Virtual PediaRaRe 5.0

Management of Medically Compromised Children in Pediatric Dental Patients

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CARDIAC DISEASE

What are the pediatric cardiac disease
Prevalence
Unique challenges in dental management

CARDIAC DISEASE IN CHILDREN

Classification

Congenital Heart Defects

Cyanotic:
Tetralogy of Fallot, transposition of the great arteries, tricuspid atresia.

Acyanotic:
atrial septal defect, ventricular septal defect, patent ductus arteriosus.

Acquired Heart Diseases

Infectious: rheumatic heart disease

Cardiomyopathies: hypertrophic cardiomyopathy or dilated cardiomyopathy.

Arrhythmias: These are abnormal heart rhythms, including tachycardia (rapid heart rate) and bradycardia (slow heart rate).

Coronary Artery Disease: While less common in children, coronary artery disease can occur due to factors like high cholesterol or diabetes.

Functional Heart Murmurs: These are harmless heart sounds that are often heard in children but do not indicate a heart problem.

Genetic Heart Diseases: Marfan syndrome or Noonan syndrome.

Clinical Manifestations

Physical Signs

Cyanosis: Bluish discoloration of the lips, nails, or extremities, especially during exertion.

Fatigue or easy fatigability

Frequent infections

Delayed growth or development

Murmurs

Dental Signs

Dental caries or periodontal disease

Delayed eruption of teeth

Bleeding gums

Behavioral Signs

Anxiety or fear of dental procedures

Difficulty tolerating dental procedures: Some children with cardiac disease may have difficulty tolerating dental treatments due to their underlying condition.

Acyanotic	Incidence	Cyanotic	Incidence
Atrial septal defect (ASD)	5-10%	Transposition of great arteries	5%
Ventricular septal defect (VSD)	33%	Tetralogy of Fallot	5-10%
Atrioventricular septal defects	2-5%	Tricuspid atresia	1%
Persistent ductus arteriosus (PDA)	5-12%	Truncus arteriosus	0.5-2%
Pulmonary stenosis (PS)	5-10%		
Coactation of aorta	6-12%		

Hughes S, Balmer R, Moffat M, Willcoxson F. The dental management of children with congenital heart disease following the publication of Paediatric Congenital Heart Disease Standards and Specifications. British dental journal. 2019 **Mar;226(6):447-52.**

Dental Management – AAPD GUIDELINES

ANTIBIOTIC PROPHYLAXIS

Table 4. AP FOR A DENTAL PROCEDURE: UNDERLYING CONDITIONS FOR WHICH AP IS SUGGESTED

Prosthetic cardiac valve or material
Presence of cardiac prosthetic valve
Transcatheter implantation of prosthetic valves
Cardiac valve repair with devices, including annuloplasty, rings, or clips
Left ventricular assist devices or implantable heart
Previous, relapse, or recurrent IE
CHD
Unrepaired cyanotic CHD, including palliative shunts and conduits
Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by transcatheter during the first six months after the procedure
Repaired CHD with residual defects at the site of or adjacent to the site of a prosthetic patch or prosthetic device
Surgical or transcatheter pulmonary artery valve or conduit placement such as Melody valve and Contegra conduit
Cardiac transplantation recipients who develop cardiac valvulopathy
AP for a dental procedure not suggested
Implantable electronic devices such as a pacemaker or similar devices
Septal defect closure devices when complete closure is achieved
Peripheral vascular grafts and patches, including those used for hemodialysis
Coronary artery stents or other vascular stents
CNS ventriculoatrial shunts
Vena cava filters
Pledgets

American Academy of Pediatric Dentistry. Antibiotic prophylaxis for dental patients at risk for infection. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2022:500-6.

Table 1. ANTIBIOTIC REGIMENS FOR A DENTAL PROCEDURE REGIMEN: SINGLE DOSE 30 TO 60 MINUTES BEFORE PROCEDURE

Situation	Agent	Adults	Children
Oral	Amoxicillin	2 g	50 mg/kg
Unable to take oral medication	Ampicillin OR	2 g IM or IV	50 mg/kg IM or IV
	Cefazolin or ceftriaxone	1 g IM or IV	50 mg/kg IM or IV
Allergic to penicillin or ampicillin —oral	Cephalexin*† OR	2 g	50 mg/kg
	Azithromycin or clarithromycin OR	500 mg	15 mg/kg
	Doxycycline	100 mg	< 45 kg, 2.2 mg/kg > 45 kg, 100 mg
Allergic to penicillin or ampicillin and unable to take oral medication	Cefazolin or ceftriaxone†	1 g IM or IV	50 mg/kg IM or IV

Clindamycin- Clostridioides difficile Infection

American Academy of Pediatric Dentistry. Antibiotic prophylaxis for dental patients at risk for infection. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2022:500-6.

Antibiotic prophylaxis recommended for following dental procedures:

- Dental extractions, periodontal procedures, endodontic surgery beyond the apex, dental implant placement and reimplantation of avulsed teeth, initial placement of orthodontic bands, local anesthetic injections, and prophylactic teeth cleaning where bleeding is anticipated.

Antibiotic prophylaxis is NOT recommended for the following dental procedures:

- Routine anesthetic injections through non-infected tissue, taking dental radiographs, placement of removable prosthodontic or orthodontic appliances, adjustment of orthodontic appliances, placement of orthodontic brackets, shedding of primary teeth, and bleeding from trauma to the lips or oral mucosa.

Jiménez Y, Poveda R, Gavaldá C, Margaix M, Sarrión G (2008) An update on the management of anticoagulated patients programmed for dental extractions and surgery. Med Oral Patol Oral Cir Bucal. Mar 1;13(3):E176-9.

RENAL DISEASES

Types of renal diseases
Renal tests
Clinical Features
Management

Acute Kidney Injury (AKI)
Pre-renal: dehydration, shock, heart failure.
Intra-renal: infections, inflammation, or toxins.
Post-renal: Obstruction of the urinary tract - kidney stones
Symptoms of AKI may include:
Decreased urine output
Swelling (edema)
Fatigue
Nausea and vomiting
Shortness of breath
Confusion

Nephrotic syndrome :characterized by the leakage of large amounts of protein from the kidneys into the urine.
swelling, fatigue, and foamy urine.
damage to the filtration membrane of the kidneys
Minimal change nephrotic syndrome (MCNS): Tuberculosis, syphilis, mycoplasma, ehrlichiosis, hepatitis C virus
Neoplasms: Hematologic malignancies, including leukemia, Hodgkin and NH lymphoma
Focal segmental glomerulosclerosis (FSGS): involves scarring of parts of the kidney's filtration units
Congenital nephrotic syndrome
Secondary nephrotic syndrome: caused by other underlying conditions such as infections, medications, autoimmune diseases, systemic diseases.

Congenital Kidney defects:
Agenesis
Dysplasia
Hypoplasia
Polycystic kidney disease (PKD): The presence of multiple cysts in the kidneys.
Horseshoe kidney: The fusion of the lower poles of the kidneys into a horseshoe shape.
Ectopic kidney: pelvis or abdomen.
Duplication: The presence of an extra kidney or an extra ureter

Hemolytic uremic syndrome (HUS) is a serious condition that affects the kidneys, blood cells, and blood clotting system.
It is most commonly caused by an infection with Escherichia coli (E. coli) bacteria

1. Tests to Assess Kidney Function

Blood tests:

- Creatinine, Blood urea nitrogen , GFR- Estimates the rate at which the kidneys filter blood.

Urine tests:

- Urinalysis: protein, blood, glucose, and other substances in the urine.
- Urine specific gravity: Measures the concentration of urine.

2. Tests to Evaluate Kidney Structure

Imaging studies:

- Ultrasound, CT scan , MRI

3. Tests to Diagnose Specific Kidney Diseases

Renal biopsy, Proteinuria tests, Immunological tests

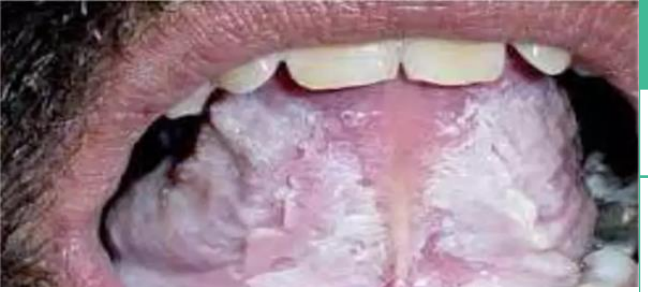
4. Tests to Monitor Treatment Response

Serial blood and urine tests

Imaging studies

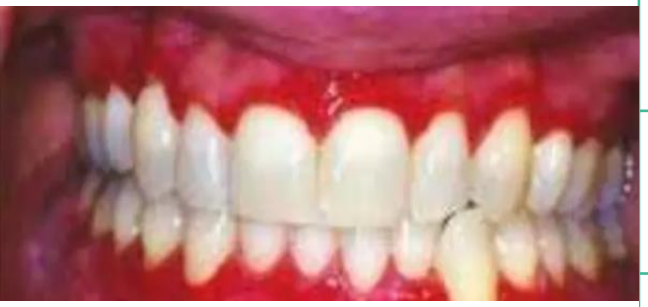
Oral symptoms in renal disorder patients

SYMPTOMS	ETIOLOGY
Gingival inflammation and plaque accumulation	Poor oral hygiene
Xerostomia	Low salivary flow rate, long term medication use
Disease related debilitation, hypoplastic enamel	Disruptions during stages of tooth development
Increased risk of caries	Carbohydrate-rich diet (necessary to reduce the renal workload)
Gingival hyperplasia	Due to medications

