

2026
Annual Session for the
Missouri Dental Association



**CONNECT
4SUCCESS**

**“Actions and Algorithms
for Medical Emergencies”**

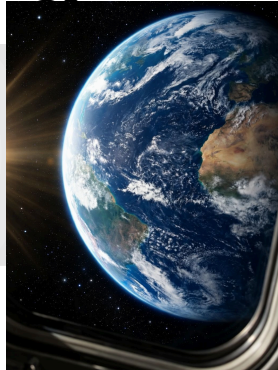
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**The Emergency
Kit**



**What's in Your
Emergency Kit?**

3

**Essential Drugs in
an Emergency Kit
for: 2025**

4



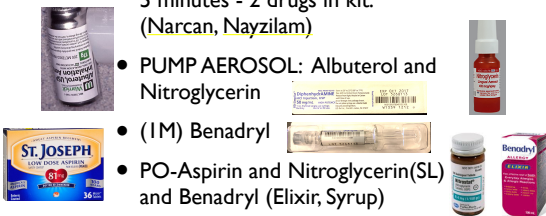
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Note: placing the drugs where you want them with color coding, is in itself, a practice drill for the actual emergency

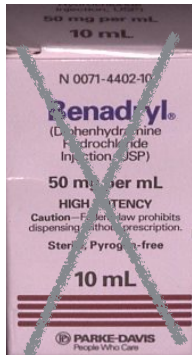
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Drugs included in the "Top 10 List": how delivered

- IV: 15 to 30 seconds NONE!
- IN: Equal to IV or up to 5 minutes - 2 drugs in kit: (Narcan, Nayzilam)
- PUMP AEROSOL: Albuterol and Nitroglycerin
- (IM) Benadryl
- PO-Aspirin and Nitroglycerin(SL) and Benadryl (Elixir, Syrup)



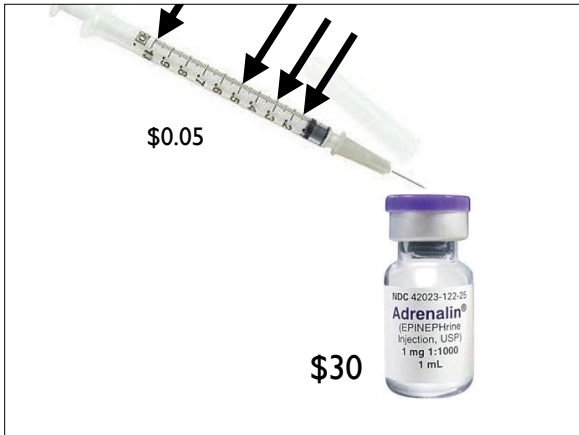
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10

4 possible uses
for
Epinephrine?

11

- *Anaphylactic Reaction*
- *Severe Asthma* without resolution
- Unconsciousness from *Hypoglycemia* with no EMS
- *Cardiac Arrest* with no EMS after 6 minutes with "No Shock Advised"

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Simple Syncope:
If No Response to
Spirits of Ammonia *after 15+ sec's*
OR better - a Pulse Oximeter
(Immediately) shows a "0" Pulse Rate



? - Get What?

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**Immediately after any
active Seizure:**
If a Pulse Oximeter shows a "0"
Pulse Rate



? - Get What?

15



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"Seizure-like activity at the onset of emergency medical service-witnessed out-of-hospital cardiac arrest"
Murasaka K., *Emergency Medicine Resuscitation Plus* - Sept 2021

- Seizure-like activity occurs in up to 13% of Cardiac Arrests
- Usually a good sign* and that patient is in a shockable rhythm
- Neurologically favorable outcomes
- Usually seen in young males with a cardiac history

*Another positive sign in a Cardiac Arrest is an Agonal Breath

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Guidance for:



- Asthma Attack not responsive to Rescue Inhaler (MDI) or Nebulizer

- Cardiac Arrest after 6 minutes
- Unconscious Hypoglycemic

- Status Epileptics



- Post Seizure Rule/Out Cardiac Arrest
- Anaphylactic Shock not responding to Epi

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For all Unconscious (LOC)

- 1) Supine
- 2) Head Tilt / Chin Lift
- 3) 100% Oxygen
- 4) Pulse Oximeter
- 5) ~~Spirits of Ammonia ?~~

*Only after 15 - 20 seconds with no response



X*

*Contraindicated if patient has Asthma and if an **Asthmatic Attack** caused the loss of consciousness

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Can cause serious laryngeal edema making the Asthma worse!

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Rule outs for Loss of Consciousness

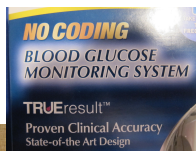
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- Vasovagal
- Hypoglycemia
- Bradycardia
- Hypotension
- Dehydration
- Seizure
- Anemia
- Anaphylactic Shock
- Pulmonary Embolism
- Stroke
- Cardiac Arrest

R/O's for Loss Of Consciousness (LOC)

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Keep a Pulse Oximeter,
Glucometer and Auto BP in
your office*

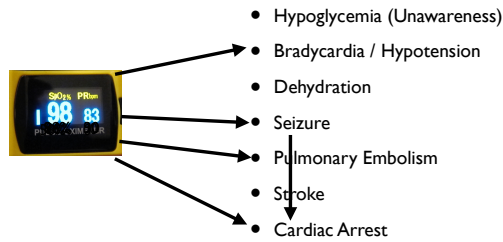


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* OR WIN ONE
TODAY!

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○ Syncope: After 12 - 15 Seconds consider



Manual change

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Basic (10) Emergency Kit

- *Oxygen Tank as an: **"E" Cylinder** with AMBU Bag



- 1) **Epi**: as **EpiPen 2-Pak** (0.3mg of 1:1,000) and Epi solution for IM use (1:1,000) = has 0.3mg in 0.3cc or 0.3ml of solution,
Epi Pen Junior = .15mg = 1/2 the dose



33 lbs to 66 lbs or
15 kg to 30 kg



200 lb = 91 kg

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British dosages for Epi:

MEDICAL EMERGENCIES IN THE DENTAL PRACTICE

MEDICAL EMERGENCY	SIGNS & SYMPTOMS	MANAGEMENT
Adrenal crisis	⊠ Collapse, pallor, cold & clammy skin ⊠ Hypotension & dizziness ⊠ Vomiting & diarrhoea	⊠ Arway Breathing Circulation Disability Exposure ⊠ Call 999, state "Adrenaline crisis", SBAR ⊠ Lie flat, administer oxygen 15 litres/min ⊠ Patient's hydrocortisone emergency IM kit at hand, hydrocortisone 100mg IM.
Anaphylaxis	⊠ Signs & symptoms can include: ⊠ Sudden onset ⊠ Urticaria &/or angioedema, flushing & pallor ⊠ Respiratory distress, stridor, wheeze &/or hoarseness ⊠ Hypotension & tachycardia ⊠ Anaphylaxis likely ⊠ Sudden onset & rapid progression of symptoms ⊠ Life-threatening A &/or B &/or C ⊠ Skin &/or mucosal changes	⊠ Arway Breathing Circulation Disability Exposure ⊠ Call 999, state "Anaphylaxis", SBAR ⊠ Lie flat, elevate legs if breathing not impaired; administer oxygen 15 litres/min ⊠ Administer adrenaline 500 micrograms IM (0.5ml of 1:1000) ⊠ Repeat adrenaline at 5 minute intervals until an adequate response ⊠ Paediatric doses of adrenaline: ⊠ < 8 yrs = 150 micrograms (0.15ml of 1:1000); 8-12 yrs = 300 micrograms (0.3ml of 1:1000); > 12 yrs = 500 micrograms (0.5ml of 1:1000)
Asthma	⊠ Breathlessness & expiratory wheeze ⊠ Severe: inability to complete sentences in one breath, RR>25/min, pulse>110/min ⊠ Life threatening: cyanosis or RR<8/min, pulse < 50/min, wheastion, confusion, decreased level of consciousness	⊠ Arway Breathing Circulation Disability Exposure ⊠ Sit upright, if available, follow patient's personalised asthma action plan (PAAIP) ⊠ 2 puffs (100 micrograms/puff) Ⓟ2 bronchodilator: inhaled e.g. salbutamol; repeat doses may be necessary (early use of spacer device) ⊠ Unresponsive response or if severe life threatening: Call 999, SBAR ⊠ While awaiting ambulance: oxygen 15 litres/min; Ⓟ2 bronchodilator via spacer given one puff at a time, inhaled separately using tidal breathing; according to response, give another puff every 30 seconds up to a maximum of 10 puffs
Cardiac Emergencies	⊠ Symptoms can vary but commonly: ⊠ Chest pain or discomfort that suddenly occurs and doesn't go away. It may feel like pressure, squeezing or heaviness in your chest. ⊠ Pain that may spread to your left or right arm or may spread to your neck, jaw, back or stomach ⊠ Feeling sick, sweaty, light-headed or short of breath NB: Heart attacks in women commonly missed	⊠ Arway Breathing Circulation Disability Exposure ⊠ Call 999, state "Heart attack", SBAR ⊠ Comfortable position (usually sitting up) ⊠ GTN spray 400-600mcg (typically 2 activations) sub lingual ⊠ Dispersible aspirin 300 mg to chew (unless there is clear evidence of allergy to it) NB Known angina: sit down, rest, GTN; no relief after a few minutes repeat GTN. Still no relief after a few minutes - heart attack protocol: call 999, SBAR & aspirin (see above)

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Pediatric dose in UK

- < 6 = 0.15mg of 1/1000
- 6-12 = 0.3mg of 1/1000
- > 12 y/o = 0.5mg of 1/1000



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**Allergy =
hypersensitive state
caused by exposure
to an Allergen,
re-exposure to which
causes a heightened
capacity to react.**

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Allergies

- 30% of Americans claim to be allergic to something
- 10+% have documented allergies

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Potential office Allergens:

- Antibiotics
- NSAIDS
- Aspirin
- Latex
- Chlorhexidine
- Acrylic liquids
- Flavoring in the topical

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Anaphylaxis

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Anaphylaxis

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Anaphylaxis =
1.6% - 2.0+%
occurrence in the U.S.

Cardiac Arrest =
0.1% occurrence
in the U.S.

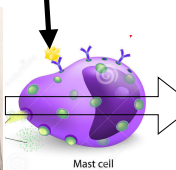
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Anaphylaxis =
Is a Mast Cell
Medicated,
Life Threatening,
Muti-Organ
Disorder

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Anaphylactic Reaction*

*Foreign antigen meets a Specific IgE
Antibodies found on tissue mast cells
and peripheral blood basophils



3+
Systems



Bilateral !

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An Important Digression

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Angioedema can also be from Bradykinin release



This is a condition that causes leakage of blood vessels resulting in the swelling of deeper layers of the skin, subcutaneous and submucosal tissues BUT is: **Unilateral !**

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Angioedema is a side effect of the # 3 most Prescribed Drug in the United States

- What is that drug?

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***Angioedema** is a common Side Effect of:

1) **ACE Inhibitors*** - Lisinopril (Zestril, Prinivil)

ACE inhibitors cause angioedema by direct interference with the degradation of bradykinin, thereby increasing bradykinin levels and potentiating its biologic effect, leading to increased vascular permeability (vasodilation) and inflammation.

*Angiotensin Converting Enzyme Inhibitor

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ACE Inhibitors:
(Angiotensin Converting Enzyme Inhibitor)

ACE Inhibitors

Lisinopril (Zestril, Prinivil)

- benazepril (Lotensin)
- captopril (Capoten)
- enalapril (Vasotec)
- fosinopril Monopril)
- moexipril (Univasc)
- prinindopril (Aceon)
- quinapril (Accupril)

1/3 of all ER visits in the U.S. for Angioedema are due to this Side Effect from these drugs

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Non-Allergic Angioedema

Bradykinin mediated
(Lack of it's breakdown)

Trigger?	- ACEI/ARB commonly involved. - Can be triggered by minor trauma .
Distribution	- Often focal/asymmetric . - Often primarily involves tongue.
	Eyelids in 2%
	Lips in 24%
	Tongue in 42%
	Larynx in 17%
	Extremities in 4%
Rapidity of onset	Slower (evolves gradually over many hours).
Associated skin findings	- No urticaria or pruritus . - Hereditary angioedema may cause erythema marginatum (erythematous rings on the torso which aren't pruritic).
Involvement of other organs	Usually doesn't involve other organs, although can involve bowel (causing pain, diarrhea, nausea).
Response to therapy	Unresponsive to epinephrine, antihistamine, and steroid.

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Urticaria = Welts,
Red Hives
Pruritus = Itchy skin

This Is Not seen
with ACE '**Unilateral**'
Angioedema:
This is Not ALLERGIC!

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Urticaria = Welts,
Red Hives
Pruritus = Itchy skin

Yes
with Allergic Reaction

No
with ACE Inhibitors =
'Unilateral' Angioedema
- NOT Allergic

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Allergic Angioedema

Histamine mediated

Trigger?	- Allergic trigger (medications, foods, insects, etc.)
Distribution	- Diffuse, symmetric. - More often involves lips & eyes. Eyelids in 4% Lips in 30% Tongue in 33% Larynx in 3% (stridor, hoarse) Extremities in 11%
Rapidity of onset	Fast (may evolve over minutes)
Associated skin findings	Urticaria, flushing, or generalized pruritus may be seen. Erythema or itching in 53%
Involvement of other organs	May occur in context of anaphylaxis with involvement of other organs (e.g., hypotension, wheeze, nausea/vomiting, diarrhea).
Response to therapy	Responds to epinephrine, antihistamine, and steroid.

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And we're Back

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Since 2012 Stats have changed:

- More than 40% of children with **food allergies** has experienced a severe allergic reaction - Anaphylaxis
- Anaphylaxis **from food** has **increased 4X's**

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IOS for a potential Food Anaphylactic Reactions

- **Teenagers and young adults** at highest risk
- **If a history of Asthma AND** food allergies...more likely to have a severe and/or a fatal outcome

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Vs.

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vs. DIA=Drug Induced Anaphylaxis

Antibiotics	35.5–66.6% of all cases of DIA [Ref. 4, 12, and 14] β-Lactams: penicillins 13.1–40.7% (most frequently amoxicillin), cephalosporins 5.4–9.5% [Ref. 4 and 12] Non-β-lactams: sulphonamides 13.4%, macrolides 3.3%, fluoroquinolones 3.2–5.9%, tetracyclines 1.8% [Ref. 4 and 12]
NSAIDs and other analgesics	21.5–28.5% of all cases of DIA [Ref. 4 and 12] NSAIDs 11.5% Opiates 8.7% Local anaesthetics 1.3% In Latin America, NSAIDs were the first cause of DIA, accounting for 57.8–72% of all cases of DIA [Ref. 3 and 27], and also in Portugal, Europe (47.9% of the cases) [Ref. 14]
Particular settings Peri-operative	Neuromuscular blocking agents 60.6% (2012, [Ref. 29]) (out of which suxamethonium 68.2%, atracurium 13.9%, rocuronium 10.6%) Antibiotics 18.2% (2012, [Ref. 29]) (out of which cephalosporins 53%, penicillins 35%, vancomycin 7.7%) Surgical dyes 5.4% (2012, [Ref. 29]) (out of which Patent blue 89%, methylene blue 11%) Latex 5.2% (2012, [Ref. 29]) Chlorhexidine from 1% (2012, [Ref. 29]) to 9% [Ref. 30], 3rd or 4th cause of peri-operative anaphylaxis in some series [Ref. 29]

Drug-Induced Anaphylaxis: An Update on Epidemiology and Risk Factors.
Int Arch Allergy Immunol 2020;181:481–487

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DIA=Drug Induced Anaphylaxis

- Largest increase in frequency is in the group **>60 years of age**, with a 71% increase over last 10–15 years.
- **Females are 2X** as likely to develop DIA with increasing age
- Overall - deaths from DIA have **doubled** for all groups over the last decade **(2X)**

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Food vs. Drug

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Index Of Suspicion for potential Food Induced Anaphylaxis

- Teenagers and Young Adults
- With Asthma

Up 400%

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Index Of Suspicion for potential Drug Induced Anaphylaxis (DIA)

- Elderly (>60)
- Female
- Concomitant-
 - Respiratory (Asthma) and/or
 - Cardio Vascular Disease

Up 200%

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Anaphylaxis

- Major organs affected are the:
 - Skin (Flushing, Urticaria, **Angioedema**)
 - Respiratory System (**Stridor**, Rhinorrhea, Laryngeal edema, Wheezing, Asphyxiation)
 - Gastrointestinal System (Bloating, **Intestinal Pain**, Vomiting and Diarrhea)
- All of the above organ systems are loaded with **mast cells** and **basophils** circulating nearby

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Anaphylaxis

- -Cardiovascular System
<BP = (<90/60) = Syncope to Cardiogenic Shock* = ultimate cause of death
- Also: Tachycardia and Arrhythmias leading to possible **Cardiac Arrest**

*Histamine directly causes an increase in vascular permeability and vasodilation

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Anaphylaxis-

Other Effects:

- **Urinary Incontinence**
- Diaphoresis - increased sweating to profuse
- Pruritus (severe itching especially around the face, neck and back)
- Urticaria (hives, weals, welts, rash)

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Anaphylaxis: Patients frequently report:

- A peculiar “**Metallic Taste in their mouths**”
- And an “**Impending Sense of Doom**”

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Anaphylaxis

- You loose 1/3 to 1/2 the volume of your body to edema and therefore a severe lowering of BP
- The effect of placing supine is equal to a 2 liter infusion of fluids!

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Anaphylactic Reactions

62% Females / 38% Males

- Do not allow patients experiencing an Anaphylactic Reaction to sit up - **keep supine till EMS arrives**
- A quick change in position with severe hypotension can initiate **Cardiac Arrest!**

!

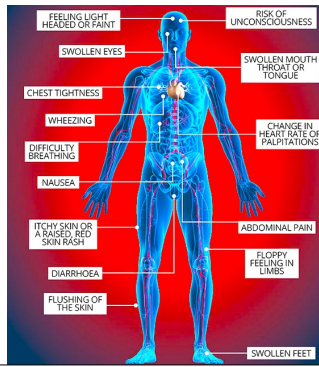
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Anaphylaxis:

What a Serious Allergic Reaction Does To Your Body

Angioedema

Stridor



<90/60

Angioedema

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Initial Treatment for Anaphylaxis

- If Cardiovascular distress (low BP) (leading to LOC) - Position supine = 2 liters of fluid
- 100% **Oxygen*** **Always to start**
- **Epi 0.3mg of 1:1000 adult (up to 0.5mg)**

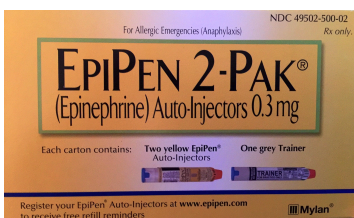
Why?

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High Oxygen makes it more difficult for Mast Cell Degranulation - so it's less severe vs. if Low Oxygen = Hypoxia

Hypoxia alone:
can induce more mast cell
degranulation THEREFORE:
Oxygen delivery at the onset of
an Anaphylactic reaction is
highly suggested!

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Talks to you!

- EpiPen 2-PAK has 2 doses and a Trainer



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When to Administer
Epi....
Signs and Symptoms of
Anaphylaxis

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When to Administer
Epi....

- • **Angioedema
(Bilaterally)**

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When to
Administer Epi

- • **Signs of Circulatory
Malfunction/Collapse**
- a) Altered Mental Status
 - b) Cold, Clammy and Pale Skin
 - c) Hypotension (fall of >30% below baseline)
 - d) Excessive weakness
 - e) **BP < 90/60** (Loss of Consciousness)

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When to Administer Epi

- **Signs of Respiratory Distress/Difficulty**

- a) High Pitched Voice
- b) Stridor

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Ask your patient
to talk to you
about anything

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Ask your patient
to talk to you
about anything

Keep the conversation going as
that will monitor 2 Systems

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When to Administer Epi..
When Circulatory Collapse,
Respiratory Difficulty and/or
Angioedema are associated
with

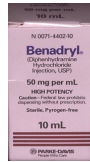
- **Abdominal Pain**
 - a) Cramps
 - b) Nausea
 - c) Vomiting and/or
- **Incontinence**

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Oxygen

Meds to use: 100% Oxygen

- 1) **Epinephrine** 0.3 mg to 0.5mg of 1:1,000 solution IM (Q5-7 min)
- 2) **Albuterol*** Inhaler then Nebulizer
- 3) **Diphenhydramine** 50 mg IV/IM



*Albuterol (also known as Salbutamol)

Benadryl = H1 Blocker
Pepcid, Tagamet = H2



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Adrenalin=Epinephrine

- **B₁**=directly increases heart rate and cardiac output..
- **B₂**=causes relaxation of smooth muscles in Lungs.....allowing open passages and more air exchange, and in the pupil—causes ciliary muscle relax - far vision focus and there is dilation of pupil, vasodilation in muscles
- **A₁**=causes contraction/constriction of peripheral smooth muscle in arterioles resulting in increasing blood pressure

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Epi Pen and Epi Jr Multiple Off-Label uses:

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Case A

- .3 of 1/1000 OK for 150 lb
- .5 of 1/1000 if **over 200 lb**
= 91 Kg but

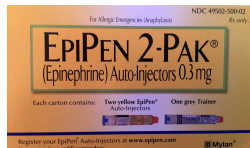
How to make it?

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Exhibit A

Epi pen + Epi Jr.

- $.3 + .15 = .45$ (close enough)



+



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Case B

- Time issue - run out of Epi Pens
used 2 (.3) Pens (Q5-7 minutes) and
no response from EMS and now need
another dose

How to make it?

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Exhibit B

Epi Jr. + Epi Jr.

- If at 10-14 minutes and used
both Epi Pens and no EMS
response and need a 3rd dose



+



80

Case C

Frail elderly asthmatic not responding to Albuterol Pump or Nebulizer

- Elderly, frail (80 -100 lb) and on multiple Cardiac Meds

How to make it?

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Exhibit C

Epi Jr. 1st followed by another Epi Jr.

- If 1st dose is not effective (in an individual from 6 - 12)



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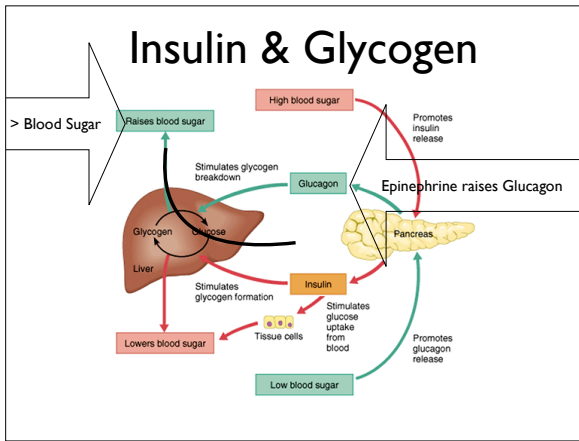
Glucagon is a hormone that acts on Liver Glycogen to convert it into Glucose

Epinephrine stimulates Glucagon

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Stress Induced Hyperglycemia is a result of Epinephrine + Glucagon + Cortisol all acting synergistically

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Case D (rare and off-off-label)

- Unconscious Diabetic from Hypoglycemia (only if 1, 2 and 3) ?
- 1) No EMS nearby or responding
- 2) No Glucagon available in any form
- 3) Have a low blood sugar reading (40-45 mg/dl and lower)
- Consider - Epi Pen or Epi Pen Jr



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Exhibit D



or



***Note:** This will not reverse unconscious hypoglycemia to consciousness but will raise Blood Sugar higher from dangerously low

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Guidance for:

- Asthma Attack not responsive to Rescue Inhaler (MDI) or Nebulizer
- Cardiac Arrest after 6 minutes
- Unconscious Hypoglycemic
- Status Epileptics
- Post Seizure Rule/Out Cardiac Arrest
- Anaphylactic Shock not responding to Epi

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In an ANAPHYLACTIC REACTION
YOU MUST BE
ASSERTIVE!

If you use Epi - the patient
may die, *However*
If you don't use Epi the
patient
WILL DIE !

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Allergic Reactions

Mild/Moderate

- Rash-Hives/Welts (Urticaria)
- Itching (Pruritus)
- Runny Nose
- Watery Eyes
- Hot or Cold

Severe

- Angioedema (Swelling of Tongue)
- Difficulty Breathing
- Loss of Consciousness BP < 90/60
- Change in pitch of voice (Stridor)
- Incontinence and GI pain

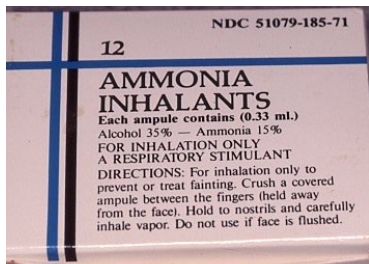
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Basic (10) Emergency Kit

-
- 2) ~~*Spirits of ammonia (crush and wave 8 - 10's under nose)*~~
 - 3) Benadryl Elixir and Benadryl 50mg/cc for IM injection and 50mg. tablets
 - 4) Nitroglycerin pills or (pump) sublingual = dissolve under tongue
 - 5) Aspirin (4 baby, 81mg. each) to be chewed then swallowed- after Nitro in "NONA" for MI

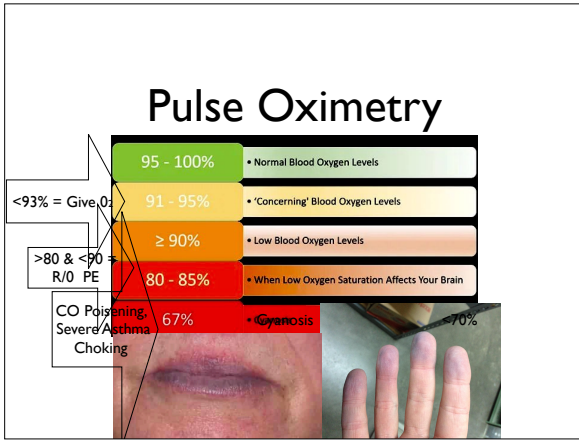


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When? Case Scenario

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R/O's for LOC: all get Oxygen

- -Vasovagal (OK)
- -Hypoglycemia (Glucometer)
- -Bradycardia
- -Hypotension (OH) (BP)
- -Dehydration (Fluids)
- -Seizure (Midazolam)
- -Anaphylactic (Epi)
- -Pulmonary Embolism (ER)
- -Stroke - Pulse? (ER)
- -Cardiac Arrest - Pulse?

Sat% Pulse

83% 120

No Response but :Yes Pulse

No Response **and** No Pulse

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95



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Basic (10) Emergency Kit



- 2) ***Spirits of ammonia** (crush and wave 8"- 10"s under nose)
- 3) **Benadryl Elixir** and Benadryl 50mg/cc for IM injection and 50mg. tablets
- 4) **Nitroglycerin pills** or (pump) sublingual = dissolve under tongue
- 5) **Aspirin** (4 baby, 81mg. each) to be chewed then swallowed- after Nitro in "NONA" for MI

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Mild Allergic Reaction:

- **Skin: rash and edema can progress**
- **Urticaria: Hives**
- **Pruritus: Itching**

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Mild Allergic Reaction:

- **The faster the progression occurs the worse it will get**
- = Increased Index of Suspicion

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Mild Allergic

- Must check throat and lips, sound of voice and lung sounds, while looking and listening a BP cuff is placed on the arm! CALMLY!!
- Patients ability to talk is critical- engage in conversation throughout episode and listen to pitch of voice

100

DELAYED REACTION
(60 minutes after exposure to allergin)

- LOCAL REACTION: Slow progression- Hives, Itching, Rash and Flushed skin
- This is not life threatening--- treatment is PO (liquid) Benadryl 50mg. 3X day x 3 days..

101

Benadryl Liquid will work faster than pills or tablets

- Children's section:
- 50 mg Elixir (Syrup) will be = to 3 Tablespoons as 1 Teaspoon = 5 mg

3 Teaspoons = 1 Tablespoon
So 3 Tablespoons = 15 mg X 3 = 45 mg



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VS.

- If Progressing quickly- and spreading, or the patient is very uncomfortable (but no respiratory stridor and patient can talk, and BP is OK) then give:
- IM Benadryl-50mg (1.0 ml = 1.0 cc) into the Deltoid Muscle
- Be Epi ready!!



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Severe Allergy



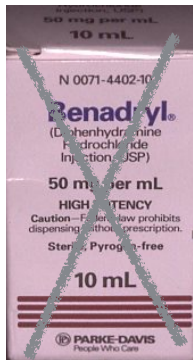
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Mild - Severe Allergy

But Not Anaphylactic

IM Benadryl 50 mg

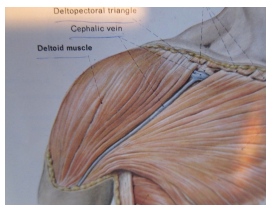
105



50 mg / ml

106

deltoid muscle



107

Severe Allergic
Reaction but
NOT
Anaphylactic

How do we know it's
not Anaphylactic?

108

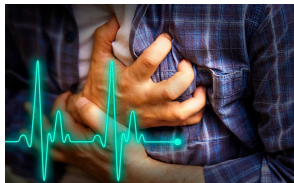
Not Anaphylactic if:

- Not feeling faint or lightheaded
- Able to talk in a normal voice
- Can breathe without difficulty
- No sign of Angioedema
- No Gastrointestinal Pain
- No Incontinence

109



Cardiac Emergencies

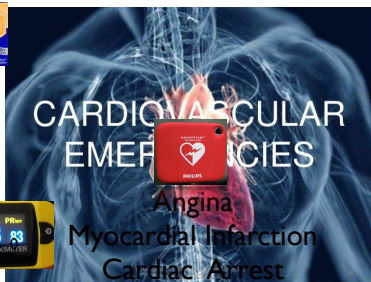


110

Ejection Fraction

→ A normal ejection fraction is 55-70 percent. An ejection fraction 50 is of concern and below 40 percent means your heart isn't pumping enough blood and maybe failing.

111



Angina
Myocardial Infarction
Cardiac Arrest

O₂

Red

112

Basic (10) Emergency Kit

- 2) ***Spirits of ammonia** (crush and wave 8"- 10"s under nose)
- 3) **Benadryl Elixir** and Benadryl 50mg/cc for IM injection and 50mg. tablets
- 4) **Nitroglycerin pills** or (pump) sublingual = dissolve under tongue
- 5) **Aspirin** (4 baby, 81mg. each) to be chewed then swallowed- after Nitro in "NONA" for MI

113



Nitroglycerine



- + 4) Nitroglycerine dilates the coronary vessels of the heart up to 28%



114



Nitro...

- With signs of angina pectoris, one tablet or spray (0.3 or 0.4 mg) should be administered sublingually

- Relief of pain should occur within minutes. If necessary, this dose can be repeated twice more in 5-minute intervals.

However:



115

Nitro...

- Systolic blood pressures below 100 mmHg will contraindicate the use of Nitro!

- ~~Viagra and Levitra = within 24-48 hrs.~~
- ~~Cialis = within 72 hrs.~~

?

Latest:- as of 6/15/25 - in NYC - EMT's will now give Nitro regardless of recent use of ED Meds = Phosphodiesterase inhibitors

116

Nitroglycerine

Indications:

-Ischemic Chest Pain - 1 tab 0.4 mg
every 4-5 min's x 3-
MUST: take a BP after each tablet!

