Evaluation of Vancomycin Dosing and Corresponding Drug Concentrations in Neonatal Intensive Care Unit (NICU) Patients

Christine Lam PharmD
Lehigh Valley Health Network

Jenny Boucher BS, PharmD, JD, BCPS
Lehigh Valley Health Network, Jenny.Boucher@lvhn.org

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Purpose:
The primary objective of this study is to retrospectively review the relationship between vancomycin dosing strategy, age and attained vancomycin trough concentrations.

Background:
• Vancomycin is the drug of choice for empirical treatment of late-onset septicemia in preterm infants.
• Many barriers to develop an optimal dosing regimen in neonates - High interpatient and intrapatient variability in vancomycin pharmacokinetics.
• Expert consensus guidelines recommend for more aggressive dosing and higher trough concentrations of vancomycin for the treatment of methicillin-resistant Staphylococcus aureus (MRSA) infections.
• Guidelines do not include neonatal population.
• Lack of consensus for optimal dosing of vancomycin in preterm and full term neonates.

Study Design:
• Retrospective chart review
• Inclusion Criteria:
  – All neonatal patients [age 0 to 46 weeks post-menstrual age (PMA)]
  – Received intravenous (IV) treatment with vancomycin July 1, 2008 to June 30, 2013.
  – Had at least one trough concentration that was obtained 0-90 minutes before a dose at steady state.
• Exclusion Criteria:
  – Received IV treatment with vancomycin prior to June 30, 2008.
  – No trough concentration reported during treatment.
  – Age greater than 46 weeks PMA.
• The primary outcomes of the study:
  – Number of patients achieving a target trough concentration of 5-15 mcg/ml in each dosing group and age group.
  – Average vancomycin dose necessary to achieve the target trough in each age group.

Methods:
• Stratify patients into predetermined categories:
  – Vancomycin dosing and age range.
• Assess relationship between categories.
• Evaluate attainment of vancomycin concentrations within each category.
• Patient-specific information to be collected will include:
  – Age [PMA and Postnatal age (PNA)]
  – Weight
  – Vancomycin dose and frequency
  – Days of vancomycin therapy
  – Measured vancomycin trough concentrations.
  – Timing of vancomycin trough concentrations.
  – Location of infection and organism.
  – Documentation of organism eradication via cultures or clinical determination by the neonatologist.
  – Daily serum creatinine from drug initiation to discontinuation.
  – Presence of any co-administered nephrotoxic drugs.

Disclosure:
Authors of this presentation have the following 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:
• Christine Lam – nothing to disclose.
• Jenny Boucher – nothing to disclose.

References: