# Opioids & Sedatives Toxicity

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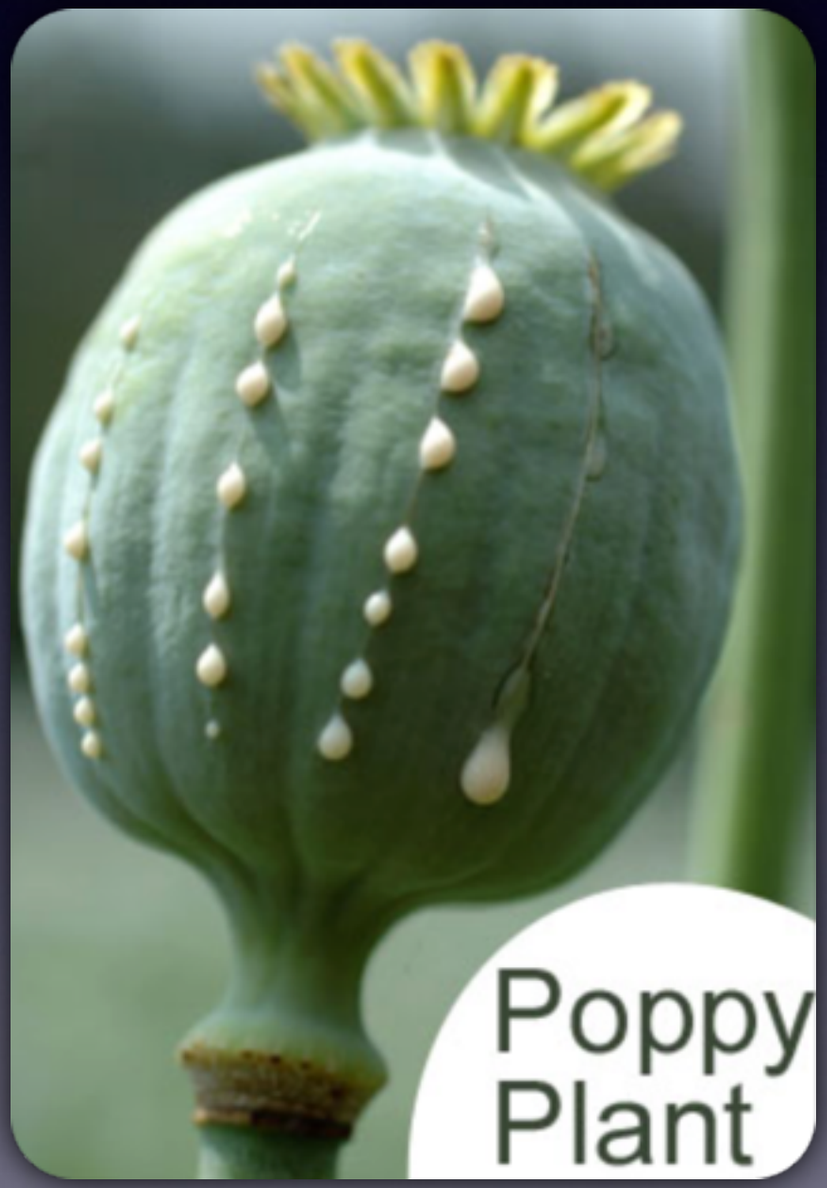
# What Are Opioids?




- Exudate of the opium poppy (*Papaver somniferum*)
- Known to relieve pain, diarrhea, produce euphoria
- Addiction to opium became commonplace

