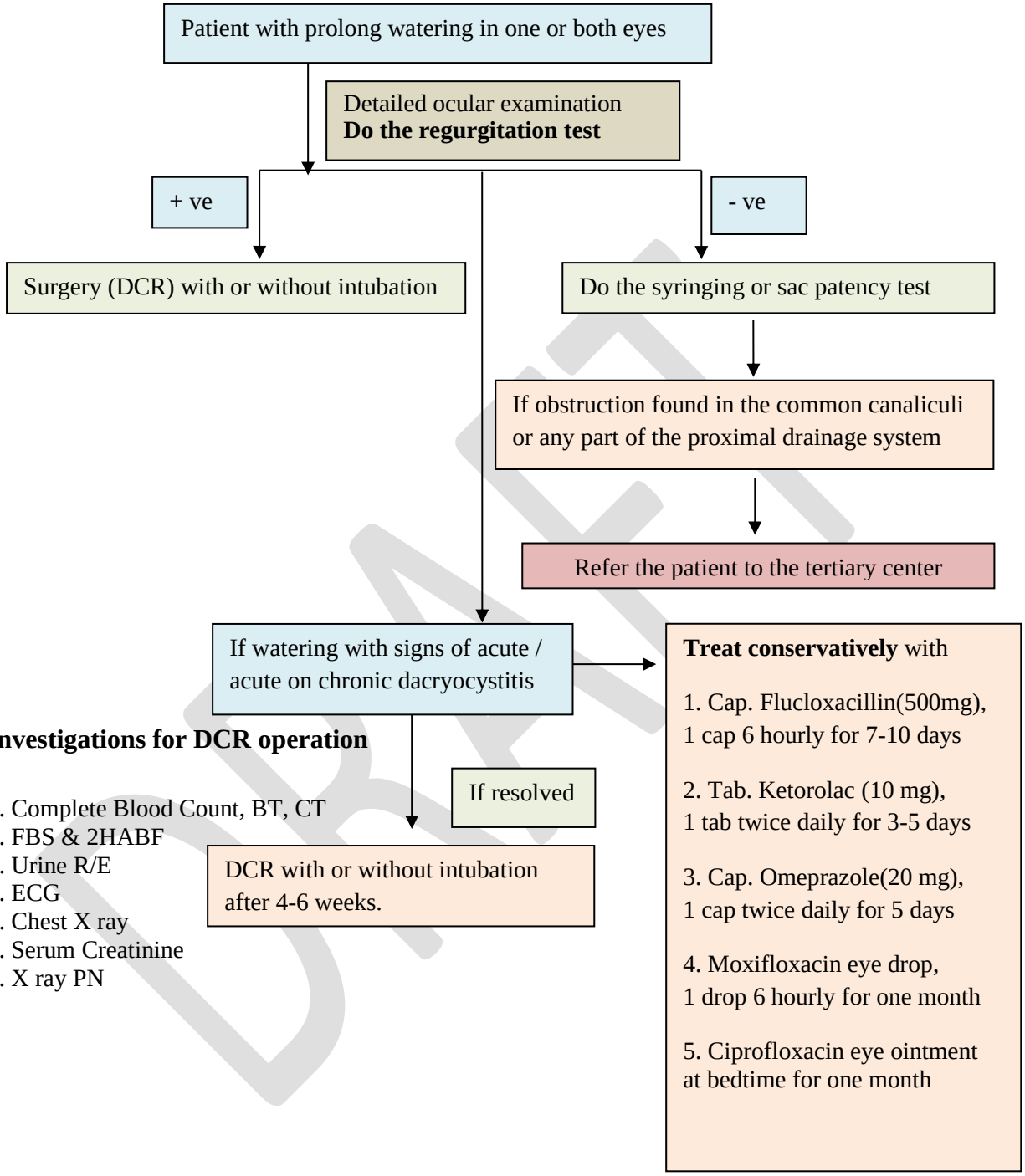
Secondary haemorrhage:

This is due to infection of the tonsillar fossa

- Swab from tonsillar fossa for c/s
- Parenteral broad-spectrum antibiotics - Inj. Ceftriaxone 1-2 gm IV for 7 days
- Cold liquid diet
- General management for reactionary hemorrhage

If bleeding persists then patient is shifted to operation theater & inter pillar suturing may be required.

