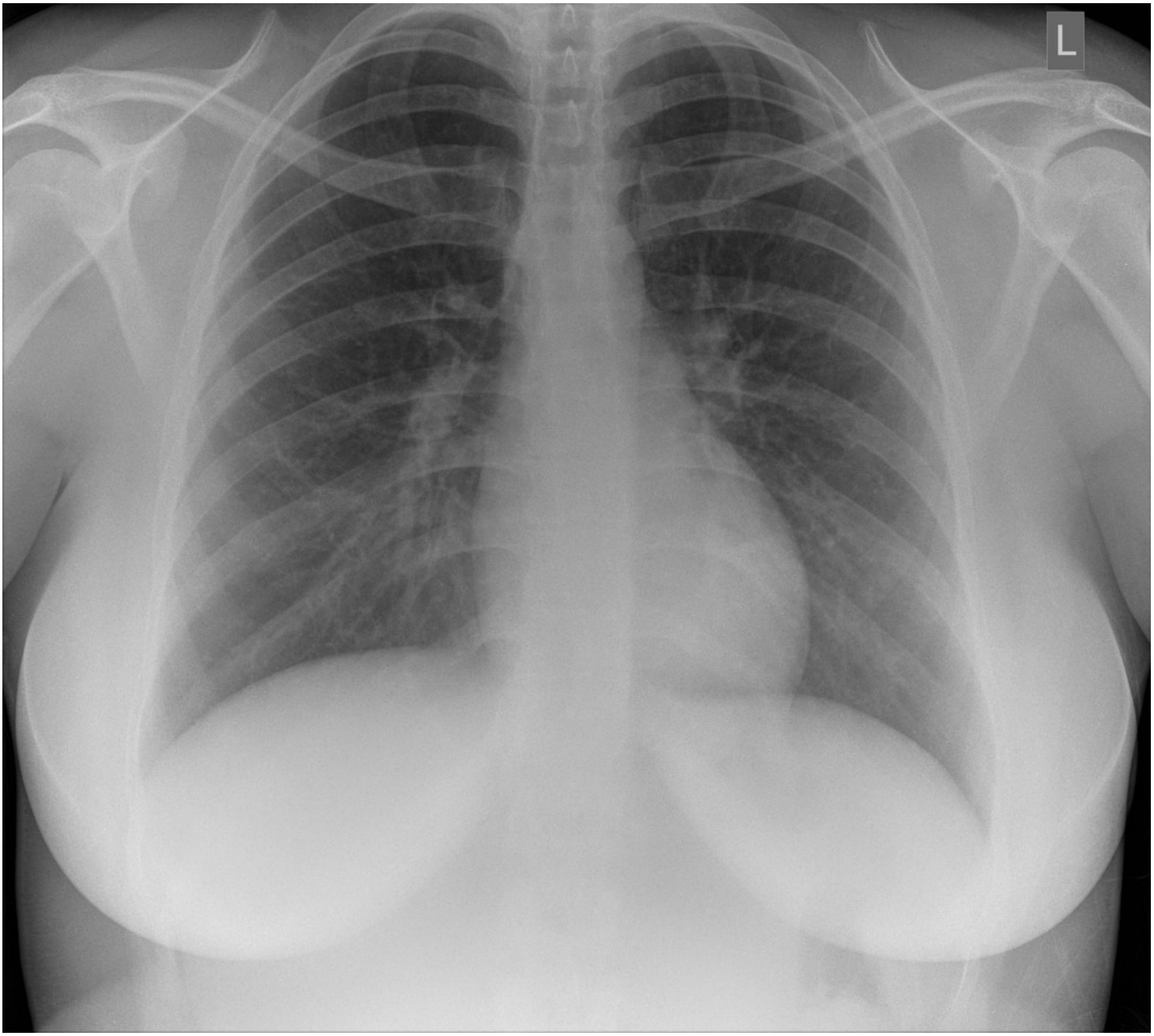
Appendix A: Laboratory Results

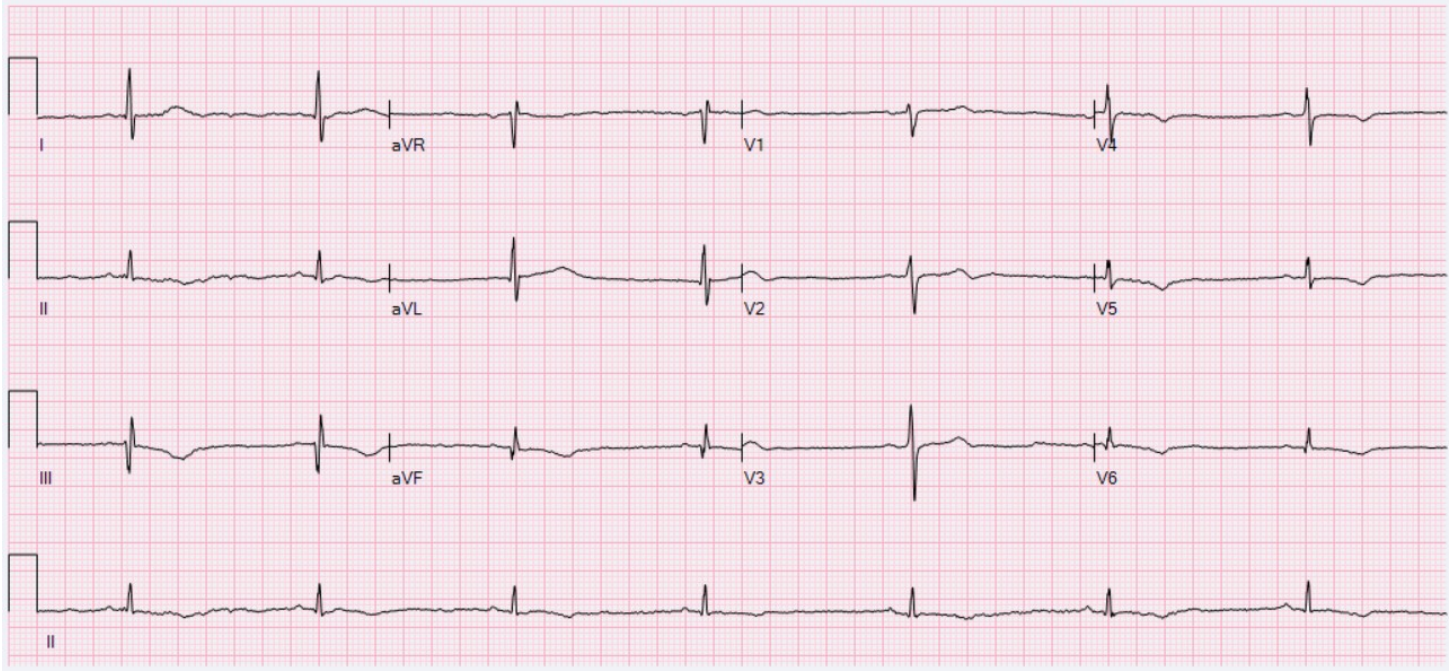
<u>CBC</u> WBC 6.0 × 10^9 cells/μL Hgb 11.2 mmol/L Plt 250 × 10^9 cells/L <u>Lytes</u> Na 138 mmol/L K 3.9 mmol/L Cl 100 mmol/L HCO_3 26 mmol/L AG 12 Urea 7.1 mmol/L Cr 79.6 μmol/L Glucose 4.7 mmol/L <u>Extended Lytes</u> Ca 2.3 mmol/L <u>VBG</u> PH 7.36 PCO_2 45 mmHg PO_2 40 mmHg HCO_3 26 mmol/L Lactate 1.8 mmol/L	<u>Tox</u> EtOH 0 mmol/L <u>Other</u> B-HCG negative Acute hepatitis panel Hepatitis A IgM negative Hepatitis B Surface Antigen (HBsAg) negative Hepatitis B Core IgM negative Hepatitis C Virus Antibody with reflex to PCR negative

Appendix B: ECGs, X-rays, Ultrasounds and Pictures

Paste in any auxiliary files required for running the session. Don't forget to include their source so you can find them later!



Bickle I, Normal chest radiograph - female. Case study, Radiopaedia.org (Accessed on 10 Jan 2023) https://doi.org/10.53347/rID-33225



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Appendix C: Facilitator Cheat Sheet & Debriefing Tips