# *Opioid vs Opiate vs Narcotic?*

# Examples of Opioids

Morphine

Heroin

Codeine

Fentanyl

Meperidine

Methadone

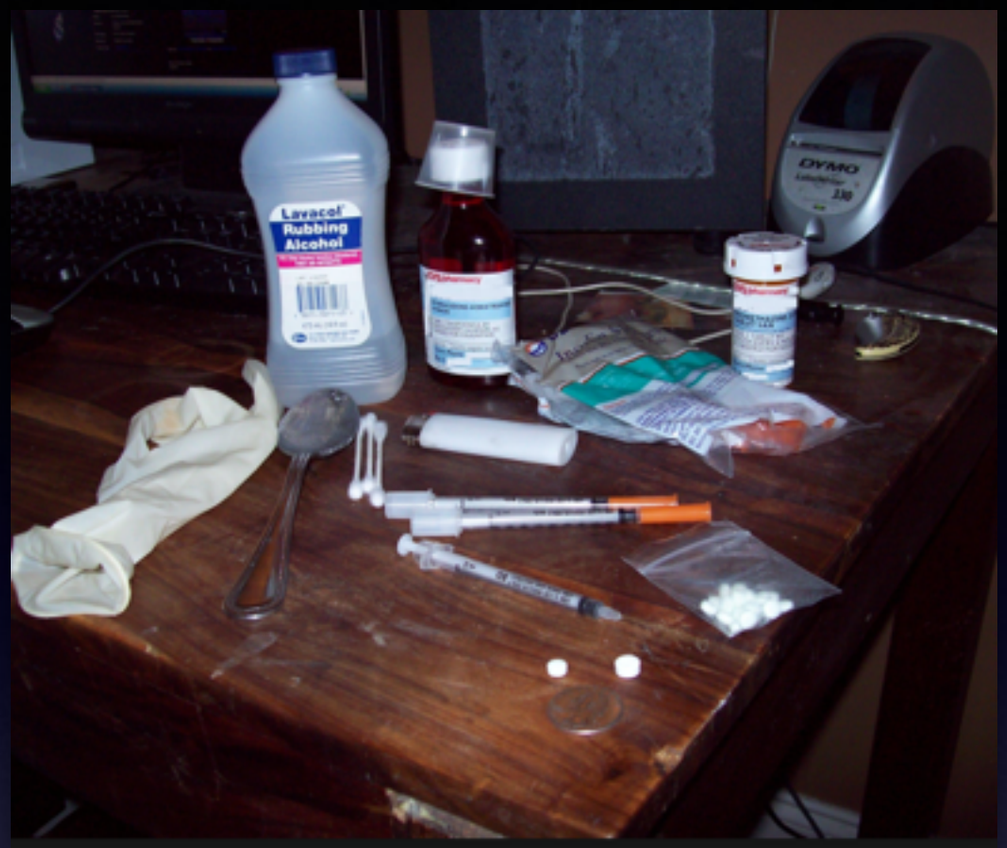
# On What Receptors do Opioids work on?

- Mu (μ)
  - Located at supraspinal and spinal sites
  - Analgesia and respiratory depression
  - Mioisis, euphoria, reduced GI motility

- Kappa (κ)
  - Dorsal horn of spinal cord and brain stem
  - Analgesia, miosis, sedation

- Delta (δ)
  - Binding sites for endogenous peptides
  - Analgesia, dysphoria, delusions, hallucinations

