

Impact of Various Stewardship Strategies Applied to a Single Antibiotic Over Time

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BACKGROUND

The Problem

Recommended strategies for antimicrobial stewardship (AMS) include prospective audit with feedback (PAF) and prior authorization (PA). Depending on hospital culture, initiation of PA can be difficult. The impact of various single AMS strategies on antibiotic consumption have been described, though the impact of several strategies over time have not been reported.

The Hospital

University of Arkansas for Medical Sciences (UAMS):

- 509 bed academic medical center (AMC) – only AMC in the state of AR
- In 2017, over 60,000 ED visits, and over 28,000 patient discharges
- Performs solid organ and bone marrow transplants
- Only level 1 trauma center in the state

The UAMS Antimicrobial Stewardship Program (ASP) originated in 2012, and has a full time pharmacist with 0.5 FTE infectious disease physician support. Initially, antimicrobial surveillance was performed via PAF with progressive restriction over time for select antimicrobials. Daptomycin transitioned to automatic stop dates and eventually PA. This is a description of how transitioning strategies from PAF to PA impacted daptomycin consumption.

METHODS

A progression of various AMS strategies for daptomycin, with increasing restrictiveness were implemented over a 6 year period at UAMS:

Period 1 (P1)

- 9/2012-6/2013
- PAF

Period 2 (P2)

- 7/2013-1/2016
- 8-d automatic stop

Period 3 (P3)

