PEDIATRIC EPILEPSY

50. EPILEPSY IN CHILDREN

MCQ 50

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Most common pediatric seizure:** Febrile seizures (2-5% of children)
- **First-line status epilepticus:** IV Lorazepam 0.1 mg/kg (IM Midazolam if no IV)
- **Infantile spasms drug:** ACTH or Vigabatrin (TSC-associated)
- **Valproate contraindication:** Hepatotoxicity in <2 yrs with metabolic disorders
- **Wrong temptation:** Carbamazepine for absence seizures - worsens them

PATHOGNOMONIC SIGNS

- **Hypsarrhythmia:** Infantile spasms (West syndrome)
- **3 Hz spike-wave:** Childhood absence epilepsy
- **Rolandic spikes:** Benign epilepsy with centrotemporal spikes

Seizure Type	First-Line AED	Alternative	Avoid
Focal onset	Carbamazepine/Oxcarbazepine	Levetiracetam	Ethosuximide
Absence	Ethosuximide	Valproate	Carbamazepine
Generalized T-C	Valproate	Lamotrigine	Oxcarbazepine
Myoclonic	Valproate	Topiramate	Carbamazepine
Infantile spasms	ACTH/Vigabatrin	Prednisolone	Carbamazepine

STATUS EPILEPTICS MANAGEMENT (STEPWISE)

- 0-5 min: ABC, O2, glucose check
- 5-20 min: IV Lorazepam 0.1 mg/kg (repeat once)
- 20-40 min: Fosphenytoin 20 mg PE/kg OR Valproate 20-40 mg/kg OR Levetiracetam 60 mg/kg
- >40 min: Midazolam infusion OR Pentobarbital coma

INVESTIGATION ALGORITHM

- EEG (sleep-deprived, with photic stimulation)
- MRI brain (if focal, abnormal exam, or infantile spasms)
- Metabolic workup (lactate, ammonia, amino acids)
- Genetic testing (if dysmorphic features)

POST-OP CARE & COMPLICATIONS

- **AED side effects:** Rash (lamotrigine), weight gain (valproate), renal stones (topiramate)
- **SUDEP:** Sudden unexplained death in epilepsy
- **Weaning:** Seizure-free 2+ years, taper over 2-3 months

KMU EXAM TRAPS

- Carbamazepine worsens absence and myoclonic seizures
- Febrile seizures: No EEG/imaging for simple; LP if <12 mo with first complex seizure
- Infantile spasms: Treat urgently - delays cause poor neurodevelopment

VIVA RAPID-FIRE

- **Q:** MC seizure type in childhood? **A:** Complex partial
- **Q:** What is hypsarrhythmia? **A:** High-voltage chaotic EEG pattern
- **Q:** Drug for absence? **A:** Ethosuximide
- **Q:** When to start AED after first seizure? **A:** Abnormal EEG, symptomatic cause, status epilepticus

GOLDEN RULE / MNEMONIC

- **"V-CALM"** - Valproate (Generalized), Carbamazepine (Focal), Absence (Ethosuximide), Lamotrigine (Broad), Monitor levels
- **Status:** "5-20-40 Rule" - Benzo by 5, 2nd line by 20, Anesthesia by 40

PEDIATRIC MENINGITIS

BACTERIAL • VIRAL • NEONATAL • EMPIRIC ANTIBIOTICS • DEXAMETHASONE • LP CONTRAINDICATIONS KMU • FINAL YEAR MBBS

51. MENINGITIS IN CHILDREN

MCQ 51

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Kernig & Brudzinski:** Sensitivity only 50%; NOT sensitive in infants
- **Most common bacteria:** S. pneumoniae (all ages), N. meningitidis (children), GBS/E.coli (neonates)
- **CSF glucose normal:** >40 mg/dL or >2/3 serum glucose
- **Dexamethasone timing:** Before or with first antibiotic dose

Parameter	Bacterial	Viral	TB
Pressure	↑↑	N/↑	↑
WBC	>1000 PMNs	<500 Lymphs	100-500 Lymphs
Protein	>100 mg/dL	N/↑	↑↑
Glucose	↓↓ (<40)	Normal	↓↓
Gram stain	60-90%	Negative	AFB rare

