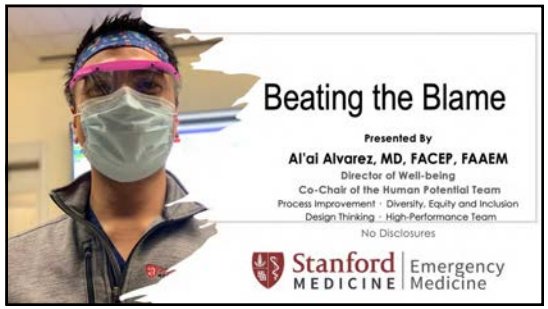

Beating the Blame
Presented By
Al'ai Alvarez, MD, FACEP, FAAEM
Director of Well-being
Co-Chair of the Human Potential Team
Process Improvement · Diversity, Equity and Inclusion
Design Thinking · High-Performance Team
No Disclosures
Stanford MEDICINE | Emergency Medicine

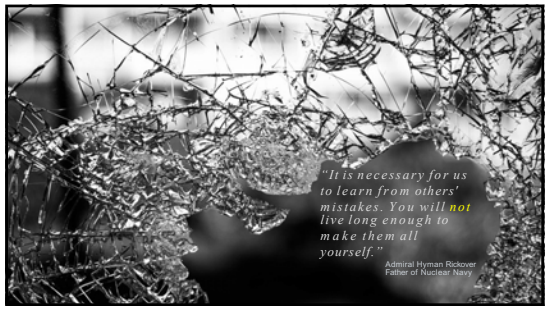
1


Disclosures

2


Objectives…
At the end of this session, engaged learners will:
Recognize the role of moral injury and vicarious trauma in reviewing cases that led to adverse events
Differentiate between the blame culture vs. Safety II debriefing
Support a culture that promotes a focus on reviewing cases rather than reviewing peers.

3


"It is necessary for us to learn from others' mistakes. You will not live long enough to make them all yourself."
Admiral Hyman Rickover
Father of Nuclear Navy

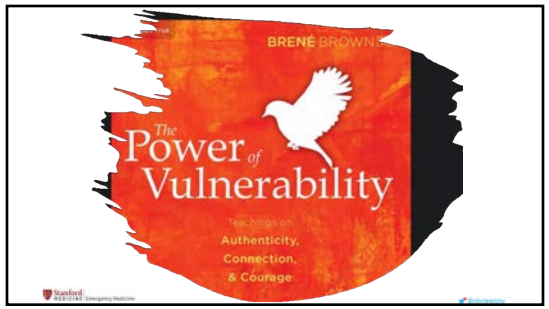
4

5

6


JACOBI
MEDICAL CENTER
EMERGENCY
Jacobi Hospital Building 1
Ambulatory Care Building 8
Jacobi
EINSTEIN

7


BRENÉ BROWN
The Power of Vulnerability
Teachings on
Authenticity,
Connection,
& Courage

8


Calm and focused

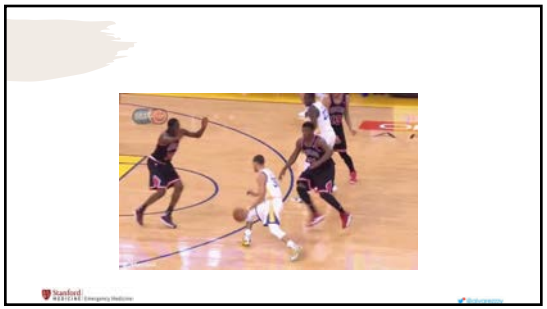
9


police report and handwriting

10


Calm and focused
Breathe In
Hold
4
seconds
Hold
Breathe Out

11



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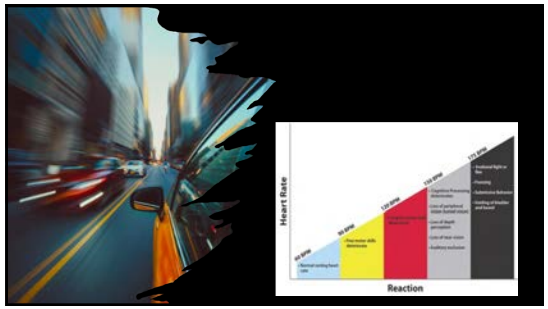

Heart Rate
Reaction

13

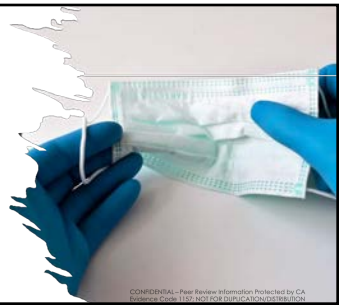
14


tactical
breathing
Breathe In
Hold
4
seconds
Hold
Breathe Out

15

29 yo female Trauma patient

- HR 137
- BP 87/62
- RR 25
- O2 Sats 97% 2L NC



16

17

18

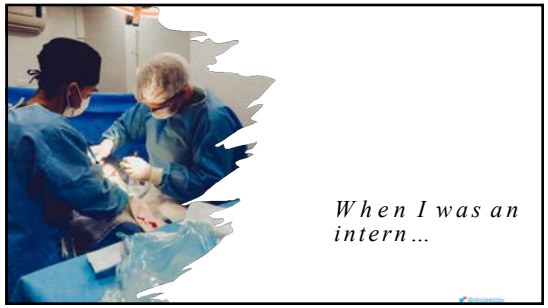

Breathe In
Hold
4
seconds
Hold
Breathe Out

19

20


Rookie Mistakes:
Things I learned after residency…
Preparation is key. And it may not be enough.

21


When I was an intern…

22


"Often the hardest person to forgive is yourself"

23


Loneliness and Isolation in Medicine
Does Loneliness Add to Physician Burnout?
Professional Loneliness and the Loss of the Doctors' Dining Room
The Loneliness of Being a Physician
KevinMD.com
ACP

24

25


Nathalie Martinek PhD
@NatsforDocs
Look for the highest performers who exceed expectations, always smiling, there to lend a hand, help others, teach others, never talk about themselves & seem to have their lives sorted. They're the highest risk – trying to fill their emptiness. Don't buy it – they are alone.

26


Medical errors are the third leading cause of death in the United States

27

imposter syndrome

28

29

"Don't shrink. Don't puff up. stand your sacred ground." – Brené Brown

30

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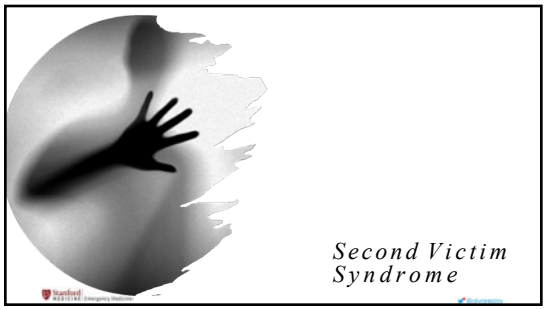

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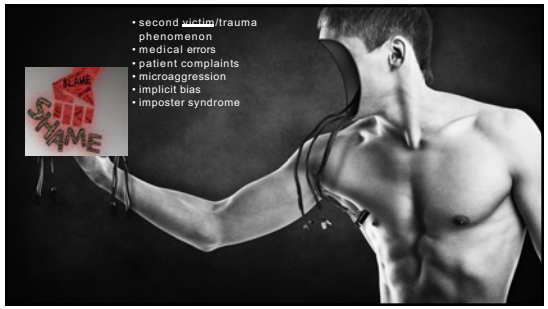
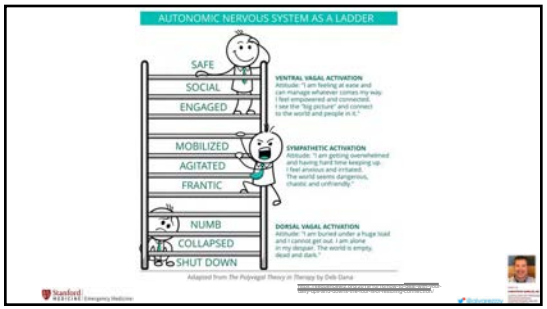

• second victim/trauma phenomenon
• medical errors
• patient complaints
• microaggression
• implicit bias
• imposter syndrome
BLAME
SHAME

34


STRESS
STRESS
STRESS
STRESS

35


AUTONOMIC NERVOUS SYSTEM AS A LADDER
SAFE
SOCIAL
ENGAGED
MOBILIZED
AGITATED
FRANTIC
NUMB
COLLAPSED
SHUT DOWN
VENTRAL VAGAL ACTIVATION
SYMPATHETIC ACTIVATION
DORSAL VAGAL ACTIVATION

36

37


"One of our greatest freedoms is how we react to things"
The Boy, the Mole, the Fox and the Horse

38


Physician burnout

39

40

"Self-compassion is simply giving the same kindness to ourselves that we would give to others."