# *WHAT IS THE TOXIDROME OF OPIOID TOXICITY?*


Lavacol
Rubbing
Alcohol
DYMO

# The Opioid Toxidrome

CNS depression

Respiratory depression

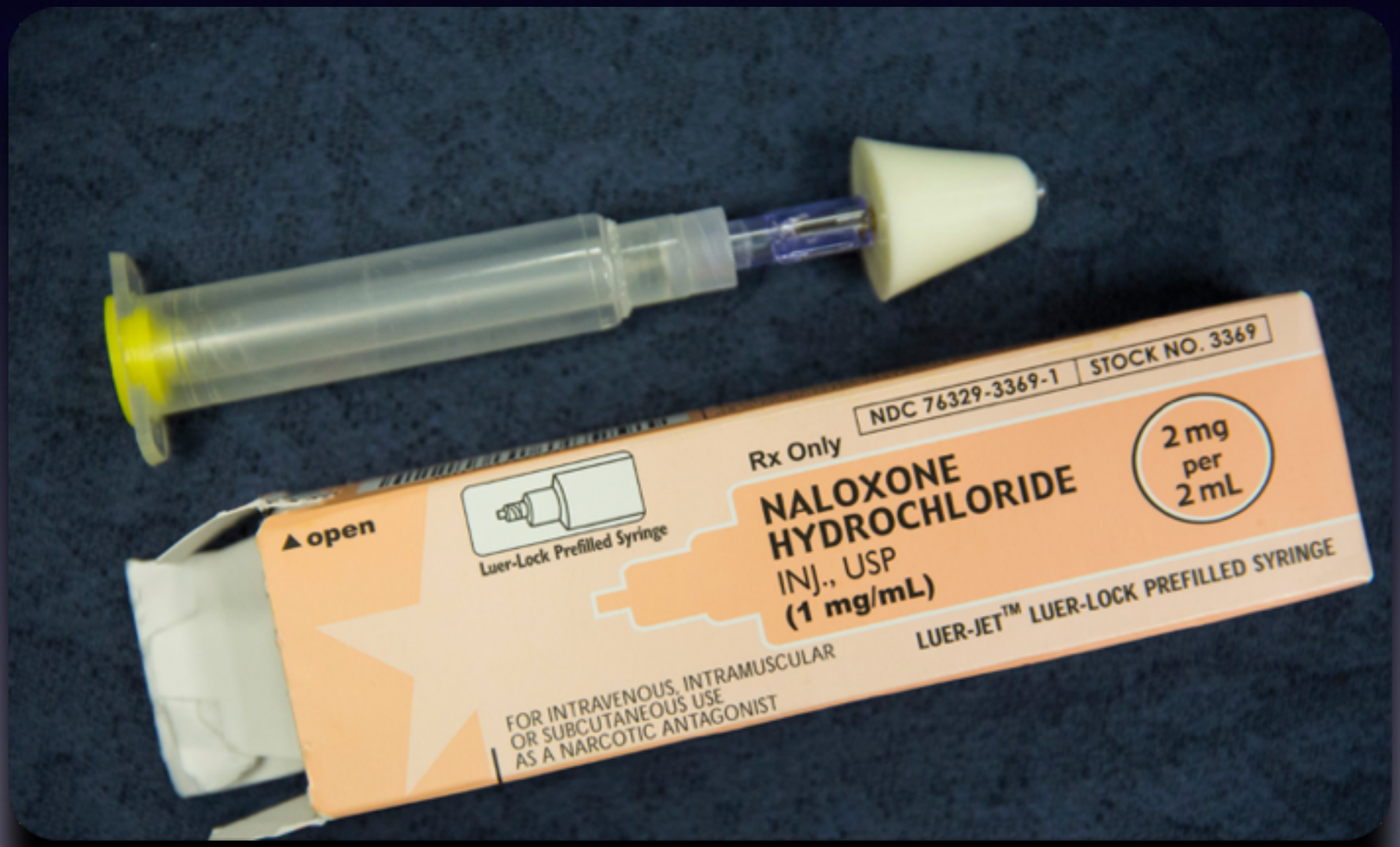
Miosis

# Other Opioid Effects

- Sensorineural hearing loss
- Mild hypotension (Histamine release) and Bradycardia
- Nausea & Vomiting (watch out for ileus)
- Urinary Retention
- Pruritus/ Urticaria and Flushing