OFF LABEL USES:

-Symptomatic Hypertensive
Episodes - Crisis Situation (BSS)

117

Hypertensive Crisis: = to or > 180/120

- Headache
- Blurred Vision
- Chest Pain
- Seizures
- Back Pain
- Confusion
- Nosebleed
- Nausea
- Vomiting
- Shortness of Breath

Yellow = Immediate call for
EMS (911) and there is no
response (BSS) or delayed

118

High Risk: Unstable Angina*

- Chest Pain at rest that is
prolonged (> 20 minutes)
- Chest Pain that is increasing in
frequency and requires more
nitro to stabilize
- New onset of chest pain

*Is Clinically Unstable and can lead
to Myocardial Infarction,
Arrhythmias or Sudden Death

119

Angina vs. Myocardial Infarction

120

- Myocardial Infarction vs. Anginal attack
Pain: CRUSHING vs. Heavy
Level: SEVERE vs. Moderate
Time: CONTINUES vs. Transient Waves
- MI is Not relieved by Nitro vs. Angina is relieved by Nitro-note: contraindicated if BP is under 100 Systolic ??? and if patient took ED meds within last 24-48 hours, eg. Viagra, Cialis Now = now questionable ???
- Blink story--Goldman algo 96' CCH pentagon 75%-86% vs. 95% with-algo-"ST,Ang,CHF/JVD", now, + Troponin T=cTnT

121

The 4 Findings:

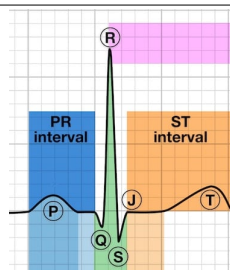
- Elevated ST Segment (on EKG)
- CHF
- JVD
- History of Angina

Lee Goldman
Stroger Hospital
Cook County Hospital

122

The EKG shows 3 changes with Myocardial Infarction:

123

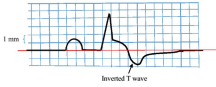


P-QRS-T Wave of
Normal Sinus Rhythm
Focus on: T, ST and Q

124

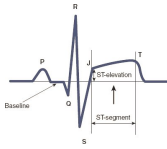
- **Early** = Inverted T waves*

*Inverted T waves in Myocardial Infarction and Pulmonary Embolism



MI

- **During** = S-T Elevation- "or not" STEMI MI = specific for an LAD MI



- **After** = Inverted / Abnormal Q wave stays with you as an EKG marker that you had an MI

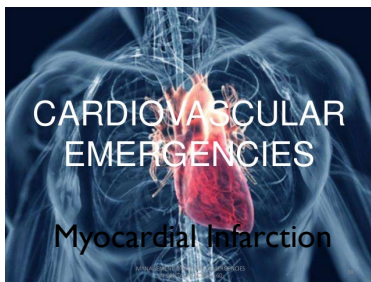


125

Myocardial Infarction



126



Red

127

Basic (10) Emergency Kit

- 2) ***Spirits of ammonia** (crush and wave 8"- 10"s under nose)
- 3) **Benadryl Elixir** and Benadryl 50mg/cc for IM injection and 50mg. tablets
- 4) **Nitroglycerin pills** or (pump) sublingual = dissolve under tongue
- 5) **Aspirin** (4 baby, 81mg. each) to be chewed then swallowed- after Nitro in "NONA" for MI

128



Aspirin: Thrombolytic



► Aspirin: reduces mortality from acute MI @162 mg. Few contraindications. These would include known hypersensitivity to aspirin, severe asthma or history of significant gastric bleeding



129

Typical Symptoms of an MI

- Crushing pain in the chest lasting more than a few minutes
- Pain spreading to the arms, neck, jaw, back and stomach (may be with severe indigestion)
- An unexplained shortness of breath at rest

130

Typical Symptoms of an MI

- Pale
- Feeling Faint or Dizzy
- Sweating - may be profuse

131

Additional S & S of a Myocardial Infarction in Women

- Nausea, Vomiting or Burping
- Back Pain
- Profound Weakness, Fatigue

132

Office Treatment for an MI

- 100% Oxygen or Nitrous Oxide (Ideal) 4l/4l
- Have the victim go to the W position
- Offer Aspirin (take 5 baby aspirin)
if not allergic and call 911!
- Pulse Oximeter on
- AED ready

133

The “W” without the W



The W position - opens up the Thoracic Cavity putting less pressure on the Heart vs. ~~Supine~~ - worst position with more pressure on the heart with increased venous return!

134

~~MONA~~ is out

135

“NOAN” for MI

- | | |
|--------------------------|--|
| • NO = Nitrous/
Oxide | • Nitrous/Oxide as
alternative to
Morphine at:
4L/4L flow |
| • A = Aspirin | |
| • N = Nitroglycerin | • Aspirin = “Take 5”
baby aspirin (not
enteric coated)
chewed then 3
minutes later |
| | • Nitroglycerine |

136

Aspirin before Nitro

BMC Emergency Medicine
Published: 17 November 2021
The timing of administering aspirin and
nitroglycerin in patients with STEMI
ECG changes alter patient outcome
Kristijan B. Todoroski

N.O.A.N.

137

Women...

- EXTREME FATIGUE -you cannot get up in the morning after a good nights sleep
- Belching - Nausea - Indigestion
- Pain between the shoulder blades usually on the left side

138

Women...

- 50% of the time - Silent MI - seen on an EKG as an "inverted Q wave"*

- *Marker of a previous MI

139

Risk Factors for Women vs. Men

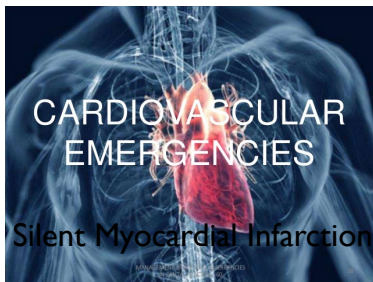
- Smoking increases MI risk for women 100% more than for men
- Hypertension increases MI risk for women 80% more than men
- Diabetes Type II increases MI risk for women 50% more than men

140

Heart Attack Warning Signs in Women



141



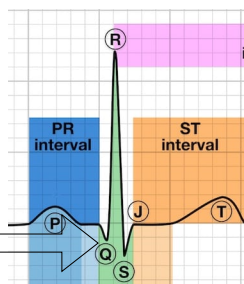
142

Silent Myocardial Infarction

- 50% of the time - Women have a **Silent MI** - seen on an EKG as an "*inverted Q wave*"* *marker of a previous MI occurrence
- 25% of Men have this
- 170,000 Silent Myocardial Infarction/yr in the U.S.

143

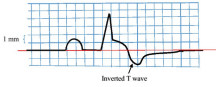
Standard EKG



144

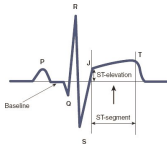
- **Early** = Inverted T waves*

*Inverted T waves
also in PE, OMFS
post op, Cocaine use



MI

- **During** = S-T Elevation- or not
STEMI MI = specific for an LAD MI



- **After** = Inverted / Abnormal Q wave
stays with you as an EKG marker
that you had an MI



145

Silent Myocardial Infarction

Women

Women

- SOB (Shortness of Breath) after exercise, passed off easily as "feeling winded"
- Prolonged excessive fatigue
- Feeling like you strained a muscle in your chest or back usually after exertion

Men

146

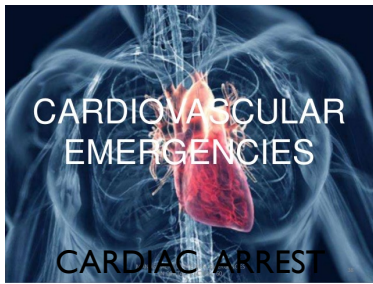
Angioplasty with possible stent placement

- Should be performed within **90 minutes of symptoms!**
- 2+ hour delay is often the result of denial and refusal to go to the ER (this is with Men not Women)
- Stent usually "deployed" at 70% blockage

147

Cardiac Arrest

148



Red

149

AED



150

Must do:

- Call 911 - Activate EMS: "The 3 Un's"*
- Early CPR and call for AED
- Get the AED ready

*Unconscious,
Unresponsive,
Unable to find a Pulse

151

Out of hospital
means=

- In our offices (now prepared)
- In our homes ??????

Over 450,000 Cardiac Arrest Deaths
per year in the U.S.

152

Survival of Cardiac Arrest

- 90% of the time victim is in VF = Ventricular fib
- Survival with BLS + AED:
- 90% @ 1 minute PERFECT
- 80% @ 2 minutes IDEAL
- 70% @ 3 minutes OK
- 60% @ 5 minutes Not Good
- 40% @ 6 minutes Asystole
- 0-2% @ 10 minutes *however...*

153

Response times in NYC

Critical delays

EMS response times have surged. In The Bronx, it takes twice as long for crews to get to medical emergencies as it did a month before the outbreak – a startling 24 minutes and 55 seconds

BOROUGH	EMERGENCY THREATENING CASES FEB.	ALL MEDICAL EMERGENCIES FEB.	LIFE- THREATENING CASES MARCH	ALL MEDICAL EMERGENCIES MARCH
Bronx	7:53	12:01	10:27	24:55
Brooklyn	7:23	10:51	8:58	17:00
Queens	7:55	10:46	10:09	16:50
Manhattan	7:26	12:22	7:59	14:00
Staten Is.	7:21	10:05	8:52	10:50
Citywide	7:38	11:27	9:24	18:00

154

Asystole occurs at just...

- **6 minutes** after the Cardiac Arrest. "Course to Fine" - with Fine less likely to be reversed
- The previous rhythms were VT and VF and are shockable and reversible!

With this



155

Epi Vial with a Tuberculin Icc syringe

- 1 mg = 1 mL of 1/1,000 MAY alter Asystole to a convertible rhythm = Ventricular Tachycardia or Ventricular Fibrillation and then the AED may change to "shock advised"



156

Guidance for:

- Asthma Attack not responsive to Rescue Inhaler (MDI) or Nebulizer
- Cardiac Arrest after 6 minutes
- Unconscious Hypoglycemic
- Status Epileptics
- Post Seizure Rule/Out Cardiac Arrest
- Anaphylactic Shock not responding to Epi

157



Pulse Oximeter

158

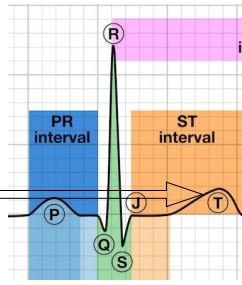


159

AED vs. no AED Cardiac Arrest outcomes:

- 1) Early BLS+delayed Defibrillation (normal EMS) Survival = 2-6% (with brain damage)*
- 2) Early BLS + early Defibrillation (fast EMS arrival in 3-5 minutes - not NYC) Survival = 20% with minimal neurological damage Still 80% mortality**
- 3) (Dental office AED or with home AED) > 60-80% Survival (with no brain damage)

160



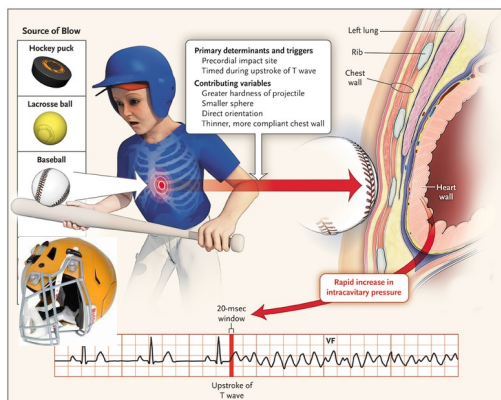
P-QRS-T Wave of NSR
T, ST, Q

161

Commotio Cordis (Agitation of the Heart)

- Sudden Death from VF triggered by a blunt, non-penetrating blow
- Without damage to ribs, sternum or heart
- Frequent cause of cardiac death in children, adolescents and young adults
- Primarily during sporting events