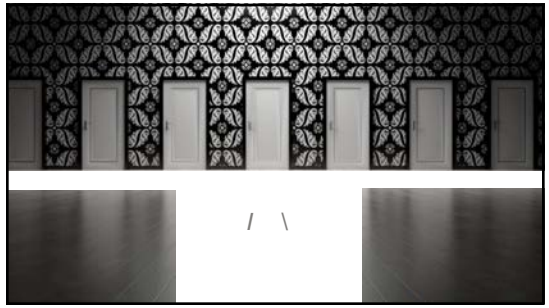
41

42


THE CENTER FOR COMPASSION AND ALTRUISM RESEARCH AND EDUCATION
STANFORD
https://www.appliedcompassionacademy.com/

43

44



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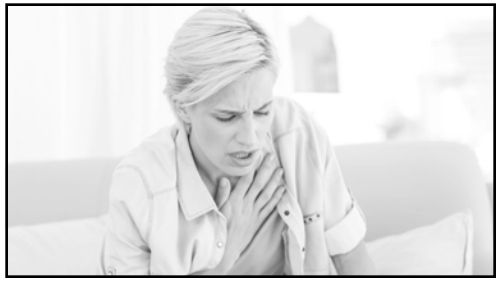
1



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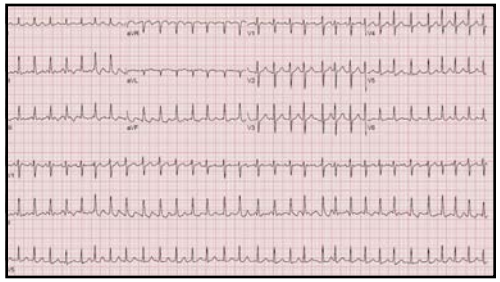

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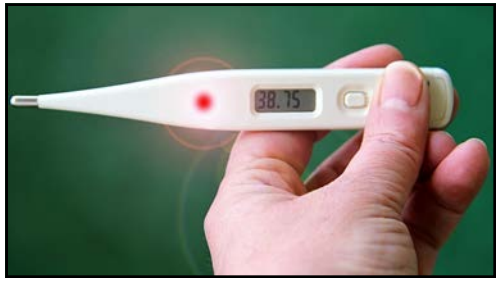

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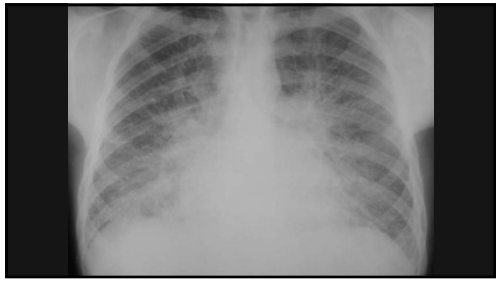

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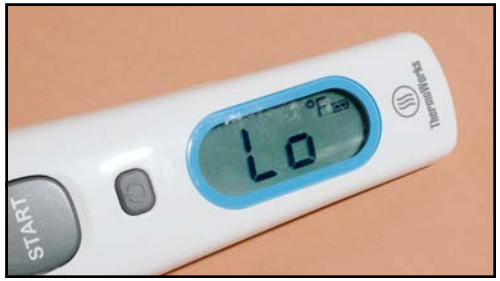

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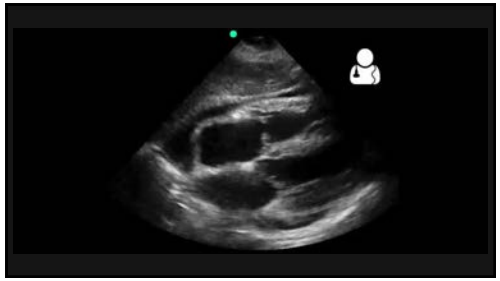

14

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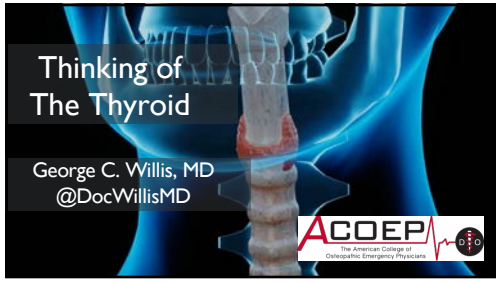
Thinking of
The Thyroid
George C. Willis, MD
@DocWillisMD
ACOEP
The American College of Osteopathic Emergency Physicians

16

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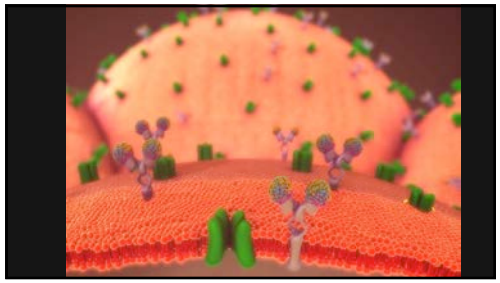

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24

PITFALL

Thyroid storm is often misdiagnosed!

- Sepsis
- CNS infection
- Alcohol withdrawal
- Cocaine
- Hypertensive emergency
- CHF
- Heat-related illness

25

Scoring Systems?

Burch-Wartofsky scoring system

Akamizu/Japanese Thyroid Assoc. criteria

26

Criteria	*Points*
Thermoregulatory dysfunction	
Temperature (°F)	
99.0–99.9	5
100.0–100.9	10
101.0–101.9	15
102.0–102.9	20
103.0–103.9	25
≥ 104.0	30
Cardiovascular	
Tachycardia (beats per minute)	
100–109	5
110–119	10
120–129	15
130–139	20
≥ 140	25
Atrial fibrillation	
Absent	0
Present	10
Congestive heart failure	
Absent	0
Mild	5
Moderate	10
Severe	20

27

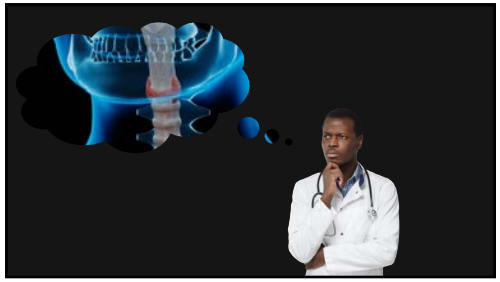
Criteria	*Points*
Gastrointestinal-hepatic dysfunction	
Manifestation	
Absent	0
Moderate (diarrhea, abdominal pain, nausea/vomiting)	10
Severe (jaundice)	20
Central nervous system disturbance	
Manifestation	
Absent	0
Mild (agitation)	10
Moderate (delirium, psychosis, extreme lethargy)	20
Severe (seizure, coma)	30
Precipitant history	
Status	
Positive	0
Negative	10

28

Criterion	Burch and Wartofsky	Akamizu et al.
Thyrotoxicosis	Not included	Pre-requisite
Scoring system	Included	Not included
Fever	≥37.2°	≥38°C
Heart rate	≥90 bpm	≥130 bpm
Atrial fibrillation	Included	Not included
Heart failure	Pedal edema to pulmonary edema	NYHA classification class IV or Killip classification ≥III
Serum bilirubin concentrations	Not included	>3 mg/dL
Jaundice	Included	Not included

29

30



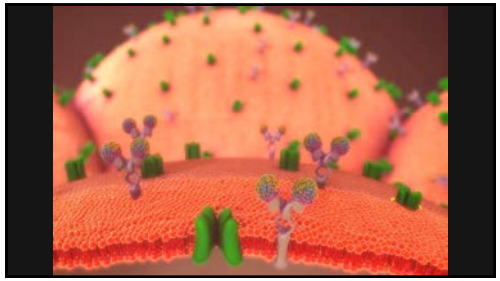
31

32

33


RECOVERY
JUST AHEAD

34



35


Systemic Blockade
Propranolol
Esmolol

36


TH

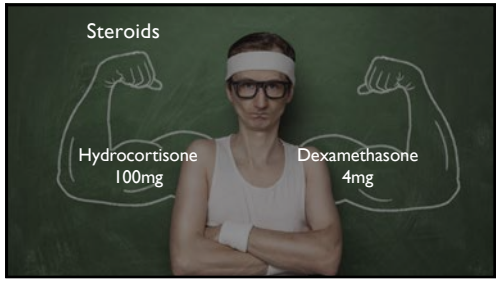
37


PTU in Pregnancy
Methimazole near Motherhood

38


Iodine
60 minutes after antithyroid medications!!

39


Steroids
Hydrocortisone
100mg
Dexamethasone
4mg

40

41


Supportive Measures

42

43

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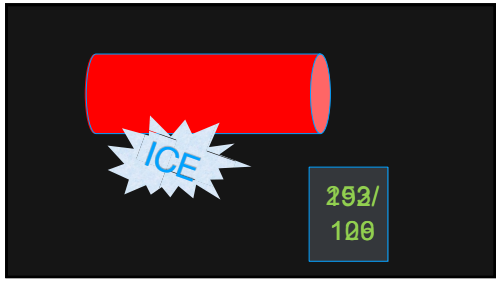

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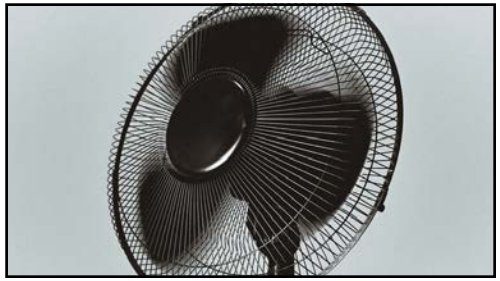


47

48


Lorazepam
Injection, USP
2 mg/mL

49

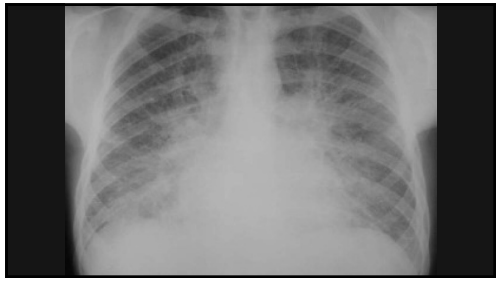

Lorazepam
Injection, USP
2 mg/mL

50


WARNING
KETAMINE

51

52



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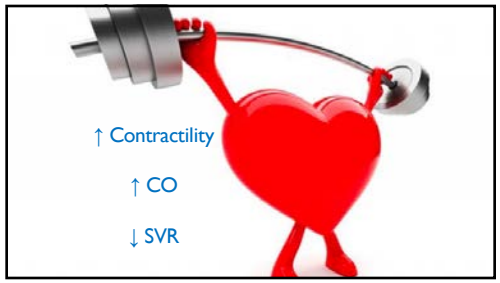

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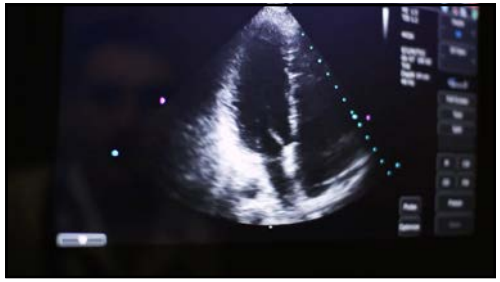

55

Low Contractility	High Contractility
• Treat like any other low output CHF • Diuretics • Afterload reduction • Preload reduction	• Avoid preload and afterload reduction • Focus on systemic blockade • Diuretics are fine, if necessary

56

57

Take Home Pearls

- Consider thyroid storm in patients with elevated vitals and AMS.
- Treat thyroid storm in a stepwise approach.
- Passive cooling and acetaminophen for hyperthermia. Benzos for agitation.
- Heart failure? Use your US to guide therapy.
- Don't forget to treat the stressor.

