Alcohol, Sedative & Opioid Withdrawal –Challenging Patients

Timothy J. Wiegand, MD, DABAM, FACMT, FAACT, FASAM

Director of Toxicology -URMC

Case 1

- 41-year-old businessman admitted for chest pain.
- Overnight he "ruled out", when arriving to bring patient for stress echo he was found partially dressed and with one shoe on, tremulous, foot on the bed, swaying precariously.
- He was diaphoretic.
- Confused and disoriented
- He'd pulled his IV out.

Case 1 continued

- Vitals: Overnight trend HR 80 bpm -→ 90's, 100's currently 120 beats-minute.
- BP 155/92 mmHg.
- The patient is standing with one foot on the side of the bed, shaking, repetitively moving back/forth from his shoe to his shirt attempting to manipulate laces then buttons (back/forth without accomplishing anything).
- He is visibly tremulous.

CNS Balance

- CNS output is a balance of excitation and inhibition. At baseline, though, we are excited…
- Excitatory neurons fire regularly while inhibitory neurons counteract this baseline excitation giving us a steady-state of balance.

Withdrawal Assessment --*assessing the 'fire'*

Routine evaluation and documentation:
The CIWA is a 10 item assessment tool for scoring the degree of AWD. Assessment and documentation of the CIWA score is required for each patient considered at risk for AWD in order to guide medication dosing and determine the degree of symptoms (see page 3).

Score	Classification
≤ 10	Mild
11-15	Moderate
16-20	Severe
≥ 21	Very Severe

Prediction of Alcohol Withdrawal Severity –*Maldonado et al, 2015*

Prediction of Alcohol Withdrawal Severity Scale (PAWSS)

Maldonado et al, 2015

Part A: Threshold Criteria: ("Y" or "N", no point)

Have you consumed any amount of alcohol (i.e., been drinking) within the last 30 days? OR did the patient have a "+" BAL on admission? ____

IF the answer to either is YES, proceed with test:

Part B: Based on patient interview: (1 point each)

1. Have you been recently intoxicated/drunk, within the last 30 days? ____
2. Have you ever undergone alcohol use disorder rehabilitation treatment or treatment for alcoholism? (i.e., in-patient or out-patient treatment programs or AA attendance) ____
3. Have you ever experienced any previous episodes of alcohol withdrawal, regardless of severity? ____
4. Have you ever experienced blackouts? ____
5. Have you ever experienced alcohol withdrawal seizures? ____
6. Have you ever experienced delirium tremens or DT's? ____
7. Have you combined alcohol with other "downers" like benzodiazepines or barbiturates, during the last 90 days? ____
8. Have you combined alcohol with any other substance of abuse, during the last 90 days? ____

Scoring PAWSS *> 4 = HIGH RISK for moderate/severe w/d*

- Score > 4 indicates potential for complicated withdrawal
- Prophylaxis and diligent attention to prevent progression of symptoms

Part C: Based on clinical evidence: (1 point each)

9. Was the patient's blood alcohol level (BAL) on presentation ≥ 200? _____

10. Is there evidence of increased autonomic activity?
(e.g., HR > 120 bpm, tremor, sweating, agitation, nausea) _____

Total Score: _____

Notes: Maximum score = 10. This instrument is intended as a SCREENING TOOL. The greater the number of positive findings, the higher the risk for the development of AWS.
A score of ≥ 4 suggests HIGH RISK for moderate to severe (complicated) AWS; prophylaxis and/or treatment may be indicated.

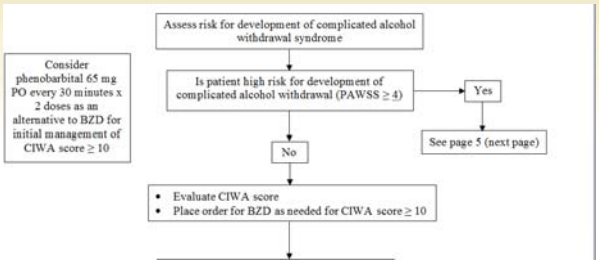
Case -back to our businessman…***put out the fire!***

- 41 year-old businessman –progression of anxiety, tachycardia, HTN, sweating, starting to hallucinate….?