162



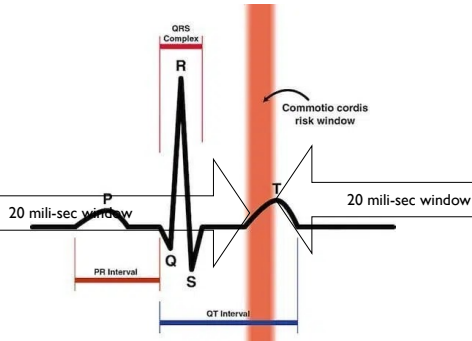
163

Commotio Cordis

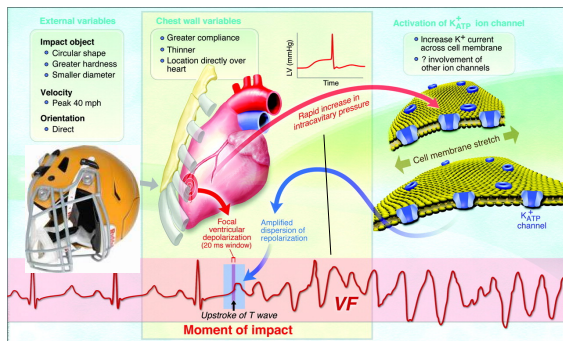
- Timing is everything - contact within 20 milliseconds of the upstroke of the T wave (1/100 or 1% of the Cardiac Cycle)

164

Commotio Cordis



165



166

Asthma

167

Basic (10) Emergency

- 6) **Albuterol** (ventolin or proventil), presently Pro-Air and/or **Nebulizer with Albuterol packets**
- 7) **Glucose** (insta-glucose) Glutose*, Packets of sugar, soft drinks, and GlucaGen which is **Glucagon for IM/IN use—1.0mg/cc**
- 8)* **Nayzilam - IN use** - 5.0mg/ml for a BSS Condition - NYC -since 1978 - 20 Snow Blizzards

168

Asthma:

**> 8 % of US
Population with 50%
having an episode
within the last year**

169

Asthma:

abrupt onset of

- Acute Shortness of Breath (SOB)
- Wheezing
- Coughing

170

Asthma:

- Contraction of the smooth muscle of the bronchioles (broncho-constriction and bronchospasm)
- Edema of the bronchial lining
- Increased secretion of mucous

171

Asthma:

- Progression can lead to hypoxia and
- Death

172

Signs and Symptoms of an Asthmatic Attack

- Patient breaths in short gasping inspirations = Dyspnea
- Tachypnea
- Patient sits up--increased anxiety-
- **Expirations** are difficult, long and wheezing
- Sweating (diaphoresis)
- Flushing of the skin

173

All offices must have:

- ALBUTEROL* =Brand= Ventolin or Proventil this is a non selective β_2 agonist, which may increase heart rate
- Even Better is a nebulizer with albuterol packet - connect to an "E Tank" or a compressor or portable nebulizer

* Salbutamol = short-acting β_2 adrenergic receptor agonist

Other versions: Airsupra (both-Ventolin and Steroid)



174

Treatment of Bronchospasm (Asthma)

- 1) Comfortable position-usually sitting up - 100% Oxygen
- 2) Use of " β_2 " Agonist inhaler (bronchodilator) - 1-2X's every minute and then Nebulizer
- 3) Call EMS if multiple doses does not relieve spasm or if there is no prior history of asthma-R/O Anaphylactic reaction..
- 4) If condition worsens - consider : Epi 0.3mg of 1/1000

*Consider Epi Jr. if Elderly, Frail and Cardiac Hx



175

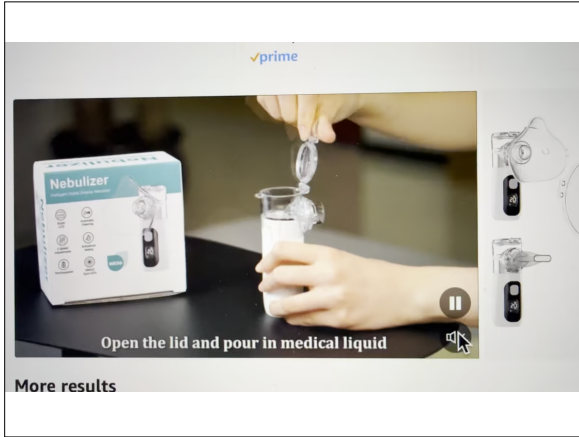
How to treat an Asthma Attack?

- Patient to sit up in chair
- Inhaler - "Pump and Prime" then (2-3 puffs /minute - up to 10 minutes) into the spacer - note time and put on a Pulse Oximeter*
- 100% Oxygen in-between puffs ~ 6L flow
- Set up Nebulizer with a Compressor + Ventolin
- If not improving (check with Pulse Oximeter- if numbers not going up)..3 minutes after first puffs:
- 4-6 puffs in 2 minutes with inhaler and spacer and go on Nebulizer - for 5 minutes
- If not improving on Nebulizer and after multiple administrations of the Inhaler and Pulse Oximeter going down (80's)- consider Epi Jr

*Base level to compare



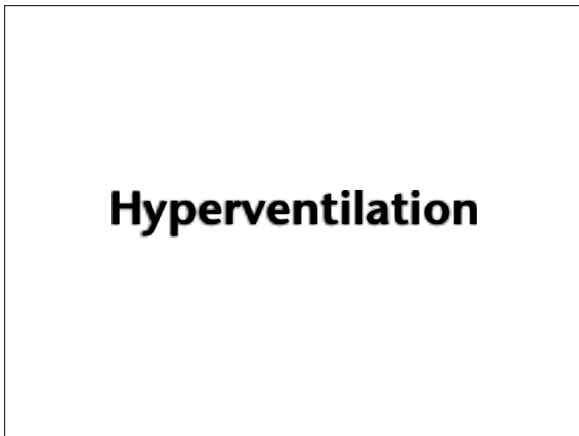
176



177



178



179

Hyperventilation

- Causes: High Anxiety**-Loss of CO₂=Respiratory Alkalosis
- Note: Rule out: Pulmonary Embolism
What other sign to look for?*
- Signs and Symptoms:
Rapid shallow breathing,
Confusion,
Vertigo,
Cold and numb hands

*Low Pulse Oximetry
Pain on Inspiration
Pregnant Female
Shortness of breath
Chest Pain

180

Hyperventilation..

- Hands: -Tingling--Cold--Numbness*---if not treated will go to Carpal-Pedal Spasm*=hands will flex inward
*Numbness also seen in?
*Carpal-Pedal Spasm also seen in?
- High Anxiety: Term created by?

181

DO NOT GIVE
O₂ !!

182

Treatment of Hyperventilation

- Position patient upright
- Calm and reassure patient
- Breathe CO₂ enriched air
- Cup hands - over (nose/mouth)
- Do not give O₂!

183



Paper Bag is
out...

184

Diabetes

185

Basic (10) Emergency



- 6) **Albuterol** (ventolin or proventil), presently Pro-Air and/or **Nebulizer with Albuterol packets**



- 7) **Glucose** (insta-glucose) Glucose*, Packets of sugar, soft drinks, and GlucaGen which is **Glucagon for IM/IN use—1.0mg/cc**



- 8)* **Nayzilam - IN use - 5.0mg/ml** for a BSS Condition - NYC -since 1978 - 20 Snow Blizzards



Nayzilam

186

Diabetes is the most frequently occurring Metabolic Endocrine Disorder facing the U.S. and the World Today

187

Diabetes

- Diabetes is the **6th** leading cause of death in the U.S. today*
- Diabetes is a constant (throughout life) cause of Disability
- Average loss of **13** years of life (if poorly or uncontrolled)
- Leading cause of death with Diabetes is Myocardial Infarction and Stroke

188

Diabetes

- Diabetes is the leading cause of:
New blindness
- Diabetes is the leading cause of:
End Stage Renal Disease
- Cost of treatment for complications =
350+ Billion Dollars/yr in the U.S.

189

Oral Manifestations..

- 1) Periodontal Disease
- 2) Increased risk of Infections
- 3) Salivary Gland Dysfunction: Hypo-salivation
- 4) Geographic Tongue
- 5) Fissured Tongue



190

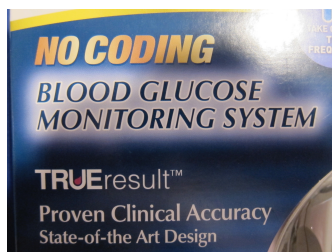
Oral Manifestations..

- 6) Traumatic Ulcers
- 7) Angular Cheilitis
- 8) Alterations in Taste
- 9) Burning Mouth Syndrome
- 10) Parotid Gland Enlargement
- 11) Lichen Plannus



191

Diabetes



Glucometer

192



193



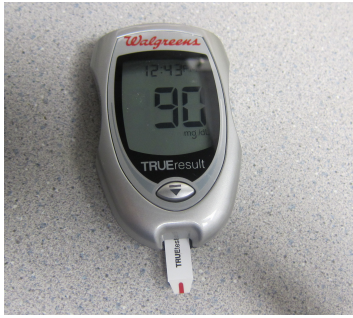
194



195



196



Not
Hypoglycemic

197

Multiple Uses of a Glucometer:

- 1) Can be used to determine if Blood Sugar is too low prior to the procedure in Diabetic patients and if so, then make necessary changes prior to initiation of a procedure
- 2) Can be used post op to see if patient needs sugar before leaving the office if long or possible long trip home

Pre and Post Op

198

Multiple Uses of a Glucometer:

3) Intra-Op check point

- 4) Can be used in a seizure to determine if Seizure is being caused by a low Blood Sugar, or not = will determine best course of action

**Intra Op and
Emergency**

199

Pre-op for Diabetic Patients:

- Take less (1/2) medication (Insulin) night before treatment
- Do not take any short acting meds morning of
- Ideal Blood Sugar between 100 and 200 mg/dl pre-op*

150 ideal

*You or the patient can take this reading pre-op if any question about blood sugar

200

Alpha Glucosidase Inhibitors* **HYPOGLYCEMIA**
(LOW BLOOD GLUCOSE LEVEL)

*Precose and Glyset

Causes: Too little food or skip a meal;
too much insulin or Diabetes Pills;
more active than usual

Onset: Often Sudden; may pass out if untreated

SYMPTOMS

 SWEATING	 DIZZY	 SHAKY	 FAST HEARTBEAT
 BLURRY VISION	 WEAKNESS OR FATIGUE	 HEADACHE	 HUNGRY
 IRRITABLE	WHAT CAN YOU DO?		

Check: your blood glucose right away. If you can't Check, treat anyway

Treat: By eating 3 to 4 glucose tablets or 3 to 5 hard candies; you can chew quickly (such as peppermints) by drinking 4 ounces of Fruit Juice, or 1/2 can of regular soda pop

No

201

Hypoglycemia

- MILD** <65 mg/dL: sweating, shaking, light headed, clammy wet skin, tachycardia, trembling, mild numbness
- MODERATE** <50 mg/dL: confusion to irritability to anger (altered consciousness), dizziness, slurred speech, blurred vision, headache
- SEVERE** <30 mg/dL: (LOC)= loss of consciousness, seizures, hypothermia, coma

Sympathetic

NeuroGlycopenic

Life Threatening

202

8 Classes of Oral Meds for Diabetes

- Alpha-glucosidase inhibitors:** blocks the action of alpha-glucosidase which breaks down carbs like starches and Sucrose to Glucose. *Acarbose (Precose)* and *Miglitol (Glyset)*. This slows down digestion and so glucose passes into the bloodstream slowly and blood glucose levels stay lower after a meal. Side effect is abdominal discomfort from the undigested carbs. Often combined with other meds that can cause hypoglycemia ***Do not give sucrose (table sugar or candy) - will have little effect. So give Glucose (Dextrose) as tablets or a gel..***

Precose and Glyset

203



204

Treatment for Hypoglycemia

- Sugar drinks...O.J. (usually first choice), then soft drinks (not diet), fruit juices, and candy* except when on:
- You may have to force the patient to drink this-but only while conscious!
- If patient is going to altered consciousness: do not use cake frosting in a tube or Insta-Glucose
- Can be aspirated into lungs

**Precose and Glyset*

205

- If fully recovered from hypoglycemia--continue with treatment if you AND the patient are comfortable.
- Patient can go home, if they are fully recovered from hypoglycemia*
* How does this compare to Syncope?
- If in doubt.....?