# Management

- **ABC’s and Supportive therapy**
- **Antidote**

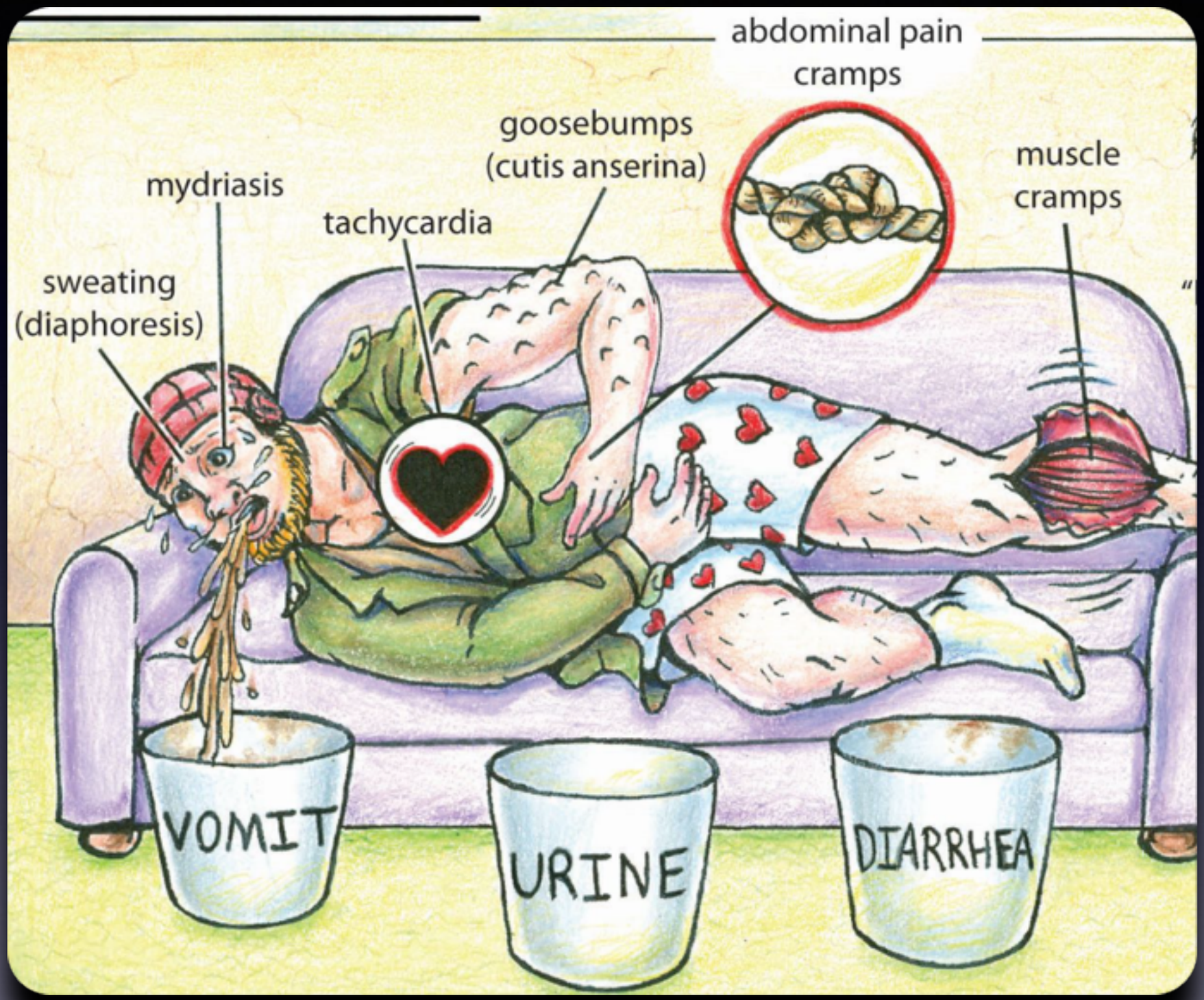

NDC 76329-3369-1
STOCK NO. 3369
Rx Only
NALOXONE HYDROCHLORIDE
INJ., USP
(1 mg/mL)
2 mg per 2 mL
▲open
Luer-Lock Prefilled Syringe
FOR INTRAVENOUS, INTRAMUSCULAR OR SUBCUTANEOUS USE AS A NARCOTIC ANTAGONIST
LUER-JET™ LUER-LOCK PREFILLED SYRINGE

- Pure Opioid antagonist
- Routes?
- Competitively bind opioid receptors and reverses all opioid mediated action
- Dose ?
- ***Half Life? Why is it important??***

- Naloxone 1/2 life is 1 -2 hours
- Morphine 1/2 life approx.  2 hours

*The duration of action of many opioids, especially after overdose, is significantly longer than that of naloxone. Patients responsive to naloxone should be observed for recurrence of opioid toxicity after the effect of naloxone has resolved.*