Age	Empiric Therapy	Duration
0-1 month	Ampicillin + Gentamicin OR Ampicillin + Cefotaxime	14-21 days
1-3 months	Vancomycin + Ampicillin + Cefotaxime	10-14 days
3 months-18 yrs	Vancomycin + Ceftriaxone/Cefotaxime ± Ampicillin	10-14 days
Immunocompromised	Vancomycin + Meropenem + Ampicillin	Per organism

MANAGEMENT LADDER

1. **Stabilize:** ABC, IV access, glucose
2. **Empiric antibiotics:** Within 30 min of presentation
3. **Dexamethasone:** 0.15 mg/kg q6h x 2-4 days (before/with antibiotics)
4. **CT before LP?** Only if: Papilledema, focal deficits, seizure, immunocompromise, history of CNS disease

PATHOGNOMONIC SIGNS

- **Bulging fontanelle:** Infants (not always reliable)
- **Opisthotonus:** Severe meningeal irritation
- **Petechial rash:** Meningococcemia (Waterhouse-Friderichsen)
- **Paradoxical irritability:** Cries when held, quiet when left alone

COMPLICATIONS

- **Acute:** SIADH, seizures, DIC, shock
- **Subacute:** Subdural effusions, hydrocephalus
- **Long-term:** Hearing loss (pneumococcal), neurodevelopmental delay

KMU EXAM TRAPS

- Partially treated meningitis: CSF may look "viral" - treat as bacterial
- Neonatal meningitis: Ampicillin covers Listeria + GBS
- Contraindications to LP: Increased ICP (risk of herniation)

VIVA RAPID-FIRE

- **Q:** When to give dexamethasone? **A:** Before or with 1st antibiotic dose
- **Q:** CSF glucose in bacterial meningitis? **A:** <40 mg/dL or <40% serum
- **Q:** Most common sequelae? **A:** Sensorineural hearing loss

GOLDEN RULE

- **"30-Minute Rule"** - Antibiotics within 30 min. **"Amp-Gent for neonates, Vanc-Ceft for kids"**

MACROCEPHALY IN INFANCY

52. BIG HEAD (MACROCEPHALY)

MCQ 52

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Most common cause:** Benign Enlargement of Subarachnoid Space (BESS) in infancy
- **BESS:** Large head, normal development, normal/mildly enlarged ventricles
- **Hydrocephalus:** Sunsetting sign, irritability, bulging fontanelle
- **Measurements:** >2 SD above mean for age/sex = Macrocephaly

Category	Conditions	Key Features
Benign	BESS, Familial macrocephaly	Normal development, OFC >90th%, father often big head
Hydrocephalus	Obstructive, Communicating	Bulging fontanelle, sunsetting, vomiting
Megalencephaly	Canavan, Alexander, Sotos	Developmental delay, white matter changes
Metabolic	Mucopolysaccharidoses, GM2	Coarse facies, organomegaly, corneal clouding
Neoplastic	Plexus papilloma	Early onset rapid growth, hyperintense T2

INVESTIGATION ALGORITHM

1. **Head circumference:** Plot on WHO growth chart
2. **USG head (fontanelle):** First-line in infants
3. **MRI brain:** Gold standard - distinguishes BESS vs hydrocephalus
4. **Fundoscopy:** Papilledema (increased ICP)

MANAGEMENT - SURGICAL DECISION MAKING

Condition	Management	Procedure
BESS	Reassurance, f/u HC monthly	None (self-limiting by age 2)
Obstructive HCP	Immediate VP shunt/ETV	VP shunt (ventriculoperitoneal)
Plexus papilloma	Surgical resection	Craniotomy + excision
Craniosynostosis	Cranial vault remodeling	Endoscopic suturectomy (<6mo)

PATHOGNOMONIC SIGNS

- **Sunsetting eyes:** Parinaud syndrome (dorsal midbrain)
- **Cracked pot sign:** Macewen sign (separated sutures)
- **Transillumination:** Hydrocephalus, hydranencephaly

VP SHUNT COMPLICATIONS

- **Infection:** Staph epidermidis (most common) - treat with shunt removal + IV antibiotics
- **Obstruction:** Proximal (choroid plexus) or distal (peritoneal adhesions)
- **Overdrainage:** Subdural hematoma, slit ventricle syndrome

KMU EXAM TRAPS

- BESS vs SDH: BESS = frontal predominance, no mass effect
- Rapid HC crossing percentiles: Pathologic until proven otherwise
- Shunt malfunction: Symptoms of increased ICP - emergency!