Acute Dacrocystitis



Investigations for DCR operation

1. Complete Blood Count, BT, CT
2. FBS & 2HABF
3. Urine R/E
4. ECG
5. Chest X ray
6. Serum Creatinine
7. X ray PN

Acute Glaucoma

It is a sight-threatening ocular emergency

Diagnosis by symptoms & signs → **Treatment**

Symptoms

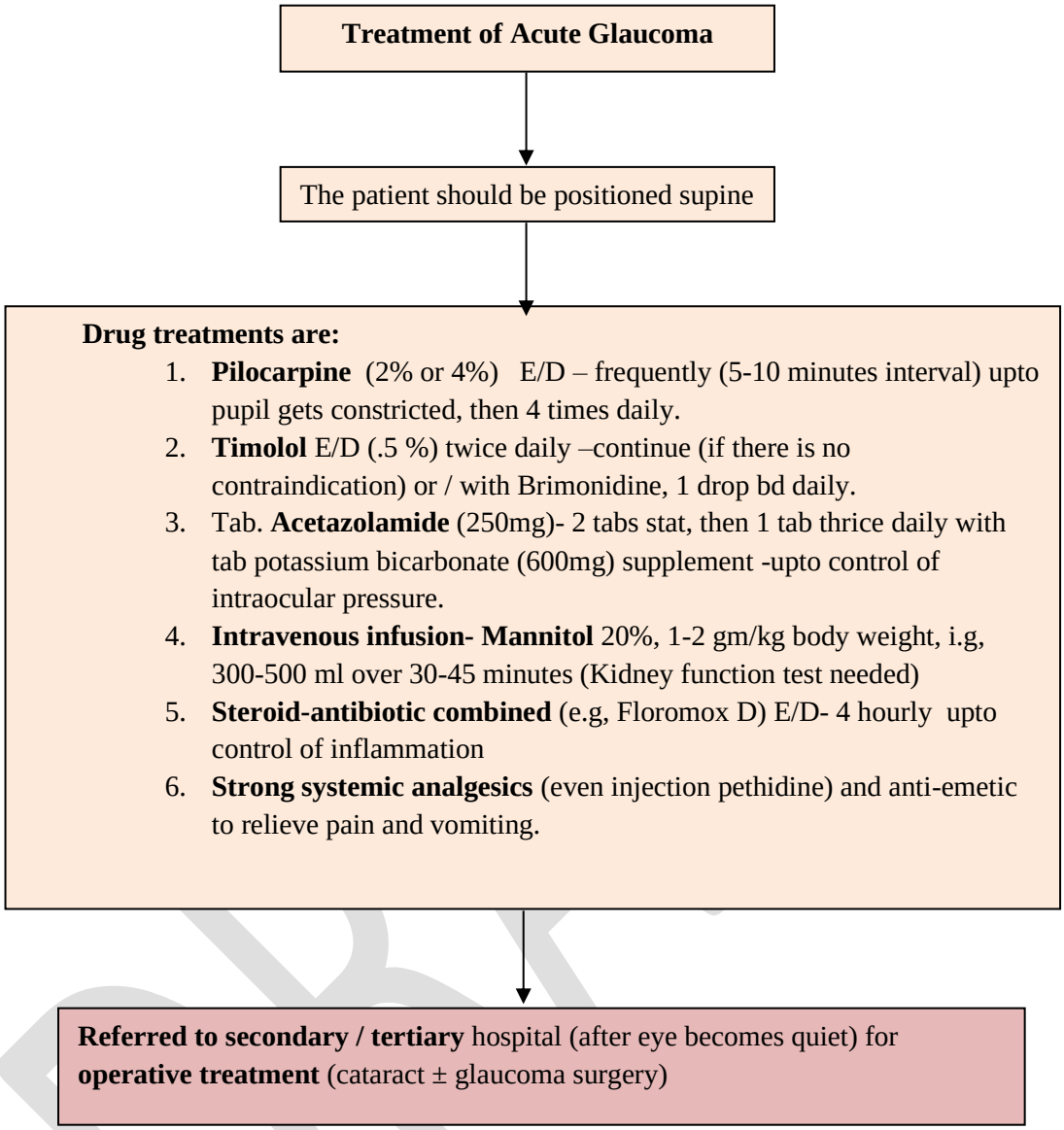
1. Sudden severe ocular pain.
2. Severe headache
3. Marked fall of vision
4. H/O gradually progressive loss of vision
5. Photophobia, redness
6. Nausea, vomiting (simulating acute abdomen)
7. Excessive watering