206

Awake Hypoglycemia

- Signs and Symptoms ?
- Can verify it's Hypoglycemia with a Glucometer reading (55-69)
- Give a few ounces of a non-diet carbonated drink then...
Can be Diet because using it for the carbonation!
- Follow this up with 15 g of Glucose as a packet or gel or 4 glucose tablets

Takes 30sec's

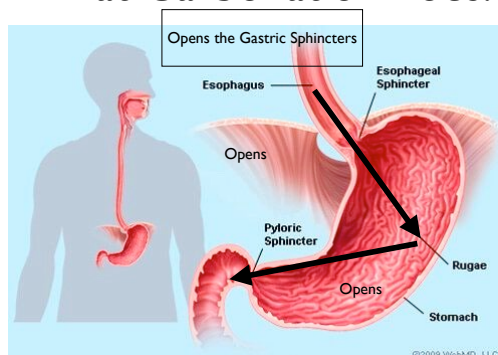


15/15 Rule



207

What Carbonation does:



208

Follow up Treatment for Hypoglycemia

- If fully recovered from hyperglycemia
—can continue with treatment if you
AND the patient are comfortable
- Patient can go home, if they are fully
recovered from hypoglycemia
— must R/O Stroke!
- How does this differ from Syncope?

209

If Unconscious from <55 mg/dL Hypoglycemia & No EMS Response

210

Hypoglycemia can result in Seizures

- Call 911 at onset
- Position patient HT/CL
- 100% O₂

211

Hypoglycemia can result in Seizures

- Call 911 at onset
- Position patient HT/CL - 100% O₂



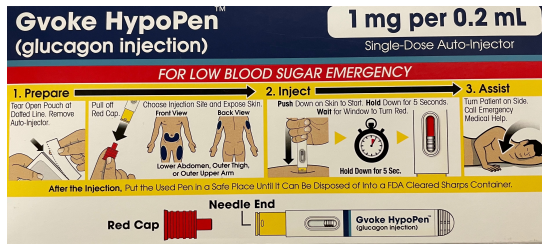
If Glucometer available and BS <55 mg/dl and no EMS
close - consider use of HypoPen = Glycogen IM

If Glucometer and BS <45 mg/dL and no EMS and no
Glucon (no HypoPen) then "off label use" of
Epi - can raise Blood Sugar - use Epi Jr 1st
(if Cardiac History or Elderly) and then recheck



212

Auto-Injector IM Glucagon



213

Glucagon

- The dose for an adult (Glucagon) is 1 mg - IM or IN*
If the patient is less than 20 kg, (44 lbs) the recommended dose is 0.5 mg

214

Glucagon

- One dose of Glucagon can raise your blood sugar by as much as 250mg/dl, depending on how much glycogen was stored in the liver.

215

Administering Glucagon (1mg) can improve B₁ Response:

**Increasing Heart Rate and
Cardiac Output**

Glucagon acts to increase Adenylate Cyclase which then increases Cyclic AMP causes increased in Heart Rate and Cardiac Output

216

If a patient is on a
non-specific
(non-selective)
Beta Blocker
for both B₁ & B₂
ie: (Inderal=
(Propranolol)

● Then.....

217

Adrenalin=Epinephrine

Glucagon!

Ventolin /
Albuterol

Epi

- B₁=directly increases heart rate and cardiac output..
- B₂=causes relaxation of smooth muscles in Lungs.....allowing open passages and more air exchange, and in the pupil—causes ciliary muscle relax - far vision focus and there is dilation of pupil, vasodilation in muscles
- A₁=causes contraction/constriction of peripheral smooth muscle in arterioles resulting in increasing blood pressure

218

Guidance for:

- Asthma Attack not responsive to Rescue Inhaler (MDI) or Nebulizer
- Cardiac Arrest after 6 minutes
- Unconscious Hypoglycemic
- Status Epileptics
- Post Seizure Rule/Out Cardiac Arrest
- Anaphylactic Shock not responding to Epi

219

WHITE or YELLOW

- Syncope
- *Altered consciousness

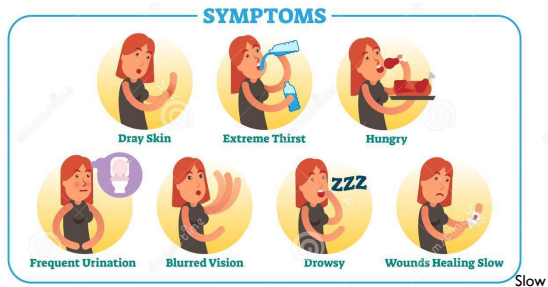
220

Hyperglycemia:

- This is **very infrequent** as it occurs over a period of days and not hours.
- Ketoacidosis-can lead to Diabetic coma
- Can be seen in patients who are not compliant and do not take their insulin or
- In a compliant diabetic patient who has recently gone through significant physical and or emotional stress.

221

Hyperglycemia...



222

Hyperglycemia:

- Lethargic and fatigue-(not agitated and shaking like in hypo state) secondary to dehydration
- Nausea
- Acetone breath (fruity odor)
- Ketones in urine-ketoacidosis-body is in a state of metabolic acidosis...body will now go into:
- Prolonged, rapid and deep breathing - known as **KUSSMAUL BREATHING**--The body's attempt to reverse the acidosis

223

(5) Types of Emergency Breathing:

- 1) Airway obstruction-partial or complete
- 2) Agonal breathing-ineffective last effort-occurs in 40% of Cardiac Arrests - secondary to hypoxia, cerebral ischemia -may exist for several minutes after CA, more favorable outcome when present

224

(5) Types of Emergency Breathing:

- 3) **Bronchospasm**-spasm or constriction of the walls of the bronchioles-long wheezing expiration, occurs in Asthma, Bronchitis and Anaphylaxis secondary to degranulation of Mast cells and Basophils
- 4) **Hyperventilation**- very fast - inspiration and expiration, but shallow
- 5) **Kussmaul Breathing**-deep and rapid

225

Dentists Role

- Identify patients who are at risk for Diabetes and Pre-Diabetes: Family history, Overweight, Hypertension, Ethnic background, Sedentary lifestyle.
- A1c testing in-office with ADA code: and the appropriate Medical Referral for these patients.
- Assist those who have Diabetes to control their A1c with ideal Periodontal Treatment and Maintenance.

226

Questions to ask all Diabetic Patients

- Do you Drive?
- First diagnosed when?
- Latest A1c levels? and what are the levels?
- How often do you check your Blood Sugar?
- Did you eat and take your medications today?
- Any Exercise and/or Alcohol use today?

227

Questions to ask all Diabetic Patients

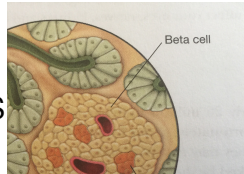
- Do you get infections frequently?
- When did you last experience Low Blood Sugar (Hypoglycemia)?
- How many episodes of hypoglycemia have you had in the last Week? Month?
- Have you ever lost consciousness while experiencing hypoglycemia?

228

New information about Diabetes

229

“Type I” Diabetes



- Caused by an Auto-Immune destruction of the Pancreatic Beta Cells. This is a T-cell mediated autoimmune attack. Occurs in otherwise healthy people. Usually thin individuals and not only in juveniles - adults are
- Now called LADA (Latent AutoImmune Diabetes in Adults)
- Catabolic disorder that results in the body eventually producing less and less to **no insulin**.
- Genetic predisposition* and/or can be triggered by environmental factors.

230

Type I Diabetic and
LADA* individuals
have Auto-Immune
AB's that attack and
destroy their B cells

*Latent AutoImmune Diabetes of
Adulthood

231

4 AutoImmune Antibodies:

- ICA's (Islet Cell Antibodies) 70-90% of T I DM
- GAD-65 (AB's to Glutamic Acid Decarboxylate) 80% of T I DM
- IAA (Insulin AutoAntibodies) 4-42% of T I DM
- IA-2A (Antibodies to the Protein Tyrosine Phosphatase) 55-75% of T I DM

232

As of November 2022

- New Monoclonal Antibody approved that can reverse the destruction of the beta cells in the pancreas.

- **TZIELD***

*Attacks and destroys the AutoImmune AB's

*Minimal Side Effects

233

Seizures

234

Basic (10) Emergency



- 6) **Albuterol** (ventolin or proventil), presently Pro-Air and/or **Nebulizer with Albuterol packets**



- 7) **Glucose** (insta-glucose) Glucose*, Packets of sugar, soft drinks, and GlucaGen which is **Glucagon for IM/IN use—1.0mg/cc**



- 8)* **Nayzilam - IN use - 5.0mg/ml** for a BSS Condition - NYC -since 1978 - 20 Snow Blizzards



Nayzilam

235



Seizures=Convulsions

236

Seizures and Convulsions=Generalized skeletal muscle contractions

Many people have a predisposition to seizures, it depends on their seizure threshold....On December 16,1997 during a single broadcast (in Japan) of the Pokemon series (Denno Snshi Porygon) also known as Electric Soldier Porygon...685 people were taken to local hospitals and over 10,000 viewers became sick. Some of these people were hospitalized for up to 2 weeks.

if low seizure threshold do not look!

Myoclonic Jerk

Warning...