# Opioid Withdrawal




***NOT LIFE THREATENING!***


TEST

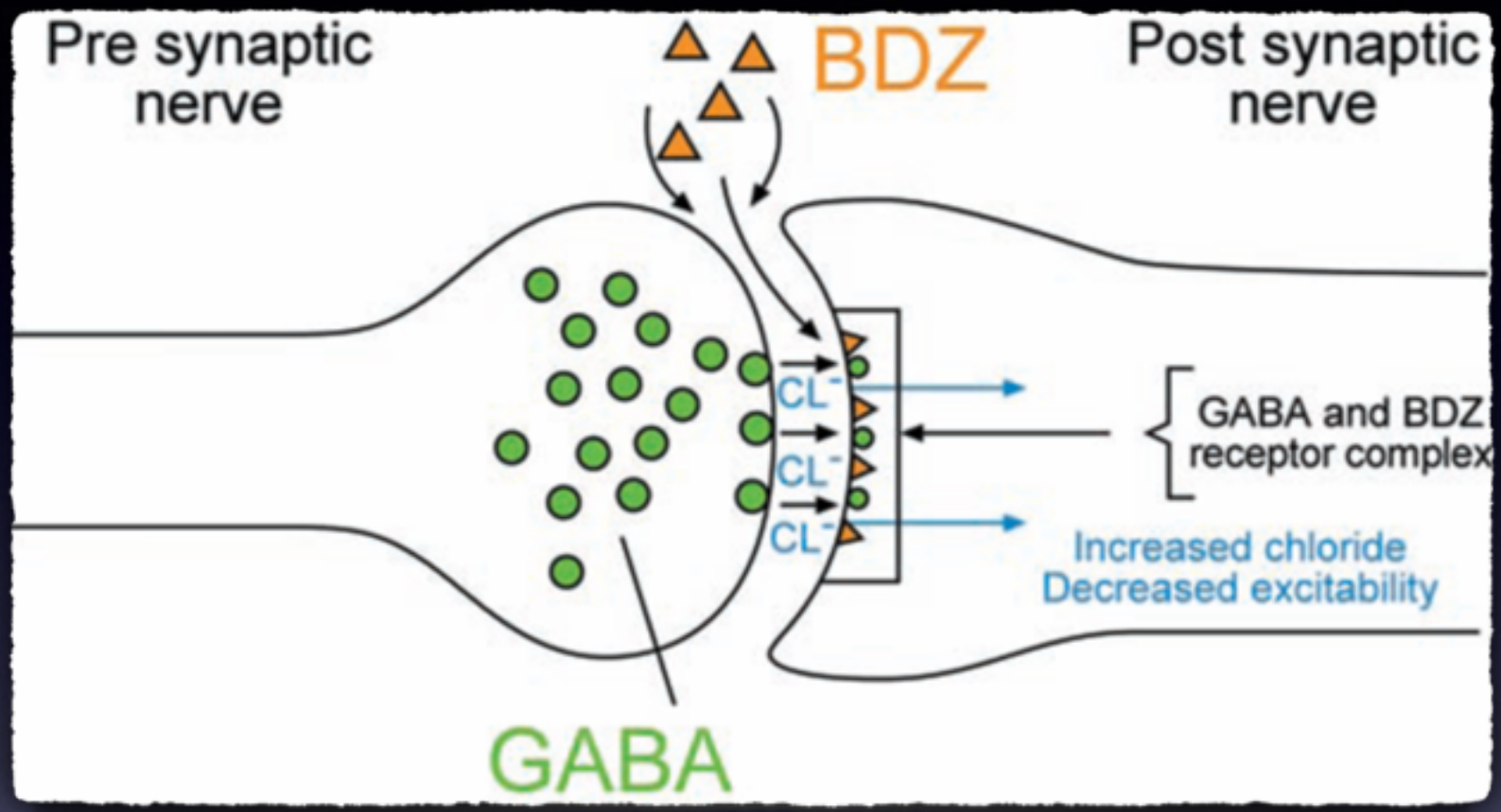

Two
Free

# Methadone

- Long half life
- Requires a dose every 24hrs

# Benzodiazepine Toxicity

# Mechanism of Action




Benzodiazepine bind to benzodiazepine receptor & potentiates GABA effects on the chloride channel —> increasing intracellular flux of CL ions & hyperpolarizing the cell

The net effect is a diminished ability of the nerve cell to initiate an action potential, inhibiting neural transmission!