VIVA RAPID-FIRE

- **Q:** Sunsetting eyes indicate? **A:** Dorsal midbrain compression
- **Q:** Most common cause big head in infant? **A:** Benign enlargement of subarachnoid space
- **Q:** VP shunt infection organism? **A:** Staphylococcus epidermidis

GOLDEN RULE / MNEMONIC

- **"H-M-B-S"** - Hydrocephalus, Megalencephaly, Benign familial, Skeletal/Metabolic
- **BESS:** Benign, Extra-axial fluid, Self-limiting, Symmetric frontal

HEREDITARY NEUROPATHIES

53. HEREDITARY MOTOR SENSORY NEUROPATHIES

MCQ 53

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Most common hereditary neuropathy:** CMT Type 1A (PMP22 duplication)
- **AD inheritance:** CMT1; AR inheritance: CMT4; X-linked: CMTX
- **Nerve conduction:** Demyelinating <38 m/s; Axonal >38 m/s
- **Classic triad:** Distal weakness, sensory loss, foot deformities

Type	Inheritance	NCV	Pathology	Key Features
HMSN I (CMT1)	AD	<38 m/s	Demyelination	Onion bulbs, hypertrophic nerves, pes cavus
HMSN II (CMT2)	AD/AR	>38 m/s	Axonal loss	No hypertrophy, later onset, less disability
HMSN III (D-S)	AR	<10 m/s	Severe demyelination	Infantile onset, severe disability, enlarged nerves
HMSN IV (Refsum)	AR	Slow	Demyelination	Retinitis pigmentosa, ataxia, high phytanic acid

PATHOGNOMONIC SIGNS

- **Inverted champagne bottle:** Distal leg wasting
- **Stork leg:** Severe distal wasting
- **Pes cavus:** High-arched foot (80% of CMT)
- **Hammer toes:** Clawing of toes
- **Enlarged nerves:** Palpable ulnar, peroneal nerves

SURGICAL MANAGEMENT

- **Orthopedic:** Tendon transfers, osteotomies for foot deformity
- **Timing:** Before fixed bony deformities develop
- **Soft tissue releases:** Plantar fascia release for cavus
- **Scoliosis:** Bracing if curve >20-25°

MANAGEMENT & GENETIC COUNSELING

- **Physical therapy:** Ankle-foot orthosis (AFO) for foot drop
- **Genetic testing:** PMP22 duplication (CMT1A), MPZ, GJB1 (CMTX)
- **Prenatal diagnosis:** Available for known mutations
- **Pain management:** Neuropathic pain agents (gabapentin)

KMU EXAM TRAPS

- CMT1 vs CMT2: NCV distinguishes (demyelinating vs axonal)
- HNPP: Hereditary neuropathy with liability to pressure palsies - episodic palsies
- Dejerine-Sottas: Severe infantile onset, AR, very slow NCV (<10 m/s)

VIVA RAPID-FIRE

- **Q:** Gene for CMT1A? **A:** PMP22 duplication on chromosome 17
- **Q:** Difference CMT1 vs CMT2? **A:** NCV <38 vs >38
- **Q:** Most common foot deformity? **A:** Pes cavus

GOLDEN RULE / MNEMONIC

- **"D-A-D"** - Demyelinating = AD (CMT1), Axonal = AR/AD (CMT2)
- **NCV Cutoff 38:** Below = Demyelinating, Above = Axonal

PEDIATRIC VOMITING

54. VOMITING IN PEDIATRICS

MCQ 54

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Bilious vomiting in newborn:** MALROTATION WITH VOLVULUS until proven otherwise - Surgical emergency
- **Non-bilious projectile vomiting:** Hypertrophic pyloric stenosis (2-8 weeks old)
- **"Olive" mass:** Palpable in HPS (50-70% cases)
- **Hypochloremic metabolic alkalosis:** Classic in HPS (loss of HCl)