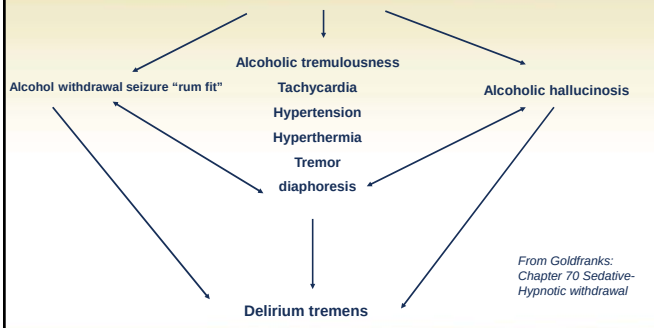
Put out the fire!

- GABAergic agents
  - Benzodiazepines
  - Phenobarbital
  - propofol
- Adjunctive Agents
  - Clonidine (adjunctive)
  - Neuroleptics (adjunctive)
  - Dexmedetomidine
  - Gabapentin (*transition to treating dependence*)

Treating Alcohol Withdrawal -initial approach



Decreasing Ethanol Level



From Goldfranks: Chapter 70 Sedative-Hypnotic withdrawal

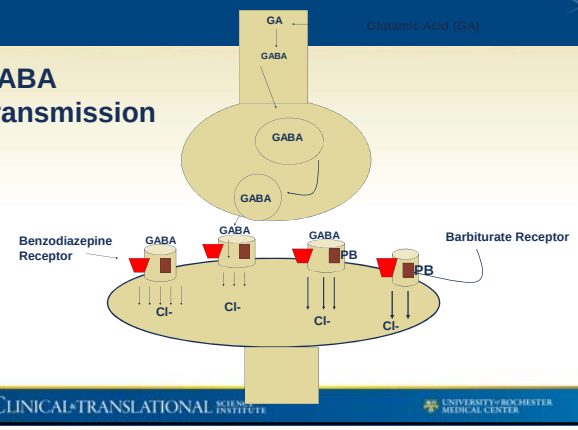
Phenobarbital Protocol for EtOH w/d part #1

- **PHENOBARBITAL PROTOCOL:**
- Assess patient for withdrawal signs and symptoms using CIWA or other objective measurement.
- 1.) for CIWA >15 select 65 mg of phenobarbital IV as first dose
- 2.) Reassess in 10-15 min.
  - -if symptoms improved but still present then redose at 65 mg.
  - If not improved dose at 130 mg and repeat q 15-30 minutes until relaxed
  - Clonidine adjunctively
- **Goal-** cessation of withdrawal symptoms without significant 'overshooting'. Ideal endpoint is a patient who is sleepy but still conversant with tremor markedly improved along with marked improvement in adrenergic signs and symptoms such as tachycardia, hypertension and diaphoresis.

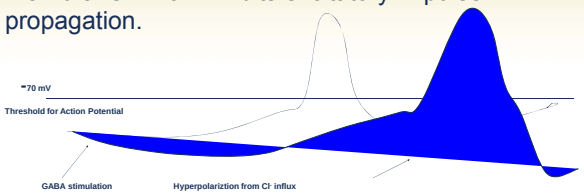
Adjunctive Meds -clonidine 0.1 mg 1-2 PO QID PRN

- Clonidine PO tabs and/or patch (0.1 mg- 0.3 mg/week)
  - Alpha2 agonist decreases norepinephrine outflow (decreases anxiety, adrenergic tone down)
  - Hold for HR < 55 bpm and SBP < 90 mmHg (MAP < 60 mmHg
- Neuroleptics *--NOT for patients with autonomic hyperactivity-*
  - Haloperidol (1-5 mg PO/IV/IM every 4 hours PRN (for delirium/hallucinations AFTER w/d attenuated (e.g. sleep patient paroxysms of 'flailing around/hallucinating' but autonomic hyperactivity clearly attenuated by GABAergic agents (primarily)
  - Quetiapine 12.5-25 mg PO q 8 hours PRN
  - Management of delirium adjunctively post initial treatment.

GABA Transmission



GABA stimulation causes inward flux of chloride resulting in hyperpolarization of the neuronal membrane which inhibits excitatory impulse propagation.