- 2/2016-12/2017
- 3-d automatic stop

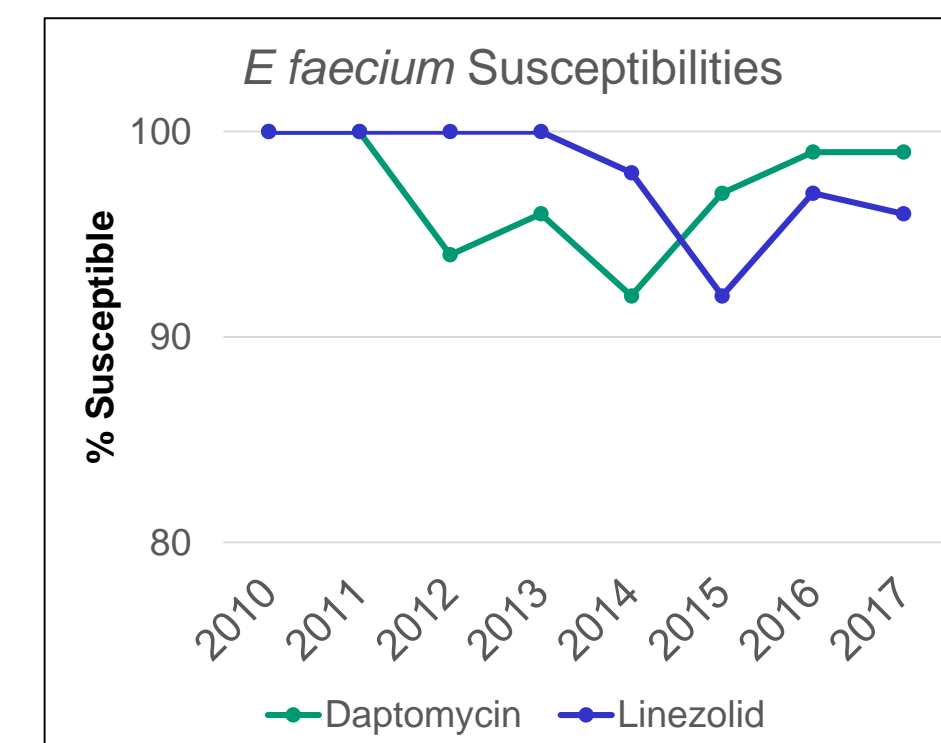
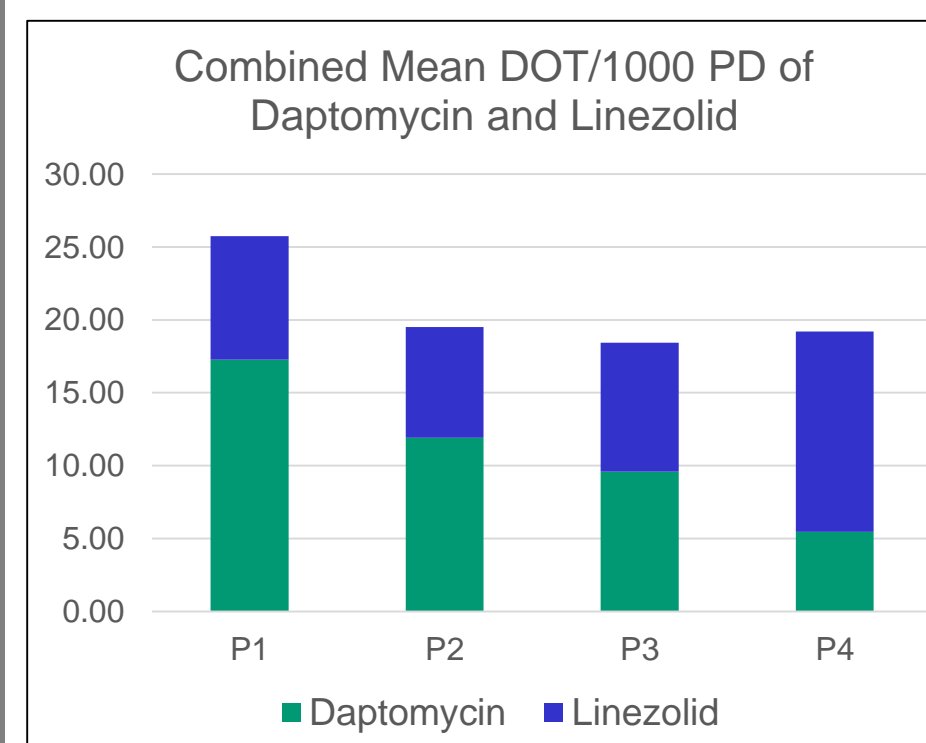
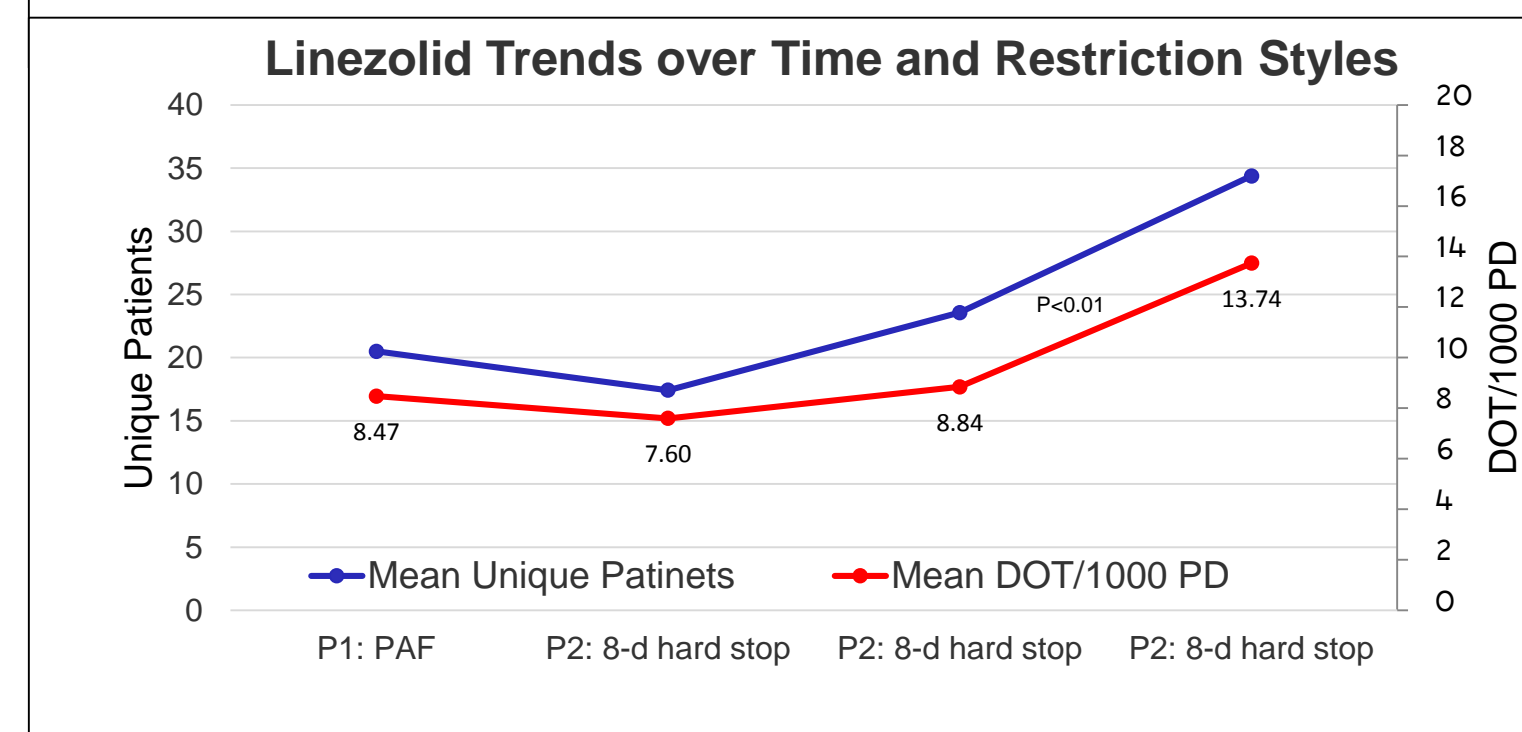
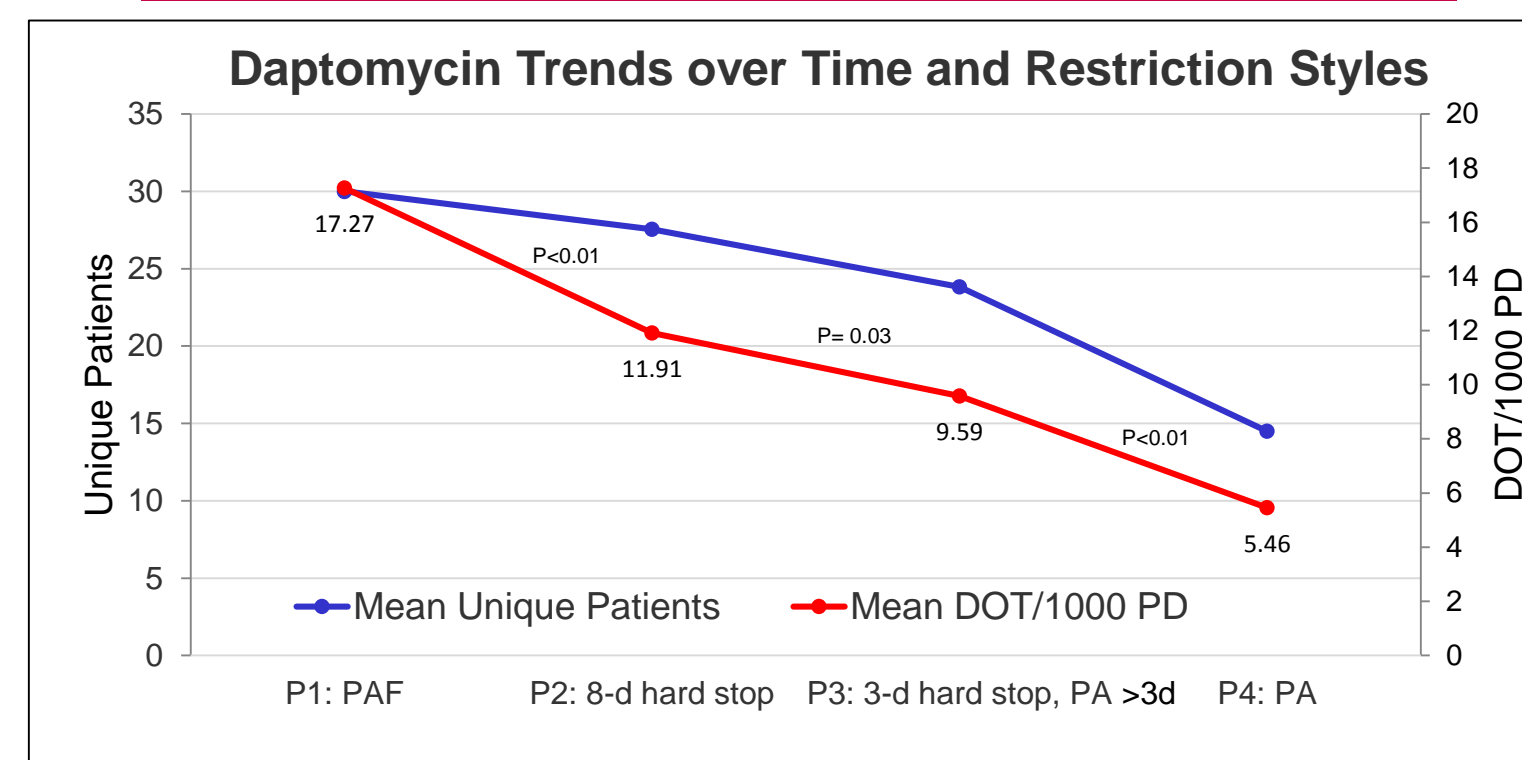
Period 4 (P4)