Age	Non-Bilious	Bilious	Surgical Emergency?
Newborn	Overfeeding, GERD, metabolic	Malrotation/volvulus, atresia, meconium ileus	YES - Bilious
2-8 weeks	Pyloric stenosis, GERD	Malrotation, Hirschsprung	YES - Bilious
2-24 months	GERD, metabolic	Intussusception, incarcerated hernia	Intussusception/Hernia
Child	GE, migraine, metabolic	Appendicitis, obstruction	Appendicitis

INVESTIGATION ALGORITHM

- **Plain X-ray abdomen:** "Double bubble" (duodenal atresia), "Coffee bean" (volvulus)
- **Upper GI series:** Malrotation (ligament of Treitz right of spine), "Beak" (volvulus)
- **USG:** HPS (pyloric muscle thickness >4mm, length >14mm), intussusception (target sign)
- **Contrast enema:** Intussusception (coiled spring), Hirschsprung (transition zone)

Condition	Initial Management	Definitive Surgery
Pyloric stenosis	Correct alkalosis (NS + KCl)	Ramstedt pyloromyotomy
Intussusception	Air/contrast enema reduction	Surgery if perforation/failed
Malrotation/volvulus	Resuscitation, NG decompression	Ladd procedure
Duodenal atresia	NG decompression, IV fluids	Duodenoduodenostomy

PATHOGNOMONIC SIGNS

- **Pyloric stenosis:** Visible peristalsis, palpable olive
- **Intussusception:** Currant jelly stool, sausage-shaped mass, empty RLQ (Dance sign)
- **Malrotation:** Acute bilious vomiting, abdominal distension

POST-OP CARE & COMPLICATIONS

- **Pyloromyotomy:** Post-op vomiting (50% - edema), wound infection
- **Intussusception:** Recurrence (5-10%), perforation with enema
- **Ladd procedure:** Adhesive bowel obstruction, recurrence

KMU EXAM TRAPS

- Bilious vomiting = Surgical abdomen until proven otherwise
- HPS: Jaundice (2-5%) - "Icteropyloric syndrome" (glucuronyl transferase deficiency)
- Intussusception: Lead point in >2 years - Meckel, polyp, lymphoma

VIVA RAPID-FIRE

- **Q:** First step in HPS? **A:** Correct dehydration and metabolic alkalosis
- **Q:** Gold standard for intussusception? **A:** USG (target sign); treatment: air enema
- **Q:** Pyloric muscle thickness? **A:** >4 mm diagnostic on USG

GOLDEN RULE / MNEMONIC

- **"Bilious = Bad"** - Always surgical emergency until proven otherwise
- **"Project-ile needs Operation-tile"** - HPS needs surgery
- **Ladd procedure:** Detorse, Divide bands, broaden mesentery, Appendectomy

HYPERBILIRUBINEMIA

PHYSIOLOGIC • PATHOLOGIC • DIRECT • INDIRECT • PHOTOTHERAPY • EXCHANGE TRANSFUSION • KERNICTERUS KMU • FINAL YEAR MBBS

55. HYPERBILIRUBINEMIAS

MCQ 55

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Physiologic jaundice:** Term: day 2-3, peak <12.9 mg/dL; Preterm: peak <15 mg/dL
- **Breast milk jaundice:** Peak 2-3 weeks, persists 3-12 weeks, indirect bilirubin
- **Pathologic jaundice:** <24h, >12.9/>15, direct >1 mg/dL, persists >2 weeks
- **Kernicterus risk:** Indirect bilirubin >20-25 mg/dL (preterm >15-18)

Type	Causes
Indirect (Unconjugated)	Hemolysis (ABO, Rh, G6PD), Physiologic/Breast milk, Crigler-Najjar, Gilbert syndrome, Sepsis, Polycythemia
Direct (Conjugated) >20%	Biliary atresia (MC), Neonatal hepatitis, Choledochal cyst, TPN cholestasis, Cystic fibrosis, Metabolic (tyrosinemia)

Condition	Management	Specifics
Physiologic	Observation, phototherapy if exceeds curve	Bhutani nomogram
Pathologic indirect	Phototherapy, IVIG (if isoimmune), exchange	Phototherapy: 450-460 nm blue light
Biliary atresia	Kasai portoenterostomy	Best <60 days of age
Choledochal cyst	Cyst excision + Roux-en-Y hepaticojejunostomy	Type I most common