Case

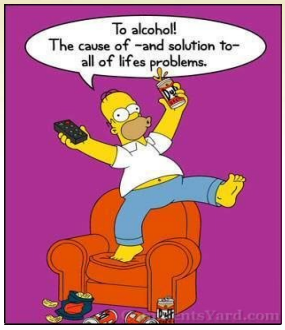
- 29-year-old Indian male is brought in by police after being found on the street.
- Two empty bottles of "mouthwash" are next to him. He is maintaining his airway, breath alcohol is difficult to obtain due to "compliance with breathalyzer".
- Blood alcohol returns at 440 mg/dL. Over the next two hours he wakes up.
- By 0400 he is becoming tremulous and He's moved from "special cares" to the main ED.

- He's moved from "special cares" to the main ED. Bloodwork: K 2.9, HCO3 18, **EtOH 280 mg/dL (***4 hours apart*).
- →several mg of IV lorazepam →increasingly tachycardic and tremulous →IV diazepam in 10 mg increments to 100 mg without significant improvement.
- Phenobarbital is given -260 mg IV then120 mg increments 15 to 30 minutes until his, he is 'sleepy' and his HR and BP have 'normalized'.
- Additional ***'supportive'*** (vitamins, IVF, electrolytes, additional labs/cultures…) initiated.

Principals of alcohol withdrawal Management

- 1.) Restore inhibitory tone to the central nervous system using long acting benzodiazepines or barbiturates.
- 2.) Identify and correct fluid, electrolyte and nutritional deficiencies.
- 3.) Evaluate for concurrent infection.
- 4.) Achieve goal 'inhibitory' target quickly.

Liquid Courage Potent Poison Cause and Solution



Gabapentin and withdrawal

The Internet Journal of Pharmacology Volume 4 Number 2

Original Article

Gabapentin-Assisted Benzodiazepine Withdrawal In A Multidrug Dependent Patient

Author Information

Keywords

Citation

Share This Article

Abstract

Anesth Analg. 2009 Nov;109(5):1625-31. doi: 10.1213/ane.0b013e3181b6f18e. Epub 2009 Aug 27.

The analgesic effect of gabapentin as a prophylactic anticonvulsant drug on postcraniotomy pain: a prospective randomized study.

Türe H, Savlin M, Karlıkaya G, Bingol CA, Avkac B, Türe U.

Author information

Gabapentin and withdrawal

Pharmacopsychiatry. 1999 May;32(3):107-9.

Treatment of alcohol withdrawal syndrome with gabapentin.

Bonnet U, Bleicher M, Leweke FM, Maschke M, Kowalski T, Gastpar M

Author information

Abstract

Four in-patients with moderate alcohol-withdrawal syndromes benefited from treatment with gabapentin administered in an add-on fashion to clomethiazole. In comparison with the amount of clomethiazole required as estimated using a specially developed score during previous detoxifications of these patients at our hospital, gabapentin (400 mg q.i.d.) clearly reduced the amount of clomethiazole needed now Gabapentin, an anticonvulsant with favorable pharmacokinetic properties and tolerability, and with no known risk of dependence, may therefore be a useful new drug in the treatment of alcohol withdrawal. We believe that the potential value of gabapentin in alcohol withdrawal deserves further controlled studies.

PMID: 10463378 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances

LinkOut - more resources

Prophylaxis of withdrawal with gabapentin

J Clin Psychiatry. 1999 Sep;60(9):617.

A case report of reduction in alcohol craving and protection against alcohol withdrawal by gabapentin.

Challenge CR, Ringold AL.

PMID: 10520981 [PubMed - indexed for MEDLINE]

Georgian Med News. 2010 Jun;(183):34-9.

Noradrenergic modulation of seizure activity.

Chachua T, Bilanishvili I, Khizanishvili N, Nanobashvili Z.

Author information

Abstract

The mechanisms underlying pathogenesis of epileptic rections have been studied insufficiently as yet. Therefore, it is considered that determining the structures, transmitters, and receptors of the brain, which putatively produce development and intensity modulation of the convulsions, is highly important. The locus coeruleus is a norepinephrinic structure and an endogenous modulator of epilepsy, determining a role of which in a course of seizure reactions is an important problem of epileptology. The goal of the study was assessment of importance of the norepinephrine synapses in development of the local hippocampal seizure activity. The studies were carried out in adult rats, in conditions of chronic experiments. Influences of microinjections of agonist (clonidine) and antagonist (yohimbine) of the alpha-2 norepinephrine receptors on a course of local hippocampal seizure reactions (without behavioral manifestation), have been evaluated. It was found that microinjection of alpha-2 norepinephrine receptors' agonist determined a blockage of the local hippocampal seizures, while alpha-2 norepinephrine receptors' antagonist increased the seizures' power. It is suggested that the effects of locus coeruleus are determined by activation of the alpha-2 norepinephrine receptors.

