

# Chronic Illness in the Adult Patient

Susan Wood, BSN,  
Paramedic

In Field System Educator  
NWC EMSS

# NWC EMSS is now on Facebook and Twitter

[twitter.com/nwcemss](https://twitter.com/nwcemss)

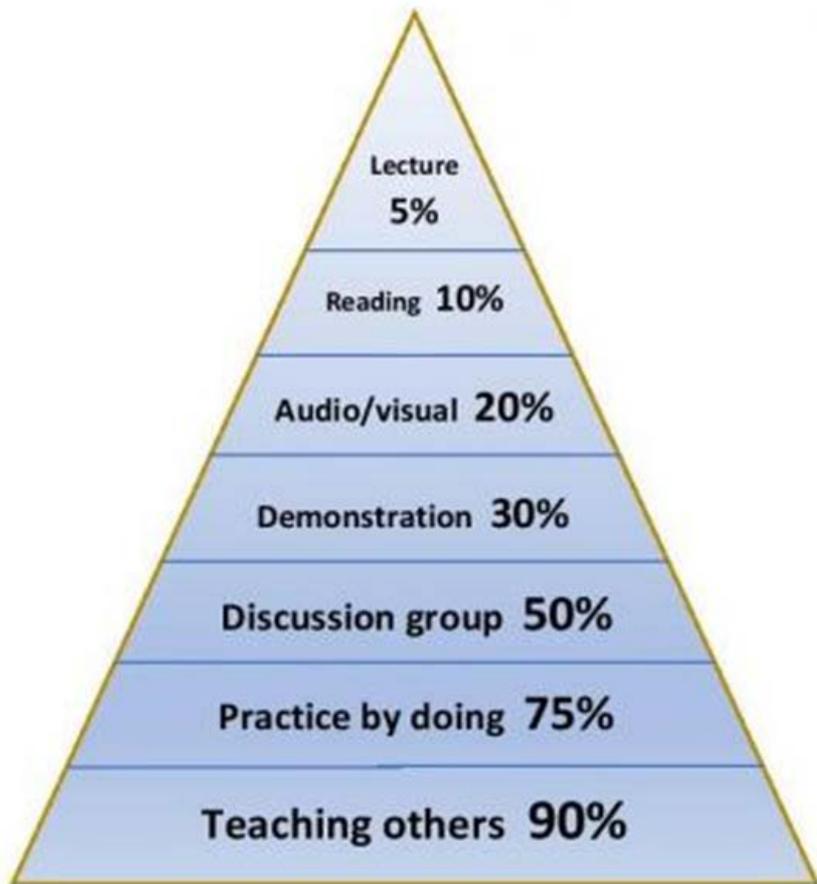
[facebook.com/nwcemss](https://facebook.com/nwcemss)



# Goal

To treat patients with the understanding that even when called for a specific complaint, the underlying chronic conditions of a patients past medical history can play a huge role in the assessment findings that are found by EMS

Let's move on...



**The Learning Pyramid: Average Learning Retention Rates**

*(National Training Laboratories, Bethel, ME)*

# How do adult learners learn?



# True or False?

What EMS gets toned out for is not always what is found upon arrival.

Patients should always know their PMHx.

Chronic conditions are treated differently than acute problems.

**Things are not always as they appear**





# AMS: Consider possible etiologies; use appropriate SOPs

- A: Alcohol and ingested drugs/toxins
- E: Endocrine/exocrine, particularly thyroid/liver; electrolyte/fluid imbalances
- I: Insulin disorders: hypoglycemia; DKA/HHNS
- O: O<sub>2</sub> deficit (hypoxia), opiates, overdose
- U: Uremia; other renal causes including hypertensive problems
- T: (recent) Trauma
- I: Infections, both neurologic and systemic
- P: Psychological; massive pulmonary embolism
- S: Space occupying lesions (epi or subdural, subarachnoid hemorrhage, tumors); stroke, shock, seizures

A 62-yo M presents at NH  
in bed, agitated, with an  
AMS

Reports he had a stroke  
while asleep at home 3d  
prior. Sym. onset unk.  
so  $\neq$  tPA.

He'd awakened 3 d ago w/  
L sided weakness & facial  
droop.

CT scan + for ischemic  
stroke

Discharged 24 h later to NH  
for rehab.



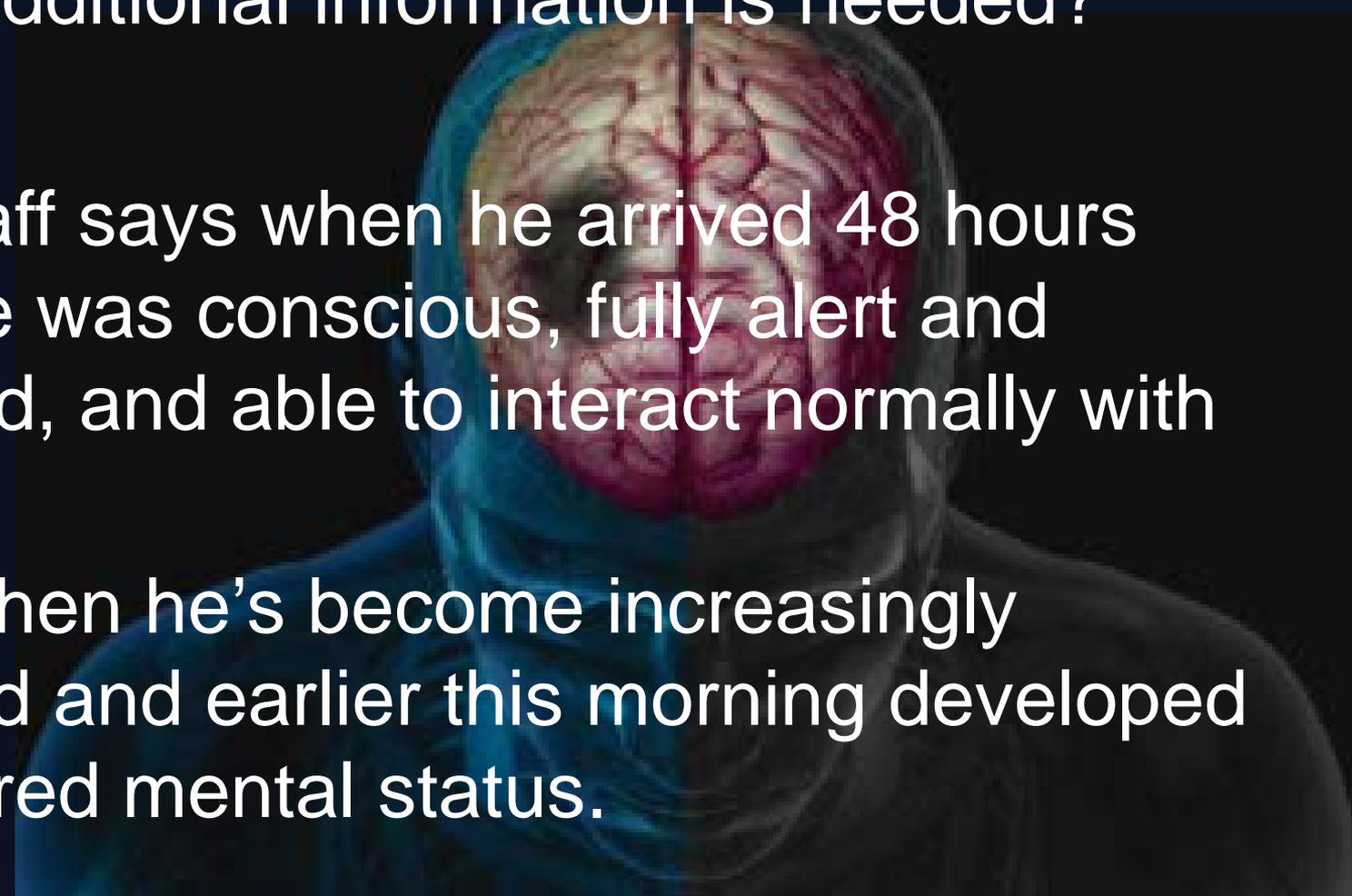


# Thoughts?

What additional information is needed?

The staff says when he arrived 48 hours ago, he was conscious, fully alert and oriented, and able to interact normally with staff.

Since then he's become increasingly agitated and earlier this morning developed an altered mental status.



Exam reveals = alert but altered;  
unable to answer questions  
appropriately, + hallucinating.

He is noticeably diaphoretic & vomits  
during exam.

VS= HR 104, RR 22. BP 152/100, RA  
SpO2 96%.

