

Analysis of Dispatch Times for Vancomycin Levels in HVI

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Problem Overview

In CVICU, approximately 40% of vancomycin levels are being collected inappropriately, and this rate has been increasing from April to December 2016. Approximately 9% of ordered levels are never collected.

Inappropriately drawn levels lead to inaccurate dosing and treatment decisions, which may result in undertreating infections, increased antimicrobial resistance, and increased risk of adverse effects.

Inappropriately collected is defined as being collected more than 60 minutes from the scheduled collection time, or more than 120 minutes for Early AM levels

Process

1. Provider places the order for the vancomycin level, specifying a priority (Routine, Stat, Timed Study) and a date/time for collection.¹
2. The Care4 system dispatches a task for nursing to collect the lab specimen.²
3. When the nurse reviews their task list or PAL, they will see the lab collection task.³
4. The nurse collects the lab specimen.
5. The nurse sends the specimen to the lab.

¹ This includes orders for both the Vancomycin Level and Vancomycin Level Trough labs.

² Nurses do not receive notification of the lab collection task until the task has been dispatched.

³ Nurses are expected to review the chart/Care4 for new orders every two hours.

Key Finding

Orders for vancomycin levels placed with a priority of Routine or Timed Study, there is a large variation in the amount of advanced notification a nurse has before the lab is due to be collected.⁴

⁴ Refer to Figure 1

Assessment

From this, it appears that Stat orders dispatch immediately, whereas Routine (which includes orders for Early AM) and Timed Study orders dispatch a variable amount of time prior to the scheduled collection time, with some tasks only dispatching 15 minutes prior to the scheduled collection time. This may present a challenge for nurses to draw time-sensitive labs in a timely manner if they do not receive enough notification to draw the lab.

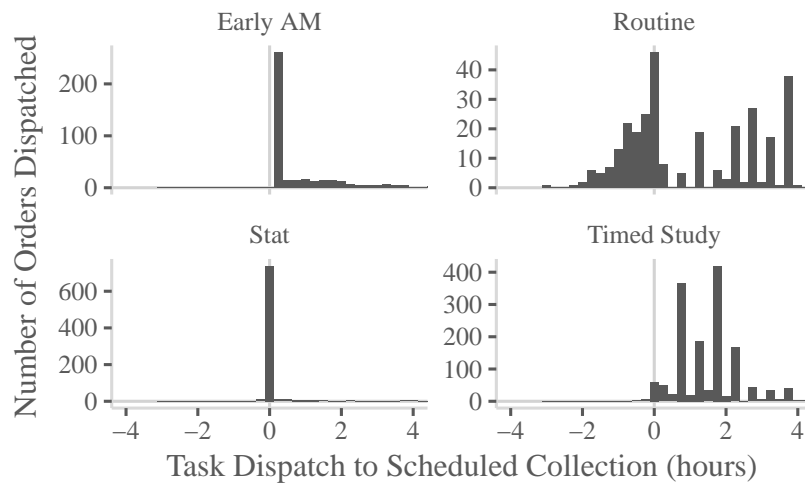


Figure 1: Distribution of time from task dispatch to scheduled collection by order priority. Most Timed Study orders are dispatching at either 45, 75, 105, or 135 minutes prior to the scheduled collection time, as indicated by the taller bars.

Back-Timed Orders

There are a small number of orders ($n = 44$) which were placed and then back-timed with an earlier collection time. The majority of these orders were placed by a Lab Med Tech (see Figure 2). Most of these orders were placed between 3 and 6 hours after the scheduled collection time (see Figure 3).

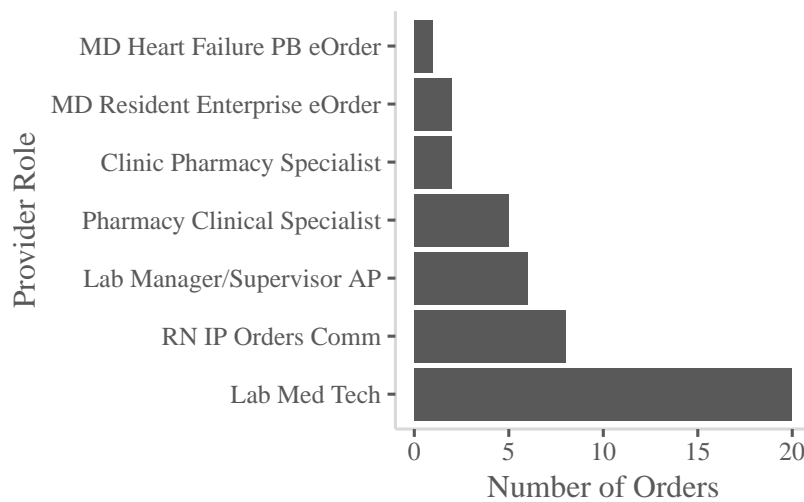


Figure 2: Provider role placing back-timed orders for vancomycin levels

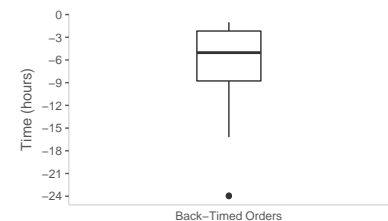


Figure 3: Distribution of the number of hours the order was back-timed