Gabapentin and alcohol dependence…

JAMA Intern Med. Author manuscript; available in PMC 2015 Jan 1.
Published in final edited form as:
JAMA Intern Med. 2014 Jan 1; 174(1): 70–77.
doi: 10.1001/jamainternmed.2013.11950
PMCID: PMC3920987
NIHMSID: NIHMS533947

Gabapentin Treatment for Alcohol Dependence: A Randomized Controlled Trial

Barbara J. Mason, PhD,[a] Susan Quello, BA, BS,[a] Vivian Goodell, MPH,[a] Farhad Shadan, MD,[b] Mark Kyle, MD,[b] and Adnan Begovic, MD[b]

Author information ▶ Copyright and License information ▶

Conclusions and Relevance

Gabapentin (particularly the 1800 mg dosage) was effective in treating alcohol dependence and relapse-related symptoms of insomnia, dysphoria and craving, with a favorable safety profile. Increased implementation of pharmacological treatment of alcohol dependence in primary care may be a major benefit of gabapentin as a treatment option for alcohol dependence.

Benzodiazepine Problems --CASE

A 30 year old man arrives to the emergency department stating that he has been taking 4-6 mg ***Etizolam*** (buying from non-medical sources) every day and that he wants to "detox"

- Further history is obtained: He has used 4-6 mg of etizolam every day for past 7 months. His last dose was 6 hours prior to arrival in the emergency department.
- He has no history of seizures, drinks EtOH once a month (6 standard shots) he has not experienced any symptoms of withdrawal in the past seven months.

Benzodiazepine Withdrawal

- Common Findings
  - Tremor
  - Myoclonic movements
  - Nausea/vomiting
  - Autonomic excitation
  - Craving
- Prolonged withdrawal
  - Persists weeks to month, irregular day to day: insomnia, perceptual disturbance, tremor, sensory hypersensitivity, anxiety

Benzodiazepine Withdrawal

- Factors for withdrawal
  - Dose
  - Duration of use
  - Duration of drug action
- Clinically significant withdrawal most likely
  - Daily low dose for 4-6 months
  - Daily high dose (2-3x upper limit of therapeutic) for more than 2-3 months.
- Timing of withdrawal
  - Short acting: (lorazepam, oxazepam, triazolam, alprazolam, temazepam)
    - Onset within 24 hours, peak in 1-5 days. Seizure may occur at 2-3 days
    - Long acting: diazepam, chlordiazepoxide, clonazepam
    - Onset within 5 days, peak 1-9 days, seizures may occur up to 7 day
  - Comparison to alcohol withdrawal: onset within hours following last drink, risk of seizures highest in first 48 hours, alcohol withdrawal delirium may start 2-5 days after last drink

Benzodiazepine Dependence –taper (*not my preference*)

- Long acting benzodiazepine regimen fixed dose taper
  - Day 1- Chlordiazepoxide (Librium) 50mg or diazepam (Valium) 10-20 mg IV/PO QID
    - May give additional chlordiazepoxide 50mg PO or diazepam 10 mg IV/PO q2h prn between scheduled doses for uncontrolled alcohol withdrawal symptoms (CIWA ≥10)
  - Day 2 – chlordiazepoxide 25mg PO or diazepam 10 mg IV/PO qid
    - May give additional chlordiazepoxide 25mg PO or diazepam 10 mg IV/PO q2h prn between scheduled doses if uncontrolled withdrawal symptoms (CIWA ≥10).
  - Day 3 – Librium 25mg PO or diazepam 10 mg IV/PO qid
  - Day 4 – Librium 10mg PO or diazepam 5 mg IV/PO qid prn for continued withdrawal symptoms

Phenobarbital protocol

ELSEVIER

Journal of Substance Abuse Treatment

Brief article

Safety and effectiveness of a fixed-dose phenobarbital protocol for inpatient benzodiazepine detoxification

Sarah Sharfstein Kawasaki, (M.D.)*, Janet S. Jacapraro, (M.D.), Darius A. Rastegar, (M.D.)