PATHOGNOMONIC SIGNS

- **Kernicterus:** Lethargy, poor suck, hypertonia (opisthotonus), high-pitched cry
- **Biliary atresia:** Acholic (white) stools, dark urine, hepatomegaly
- **ABO incompatibility:** Jaundice <24h, anemia, spherocytes on smear

PHOTOTHERAPY & EXCHANGE TRANSFUSION

- **Phototherapy:** Term >12 mg/dL; Preterm 8-10 mg/dL; Hemolysis - start earlier
- **Exchange:** Term >20-25 mg/dL or rising >0.5/hr, Signs of acute bilirubin encephalopathy
- **Double volume:** 2x blood volume (170 mL/kg), use O-neg blood cross-matched against mother

KMU EXAM TRAPS

- Direct hyperbilirubinemia is NEVER physiologic - always investigate
- Breast milk vs breastfeeding jaundice: Breast milk (day 3-5, lasts weeks) vs inadequate intake (day 2-3, dehydration)
- Kasai timing: >90 days old = poor outcome, liver transplant needed

VIVA RAPID-FIRE

- **Q:** Cutoff for pathologic jaundice in term? **A:** >12.9 mg/dL or <24h onset
- **Q:** MC cause of obstructive jaundice in neonate? **A:** Biliary atresia
- **Q:** Why phototherapy works? **A:** Converts indirect to water-soluble isomers (lumirubin)

GOLDEN RULE / MNEMONIC

- **"Direct is Dreadful"** - Always pathologic
- **"Kasai by Day 60"** - Surgery for biliary atresia must be before 60 days
- **Exchange: "20 is Plenty"** - Consider exchange at 20 mg/dL in term infants

MALABSORPTION & CELIAC DISEASE

56. MALABSORPTION & CELIAC DISEASE

MCQ 56

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Celiac triad:** Diarrhea, steatorrhea, failure to thrive (classic); Non-classic: Anemia, short stature, dental enamel defects
- **TTG-IgA:** Sensitivity/specificity >95%; always check total IgA first
- **Gold standard:** Duodenal biopsy showing villous atrophy, crypt hyperplasia, increased IELs
- **HLA association:** DQ2 (90%) or DQ8; negative makes celiac unlikely

DIAGNOSTIC ALGORITHM - CELIAC DISEASE

1. **Serology:** TTG-IgA + total IgA (if IgA deficient → TTG-IgG or DGP-IgG)
2. **EMA-IgA:** If TTG positive (confirms)
3. **HLA typing:** DQ2/DQ8 (if serology equivocal)
4. **Endoscopy with biopsy:** Multiple biopsies (bulb + duodenum)
5. **Histology:** Marsh classification (0=normal, 3a-c=villous atrophy)

PATHOGNOMONIC SIGNS

- **Dermatitis herpetiformis:** Pruritic papulovesicular rash (elbows, knees, buttocks)
- **Short stature:** Fall-off growth curve (presentation in 10%)
- **Dental enamel hypoplasia:** Permanent teeth only
- **Pot-belly:** Distended abdomen with wasted buttocks

Category	Conditions
Intestinal	Celiac, Crohn's, tropical sprue, SIBO
Pancreatic	Cystic fibrosis, Shwachman-Diamond, chronic pancreatitis
Hepatobiliary	Biliary atresia, cholestasis
Other	Lactose intolerance, post-infectious, food protein allergy

MANAGEMENT - GLUTEN-FREE DIET (GFD)

- **Diet:** Strict GFD (no wheat, barley, rye); oats if certified GF
- **Nutrition:** Iron, folate, B12, calcium, vitamin D supplementation
- **Follow-up:** Annual TTG-IgA, growth monitoring; TTG should normalize by 12 mo
- **Complications:** Refractory celiac (steroids), lymphoma, T-cell lymphoma