# Clinical Effects

- Sedative
- Hypnotic
- Anxiolytic
- Anticonvulsant

| NAME | USUAL DOSE | ORAL PEAK (hr) | HALF-LIFE (hr) | PARENT METABOLITE ACTIVITY |
|---|---|---|---|---|
| Alprazolam (Xanax) | 0.25-0.5 mg | 1-2 | 6-27 | Inactive |
| Chlordiazepoxide(Librium) | 5-25 mg | 0.5-4 | 5-30 | Active |
| Clonazepam (Klonopin) | 0.25-0.5 mg | 1-2 | 18-50 | Inactive |
| Clorazepate (Tranxene) | 7.5-15 mg | 1-2 | 1-3 | Active |
| Diazepam (Valium) | 2-10 mg | 0.5-1 | 20-50 | Active |
| Estazolam (ProSom) | 1-2 mg | 2 | 8-28 | Inactive |
| Flurazepam (Dalmane) | 15-30 mg | 0.5-1 | 2-3 | Active |
| Halazepam (Paxipam) | 20-40 mg | 1-3 | 14 | Active |
| Lorazepam (Ativan) | 0.5-2 mg | 2-4 | 10-20 | Inactive |
| Midazolam (Versed) | 0.025-0.1 mg/kg | 1-2 | 1.5-3 | Active |
| Oxazepam (Serax) | 10-30 mg | 2-4 | 5-20 | Inactive |
| Quazepam (Doral) | 7.5-15 mg | 2 | 39-41 | Active |
| Temazepam (Restoril) | 7.5-30 mg | 1-2 | 3-19 | Inactive |
| Triazolam (Halcion) | 0.125-0.25 mg | 1-2 | 1.5-5.5 | Inactive |

# Clinical Features of Benzo Poisoning

- CNS depression (spectrum)
- Resp. depression (non central)
- Hypotension (uncommon)
- Potentail complications:
  Aspiration - Pressure sores

# Why do they get HAGMA ACIDOSIS?

- ***How to Diagnose?***
- ***Differential Diagnosis?***

# Management

- **Supportive**
- **Antidote**


# Flumazenil

Nonspecific competitive antagonist of the benzo receptor

Reverse benzodiazepine-induced sedation after GA, PSA, & confirmed benzodiazepine overdose

Not recommended for the routine reversal of sedative overdose in the ED

## Indications

Isolated benzodiazepine overdose in nonhabituated user (e.g., accidental pediatric exposure)
Reversal of conscious sedation

## Absolute Contraindications

Suspected coingestant that lowers seizure threshold (e.g., tricyclic antidepressants, cocaine, lithium, methylxanthines, isoniazid, propoxyphene, monoamine oxidase inhibitors, bupropion, diphenhydramine, carbamazepine, cyclosporine, chloral hydrate)
Patient taking benzodiazepine for control of a potentially life-threatening condition (e.g., seizures)
Concurrent sedative-hypnotic withdrawal
Seizure activity or myoclonus
Hypersensitivity to flumazenil or benzodiazepines
Patient with neuromuscular blockade

## Relative Contraindications

Chronic benzodiazepine use, not taken for control of life-threatening condition
Known seizure disorder not treated with benzodiazepines
Head injury
Panic attacks
Chronic alcoholism

# Complications

- Seizures
- Dysrhythmia
- Reported mortalities
- Precipitate withdrawal

# Withdrawal

**Nonspecific**
Anxiety, depression, insomnia, tremor, tachycardia, sweating

**Severe (rare)**
Visual hallucinations, delirium, seizures

# QUESTIONS?

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