Center for Chemical Dependence, Johns Hopkins Bayview Medical Center Baltimore, MD 21224, USA

Received 24 August 2011; received in revised form 18 December 2011; accepted 21 December 2011

- Test dose then incremental dosing –PB has depot effect (very lipid soluble) and this dosing will allow for 'auto titration' as it slowly leaves the body

S.S. Kawasaki et al. / Journal of Substance Abuse Treatment 43 (2012) 331–334

Classic Regimen (*from Kawasaki et al prev page.*)

Table 2
Phenobarbital protocol and percentage of doses held

Dose/Interval	No. of doses in protocol	Percentage who received all doses*	Percentage of doses held because of sedation*
200 mg once	1	86	14
100 mg every 4 hours	5	58	17
60 mg every 4 hours	4	70	14
60 mg every 8 hours	3	56	25

* Patients who were discharged against medical advice were not included.

S.S. Kawasaki et al. / Journal of Substance Abuse Treatment 43 (2012) 331–334

- URMC Toxicology Protocol
- Phenobarbital 130 mg PO x 1 (after w/d symptoms visibly attenuated)
- Day 1.) 130 mg PO q 4 hours x 6.
- Day 2.) 130 mg PO q 6 hours x 4.
- Day 3.) 130 mg PO q 8 hours x 3.
- If any sedation hold dose. If dose held for 2 consecutive doses then d/c protocol.
- Clonidine 0.1 mg PO QID PRN anxiety adjunctive to above protocol (with/without Catapres™ patch
- At end consider gabapentin 300 mg PO TID for 5 days, BID x 5 days then HS x 5 days then off.

Opioid withdrawal in ED/Hospital

- A 19 year-old Male presents to the Emergency Department with a complaint of opioid withdrawal and he is requesting help with getting into treatment.
- He reports using Vicodin™ and Percocet™ for several years with increasing doses until he started using Oxycontin™ tablets –and IR oxycodone, usually 30 mg tabs on average 300 mg total/day.
- He states he's been looking for a Suboxone™ program but hasn't found anyone with open slots.

Case One *continued*

It has been over 24 hours since his last use of oxycodone. He has occasionally been able to buy Suboxone™ "…off the street…" but was unable to procure any this time.

Exam:

- **Vitals:** HR 110 bpm, BP 144/70 mmHg, temp 37.6 C

General: The patient is mildly diaphoretic, very restless, and has quite a bit of tearing in his eyes. He has quite significant rhinorrhea.

HEENT: Marked mydriasis.

Additional: You note that he yawns very prominently several times during the interview.

Detoxification

TABLE 7
COWS

Symptoms	*Scores*	*Examples*
Resting pulse rate	0–4	0=80 or less; 1= 81–100; 2=101–120; 4=120 or greater
Sweating	0–4	0=none; 4=sweat streaming from face
Restlessness	0–5	0=sits still; 5=unable to sit still (even for a few seconds)
Pupil size	0–5	0=normal; 5=dilated (only iris rim visible)
Bone or joint aches	0–4	0=none; 4=severe discomfort
Runny nose or tearing	0–4	0=none; 4=constant
GI upset	0–5	0=none; 5=multiple episodes of vomiting or diarrhea
Tremor	0–4	0=none; 4=gross tremor
Yawning	0–4	0=none; 4=yawning several times/minute
Anxiety & Irritibility	0–4	0=none; 4=severe, precluding participation
Gooseflesh skin	0–5	0=smooth; 5=prominent piloerection

COWS=Clinical Opiate Withdrawal Scale; GI=gastrointestinal.
Score: 5–12 mild; 13–24=moderate; 25–36=severe.
Baron D, Garbely J, Boyd RL. *Primary Psychiatry.* Vol 16, No 9. 2009.

- Options:
- A.) opioid agonists
- B.) adjunctive meds
  - Clonidine
  - Antihistamines
  - Analgesics (non-opioid)
  - Benzodiazepines or baclofen
  - Ondansetron
  - Loperamide
  - Others?

