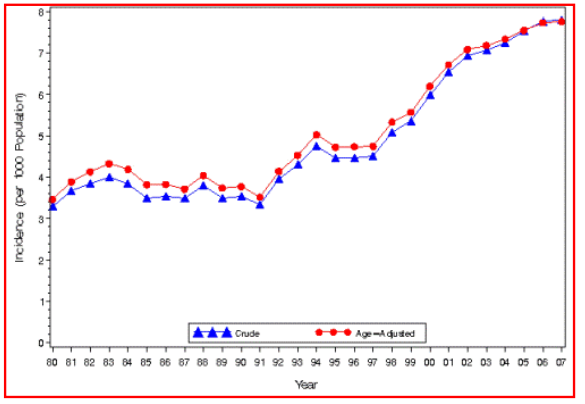
Altered Consciousness

Altered Consciousness

Diabetic Emergencies (Insulin Shock)

U.S. Incidence of Diabetes



Source: Centers for Disease Control and Prevention (CDC), National Center for Health Statistics , Feb 2009

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Diabetes Classification

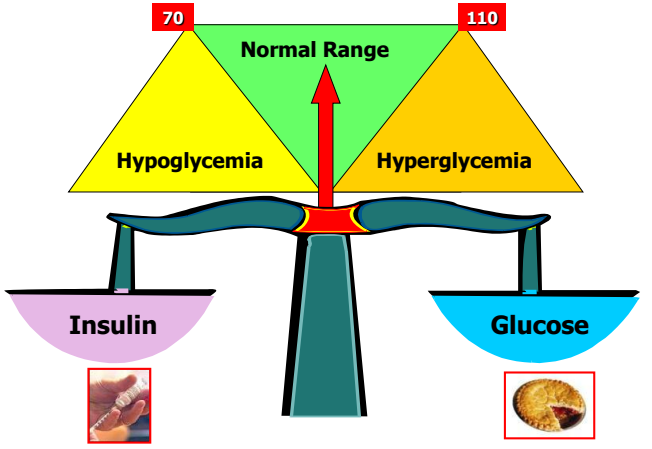
- Type 1
  - Absolute insulin deficiency, usually autoimmune process – 8%

Type 2

Insulin resistant with relative deficiency – 90%

- Gestational Diabetes Mellitus
  - Abnormal glucose tolerance during pregnancy
- DM associated with other conditions
  - Pancreatic disease, drug-induced, etc.

Diabetic Emergencies

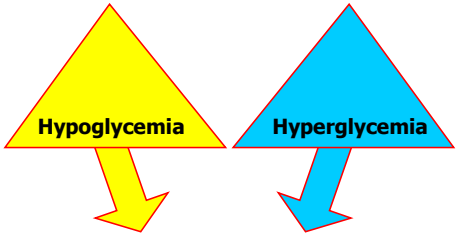


Diabetic Emergencies

Dental Management to Avoid Problems

- Morning appointments are best
- Confirm took insulin and ate usual meal
- What is their CBG – Check with glucometer
  - CBG < 70mg/dL or > 200mg/dL, defer Tx
- Major goal => "KEEP 'EM SWEET"

Diabetic Emergencies



Altered Consciousness

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Diabetic Emergencies

Differential Diagnosis in Diabetic with aLOC

Hypoglycemia	Hyperglycemia
❖Cool, wet, pale	❖Hot, flushed, dry
❖Confusion	❖Acetone breath
❖Lethargy	❖Dry mouth
❖Hunger	❖Irritable

Diabetic Emergencies

Diabetic Ketoacidosis

Lack of Insulin - - Hyperglycemia

↓

Glycogenolysis
Gluconeogenesis
Ketogenesis

↓

Ketoacidosis

↓

Coma

Diabetic Emergencies

Diabetic patients who behave in a bizarre manner or exhibit altered level of consciousness should be managed as if they are

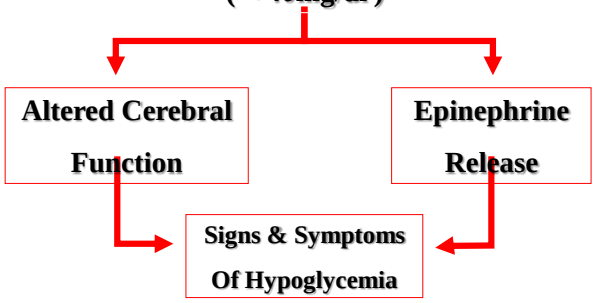
HYPOGLYCEMIC

until proven otherwise.