Signs

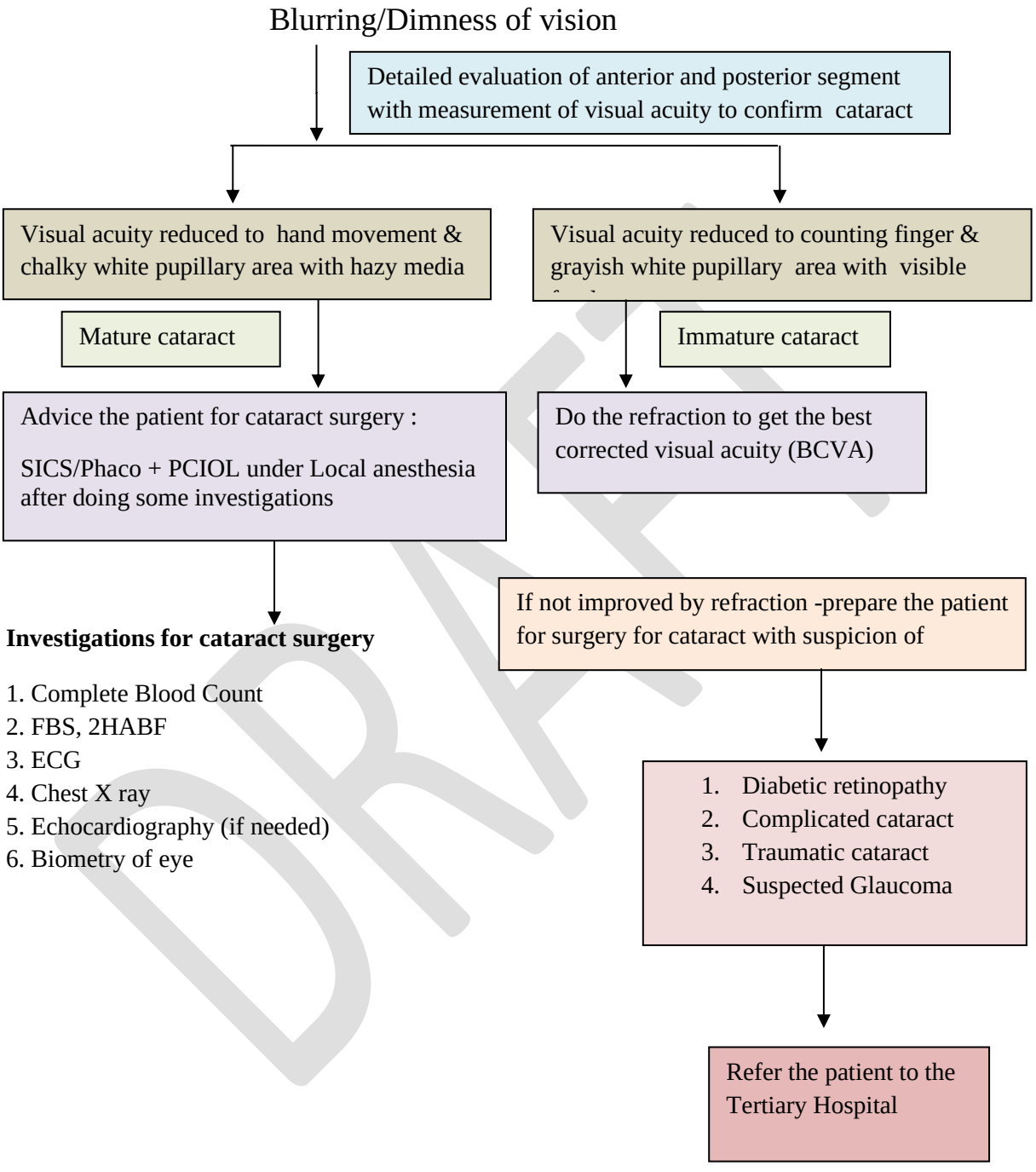
1. Vision-Reduced to PL (perception of light)/PR (projection of rays)
2. Eyeball-Tender
3. Eyelids-Swollen with narrowing palpebral apertures
4. Conjunctiva-Congested & chemosed
5. Cornea-Steamy/cloudy & insensitive
6. Anterior chamber-Very shallow
7. Pupil-Mid dilated, vertically oval & not reacting to light
8. Iris- Pattern is lost & discolored
9. IOP (Intra ocular pressure) highly raised
10. Fundus- Cannot be visualized due to hazy media

