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# Transition from Fixed-dosing to Symptom-triggered Management of Alcohol Withdrawal Syndrome in the Intensive Care Unit of a Community Hospital



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# Disclosure

- The authors of this presentation have no relevant financial or non-financial relationships in the products described and reviewed in this presentation
- Co-investigators
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  - Claudia Chang, PharmD, BCPS
  - Frances Ordieres Gonzalez, PharmD
  - Lorenzo Porras, PharmD

# Abbreviations

- ADR: Adverse drug reaction
- AW: Alcohol withdrawal
- BZD: Benzodiazepine
- CIWA-Ar: Clinical Institute Withdrawal Assessment for Alcohol, revised
- GABA: Gamma-aminobutyric acid
- ICU: Intensive care unit
- IRB: Institutional review board
- IV: Intravenous
- LOS: Length of stay
- MINDS: Minnesota Detoxification Scale
- STT: Symptom-triggered therapy

# Objective

- Discuss the outcomes of a fixed-dose protocol for the management of AW in a community hospital

# Background

- In the United States, 2 to 7% of heavy alcohol users admitted to the hospital for general medical care will develop severe AW
- The most dangerous complications of AW are delirium tremens and seizures
- Benzodiazepines are considered first-line therapy
  - Alcohol is a central nervous system depressant which acts by modulation of GABA and glutamate activity
  - BZDs modulate binding of GABA to its receptor, increasing chloride ion influx and causing an inhibitory effect similar to alcohol

# Fixed-Dose versus STT

## ■ Fixed-dose

- Historically has been used to manage AW
- BZDs are given at regular intervals
- Additional doses are given as needed depending on severity of the symptoms according to AW scale scoring

## ■ STT

- BZDs are only administered when severity of symptoms necessitate, according to AW scale scoring
- Evidence shows that STT results in:
  - Lower doses of BZDs
  - Shorter BZD duration
  - Decreased rate of severe AW
  - Shorter duration of AW syndrome
  - Decreased complications

# Purpose

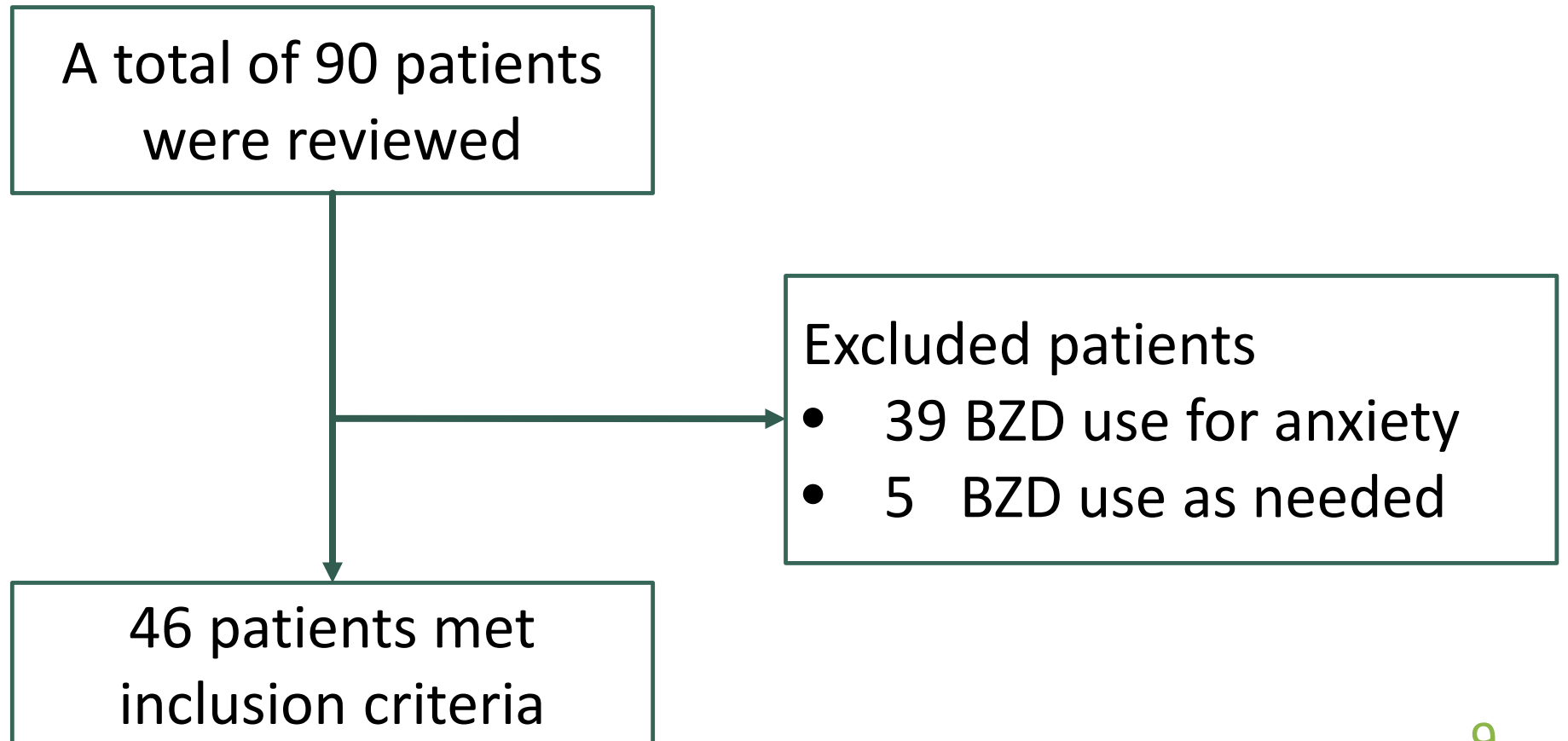
- The purpose of this study was to evaluate the current BZD fixed-dose protocol and outline the transition to STT in the ICU