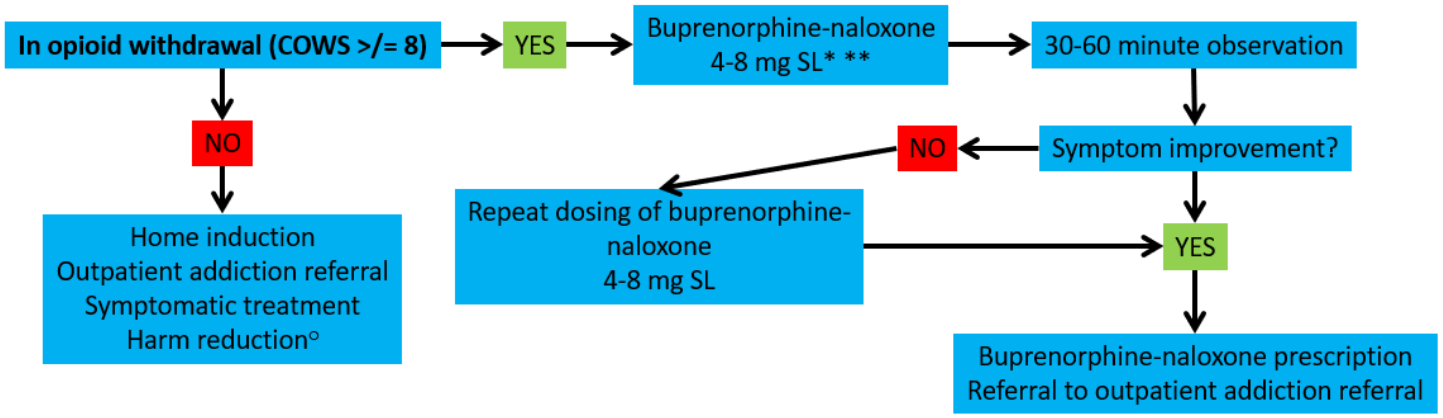
Include key errors to watch for and common challenges with the case. List issues expected to be part of the debriefing discussion. Supplemental information regarding any relevant pathophysiology, guidelines, or management information that may be reviewed during debriefing should be provided for facilitators to have as a reference.

The Emergency Department is the first point of contact for overdose patients making it a critical access point to initiate opioid use disorder (OUD) treatment.[1] Medication in addition to psychotherapy is the standard of care.[2] The two most common medications for OUD (MOUD) include methadone and buprenorphine. Buprenorphine-naloxone has gained traction as a widely accepted medication with increased access compared to methadone which can only be dispensed at federally-regulated sites in the USA.[2] In its byproduct formulation, buprenorphine-naloxone decreases diversion potential by neutralizing its effect if injected into a vein deterring intravenous administration.[2] Buprenorphine-naloxone is indicated in OUD and has been shown to decrease opioid-related mortality and increase follow up care compared to referral alone.[2,3,4] As a partial mu opioid agonist, its properties are favorable with low abuse potential, low risk for respiratory compromise, and greater accessibility.

Emergency medicine physicians encounter sequelae of substance abuse regularly such as nonfatal opioid overdoses, and treatment of the patient involves addressing the addiction (the root cause). Screening, brief intervention and referral to treatment (SBIRT) is a therapeutic strategy to engage a patient into substance use disorder treatment.[2] First, consent to discuss opioid use should be obtained. Screening for opioid use disorder should be performed by asking specific questions as it relates to the opioid use disorder DSM-V criteria. If the patient meets criteria, then a brief intervention should be performed. Ideally, motivational interviewing techniques should be employed: Asking open-ended questions, using a conversational style with reflection, and providing supportive feedback.[2,5] Physicians should avoid paternalistic patterns and support a patient driven plan to motivate change.[5] Brief interventions can come in many forms including advice, education, motivation, and constructive feedback.

Engaging high-risk patients into treatment is a time-sensitive matter with increasing illicit fentanyl and potent synthetic opioids infiltrating our communities causing unexpected overdoses.[6,7,8] As EM providers, engaging and initiating a life-saving medication such as buprenorphine-naloxone should be an included in the curriculums for training programs.[9] Buprenorphine-naloxone was regulated by the X-waiver requirement in the United States which has been removed to increase availability of the medication to patients.[10] Now all providers can prescribe buprenorphine-naloxone. ED initiation of buprenorphine-naloxone is not widely accepted, even though major emergency medicine governing bodies recommended ED initiation of buprenorphine-naloxone.[11,12] Before initiation, consent must be obtained and a clinical opioid withdrawal scale (COWS) performed.[11] COWS is a clinical measurement consisting of subjective and objective opioid withdrawal symptoms to assess the severity of withdrawal. Multiple protocols exist, a minimum COWS score of 8-13 is the ideal scenario for induction opening the mu receptors allowing for the high affinity buprenorphine to bind.[2,12] A common complication of buprenorphine-naloxone induction (especially in the era of fentanyl abundance) is precipitated withdrawal, as the partial mu agonist displaces the mu agonist.[2,13] Higher dosing of buprenorphine-naloxone, supportive care and inpatient admission may be required to manage this unexpected complication.[13] If the patient is not exhibiting opioid withdrawal during the ED visit they may receive a prescription with home instructions to gauge withdrawal symptoms before induction.[11,12] A vital component of the treatment of OUD is the linkage to an office-based opioid treatment program in the area.[12,11] The link to outpatient treatment in a timely manner is imperative to ensure continuation of the MOUD but also address the psychosocial components of their disease process.[11,12] Emergency Medicine physicians have a significant role to play in OUD treatment.

