Evaluation of Empiric Antibiotic Use and Subsequent De-escalation as a Proponent for Developing a Pharmacist Managed Antimicrobial Stewardship De-escalation Protocol

Kailee Shearer, PharmD, Stephanie Holcomb, PharmD, Nicole Lu, PharmD, BCPS, and Ann Vu, PharmD, BCPS
Community Regional Medical Center—Fresno, California

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.

BACKGROUND

- Antimicrobial resistance is a national public health concern.1 Appropriate stewardship is essential for:
  - Optimization of patient care
  - Decreased rates of drug resistance
  - Reduced healthcare-associated costs

- Benefits from pharmacist managed antimicrobial stewardship programs (ASP) have been well documented2,3 and include:
  - Improved patient outcomes
  - Significant cost savings

- California Senate Bill 1311 passed in September 2014 requires more robust measures for antimicrobial stewardship.4
  - ASP implementation deadline July 1, 2015

OBJECTIVES

- Evaluate if appropriate antibiotic de-escalation occurs within 72 hours after initiation of vancomycin plus a broad-spectrum antibiotic based on:
  - Appropriate infectious disease guidelines
  - Microbiology culture results

- Determine cost-savings associated with appropriate antibiotic de-escalation.

- Identify areas for ASP improvement and opportunities for pharmacist intervention.

DISCUSSION

Community Regional Medical Center (CRMC) currently meets the basic requirements for an ASP as defined by California legislation.

- Official ASP policy and procedure
- Physician-supervised committee with appropriately trained individuals
- Reporting of ASP activities to quality improvement committees

Current ASP related pharmacist-managed protocols at CRMC are well received and utilized by interdisciplinary healthcare teams.

- IV to PO conversion
- Vancomycin and aminoglycoside management

- Provides platform to expand services and more robust opportunities for impact on patient care

METHODOLOGY

Study Design

- Retrospective chart review from January 1, 2014 through December 31, 2014

Inclusion Criteria

- Non-intensive care unit and non-emergency department patients ≥ 18 years old started on vancomycin + a broad spectrum antibiotic for one of the following:
  - Bacteremia
  - Urinary tract infection
  - Bacterial meningitis
  - Methicillin resistant Staphylococcus aureus
  - Pseudomonas aeruginosa
  - Endocarditis, osteomyelitis, periodontitis

Exclusion Criteria

- Pediatric patients (< 18 years old)
- Pregnant or breastfeeding women
- Surgical patients receiving perioperative antibiotics
- Infections unconfirmed by microbiology, such as:
  - Pneumonia
  - Skin or soft tissue infections
  - Intra-abdominal infections
- Antibiotic administration prior to microbiology lab draw
- Non-bacterial infections

Data Collection

- Patient demographics
  - Age
  - Allergies
  - Gender
  - Height
  - Weight
- Past Medical History
  - ICD-9 diagnosis codes
  - Problem list
  - Recent antibiotic ≤ 90 days
- Vital Signs/Lab Values
  - Blood pressure / heart rate
  - Complete blood count
  - Comprehensive metabolic panel
  - Microbiology culture results
  - Temperature

This study was funded by Community Regional Medical Center's Health System Improvement Grant. This manuscript has been peer-reviewed and approved for publication in a scientific journal. This work was presented at the American Society of Health-System Pharmacists Annual Meeting in 2014.

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.
Efficacy of a Pharmacist-Managed Epoetin Alfa Protocol for Anemia of Prematurity

Laurie Wright, PharmD, Tsung-Chi Lien, MS, PharmD, BCPS, and Harlan Husted, PharmD, BCPS

BACKGROUND

- Endogenous production of erythropoietin alfa occurs during the 19th week of fetal development and increases in the 3rd trimester.
- After birth, infants experience a decline in endogenous erythropoietin alfa, which typically manifests in a term infant as an asymptomatic hematocrit decline at 8–12 weeks postnatal age.
- Premature infants often have an exaggerated anemic response to a transition from low to high oxygen environment.
- Continuation of data collection and administration of the first dose of epoetin alfa.
- Gestational weight.
- The authors hope these study findings will help to identify the cost-savings associated with a pharmacist-managed protocol in the NICU and the protocol’s impact on safe and effective NICU medication use.

METHODOLOGY

- Study design
  - Retrospective chart review
  - Outcomes to be compared to a 2014 Cochrane Review meta-analysis evaluating the use of early epoetin alfa for AOP to identify statistically significant differences.
- Timeframe
  - Data for control: literature search performed in 2013, published data in 2014
- Inclusion criteria
  - Less than 37 weeks gestational age and/or less than 2500 grams at birth
  - Administration of first dose of epoetin alfa within 7 days of life
  - Sample group: received at least three doses of epoetin alfa within the timeframe of inclusion.
- Exclusion criteria
  - Family religious belief that inhibits the use of blood transfusions.

DATA COLLECTION

- Baseline characteristics
  - Gender
  - Gestational age
  - Gestational weight
  - Discharge status
- Intervention details
  - Postmenstrual age (PMA) and weight at initiation of epoetin alfa
  - PMA at termination of epoetin alfa
- Primary outcome
  - One or more transfusions of red blood cells
- Secondary outcomes
  - Number and volume of transfusions
  - Hemococoncentration levels during therapy
  - Incidence of retinopathy of prematurity
  - Concurrent disease states
  - Length of hospital stay and all-cause mortality

- Epoetin alfa therapy & iron supplementation
  - Total days of epoetin alfa therapy
  - Days of non-therapeutic epoetin alfa doses
  - Days with suboptimal iron supplementation

- Statistical analysis
  - Statistical analyses to be utilized:
    - Descriptive statistics
    - Fischer’s Exact test
    - Mann-Whitney U-test
    - Student’s T-test

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.

FUTURE DIRECTION

- Continuation of data collection
- Completion of statistical analysis
- Further dissemination of study information and results at upcoming pharmacy and pediatric conferences

DISCUSSION

- Efficacy of the pharmacist-managed epoetin alfa protocol and protocol compliance to be assessed upon completion of data collection and statistical analyses.
- The authors hope these study results will help to identify the cost-savings associated with a pharmacist-managed protocol in the NICU and the protocol’s impact on safe and effective NICU medication use.

OBJECTIVES

- Validate the efficacy and assess the cost-savings associated with the pharmacist-managed epoetin alfa protocol for AOP, in terms of prevention of red blood cell transfusions in premature infants.
- Assess degree of deviation from protocol dosing recommendations.

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.