Insulin Shock

Hypoglycemia

(< 40mg/dl)



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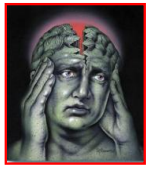
Insulin Shock

Hypoglycemia – Early manifestations

- Diminished cerebral function
  - Alteration of mood
  - Lack of spontaneity
- Weakness, dizziness
- Pale, moist skin
- Headache



Insulin Shock

Hypoglycemia – Late manifestations

- Sweating
- Tachycardia
- Hypotension
- Anxiety
- Seizure activity
- Unconsciousness

Insulin Shock - Management

* * Conscious Patient * *

Position patient comfortably

C - A – B – BLS as needed

Administer oral carbohydrate (InstaGlucose)

(Episode terminates)

Observe one hour

Discharge patient, escort?

(Episode continues)

Activate EMS

Glucagon 1mg IM or IV

Dextrose 50% 50ml IV

Discharge or hospital ?

Insulin Shock - Management

* * Unconscious Patient * *

Position patient supine, legs elevated

C – A – B – BLS as needed

Activate EMS - ASAP

<u>Parenteral Carbohydrates</u>

Dextrose 50% 50ml IV

Glucagon 1mg IM or IV

(Epinephrine 0.5mg SQ or IM)

Oral carbohydrates after recovers

Discharge or transport to hospital

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Altered Consciousness

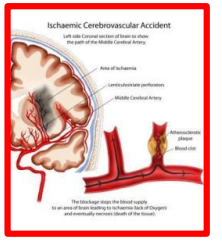
Cerebrovascular Accident

(Acute Stroke)

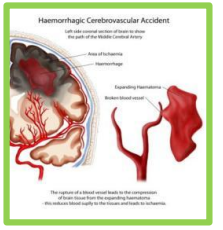
Cerebrovascular Accident

CVA Classification

- Cerebral Infarction (85%)
  - Thrombosis or embolism
  - Necrosis of tissue from ischemia



- Intracerebral Hemorrhage (10%)
  - Vessels rupture, bleeds
  - Rapid onset, severe headache



Cerebrovascular Accident

CVA Classification

Transient Ischemic Attack (TIA)

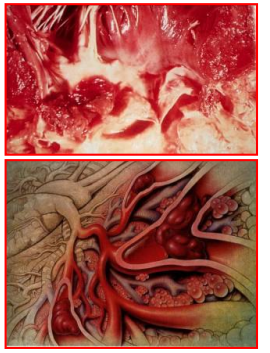
- Focal ischemic neurologic deficits that last < 24 hrs, usually resolve in 2 - 10 minutes
- Indicates cerebrovascular disease

"Angina of the Brain"

Cerebrovascular Accident

Associated Risk Factors

- Hypertension
- Atrial Fibrillation
- Abnormal heart valve
- Smoking
- Elevated lipids
- Prior TIAs