Title 21 Code of Federal Regulations

Section 1306.07 Administering or Dispensing of Narcotic Drugs

- A practitioner may administer or dispense directly (but not prescribe) a narcotic drug listed in any schedule to a narcotic dependent person for the purpose of maintenance or detoxification treatment if the practitioner meets both of the following conditions:
- (1) The practitioner is separately registered with DEA as a narcotic treatment program.
- (2) The practitioner is in compliance with DEA regulations regarding treatment qualifications, security, records, and unsupervised use of the drugs pursuant to the Act.
- (b) Nothing in this section shall prohibit a physician who is not specifically registered to conduct a narcotic treatment program from administering (but not prescribing) narcotic drugs to a person for the purpose of relieving acute withdrawal symptoms when necessary while arrangements are being made for referral for treatment. Not more than one day's medication may be administered to the person or for the person's use at one time. Such emergency treatment may be carried out for not more than three days and may not be renewed or extended.
- (c) This section is not intended to impose any limitations on a physician or authorized hospital staff to administer or dispense narcotic drugs in a hospital to maintain or detoxify a person as an incidental adjunct to medical or surgical treatment of conditions other than addiction, or to administer or dispense narcotic drugs to persons with intractable pain in which no relief or cure is possible or none has been found after reasonable efforts.
- (d) A practitioner may administer or dispense (including prescribe) any Schedule III, IV, or V narcotic drug approved by the Food and Drug Administration specifically for use in maintenance or detoxification treatment to a narcotic dependent person if the practitioner complies with the requirements of § 1301.28 of this chapter.

[39 FR 37986, Oct. 25, 1974, as amended at 70 FR 36344, June 23, 2005]

Hospital & ED use exempt when medical issue present

- In the ED or inpatient setting, an X-waiver is not required.
- Providers are administering or dispensing buprenorphine, not prescribing it for outpatient use .
- Physicians in a hospital or ED can treat acute withdrawal with buprenorphine *or methadone* while the patient is attempting to access treatment.
- The patient may not receive more than three days of administered methadone in the emergency department or ***hospital unless there is a concomitant acute medical or surgical condition requiring treatment.***
- If a patient who is currently in a medication assisted treatment program their medication may be continued in the hospital, but they may not be discharged with a prescription.
- If the treating provider is X-waivered (*able to prescribe buprenorphine for the treatment of opioid dependence*) and they are able to link the patient to either their own clinic or another provider who also has X-waiver they can continue the buprenorphine (Suboxone™)

Opioid Withdrawal Treatment Regimens

- Symptomatic Treatment
  - Clonidine 0.1 – 0.2 mg PO q4hr prn
    - hold for systolic bp <100 mm Hg, pulse <65 bpm
  - Gabapentin 400-600 mg PO q6 hr prn
  - Antihistamines
    - Hydroxyzine 50 mg 1-2 PO QID PRN
    - Diphenhydramine 25-50 mg PO QID PRN rhinorrhea, pruritis, also effective for nausea
  - Antiemetics
    - Ondansetron 8 mg PO (also an SL formulation if significant nausea/inability to keep down) TID PRN
  - Sedatives
    - Valium 10mg IV or PO q6 hr prn -hold for sedation and/or disinhibition
  - Zolpidem 5 mg PO or trazodone 50 mg PO qhs prn insomnia
  - Loperamide 4mg PO x 1 prn diarrhea, 2 mg after each subsequent stool (max 16 mg/day)*
  - Olanzapine 5 mg IV or 10mg PO q8hr prn
  - NSAIDS
    - Ibuprofen 600 mg PO q4hr prn
    - Ketorolac 30 mg IV q6 hr prn
  - Acetaminophen 325-650 mg PO prn

Opioid Withdrawal Treatment Regimens

- Methadone
  - Options for initial dose
    - 20-30 mg PO
      - May repeat 10mg dose later that day if continued withdrawal
    - 10 mg IM

*If not in a medication assisted therapy program

Opioid Withdrawal Regimens

- Buprenorphine
  - Day One
    - Take 2mg buprenorphine-naloxone sublingual tablet/film
    - Monitor for opioid withdrawal symptoms over 1 hour (stomach cramps, nausea, muscle aches, yawning, stuffy nose)
    - If no opioid withdrawal symptoms appear after 1 hour, administer one 8 mg buprenorphine-naloxone sublingual tablet/film
  - Day Two
    - 8-16 mg buprenorphine-naloxone sublingual tablet/film
    - Next plan either **link to treatment** and maintenance regimen vs taper (3-7 days)

Buprenorphine Pharmacology

- Buprenorphine is a partial mu receptor agonist
  - Kappa receptor antagonist

PK: buprenorphine half-life 4-6 hours but metabolites (e.g. nor buprenorphine) have a very long duration of action T1/2 =