L sided weakness & facial droop is no  
worse than upon arrival.

Chart states prior to stroke + h/o HTN  
tx with amlodipine (Norvasc).

....the hidden secret



# Alcohol Abuse

Alcohol = CNS depressant

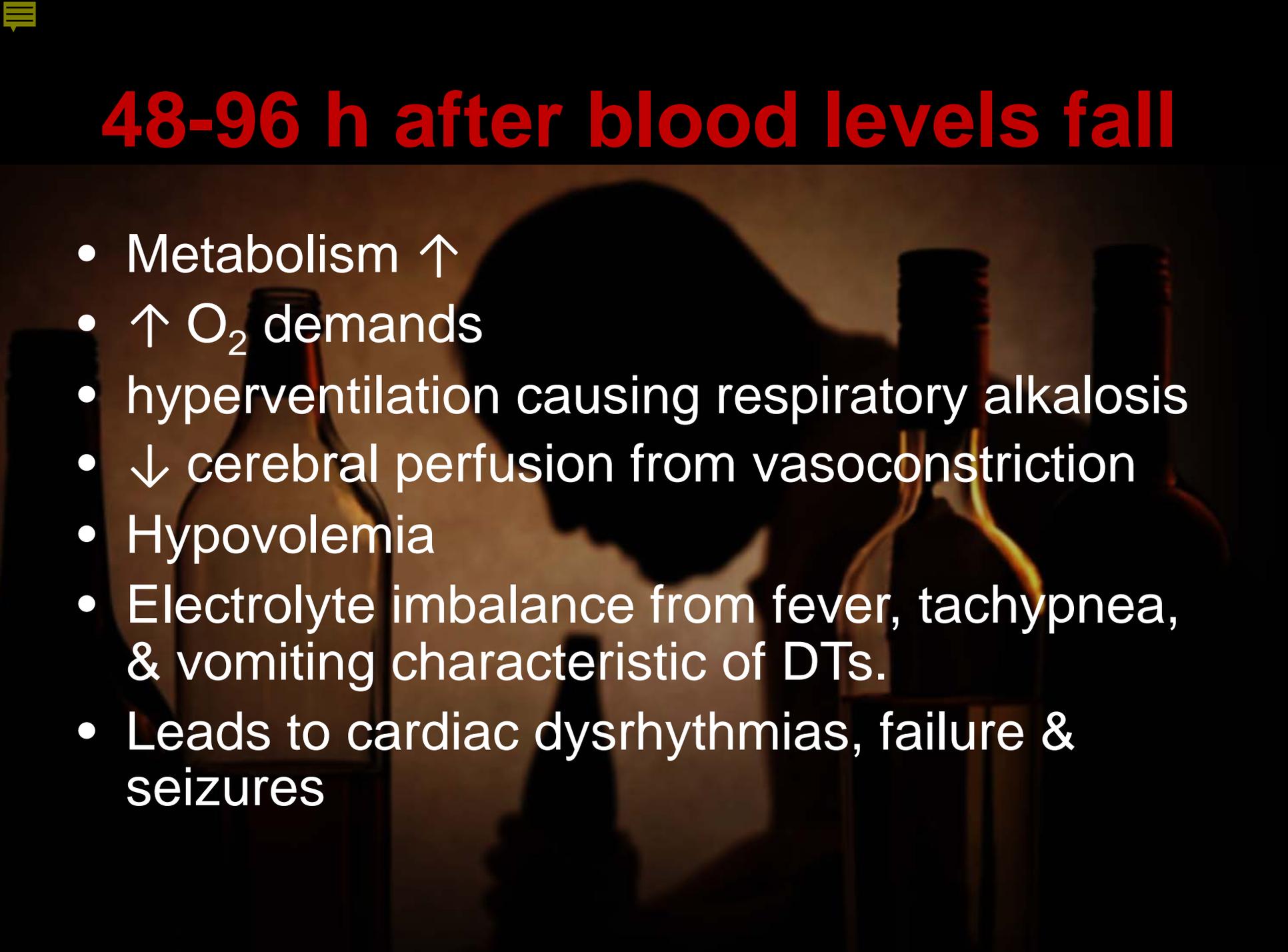
Stimulates GABA = chief inhibitory neurotransmitter in the brain; regulates muscle tone

Chronic ethanol use, brain becomes insensitive to GABA = tolerance

↑ GABA receptors = excitability

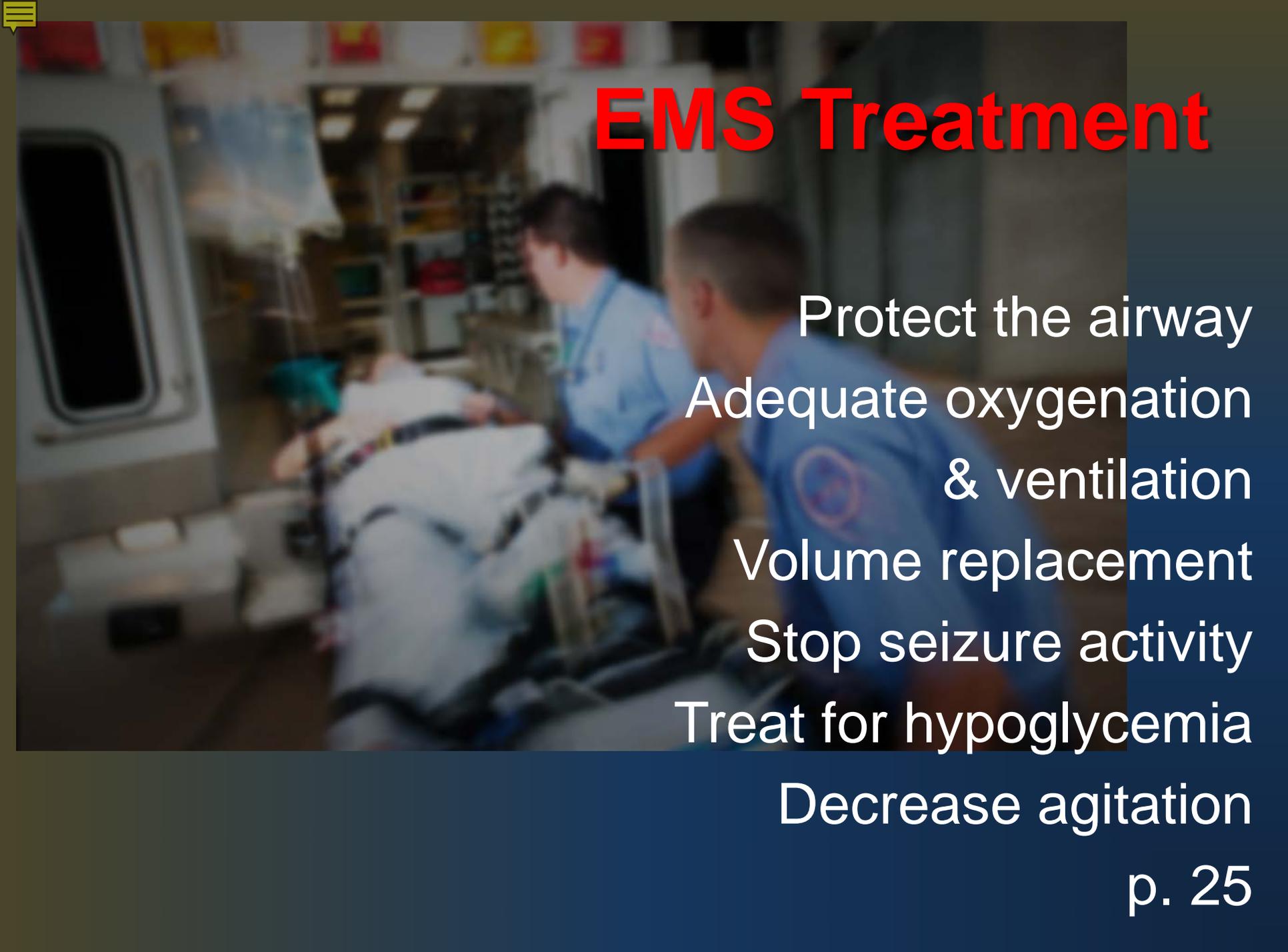
Withdrawal occurs

Similar issues with drugs



# 48-96 h after blood levels fall

- Metabolism ↑
- ↑ O<sub>2</sub> demands
- hyperventilation causing respiratory alkalosis
- ↓ cerebral perfusion from vasoconstriction
- Hypovolemia
- Electrolyte imbalance from fever, tachypnea, & vomiting characteristic of DTs.
- Leads to cardiac dysrhythmias, failure & seizures



# EMS Treatment

Protect the airway  
Adequate oxygenation  
& ventilation  
Volume replacement  
Stop seizure activity  
Treat for hypoglycemia  
Decrease agitation

# Drug Use



What are common thoughts of those people who use drugs?



Who are they?  
What do they look like?





**KEEP  
CALM  
AND  
TRY 2 BE  
OBJECTIVE.**

Ultimately,  
judgment  
must be put  
aside and  
care must be  
rendered in  
an objective  
manner.

SOP p. 27-28



# All kinds of drugs...

**How do beta blockers mask normal compensatory responses to injury?  
TCAs?**

**Opiate use has epidemic numbers and  
naloxone use continues...**

**Interesting fact: PBPI number for naloxone  
use dipped this past quarter. Ideas as to  
why?**

# Stimulants

If violent or severely agitated  
ketamine



# Ketamine Usage

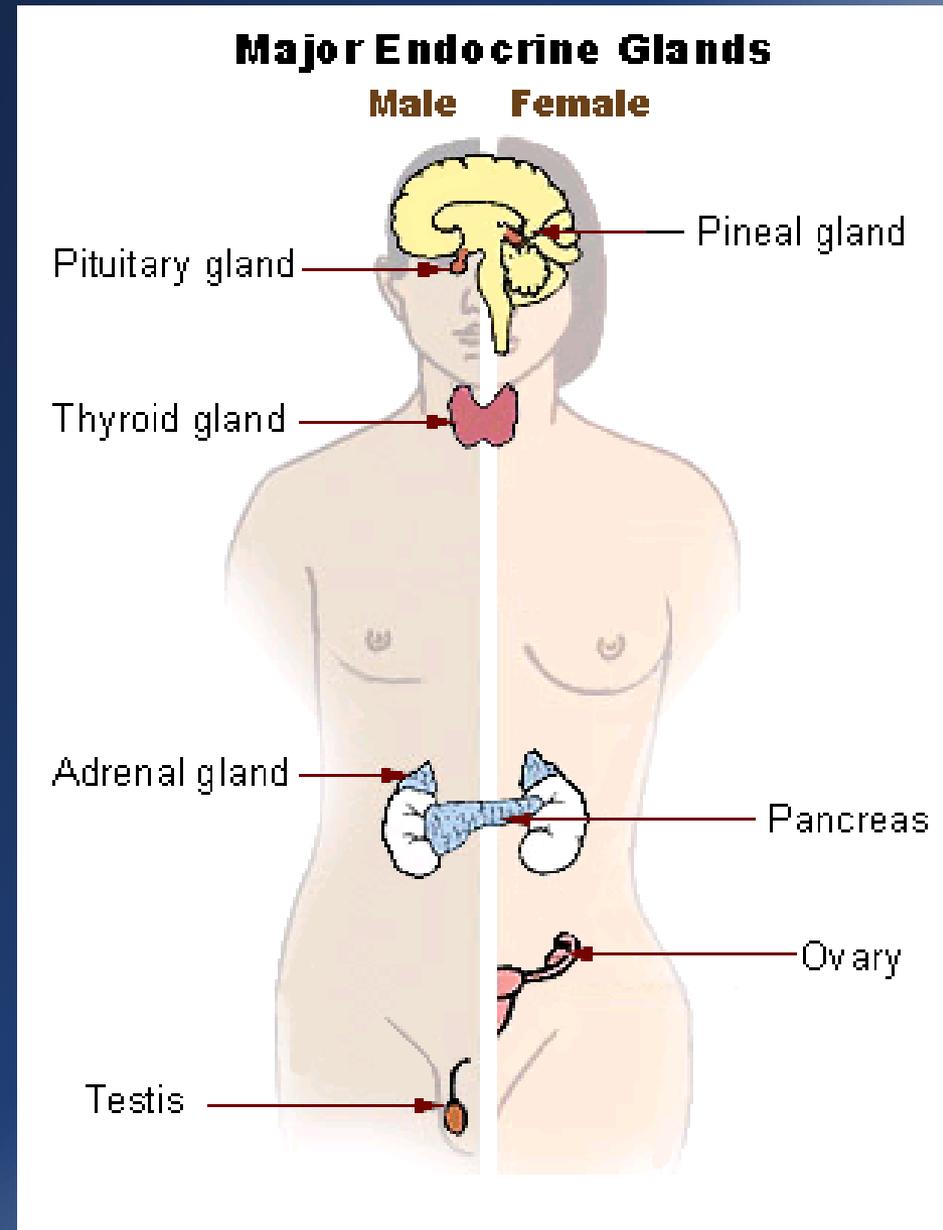
# CA per Agency		Pt Age		Reason for Use		Route Administered <sup>J1</sup>		Correct Dosage Given	
		Mean	39.0	Excited Delirium/Violent	6	IV	3	Yes	6
Advantage Ambulance		Median	31.5	Asthma DAI	1	IN	3	No	4
Arlington Heights FD	1	Mode	#N/A	Peds DAI	1	IM	7	Unable to Determine	0
Barrington Countryside F.P.D.	0	Range	14 , 84	Pain	0				
Barrington Fire Department	0			Other	2				
Bloomington FPD	0								
Buffalo Grove FD	1								
Des Plaines FD	0								
Elk Grove Township FPD	0								
Elk Grove Village FD									
Fermilab FD	0								
Hoffman Estates Fire Department	3								
Itasca FPD	0								
Lake Zurich Fire / Rescue	1								
Lincolnshire-Riverwoods FPD	0								
Long Grove FD									
Mount Prospect FD	0								
Palatine FD	2								
Palatine Rural Fire Prot Dist									
Prospect Heights FPD	0								
Rescue Eight - NWC	0								
Rolling Meadows FD	0								
Schaumburg FD	1								
Superior Ambulance - NWC									
Wood Dale FPD	1								
	10								
Agencies =	19								