EXOCRINE PANCREATIC INSUFFICIENCY

- **Cystic fibrosis:** Most common cause; sweat chloride >60 mmol/L
- **Shwachman-Diamond:** Pancreatic insufficiency + bone marrow failure + metaphyseal dysostosis
- **Diagnosis:** Low fecal elastase-1 (<200 µg/g)
- **Treatment:** Pancreatic enzyme replacement (lipase 2500-4000 units/kg/meal)

KMU EXAM TRAPS

- IgA deficiency: 10x more common in celiac; TTG-IgA falsely negative
- Biopsy timing: Must be on gluten-containing diet (4-6 weeks)
- Marsh 1 lesion: Increased IELs only - not diagnostic of celiac

VIVA RAPID-FIRE

- **Q:** Best screening test for celiac? **A:** TTG-IgA with total IgA level
- **Q:** HLA types in celiac? **A:** DQ2 or DQ8 (negative virtually excludes)
- **Q:** Gold standard diagnosis? **A:** Duodenal biopsy with villous atrophy

GOLDEN RULE / MNEMONIC

- **"Gluten is the Enemy"** - Strict GFD only treatment
- **"TTG Tops"** - TTG-IgA is best screening test
- **Villous atrophy + Gluten + HLA-DQ2 = Celiac**

ACUTE DIARRHEA & GASTROENTERITIS

57. ACUTE DIARRHEA

MCQ 57

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Most common cause:** Rotavirus (unvaccinated), Norovirus
- **ORS composition:** Na+ 75, K+ 20, Cl- 65, Citrate 10, Glucose 75 mmol/L (WHO low-osmolarity)
- **Zinc supplementation:** <6 months: 10 mg/day; >6 months: 20 mg/day for 10-14 days
- **Antibiotics:** NOT routine - only for dysentery, cholera, severe malnutrition

Feature	No Dehydration	Some Dehydration	Severe Dehydration
General	Well, alert	Restless, irritable	Lethargic, unconscious
Eyes	Normal	Sunken	Sunken
Tears	Present	Absent	Absent
Mouth	Moist	Dry	Very dry
Thirst	Drinks normally	Thirsty, drinks eagerly	Drinks poorly/unable
Skin pinch	Goes back quickly	Goes back slowly	Goes back very slowly (>2 sec)
Treatment	Home/Plan A	ORS/Plan B	IV fluids/Plan C

MANAGEMENT - PLAN A, B, C

1. **Plan A (No dehydration):** Continue feeding, give extra fluids (ORS), zinc
2. **Plan B (Some dehydration):** 75 mL/kg ORS over 4 hours, reassess, zinc
3. **Plan C (Severe):** Ringer Lactate 30 mL/kg over 30 min (infants) or over 30 min (children), repeat if still severe, then 70 mL/kg over next 5 hours

PATHOGNOMONIC SIGNS

- **Cholera:** Rice water stools, massive watery diarrhea
- **Dysentery:** Blood/mucus in stool, tenesmus
- **Rotavirus:** Vomiting precedes diarrhea, fever
- **Shigella:** High fever, abdominal cramps, rectal prolapse

Condition	Antibiotic	Dose
Cholera (severe)	Azithromycin or Erythromycin	Azithro: 20 mg/kg single dose
Shigella dysentery	Ceftriaxone or Azithromycin	Ceftriaxone 50-100 mg/kg/day x 3-5d
Severe malnutrition	Ceftriaxone or Amoxicillin	Broad coverage for sepsis
Giardiasis	Metronidazole	15 mg/kg/day x 5-7 days

KMU EXAM TRAPS

- ORS never contraindicated: Even in cholera, can give ORS
- Antidiarrheals: Loperamide contraindicated <2 years; avoid in bloody diarrhea
- BRAT diet: Outdated - continue normal diet including milk
- Zinc: Reduces severity/duration - must give for 10-14 days

VIVA RAPID-FIRE

- **Q:** First step in diarrhea? **A:** Assess dehydration status
- **Q:** ORS osmolarity? **A:** 245 mOsm/L (low osmolarity)
- **Q:** Zinc dose >6 months? **A:** 20 mg daily x 10-14 days

GOLDEN RULE / MNEMONIC

- **"ORS is First, Antibiotics Last"** - Rehydration is key
- **"Zinc for 10"** - 10-14 days zinc reduces recurrence
- **Plan C:** "30-70 Rule" - 30 mL/kg fast, then 70 mL/kg slow