# Study Design

- Single center, IRB approved, retrospective chart review of patients treated for AW with a fixed-dose BZD protocol
- Study period: November 2017-December 2019
- Inclusion
  - Admitted to an ICU
  - Treatment for AW
  - Use of BZDs
- Exclusion
  - Age < 18 years
  - Pregnancy
  - Allergy to BZD

# Screening



# Outcomes

## ■ Primary outcomes

- Amount of BZD(s) used
  - Clordiazepoxide daily mg dose
- Duration of BZD therapy
  - Days of BZD use
- Time to symptom control
  - Total days; beginning of symptoms to when symptoms were controlled

## ■ Secondary outcomes

- BZD-related adverse effects
  - Any BZD-related ADR such as somnolence, drowsiness, hypotension, or unresponsiveness
  - Reported by the nurse or physician
- LOS in the ICU
  - Days spent in the ICU

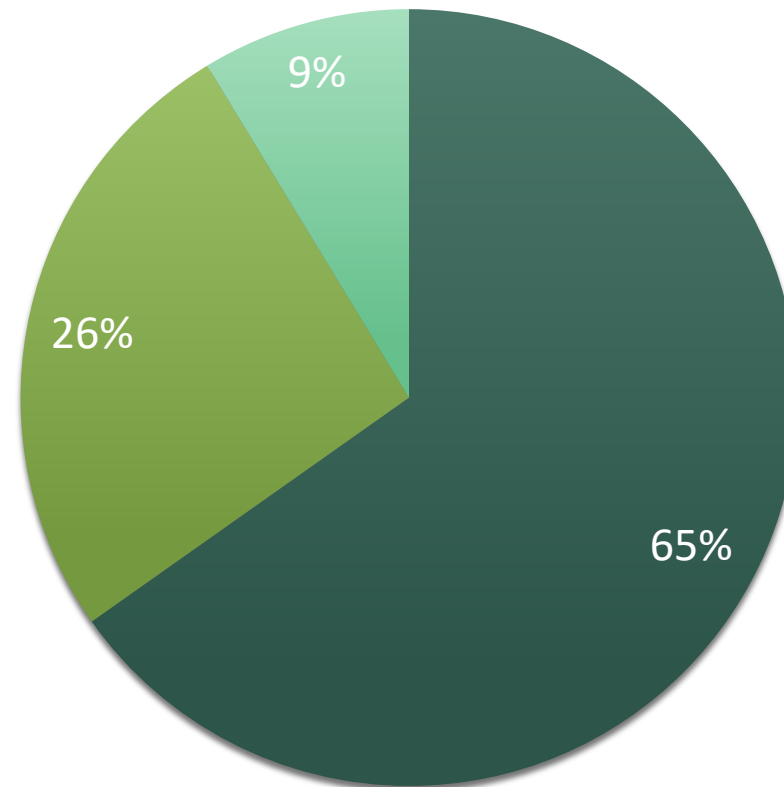
# Statistical Methods

- Descriptive statistics
  - Mean
    - Duration of therapy
    - Time to symptom control
  - Median
    - Daily BZD use
    - LOS in the ICU