Common types:

1. Acute narrow angle glaucoma
2. Lens induced (phacomorphic) glaucoma (due to hypermature cataract) seen in elderly patients


Treatment of Acute Glaucoma
The patient should be positioned supine
Drug treatments are:
1. Pilocarpine (2% or 4%) E/D – frequently (5-10 minutes interval) upto pupil gets constricted, then 4 times daily.
2. Timolol E/D (.5 %) twice daily –continue (if there is no contraindication) or / with Brimonidine, 1 drop bd daily.
3. Tab. Acetazolamide (250mg)- 2 tabs stat, then 1 tab thrice daily with tab potassium bicarbonate (600mg) supplement -upto control of intraocular pressure.
4. Intravenous infusion- Mannitol 20%, 1-2 gm/kg body weight, i.g, 300-500 ml over 30-45 minutes (Kidney function test needed)
5. Steroid-antibiotic combined (e.g, Floromox D) E/D- 4 hourly upto control of inflammation
6. Strong systemic analgesics (even injection pethidine) and anti-emetic to relieve pain and vomiting.
Referred to secondary / tertiary hospital (after eye becomes quiet) for operative treatment (cataract ± glaucoma surgery)

Cataract (age related cataract)



Investigations for cataract surgery

1. Complete Blood Count
2. FBS, 2HABF
3. ECG
4. Chest X ray
5. Echocardiography (if needed)
6. Biometry of eye

Corneal Ulcer

Breach of continuity of the corneal epithelium superadded with organismal invasion

Keratitis: Inflammation of the cornea.

Symptoms: Pain, redness, watering, photophobia, white spot on the cornea, decreased vision with short duration

Diagnosed by detailed history and evaluation of anterior segment with slit lamp

Clinical Types & Symptomatic Assessment:

1. **Bacterial Infection**-Redness, watering & discharge.
2. **Viral Infection**- Redness, watering & severe photophobia
3. **Fungal Infection**- Redness, watering, discharge & H/O agricultural trauma (specially in harvesting season)

Clinical signs:

1. Lid edema
2. Circumciliary congestion
3. Corneal epithelial defect with infiltrate
4. Dendrite or punctate shaped lesions (in viral keratitis)
5. Dry, cheesy, grayish white infiltrate with feathery margin (in fungal keratitis)
6. Satellite lesions (in fungal keratitis)
7. Anterior chamber reaction present
8. Hypopyon (yellowish white colour & water level present- in bacterial corneal ulcer; thick, cheesy and no water level- in fungal corneal ulcer)

Clinical Tests: Clue for diagnosis:

1. Corneal sensitivity diminished -- (in favour of viral corneal ulcer).
2. Corneal smear with 10% KOH (+) ve - (in favour of fungal corneal ulcer)
3. More symptoms, less signs-- (in bacterial corneal ulcer) (patient looks very ill)
4. Less symptoms, more signs- (in fungal corneal ulcer) (patient not worried, not anxious)

Treatment

A. Bacterial Corneal Ulcer

1. **Intensive broad-spectrum topical antibiotic therapy**: Dose depends on severity of ulcer
   - **Monotherapy** with a Fluoroquinolone (Moxifloxacin / Levofloxacin / Gatifloxacin / Besifloxacin)
   - **Dual therapy** Combination of two antibiotics. For Gram-negative organisms- Gentamicin, Tobramycin etc & for Gram-positive organisms- Ciprofloxacin, Cephalosporin
   - **Topical fortified** (concentrated) drops, e.g, Fortified Gentamicin / Tobramycin 15 mg/ml or Fortified Cefuroxime / Cefazolin / Ceftazidime 50 mg/ml are most effective for moderate to severe cases
   - **Sub-conjunctival Injections** may be also given for moderate to severe cases. It may be mixed with injection Atropine. Gentamicin (20-40 mg) is usually preferred. Injections are given every 24 hour for about 5 days.
2. **Atropine (1%) E/D**- 1 drop 2-3 times daily
3. **Systemic Analgesic** like Diclofenac/Naproxen with anti ulcerant
4. **Anti-glaucoma medication**- if necessary.