58

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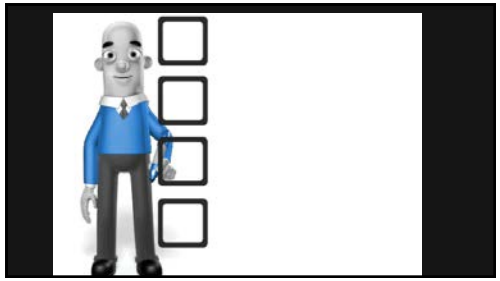

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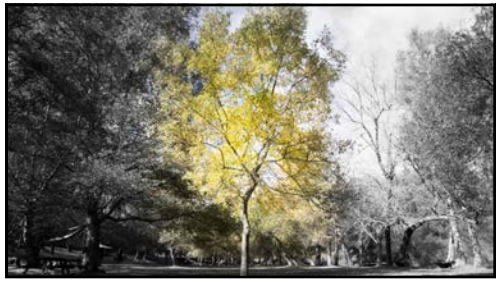

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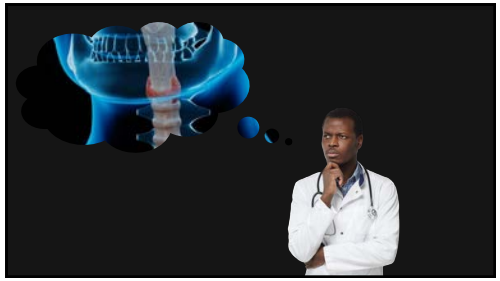


68

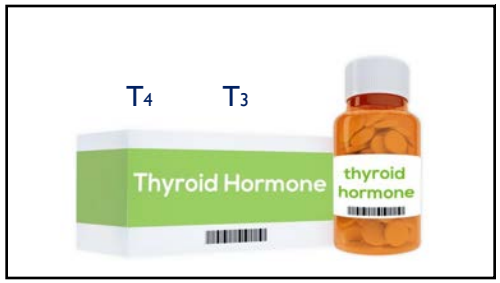
69


Free
T4

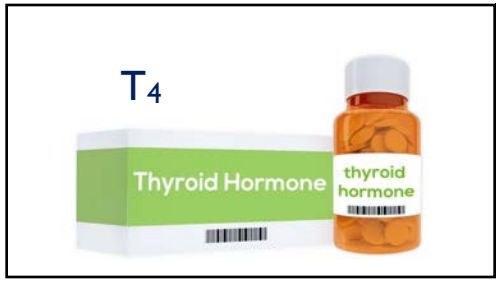
70


MANAGEMENT
320
340
0
20
40
NW
NE

71


T4
T3
Thyroid Hormone
thyroid
hormone

72


T4
Thyroid Hormone
thyroid hormone

73

74


T4 100-500 mcg
Thyroid Hormone
thyroid hormone

75


T4
T3
Thyroid Hormone
thyroid hormone

76


T3
Thyroid Hormone
thyroid hormone

77

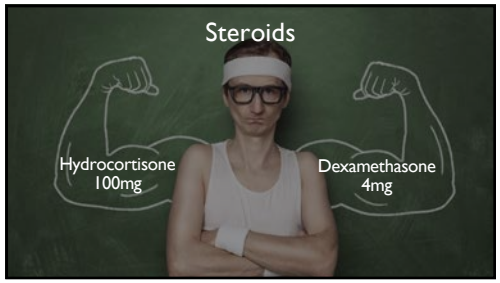
78


10-150 mcg
Thyroid Hormone
thyroid hormone

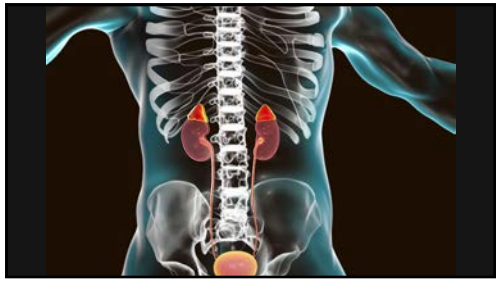
79


T4 + T3
Thyroid Hormone
thyroid hormone

80


Steroids
Hydrocortisone 100mg
Dexamethasone 4mg

81



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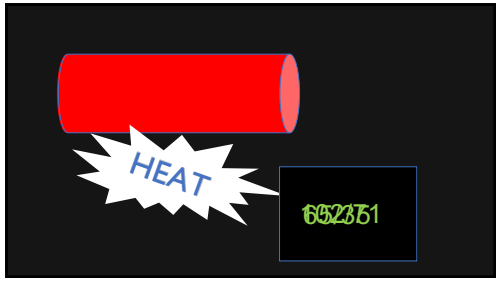

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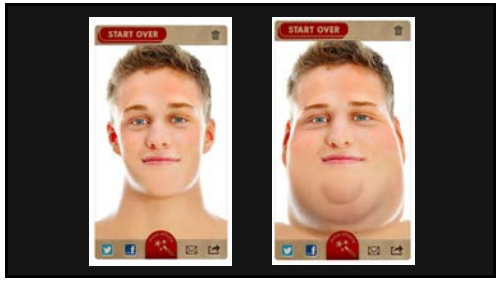


92

93

94

95

96

97


YOU LOST YOUR PHONE
AND IT'S ON SILENT?
TOO BAD. IF YOU LIKED IT
YOU SHOULDA PUT A RING ON IT.

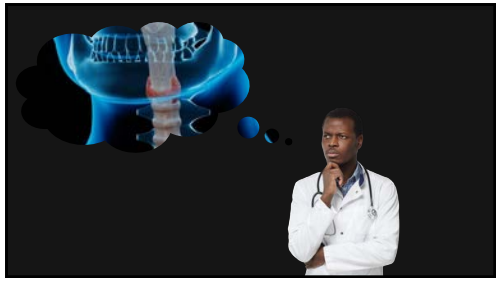
98

99

Take Home Pearls

- Consider myxedema in patients with decreased vitals and altered sensorium.
- Consider dual thyroid replacement and administer after the stress dose steroids.
- Passive rewarming only so as to not precipitate circulatory collapse. Be careful with intubation.
- Don't forget about the stressor.

100



101

102

QRS… TUV (MARIJUANA)

Dan Quan, DO FAAEM FACEP FACMT
Emergency Medicine/Medical Toxicology/Addiction Medicine
Creighton University Emergency Medicine Residency
Toxicology Consultants of Arizona
Phoenix, Arizona

1

DISCLOSURES

All relevant financial relationships(s) with any commercial interest to the provider's name of commercial interest(s) nature of the relationship with each

NONE

2

TECHNICAL TERMS

- Cannabis
  - All products derived from the plant Cannabis sativa
- Marijuana
  - Parts of the plant that contains the most tetrahydrocannabinol (THC)
- Hemp
  - Contains little THC
- Cannabinoids
  - Chemicals found in the plant

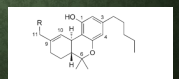
3

CANNABIS FLOWER

4

CANNABINOIDS

- Psychoactive
  - Cannabinoid receptor 1 (CB1)
  - Δ9-tetrahydrocannabinol or Δ9-THC
  - Δ8_tetrahydrocannabinol or Δ8-THC
  - Cannabinol
  - 11-hydroxy- Δ9_ THC
  - Anandamide
- Non-psychoactive
  - Cannabidiol (CBD)
  - Cannabichromene
  - (-) Δ8- THC-11-oic acid



R = H Δ⁸-Tetrahydrocannabinol (THC)
R = OH 11-Hydroxy variant (11-OH-THC)

5

FDA APPROVED CANNABINOIDS

- Epidiolex
  - Purified CBD
  - Indicated for the treatment of severe seizures
- Marinol - Dronabinol (Schedule III), Syndros (Schedule II)
  - Synthetic Δ⁹ THC
- Cesamet (nabilone)
  - Δ⁹ THC synthetic analog
  - Used to treat nausea and vomiting caused by chemotherapy

6

CANNABINOID RECEPTORS

- Cannabinoid receptor type 1 (CB1)
  - Brain – cognition, anxiety, addiction, sleep
  - CV – negative inotropy, vasodilation, cardiac function
  - GI – mobility, secretion of gastric acid, nausea and vomiting control
- Cannabinoid receptor type 2 (CB2)
  - Immune cells, peripheral tissues, cerebellum, brain stem

7

HEMP

- Fibers and oil are used to make
  - Paper, rope, textiles, plastics, animal feed, building materials
- Higher concertation of CBD vs Δ^9 THC
- Legal to grow after the 2018 Farm Bill
  - May contain up to 0.3% Δ^9 THC

8

Δ^8 THC

- Dervived from Cannabis sativa and mostly from hemp
- May be mixed with CBD products
- Less affinity at the CB_1 receptor
- Similar "desired" effects as Δ^9 THC with less adverse effects
  - Decreases nausea and vomiting, stimulates appetite, less anxiety
  - Short-term memory problems, anxiety and paranoia, hallucinations, syncope
- Low amounts in cannabis
  - Converted from CBD using strong organic solvents
- DEA considers Δ^8 THC a Schedule I substance on 2/13/2023

9

CBD

- Extracted from hemp
- Used for chronic pain and spasticity, nausea and vomiting due to chemotherapy, weight gain in HIV, sleep disorders, Tourette syndrome, seizures
- June 2018, Epidiolex was FDA approved
  - Purified CBD oral solution
- Rick Simpson's Oil (RSO)
  - www.leafly.com/news/cannabis-101/what-is-rick-simpson-oil

10

NOT YOUR MAMA'S WEED

- In the 1960s and 1970s marijuana contained less than 4% of THC along with nearly the same amount of CBD
- Today, the average amount is 16% THC and lower amounts of CBD
  - Result of cross breeding, preventing pollination (plant spends time making THC rather than seeds)