# Results: Primary Outcomes

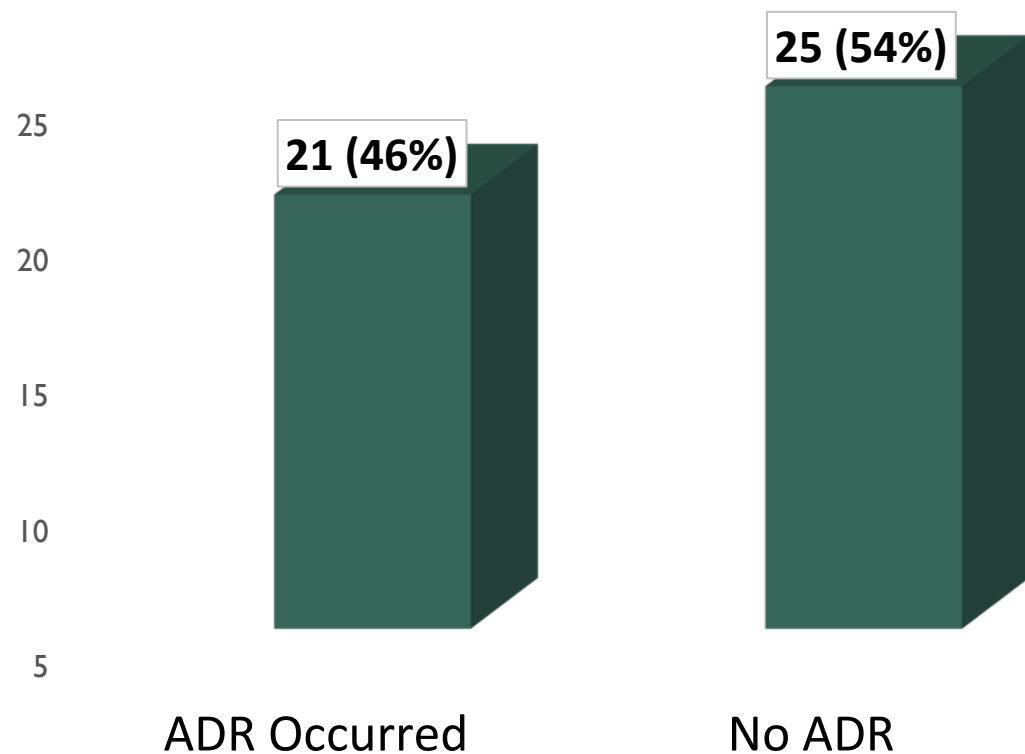
- Daily BZD(s) used:
  - 75 mg daily
- Duration of BZD therapy:
  - 5.4 days
- Time to symptom control:
  - 4.25 days

**BZD Use**



# Results: Secondary Outcomes

## BZD ADRs



- BZD-related adverse effects
  - Approximately 42% of the patients who experienced an ADR received BZDs while asymptomatic or after symptoms were controlled
- LOS in the ICU
  - Median: 3 days
  - Majority of patients were transferred to the floors

# Additional Findings

- Only 21% of the prescribers used the AW PowerPlan
- Approximately 30% of patients had a CIWA-Ar score documented
  - For patients with a documented CIWA-Ar score, most had low scores for which treatment was not indicated
  - The use of CIWA-Ar did not necessarily correlate with the use of the PowerPlan
  - In patients with a CIWA-Ar score, reassessment of the score was not conducted

# Conclusions

- The fixed-dose protocol led to patients receiving unnecessary treatment for AW
- Duration of BZD therapy was longer than time to symptom control, exposing patients to an extra day of unnecessary therapy
  - A large percentage of these patients experienced an ADR
- Areas for improvement for appropriate patient monitoring were identified, given the lack of use of the AW PowerPlan and poor documentation of CIWA-Ar scores



# Limitations

- Retrospective chart review
- Small sample size
- Information assessed based on documentation
- Multiple sedative medications utilized
- Challenging to assess ADRs in intubated patients

# Transition to STT

- Patients with AW will be treated using STT
- BZD of choice will be lorazepam oral or IV
- BZD will be administered based on a scale score (CIWA-Ar or MINDS)
- Score severity will determine BZD dose and monitoring parameters
  - Monitoring will be conducted by nurses
  - Parameters will be pre-determined to ensure proper escalation and de-escalation of therapy
- Education will be provided to physicians, nurses, and pharmacists

# Assessment Question

- Which of the following outcomes is associated with fixed-dose benzodiazepine protocols?
  - A. Increased benzodiazepine use
  - B. Shorter duration of benzodiazepine use
  - C. Less sedation
  - D. Decreased length of stay

# Assessment Answer

- Which of the following outcomes is associated with fixed-dose benzodiazepine protocols?
  - A. Increased benzodiazepine use
  - B. Shorter duration of benzodiazepine use
  - C. Less sedation
  - D. Decreased length of stay



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