237



Seizure Threshold

238

Causes of Seizures

- ▶*Epilepsy
- ▶*Hypoglycemia (Diabetes)
- ▶*Cerebral Hypoxia
- ▶*Local Hypersensitivity
- ▶*Drugs/alcohol
- ▶Stroke
- ▶Cardiac Arrest
- ▶Renal failure
- ▶Hyperthyroidism
- ▶Head injuries
- ▶High Temperature
- ▶Meningitis
- ▶Brain tumor
- ▶Electrolyte imbalance
- ▶Toxins

Add to list...(IOS)

* More likely causes
in our offices

239

3 Causes of Seizures

(not from Epilepsy)



- Cerebra Hypoxia < **Oxygen**
- Hypoglycemia < **Glucose**
- Local Anesthesia Hypersensitivity

240



Causes of Seizures

not from Epilepsy..Dental Office

- Onset of a Cardiac Arrest
- Alcohol Toxicity
- Stroke

241



Focal* Onset Seizures

(Maintain Consciousness)

- Focal Aware Seizure
Simple - changes in sensation or motor activity
- Focal impaired awareness Seizure
Complex - loss of awareness but conscious - can easily be confused with drug or alcohol abuse

*These start on one side of the brain

*Old name was
Partial Onset Seizures

242



Generalized* Onset Seizures

(Loss of Consciousness)

- **Tonic-Clonic** (GTCS) = Grand Mal
- **Absence Seizure** = Petit Mal
Seizures - can do fast blinking (eyelid myoclonia), puckering, or straight stare
- **Atonic Seizures** = Drop Attacks - go limb - head may nod or you fall - quickly

*These start on both sides of the brain vs Focal (one side)

*The Seizure is usually only 1-3 minutes and rarely life threatening - it's the surrounding environment that can pose a serious threat to health

243

Tonic - Clonic Seizures

- The Tonic phase is first:
 - All muscles stiffen
 - Air being forced through the vocal cords causes a *cry* or a *groan*
 - Loss of consciousness occurs with falling
 - If teeth bite tongue or cheek = blood seen
- The Clonic phase follows:
 - Arms and usually legs begin to jerk rapidly
 - Rhythmic bending and relaxing of the elbows, hips and knees
 - After a few minutes the jerking slowly stops

244

Tonic - Clonic Seizures

- After the Clonic phase:
 - The face may look pale to slightly cyanotic secondary to respiratory compromise
- Urinary and Bowel Incontinence is frequent
 - Occurs during the relaxation in the Clonic phase
- Return to Consciousness:
 - Occurs slowly

245

The drugs to use for a seizure are:

- Oxygen 100% — **after** the seizure ends
- This will raise the threshold for a second seizure
- Take a Blood Glucose measurement = use the Glucometer! - most frequent cause of a seizure (other than Epilepsy) is hypoglycemia - treat with Glucagon if continuing (Hypo Pen)

246

The drugs to use for a seizure are:

- **Versed (Midazolam) (IN)** may be used especially if this is not hypoglycemia and patient is in Status Epilepticus - In the ER: **Lorazepam (Ativan)**
- Now we have IN (premixed) = **Nayzilam**



247

Use of Nayzilam only indicated if:

- 1) Status epileptics: (seizure > 5 minutes) and/or
- 2) Repeat seizure (3 within an hour) or
- 3) Cessation of a seizure and then a second one occurs
- Can also use Midazolam (Versed) in the Buccal Mucosa: 5 mg - 10 mg IM dose

Use O₂



248

Guidance for:

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249

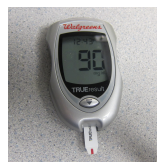
- Have someone time the seizure
- After seizure is over:
- 1) Suction and maintain airway, give Oxygen and be supportive **and**
- 2) **Check pulse!** - as Seizures can be a precursor to Cardiac Arrest (use a pulse oximeter)*



+ check ?

250

- 3) Check the **Blood Sugar** with a Glucometer to R/O Hypoglycemia as the cause of the seizure



251

"Seizure-like activity at the onset of emergency medical service-witnessed out-of-hospital cardiac arrest"
Murasaka K., *Emergency Medicine Resuscitation Plus* - Sept 2021

- Seizure-like activity occurs in up to 13% of Cardiac Arrests
- Usually a good sign* and that patient is in a shockable rhythm
- Neurologically favorable outcomes
- Usually seen in young males with a cardiac history



*Another positive sign in a Cardiac Arrest is an Agonal Breath

252

More info on Nayzilam



Go to
nayzilam.com
to register for a savings card

253



AutoImmune Seizures AED* Resistant Seizures

- Individuals with Autoimmune Diseases:
ie: Lupus, DM Type I, Celiac Disease, RA,
MS, Psoriasis
- Are more susceptible to Epileptic
Seizures and often
- Do NOT respond to traditional seizure
meds and treatment

*Anti Epileptic Drug

254



AutoImmune Seizures AED* Resistant Seizures

- Several studies now show the presence of
AutoAntibodies in autoimmune epilepsy
patients. These AutoAntibodies against
foreign substances (Bacterial and Viral) are
mistakenly turned against healthy brain
neuronal tissue.*

*Similar to Rheumatic Heart
Disease secondary to RF from
Group A Beta-Hemolytic Strep
infection of the throat

255



AutoImmune Seizures AED* Resistant Seizures

- Best new finding is that when and if an
autoimmune etiology is discovered
- Then treatment with Immunotherapies can
and does dramatically impact recovery
- 81% of these treated patients can then have
significant improvement and....

256



AutoImmune Seizures AED* Resistant Seizures

- **67% of these treated patients are SEIZURE FREE, most of which were AED* Resistant!!**

*Anti Epileptic Drug

257

Autoimmune Epilepsy

Clinical Approach to Autoimmune Epilepsy
J Clin Neurol. 2020 Oct; 16(4): pages 519–529.

Published online 2020 Jul 29.
doi: 10.3988/jcn.2020.16.4.519

Tx with Immunotherapy:
High Dose Steroids +
Immunoglobulin IVIg

Rituximab then Tocilizumab
=90% Success

258

Basic (10) Emergency

- 9)* **Narcan**: also IN use
- 10)* **Nitrous Oxide** 4l/4l =
pain relief of 10mg Morphine
without Respiratory
Depression

259



260



Kloxxado (naloxone HCl)
nasal spray 8 mg

Pay as little as \$0* With the first ever manufacturer's savings card for a naloxone nasal spray

Refill: 018944
PCN: 3F
Group: FCOXAD
Member ID: 4173926425

hikma.

New IN Drug for Narcotic Overdose: Kloxxado

261



Kloxxado

This is Naloxone HCL but double the dose =
8 mg in .1 ml of spray
BEST FOR SUSPECTED STREET DRUGS,
ATYPICAL OPIOIDS, SYNTHETIC GENTANYL
OR MASSIVE OVERDOSE

262

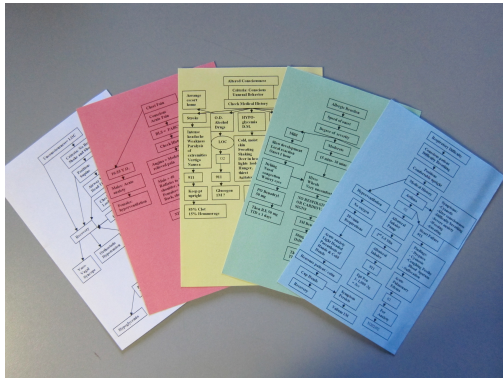
Basic (10) Emergency

- 9)* **Narcan:** also IN use
- 10)* **Nitrous Oxide** 4l/4l =
pain relief of 10mg Morphine
without Respiratory
Depression for a
Myocardial Infarction

263



264



265

#11 - Hands: Yours and your Patients

- What is the one drug you do not administer for Hyperventilation?
- Oxygen

266



267

How to Save Your Life

268

Update on Myocardial Infarction (2025)

- Three major factors: **1) Hypertension**
2) LDL type, 3) Inflammation
- 1) HTN - "Silent killer"--over time weakens elasticity of arterial vessels--developing TIGHT JUNCTIONS--areas to embed material like plaque, platelets, fibrin
- 2) LDL - BAD cholesterol--pattern A and B
 - Pattern A is large and buoyant = AOK
 - Pattern B is small and dense = BADtest is NMR

269

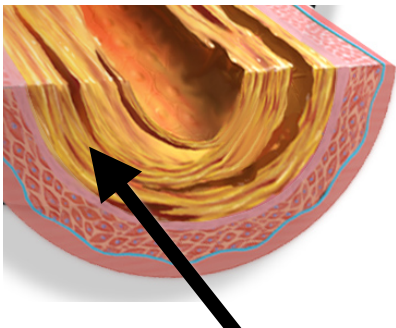
- 3) INFLAMMATION* The "Secret Killer" measured by (C-Reactive Protein, ESR, PV & PCT*) This is the final insult...
- 1 + 2 + 3 is the Disease (I=HTN),—Location (TIGHT JUNCTIONS),—Material (Recent Plaque, RBC's, 2=Pattern B LDL) = Response (Walling off and sealing area with more RBC's and 3=INFLAMMATORY mediators)--the result is fresh blood clots layered on the underlying plaque
- Add Inflammation + HTN = perfect storm

*All < Inflammation = Statins, Aspirin, Turmeric
& L-Arginine + Increased F & V,
> Exercise, > Sleep

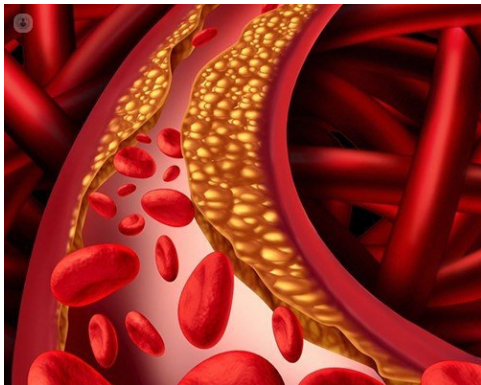
Other factors:
High Emotional Stress —
Coronary Spasm

270

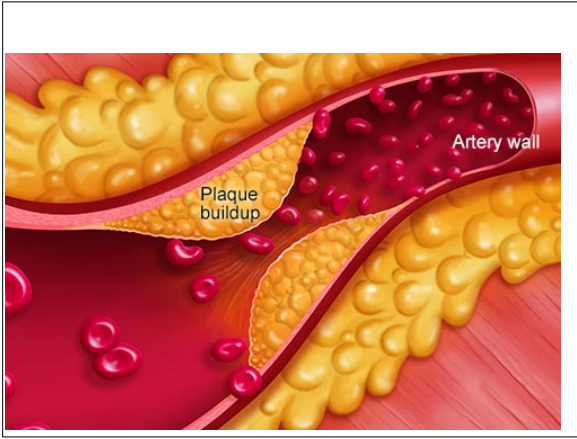
Fatty Deposit



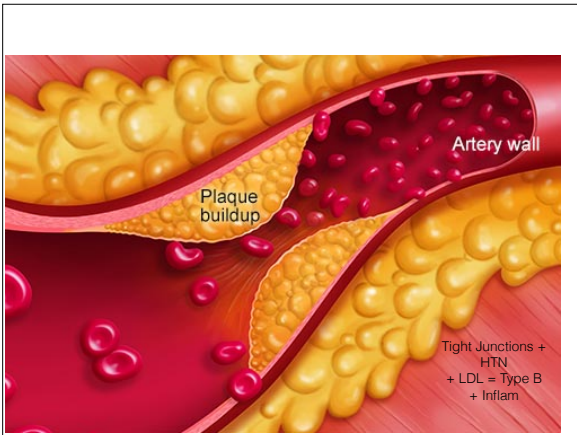
271



272

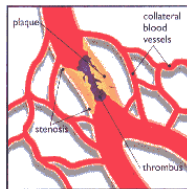


273

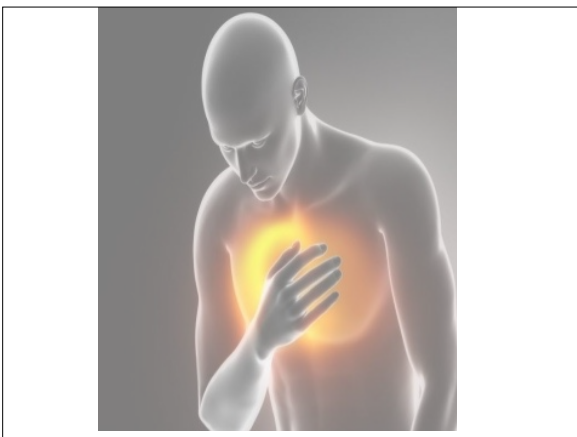


274

Occlusion of the vessel

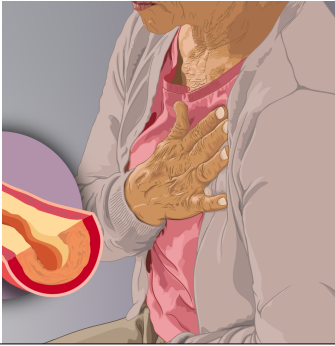


275

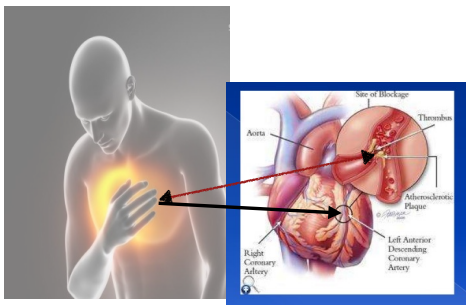


276

Levine Sign



277



278

Time is critical

- “Time is Muscle”