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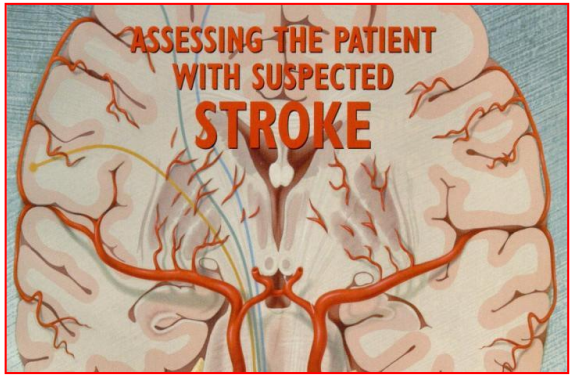
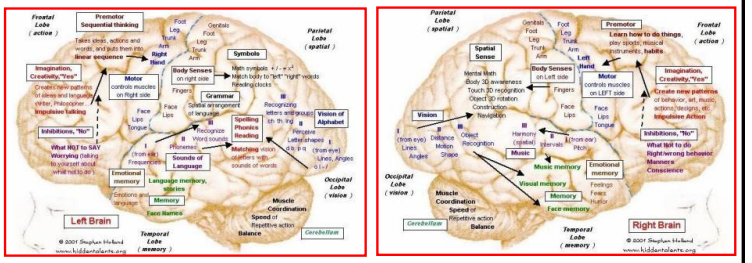
Cerebrovascular Accident

CVA or TIA Diagnostic Clues



Cerebrovascular Accident

CVA or TIA Diagnostic Clues



Symptoms vary with area of involvement

Cerebrovascular Accident

CVA or TIA Diagnostic Clues

- Hypertension, BP > 140/90
- Altered consciousness
- Hemiparesis, hemiparalysis
- Headache, blurred vision
- Asymmetry of face or pupils
- Incontinence
- Aphasia, slurring words

Cerebrovascular Accident

CVA or TIA Diagnostic Clues

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CVA or TIA Management

Position patient comfortably

↓

C – A – B – BLS as needed

↓

Monitor vital signs
Activate EMS

↓

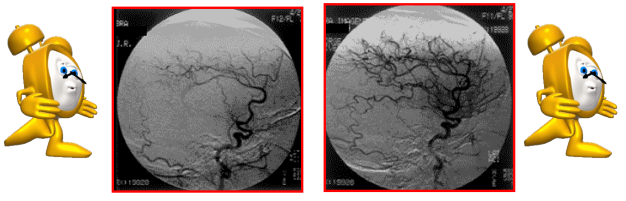
Administer oxygen
Elevate head if BP elevated

↓

ASA Stroke Protocols

CVA or TIA Management

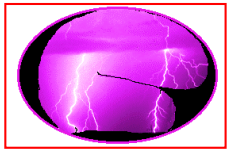
CVA or TIA Management



Time is Brain

Medical Emergencies

Seizures



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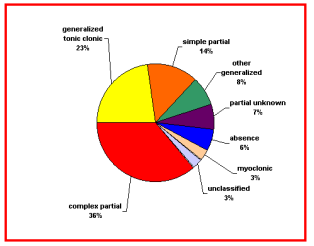
Seizures

Classification

- Partial Seizures
  - Simple partial
  - Psychomotor seizures
- Generalized Seizures
  - Grand mal, tonic-clonic
  - Petit mal, absence
- Status Epilepticus



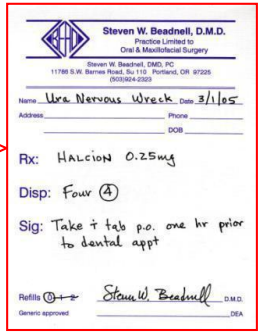
Seizures

What do you do when you have your seizure?

Seizures

Common triggering factors

- Flashing lights
- Fatigue, missed meal
- Emotional stress
- Alcohol ingestion
- Physical stress
- Hypoglycemia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Practice Limited to
Oral & Maxillofacial Surgery

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11786 S.W. Barnes Road, Su 110 Portland, OR 97225
(503)924-2323

Name Ura Nervous Wreck Date 3/1/05
Address Phone
DOB

Rx: Halcion 0.25mg

Disp: Four (4)

