Expansion of Pharmacy-Managed Intravenous (IV)-to-Oral (PO) Conversion to Include Antiepileptic Drugs (AEDs)

Avo Arikian, Pharm.D., Amy Royston, MS, Pharm.D., BCPS, and Alice Robbins, Pharm.D., BCPS
Community Regional Medical Center – Fresno, California

BACKGROUND

- Hospital-implemented IV-to-PO conversion programs have been shown to:
  - Reduce medication costs
  - Provide high levels of patient comfort and satisfaction
  - Reduce IV medication usage and the subsequent risk of infusion-related complications
  - Reduce the length of hospital stay

- While many AEDs have excellent oral bioavailability that allows inclusion in pharmacy-managed IV-to-PO programs, research supporting this practice is lacking.

- The addition of several AEDs to Community Regional Medical Center’s pharmacy-managed IV-to-PO protocol is pending.

OBJECTIVES

- Determine the cost savings associated with the inclusion of several AEDs to the pharmacy-managed IV-to-PO protocol
- Evaluate the safety and efficacy of systematically converting epileptic patients on AEDs from IV-to-PO

This study proposal will be submitted to the Institutional Review Board (IRB) for approval. All data will be recorded without patient specific identifiers and maintained in a confidential manner to protect patient privacy.

METHODOLOGY

- Retrospective chart review
  - Pre-implementation: 01/01/12 – 03/31/12
  - Post-implementation: 01/01/13 – 03/31/13

- Inclusion criteria (must meet at least 1 of 2)
  - Able to receive and tolerate scheduled oral medications via oral or gastric feeding tube route
  - Able to receive and tolerate a diet or enteral feeding (via gastric feeding tube)

- Exclusion criteria
  - Observed or electroencephalogram (EEG)-proven seizure in the past 48 hours
  - Comatose patients (Glasgow Coma Scale less than or equal to 8) without an EEG demonstrating no epileptiform activity within the past 24 hours
  - Nausea, vomiting and/or diarrhea in the last 24 hours
  - Gastric output that exceeds 300 ml on 2 or more occasions in the previous 24 hours
  - Use of a feeding tube that terminates distal to the stomach (e.g. jejunal tube)
  - Active gastrointestinal bleeding

- Data collection will consist of:
  - Rate of conversions performed by pharmacy
  - Seizure occurrence
  - AED doses based on route
  - Duration of hospital stay
  - Rate of drug-related adverse events
  - Therapeutic drug levels

- Cost savings will be evaluated based upon:
  - Drug acquisition costs

PRELIMINARY RESULTS

- Lacosamide: Lacosamide at same dose and frequency as intravenous therapy.
- Levetiracetam: Levetiracetam at same dose and frequency as intravenous therapy.
- Phenytoin: Phenytoin at same total daily dose as intravenous therapy, given at bedtime.
- Fosphenytoin: Divalproex (tablets) or valproic acid (syrup) at same dose and frequency as intravenous therapy.
- Valproate: Propranolol at same dose and frequency as intravenous therapy.

FUTURE DIRECTION

- AEDs, as a class, appear to be viable for inclusion into a pharmacy-managed IV-to-PO program.
- Further studies are needed to determine the safety, efficacy and cost savings of such an intervention.

CONCLUSION

- Obtain IRB approval upon implementation
- Complete data collection and analysis

REFERENCES


All authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.
**BACKGROUND**

- Chemotherapy-induced febrile neutropenia is a serious hematologic toxicity, which often requires hospitalization.\(^1\)
- Patients with febrile neutropenia should be treated with empiric antibiotics in a timely manner since fever may be the only indication of an underlying infection, which could be fatal if left untreated.\(^2\)
- One promising way of improving outcomes and reducing costs is through implementation of an order set to standardize patient care.

**OBJECTIVES**

- Evaluate the efficacy of implementing a standardized antimicrobial order set
- Evaluate prescriber compliance with current guidelines pre- and post- implementation of order set
- Evaluate the cost-savings for Community Regional Medical Center through implementing a standardized antimicrobial order set

This study proposal was submitted to and approved by the Institutional Review Board at Community Regional Medical Center. All data will be recorded without patient specific identifiers and maintained in a confidential manner to protect patient privacy.