CHRONIC DIARRHEA

PERSISTENT • TODDLER'S DIARRHEA • SECRETORY • OSMOTIC • MALABSORPTION • IBD KMU • FINAL YEAR MBBS

58. CHRONIC DIARRHEA

MCQ 58

Primary reference: Nelson Textbook of Pediatrics

KMU MCQ PICKUP LINES

- **Definition:** Diarrhea >14 days (WHO) or >4 weeks (NASPGHAN)
- **Most common cause 1-3 years:** Toddler's diarrhea (chronic nonspecific diarrhea)
- **Fat malabsorption:** Stool spot shows neutral fat (>60 globules/hpf)
- **Carbohydrate malabsorption:** Stool pH <6, positive reducing substances

Type	Mechanism	Causes	Stool Characteristics
Osmotic	Non-absorbed solutes	Lactose intolerance, laxatives, Mg	Decreases with fasting, acidic pH
Secretory	Active secretion	Toxins (cholera), VIPoma, IBD	Large volume, persists with fasting, nocturnal
Malabsorptive	Nutrient malabsorption	Celiac, CF, abetalipoproteinemia	Steatorrhea, foul, greasy, bulky
Dysmotility	Altered motility	Toddler's diarrhea, IBS, Hirschsprung	Variable, mucus

Age	Common Causes	Red Flags (Need Workup)
Neonate	Infectious, Hirschsprung, CSD	Bloody, bilious, FTT, <3 weeks onset
Infant	Post-infectious, food allergy, CSD	Severe dehydration, acidosis
Toddler	Toddler's diarrhea, celiac, IBD	Nocturnal diarrhea, blood, FTT
Child	IBD, celiac, IBS, disaccharidase def	Arthritis, perianal disease, pubertal delay

PATHOGNOMONIC SIGNS

- **Toddler's diarrhea:** Stool only while awake, normal growth
- **Celiac:** Distended abdomen, wasted buttocks, dermatitis herpetiformis
- **IBD:** Oral ulcers, perianal tags/fistulas, growth failure
- **Hirschsprung:** Delayed meconium (>48h), enterocolitis

INVESTIGATION ALGORITHM

1. **Stool studies:** Culture, O&P, C.diff toxin, pH, reducing substances, occult blood, leukocytes
2. **Labs:** CBC (anemia, eosinophils), ESR/CRP (inflammation), albumin, electrolytes
3. **Specific tests:** TTG-IgA (celiac), sweat test (CF), fecal elastase (pancreatic)
4. **Imaging:** AXR (constipation), Barium enema (Hirschsprung), MRE (IBD)
5. **Endoscopy:** Colonoscopy with biopsies (IBD, microscopic colitis), EGD (celiac)

TODDLER'S DIARRHEA (CHRONIC NONSPECIFIC DIARRHEA)

- **Definition:** 1-3 years, >3 loose stools/day >4 weeks, normal growth
- **Pathogenesis:** Excess fruit juice (fructose, sorbitol), low fat intake, rapid transit
- **Management:** Reassurance, reduce juice, increase fat to 35-40% calories, normalize fiber
- **Prognosis:** Resolves by age 4 in 90%

KMU EXAM TRAPS

- Toddler's diarrhea: Do NOT restrict diet or use antidiarrheals
- Secretory vs Osmotic: Fasting stool osmotic gap; Secretory continues with fasting
- Post-infectious: Secondary lactase deficiency common - trial lactose-free
- Nocturnal diarrhea: Always organic (except IBD can wake patient)

VIVA RAPID-FIRE

- **Q:** MC cause chronic diarrhea 1-3 years? **A:** Toddler's diarrhea
- **Q:** Differentiate osmotic vs secretory? **A:** Response to fasting, stool osmotic gap
- **Q:** Treatment toddler's diarrhea? **A:** Reduce juice, increase fat, reassurance

GOLDEN RULE / MNEMONIC

- **"Fat is Friend"** - In toddler's diarrhea, increase fat to 35-40%
- **"Nocturnal is Never Normal"** - Organic cause if wakes to stool
- **"SOS"** - Secretory (ongoing), Osmotic (stops fasting), Steatorrhea (malabsorption)