You’re in the ED working a shift.

Mr. M is a 53 year old male with a past medical history of hypertension, anxiety, hyperlipidemia who presented to the ED with a rash over his leg. You diagnose him with cellulitis, you start the patient on doxycycline and he is placed in observation. His cellulitis did not improve and you call the admitting team for admission.
Lucky you, you are also the admitting team.
You admit and later in the day the nurse notes that the patient has some tachycardia, nausea, has a tremor, is sweaty and feels anxious.

Vitals, patient is tachycardic and BP is mildly elevated
CBC from the morning showed leukocytosis
Chem 7 showed potassium of 3.0

What is your differential diagnosis ?
Worsening infection, pulmonary embolism, gastroenteritis ect

You remember that he said he drank a few beers a day. You go see him and revisit the topic and he admits he also drinks at least a fifth of hard liquor as well.

What are important timelines for alcohol withdrawal?

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Timing of alcohol withdrawal syndromes

Syndrome	Clinical findings	Onset after last drink
Minor withdrawal	Tremulousness, mild anxiety, headache, diaphoresis, palpitations, anorexia, gastrointestinal upset; normal mental status	6 to 36 hours
Seizures	Single or brief flurry of generalized tonic-clonic seizures, short postictal period; status epilepticus rare	6 to 48 hours
Alcoholic hallucinosis	Visual, auditory, and/or tactile hallucinations with intact orientation and normal vital signs	12 to 48 hours
Delirium tremens	Delirium, agitation, tachycardia, hypertension, fever, diaphoresis	48 to 96 hours

Graphic 75499 Version 2.0

Are there any other labs you would like?
Chem10, remember that phosphorus may be low if they’ve had poor nutrition and have mostly been drinking. Additionally magnesium may be low and can cause the hypokalemia that is difficult to correct. LFTs. Coags if concern for more advanced cirrhosis.

You decide this is most likely alcohol withdrawal and you decide to start the CIWA protocol

PowerOrders

Add | Document Medication by Hx | Reconciliation | Check Interactions | External Rx History | Rx Plans (0):

Reconciliation Status: Meds History, Admission, Discharge

Orders | Medication List | Document In Plan

Add to Phase | Check Alerts | Start: Now | Duration: None

Component	Status	Details	Order Com...
Adult Alcohol Withdrawal (Awake) - CIWA (Planned Pending)			
Patient Care			
General Nursing Orders			
Follow Adult Alcohol Withdrawal (Awake) - CIWA			
Communication Order (Nursing Communication)		Follow Adult Alcohol Withdrawal (Awake) - CIWA	
Ref Link for Nurse-CIWA Psych (Ref Link for Nurse-CIWA)			
Capnography for SRMC USE ONLY			
Capnography			
Cardiac Monitoring - Continuous		Continuous - CIWA	
Patient Care			
Communication Order (Nursing Communication)		Assess CIWA and/or SAS (RIKER) scores at baseline and per protocol	
Communication Order (Nursing Communication)		Document score and treatment doses on eMAR	
Seizure Precautions		Neurological checks q shift and per unit	

Details

Dx Table | Orders For Cosignature | Initiate | Sign

Are there any other medications you'd like to order?
Thiamine 500mg, folic acid 1mg. This can be ordered orally if they are able to take oral, sometimes they can't and IV is necessary. Keep in mind that it is more expensive and there can be shortages of this as well.

What other considerations or calculations would you like to make with this new information?
MELD, used to predict mortality in patients with cirrhosis
Maddrey's discriminant function (For alcoholic hepatitis), if >32 indicates high short term mortality and you would add steroids to your treatment plan.

Why prednisolone and not prednisone?

You round on the patient the next day, symptoms have been worsening and per protocol the medications doses have been increasing.

Patient reports some bugs crawling on walls during your interview that morning.

What are you concerned about?
What differentiates DT's from alcohol hallucinations?
In delirium tremens you also have hallucinations however you also develop delirium where you lose orientation completely.
Criteria for DT:
Disturbance in attention, awareness, memory, orientation, language, visuospatial ability, perception, and fluctuates in severity during the day

More likely with CIWA over 15, recent w/d seizures, older age, recent misuse of depressant agents and comorbidities including lab abnormalities

You see this patient again a few months later, he has stopped drinking but does have continued liver disease due to his history. This time he is very confused, not making much sense, what is your leading diagnosis? What kind of work up would you do?