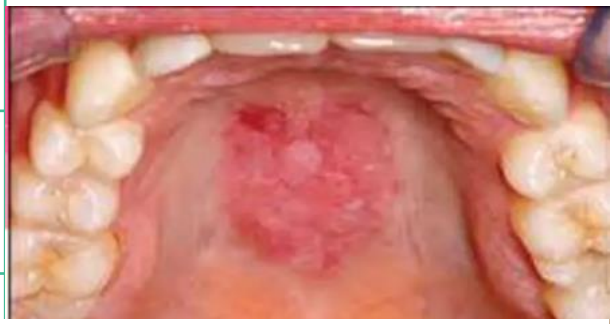


URAEMIC STOMATITIS

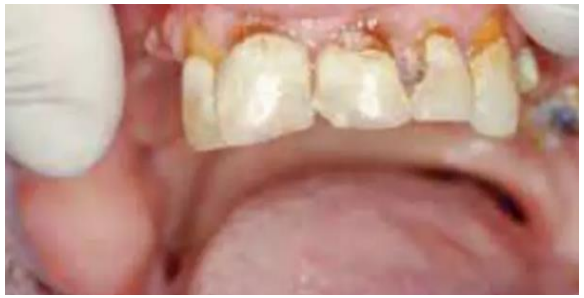
DRUG INDUCED GINGIVAL HYPERPLASIA



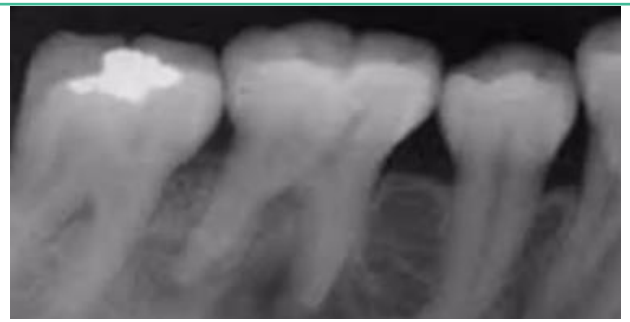
GINGIVITIS



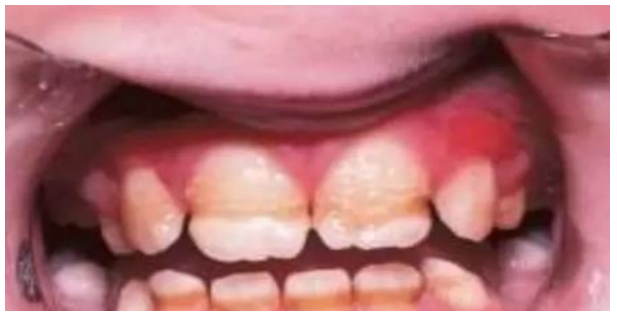
PALATAL ECCHYMOSIS



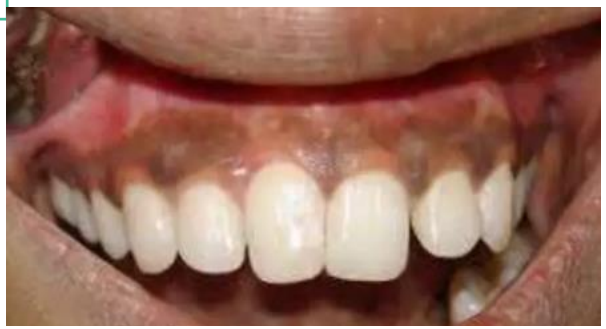
XEROSTOMIA



OSTEODYSTROPHY



ENAMEL HYPOPLASIA



PIGMENTATION

Subramaniam P, gupta M, mehta A. Oral health status in children with renal disorders. Journal of clinical pediatric dentistry. 2013. 37(1);89-94.
Gupta M, Gupta M, Abhishek. Oral conditions in renal disorders and treatment considerations - A review for pediatric dentist. Saudi Dent J. 2015 Jul;27(3):113-9.

Gingival hyperplasia with renal drugs

E Gómez, M Sánchez-Nuñez, J E Sánchez, C Corte, S Aguado, C Portal, J Baltar, J Alvarez-Grande, Treatment of **cyclosporin-induced gingival hyperplasia with azithromycin.**, *Nephrology Dialysis Transplantation*, Volume 12, Issue 12, Dec 1997, Pages 2694–2697

WALKER, R. G., COTTRELL, S., SHARP, K., TRIPODI, R., NICHOLLS, K. M., FRASER, I., VARIGOS, G. A., & BUTCHER, B. E. (2007). Conversion of cyclosporine to **tacrolimus** in stable renal allograft recipients: Quantification of effects on the **severity of gingival enlargement** and hirsutism and patient-reported outcomes. *Nephrology*, *12*(6), 607-614.

Dental Considerations

Amide type of anesthetics are recommended due to their reabsorption potential in the liver

Aspirin and other NSAIDs analgesics avoided since they aggravate GI irritation and bleeding associated with CRF.

Dental considerations	Precautions/ Recommendations
Invasive dental treatment	Prophylactic antibiotics
Electrolyte disturbances complication - GA	Treat under LA
While administering nerve block	Bleeding tendency excluded Hemostatic agent ready during extraction
Moderate renal impairment lead to fluoride retention	Additional fluoride – avoided
On creatinine increase	Intramuscular injection avoided

1. Sulejmanagić H, Sulejmanagić N, Prohić S, Secić S, Miseljić S. Dental treatment of patients with kidney diseases-review. Bosn J Basic Med Sci. 2005 Feb;5(1):52-6.

2. DE ROSSI, SCOTT S. et al. The Journal of the American Dental Association, Volume 127, Issue 2, 211 – 219

3. Nirmala SVSG. Dental Considerations and Management of Children with Renal Diseases - An Over View. Austin J Dent. 2018; 5(6): 1122.

Key Considerations for long term corticosteroid in children

- **Adrenal Suppression**
- **Increased Risk of Infection:** Corticosteroids suppress the immune system, making patients more susceptible to infections
- **Delayed Wound Healing:** Corticosteroids can impair wound healing, increasing the risk of complications after dental procedures
- **Osteoporosis:** Long-term corticosteroid use can lead to osteoporosis, increasing the risk of fractures.

Patients under dialysis

- Treatment of haemodialysis patients on non-dialysis days to ensure absence of circulating heparin.
- Prefer use of local anaesthetics with reduced epinephrine in all dialysis patient
- Meticulous local haemostatics measures, including mechanical pressure, packing, suturing and topical thrombin, may be required,- platelet dysfunction that often occurs in patients with renal failure
- Desmopressin -synthetic vasopressin ---controls severe bleedings.
- Conjugated oestrogen achieves longer haemostasis. Tranexamic acid for oral rinse
- **non-steroidal anti-inflammatory, morphine, codeine, meperidine, dextropropoxyphene to be avoided.**
- **Acetaminophen, with adjuvants if needed gabapentin, Pregabalin, Tricyclic antidepressants can be used.**

5% oral solution can be prepared by diluting 5 mL of tranexamic acid with 5 mL of sterile water.

Livio M, Mannucci PM, Viganò G, Mingardi G, Lombardi R, Mecca G, Remuzzi G. Conjugated estrogens for the management of bleeding associated with renal failure. N Engl J Med. 1986 Sep 18;315(12):731-5.

Reis A, Luecke C, Davis TK, Kakajiwala A. **Pain Management in Pediatric Chronic Kidney** Disease. J Pediatr Pharmacol Ther. 2018 May-Jun;23(3):192-202.

Patient of renal transplant

1. Evaluate and eliminate the foci of infection before transplant.

2. All the elective dental procedures should be avoided first 6 months post renal transplant.

3. Prophylactic antibiotic therapy is mandatory.

4. A recommended dose of 25 mg of **hydrocortlume(synthetic cortisol steroid)** via IV route before the procedure.

5. Uremic stomatitis can be treated with 10% hydrogen peroxide gargles (1:1 in water) 4 times a day.

Albagieh H, Alosimi A, Aldhuhayan A, AlAbdulkarim A, Fatani B, Alabood A. Dental management of patients with renal diseases or undergoing renal transplant. Saudi Dent J. 2024 Feb;36(2):270-276.

Renal disease associated with AI

Nephrotic syndrome

Alport syndrome

Dent-1 disease A rare genetic condition that affects the teeth and kidney

Farias MLM, Ornela GO, de Andrade RS, Martelli DRB, Dias VO, Júnior HM. Enamel Renal Syndrome**: A Systematic Review.** Indian J Nephrol. 2021 Jan-Feb;31(1):1-8.

Ravi P, Ekambaranath TS, Arasi SE, Fernando E. **Distal renal tubular acidosis and amelogenesis imperf ecta:** A rare association. Indian J Nephrol 2013;23:452-5..

EPILEPSY

Types

Etiology

Management

AED

Epilepsy is a chronic disorder characterized by recurrent unprovoked seizures.

An epileptic seizure refers to transient occurrence of signs and or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. The epileptic seizure may be characterized by sensory, motor or autonomic phenomena with or without loss of consciousness.

Types of Seizures

There are many different types of seizures, but they can generally be classified into two main categories:

Focal seizures: These are seizures that begin in a specific area of the brain. They can cause a variety of symptoms, depending on the part of the brain that is affected.

Generalized seizures: These are seizures that affect the entire brain. They can cause loss of consciousness, muscle jerking, and other symptoms.

Etiology of epilepsy based on age groups

Young infants
- Metabolic disturbances
- Congenital brain malformations
- Infection
- Perinatal intracranial trauma
- Hypoxia or birth asphyxia

Children and adolescents
- Idiopathic
- Infection
- Trauma

Phenylketonuria (PKU),Maple syrup urine disease , Galactosemia ,Pyruvate dehydrogenase deficiency

Polymicrogyria: many folds in the brain's cortex.
Lissencephaly: smooth brain surface, lacking the normal folds and grooves.
Schizencephaly: clefts or gaps in the cerebral cortex.
Tuberous sclerosis: genetic disorder -non-cancerous tumors to grow in various organs, including the brain
Hemangioma
Hydrocephalus

Precipitating/triggering factors for seizure

Hunger
- Stress
- Fever
- Hormonal disturbance
- Photosensitivity
- Sleep deprivation Infection
- Metabolic disturbance

Klein P, van Passel-Clark LM, Pezzullo JC. **Onset of epilepsy at the time of menarche**. Neurology. 2003 Feb 11;60(3):495-7.

Measures to minimize injury when a child patient has an attack of epilepsy in the dental setup

- The attendant should stay calm and remain with the patient.
- Clear the area around -anything hard or sharp to prevent injury.
- Roll the patient to side immediately -help the patient breathe and prevent the aspiration of foreign objects.
- Place the dental chair in a supported, supine position as near to the floor as possible.
- If the patient is not on the chair, - head should be protected by placing something soft and flat, like a foldable jacket, shirt, towel under the head.
- Do not restrain during convulsions -might cause difficulty in breathing.
- Fingers should not be placed in mouth because of the risk of being bitten.
- Eyeglasses must be removed
- Anything around the neck, like a necktie, scarf -should be loosened.

Goswami M, Johar S, Khokhar A. Oral health considerations and dental management for epileptic children in pediatric dental care. International Journal of Clinical Pediatric Dentistry. 2023 Jan;16(1):170.)

AED used in children

Valproic acid: Effective for both generalized and focal seizures.
Levetiracetam: A newer AED that can be used for various seizure types.
Phenytoin: A classic AED that has been used for many years.
Carbamazepine
Lamotrigine: A newer AED that can be used for both generalized and focal seizures.
Topiramate: Can be used for a variety of seizure types, including absence seizures.
Zonisamide: Effective for partial-onset seizures and generalized tonic-clonic seizures.
Oxcarbazepine: A newer AED that can be used for partial-onset and generalized tonic-clonic seizures.
Ethosuximide

Suneja B, Chopra S, Thomas AM, Pandian J. A Clinical Evaluation of Gingival Overgrowth in Children on Antiepileptic Drug Therapy. J Clin Diagn Res. 2016 Jan;10(1):ZC32-6.

