00223 Economic Burden of Adverse Drug Reactions and Potential for Pharmacogenomic Testing in Singaporean Adults

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Aims: Adverse drug reactions (ADRs) contribute to hospitalization but data on its economic burden is scant. Pre-emptive pharmacogenetic (PGx) testing can potentially reduce ADRs and its associated costs. The objectives of this study were to quantify the economic burden of ADRs and to estimate the breakeven cost of pre-emptive PGx testing in Singapore.

Methodology: We collected itemized costs for 1000 random non-elective hospitalizations of adults admitted to a tertiary-care general hospital in Singapore. The presence of ADRs at admission and their clinical characteristics were reported previously. The economic burden of ADRs was assessed from 2 perspectives: 1) Total cost (sum of costs of hospitalizations caused by ADRs) and 2) incremental costs, determined by comparison of propensity score-matched control for patients with admissions caused by ADRs and with but not caused by ADRs. The breakeven cost of PGx testing was estimated by dividing avoidable hospitalization costs for ADRs due to selected drugs by the number of patients taking those drugs.

Result: The total cost of 81 admissions caused by ADRs was US$570,404. Costs were significantly higher for bleeding/elevated international normalized ratio (US$9,906 vs. US$2,251, p = 6.58 x 10-3) compared to other ADRs, and for drugs acting on the blood coagulation system (US$9,884 vs. US$2,229, p = 4.41 x 10-3) compared to other drug classes. There were higher incremental laboratory costs due to ADRs causing or being present at admission. The estimated breakeven cost of a pre-emptive PGx test for patients taking warfarin, clopidogrel, chemotherapeutic and neuropsychiatric drugs was US$114 per patient.

Conclusion: ADRs incur higher hospitalization costs and pharmacogenomics has the potential to alleviate some of these costs by informing actions to avoid these ADRs.