Sig: Take 1 tab p.o. one hr prior to dental appt

Refills ~~0~~ 1 2 Steven W. Beadnell D.M.D.
Generic approved DEA

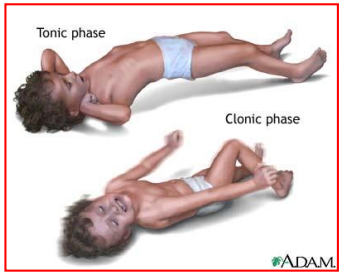
Seizures

Possible causes in dental office

- Epilepsy
- Local anes overdose
- Hyperventilation
- CVA (stroke)
- Hypoglycemia
- Syncope (hypoxia)

Grand Mal Seizure

- Prodromol Phase
  - Change in mood
  - Aura – related to senses
- Preictal Phase
  - Falls to floor
  - Epileptic cry
- Ictal Phase
  - Tonic – sustained contractions
  - Clonic – alternate flexor / extensor
- Postictal Phase
  - Muscle flaccidity
  - Incontinence
  - Slowly regains consciousness



Seizure Management

Ictal Phase

Position supine, legs slightly elevated

↓

Activate EMS if new onset

↓

C- A - B– BLS as needed

↓

* Protect from injury *
Administer oxygen
Monitor vital signs

Seizure Management

Postictal Phase

Keep supine, legs slightly elevated

↓

C – A – B – BLS as needed

↓

Monitor vital signs
Reassure patient, permit recovery

↓

Discharge patient

↓

To hospital | To home | To physician

Cardiac Emergencies

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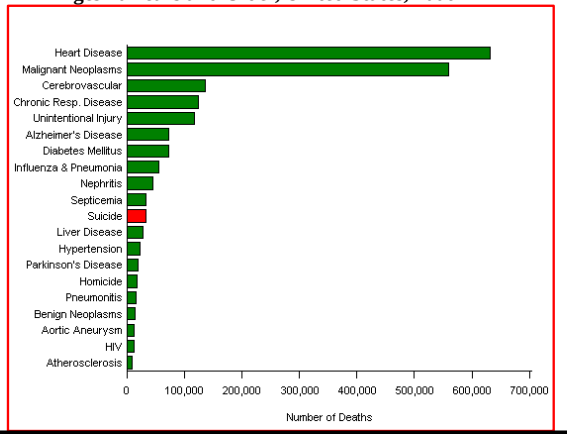
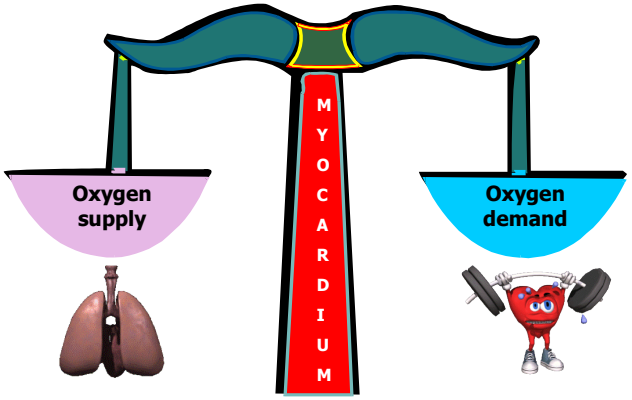
U.S. Causes of Death 2006

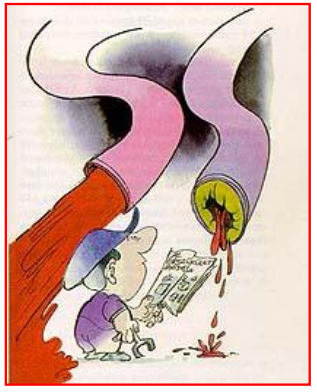
Twenty Leading Causes of Death Among Persons Ages 10 Years and Older, United States, 2006