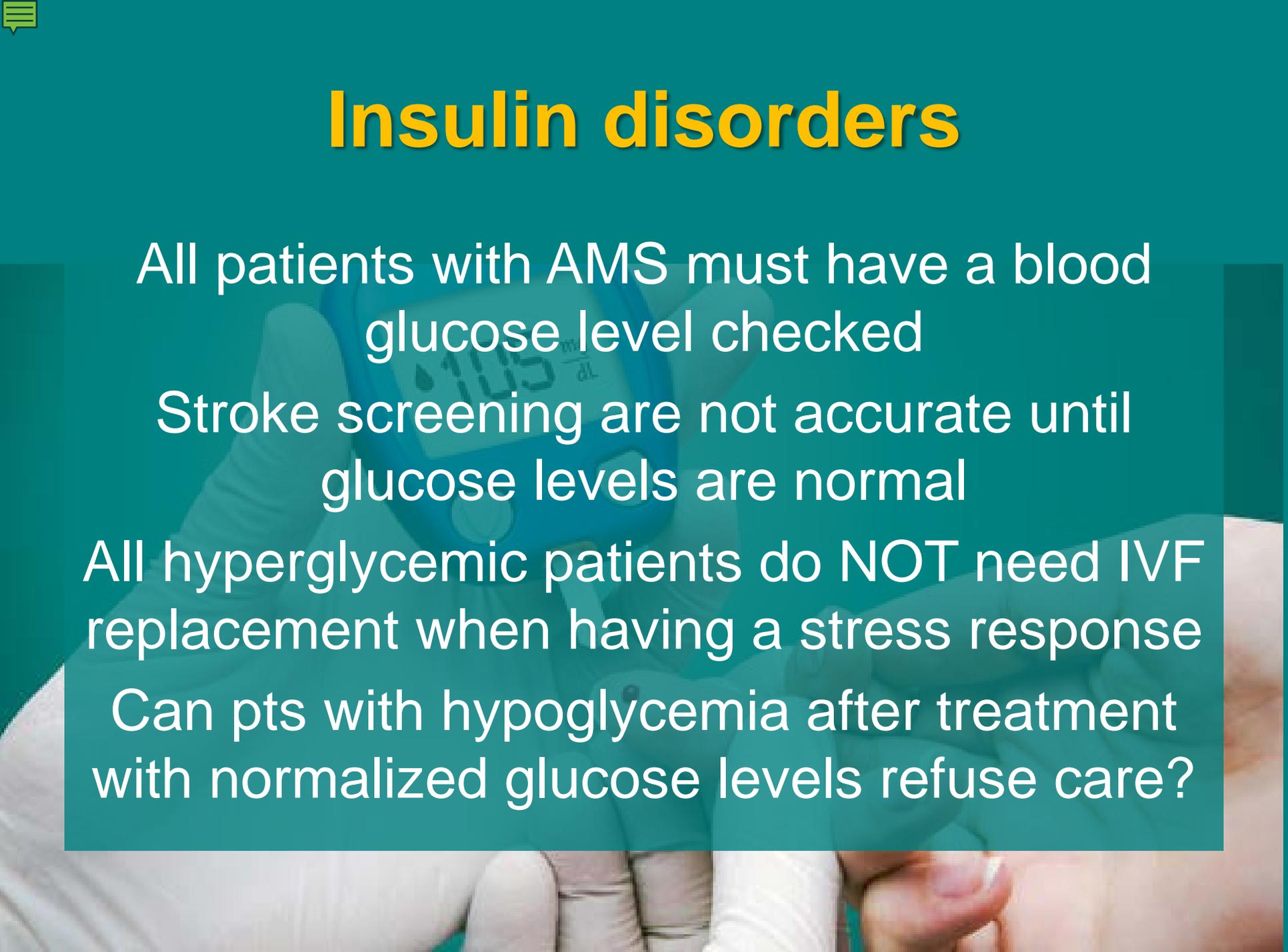


**NORTHWEST  
COMMUNITY  
EMERGENCY  
MEDICAL  
SERVICES  
SYSTEM**

# Endocrine system

Collection of glands that secrete hormones into the circulatory system to target organs



A background image showing a hand holding a blue glucose meter. The meter's screen displays the number '105' with 'mg/dL' below it. The hand is wearing a white glove. The background is a teal color with a semi-transparent white box containing text.

# Insulin disorders

All patients with AMS must have a blood glucose level checked

Stroke screening are not accurate until glucose levels are normal

All hyperglycemic patients do NOT need IVF replacement when having a stress response

Can pts with hypoglycemia after treatment with normalized glucose levels refuse care?

# Electrolyte / Fluid balance

When should  
EMS start an IV?

Signs of  
dehydration  
Medication  
administration



There is **ALWAYS** access...



[https://video.search.yahoo.com/yhs/search?fr=yhs-adk-adk\\_sbnt&hsimp=yhs-adk\\_sbnt&hspart=adk&p=teleflex+EZIO+humeral+head+videos#id=1&vid=fc00c572d9171a8f03f789e8e44ce83f&action=click](https://video.search.yahoo.com/yhs/search?fr=yhs-adk-adk_sbnt&hsimp=yhs-adk_sbnt&hspart=adk&p=teleflex+EZIO+humeral+head+videos#id=1&vid=fc00c572d9171a8f03f789e8e44ce83f&action=click)

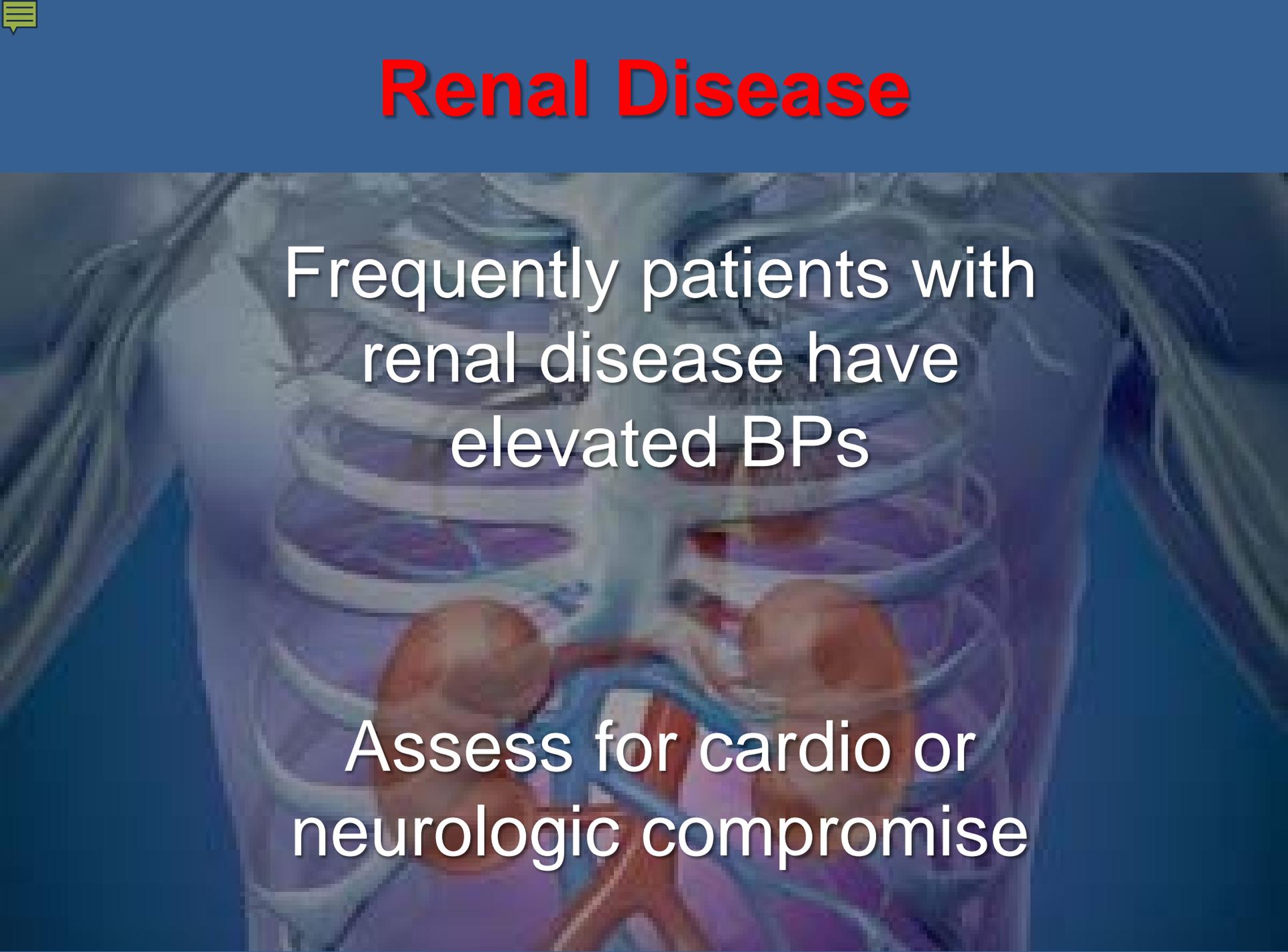
# Seizures

When called for seizure, hx plays a  
↑ role in determining if current  
condition is same or new

If new, other possible etiologies must be  
considered

If a pt has a h/o seizures, but EMS is  
called for another issue, awareness to  
possibility of sz should be taken into  
account



An anatomical illustration of the human torso, showing the ribcage, lungs, and kidneys. The kidneys are highlighted in a reddish-brown color, and the surrounding organs and structures are shown in various shades of purple and blue. The background is a dark blue gradient.