Diabetes mellitus

Classification
Diagnosing
Clinical features
Management

Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both

Etiological Classification

The American Diabetes Association's Expert Committee (1999)

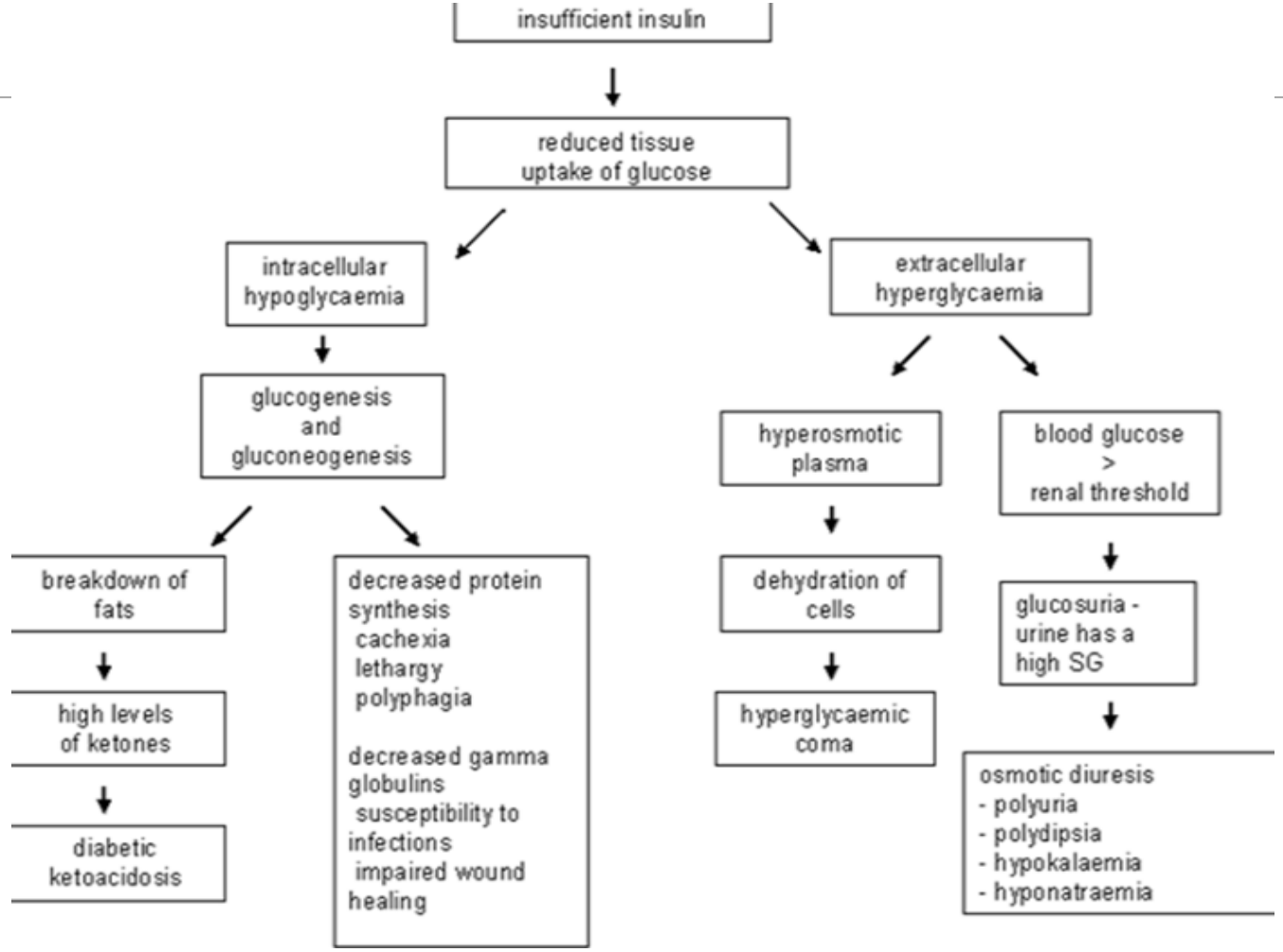
TYPE – I DM (5-10%) Insulin dependent	**Loss of endogenous insulin secreting capacity.**
TYPE - II DM (90-95%) Non insulin dependent	**Insulin resistance, cell do not utilize insulin properly**
GESTATIONAL DIABETES	**Form of glucose intolerance identified in pregnant women**

Other specific types

GENETIC DEFECTS	GLANDULAR DEFECTS	OTHERS
Defects in β cell functions: Maturity onset diabetes of the young (MODY) Mitochondrial DNA mutations	**Exocrine pancreatic defects** Chronic pancreatitis Pancreatectomy Pancreatic neoplasia Cystic fibrosis Hemochromatosis	**Infections** Cytomegalovirus Coxsackievirus B
Defects in insulin processing or insulin action Defects in proinsulin conversion Insulin gene mutation Insulin receptor mutation	**Endocrinopathies** Acromegaly Cushing syndrome Hyperthyroidism Pheochromocytoma Glucagonoma	**Drugs** Glucocorticoids Thyroid hormone β Adrenergic agonists

American Diabetes Association (2010) Diagnosis and classification of diabetes mellitus. Diabetes Care 33(Suppl 1): s62-s69.

PATHOPHYSIOLOGY OF DIABETES MELLITUS



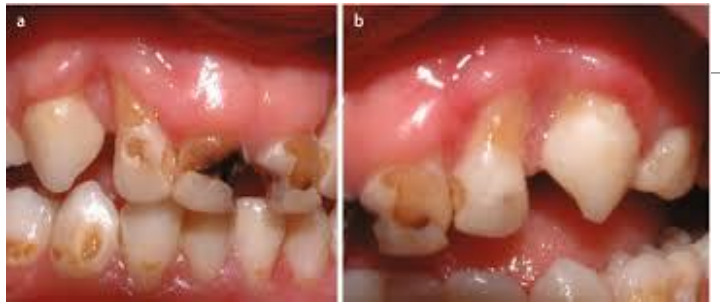
American Diabetes Association (2010) Diagnosis and classification of diabetes mellitus. Diabetes Care 33(Suppl 1): s62-s69.

DIAGNOSIS

Test	Threshold	Qualifier
Haemoglobin A1c	6.5%	Lab NGSP-certified, standardized DCCT assay
Fasting glucose	126 mg/dL (7.0mmol/L)	No caloric intake for at least 8 hours
2-hour glucose	200 rngicIL (111mmol/L)	After 75 g of anhydrous glucose
Random glucose	200 mg/dL (11.1 mmol/L)	Plus classic hyperglycemia symptoms or crisis

Diabetes diagnosis National Diabetes information clearinghouse (2001) National institute of Diabetes and digestive and kidney diseases. National Institute of Health 41: 31-35.

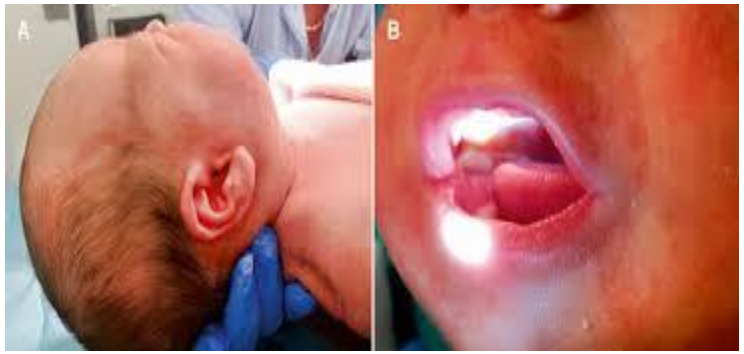
ORAL MANIFESTATIONS



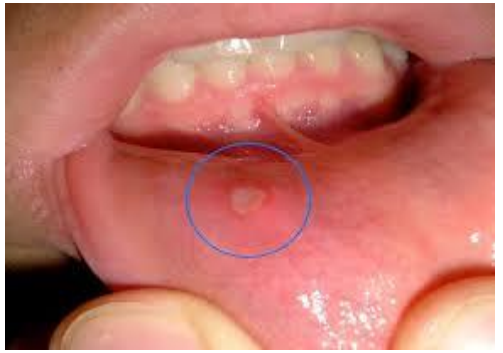
Gingival and periodontal diseases

Dental caries

Fungal infections



Salivary gland dysfunction and xerostomia



Traumatic ulcers

Vernillo AT. Dental considerations for the treatment of patients with diabetes mellitus. The Journal of the American Dental Association. 2003 Oct 1;134:24S-33S.

Non-pharmacological measures:

Medical nutrition therapy:
55-60% energy from carbohydrate,
10-15% from protein
20-25% from fat
Dietary fibres
Artificial sweeteners: saccharin, aspartame
Fruits: avoid sweet fruits and juices
Physical activity: aerobic exercises, brisk walking (30-40 min), yoga asanas

Oral hypoglycaemic agents

Insulin secretagogues :
- Sulfonyl ureases
- Meglitinides

Insulin sensitizers
- Biguanides
- Thiazolidinediones

α-glucosidase inhibitors
- Acarbose
- Miglitol

Incretins

- Insulinotropic hormones
- Secreted from specialized neuroendocrine glands in small intestine
- Stimulate insulin secretion

Glucagon-like peptide-1 (GLP-1): in response to the presence of glucose release of insulin from the pancreas and slows down the emptying of the stomach.

Gastric inhibitory polypeptide (GIP): This hormone is also produced in the intestines in response to the presence of glucose and fatty acids.

It stimulates the release of insulin from the pancreas and inhibits the release of gastric acid.

Children: risk of Pancreatitis, not in type2, wt gain

Nirmala SV, Saikrishna D. Dental care and treatment of children with diabetes mellitus-an overview. J Pediatr Neonatal Care. 2016 Feb;4(2):00134.
Nauck MA, Quast DR, Wefers J, Meier JJ. GLP-1 receptor agonists in the treatment of type 2 diabetes - state-of-the-art. Mol Metab. 2021 Apr;46:101102.

DENTAL MANAGEMENT CONSIDERATIONS

Preoperative

- Acquire proper medical and dental history
- Preferably morning appointments- increased endogenous cortisol levels, should not coincide with peak insulin activity
- Diet: ensure patient has eaten normally and taken medication- prevent hypoglycaemia
- Blood glucose monitoring

During treatment

- Commonest complications in dental office is hypoglycaemia
- If untreated, consequences of Insulin shock
- Regular blood glucose monitoring is necessary

  Conscious patients:

  Oral glucose intake: 15g of carbohydrate

  Unconscious patient:

  With IV access- 5-25g of 50% dextrose.
- Apply glucose gel inside the mouth in a semi obtund patient/ 1 mg of glucagon IM/ subcutaneously
- If symptoms persist refer to physician

Postoperative

- Consult physician for post operative diet plan
- Antibiotic coverage may be necessary for patient with overt infections

Iughetti L, Marino R, Bertolani MF, Bernasconi S (1999) Oral health in children and adolescents with IDDM--a review. J Pediatr Endocrinol Metab 12(5 Suppl 2): 603-610