Peak analgesic effect = 4-6 hours

Monitoring:

buprenorphine level

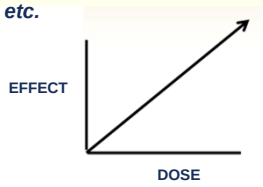
nor buprenorphine

buprenorphine glucuronide

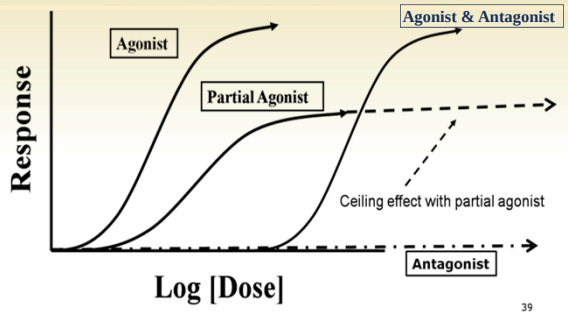
nor buprenorphine glucuronide

Opioid Pharmacology -a better opioid?

Full mu opioid agonists activate mu receptors. Increasing doses of full agonists produce increasing effects until a maximum effect is reached (the receptor is fully activated). ***morphine, heroin, methadone, oxycodone, hydromorphone, etc.***

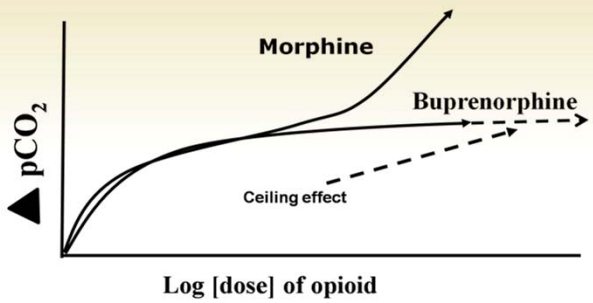


Dose Response –partial agonist and 'ceiling effect'

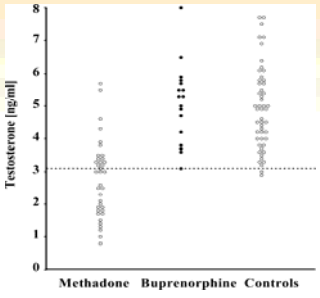


39

Dose-effect with buprenorphine



Comparison of serum testosterone levels in 17 patients treated with buprenorphine, 37 patients treated with methadone, and 51 healthy controls.



THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

Bliesener N et al. JCEM 2005;90:203-206

Evidence for effectiveness

Am J Addict. 2014 Nov 6. doi: 10.1002/AJAD.12161.x. [Epub ahead of print]

Initiating buprenorphine treatment for hospitalized patients with opioid dependence: A case series.

Suzuki J[1], DeVido J, Kalra I, Mittal L, Shah S, Zinser J, Weiss RD

Author information

Abstract

BACKGROUND AND OBJECTIVES: Opioid dependent patients are hospitalized frequently. We aimed to determine if initiation of buprenorphine treatment during hospitalization facilitates entry into treatment following discharge.

METHODS: Retrospective case series (n = 47).

RESULTS: Twenty-two (46.8%) patients successfully initiated buprenorphine treatment within 2 months of discharge. Those patients obtaining a referral to a specific program were more successful in continuing treatment, but this difference did not reach statistical significance (59.1% vs 39.1%, p = 0.18).

DISCUSSION AND CONCLUSIONS: Hospitalization may be an important opportunity to engage opioid dependent patients to initiate buprenorphine treatment.

SCIENTIFIC SIGNIFICANCE: This study provides provisional support for utilizing buprenorphine for hospitalized patients. (Am J Addict 2014;XX: XX-XX).

Case

- 31 year-old M with IVDU heroin and cocaine is hospitalized for fever and myalgias. Found to have endocarditis. Requires valve replacement and prolonged antibiotics.
- After surgery, and while on a fentanyl PCA, the CV surgery team contacts toxicology to help transition from fentanyl PCA and wean from opioids.
- Buprenorphine initiated 12 hours after PCA transitioned to off. 2/0.5 mg Suboxone™ started then 1 hour later 8/2 mg SL (continued SL BID)

The Heroin Blocker

- 42 year-old African-American Male presents to Suboxone™ clinic for an intake assessment.
- Long history of chemical dependency with primarily opioids (heroin and 'street' methadone) and cocaine.
- Prior exposure to 'street' buprenorphine through primarily Suboxone™ tabs being purchased when he cannot afford or cannot find heroin (*5-8$/tab -8/2 mg Suboxone™ tabs*).
- Describes purchasing an 8/2 mg Suboxone™ tab, several hours later coming into some money he purchases a "bundle" (10 bags) of heroin. Use of heroin completely blocked.