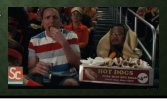
11

HASH OIL WITH 95% CANNABINOID, 75% Δ9-THC

12

EDIBLES

- Converts Δ9-THC to psychoactive 11-OH-THC by the liver
  - Stronger than THC
  - Generally, 10 mg THC is for recreational use products
- Eat low and go slow
  - May take 30 minutes to 3 hours before effects show up
  - Lasts longer, peaks in 3-4 hours



13

EDIBLE TOXICITY

- Drowsiness, ataxia, hypo- or hypertonia, seizures, coma, altered mental status, agitation, euphoria, mydriasis, respiratory depression
- Pediatric
  - 3 mg/kg THC - observation
  - 7 mg/kg THC - admission and moderate intervention
  - 13 mg/kg THC - ICU admission and major interventions
- Keep out of reach from children

14

CANNABIS WITHDRAWAL

- Occurs in 50% of regular THC users
- May be caused by decreased CB1 receptor stimulation
- Cessation or decrease use may cause symptoms
  - Onset is 1 to 2 days
  - Peaks in 2 to 6 days and lasts up to 3 weeks
- Symptoms
  - Anxiety, irritability, aggressive, angry behavior
  - Restelessness, shakiness, insomnia, depression, anorexia
  - Sweats, headaches, diaphoresis, abdominal pain, nausea, muscle cramps

15

CANNABIS WITHDRAWAL

- Withdrawal scales
  - 16-item marijuana withdrawal checklist
  - 19-item cannabis withdrawal scale
  - Not well validated
- Treatment
  - Supportive
  - Dronabinol, edible THC
  - SSRI, antipsychotics, anticonvulsants, benzodiazepines

16

CANNABINOID HYPEREMESIS SYNDROME

- No risk factors other than frequent THC users
  - Any age
  - Develops with no specific timeframe
- CB1 receptors are found in enteric nerves delaying gastric emptying
- Cannabinoids accumulate in fat stores
- Genetics
  - Polymorphism in P450 may affect metabolism rate of THC
    - CYP2C9, CYP2C19, CYP3A4

17

CANNABINOID HYPEREMESIS SYNDROME

- Early phase
  - Nausea, anorexia
- Hyperemetic phase
  - Persistent and painful vomiting
  - May cause electrolyte abnormalities, dehydration, acute kidney injury
- Recovery phase
  - Abstinence and symptoms resolve

18

CANNABINOID HYPEREMESIS SYNDROME

- IV fluids
- Electrolyte replacement
- antiemetics
  - Ondansetron
  - Droperidol
    - 0.625 to 2.5 mg IV may help
  - Haloperidol
    - 5 mg IV, may try 5 mg PO daily prescription

19

CANNABINOID HYPEREMESIS SYNDROME

- Cessation from use
- Hot showers
  - Blood flow to skin away from the enteric system
- Topical capsaicin cream 0.075% to 0.1% over the abdomen
  - Inhibits substance P and disrupts TPRV-1
  - Side effects – burning sensation, skin irritation, blistering

20

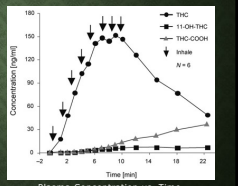
RAPID URINE DRUG SCREEN

- Detects 11-nor-Δ9-THC-9-carboxylic acid (THC-COOH)
- Positive
  - 3 to 10 days in occasional users
  - 30 to 45 days in habituated users
- Cannabidiol (CBD)
  - Does not generate THC-COOH metabolites
  - Products may contain THC (0.3% or more)
- Δ8-THC
  - May test positive due to cross reactivity or contamination with Δ9-THC
- Does NOT indicate intoxication

21

METABOLISM OF CANNABIS

- Nonlinear
- Blood concentrations may drop as much as 90% in the first hour
- Cannot extrapolate backwards to determine levels
- Edibles can have a lower, gradual concentration compared to smoking



Plasma Concentration vs. Time
Smoking 3.55% THC

22

ACCURACY OF TESTING

- Affected by body habitus and type of cannabis used
- THC rapidly redistributes to fat tissue from blood
  - Smoking marijuana has a maximum plasma concentration at a mean of 8.4 minutes after the start of smoking
- Effects of THC on cognitive function do not correlate with blood concentration
  - Peak impairment occurs during the 1st hour and may last 6 hours or more
  - Chronic users may have THC levels at the limit of detection (2 ng/mL – 5 ng/mL)

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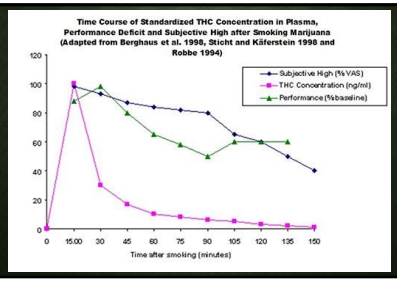

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QUESTIONS AND DISCUSSION

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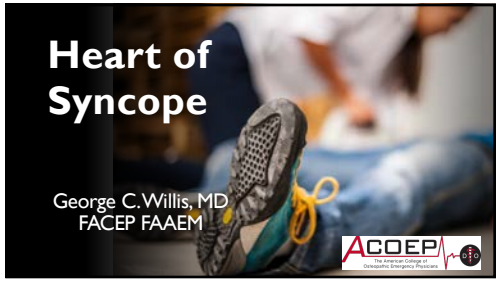
Heart of Syncope
George C. Willis, MD
FACEP FAAEM
ACOEP

4


6-8%

5


Up to 33%

6

What is syncope?

7

What is syncope?

- Transient loss of consciousness
- Complete return to baseline
- No medical intervention

PASS OUT
FAINT D.F.O. BLACK OUT

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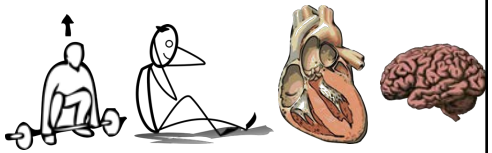
Presyncope

=

Syncope

11

Types of Syncope



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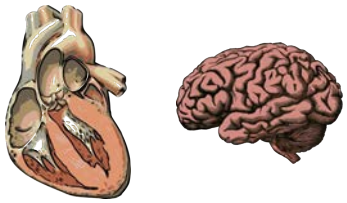
Types of Syncope



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Differential Diagnoses

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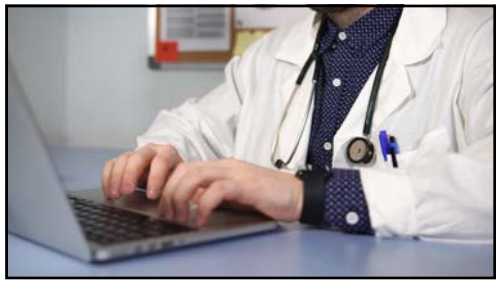

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23

- No or short prodrome
- Palpitations during prodrome
- Prolonged length of syncope
- Exertional
- Syncope while supine or sitting
- Worrisome symptoms
- PMH of heart disease
  - MI, CABG, Valve Dz
- Family history of SCD

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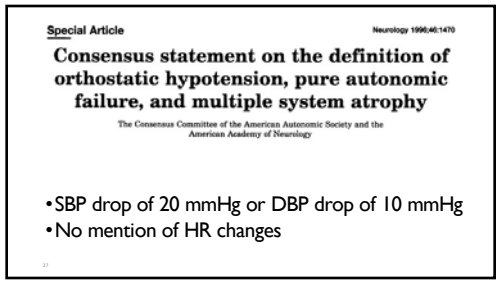
•Abnormal vital signs
•Bradycardia
•Hypotension
•New heart murmur
•Worrisome signs

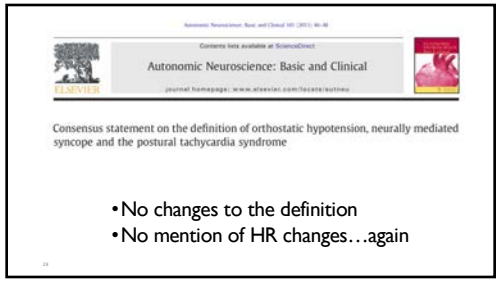
25


Orthostatic
Vital Signs

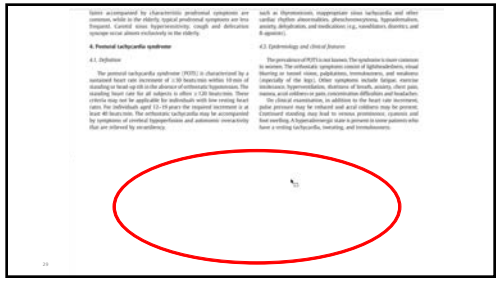
26


Special Article
Neurology 1996;46:1470
Consensus statement on the definition of orthostatic hypotension, pure autonomic failure, and multiple system atrophy
The Consensus Committee of the American Autonomic Society and the American Academy of Neurology
•SBP drop of 20 mmHg or DBP drop of 10 mmHg
•No mention of HR changes

27


Autonomic Neuroscience: Basic and Clinical
Consensus statement on the definition of orthostatic hypotension, neurally mediated syncope and the postural tachycardia syndrome
•No changes to the definition
•No mention of HR changes…again

28



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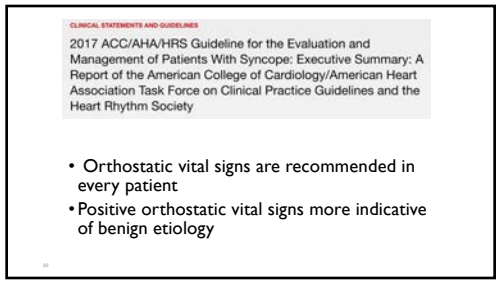
CLINICAL STATEMENTS AND GUIDELINES
2017 ACC/AHA/HRS Guideline for the Evaluation and Management of Patients With Syncope: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society
• Orthostatic vital signs are recommended in every patient
•Positive orthostatic vital signs more indicative of benign etiology

30

31

Are they actually useful?

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What is useful?

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Bottom Line

- Orthostatic vital signs do not reliably diagnose mild to moderate volume loss.
- Symptoms upon rising are more indicative of volume loss.