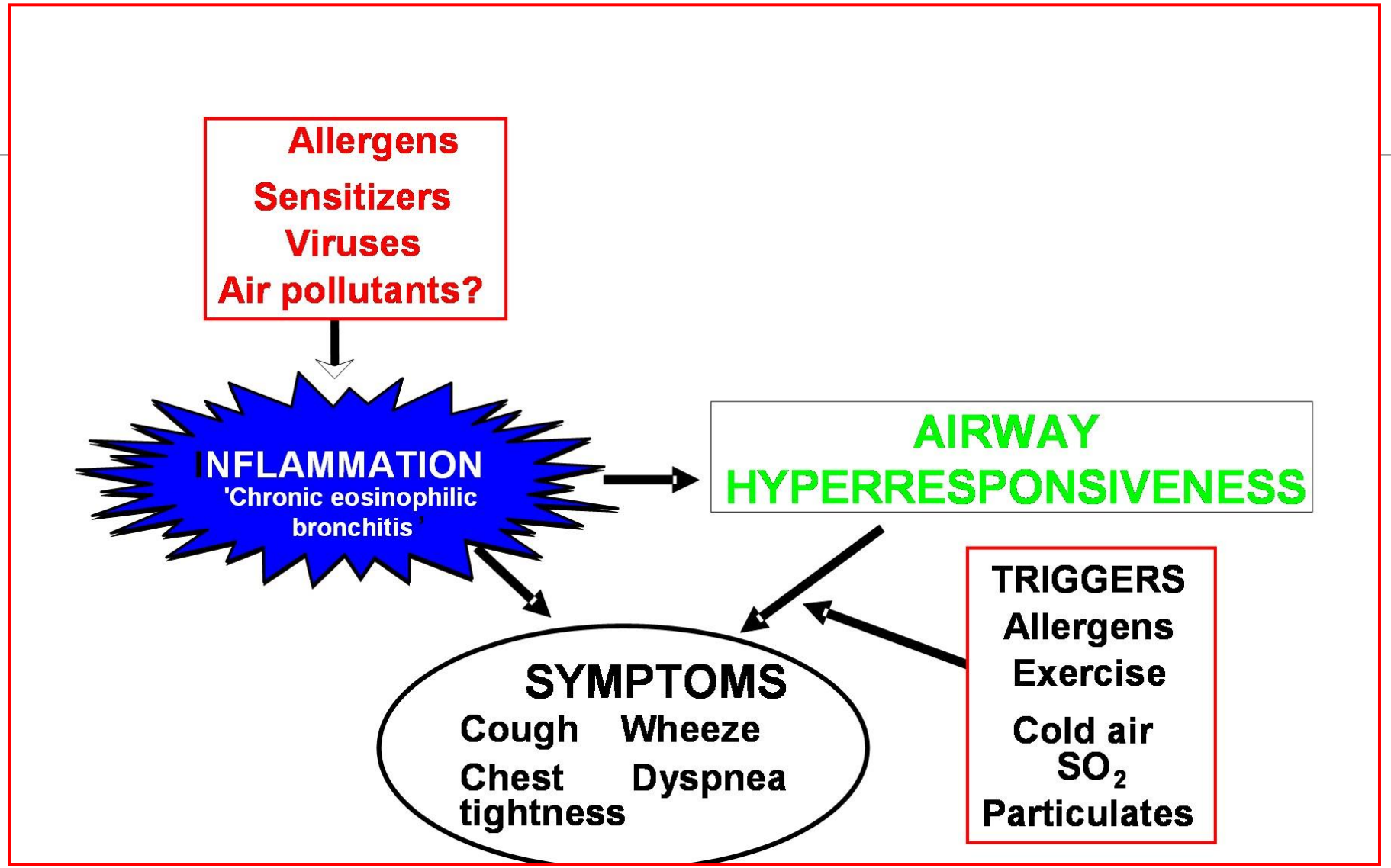
Asthma

- Mechanism
- Diagnostic testing
- Treatment

- Chronic inflammatory disorder of the airways characterized by periods of reversible bronchospasm.

- Chronic inflammation is associated with *airway hyper responsiveness* that leads to recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning.

Mechanisms: Asthma Inflammation



Diagnostic Testing

Peak expiratory flow (PEF)

Inexpensive

Patients can use at home, monitor

Spirometry

- Recommended to do spirometry pre- and post- use of an albuterol MDI to establish reversibility of airflow obstruction
- ≥ 12% reversibility or an increase in FEV1 of 200cc is considered significant
- Obstructive pattern: reduced FEV1/FVC ratio
- Restrictive pattern: reduced FVC with a normal FEV1/FVC ratio

Methacholine challenge

- Bronchoprovocative test -induce bronchoconstriction
- **Positive test:** If the child's lung function deteriorates significantly after inhaling methacholine, it suggests they have asthma.

Diagnostic trial of anti-inflammatory medication (preferably corticosteroids) or an inhaled bronchodilator

Especially helpful in very young children unable to cooperate with other diagnostic testing

Asthma Classification Based on Severity

Disease	Symptoms
Step 4:	Continual symptoms
Step 3:	Daily symptoms
Step 2:	Symptoms > than twice weekly
Step 1:	Symptoms < than twice weekly

McCance KL, Huether SE: *Pathophysiology: The biologic basis for disease in adults and children*, ed 4, St. Louis, 2002, Mosby.

Treatment:

- O_2 (Sa O_2 90-95)
- inhaled short-acting bronchodilator for all pts. (3 tx Q 20 min, continuous therapy an option).
- **Albuterol:** short-acting beta-agonist. **Salmeterol or formoterol- long acting**
- oral systemic corticosteroids -**Fluticasone or budesonide:** Inhaled corticosteroids -to reduce airway inflammation.
- systemic steroids administered when admitted
- methylxanthines are **not** recommended (increases HR, seizures)
- Aggressive hydration **NOT** recommended for older children and adults (may be necessary with infants and small children)
- Antibiotics **NOT** recommended unless infection present (fever, purulent sputum)
- Mucolytics **NOT** recommended

Cystic fibrosis

WHAT IS CF

CLINICAL FEATURES

PATHOGENESIS

MANAGEMENT

Pathogenesis-auto recessive

- Defects in CFTR gene - encodes for a protein that functions as chloride channel & regulated by cAMP.
- Abnormalities of cAMP-regulates chloride transport
- Decreased hydration of mucus – viscous secretion

Presentation : CF PANCREAS

C Chronic respiratory disease

F Failure to thrive

P Polyps -nasal

A Alkalosis, metabolic

N Neonatal intestinal obstruction

C Clubbing of fingers

R Rectal Prolapse

E Electrolyte in sweat

A Aspermia / absent vas deferens

S Sputum – S.aureus/P.aeruginosa -MRSA

Diagnostic Criteria of CF

One or more clinical features of CF

OR

A history of CF in a sibling

OR

A positive newborn screening test

Plus

Laboratory evidence for CFTR dysfunction:

Two elevated sweat chloride concentrations obtained on separated days

OR

Identification of two CF mutations

Blood sample:

- A small blood sample is taken from the infants heel shortly after birth.
- **Immunoreactive trypsinogen (IRT) test:** protein that is often elevated in infants with CF.
- **Sweat test:** The sweat test measures the amount of salt in the sweat.

Increased risk: higher risk of developing dental caries -due to the thick, sticky mucus

Difficulty brushing: The mucus can also make it difficult to effectively brush and floss teeth

Gingivitis and periodontitis: increased

Medication-induced: CF medications can cause dry mouth, which can increase the risk of tooth decay

Reduced saliva flow: The mucus can also block the ducts that carry saliva to the mouth, leading to reduced saliva flow.

Hypomineralization: Children with CF may have dental enamel defects, such as hypomineralization, which can make their teeth more susceptible to decay.

Oral Thrush : Due to the weakened immune system often associated with CF, children may be more prone to oral thrush, a fungal infection of the mouth.

Dental Management

Patients with pulmonary involvement may be more comfortable if **appointments are kept short.**

They also may prefer to be maintained in an **upright sitting** position while being treated, since it often is necessary for them to clear secretions from the bronchi and trachea by coughing frequently.

The concern of precipitating an atelectasis makes patients with CF poor candidates for conscious sedation techniques.

Oral midazolam probably improves behaviour of children during dental treatment.(Ashley)

Saja Alhaidar et al (2021). Dental Treatment of **Cystic Fibrosis for Pediatric Patient** – Case Report. Saudi J Oral Dent Res, 6(12): 548-556.

Pawlaczyk-Kamieńska T, Borysewicz-Lewicka M, Batura-Gabryel H, Cofta S. Oral Care **Recommendation for Cystic Fibrosis Patients**-Recommendation for Dentists. J Clin Med. 2022 May 13;11(10):2756.

Ashley PF, Chaudhary M, Lourenço-Matharu L. **Sedation of children undergoing dental treatment.** Cochrane Database Syst Rev. 2018 Dec 17;12(12):CD003877.

ANEMIA

CLASSIFICATION

DIAGNOSIS

MANAGEMENT

•Anemia is a condition characterized by insufficient red blood cells (RBCs) to transport oxygen adequately to the peripheral tissues.

•It is often associated with a decrease in hemoglobin (Hb), the primary protein in RBCs responsible for oxygen transport.

Classification of Anemia

1.Morphological Classification:

Based on RBC size and hemoglobin content.

1. **Microcytic Hypochromic Anemia:**
    1. Characterized by low MCV and MCH.
    2. Examples: Iron deficiency anemia, Thalassemia.
2. **Normocytic Normochromic Anemia:**
    1. Normal MCV and MCH.
    2. Examples: Acute blood loss, Hemolysis, Marrow infiltration.
3. **Macrocytic Anemia:**
    1. Raised MCV.
    2. Example: Megaloblastic anemia.

2.Etiological Classification:

Based on the cause of anemia.

1. **Due to Bleeding:**
    1. Blood loss leading to decreased RBCs.
2. **Due to RBC Destruction:**
    1. Hemolytic anemia.
3. **Failure of RBC Production:**
    1. Causes include nutritional deficiencies (Iron, Vitamin B12, Folate), chronic inflammation, and bone marrow disorders (e.g., aplastic anemia, bone marrow infiltration).

Gupta PV, Hegde AM, editors. Pediatric dentistry for special child. JP Medical Ltd; 2016 Mar 30.

INDEX AND PARAMETERS	IRON DEFICIENCY ANEMIA	MEGALOBLASTIC ANEMIA	THALASSEMIA	SICKEL CELL ANEMIA	NORMAL RANGE
MCV	↓	↑	↓	NORMAL TO ↑	76-96 fl
MCHC	↓	NORMAL	↓	NORMAL	31-35 g/dl
MCH	↓	↑	↓	NORMAL TO ↓	27-32 pg
SERUM FERRITIN	↓↓	NORMAL TO ↑	NORMAL TO ↑	NORMAL TO ↑	7 to 140 ng/mL
RDW	↑	↑	Normal	↑	12-14%
SERUM IRON	↓↓	NORMAL TO ↓	NORMAL TO ↑	NORMAL TO ↑	50-120 mcg/dL
HEMOGLOBIN	↓	↓	↓ **TO** ↓↓	↓	2-6 months: 10-17 g/dL. 6 months-1 year: 9.5-14 g/dL. 1-6 years: 9.5-14 g/dL. 6-18 years: 10-15.5 g/dL

Saxena R, Chamoli S, Batra M. Clinical evaluation of different types of anemia. World. 2018 Jan;2(1):26-30.

Naigamwalla DZ, Webb JA, Giger U. Iron deficiency anemia. The Canadian Veterinary Journal. 2012 Mar;53(3):250.

Harize IN, Hamid GA. Clinical and Hematological Evaluation of Acute Leukemia in Aden Hospitals, Yemen.

Qurtom HA, al-Saleh QA, Lubani MM, Hassanein A, Kaddoorah N, Qurtom MA, al-Sheikh T. The value of red cell distribution width in the diagnosis of anaemia in children. Eur J Pediatr. 1989 Aug;148(8):745-8. doi: 10.1007/BF00443100. PMID: 2792125.