**METHODOLOGY**

**Study Design**

- Retrospective chart review
  - Pre-implementation: July 1, 2012 - September 1, 2012
  - Post-implementation: 3 months post implementation

**Data Collected**

- Antimicrobial use and duration
- Lab monitoring associated with antimicrobials
- Microbiology cultures and susceptibilities
- Temperature, white blood count (WBC), bands, platelets and absolute neutrophil count (ANC)

**Outcome Measures**

- Efficacy of order set
  - Response: resolution of fever after 3 days of empiric antimicrobial treatment
  - Failure: death or unresolved fever after 3 days of empiric antimicrobial treatment
  - Prescriber compliance
  - Number of patients receiving evidence-based treatment pre- and post- order set implementation

**FUTURE DIRECTION**

- Implementation of antimicrobial order set
- Complete data collection and analysis
- Perform cost-savings analysis

**CONCLUSION**

- Based on preliminary results, the majority of patients (63%) evaluated had a resolution of fever.
- Approximately 50% of the patients were prescribed with inappropriate empiric antimicrobial therapy.
- An order set to guide appropriate therapy is currently being developed.

**REFERENCES**


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Appropriate Antibiotic Therapy for VAP in the Intensive Care Units of a Level I Trauma Center

Stephen Rettig, Pharm.D., Staci Anderson, Pharm.D., BCPS and Melissa Reger, Pharm.D., BCPS
Community Regional Medical Center – Fresno, California

BACKGROUND

- Empiric antibiotic therapy of ventilator associated pneumonia (VAP) is usually based on time of disease onset and risk for multi-drug resistant pathogens.1,2
- A study from a single, multidisciplinary intensive care unit (ICU) reported that both early-onset and late-onset VAP were mainly caused by multi-drug resistant bacteria; most commonly P. aeruginosa and methicillin-resistant S. aureus (MRSA).3
- Appropriate empiric antibiotic therapy defined as a regimen that has in vitro activity against the isolated organism(s) responsible for infection.5,6
- Appropriate empiric antibiotic selection depends on clinical evaluation of patient factors and antibiograms of individual ICUs.

OBJECTIVES

- Determine appropriate empiric antibiotic regimen for suspected VAP
- After implementation, retrospectively assess its effect on clinical outcomes
- Determine whether implemented regimen results in decreased mortality, decreased length of stay, reduction in VAP recurrence, fewer ventilator days, and less costly medication therapy

CONCLUSION

- Ceftriaxone could be safely used instead of cefepime/vancomycin for empiric therapy in trauma patients with early VAP
- Cefepime/vancomycin is appropriate empiric therapy for trauma patients with late VAP

FUTURE DIRECTION

- Incorporate ceftriaxone into empiric antibiotic regimen in trauma patients with early VAP
- Complete data collection and analysis

METHODOLOGY

Study Design
- Retrospective chart review to determine, implement, and evaluate appropriate empiric antibiotic regimen for suspected VAP
- Cohort 1: October 2011 through August 2012
- Cohort 2: December 2012 through April 2013

Exclusion Criteria
- Age less than 18 years
- Incarceration
- Pregnancy
- Insufficient microbiologic data

Data Collection
- Quantitative Mini-Bronchoalveolar Lavage (mini-BAL) culture data
- Antibiotic sensitivity data
- Number of days on mechanical ventilation
- Duration of ICU and hospital stay
- VAP recurrence
- All cause mortality
- Costs will be calculated based on:
  - Acquisition cost
  - Associated therapeutic drug monitoring

RESULTS

Preliminary Results
- Cohort 1
  - 434 charts screened
    - 136 met inclusion criteria
      - Mean age (range): 46.7 years (18 – 90)
      - 80.1% male
      - 21.3% all-cause mortality
      - 67% of mini-BAL cultures with greater than 50,000 colony forming units/mL

- Empiric therapy with cefepime/vancomycin would have been appropriate in 93.4% of all patients
  - Ceftriaxone on days 1- 4: 85.1%
  - Cefepime/vancomycin on day ≥ 5: 87.7%

Organism Occurrence By ICU Day When Culture Taken

REFERENCE


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