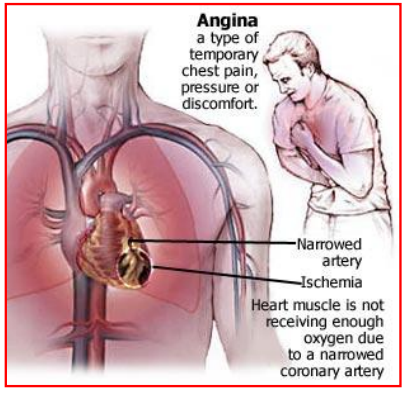


Ischemic Heart Disease



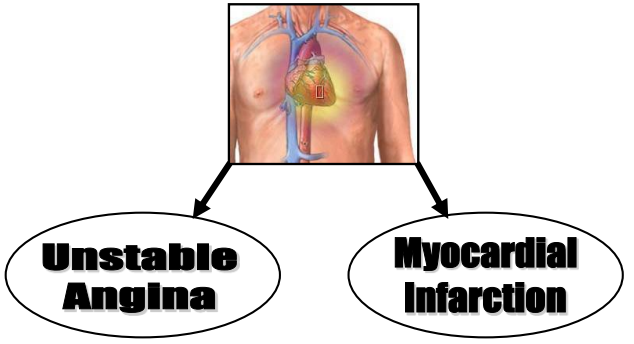
Ischemic Heart Disease





Chest Pain

Acute Coronary Syndrome



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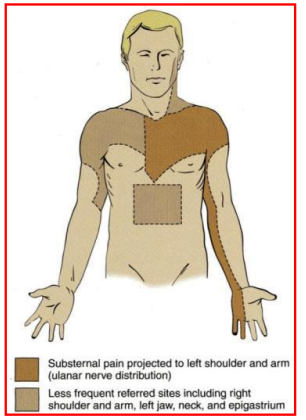
Cardiac Emergencies

Angina Pectoris

Angina Pectoris

Clinical manifestations

- Substernal, squeezing / burning pain
  - "Heavy weight", "Indigestion"
- Sudden onset with exertion or emotion
- Radiates to shoulder, face, left arm
- Subsides with rest or nitroglycerin



Angina Pectoris

Precipitating Factors

- Physical activity
- Hot, humid room
- Cold weather
- Large meals
- Emotional stress
- Caffeine ingestion
- Fever, anemia
- Cigarette smoking
- Smog
- High altitudes

Angina Pectoris

Anxiety, fear, pain

↓

Release of catecholamines (EPI)

↓

Increases BP, heart rate, contraction

↓

Increases myocardial oxygen demand

↓

Myocardial ischemia

↓

Chest Pain

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Angina Pectoris Management

Is this your typical angina?

- Location
- Radiation
- Severity of pain
- Other symptoms
- Response to NTG

Angina Pectoris Management

Position patient comfortably (upright)

BLS as needed, monitor vital signs

History of angina pectoris ? Typical Symptoms ?

YES — NO

Activate EMS

Nitroglycerin 0.4mg SL

Administer oxygen, monitor VS

Repeat NTG q3-5' , Total 3 doses

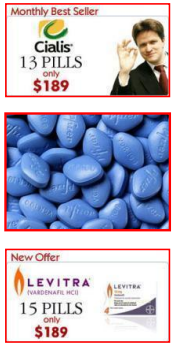
Discharge — Pain Resolves — Hospital

If no response in 3 doses, Tx as MI

Preventing Angina

Give 3-5' before local anesthetic injections

Nitroglycerin Contraindication



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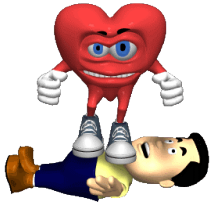
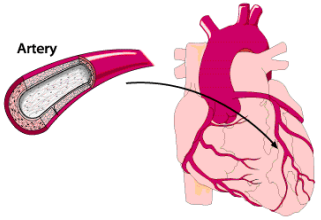
Cardiac Emergencies

Myocardial Infarction





Myocardial Infarction

Clinical manifestations

- Retrosternal severe pain
  - "Crushing", "choking"
- Usually > 30 minutes
- Radiates as angina
- N/V, palpitations, SOB
- "Impending doom"

Myocardial Infarction

Assume MI, not angina, if:

- New onset chest pain
- Change in previous angina pain
  - More severe, different location
- Pain unrelieved by rest or NTG