Laboratory Assessments to Aid in the Diagnosis of Anemia*

	Type	Tests to Discriminate Types of Anemia
Microcytic anemia	Iron deficiency	Serum iron, ferritin, total iron binding capacity (TIBC), transferrin saturation, bone marrow aspirate. Also, stool examination for occult blood
Macrocytic anemia	Folate deficiency	CBC, serum folate level
Macrocytic anemia	Pernicious anemia	CBC, serum vitamin B_{12} (cobalamin) assay levels, Schilling's test, serum antiparietal cell, and intrinsic factor antibodies
Normocytic anemia	G-6-PD	Staining peripheral blood smear with methyl or crystal violet, cyanide-ascorbate assay, qualitative (fluorescent spot) test and quantitative test for G-6-PD, reticulocyte count, indirect bilirubin levels
Normocytic anemia	Sickle cell anemia	Sickledex, high-performance liquid chromatography, hemoglobin electrophoresis, reticulocyte count, indirect bilirubin levels
Normocytic anemia	Aplastic anemia	Erythropoietin levels, bone marrow aspirate

Little JW, Miller C, Rhodus NL, Falace D. Dental Management of the Medically Compromised Patient-E-Book: Dental Management of the Medically Compromised Patient-E-Book. Elsevier Health Sciences; 2012 Feb 16.

PARAMETER	IRON DEFICIENCY ANEMIA	MEGALOBLASTIC ANEMIA	THALASSEMIA	SICKEL CELL ANEMIA
ORAL MANIFESTATION	1. Loss of papillae on dorsum of tongue 2. Paraesthesia 3. In patients with dysphagia, increased incidence of 4. carcinoma of oral and pharyngeal areas (Plummer-Vinson syndrome)	1. Sore or burning tongue (smooth tongue no papilla; often normal Hb) 2. Moeller's glossitis (a pattern of red lines; may resemble erythroplakia) 3. Atrophic glossitis (red, glossy, smooth and sore; severe anaemia) 4. Candidiasis 5. Angular cheilitis 6. Ulcers (especially late onset-folate deficiency)	1. Malocclusion- expansion of bone marrow and extra medullary hemopoesis- Chipmunk facies 2. High caries index 3. atrophic glossitis 4. Thin mandibular cortex 5. Multiple diastemas 6. Roots- short and spike shaped, 7. taurodontism	1. Yellow tissue coloration 2. Mucosal pallor 3. Gingival enlargement 4. Delayed tooth eruption 5. Intrinsic enamel opacity 6. Malocclusion 7. Papillary atrophy of the tongue 8. Smooth reddish pigmentation of the tongue 9. Nerve damage (neuropathy) 10. Pulp necrosis 11. Radiographic abnormalities in jaw bones

1. Little JW, Miller C, Rhodus NL, Falace D. Dental Management of the Medically Compromised Patient-E-Book: Dental Management of the Medically Compromised Patient-E-Book. Elsevier Health Sciences; 2012 Feb 16.
2. Al Harbi TA, Al Harbi SD, Al Malik M, El Meligy OA. Sickle cell anemia in dentistry: manifestations and management. International Journal of Medicine in Developing Countries. 2020 Feb 25;4(3):567-.
3. Helmi N, Bashir M, Shireen A, Ahmed IM. Thalassemia review: features, dental considerations and management. Electronic physician. 2017 Mar;9(3):4003.

IRON DEFICIENCY ANEMIA	MEGALOBLASTIC ANEMIA	THALASSEMIA	SICKEL CELL ANEMIA
1. Correct underlying nutritional deficiencies 2. Antifungal therapy for cheilosis 3. Protein fluids and nutrition as supportive therapy to promote healing	1. Parenteral vitamin B12 treatment 2. Transfusion in cases where Hb is below 15% of normal or in heart failure cases	1. Risk of infections and delayed wound healing prescribe prophylactic antibiotics. 2. Avoid treatment under general anesthesia unless necessary, coordinate with hematology if required. 3. Prefer acetaminophen over aspirin. 4. Emphasize preventive care and maintain good oral hygiene. 5. Monitor for hepatitis, neutropenia, and agranulocytosis 6. Regular check-ups and early orthodontic intervention to manage malocclusion and craniofacial effects. 7. Apply low forces and follow short intervals between appointments in orthodontic treatments.	1. Local anesthetic is preferred 2. Oral sedation for anxiety 3. Prophylactic antibiotics before dental procedures 4. Blood transfusion prior to general anesthesia to prevent sickle cell anemia crisis 5. Maintain optimum hemoglobin levels (10-12 g/dL for children)

1. Little JW, Miller C, Rhodus NL, Falace D. Dental Management of the Medically Compromised Patient-E-Book: Dental Management of the Medically Compromised Patient-E-Book. Elsevier Health Sciences; 2012 Feb 16.
2. Gupta PV, Hegde AM, editors. Pediatric dentistry for special child. JP Medical Ltd; 2016 Mar 30.

Leukemia

- Types
- Clinical Features
- Management

Classification

By Disease Progression:

Acute Leukemia:

- Acute Lymphoblastic Leukemia (ALL)
- Acute Myeloid Leukemia (AML)

Chronic Leukemia

- Chronic Lymphocytic Leukemia (CLL)
- Chronic Myeloid Leukemia (CML)

By Affected Cell Type:

- **Lymphoid Leukemias**
- **Myeloid Leukemias**

Other Rare Forms:

- **Hairy Cell Leukemia**
- **T-cell Prolymphocytic Leukemia (T-PLL)**

DNA changes that cause CLL usually occur during a person's lifetime, rather than being passed down from a parent.

Genetic disorders. -Down syndrome

Exposure to certain chemicals. Exposure to certain chemicals, such as benzene — which is found in gasoline and is used by the chemical industry ,pesticide

Smoking. Smoking cigarettes increases the risk of acute myelogenous leukemia.

Family history of leukemia

Acute lymphoblastic leukemia (ALL)-30 % of all pediatric cancers.
T-ALL and B- or pre-B ALL.
Anemia: overcrowded by leukemia , no of RBC below normal.
Bleeding and/or bruising. Decreased platelets
Bone and joint pain. Bone marrow being crowded with leukemic blasts.
Recurrent fevers/infections. WBC though high are immature
Abdominal pain. Leukemia cells can accumulate in the kidneys, liver
Swollen lymph nodes.
Difficulty breathing. T-cell ALL, cells can accumulate together in the thymus a gland

Before leukemic treatment

- Extraction of teeth with questionable prognosis should be done at least 10-14 days before starting chemotherapy
- Dental scaling and preventive therapy such as fluoride application and pits and fissure sealant should be completed prior
- All carious teeth need to be restored

During Leukemic treatment: Mucositis

- ❑ Rinsing with chlorohexidine 0.12% mouth wash for one minute twice a day
- ❑ Palifermin –recombinant keratinocyte growth factor.
- ❑ low level infra-red laser therapy
- ❑ Honey

Candidiasis:

- ❑ Nystatin suspension 100 000 units/ml four times daily.
- ❑ Nystatin and chlorohexidine should not be used simultaneously because some studies suggest that they inhibit each other action- time gap between the two drugs

After Leukemic treatment:

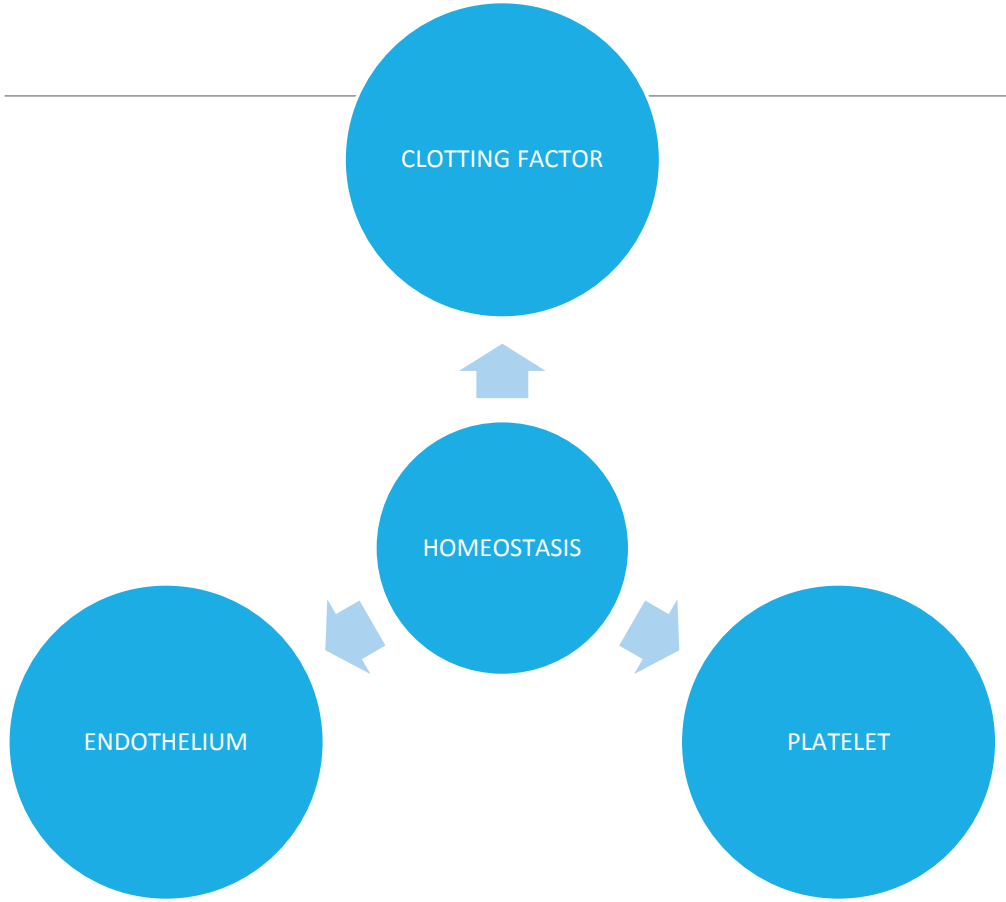
- Tooth brushing with fluoride toothpaste and 0.05% sodium fluoride mouthwash should be used instead of chlorohexidine mouthwash
- Risk of developing of mucoepidermoid carcinoma in previously treated leukemic children

  Squamous cell carcinoma secondary to allogenic bone marrow transplant.

Lowal KA, Alaizari NA, Tarakji B, Petro W, Hussain KA, Altamimi MA. DENTAL CONSIDERATIONS FOR LEUKEMIC PEDIATRIC PATIENTS: AN UPDATED REVIEW FOR GENERAL DENTAL PRACTITIONER. Mater Sociomed. 2015 Oct;27(5):359-62.