B. Fungal Corneal Ulcer

1. **Local antimycotics**- Natamycin (eg. N Mycin/ Natoph) 5% one hourly, then tapered according to response
2. **Systemic antimycotics**: eg. Tab Ketoconazole/Fluconazole 200 mg b.i.d (in normal liver function)
3. **Atropine (1%)** E/D one drop 8 hourly
4. **Analgesics and anti-glaucoma medication**, if needed

C. Viral Corneal Ulcer

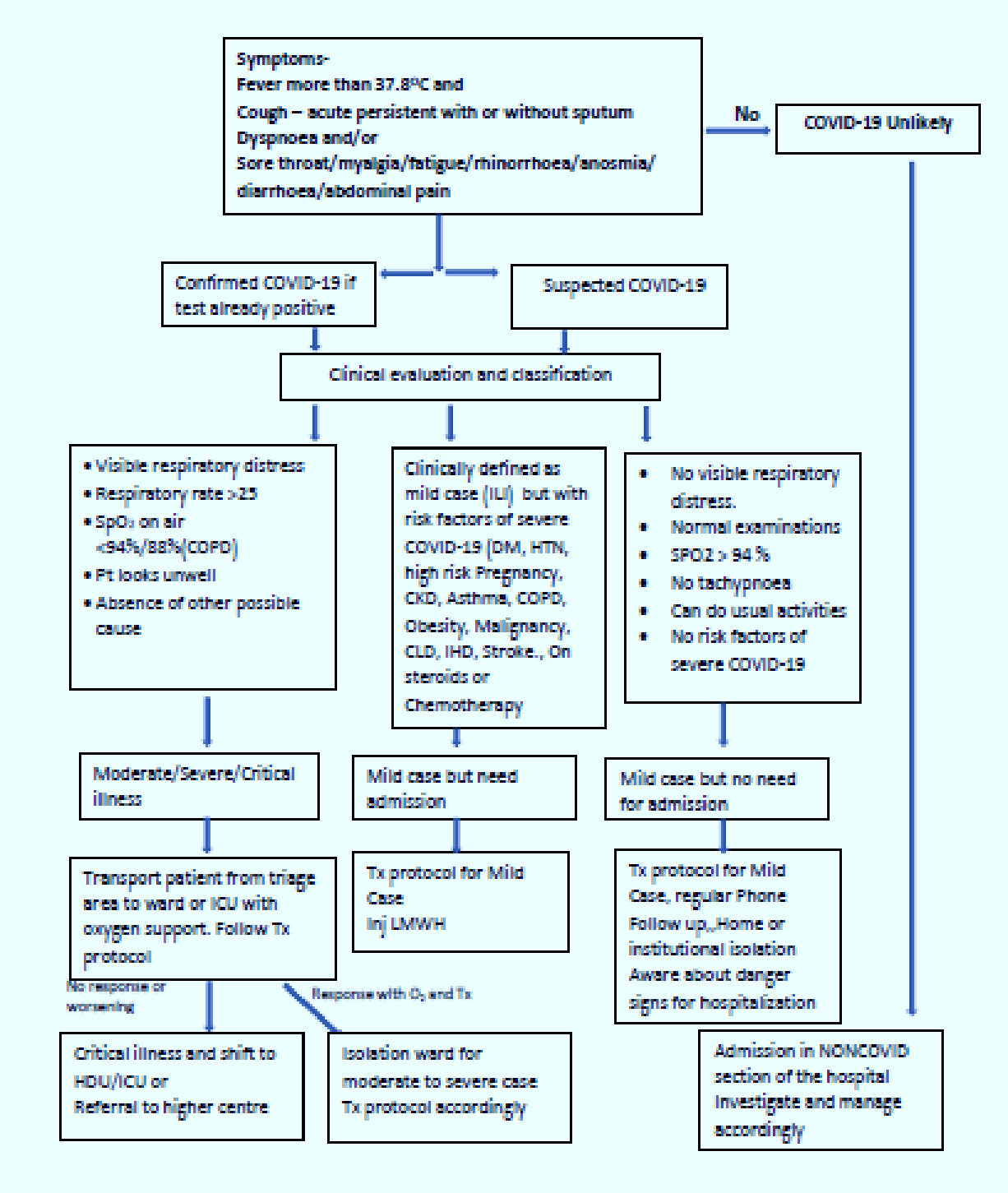
1. **Topical antiviral** - Acyclovir 3% (Clovir) or Ganciclovir 15 % (Xoviral) eye gel- 5 times a day for 4 weeks
2. **Artificial tear** (e.g, Sinafresh Liquigel) - 6 times daily for 8 weeks
3. **Mild Steroid** eye drops (e.g, Flurometholone E/D) (e.g, AFM) if no superadded infection- 4 times daily for 4 weeks
4. Use of **Photo-sunglass**
5. **Antibiotic**-If superadded infection- Moxifloxacin E/D (e.g, Moxigen) -4 times daily for 2/3 weeks (before steroid use).
6. **Vitamin C**-Tab. Vit-C- 12 hourly for 2 weeks.
7. **Systemic antiviral**- Tab. Acyclovir 800 mg five times daily or Valcyclovir 1gm for 5-7 days should be given in case of Herpes Zoster virus involvement
8. **Systemic steroids** to reduce severity of post herpetic neuralgia, optic neuritis, cranial nerve palsy in case of Herpes Zoster Ophthalmicus