Myocardial Infarction Management

Position comfortably

↓

BLS, oxygen, NTG X 3 doses as in angina

↓

**** If no response or if pain resolves, but returns ****

↓

Activate EMS

↓

Administer fibrinolytics (ASA)

23% mortality reduction

ISIS-2 study

↓

Monitor vital signs

↓

Manage pain - narcotics
Morphine 2-15mg IV q15 minutes
Nitrous oxide is option

↓

Transport to hospital - - ACLS

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Myocardial Infarction Management

Time is Muscle

Cardiac Emergencies

Cardiac Arrest

Cardiac Arrest

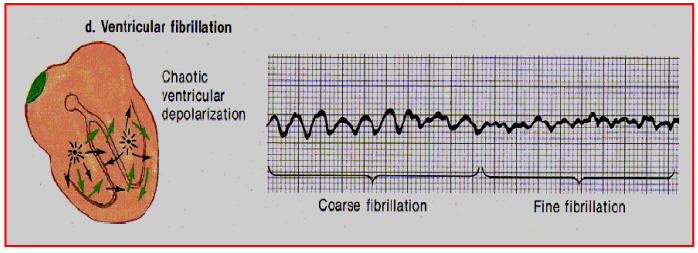
Possible causes

- Myocardial infarction
- Sudden cardiac death
- Airway obstruction
- Drug overdose reaction
- Anaphylaxis
- Seizure disorder
- Acute adrenal insufficiency

Cardiac Arrest

Ventricular Fibrillation

About 90% of cardiac arrests



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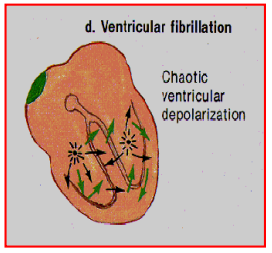
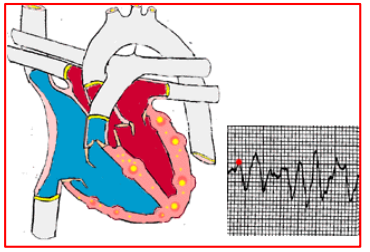
Cardiac Arrest

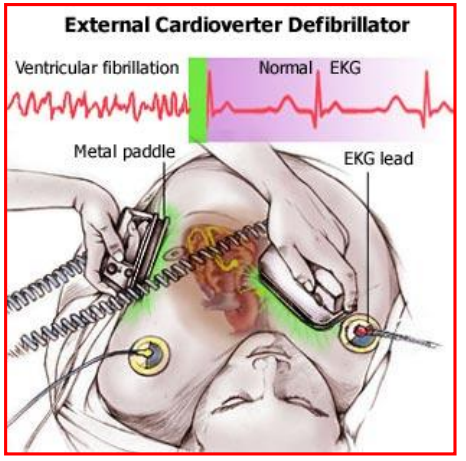
Ventricular Fibrillation

About 90% of cardiac arrests





Cardiac Arrest



Efficacy of Debibrillation

Conversion of Ventricular Fibrillation to normal rhythm

Time in Ventricular Fibrillation	Success of Defibrillation
Less than one minute	90%
One to two minutes	80%
Each add'l minute	Decreases 10%

Automated External Defibrillator

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AED Instructions

Instructions for operation – two steps

Step one

- ✓ Patient is unconscious
- ✓ Patient is not breathing
- ✓ Patient is pulseless

Step two

- ✓ Apply defibrillator pads
- ✓ Follow verbal instructions

BLS – The Primary Survey

First C – A – B - D

- Circulation
  - Give chest compressions
- Airway
  - Open the airway
- Breathing
  - Provide positive-pressure ventilation
- Defibrillation
  - Shock ventricular fibrillation

Drug-Related Emergencies

Allergic Reactions

Allergic Reactions

Common Dental Allergens

- Antibiotics
  - Penicillin
  - Cephalosporins
  - Tetracyclines
- Analgesics
  - Aspirin-compounds
  - Nonsteroidals
- Opioids
  - Meperdine
  - Codeine
- Antianxiety agents
  - Barbiturates
- Local anesthetics
  - Esters: Benzocaine
  - Sodium bisulfite
  - Methylparaben
- Others
  - Acrylic monomer
  - Latex