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CSRS

Predisposition for vasovagal syncope	-1
Heart disease	1
SBP <90 or >180	2
Elevated troponin	2
Abnormal QRS axis	1
Prolonged QT interval	1
Wide QRS complexes	2
ED diagnosis of vasovagal syncope	-2
ED diagnosis of cardiac syncope	2

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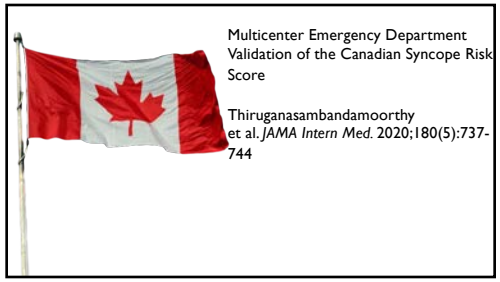

Multicenter Emergency Department Validation of the Canadian Syncope Risk Score

Thiruganasambandamoorthy et al. *JAMA Intern Med.* 2020;180(5):737-744

49

50

Sensitivity 97.8%

0.3% and 0.7% had a serious adverse event

51

Specificity 44.3%

19.2% and 51.3% had a serious adverse event

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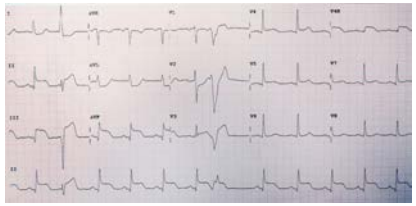
54

7 things to look for on EKG!

55

Acute Coronary Syndrome



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AV Blocks

- Mostly 2nd and 3rd degree AV blocks
- Predisposes to syncope through:
  - AV dissociation
  - Sinus pause

57

2nd Degree Mobitz II

- Fixed prolonged PR interval
- Dropped QRS complex

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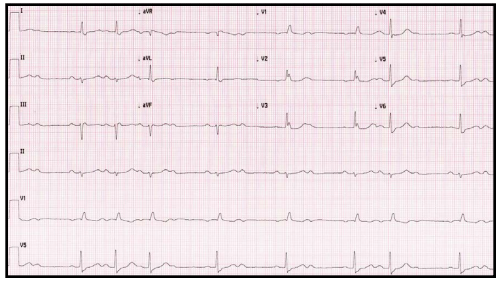

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2nd Degree Mobitz II

60

3rd Degree AV Block

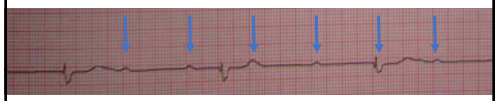
- Complete dissociation of atria and ventricles
- P waves operate independently of QRS complexes

61

3rd Degree AV Block

62

3rd Degree AV Block



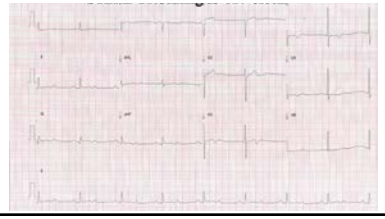
63

2:1 AV Dissociation

- PQRS complex and then dropped QRS complex
- Think of as between 2nd and 3rd degree

64

2:1 AV Dissociation



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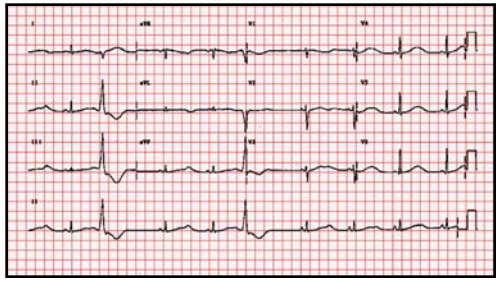
2:1 AV Dissociation

66

Prolonged QT

- QTc > 450ms
- Can be congenital or acquired
- Most commonly caused by medications
- Will progress to TdP

67



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Wolf-Parkinson-White

- Delta waves on ECG
- Short PR interval
- Problem=atrial fibrillation w/ WPW
  - Ventricular rate of ~300
  - Wide QRS complex

70

Wolf-Parkinson-White

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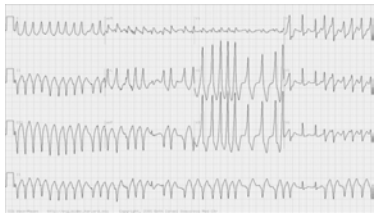
Wolf-Parkinson-White

72

Wolf-Parkinson-White



73

Wolf-Parkinson-White

74

HOCM

- Obstructive cardiomyopathy
- Symptoms with exertion

- LVH on EKG
- Dagger-like Q waves

75

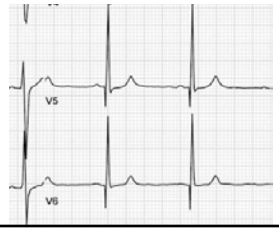
HOCM

76

HOCM

77

HOCM



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Brugada

- Sodium channelopathy
- 3 types
- EKG findings
  - Incomplete RBBB pattern
  - ST elevation in V1 – V3
  - Coved vs. Saddle

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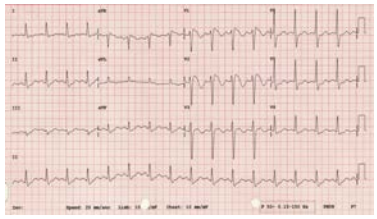
Brugada

80

Brugada



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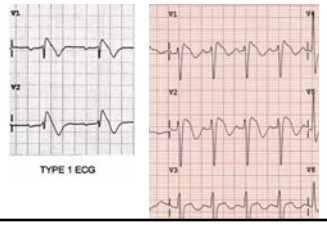
Brugada



82

ARVC

- Arrhythmogenic right ventricular CM
- Fat deposition in the myocardium
- Causes decreased electrical conduction
- Predisposes to ventricular dysrhythmias

83

ARVC

- EKG findings
  - Epsilon wave
  - TWI in V1-V3
  - Prolonged S wave

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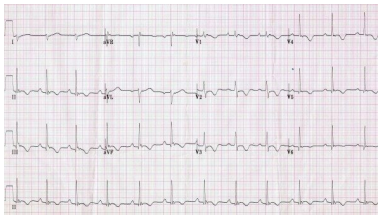
ARVC



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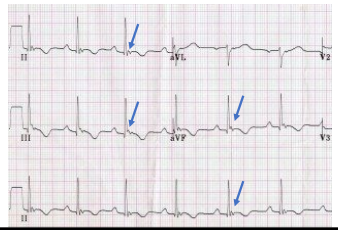
ARVC



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Bottom Line

- 7 DEADLY EKG findings in syncope
  - ACS
  - AV blocks
  - ARVC
  - Brugada
  - HOCM
  - Prolonged QT
  - WPW

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Questions?

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Take Home Pearls

- A good history and physical dictates the workup. There are no "syncope labs"!
- Remember the worrisome signs and symptoms for syncope. Focus on what happened surrounding the syncope.
- Orthostatics are useful for bringing on symptoms to assess for volume status. The numbers aren't helpful.
- Remember the 7 deadly EKG findings for syncope

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ACOEP
The American College of
Osteopathic Emergency Physicians
D O
THANK YOU

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Well... For What It's Worth
(A nealthy Reassessment of What Emergency Medicine is About)
Presented By
Al'ai Alvarez, MD, FACEP, FAAEM
Director of We -being
Co-C air of the uman Potentia Team
Process Improvement • Diversity#Equity and Inclusion
Desi n Thinkin • Hi h-Performance Team
No Disc'losures
Stanford
MEDICINE
Emergency
Medici e

1

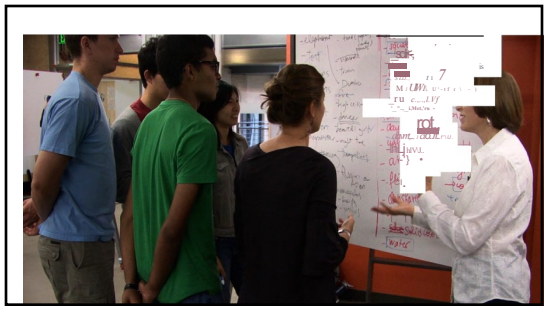

Disclosures

2


Objectives…
At the end of this session, engaged learners will:
Recognize the difference between focusing on minimizing burnout and optimizing professional fulfillment
Relate to different pivot points shared by the speaker to highlight authenticity and alignment with values
Appraise their current work environment to examine ways to achieve alignment with personal values

3

4



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EINSTEIN
Albert Einstein College of Medicine
OF YESHIVA UNIVERSITY
EMERGENCY
MONTEFIORE
JACOBI
MEDICAL CENTER

6


STANFORD
SCHOOL OF MEDICINE
Stanford University Medical Center

7


Imposter Phenomenon
PMID: 36116974

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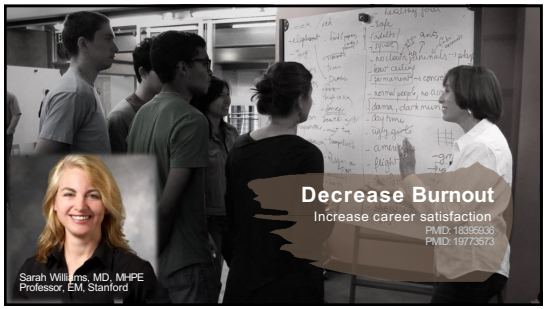

Decrease Burnout
Increase career satisfaction
PMID: 18395936
PMID: 19773573
Sarah Williams, MD, MHPE
Professor, EM, Stanford

9


HELLO
My Name Is
Jamon
Melissa
Tyler
VIVIAN
Tom
Stanford MEDICINE | Educational Technology
Technology & Digital Solutions
d.
HASSO PLATTNER
Institute of Design at Stanford

