Preauthorization vs. Prospective Audit and Feedback: Impacts on Antibiotic Use in a Surgical Intensive Care Unit During a Period of Healthcare Disruption

Ki Dae Eom[1], Eliel Nham[2], Yunmi Jang[1], Yu Jung Choi[2], Jin Gu Yoon[2], Min Joo Choi[2], Ji Yun Noh[2], Joon Young Song[2], and Hee Jin Cheong*[2]

[1] Department of Pharmacy, Korea University Guro Hospital, Seoul, Korea
[2] Division of Infectious Diseases, Department of Internal Medicine, Korea University College of Medicine, Seoul, Korea

Background

- Preauthorization (PA) of restricted antibiotics frequently serves as the sole antimicrobial stewardship programs (ASP) modality implemented in the vast majority of Korean hospitals that lack comprehensive ASP. This was also true for our institution, before the launching of the ASP pilot project by the Ministry of Health and Welfare.
- During a 2024 nationwide junior doctor shortage in Korea, **PA was temporarily suspended**, with the length of suspension differing for each class.
- To maintain minimum oversight, **we implemented twice-weekly prospective audit and feedback (PAF) in a surgical intensive care unit (SICU).**
- This study analyzed the impact of PA suspension, reinstatement, and PAF on days of therapy (DOT) for meropenem (MEM), piperacillin/tazobactam (TZP), and intravenous vancomycin (VAN).

Methods

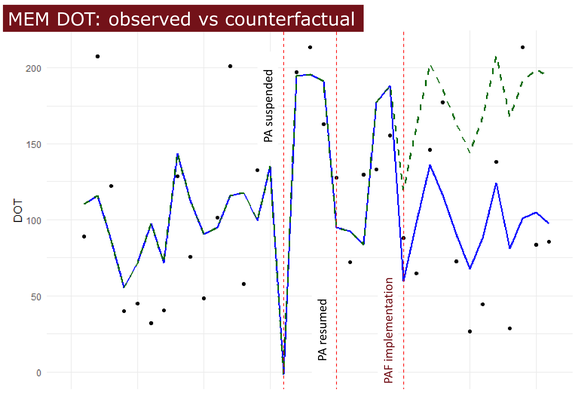
The date of mass resignation

- PA was suspended in Feb 20, 2024, and PAF was implemented in Nov 15, 2024 and ended in Oct 2, 2025. We used interrupted time series modeling to analyze monthly DOT (**Nov 2022-Oct 2025**), adjusting for patient severity markers (e.g., ventilator/renal replacement therapy use).
- For MEM, multidrug-resistant Acinetobacter baumannii (MRAB) incidence density was also included as confounder, given that MEM is a component of combination therapy for MRAB in our institution.
- Counterfactual scenarios assuming no PAF were plotted. Additional counterfactual models were built to further differentiate the effects of PAF from reinstated PA for TZP and VAN, for which PA was resumed after the initiation of PAF.
- Daily defined dose (DDD) of proton pump inhibitors (PPIs) served as an internal control.

Results & Conclusion

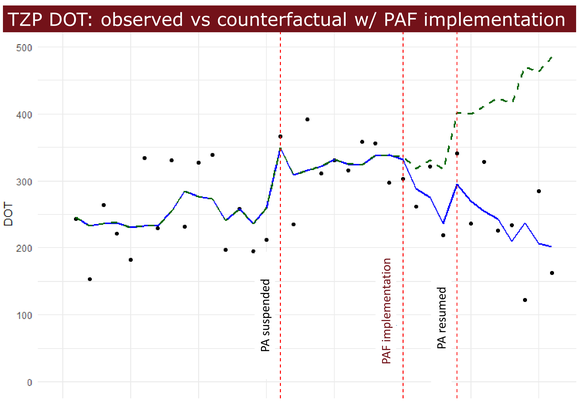
- Compared to the pre-implementation cohort, the post-PAF cohort exhibited a higher proportion of male patients and a significantly higher rate of CRRT utilization, whereas the mean length of stay in the intensive care unit was significantly shorter by 0.5 days (Table).
- Following suspension of PA in February 2024, DOT for all agents rose sharply.
- For **MEM**, DOT returned near pre-suspension levels immediately after restrictions were reinstated in June 2024, though it showed only a transient decline during PAF before rising again.
- **TZP** DOT trended downward after PAF began; however, counterfactual analysis revealed this was largely driven by the PA reinstatement in March 2025 rather than PAF itself.
- **VAN** DOT showed a modest reduction during PAF but failed to return to baseline levels even after PA reinstatement. In contrast to TZP, counterfactual projections indicated that VAN consumption would have remained similar following PAF implementation had PA not been reinstated.
- **While twice-weekly PAF in the SICU provided modest DOT reductions during healthcare disruption, PA may exert a more dominant influence on selected broad-spectrum antibiotic consumption.**

MEM DOT: observed vs counterfactual

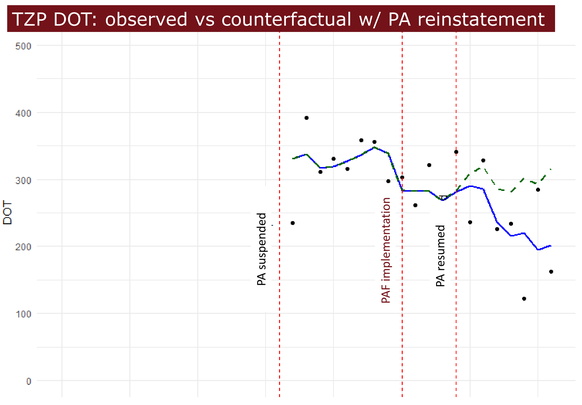


	Before PAF	After PAF	p-value
No. of patients	1,912	1,097	NA
Patient-days, total	7,711	3,827	NA
Age, mean	64.4	64.9	0.294
Male sex	58.9%	64.7%	0.008
Length of stay, mean	4.0	3.5	0.035
In-hospital mortality	6.7%	8.3%	0.174
CRRT utilization ratio	2.4%	4.3%	0.018
Ventilator utilization ratio	13.4%	15.3%	0.226
DDD of PPIs	91.8	92.5	0.968

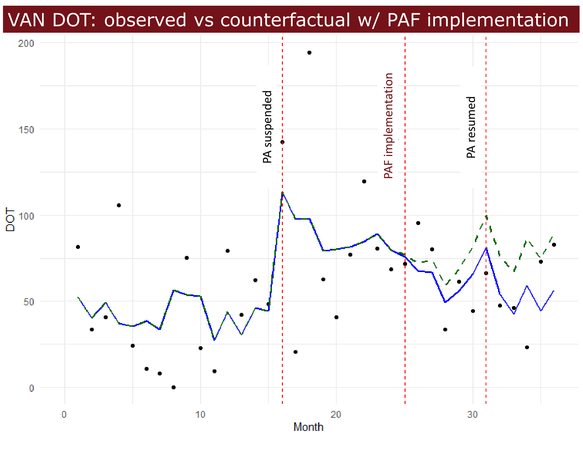
TZP DOT: observed vs counterfactual w/ PAF implementation



TZP DOT: observed vs counterfactual w/ PA reinstatement



VAN DOT: observed vs counterfactual w/ PAF implementation



VAN DOT: observed vs counterfactual w/ PA reinstatement