# Renal Disease

Frequently patients with renal disease have elevated BPs

Assess for cardio or neurologic compromise

# Trauma

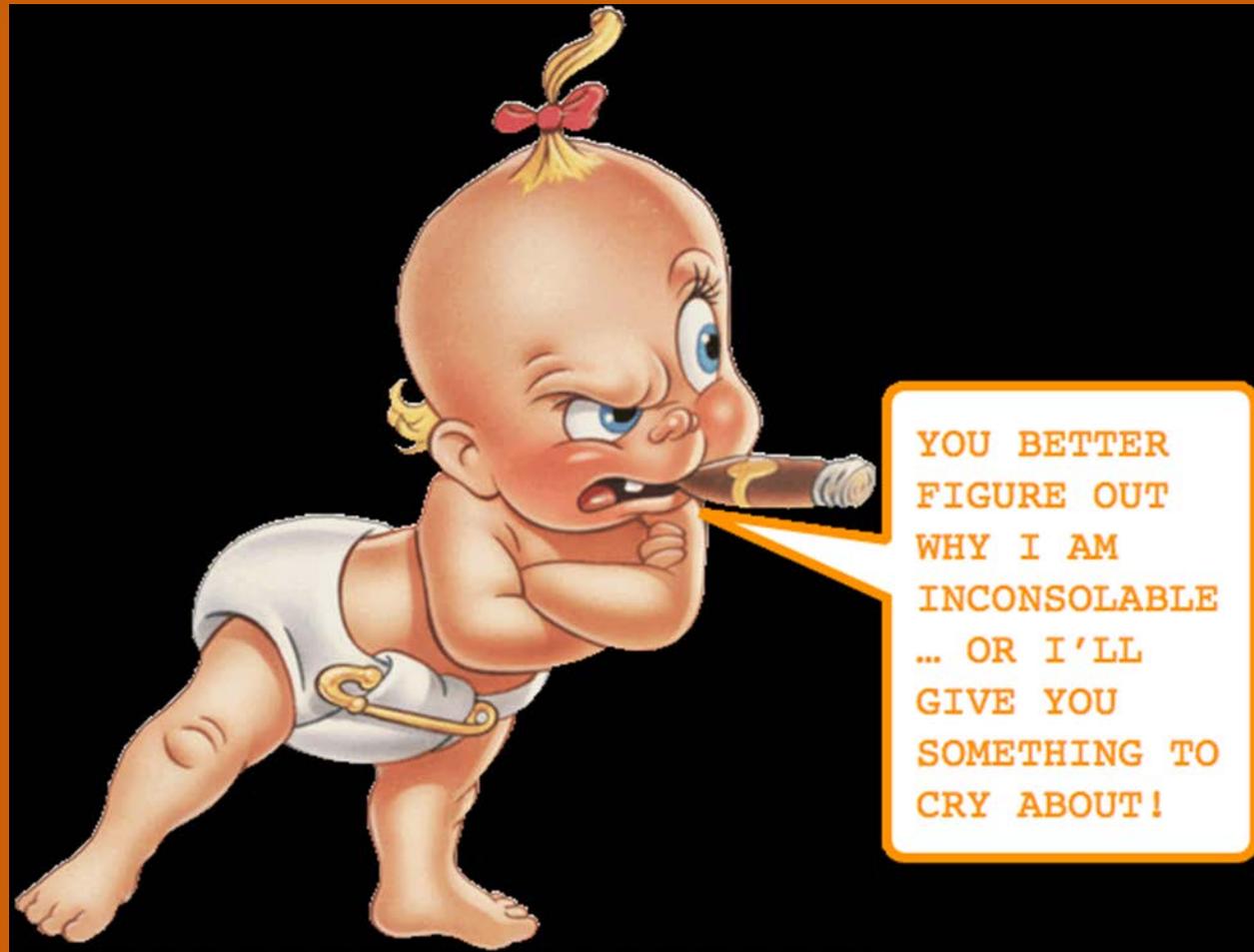
Certainly acute AMS in pts sustaining a traumatic head injury is suspect and should be evaluated at the L1TC for GCS 13 or less

How about the elderly person who fell two days ago but now with “loss of balance” requesting help for injured arm with skin tear?

Middle aged person in a minor car crash yesterday today with AMS?

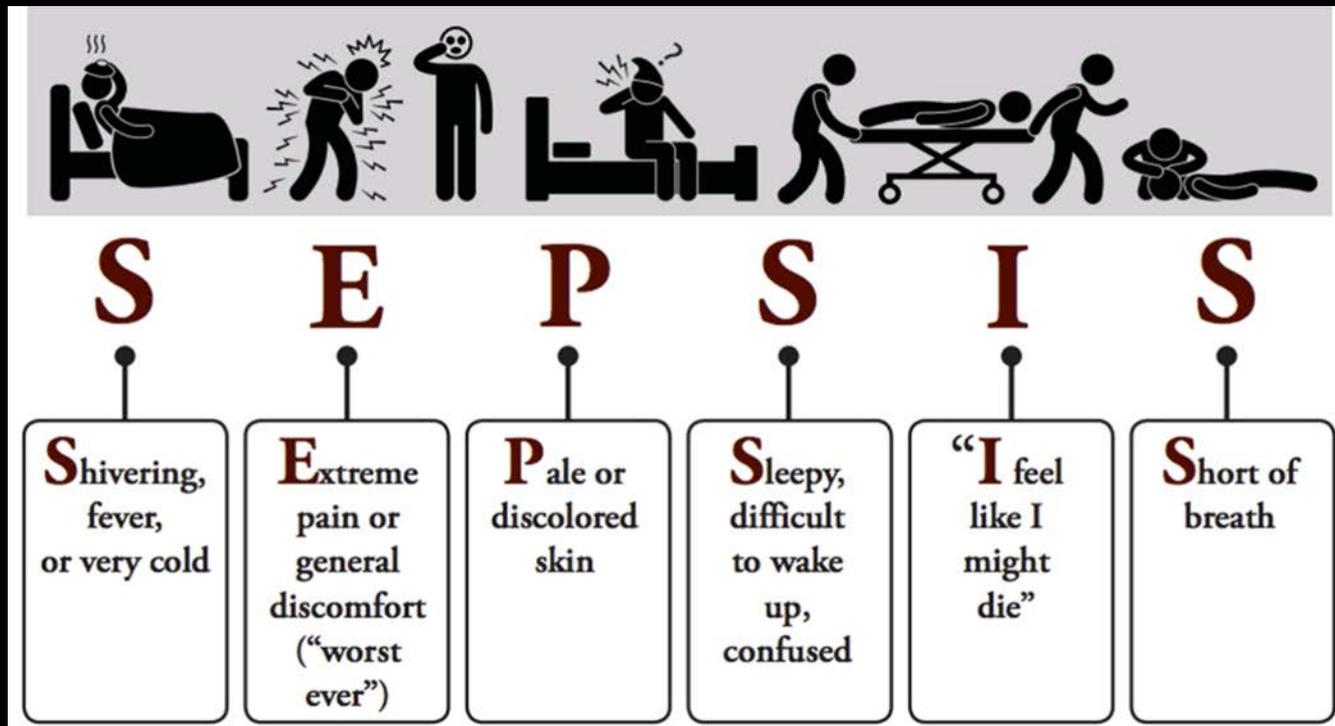
# Infections

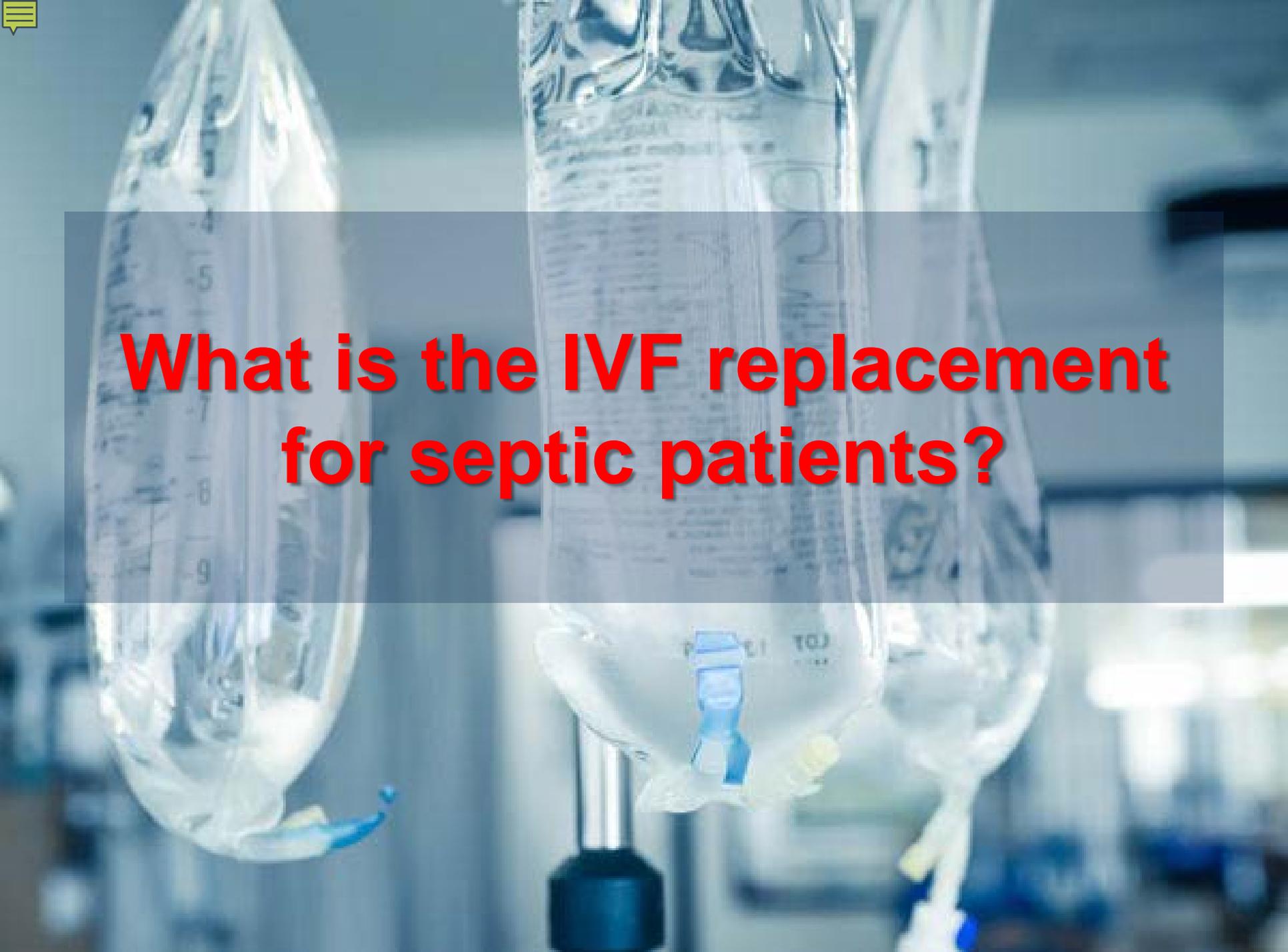
Patients of every age can get infections from the very young to the very old



# ...called for the “sick” person

How many differential diagnoses can a call for a *fever* be associated with that EMS gets called?



