Leveraging EMR Alerts for Vancomycin Time Outs (1791)

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BACKGROUND

Vancomycin represented the most used antibiotic at our academic medical center from 2014-2022. To enhance compliance with the "antibiotic time out" part of the CDC Core Elements for Stewardship, we designed an electronic medical record (EMR) best practice alert (BPA) to assist providers in identifying patients eligible for vancomycin discontinuation.

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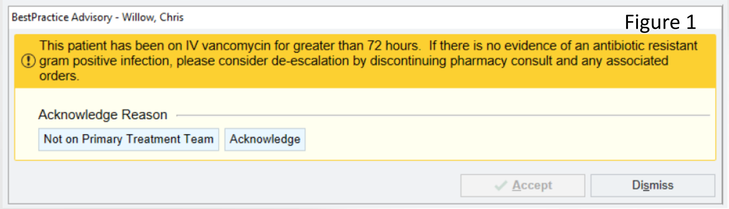
METHODS

This is a single center, retrospective pre (06/01/14-2/24/20) and post (02/25/20-03/31/22) comparison of vancomycin utilization after the introduction of a locally validated automated vancomycin time-out.

The BPA alerts on patients who had received vancomycin for at least 72 hours, had no microbiological evidence of methicillin resistant *S. aureus*, and had no infectious diseases consult. The alert displayed when providers entered the chart, indicating the absence of positive cultures, and suggesting discontinuation of vancomycin (Figure 1).

Figure 1



While other vancomycin reduction strategies had previously been implemented as part of the stewardship program, no other intervention debuted during the same time period. Vancomycin utilization was extracted from Epic™ and converted to days of therapy (DOT)/1000 patient days (PD) and length of therapy (LOT) defined as time from start to stop of therapy.

An interrupted time series analysis was performed to assess immediate and ongoing trend changes of institutional vancomycin use. Wilcoxon rank sum and Chi-squared analyses were also performed to compare DOT/1000 PD and LOT of vancomycin pre and post BPA implementation.

RESULTS

From June 2014 through March 2022, there were 36,817 inpatient vancomycin orders placed (24,898 in the pre-BPA period, and 11,919 in the post-BPA period).

The BPA triggered during 1,881 (15.7%) orders in the post-BPA period, which was 49.6% of the 3,794 orders still active at 72h.

After BPA introduction, there was an immediate decrease in vancomycin DOT/1000 PD ± SE (-8.5±3.6; p= 0.021) followed by a significant decrease in the monthly trend relative to the pre-intervention trend (-0.7 DOT/1000 PD ±0.2; p< 0.001) (Figure 2).

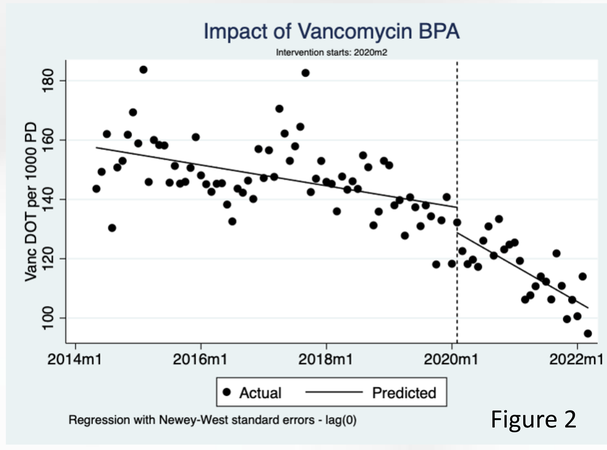


Figure 2

Median vancomycin DOT/1000 PD decreased from 145.9 (IQR 140.2-153.0) to 117.3 (IQR 107.7-122.6) in pre and post periods respectively (p< 0.001). LOT decreased, orders were more commonly discontinued by day 5, and orders were more likely to be discontinued prior to discharge (Table 1). Separate analysis including only orders with >72h showed similar results.

Table 1	Pre-BPA Orders (N= 24,898)	Post-BPA Orders (N=11,919)	P-value
Vancomycin LOT, median, d (IQR)	2.6 (1.1-4.7)	1.9 (0.9-3.7)	<0.001
Vancomycin LOT, n(%)			<0.001
< 3 days	14,351 (57.6)	8,125 (68.2)	
3-5 days	5,033 (20.2)	1,947 (16.3)	
>5 days	5,512 (22.2)	1,846 (15.5)	
Vancomycin discontinued prior to discharge, n (%)	18,249 (73.3)	9,485 (79.6)	<0.001

CONCLUSIONS

Introduction of an EMR automated vancomycin time out was an effective tool to decrease vancomycin utilization at an academic medical center. This helps comply with the Core Elements of stewardship, allowing for a prescriber driven antibiotic time out. This allows for a decrease in vancomycin utilization, with minimal daily manpower from stewardship practitioners.

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