10


Learning Environment
PMID: 19250355

11


Cookies and Evaluations
PMID: 29956364

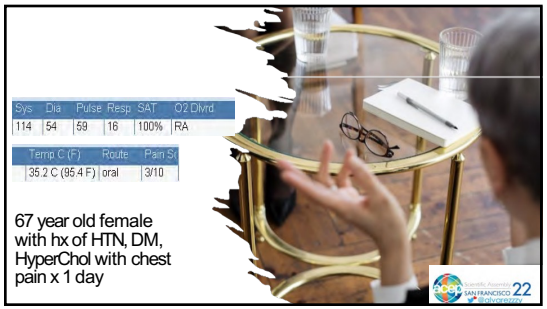
12


Signpost Teaching
Nounou Taleghani MD, PhD
Professor, EM, Stanford

13


Sarah Williams, MD, MHPE
Professor, EM, Stanford
Psychological Safety
PMID: 34705709

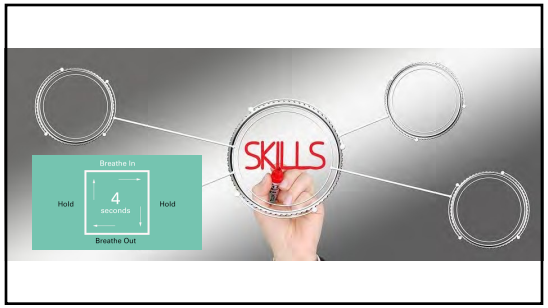
14


Sys Dia Pulse Resp SAT O2 Dlvrd
114 54 59 16 100% RA
Temp C (F) Route Pain Sc
35.2 C (95.4 F) oral 3/10
67 year old female with hx of HTN, DM, HyperChol with chest pain x 1 day

15


Bedside
Procedures
Christine Cassidy, MD
Jacobi Medical Center

16


SKILLS
Breathe In
Hold
4
seconds
Hold
Breathe Out

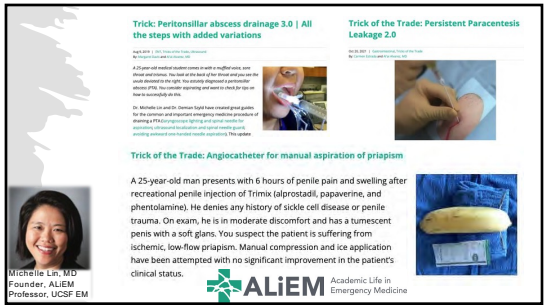
17


Dr. Alvarez
vs.
Dr. LA
Kimberly Scherzer, MD, MS
Associate Professor
EM, Stanford

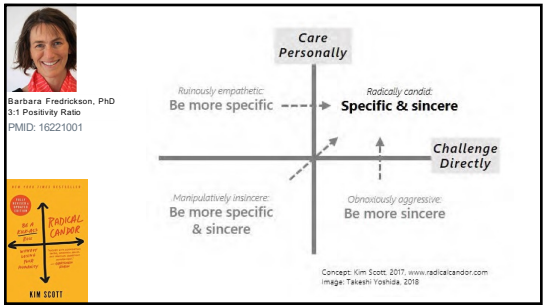
18


DORSAL VEIN
CORPUS CAVERNOSUM

19


Trick: Peritonsillar abscess drainage 3.0 | All the steps with added variations
Trick of the Trade: Persistent Paracentesis Leakage 2.0
Trick of the Trade: Angiocatheter for manual aspiration of priapism
A 25-year-old man presents with 6 hours of penile pain and swelling after recreational penile injection of Trimix (alprostadil, papaverine, and phentolamine). He denies any history of sickle cell disease or penile trauma. On exam, he is in moderate discomfort and has a tumescent penis with a soft glans. You suspect the patient is suffering from ischemic, low-flow priapism. Manual compression and ice application have been attempted with no significant improvement in the patient's clinical status.
Michelle Lin, MD
Founder, ALiEM
Professor, UCSF EM
ALiEM
Academic Life in Emergency Medicine

20


Barbara Fredrickson, PhD
3:1 Positivity Ratio
PMID: 16221001
Care Personally
Ruinously empathetic:
Be more specific
Radically candid:
Specific & sincere
Challenge Directly
Manipulatively insincere:
Be more specific & sincere
Obnoxiously aggressive:
Be more sincere
RADICAL CANDOR
KIM SCOTT
Concept: Kim Scott, 2017, www.radicalcandor.com
Image: Takeshi Yoshida, 2018

21


Kimberly Schertzer, MD, MS
Associate Professor
EM, Stanford

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22
SAN FRANCISCO
@alvarezzzy

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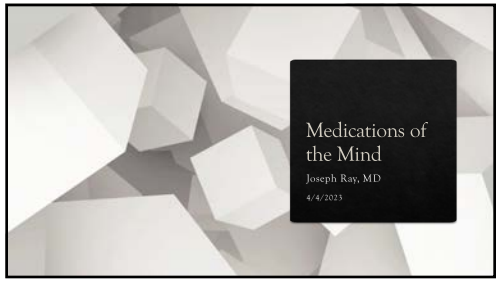
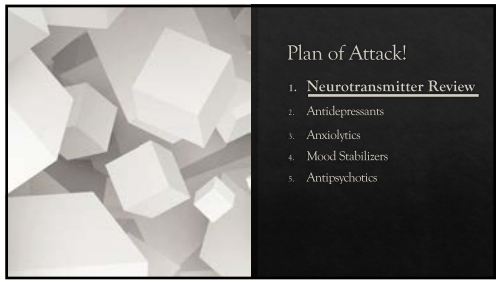

Medications of the Mind
Joseph Ray, MD
4/4/2023

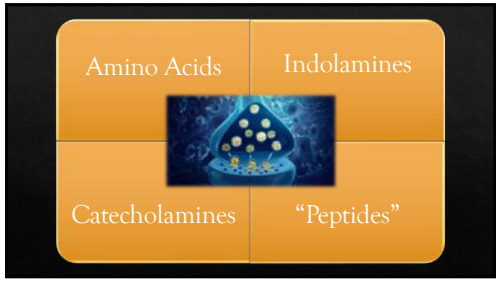
1


Conflicts of Interest
None

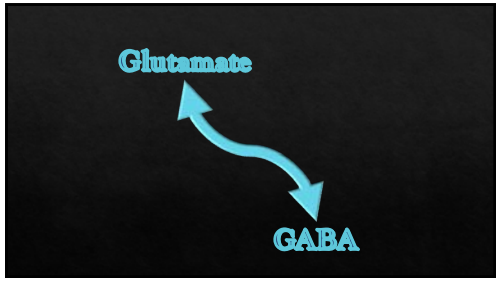
2


Plan of Attack!
1. Neurotransmitter Review
2. Antidepressants
3. Anxiolytics
4. Mood Stabilizers
5. Antipsychotics

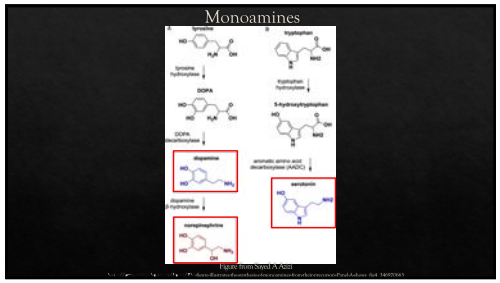
3


Amino Acids
Indolamines
Catecholamines
"Peptides"

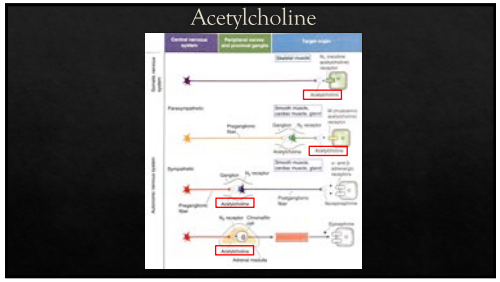
4


Glutamate
GABA

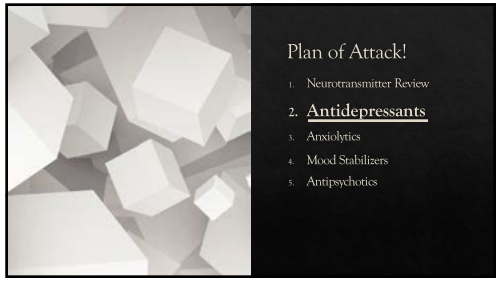
5


Monoamines

6


Acetylcholine

7


Plan of Attack!
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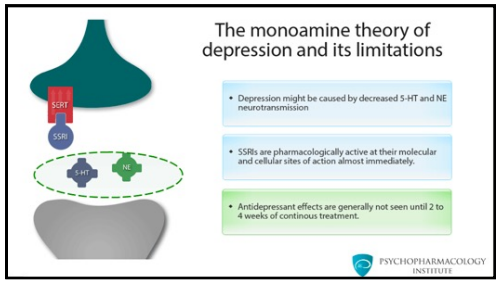
8


The monoamine theory of depression and its limitations
SERT
SSRI
5-HT
NE
• Depression might be caused by decreased 5-HT and NE neurotransmission
• SSRIs are pharmacologically active at their molecular and cellular sites of action almost immediately.
• Antidepressant effects are generally not seen until 2 to 4 weeks of continous treatment.
PSYCHOPHARMACOLOGY INSTITUTE

9

Monoamine Oxidase Inhibitors (MAO-Is)

- Phenelzine
- Selegiline
- Isocarboxazid
- Tranylcypromine

10

Tricyclic Antidepressants

Inhibits Serotonin reuptake	Inhibits Norepinephrine reuptake
Clomipramine Imipramine	Nortriptyline Desipramine
Amitriptyline Doxepin	

- Second line: Depression, GAD, etc
- Primary uses: Chronic pain
- Side effects: anticholinergic, sodium channel blockade, "dibenzazepine syndrome"

11

Selective Serotonin Reuptake Inhibitors

- Citalopram (Celexa)
- Escitalopram (Lexapro)
- Fluoxetine (Prozac)
- Fluvoxamine (Luvox)
- Paroxetine (Paxil)
- Sertraline (Zoloft)

First Line: Major Depression, GAD, panic disorder, OCD, PTSD, eating disorders

12

Serotonin Norepinephrine Reuptake Inhibitors (SNRIs)

- Venlafaxine (Effexor)
- Duloxetine (Cymbalta)
- Milnacipran
- Tramadol

13

Mirtazepine

Serotonin and NE (↑)
Often combined with SNRI

Trazodone

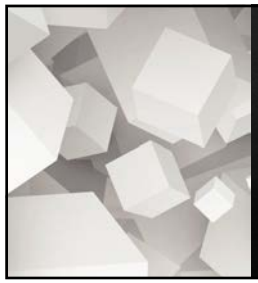
Orthostasis
Priapism

"Other"

Buproprion

NE + Dopamine
C.I. in seizures and
Eating disorders

14



Plan of Attack!