The background of the slide shows three clear plastic IV drip chambers hanging from a metal stand. The chambers are partially filled with clear liquid and have blue flow regulators. The background is slightly blurred, showing a clinical environment with blue and white tones. In the top left corner, there is a small yellow icon of a speech bubble with three horizontal lines inside.

**What is the IVF replacement  
for septic patients?**

We are not recognizing sepsis in our patients

## NEW SUPPLEMENTAL SEPSIS/INFECTION QUESTION

- A New Supplemental Question was previously added to the Template
- Within the “Supplemental Questions” tab.
- On Monday, December 18th, new validity rules will be implemented.
- The box will turn red and require an answer.

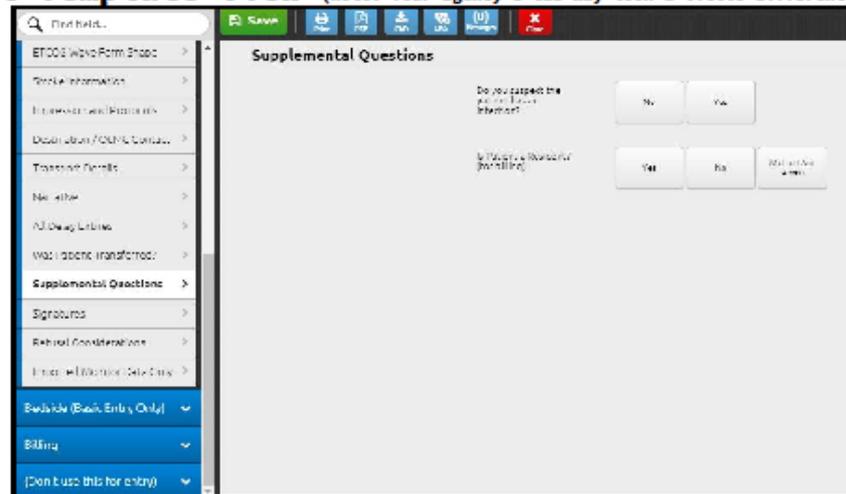


• When your qSOFA score is 2 or greater

**Sepsis / Septic shock**  
2 or more qSOFA criteria

- GCS < 15
- RR ≥ 22
- SBP ≤ 100

### Full Template View (Note: Your agency's tab may look a little different)



NWCEMS System CARS/PBPI "Tip of the Month"  
December 15, 2017  
Property of the NWCEMSS System. Reproduction prohibited with expressed consent.

# Sepsis Analysis

# Incidents reviewed per Agency	
Advantage Ambulance	
Arlington Heights Fire	54
Barrington Countryside FPD	9
Barrington Fire Department	
Bloomingtondale FPD	45
Buffalo Grove Fire	36
Des Plaines Fire	55
Elk Grove Township FPD	5
Elk Grove Village Fire	35
Fermilab FD	0
Hoffman Estates Fire	38
Itasca FPD	
Lake Zurich Fire / Rescue	40
Lincolnshire-Riverwoods FPD	
Long Grove FD	
Mount Prospect Fire	36
Palatine FD	48
Palatine Rural Fire Prot Dist	
Prospect Heights Fire	15
Kurtz/Rescue Eight - NWC	19
Rolling Meadows FD	17
Schaumburg FD	66
Superior Ambulance - NWC	9
Wood Dale FPD	14
<b>n =</b>	<b>541</b>
<b>Agencies =</b>	<b>18</b>

Pt Age	
Mean	66.3
Median	71
Mode	88
Range	18 , 100

qSOFA Score	
0	0
1	109
2	398
3	34
<b>n =</b>	<b>541</b>

ETCO2 <31	
Yes	185
No	5
Blank	351
<b>n =</b>	<b>541</b>

Alert Field	Infection Suspected	
Sepsis	22	18
Cardiac / STEMI	5	0
Cardiac Arrest	1	0
Stroke	30	1
Trauma	9	0
Yes - Other	4	0
None	444	49
Blank	26	
<b>n =</b>	<b>541</b>	<b>68</b>

Sepsis Alert Criteria Meet		
		w/ ETCO2<25
qSOFA (2+), ETCO2<31, Suspicion - YES	32	18
Criteria meet and Alert Called	13	7
<b>Percentage (Yes Called/Meet Criteria)</b>	<b>41%</b>	<b>39%</b>



**NORTHWEST  
COMMUNITY  
EMERGENCY  
MEDICAL  
SERVICES  
SYSTEM**

# Alert Documentation

The screenshot shows a medical software interface for documenting alerts. On the left is a navigation pane with a search bar and a list of categories: Pertinent & PMH, Trauma Information, 12 Lead & STEMI, ETCO2 Wave Form Shape, Stroke Information, Impression and Protocols, Destination / OLMC Contact (highlighted), Transport Details, Narrative, All Delay Entries, Was Patient Transferred?, Supplemental Questions, and Signatures. The main area is titled "Destination / OLMC Contact" and contains a "Hospital Pre-Arrival Alert Request" section with an "Add" button. Below this is a form with a dropdown menu for "What Type of Hospital Pre-Arrival Alert was Requested?". The dropdown is open, showing options: Stroke, Cardiac / STEMI, Trauma, Sepsis, and Cardiac Arrest. Other fields include "Time y", "Scene", "OLMC", "Destination State", and "Status". The status is currently set to "In Progress". At the bottom, there is a patient name field with "No Patient Name Entered", a validation score of "81", and a menu icon.

Find field...

Save Print PDF CAD DIC Messages Close

Pertinent & PMH

Trauma Information

12 Lead & STEMI

ETCO2 Wave Form Shape

Stroke Information

Impression and Protocols

**Destination / OLMC Contact**

Transport Details

Narrative

All Delay Entries

Was Patient Transferred?

Supplemental Questions

Signatures

Destination / OLMC Contact

Hospital Pre-Arrival Alert Request

+ Add

What Type of Hospital Pre-Arrival Alert was Requested?

Find value...

Stroke

Cardiac / STEMI

Trauma

Sepsis

Cardiac Arrest

Time y

Scene

OLMC

OLMC

OLMC

Destination State:

Status: In Progress

No Patient Name Entered

81 Validation

Menu



**NORTHWEST  
COMMUNITY  
EMERGENCY  
MEDICAL  
SERVICES  
SYSTEM**

	Norepinephrine Admin Per Protocol		SBP <90
		Saline Administered	
Yes	3	3	3
<b>No</b>	<b>36</b>	<b>12</b>	<b>31</b>
Not Applicable	502	83	125
No BP Recorded	0		
	n = 541	98	

