Retrospective Evaluation of Pharmacist Screened Vancomycin Levels and Its Impact on Quality and Cost

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Retrospective evaluation of pharmacist screened vancomycin levels and its impact on quality and cost

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LEHIGH VALLEY HEALTH NETWORK • ALLENTOWN AND BETHLEHEM, PENNSYLVANIA

PURPOSE

The objective of this study is to retrospectively evaluate the impact of pharmacist interventions on vancomycin serum concentrations.

BACKGROUND

Literature

- To monitor vancomycin efficacy, the 2009 Infectious Disease Society of America/ American Society of Health-System Pharmacists consensus review recommends obtaining serum trough concentrations, instead of both peak and trough concentrations.
  - It is recommended that trough serum concentrations should be obtained just prior to the fourth dose.[1]

Lehigh Valley Health Network (LVHN)

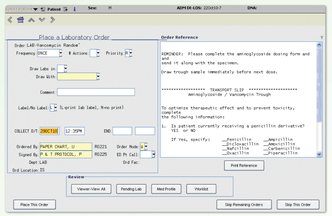
- Historically, providers at LVHN utilized physician order entry to order vancomycin serum concentrations.
- Lab orders did not require verification by a pharmacist.
- Beginning in February 2010, pharmacists timed orders for vancomycin serum concentrations.
- The provider may select from the following options:
  - Serum trough concentration prior to the fourth dose.
  - Serum trough concentration prior to the next dose.
  - Serum random concentration at a time designated by the provider.
- The intent of the new process was to create standardization throughout the health network.
- The total costs for vancomycin usage and vancomycin serum concentrations at LVHN in 2007 were $194,966 and $392,022, respectively.

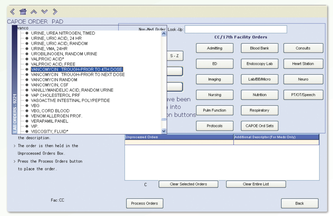
STUDY DESIGN

- A retrospective chart review of patients admitted to LVHN with a minimum of one serum vancomycin concentration obtained during the pre- or post intervention periods.
- The pre- and post intervention periods are defined as December 2009 to January 2010 and September 2010 to October 2010, respectively.

STUDY POPULATION

- **Inclusion criteria**
  - Inpatient adults greater than 18 years old.
  - Patients who had a minimum of one serum vancomycin concentration obtained from December 2009 to January 2010.
  - Patients who had a minimum of one serum vancomycin concentration obtained from September 2010 to October 2010.
- **Exclusion criteria**
  - Patients admitted to the transitional skilled unit, hospice, or the long term acute care facility.





METHODS

- **The primary outcome of the study is the number of appropriately ordered serum vancomycin concentrations.**
  - Appropriate serum concentrations will be compared pre- and post intervention by the type of concentrations requested and the time the concentrations were to be obtained.
  - An appropriate serum concentration, based on type, will be defined as an ordered trough or random concentration. All peak serum concentrations will be deemed inappropriate.[1-5]
  - An appropriately timed serum concentration will be defined as a trough concentration obtained within one hour of the fourth or next dose. All random concentrations will be considered appropriately timed.[2-5]
- **The secondary outcome is the number of appropriately obtained vancomycin serum concentrations prior to and after pharmacist intervention.**
  - A trough serum concentration will be considered appropriately obtained when it is acquired between the time it was ordered to be obtained and immediately before the next administered dose.
  - A random serum concentration will be considered appropriately obtained when it is acquired within one hour before or one hour after the time the concentration was to be obtained.
- Collected data will be in relation to the first serum vancomycin concentration obtained for each patient.
- Additional data to be collected:
  - Demographics (age, gender, weight, serum creatinine, estimated creatinine clearance).
  - The cost of total vancomycin usage and the cost to obtain all serum vancomycin concentrations prior to and after pharmacist intervention.

DISCLOSURE

Authors of this 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:
- Jennie Mathew: Nothing to disclose
- Jarrod Kile: Nothing to disclose

REFERENCES

1. Rybak M, Lomaestro B, Rotschafer JC, Moellering R Jr, Craig W, Billeter M, Dalovisio JR, Levine DP. Therapeutic monitoring of vancomycin in adult patients: A consensus review of the American Society of Health-System Pharmacists, the Infectious Diseases Society of America, and the Society of Infectious Diseases Pharmacists. Am J Health Syst Pharm. 2009 Jan 1;66(1):82-98.
2. Kanjwal MK and Lutfi SA. Accuracy of vancomycin trough levels: An experience at a large university based hospital. The Internet Journal of Family Practice. 2007;(5)2.
3. Vancomycin dosing and monitoring in adults. www.cumc.columbia.edu/dept/.../ Vancomycin_5-26-05.pdf. Accessed October 22, 2010.
4. Vancomycin adult dosing and monitoring. clinicalpharmacy.ucsf.edu/idmp/.../vanco_ dosing.htm. Accessed October 22, 2010.
5. James CW, Gurk-Turner C. Recommendations for monitoring serum vancomycin concentrations. Proc (Bayl Univ Med Cent). 2001 April; 14(2): 189–190.

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