References

- Gold JA, et al. A strategy of escalating doses of benzodiazepines and phenobarbital administration reduces the need for mechanical ventilation in delirium tremens. *Crit Care Med* 2007;35(3):724-30.
- Jaeger TM, et al. Symptom-triggered therapy for alcohol withdrawal in medical inpatients. *May Clin Proc* 2001;76(7): 695-701.
- Maldonado JR, et al. The "Prediction of Alcohol Withdrawal Severity Scale" (PAWSS): systematic literature review and pilot study of a new scale for the prediction of complicated alcohol withdrawal syndrome. *Alcohol* 2014;48(4):375-90.
- Maldonado JR, et al. Prospective Validation Study of the Prediction of Alcohol Withdrawal Severity Scale (PAWSS) in Medically Ill Inpatients: A New Scale for the Prediction of Complicated Alcohol Withdrawal Syndrome. *Alcohol* 2015 May 21. pii: agv043. [Epub ahead of print]
- Mayo-Smith MF, for the American Society of Addiction Medicine Working Group on Pharmacologic Management of Ethanol Withdrawal. Pharmacological management of ethanol withdrawal: A meta-analysis and evidence based practice guideline. *JAMA* 1997;278:144-151.
- Mayo-Smith MF, for the American Society of Addiction Medicine Working Group on the Management of Alcohol Withdrawal Delirium. Management of Alcohol Withdrawal Delirium. An evidence-based practice guideline. *Arch Intern Med* 2004;164:1405-1412.
- Rosenson J, et al. Phenobarbital for acute alcohol withdrawal: a prospective randomized double-blind placebo-controlled study. *J Emerg Med* 2013;44(3):592-598.
- Sullivan JT, et al. Assessment of alcohol withdrawal: The revised Clinical Institute Withdrawal Assessment for Alcohol Scale (CIWA-Ar). *BR J Addict* 1989;1353-1357.
- Young GP, et al. Intravenous phenobarbital for alcohol withdrawal and convulsions. *Ann Emerg Med* 1987;16(8):847-50.
- Donaldson M, Gizzarelli G, Chanpong B. Oral sedation: A primer on anxiolysis for the adult patient. Anesth Prog 2007;54:118-29.

References *continued*

- Mariani JJ, Malcolm RJ, Mamczur AK, Choi JC, Brady R, Nunes E, Levin FR. Pilot trial of gabapentin for the treatment of benzodiazepine abuse or dependence in methadone maintenance patients. American Journal of Drug and Alcohol Abuse 2016 Mar 10:1-8. [Epub ahead of print].
- Stock CJ, Carpenter L, Ying J, Greene T. Gabapentin versus chlordiazepoxide for outpatient alcohol detoxification treatment. Annals of Pharmacotherapy 2013 Jul-Aug; 47(7-8): 961-9.
- Galbis-Reig D. A Case Report of Kratom Addiction and Withdrawal. WMJ 2016 Feb; 115(1): 49-52.
- Giovannitti JA Jr, Thomas SM, Crawford JJ. Alpha-2 adrenergic receptor agonists: a review of current clinical applications. Anesth Prog 2015 Spring; 62(1): 31-9.
- Ungur LA, Neuner B, John S, Wernecke K, Spies C. Prevention and therapy of alcohol withdrawal on intensive care units: systematic review of controlled trials. Alcohol Clin Exp Res 2013 Apr; 37(4): 675-86.
- Albertson TE, Chenoweth J, Ford J, Owen K, Sutter ME. Is it prime time for alpha-2 adrenoreceptor agonists in the treatment of withdrawal syndromes? Journal of Medical Toxicology 2014 Dec; 10(4): 369-81.
- Myrick H, Malcolm R, Randall PK, Boyle E, Anton RF, Becker HC, Randall CL. A double-blind trial of gabapentin versus lorazepam in the treatment of alcohol withdrawal. Alcohol Clin Exp Res 2009 Sep; 33(9): 1582-8.

Questions ??????????????????????

CLINICAL & TRANSLATIONAL SCIENCE INSTITUTE UNIVERSITY of ROCHESTER MEDICAL CENTER