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Allergic Reactions

Allergen

↓

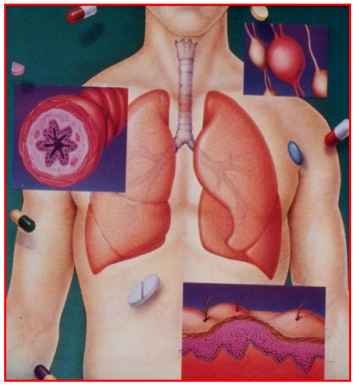
Mast cells & Basophils

↓

Histamine
Leukotreines
ECF – Anaphylaxis
Kallikreins
Prostaglandins

↓

Allergic phenomenon



Allergic Reactions - Cutaneous

Clinical manifestations

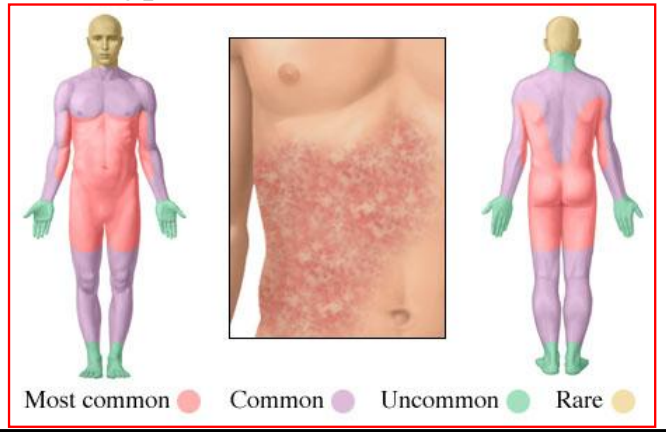
Increased vascular permeability
Vasodilation

↓

Urticaria / Hives
Rash
Pruritis (itching)
Tingling and warmth
Flushing

Allergic Skin Reactions

Typical Distribution Pattern



Allergic Reactions - Cutaneous

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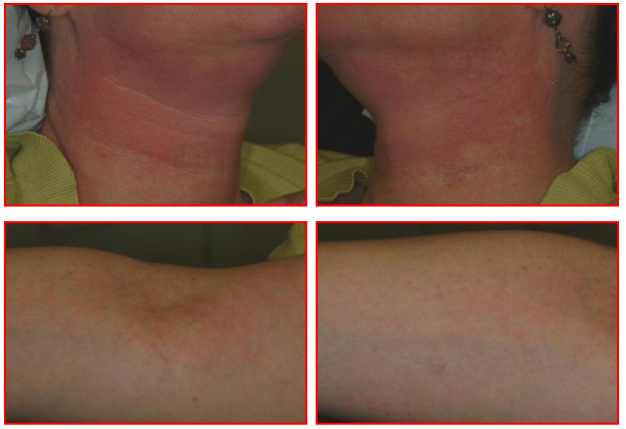
Allergic Reactions - Cutaneous



Allergic Reactions - Respiratory

Clinical manifestations

Increased vascular permeability & vasodilation
Increased exocrine gland secretions
Bronchiole smooth muscle contraction

Rhinitis	Laryngeal edema	Bronchospasm
Nasal congestion	Dyspnea	Cough
Nasal itching	Hoarseness	Wheezing
Rhinorrhea	Throat tightness	Tachypnea
	Laryngeal stridor	

Allergic Reactions - Respiratory

Bronchospasm

Cough
Wheezing
Tachypnea

Allergic Reactions - Cardiovascular

Clinical manifestations

Increased vascular permeability & vasodilation
Decreased cardiac output
Loss of vasomotor tone

Circulatory collapse	Dysrhythmias	Cardiac arrest
Light-headed	Light-headedness	Pulselessness
Weakness	Weakness	EKG changes
Syncope	Palpitations	Vent fibrillation
Ischemic chest pain	Ischemic chest pain	Asystole