Bleeding & clotting Disorders

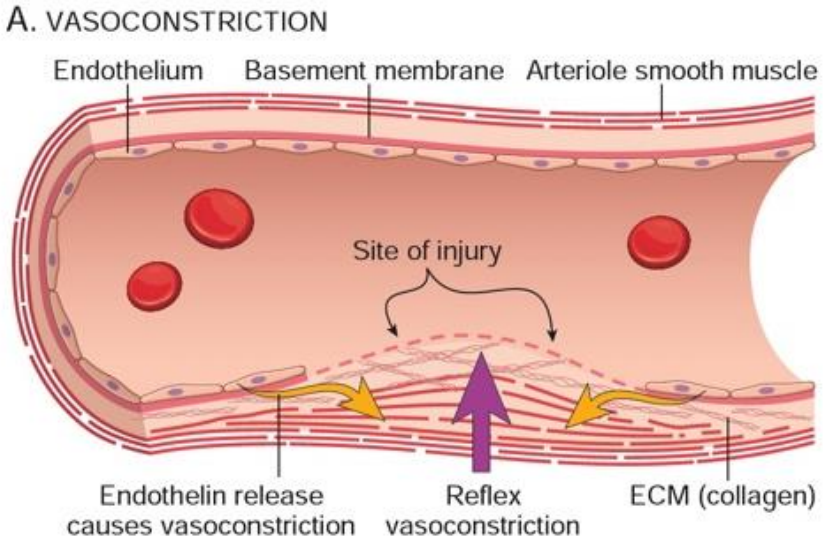
- Hemostasis
- Classification
- Diagnostic test
- Management

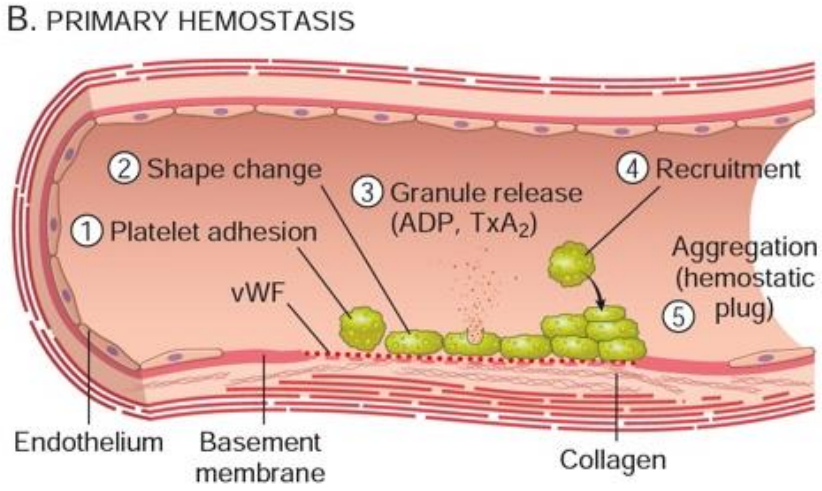


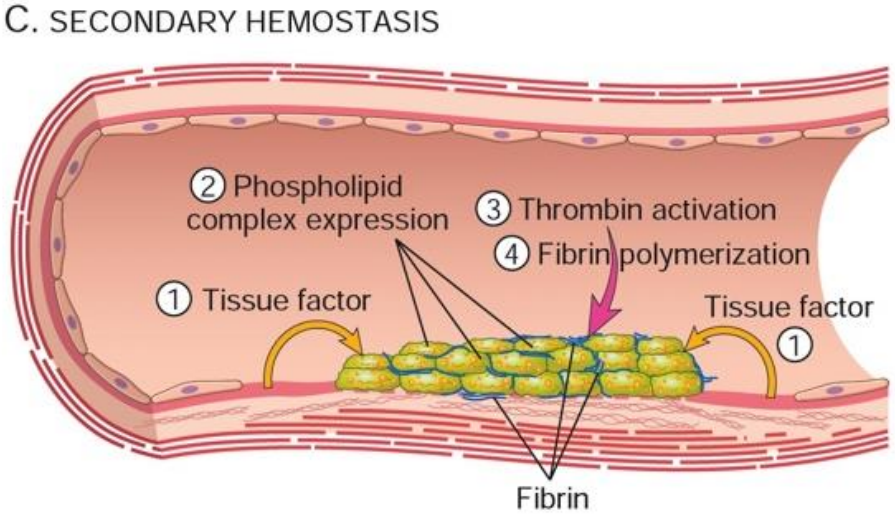
Hemostasis is a precisely orchestrated process involving platelets, clotting factors, and endothelium that occurs at the site of vascular injury and culminates in the formation of a blood clot, which serves to prevent or limit the extent of bleeding.

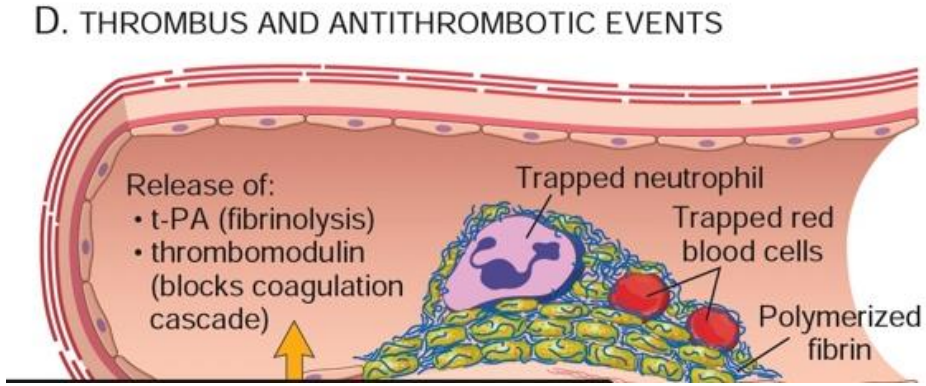
Hemostasis can be defined simply as the process by which blood clots form at sites of vascular injury.

GENERAL SEQUENCE OF EVENTS LEADING TO HEMOSTASIS









Thrombocytopenia

A. **Decreased platelet production:**

- **Congenital disorders:** Aplastic anemia, Fanconi anemia
- **Acquired disorders:** Leukemia, lymphoma, and myelodysplastic syndromes

B. **Increased platelet destruction:**

Autoimmune Disorders: Idiopathic Thrombocytopenia Purpura (ITP) ,Autoimmune hemolytic anemia

Infections: Viral infections such as hepatitis C, HIV, and Epstein-Barr virus

C. **Hemolytic Uremic Syndrome (HUS):** A condition that can be caused by infections, toxins or medications, leading to damage to red blood cells, platelets, and kidneys.

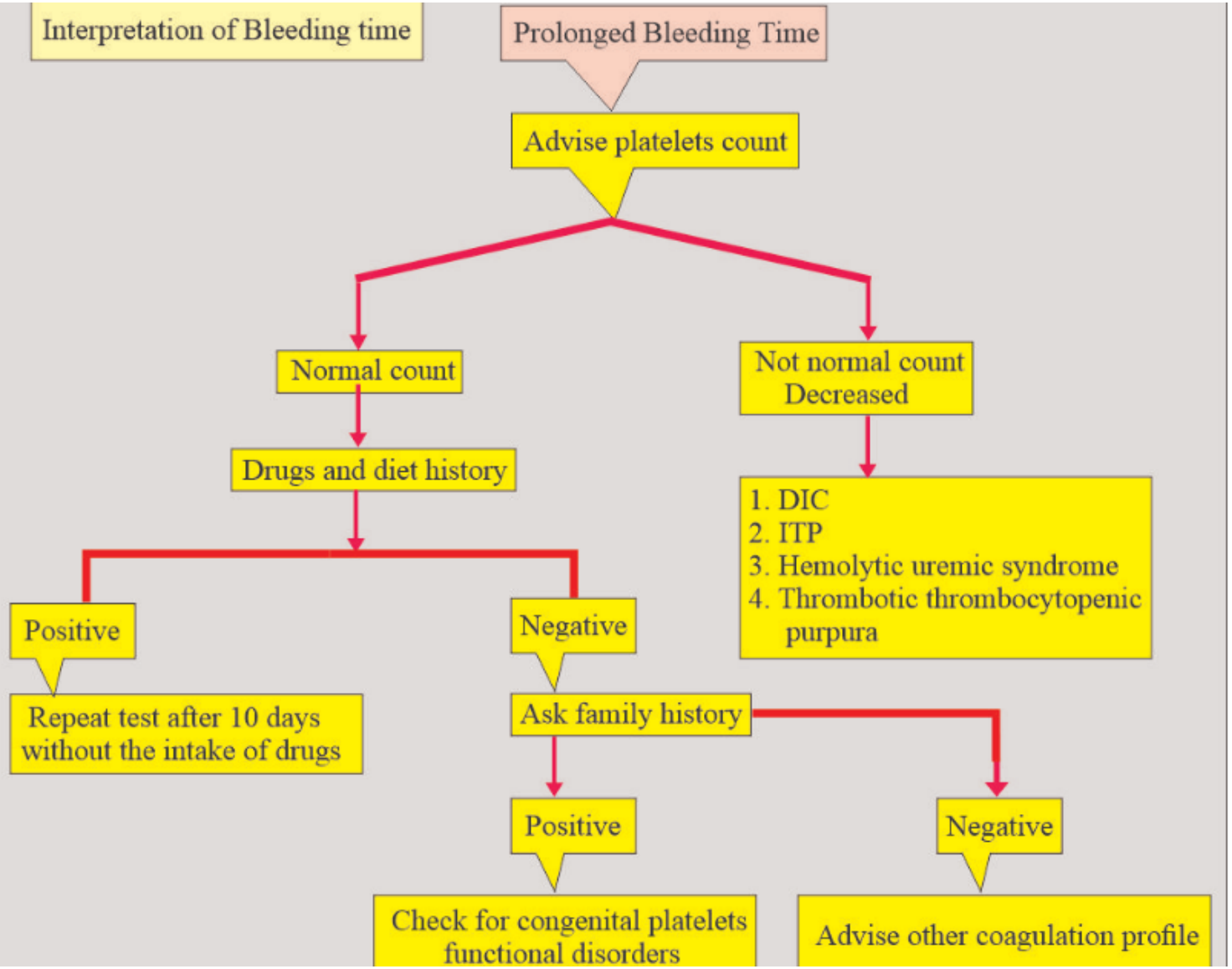
D. **Inherited Disorders:**

- **Bernard-Soulier syndrome:** deficiency -glycoprotein Ib -platelet adhesion to blood vessels.
- **Glanzmann thrombasthenia:** deficiency in glycoprotein IIb/IIIa -platelet adhesion.
- **May-Hegglin anomaly:** large platelets and the presence of inclusion bodies within them.