1. Neurotransmitter Review
2. Antidepressants
3. **Anxiolytics**
4. Mood Stabilizers
5. Antipsychotics

15

Benzodiazepines

Mechanism of Action
GABA receptor stimulation

Side Effects
Respiratory Depression
Delirium
Dependency
Withdrawal

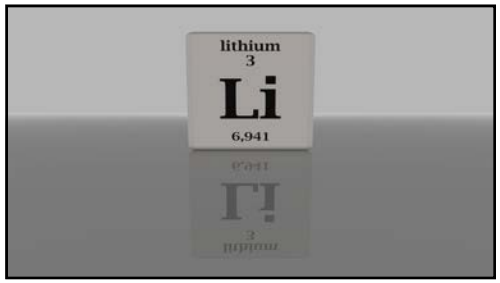
Uses
Anxiety
Acute agitation
Alcohol withdrawal
Seizures

16

Plan of Attack!

1. Neurotransmitter Review
2. Antidepressants
3. Anxiolytics
4. **Mood Stabilizers**
5. Antipsychotics

17



18

Anticonvulsants

Hepatotoxic Pancreatitis	Danger rashes	Aplastic anemia Agranulocytosis Danger rashes

19

Plan of Attack!

1. Neurotransmitter Review
2. Antidepressants
3. Anxiolytics
4. Mood Stabilizers
5. **Antipsychotics**

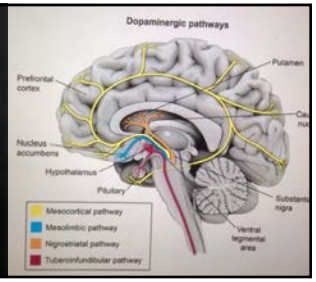
20

Dopamine Theory

Meso = Midbrain
Cortical = Cortex
Limbic = Limbus system

Nigro = Substantia Nigra
Striatal = Basal Ganglia

Tubero = Hypothalamus
Infundibular = Pituitary



21

Typical Antipsychotics

D2 Antagonism	Example	ADRs
Low	Thioridazine Chlorpromazine	Sedation, Postural Hypotension
High	Haloperidol Fluphenazine	Extrapyramidal symptoms

22

But why do we care???

1. First line now
2. Dirty Drugs
3. Serotonin syndrome
4. Sedation
5. Postural Hypotension

Atypical antipsychotics

Relative receptor-binding of atypical antipsychotics

Drug	D1	D2	5-HT2	α1	M1	H1
Clozapine	++	++	+++	+++	+++	+
Risperidone	-	+++	+++	+++	-	+
Olanzapine	++	++	+++	++	+++	++
Quetiapine	-	+	++	+++	+	+
Ziprasidone	+/-	++	+++	++	-	+
Aripiprazole	+	+++	++	++	-	+

https://jen.pol-online.com/291120

23

ExtraPyramidal Symptoms

24

Questions?

25

Summary

- Neurotransmitter Review
  - GABA and Glutamate
  - Monoamines
  - "Other"
- Antidepressants
  - SSRIs
  - SNRIs
  - TCAs
  - MAO-Is
  - Other
- Anxiolytics
  - Benzodiazepines
- Mood Stabilizers
  - Lithium
  - Anticonvulsants
- Antipsychotics
  - First generation (typical)
  - Second generation +

26

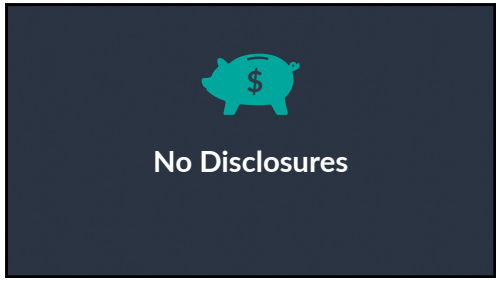
References

- Tintinalli's 8th edition
- BRS Pharmacology 6th edition
- The Human Brain An Introduction to Functional Anatomy by John Nolte 6th edition
- First Aid for Step 1
- First Aid for Step 2CK
- DSM V
- Boron and Boulpaep's Medical Physiology 2nd ed

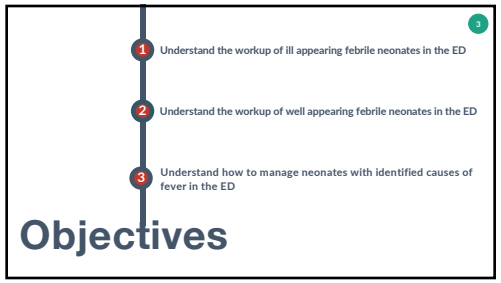
27


Updates In Pediatric Fever
Ages 0-60 days old
Ashley Grigsby, DO, FACEP, FAAP

1


No Disclosures

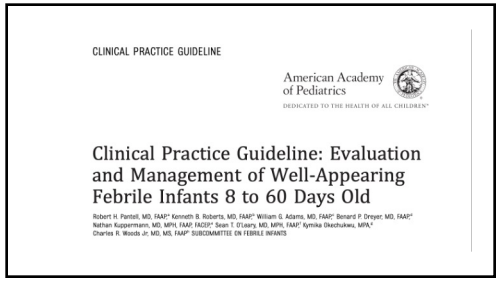
2


3
1 Understand the workup of ill appearing febrile neonates in the ED
2 Understand the workup of well appearing febrile neonates in the ED
3 Understand how to manage neonates with identified causes of fever in the ED
Objectives

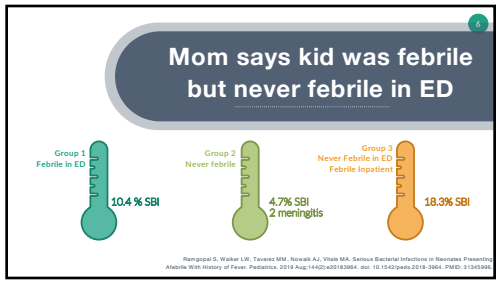
3


Fever = 38.0C / 100.4F

4


CLINICAL PRACTICE GUIDELINE
American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN™
Clinical Practice Guideline: Evaluation and Management of Well-Appearing Febrile Infants 8 to 60 Days Old

5


6
Mom says kid was febrile but never febrile in ED
Group 1
Febrile in ED
10.4 % SBI
Group 2
Never febrile
4.7% SBI
2 meningitis
Group 3
Never Febrile in ED
Febrile Inpatient
18.3% SBI

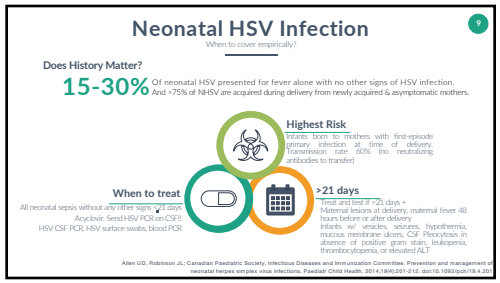
6


0-21 DAY OLDS

7


0-21 DAYS OLD
Cookbook Medicine
8
BREAKDOWN
Causes
10-20% Urinary Tract Infection
4-5% Bacteremia
1-3% Meningitis
Pneumonia, Septic Joint, Osteomyelitis
Workup
Cath urine, UA and culture
Blood Cx, LFT, HSV Studies
No Inflammatory Markers
CSF - glucose, protein, cell count, gram stain/culture, HSV PCR, enterovirus PCR
TREATMENT
Antibiotics
Ampicillin (GBS, Listeria)
Gentamicin or Cefotaxime (E. coli)
No Ceftriaxone
Acyclovir (0-21 days)

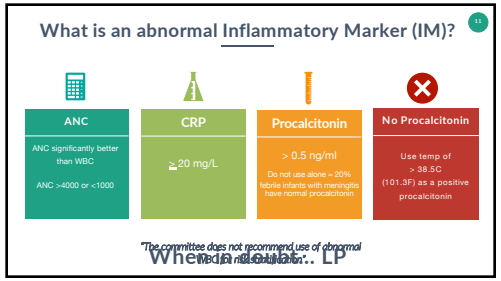
8


Neonatal HSV Infection
When to cover empirically?
9
Does History Matter?
15-30% Of neonatal HSV presented for fever alone with no other signs of HSV infection.
And >75% of NHSV are acquired during delivery from newly acquired & asymptomatic mothers.
Highest Risk
Infants born to mothers with first-episode primary infection at time of delivery. Transmission rate 40% (no neutralizing antibodies to transfer)
When to treat
All neonatal sepsis without any other signs, <21 days
Acyclovir. Send HSV PCR on CSF!!
HSV CSF PCR, HSV surface swabs, blood PCR
>21 days
Treat and test if >21 days +
Maternal lesions at delivery, maternal fever 48 hours before or after delivery
Infants w/ vesicles, seizures, hypothermia, mucous membrane ulcers, CSF Pleocytosis in absence of positive gram stain, leukopenia, thrombocytopenia, or elevated ALT
Allen UD, Robinson JL; Canadian Paediatric Society, Infectious Diseases and Immunization Committee. Prevention and management of neonatal herpes simplex virus infections. Paediatr Child Health. 2014;19(4):201-212. doi:10.1093/pch/19.4.201

9


22-28 DAY OLDS

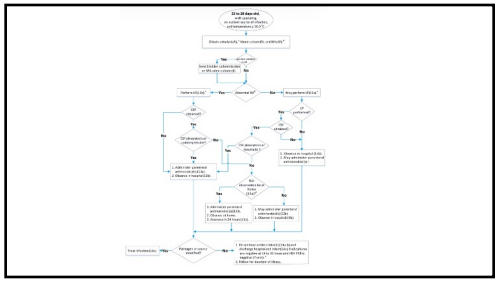
10


What is an abnormal Inflammatory Marker (IM)?
11
ANC
ANC significantly better than WBC
ANC >4000 or <1000
CRP
≥ 20 mg/L
Procalcitonin
> 0.5 ng/ml
Do not use alone – 20% febrile infants with meningitis have normal procalcitonin
No Procalcitonin
Use temp of > 38.5C (101.3F) as a positive procalcitonin
"The committee does not recommend use of abnormal
LP

11


22-28 DAYS OLD
I thought this was cookbook?
12
BREAKDOWN
Causes
Workup
Cath urine, UA and culture
Blood Cx, LFT
Inflammatory Markers (IM)
IF LP DONE: CSF – glucose, protein, cell count, gram stain/culture, enterovirus PCR
TREATMENT
Antibiotics
Unclear cause or UTI
Ceftriaxone 50mg/kg

12



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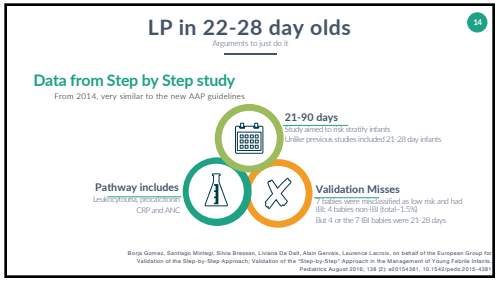
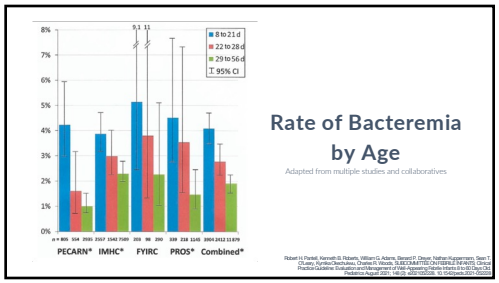

LP in 22-28 day olds
Arguments to just do it
14
Data from Step by Step study
From 2014, very similar to the new AAP guidelines
21-90 days
Study aimed to risk stratify infants
Unlike previous studies included 21-28 day infants
Pathway includes
Leukocytosuria, procalcitonin
CRP and ANC
Validation Misses
7 babies were misclassified as low risk and had
IBI; 4 babies non-IBI (total~1.5%)
But 4 or the 7 IBI babies were 21-28 days

14


8% 7% 6% 5% 4% 3% 2% 1% 0%
9.1 11
8 to 21 d
22 to 28 d
29 to 56 d
95% CI
PECARN* IMHC* FYIRC PROS* Combined*
Rate of Bacteremia
by Age
Adapted from multiple studies and collaboratives

15

Can I skip the LP if the urine is dirty?

16

0-28 days

> J Pediatr. 2017 May;184:199-203. doi: 10.1016/j.jpeds.2017.01.022. Epub 2017 Feb 6.

Prevalence of Concomitant Acute Bacterial Meningitis in Neonates with Febrile Urinary Tract Infection: A Retrospective Cross-Sectional Study

Sowdhamini S Wallace [1], Danielle N Brown [2], Andrea T Cruz [3]

Affiliations + expand

PMID: 28185626 DOI: 10.1016/j.jpeds.2017.01.022

236 infants with UTI. 2 with bacterial meningitis.
1 with HSV meningoencephalitis

16

Can I skip the LP if the urine is dirty?

17

0-28 days

Comparative Study > Pediatr Emerg Care. 1995 Oct;11(5):280-4.
doi: 10.1097/00006565-199510000-00004.

Bacteremia and meningitis among infants with urinary tract infection:

NOPE!

R Bachur [1], G L Caputo

Affiliations + expand

PMID: 8570449 DOI: 10.1097/00006565-199510000-00004

21% of ≤28 day olds with UTI had bacteremia
4 infants <2 months had Cx positive CSF or CSF pleocytosis

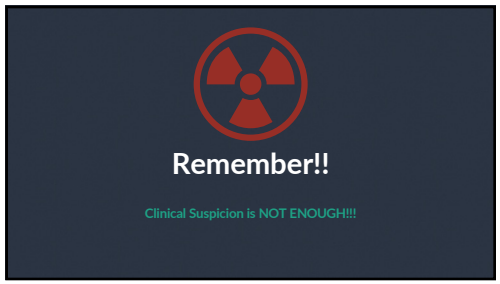
17

Age 29-60 days

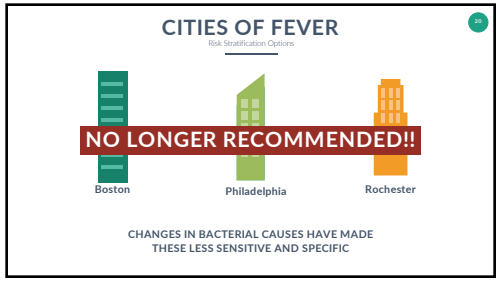
18

No one knows. Don't feel bad.

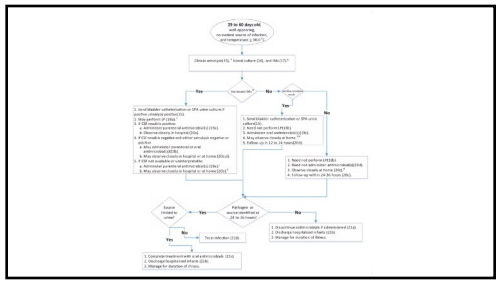
18


Remember!!
Clinical Suspicion is NOT ENOUGH!!!

19


CITIES OF FEVER
Risk Stratification Options
20
NO LONGER RECOMMENDED!!
Boston
Philadelphia
Rochester
CHANGES IN BACTERIAL CAUSES HAVE MADE
THESE LESS SENSITIVE AND SPECIFIC

20



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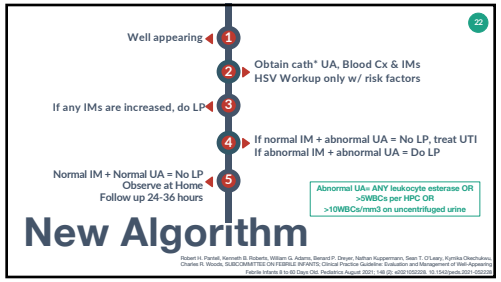
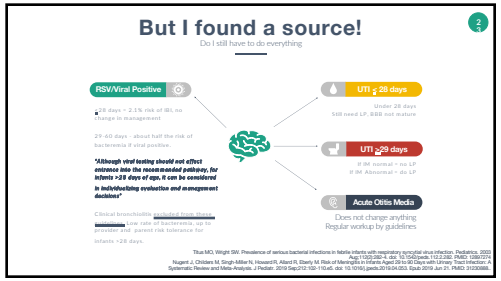
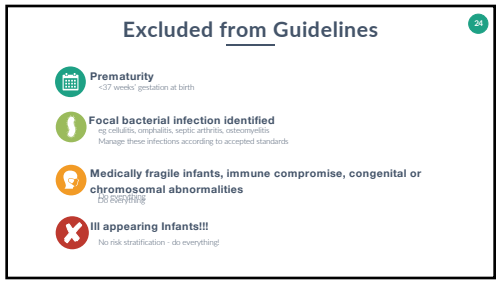

22
Well appearing
1
Obtain cath* UA, Blood Cx & IMs
HSV Workup only w/ risk factors
2
If any IMs are increased, do LP
3
If normal IM + abnormal UA = No LP, treat UTI
If abnormal IM + abnormal UA = Do LP
4
Normal IM + Normal UA = No LP
Observe at Home
Follow up 24-36 hours
5
Abnormal UA= ANY leukocyte esterase OR
>5WBCs per HPC OR
>10WBCs/mm3 on uncentrifuged urine
New Algorithm

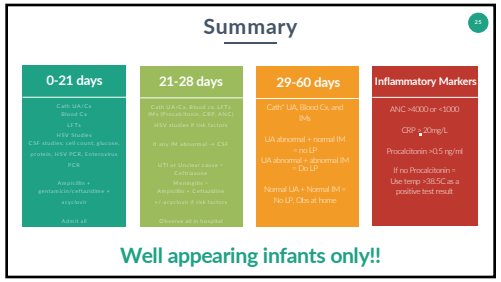
22


But I found a source!
Do I still have to do everything
RSV/Viral Positive
UTI ≤ 28 days
Under 28 days
Still need LP, BBB not mature
UTI ≥29 days
If IM normal = no LP
If IM Abnormal = do LP
Acute Otitis Media
Does not change anything
Regular workup by guidelines

23


Excluded from Guidelines
24
Prematurity
<37 weeks' gestation at birth
Focal bacterial infection identified
eg cellulitis, omphalitis, septic arthritis, osteomyelitis
Manage these infections according to accepted standards
Medically fragile infants, immune compromise, congenital or chromosomal abnormalities
Ill appearing Infants!!!
No risk stratification - do everything!

24


Summary
25
0-21 days
Cath UA/Cx
Blood Cx
LFTs
HSV Studies
CSF studies: cell count, glucose, protein, HSV PCR, Enterovirus PCR
Ampicillin + gentamicin/ceftazidime + acyclovir
Admit all
21-28 days
Cath UA/Cx, Blood cx, LFTs IM+/Procalcitonin, CRP, ANC)
HSV studies if risk factors
If any IM abnormal → CSF
UTI or Unclear cause – Ceftriaxone
Meningitis – Ampicillin + Ceftazidime
+/- acyclovir if risk factors
Observe all in hospital
29-60 days
Cath* UA, Blood Cx, and RVA
UA abnormal + normal IM = no LP
UA abnormal + abnormal IM = Do LP
Normal UA + Normal IM = No LP, Obs at home
Inflammatory Markers
ANC >4000 or <1000
CRP > 20mg/L
Procalcitonin >0.5 ng/ml
If no Procalcitonin = Use temp >38.5C as a positive test result
Well appearing infants only!!

25


Questions?
Ashley Grigsby, DO, FACEP, FAAP
ashgrigs@gmail.com

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