- 1/2018-8/2018
- PA

Each strategy was supported by a policy change, that was approved by Pharmacy and Therapeutics Committee, and then Hospital Medical Board. PAF was performed daily M-F, by the pharmacist, with physician support and intervention when needed. Automatic stop dates were reviewed to ensure medications did not stop prematurely. During P4, ordering providers have to call the restricted line (carried by ID PharmD or ID MD) for authorization to use daptomycin, around the clock. In comparison, linezolid continued as an 8-day automatic stop date.

The most common indication for daptomycin was VRE or suspicion of VRE. Days of therapy (DOT) were extracted from TheraDoc™ for inpatient and observation units that had corresponding patient day (PD) data available during the time period. Emergency Department and outpatient administrations were excluded from this analysis. Mean DOT/1000 PD for each restriction period were compared using a student t-test. Antibiotic susceptibility data were taken from the yearly antibiogram.

RESULTS



For these antibiotics, distribution of utilization shifted over time, however there was a decrease in overall use.

E. faecium daptomycin susceptibility reverted to near 100%. Linezolid (97%) and vancomycin (20%) remained stable.

CONCLUSION

This single center descriptive analysis of AMS restriction strategies reveals progressive decrease in daptomycin use with stepwise implementation. This decrease was most profound with transition to PA. ASPs unable to initially implement highly restrictive policies can consider using a stepwise approach to ease practitioners into the new model with a meaningful impact on antimicrobial utilization.