Allergic Reactions

Predictors of severity of the reaction

Rapidity of onset

of signs and symptoms

Rapidity of progression

of signs and symptoms

Tx Allergic Reactions

Epinephrine

- Reverses the pathologic processes causing the allergic reaction

Diphenhydramine

- Antagonizes histamine, preventing progression of the allergic reaction

Delayed-Onset Allergic Skin Rxn Management

Onset skin reaction (> 1 hour) from allergen

Position patient comfortably

↓

Assess and perform BLS as needed

↓

Definitive care

Increasingly severe symptoms

Observe patient	Administer oral histamine blocker prn Benadryl 50mg oral	Administer IM + oral histamine blocker q4-6h Benadryl 50mg IV or IM Benadryl orally X 2-3 days (25 – 50mg qid)

Rapid-Onset Allergic Skin Rxn Management

Onset skin reaction (< 1 hour) from allergen

Position patient comfortably

↓

Assess and perform BLS as needed

↓

Definitive care

NO ← **Cardiac or respiratory involvement ?** → **YES**

NO	YES
Benadryl 50mg oral / IM	Oxygen, start IV
↓	↓
Discharge	Epinephrine 0.3mg SQ, IM, IV
	↓
	Activate EMS 911
	↓
	Benadryl 50mg IV or IM
	↓
	Hospital

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Tx Respiratory Allergic Rxn

Position patient comfortably

Assess and perform BLS as needed

Calm patient

Activate EMS 911

Administer Epinephrine 0.3mg q 15-30 min
SC, IM, IV, inhaler

Benadryl 50mg IM

Discharge or hospitalize

What is it ?

Allergic Reactions

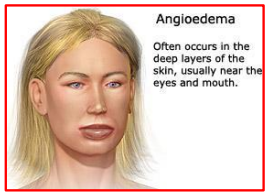
Angioedema

Angioedema

A noninflammatory, nonpruitic edema involving the skin, subcutaneous tissue, underlying muscle, and mucus membranes, especially those of the GI and upper respiratory tracts.

Steven W. Beadnell, DMD
September 2012

Angioedema



Angioedema

Three types of angioedema:

Allergic angioedema

Hereditary angioedema

Idiopathic angioedema

Angioedema

Exposure to trigger

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Faulty or deficient C1-INH

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Increased Bradykinin levels

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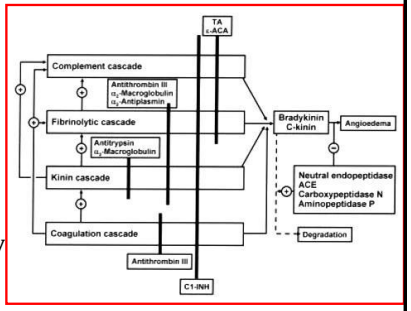
Increased vascular permeability

↓

Mucosal edema



Angioedema

Deficiency or Defect in C1-INH

- Inherited or acquired defect

High association with dental office triggers

- Latex, other office materials

Other known triggers

- ACE inhibitors
- Other drugs: Abx, NSAIDs, ASA
- Environmental

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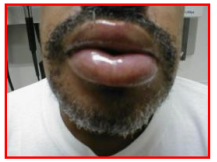
Allergic Angioedema

Allergic angioedema symptoms include:

Marked skin swelling:

- **Eyes, mouth, hands, feet, throat**
- **Usually does not itch, may burn or be painful**
- **May be asymmetric**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Abdominal pain or cramping – swollen mucosa

Hives possibly present

Laryngeal edema, hoarseness

Angioedema Management

Remove trigger

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Secure Airway

↓

Transfer to hospital

↓

Medical ICU

Medications include:
Antihistamines (Benadryl)
Adrenalin (Epinephrine)
Terbutaline (Bronchodilator)
Cimetidine (Tagamet)
Corticosteroids
Sedatives
Tranquilizers

Activate EMS

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