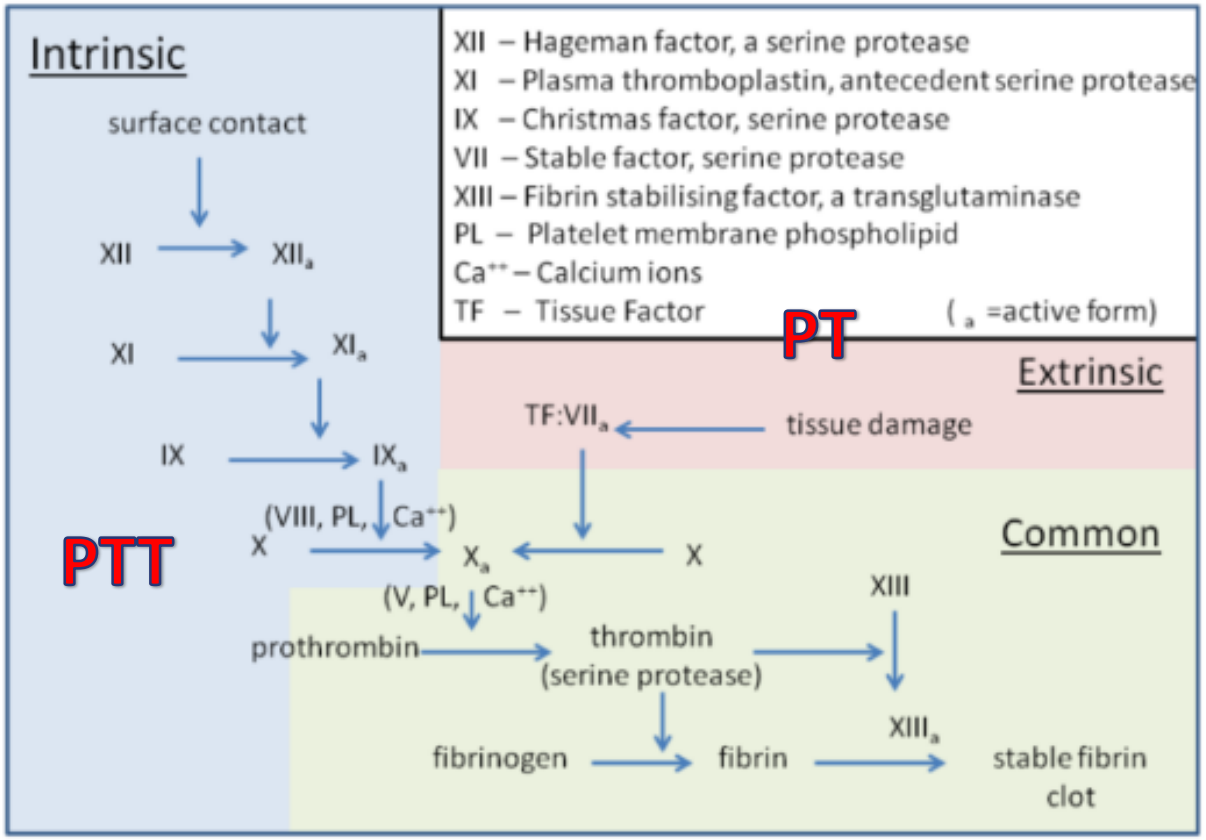
E. Storage pool disorders: deficiency in the storage of platelets or their granules- alpha, dense

F. Platelet release disorders: inability of platelets to release

- **Chediak-Higashi syndrome:** enlarged lysosomes within platelets-interfere with the release of clotting factors.
- **Wiskott-Aldrich syndrome:** X-linked recessive disorder that affects platelets, immune cells, and the skin. It can cause thrombocytopenia and impaired platelet function.
- **Gray platelet syndrome:** deficiency in alpha granules within platelets.


Interpretation of Bleeding time
Prolonged Bleeding Time
Advise platelets count
Normal count
Not normal count
Decreased
Drugs and diet history
1. DIC
2. ITP
3. Hemolytic uremic syndrome
4. Thrombotic thrombocytopenic purpura
Positive
Negative
Repeat test after 10 days without the intake of drugs
Ask family history
Positive
Negative
Check for congenital platelets functional disorders
Advise other coagulation profile

COAGULATION CASCADE



Intrinsic pathway - activated by a trauma - blood is exposed to a subendothelial collagen.
Components required for intrinsic pathway are entirely contained within the blood or the vasculature.

Extrinsic pathway - vascular tissue trauma or surrounding extra-vascular tissue trauma.
These external factors release tissue factor or tissue thromboplastin or factor III.
Tissue factor is a protein found in many tissues of the body, including brain, lungs, and placenta.

Von Willebrand disease (VWD)

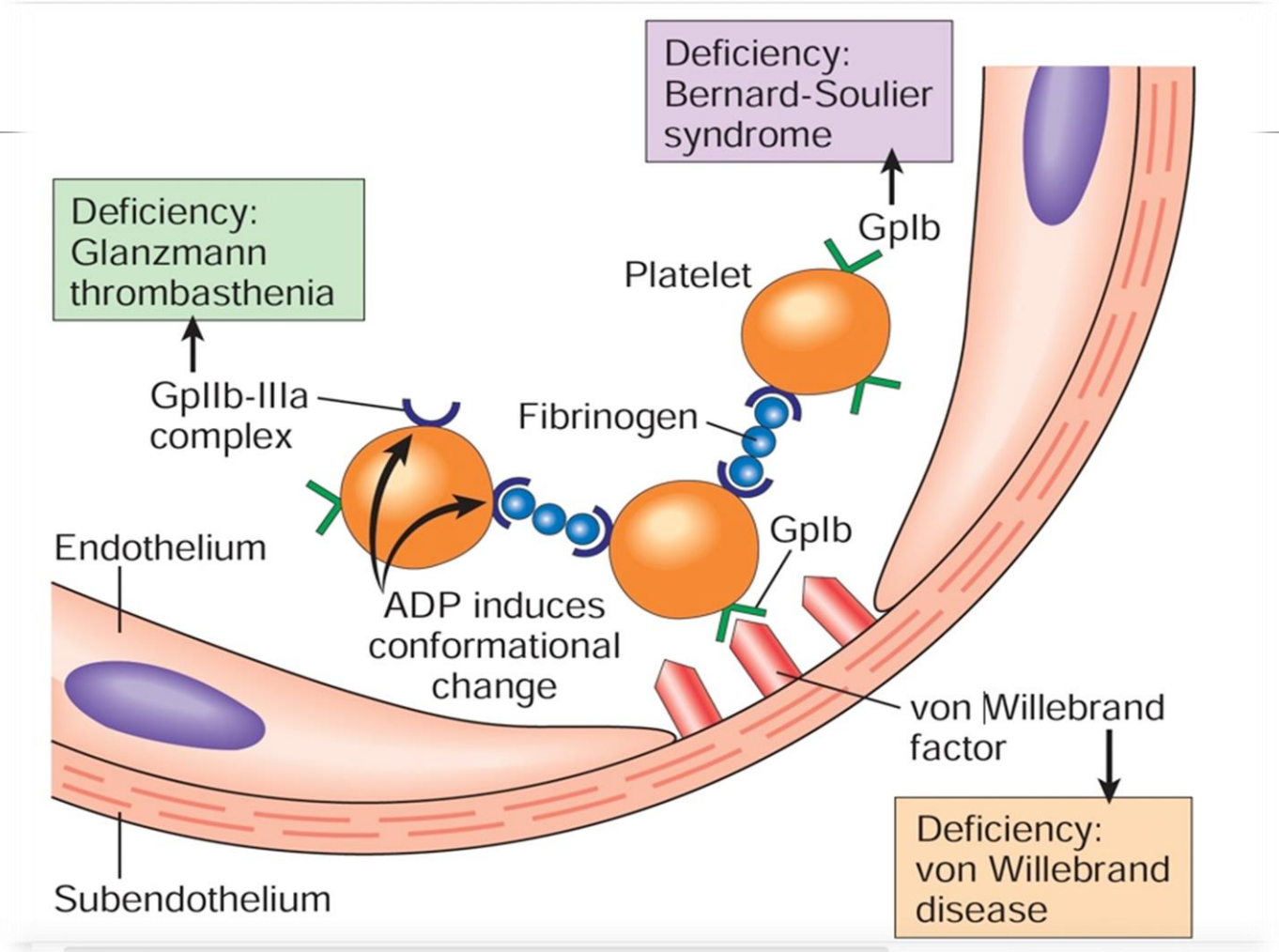
- Hereditary abnormality of von Willebrand factor
- normal platelet count slightly prolonged PTT

Diagnosis:

- low levels of von Willebrand factor antigen +von Willebrand factor activity (ristocetin cofactor activity).

- Treatment involves control of bleeding with replacement therapy virally inactivated intermediate-purity factor VIII concentrate

or desmopressin.


Deficiency:
Bernard-Soulier
syndrome
GpIb
Platelet
Deficiency:
Glanzmann
thrombasthenia
GpIIb-IIIa
complex
Fibrinogen
GpIb
Endothelium
ADP induces
conformational
change
von Willebrand
factor
Deficiency:
von Willebrand
disease
Subendothelium

Clinical manifestations

- **Easy bruising:**
- **Excessive bleeding**
- **Spontaneous bleeding**
- **Petechiae and purpura**
- **Joint pain and swelling**
- **Fatigue**

- **Excessive bleeding after dental procedures**
- **Spontaneous bleeding**
- **Delayed wound healing**
- **Hematoma formation:**

Diagnosis

Prothrombin Time- extrinsic pathway -9 to 13 seconds.

- Abnormal PT values may indicate liver disease, vitamin K deficiency, or the presence of anticoagulants.

PTT-intrinsic and common pathways -25 to 35 seconds.

- Prolonged PTT -deficiencies in these clotting factors, hemophilia
- Shortened PTT - increased risk of thrombosis

Activated Partial Thromboplastin Time

- activator added
- INR is a standardized across different laboratories -0.8 to 1.2. Higher INR values - increased risk of bleeding.

D-Dimer

- marker for fibrin degradation products, indicates ongoing fibrinolysis. <500 ng/mL.
- Elevated D-dimer -DVT, pulmonary embolism (PE), DIC

Disease	PT	PTT	Platelets
Hemophilia A	Normal	↑ ↑ ↑	Normal
Hemophilia B	Normal	↑ ↑ ↑	Normal
Factor XIII Deficiency	Normal	Normal	Normal
Vitamin K Deficiency of the Newborn	↑ ↑	Normal	Normal
vWD type 3	Normal	↑ ↑ ↑	Normal
DIC	↑ ↑	↑ ↑	↓ ↓ ↓

vWD, Von Willebrand Disease; DIC, Disseminated Intravascular Coagulation.

quantitative analysis of factor XIII (assay)

low levels of von Willebrand factor antigen +von Willebrand factor activity

DENTAL CONSIDERATION

1. In apprehensive patients, nitrous oxide sedation is considered followed by acetaminophen
2. In general anaesthesia oral intubation is preferred over nasal intubation.
3. Factor replacement before even minor surgical procedure.
4. Electrosurgery preferred.
5. Use of wedges and matrix band, retainers in rubber dam are avoided to be less traumatic

USE OF NSAIDS

- Dental pain can usually be controlled with a minor analgesic such as **paracetamol (acetaminophen).**
- **Aspirin** should not be used due to its **inhibitory effect on platelet aggregation**.
- NSAID can have effect on platelet aggregation.

Dean JA, Avery DR, McDonald RE. Local anesthesia and pain control for the child and adolescent. In: Dentistry for the Child and Adolescent. 9th ed. St Louis, Mo.: Mosby; 2011:241-52.