Infection Suspected & ETCO	
Yes	37
<b>No</b>	<b>31</b>
	<b>46%</b>

Saline Administered	
Yes	98
No	321
Blank	122
n =	541
Average Given	228

Infection Suspected	
qSOFA score	
1	15
2	44
3	9
n (infection) =	68

# Sepsis Analysis





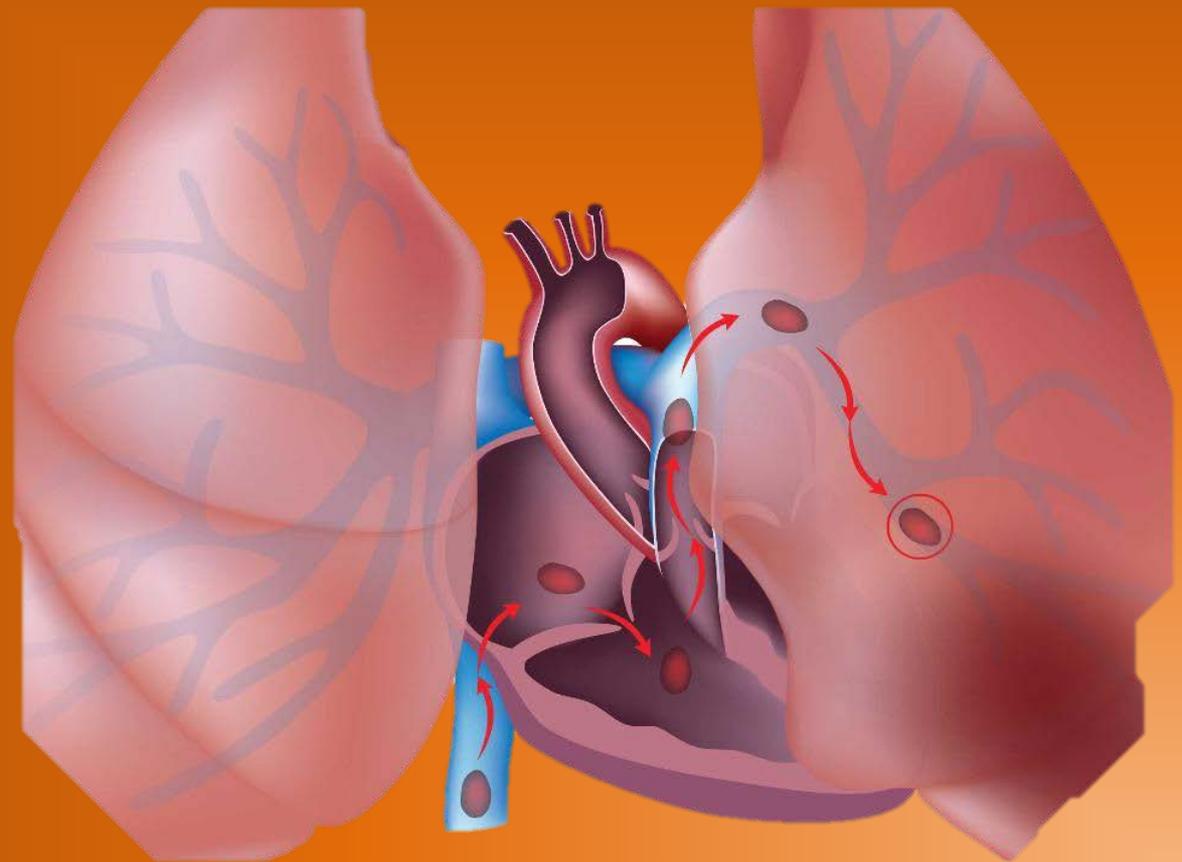
# Pulmonary Embolus

The silent killer

Symptoms

Causes

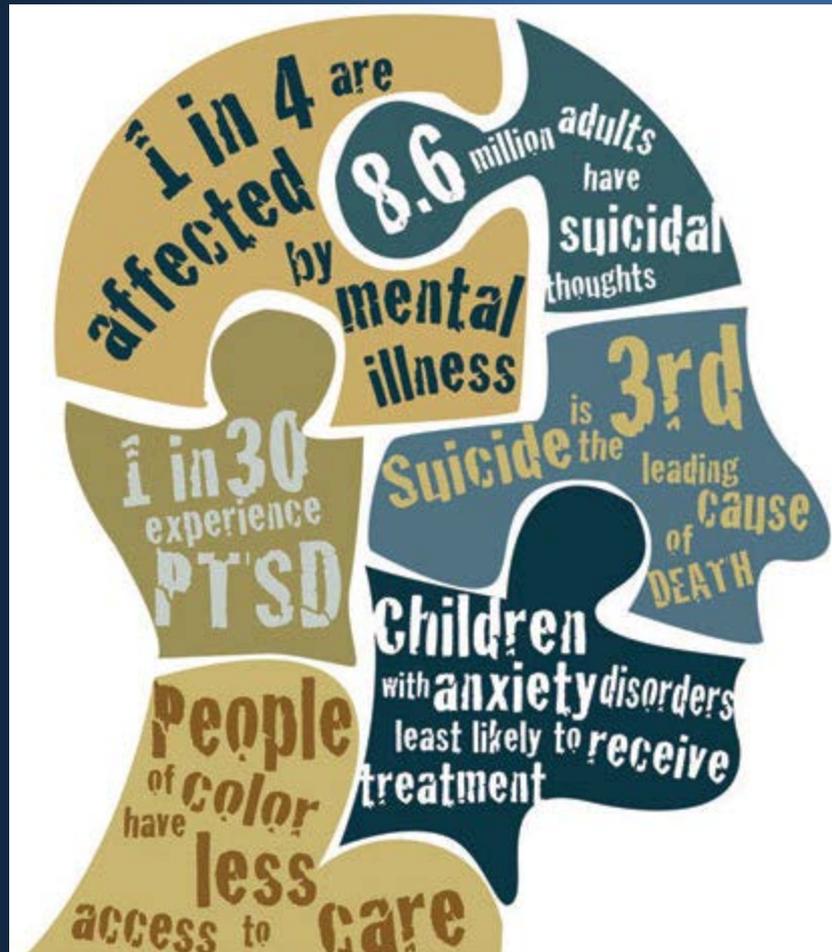
Treatment



# Psychological

Published studies report ~ 25% of U.S. adults have mental illness & nearly 50% of U.S. adults will develop at least one mental illness during their lifetime (APA, 2011)

Not all patients with mental illness are agitated or violent, but who is to know which ones are?



# Decisional Capacity

**C**onsciousness/arousal using GCS; attention span

**A**ctivity: restlessness, agitation, compulsions

**S**peech: rate, volume, articulation, content

**T**hinking/thought processes: delusions, flight of ideas, obsessions, phobias; thoughts of suicide/harm to others

**A**ffect & mood: appropriate or inappropriate

**M**emory: immediate, recent, remote

**O**rientation X 4, understands; complies with instructions

**P**erception: delusions, hallucinations

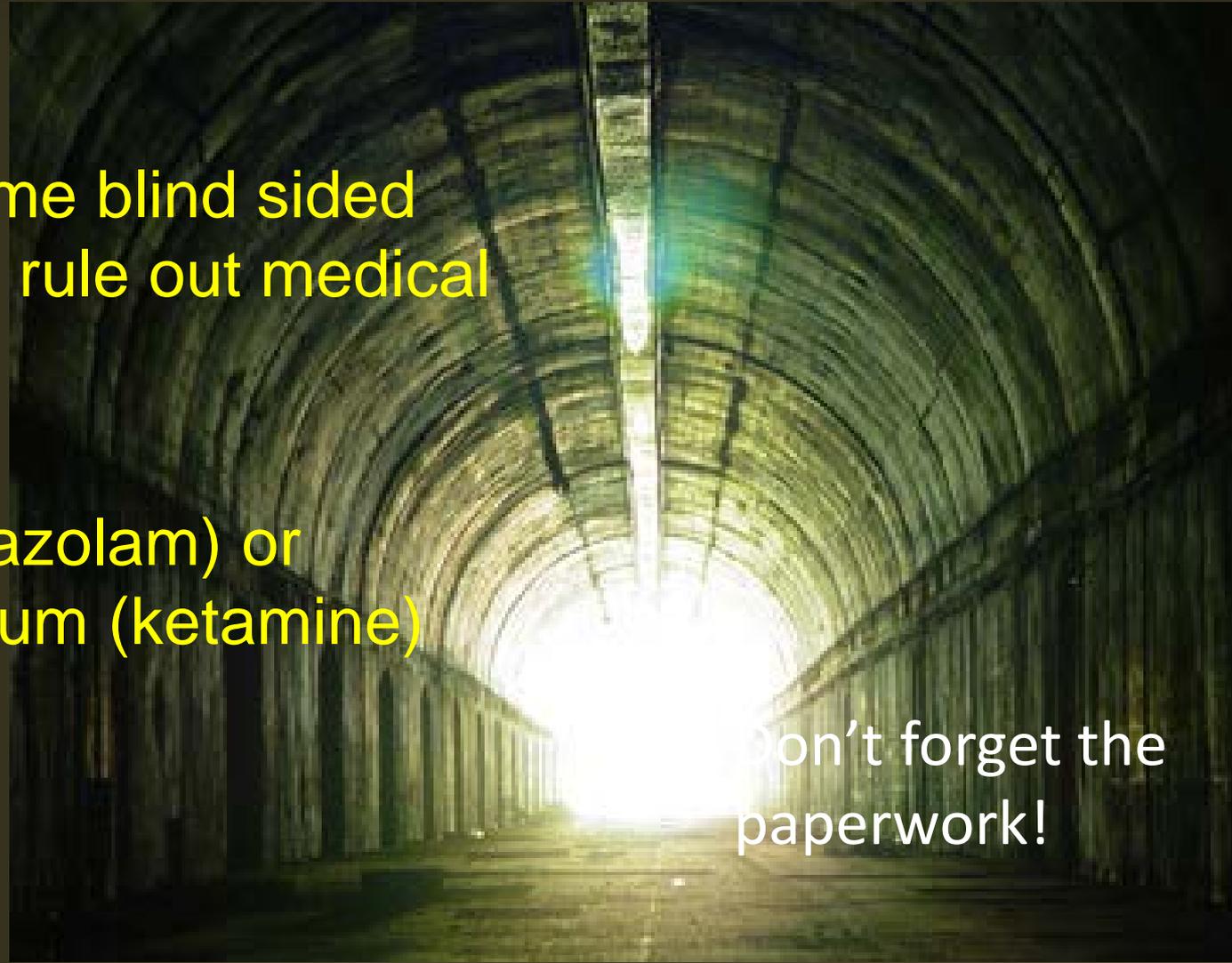


# The balance between psychological and medical concerns

Do not become blind sided  
and forget to rule out medical  
etiologies

Safety first;  
anxiety (midazolam) or  
excited delirium (ketamine)

Don't forget the  
paperwork!





# Stroke Screen

## Mental status

- Level of consciousness; GCS
  - **Speech:** “You can’t teach an old dog new tricks.” Slurred? Uses wrong words? Mute?
  - Questions: Age, month (orientation)
  - Commands: Open/close eyes
- 

## Cranial nerves

- **Facial asymmetry/droop:** smile, show teeth
  - **Vision deficits:** loss of visual fields; diplopia
  - **Horizontal gaze abnormalities:** dysconjugate gaze, forced or crossed gaze
  - Other deficits: pupil changes; light sensitivity, deviated uvula; hoarse voice; vertigo/dizziness, sound sensitivity
- 

## Limbs

- **Unilateral weakness or paralysis (arm drift)** – Close eyes, hold both arms out for 10 sec. Assess if arm drifts down compared to other side or is flaccid.
  - **Leg drift:** Open eyes; lift each leg separately
  - **Sensory:** Arm/leg (close eyes; touch/pinch): note paresthesias, numbness
  - **Coordination** – arm/leg (finger-nose; heel-shin) Note loss of balance, coordination(ataxia), gait disturbance
-

# Stroke

## Primary

alteration in EMS  
stroke screen  
pt. unstable  
falls out of 3.5-6 h  
window

Negative for the  
“bleed box”

## Comprehensive

alteration in EMS  
stroke screen  
pt. stable  
Within 3.5-6 h  
window

Positive for the  
“bleed box”



NWC EMSS STROKE ALERT / EXAM PREHOSPITAL CHECKLIST

Dates & Times									
Date:	Dispatch time	Pt contact time	EMS Departure time						
BASIC DATA									
Pt. name					DOB			Gender	
Witness name					Call back number:				
Chief complaint(s)				Time last known well	Military clock: <input type="checkbox"/> < 3.5 hrs or > 6 hrs <input type="checkbox"/> 3.5 - 6 hrs				
Glucose	BP	R	L	Pulse			Resp		
HISTORY Present Illness									
Severe headache or seizure at onset?					YES NO				
Head trauma at onset?									
EXAMINATION - NEW ONSET									
✓ IF ABNORMAL									
MENTAL STATUS		Level of consciousness: GCS 8 or less?							
		Speech ("You can't teach an old dog new tricks" (expressive/receptive aphasia)							
		Orientation: Answers to questions: Age, month							
		Responds appropriately to commands: open/close eyes							
CRANIAL NERVES		Vision: blurred, diplopia, loss of vision; loss of visual field; photophobia							
		Horizontal gaze: gaze palsy or fixed deviation							
		Facial droop; can't close eyelids tightly							
		Hearing deficit							
		Uvula / tongue deviates							
LIMBS		Motor - Arm drift (close eyes and; hold out both arms for 10 sec)							
		Motor - Leg drift (open eyes and lift each leg separately)							
		Sensory - Face, arm, leg (close eyes - touch each side)							
		Coordination - arm and leg (finger to nose, heel to shin); ataxia; vertigo							
Other		Neck stiffness (cannot touch chin to chest; vomiting)							
PMH		<input type="checkbox"/> None <input type="checkbox"/> A-Fib/Flutter <input type="checkbox"/> Atrial tumor, aneurysm <input type="checkbox"/> Bleeding disorders <input type="checkbox"/> CAD/Prior MI/Heart/vascular dx <input type="checkbox"/> Carotid stenosis <input type="checkbox"/> Pregnant (or up to 6 wks post-partum) <input type="checkbox"/> Depression <input type="checkbox"/> Diabetes <input type="checkbox"/> Drug/Alcohol Abuse <input type="checkbox"/> Dyslipidemia <input type="checkbox"/> Family hx stroke <input type="checkbox"/> HF <input type="checkbox"/> HRT <input type="checkbox"/> HTN <input type="checkbox"/> Migraine <input type="checkbox"/> Obesity <input type="checkbox"/> Previous stroke <input type="checkbox"/> Previous TIA: <input type="checkbox"/> Previous intracranial surgery/bleed <input type="checkbox"/> Serious head trauma <input type="checkbox"/> Prosthetic valve <input type="checkbox"/> PVD <input type="checkbox"/> Renal failure <input type="checkbox"/> Sleep apnea <input type="checkbox"/> Smoker/tobacco use							
MEDS		Anti-hypertensives: <input type="checkbox"/> ACEI <input type="checkbox"/> ARB <input type="checkbox"/> Beta blocker <input type="checkbox"/> Ca blocker <input type="checkbox"/> Diuretic <input type="checkbox"/> Other Cholesterol reducers: <input type="checkbox"/> Statin <input type="checkbox"/> Niacin <input type="checkbox"/> Fibrate <input type="checkbox"/> Absorption Inhibitor <input type="checkbox"/> Anticoagulant use in 48 hrs: <input type="checkbox"/> warfarin/Coumadin <input type="checkbox"/> apixaban/Eliquis <input type="checkbox"/> alteplase <input type="checkbox"/> dabigatran/Pradaxa <input type="checkbox"/> desirudin/Bivalirudin <input type="checkbox"/> edoxaban/Savaysa <input type="checkbox"/> enoxaparin/Lovenox <input type="checkbox"/> fondaparinux/Arixtra <input type="checkbox"/> LMW heparin <input type="checkbox"/> lepirudin/Refudan <input type="checkbox"/> rivaroxaban/Xarelto Platelet inhibitors: <input type="checkbox"/> ASA <input type="checkbox"/> clopidogrel/Plavix <input type="checkbox"/> dipyridamole/Aggrenox <input type="checkbox"/> prasugrel/Effient <input type="checkbox"/> ticagrelor/Bridgion <input type="checkbox"/> ticlodipine/Ticlid <input type="checkbox"/> Other subcutaneous/injectable agents Diabetic drugs: <input type="checkbox"/> Insulin <input type="checkbox"/> Oral agents <input type="checkbox"/> Other subcutaneous/injectable agents <input type="checkbox"/> Antidepressants - list: <input type="checkbox"/> Cocaine/other vasoconstrictors, e.g. amphetamines: PCP (Phencyclidine AKA angel dust, ozone, wack, rocket fuel) <input type="checkbox"/> Oral contraceptives; hormone replacement therapy (HRT) Others:							
Destination									
Nearest hospital					Patient unstable				
Nearest SC (Primary or Comprehensive)					<input type="checkbox"/> Onset <3.5 or > 6 hours with acute S&S of stroke; NO co-morbid factors <input type="checkbox"/> Criteria for Comprehensive, but > 30 minutes from closest CBC				
Nearest Comprehensive SC					<input type="checkbox"/> Onset 3.5 - 6 hours AND/OR <input type="checkbox"/> Co-morbid factors: GCS ≤8; severe HA; anticoagulant w/in 48 hrs; PMH of CHAD/aneurysm <input type="checkbox"/> Travel time ≥30 min scene to CBC				
Stroke alert called to (OLMC hospital)					Time:				
Receiving hospital					Time:				

# NWC EMSS Stroke Alert / Exam Prehospital Checklist

# **Last part of Class**

Scenarios