Note1: *For all types of corneal ulcer, if medical treatment is non-responding & impending to perforation, surgery may be needed (in referral hospital) like-*

- *Tarsorrhaphy (temporary or permanent)*
- *Cauterization*
- *Conjunctival hooding*
- *Corneal debridement*
- *Tissue adhesion by cyanoacrylate glue with bandage contact lens (BCL)*
- *Keratoplasty (therapeutic)*

Note2: *For eye disease management (both medical and surgical), support services may be taken freely from targeted upazila/district hospitals, where National Eye Care (a priority based project of DGHS) facilities are available*

Coronavirus Disease-2019 (COVID-19)



Source: National Guideline Version 09, page 24

1. Treatment

a. Mild case (with no significant co-morbidity): at home or isolation ward

i) Symptomatic treatment only with paracetamol if temperature 1010F or more; antihistamine if rhinorrhea; antitussive if dry cough

ii) Isolation, rest, nutrition, monitor for alarm symptoms (respiratory distress: respiratory rate >24 or SPO2 < 94%, worsening cough and fever, altered mental status, extreme lethargy or unable to proper talk)

i) Ivermectin, Favipiravir, any form of thromboprophylaxis, vitamins, antibiotics and other respiratory medications are not recommended

b. Mild COVID 19 cases with risk factors:
Above + Enoxaparin 40 mg, SC, once daily (for obese patients,40 mg BID). Adjust dose when CrCl < 30ml/min or start Unfractionated heparin 5000 unit SC /day.

c. Moderate case:

i) Mild symptomatic Treatment Protocol, Plus

ii) Oxygen through nasal canula (Maximum 5 L/min) if required.

iii) Proning- Prone position at least 4-6 hrs/day

iv) LMW heparin Inj Enoxaparin 1mg/kg SC twice daily/ day (dose adjust with CrCl< 30ml/min). If LMWH cannot be given or contraindicated:

i. Inj Unfractionated heparin (UFH):

1. 60U/kg bolus+12units/kg/hr infusion-for ACS
2. 80U/Kg bolus +18units/kg/hr infusion-for VTE and AF

ii. Thromboprophylaxis should be given until symptom resolves or improves and followed by Tab rivaroxaban 10 mg once daily for 1 month

v) Antiviral: For moderate to severe cases who need oxygen therapy and/or are hospitalized, Inj Remdesivir has been advocated.

i. Dosage of Remdesivir: 200 mg IV infusion (within 30 min-2 hours) on Day 1 followed by 100 mg infusion (within 30 min to 2 hours) from Day 2 to Day 5.

Remdesivir should be used at the discretion of consultant working in the hospital.

vi) Any Moderate case on treatment – if no response or deterioration at 24 hours in hospital: Oral Dexamethasone 6 mg/day in single or two divided dose for 10 days

d. Severe case:

i) Oxygen therapy as required escalating from nasal canula (5L/min max.) to non-rebreather face mask (15L/min max.); then HFNC.

ii) Inj. Dexamethasone 6mg I.V. daily for 10 days

iii) Thromboprophylaxis as above

iv) Anti-viral as above

v) Broad spectrum antibiotics at the discretion of consultant working in the hospital.

vi) Consultant may consider Tocilizumab or Baricitinib where appropriate

2. Indications for referral

i) Severe and Critical COVID-19

ii) Respiratory distress (not due to over hydration) [ARDS].

iii) Persisting oliguria even after correction of dehydration.

iv) Multi organ failure.

v) Active bleeding.

Any serious Cardiovascular or Cerebrovascular disease (MI, stroke etc).