Figure 1. ED Initiation of Buprenorphine.[14]



* = Sublingual. ** = Discuss with an addiction medicine specialist if the patient has severe liver disease or other systemic comorbidities, is altered, is currently using extended-release opioids such as methadone, or is on a high daily dose of prescription opioids. ○ = Naloxone prescription, connection with a peer recovery specialist, screening for HIV/hepatitis C, needle exchange referral and discussion of safe injection (if the patient engages in intravenous drug use), reminding the patient that the ED doors are open 24/7 if they need assistance with their addiction issues.

Table 1. DSM-V Criteria for OUD.[15] Each box is given 1 point. 2-3 points = mild, 4-5 points = moderate, 6 points = severe.

Opioids are often taken in larger amounts or over a longer period of time than intended.
There is a persistent desire or unsuccessful efforts to cut down or control opioid use.
A great deal of time is spent in activities necessary to obtain the opioid, use the opioid, or recover from its effects.
Craving, or a strong desire to use opioids.
Recurrent opioid use resulting in failure to fulfill major role obligations at work, school or home.
Continued opioid use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of opioids.
Important social, occupational or recreational activities are given up or reduced because of opioid use.
Recurrent opioid use in situations in which it is physically hazardous.
Continued use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by opioids.
Tolerance, as defined by either of the following: A. A need for markedly increased amounts of opioids to achieve intoxication or desired effect B. Markedly diminished effect with continued use of the same amount of an opioid
Withdrawal, as manifested by either of the following: A. The characteristic opioid withdrawal syndrome B. The same (or a closely related) substance are taken to relieve or avoid withdrawal symptoms

Table 2. Clinical Opiate Withdrawal Scale (COWS). Scoring: 5-12 = mild withdrawal; 13-24 = moderate withdrawal; 25-36 = moderately severe withdrawal; more than 36 = severe withdrawal.[16]

Resting Pulse Rate: _____ beats/minute (*measured after patient is sitting or lying for one minute*) 0 - pulse rate 80 or below 1 - pulse rate 81-100 2 - pulse rate 101-120 4 - pulse rate greater than 120	**GI Upset**: *Over last 30 minutes* 0 - no GI symptoms 1 - stomach cramps 2 - nausea or loose stool 3 - vomiting or diarrhea 5 - multiple episodes of diarrhea or vomiting
Sweating: *Over past 30 minutes not accounted for by room temperature or patient activity* 0 - no report of chills or flushing 1 - subjective report of chills or flushing 2 - flushed or observable moistness on face 3 - beads of sweat on brow or face 4 - sweat streaming off face	**Tremor**: *Observation of outstretched hands* 0 - no tremor 1 - tremor can be felt, but not observed 2 - slight tremor observable 4 - gross tremor or muscle twitching
Restlessness: *Observation during assessment* 0 - able to sit still 1 - reports difficulty sitting still, but is able to do so 3 - frequent shifting or extraneous movements of legs/arms 5 - unable to sit still for more than a few seconds	**Yawning**: *Observation during assessment* 0 - no yawning 1 - yawning once or twice during assessment 2 - yawning three or more times during assessment 4 - yawning several times/minute
Pupil size: 0 - pupils pinned or normal size for room light 1 - pupils possibly larger than normal for room light 2 - pupils moderately dilated 5 - pupils so dilated that only the rim of the iris is visible	**Anxiety or Irritability**: 0 - none 1 - patient reports increasing irritability or anxiousness 2 - patient obviously irritable or anxious 4 - patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches: *If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored* 0 - not present 1 - mild diffuse discomfort 2 - patient reports severe diffuse aching of joints/muscles 4 - patient is rubbing joints or muscles and is unable to sit still because of discomfort	**Gooseflesh skin:** 0 - skin is smooth 3 - piloerection of skin can be felt or hairs standing up on arms 5 - prominent piloerection

Runny nose or tearing: *Not accounted for by cold symptoms or allergies* 0 - not present 1 - nasal stuffiness or unusually moist eyes 2 - nose running or tearing 4 - nose constantly running or tears streaming down cheeks	**Total Score**: ____ (*The total score is the sum of all 11 items*)