279



280

281

- Unless an artery (including coronary arteries) is narrowed by at **least 75%**, the blood flow remains mostly unaffected!---Therefore--At 74%, you're OK and Asymptomatic
- It's the new Plaque and fresh fibrin clot that's the problem.*:

282



80+% Blockage

283

**Stent in place
(80% blockage to 10%*)**



***= 90% Open!**

284

- THESE BLOOD CLOTS CAN AND DO RUPTURE CAUSING MOST MI's and STROKES!!!!
- It's a "123 Punch!"-must check BP, LDL, CRP.

Recent findings:

- High Triglycerides can be worse than Cholesterol as they also alter the LDL to make it more prone to plaque development
- Associated with >CRP = high risk

285

How to lower Triglycerides

- Foods such as Bananas, Lentils, Green Vegetables, Nuts, Whole Wheat Products, Oatmeal and Sweet Potatoes
- Reduce weight and reduce or eliminate alcohol

286

Blood tests..

- **C Reactive Protein - (CRP)**
A direct indicator of inflammation in Arterial Walls. Ideal = < 3mg/ml
- Women with high CRP are 2X more likely to die of Cardiac disease vs. women with high Cholesterol.
-Aspirin and Statins lowers CRP.

287

Other Blood tests for Inflammation

- ESR (Erythrocyte Sedimentation Rate) 0 - 25 mm/hr
- Plasma Viscosity (PV) <0.25 mcg/L
- Procalcitonin (PCT) 1.5-1.7 mPA

*When high can indicate:
Cancer, Auto Immune Disease and Infection

288

For those who win a
Pulse Oximeter or
buy one:

- If your AM pulse (when you wake up) is over 90 you have a 3X higher risk of a Myocardial Infarction and heart disease,
- If your AM pulse is 60 and under, you are unlikely to have cardiac disease.

289

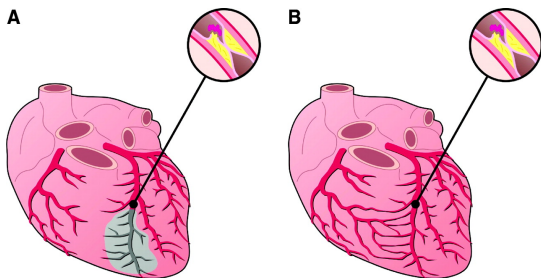
Working harder
(Physical Exercise)
over the long
term can increase
vascularization

290



291

Collateral Circulation



292

293

To increase IGF-I

- GH (from Pituitary) peaks at puberty and decreases after 20's
- GH induces the Liver to produce IGF-I
- At age 60 very low levels but detectable

294

To increase IGF-I

- Sleep more - @ 10 hrs puts insulin levels at lowest = highest levels of IGF-I
- Exercise - Peak levels
- High Insulin (after meals) = Lowest IGF-I levels therefore:
- Highest IGF-I = before eating!

295

The # 1 thing to do to change your life!!

The one hour daily walk - Just do it!

- First half hour - improves heart function
- Second half hour - may develop collateral circulation*

*As long as you have GF produced and circulating

296

New information

Interval Walking = Q 3 min's





297

Treadmill workout

- During aerobic exercise - this happens after the first 10 minutes when you get that **warm fuzzy feeling**
- **Bruce Protocol:** 4.2 mph (6.75 km/h) at a 17 degree incline = set at 3-4 on incline - for 10 -12 minutes*

*If no Pain = 0.001% chance
of having a Cardiac event
during next 1 year

*Perinatologist

298

Treadmill workout

- Always walk on a treadmill with at least a 0.5 - 1.0 incline - puts less pressure on knee and hip joints!

299

Max Heart Rate

- 220 - Age
- 77% to 93% of that number is the range (heart rate) for moderate - strenuous exercise

$$220-70=150 \quad 150 \times .77 = 115.5 \quad 150 \times .93 = 139.5$$
$$115.5 + 139.5 / 2 = 127.5$$

300

Metabolic Syndrome = *

- Hypertension: 130/85 and higher
- Hyperglycemia = > 100 fasting BS
- Excess Body Fat = > 40" waist in men and > 35" for women
- Reduced HDL: < 40 for men, < 50 for women is a problem Ideally want to be > 50-60
- High Triglycerides = > 150**

*If you have 3 or more

**More significant for Women vs. Men

301

How to lower Triglycerides

- Foods such as Bananas, Lentils, Green Vegetables, Nuts, Whole Wheat Products, Oatmeal and Sweet Potatoes
- Reduce weight and reduce or eliminate alcohol
- "Fibrates"* - a drug that will lower Triglycerides and raise HDL. But has little effect on lowering LDL. Also significant side effects!

- *Clofibrate (Atromid-S®).
- Fenofibrate (TriCor®, Fibracor®, Lofibra®).
- Gemfibrozil (Lopid®).

302

Top 10 List:

- 1) **Epi Pen and Epi Pen Jr (IM-Autoinjector)**
- 2) **Spirits of Ammonia (to R/O Etiology of LOC = Differential Dx) - even better: now Pulse Oximeter**
- 3) **Benadryl (Pre-filled-IM), Elixir, PO**
- 4) **Ventolin Inhaler and as packets for a Nebulizer**
Note: If using a Nebulizer: use with an E tank Cylinder or Compressor NOT chairside Oxygen

303

Top 10 List:

- 5) **Aspirin (baby aspirin 81 mg)**
- 6) **Nitroglycerine (Pills* or Spray)**
- 7) **Glucose: for Hypoglycemia: Glucose Gel 15, 30 and 45**
Now New: for Hypoglycemia Autoinjector=HypoPen



304

Top 10 List:

- 8) **Midazolam IN/IM & Now New: Nayzilam IN**
- 9) **Narcan IN/ Kloxxado IN**
- 10) **Oxygen with Nitrous Oxide**

305

“Recovery Position”

Keep the Airway Clear



If you have to leave a person who is unconscious - put them in this position to keep the airway open and clear and to prevent choking - also if multiple victims

306

Newest developments: Immunotherapy

TZIELD

- For Diabetics who can produce insulin and have LADA
- For Epileptic individuals who do not respond to Meds (AED)

Tx with Immunotherapy:
High Dose Steroids +
Immunoglobulin IV Ig

Palforzia

- To reduce or eliminate sensitivity/ allergies - ie: Peanuts
- Dupixent - Monoclonal AB for uncontrolled Asthma

Rituximab then Tocilizumab

307

Pearls

- Take a CPR course-yearly-get latest CPR information
- Practice drills with your Automatic External Defibrillator (AED)
- Take a BP on everyone (as stated in local anesthetic-drug information insert)

308

Pearls

- Purchase a pulse oximeter and a glucometer
- UPDATE entry for every visit:
(DASH), _/_/_ and initial-you and pt.
(D)=Drugs, (A)=Allergies,
(S)=Surgeries, (H)=Hospital,
staff (Front or Back) can do it!---story
about my Drs office--any change in
- ABC'S Aspirin, Bleeding, Chest Pain, Shortness of Breath.

309

Have in your refrig..

- Orange Juice (pint or quart)-
4 oz. / q4 min.
- Any Soda-regular-(not diet-for
treatment) but Diet OK to start?
- Benadryl Elixir (usually 50mg per
tsp.
- "Glucose" - pure glucose

Precose and Glyset

310



311

Have a basic emergency kit in the office
Make sure the staff knows
where it is!

Office staff including front should be
trained in BLS and AED use every year!

312

313

Dental Offices....

- Should have an “E” cylinder with oxygen mask* *prepare for B.S.S. =BLIZZARD STORM SCENARIO-- patient in WR....

314

- Get a HOME / AEDthis will-- change a 2%-4% to **60-80% Survival!!!!**..from a Cardiac Arrest
- Get a Pulse oximeter for your home
- Get an epi pen for your home-- only way to survive anaphylactic reaction and severe asthma

315

Keep a Pulse Oximeter, Glucometer, Auto BP and Thermometer in your office*



316

Please don't take patients off meds given to them by their MD!

Morimoto Y, Niwa H, Minematsu K. Risk factors affecting postoperative hemorrhage after tooth extraction in patients receiving oral antithrombotic therapy. J Oral Maxillofac Surg 2011;69:1550-6.

Napenas, JJ, Review of postoperative bleeding risk in dental patients on antiplatelet therapy. Oral Surg Oral Med Oral Pathol Jan 15 2013.

Never list

- never give Oxygen to a patient who is hyperventilating
- never hesitate to give Epi to a patients in a Anaphylactic Reaction
- Never give Nitro if Systolic BP is < 100
- Never give Nitro to a patient who took Viagra within the last 48 hours.

317

- Do not schedule a cardiac patient as the first patient on a *Monday Morning*

318

Higher incidence of MI and Stroke in the AM*:

Circadian Fluctuations cause

- Higher BP in the AM
- Higher Steroid levels in the AM
- Higher Heart Rate
- Less water while sleeping = thicker blood
- Positional effect on BP changes

*6 AM - 12 Noon

319

- Never place a patient upright who is in syncope-----WHY?
- Never place a patient supine who is having a suspected Stroke——WHY?
- These are Shout out answers....

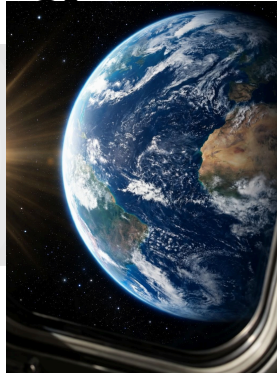
320



The End

321

• DPompaOMS@gmail.com



322

Thank you!

323
