

Limited effectiveness of an EMR alert-based antibiotic time-out procedure in solid tumor cancer patients.

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Purpose

Computer-based antibiotic time-outs, in which inpatient providers receive automated electronic medical record (EMR) alerts regarding continuation of antibiotics (Anb), are common stewardship initiatives. We assessed the efficacy of such an intervention in oncology patients (pts), who frequently receive Anb when hospitalized.

Methods

An EMR alert triggered 48 hours after starting vancomycin (vanc), cefepime (cef), piperacillin-tazobactam (pip-tazo), meropenem (mero), and fluoroquinolones (flq) was initiated in a tertiary care hospital November 2018. We compared length of therapy [LOT; days of therapy per 1000 patient-days (DOT/1000 pd)], via t-test and incidence rate ratio (IRR) for 3- and 12-month periods preceding and following the intervention in adult (≥ 18 years) solid tumor malignancy pts admitted through the ED.

Results

The groups did not differ by age, sex, length of stay, or rate of bacteremia.

Comparing the 3 months pre- and post- intervention, neither mean LOT (2.9 ± 0.20 vs 2.6 ± 0.14 DOT/1000 pd, $p=0.31$) nor rate of Anb use changed (IRR 0.97, $p=0.32$). When only considering Anb targeted by the intervention, mean LOT was unchanged (Fig. 1). However, cef usage was 1.4 times higher post-intervention ($p=0.002$), while unchanged for other Anb (Table 1).

Figure 1

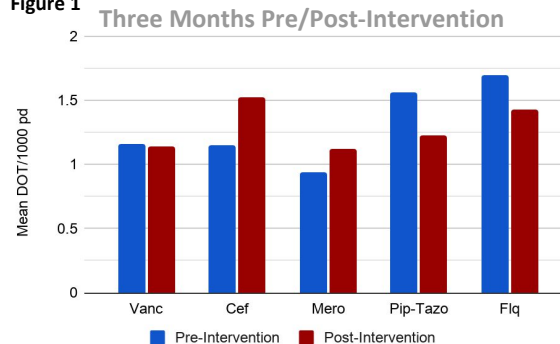


Table 1	Three Months from Intervention	
	IRR	P-value
Vancomycin	1.1	0.27
Cefepime	1.4	0.002
Meropenem	1.3	0.16
Piperacillin-Tazobactam	0.9	0.16
Fluoroquinolones	0.9	0.28
Combined	1.1	0.36

Expanding the time frame to 12 months, mean LOT was longer after (0.74 ± 0.018) than before (0.68 ± 0.020 DOT/1000 pd; $p=0.03$), and Anb use increased (IRR 1.4, $p<0.0001$). Specifically, mero (IRR 1.8, $p<0.0001$) and cef (1.6, $p<0.0001$) were used more frequently after the intervention while none were used less (Table 2). Mean LOT increased for cef (0.26 ± 0.031 vs 0.38 ± 0.017 , $p=0.001$) and mero (0.21 ± 0.058 vs 0.25 ± 0.031 DOT/1000 pd, $p=0.04$; Fig 2).

Conclusions

An EMR-based Anb time-out did not mitigate continuation of Anb among inpatients with solid tumors. A thorough investigation of what factors motivate excessive use of Anb in this population and additional interventions, such as active involvement of the inpatient pharmacy and infection control to limit Anb use, are therefore warranted.

Figure 2

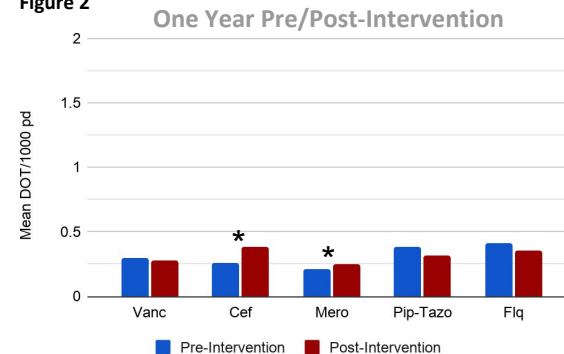


Table 2	One Year from Intervention	
	IRR	P-value
Vancomycin	1.0	0.20
Cefepime	1.6	<0.0001
Meropenem	1.8	<0.0001
Piperacillin-Tazobactam	0.9	0.16
Fluoroquinolones	1.0	0.22
Combined	1.4	<0.0001