Table 1. A Comparison of West Haven and FOUR Score Criteria for Grading Hepatic Encephalopathy.*

West Haven		FOUR Score				
Grade	Features	Score	Eye Response	Motor Response	Brain-Stem Reflex	Respiration
0	No abnormalities detected	4	Eyelids open or manually opened; tracking or blinking on command	Thumbs up, fist, or peace sign on command	Pupillary and corneal reflexes present	Not intubated, regular breathing
1	Unawareness (mild), euphoria or anxiety, shortened attention span, impairment of calculation ability, lethargy or apathy	3	Eyelids open but no tracking	Localized response to pain	One pupil wide and fixed	Not intubated, Cheyne–Stokes breathing
2	Disorientation to time, obvious personality change, inappropriate behavior	2	Eyelids closed but open to loud voice	Flexion response to pain	Pupillary or corneal responses absent	Not intubated, irregular breathing
3	Somnolence to stupor, responsiveness to stimuli, confusion, gross disorientation, bizarre behavior	1	Eyelids closed but open to pain	Extension response to pain	Pupillary and corneal responses absent	Breathing above ventilator rate
4	Coma	0	Eyelids remain closed to pain	No response to pain, or generalized myoclonus status	Pupillary, corneal, and cough reflexes absent	Breathing at ventilator rate or apnea

* Patients with minimal hepatic encephalopathy (grade 1 with the use of the West Haven criteria) would be classified as having covert hepatic encephalopathy. Patients with West Haven grade 2 or higher encephalopathy would be classified as having overt hepatic encephalopathy.[30,31] The FOUR (Full Outline of Unresponsiveness) score clinical grading scale takes into account four components of neurologic function. Scores range from 0 to 16, with lower scores indicating a lower level of consciousness.

How would you treat this condition?
Pretty much continuing to treat the w/d, may require ICU

You're in the ED again

Mr. S is a 35 year old male with a past medical history of anxiety presents with severe epigastric abdominal pain. Started 4-5 hours ago right in his stomach area, hasn't been able to eat or drink because he has had nausea and vomiting. Radiates to his back.

PMH: Hypertension "white coat", anxiety
PSH: Tonsillectomy in childhood
Medications: None currently has taken sertraline in the past
Social: No tobacco, drinks at least a fifth of vodka per day since his mid 20s, occasional marijuana use 1-2x month, no other drug use

What is the differential diagnosis?
Gastritis, pancreatitis cholecystitis, ischemic bowel, diverticulitis, pancreatitis, ascending cholangitis among others

What labs/tests would you like to order?

Lab work
WBC (H) 13.6 (4.0 - 11.0)
RBC 5.61 (4.64 - 6.00)
HGB 16.2 (13.5 - 17.7)
HCT 50 (42 - 53)
MCV 89 (81 - 101)
Platelet Count 189 (150 - 400)

NA 139 (134 - 144)
K 3.8 (3.5 - 5.1)
CL 107 (98 - 111)
CO2 28 (20 - 30)
BUN 28 (7 - 31)
CR 1.41 (0.62 - 1.66)
GLU * (H) 122 (60 - 100)
CA 9.1 (8.4 - 10.4)
Anion Gap (L) <6 (6 - 14)

T Protein 7.7 (6.1 - 8.2)
ALB 3.7 (3.4 - 4.7)
AST (SGOT) (H) 73 (6 - 58)
ALT (SGPT) 40 (14 - 67)
ALK Phos 115 (38 - 150)
T Bilirubin (H) 2.1 (0.3 - 1.2)
D Bilirubin (H) 0.7 (0.1 - 0.4)
I Bilirubin (H) 1.4 (0.2 - 1.0)
Chol (H) 200 (<200)
Triglyceride (H) 162 (<150)
HDL Chol 52 (>40 -)
LDL Chol (Calc) * (H) 116 (<100)
Lipase (lab) (H) >30000 (66 - 360)
Est Glomerular Filtration Rate * (L) 45 (>60 -)

How is pancreatitis diagnosed?
Must have at least 2 of the 3:
Abdominal pain consistent with pancreatitis, lipase/amylase that are elevated at least 3x the upper limit of normal, and findings of it on imagining (CT/MRI).

What are the most common causes? Gallstones, alcohol, triglycerides, genetics, drugs (including ACE inhibitors), autoimmune, ERCP

What is “severe” vs “not severe” pancreatitis?
Various scoring methods

Acute Physiology and Chronic Health Evaluation II (APACHE II), APACHE combined with scoring for obesity (APACHE-O), the Glasgow scoring system, the Harmless Acute Pancreatitis Score (HAPS), PANC 3, the Japanese Severity Score (JSS), Pancreatitis Outcome Prediction (POP), and the Bedside Index for Severity in Acute Pancre- atitis (BISAP)
Tend to have high false positive rates due to most cases not leading to “severe” pancreatitis.

Risk factors to think of: SIRS criteria (especially if persistent after fluids have been given, age >60, obesity, co-existing medical comorbidities, hematocrit >44%, BUN >20, creatinine >1.8mg per deciliter, and present of SIRS, early signs of pancreatic necrosis on imaging

What are the first things you’d like to do?
Start fluids, at what rate? What kind?
Some studies have shown that LR is a little better. Fluids provide the most benefit in the first 24 hours and the rate is high, 5-10 ml/kg/hr, puts you somewhere between 200-500 cc/hr. Rates seem to differ based on attending and no ideal has been shown, rates seem to be more expert opinion than anything.

Remember that patients can have severe electrolyte abnormalities.
There is an electrolyte replacement protocol which you can use but often we order replacement as needed. Remember to consider a chem10 if you have reason to suspect issues with magnesium or phosphorus levels as you often will with patients who are heavy alcohol users

What are the potential short and long term complications?