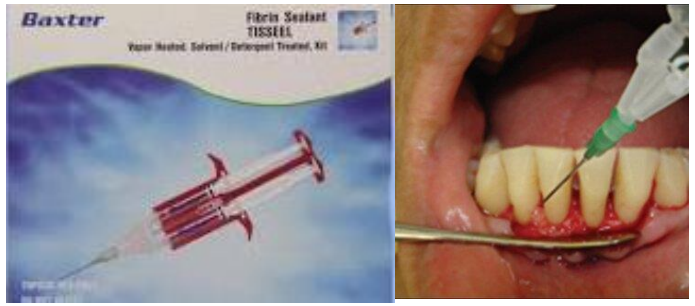
USE OF LOCAL ANESTHESIA

- There are no restrictions regarding the type of local anesthetic agent used although those with **vasoconstrictors** may **provide additional local hemostasis.**
- While giving **inferior alveolar nerve block**, there is a risk of bleeding into the muscles and **potential airway compromise** due to a **hematoma in the retromolar or pterygoid space.**
- **Articaine buccal infiltration** can be used **to anesthetize the mandibular molar.**

Wray D, Lowe GDO, Dagg JH, Felix DH and Scully C. Textbook of general and oral medicine. London: Harcourt Brace, Churchill Livingstone, 1999

LOCAL HEMOSTATIC AGENTS

- **Gelfoam** (Pfizer, Markham, Ont.) - Absorbant gelatin sponge material
- **Bleed-X** (QAS, Orlando, Fla.) - Microporous polysaccharide hemispheres
- **Surgicel** (Ethicon, Markham, Ont.) - Oxidized cellulose
- **Tisseel** (Baxter, Mississauga, Ont.) - Fibrin sealant
- **Thrombostat** (Pfizer) - Topical thrombin
- **Cyklokapron** (Pfizer) - Tranexamic acid
- **Amicar** (Wyeth, Markham, Ont.) - Epsilon-aminocaproic acid



AIDS

- Stages
- Anti retroviral drugs
- Clinical features
- Management

Family Retroviridae
Genus – Lentivirus : Contains Human immunodeficiency virus HIV-1 and HIV -2

STAGE – 1	STAGE – 2	STAGE -3	STAGE-4
Asymptomatic Persistent generalised lymphadenopathy	• Unexplained persistent hepato-splenomegaly • Pruritic eruption • Extensive warts virus infection • Extensive molluscum contagiosum	• Unexplained persistent diarrhoea (>14 days) Unexplained persistent fever (>37.5°C intermittent or constant for longer than 1 month) • Persistent oral candidiasis(After 1st 6-8 weeks of life) • Oral hairy leukopenia • Pulmonary TB • Lymph node TB	• Chronic herpes simplex infection (oro labial cutaneous infection of >1 month duration) • Extra pulmonary TB • Kaposi's sarcoma • Oesophageal candidiasis • HIV encephalopathy

Diagnosis of Pediatric HIV infection

- The routine screening methods (ELISA or rapid/simple tests) detect IgG antibodies
- But cannot differentiate between child's IgG or maternally transferred IgG
- As all maternal antibodies would disappear by 18 months, IgG assays can be performed after 18 months of birth.
- The recommended methods for diagnosis of paediatric HIV include-
  - **HIV DNA detection**-most recommended
  - HIV RNA detection
  - p24 antigen detection
  - IgG ELISA-only after 18 months of age

Antiretroviral comprise three main classes of drugs:

NRTIs

Zidovudine	AZT/ZDV
Lamivudine	3TC
Stavudine	d4T
Didanosine	ddI
Abacavir	ABC
Emtricitabine	FTC

Nucleoside Reverse Transcriptase Inhibitors

Non-Nucleoside Reverse Transcriptase Inhibitors

NNRTIs

Nevirapine	NVP
Efavirenz	EFV

PIs

Lopinavir/ritonavir	LPV/r
Ritonavir	RTV
Nelfinavir	N FV
Atazanavir	ATV

Protease Inhibitors

Integrase Inhibitors:

Function: These drugs block the enzyme integrase, which HIV uses to insert its genetic material into the host cell's DNA.

Examples: Raltegravir, dolutegravir, elvitegravir

Fusion Inhibitors:

Function: These drugs prevent HIV from entering human cells by blocking the fusion of the virus with the cell membrane.

Examples: Enfuvirtide

Oral lesions commonly associated with Pediatric HIV infection

Oral candidiasis

Oral hairy leukoplakia: white, hairy-like patches on the sides of the tongue caused by EBV

Oral herpes simplex virus (HSV) infection

Kaposi's sarcoma: Purplish-red lesions on the mouth and other parts of the body

Periodontal diseases

Necrotizing ulcerative gingivitis (NUG)

Necrotizing ulcerative periodontitis (NUP)

Necrotizing stomatitis (NS)

Viral infections CMV, human papilloma virus, varicella zoster virus,

Xerostomia

Lauritano D, Moreo G, Oberti L, Lucchese A, Di Stasio D, Conese M, Carinci F. Oral Manifestations in HIV-Positive Children: A Systematic Review. Pathogens. 2020 Jan 31;9(2):88

ORAL CONDITIONS

CANDIDIASIS

oral candidiasis is prevalent in HIV/AIDS and has been reported in up to **72%** of all **pediatric** HIV infection

Topical Antifungal Agents
These include Nystatin, Ketoconazole, Clotrimazole, Amphotericin B and Miconazole.

Herpes simplex virus infection

- Prevalence ranges from 2% - 24% in Paediatric HIV studies.

Antiviral therapy is recommended -Oral acyclovir is most frequently used.

Lauritano D, Moreo G, Oberti L, Lucchese A, Di Stasio D, Conese M, Carinci F. Oral Manifestations in HIV-Positive Children: A Systematic Review. Pathogens. 2020 Jan 31;9(2):88

ORAL CONDITIONS

DENTAL CARIES:

Caries prevalence of 28–33% among HIV infected infants and toddlers have been reported.

- XEROSTOMIA
- **Pilocarpine, Cevimeline:** Similar to pilocarpine
- Salivary substitutes-**sprays** : Aldiamed, Artisial,Aqwet,Biotene , Emoflour, Entertainer, Glandosane,Oasis, Xeros, Biotene
- **Gels:** biotene, Oral seven
- **Lozenges:** Salese, Saliva sure

Lauritano D, Moreo G, Oberti L, Lucchese A, Di Stasio D, Conese M, Carinci F. Oral Manifestations in HIV-Positive Children: A Systematic Review. Pathogens. 2020 Jan 31;9(2):88

Kapourani, A.;Kontogiannopoulos, K.N.;Manioudaki, A.-E.; Poulopoulos,A.K.; Tsalikis, L.; Assimopoulou,A.N.; Barmpalexis, P. A Review **onXerostomia and Its VariousManagement Strategies: The Role ofAdvanced Polymeric Materials in theTreatment Approaches**. Polymers2022, 14, 850. : O.S. Malallah, M.A. Garcia, G.B. Proctor, B. Forbes, P.G. Royall, Buccal drug delivery technologies for patient-centred treatment of radiation-induced xerostomia (dry mouth), International Journal of Pharmaceutics (2018),

.

- Caphosol, NeutraSal: Swish and spit; 2-10 doses/day
- Oasis spray: 1-2 sprays as needed; not to exceed 60 sprays/day
- Oasis mouthwash: Rinse mouth with approximately 30 mL every 12 hours as needed; do not swallow
- Aquoral: 2 sprays orally every 6-8 hours as needed
- Entertainer's secret: Spray as needed
- Mouth Kote spray: Spray 3-5 times; swish for 8-10 seconds and spit or swallow as needed
- Biotene: Apply 0.5-inch length onto tongue and spread evenly; repeat as often as needed
- Numoisyn liquid: Use 2 mL as needed
- Numoisyn lozenges: Dissolve 1 lozenge slowly; not to exceed 16 lozenges/day
- SalivaSure: Dissolve 1 lozenge in mouth as needed; 1 lozenge/hour recommended
- XyliMelts: Apply 2 discs before bed, 1 on each side of mouth, in lower or upper part of cheek; during the day, use as needed; swallow as it slowly dissolves (the tan, dimpled side will adhere to teeth or gums); before bedtime, use 2 discs, placing one on each side of the mouth

Discs Extended Release: Xylimelts
Powder: neutrasal

Marek CL, Parks ET. Patients with a psychological disorder. InDiagnosis and Treatment Planning in Dentistry 2017 Jan 1 (pp. 342-363). Mosby.

ORAL CONDITIONS

LOCAL ANESTHETICS::

There are no contraindications related to the use of local anesthetics in patients with HIV disease

- Endodontic treatment
- Endodontic therapy has a relatively high degree of success in the majority of HIV/AIDS patients.

EXCEPTION

History of poor hemostasis
- Avoid block injections

One step endodontic therapy should always be considered in case of acute pulpitis or when patients with physical limitations are unable to return for multiple visits

Prophylactic antibiotic recommendations for children

- It is recommended for severely neutropenic patients with absolute neutrophil counts <1000 cells/mm3.---5–7 days of antibiotic coverage
- .Children with absolute neutrophil counts < 500 cells/mm3 should have dental procedures **deferred** until their neutropenia has resolved.

NACO Guidelines to Prevent Neonatal HIV

Pregnant women who are - HIV reactive - initiated on lifelong ART (TLE regimen- **T:** Tenofovir**L:** Lamivudine**E:** Efavirenz).

Their newborn (HIV exposed) babies - initiated on 6 weeks of Syrup Nevirapine immediately after birth - extended up to 12 weeks, if the duration of the ART of mother is less than 24 weeks.

Baby - also initiated on cotrimoxazole prophylaxis at 6 weeks till 18 months.

National AIDS control orgn https://naco.gov.in/

Post exposure prophylaxis

PEP is required to reduce the risk of transmission after occupational exposures - needle stick or sharp injury or mucocutaneous exposure.

Every hospital should have a nodal center for PEP management and must provide PEP free of cost to the employee.

TLD regimen: Fixed dose combination of Tenofovir + Lamivudine + Dolutegravir is the preferred regimen.

Indication: If source is unknown/positive for HIV

Duration: Started within 2 hours of exposure and continued for 28 days.

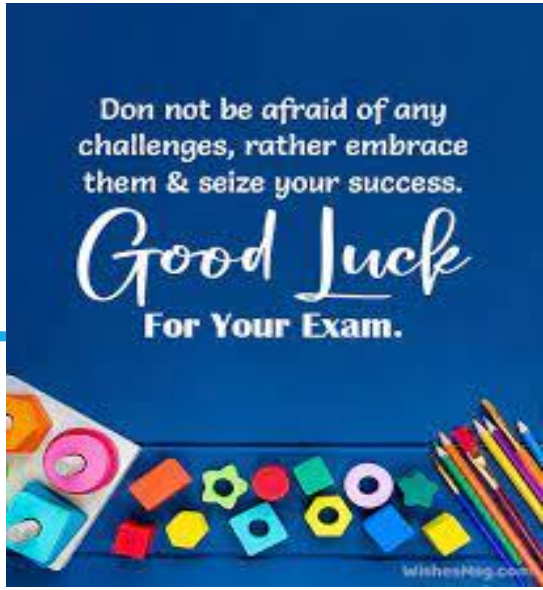
Questions:

- Management of Children with Congenital Heart disease
- Epileptic Child management in Dental Clinic
- Asthma management in Pediatric Dental clinic
- Management of Diabetic Child requiring dental treatment.
- Management of HIV positive Child in dental set up.


ALL
THE BEST


GOOD LUCK


"మనకు అన్ని సమాధానములు
తెలియడం వచ్చేది కాదు
Confidence అంటే...
ఏ ప్రశ్నైనా ఎదుర్కొనేందుకు సిద్ధంగా
ఉండడమే Confidence అంటే..."
So, Friend Be Confident
Wish you all the Best


Don not be afraid of any challenges, rather embrace them & seize your success.
Good Luck
For Your Exam.


முடியாது
என எதையும்
விட்டு விடாதே
முயன்றுபார்
நிச்சயம்முடியும்
tamilsms.blog


Wishing you
Success in your Exams!
May Good Luck be in your
favor, and your preparation bring
fantastic outcomes!


HARD
WORK
WORKS


Best of Luck
परीक्षा की
शुभकामनाएं
HindiHelpGuru.com

Thank you

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