

Pharmacoeconomic Analysis and Probability: an attempt to estimate the probability of clinical events specifically in Japan

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Abstract

Objectives: We aimed at estimating the probabilities of clinical events that specifically reflect the Japanese domestic clinical situation by integrating pharmacoepidemiological methods. These probabilities could ultimately be used in pharmacoeconomic analysis using principles of clinical decision analysis.

Design and Methods: We based our analysis on the use of H₂-receptor antagonists for the treatment of upper gastrointestinal hemorrhage. Literature searches were conducted in order to obtain relevant information for our study. Three domestic randomized controlled trials (RCTs) were identified as containing appropriate evidence for the analysis. The results (hemostatic rate associated with cimetidine's treatment after hemorrhage) from the different RCTs were consolidated, and the constant hazard hemostatic (CHH) rate for cimetidine was calculated using the general variance-based model. Furthermore, relative risks (RRs) and risk differences (RDs) for other H₂-receptor antagonists (roxatidine, famotidine and ranitidine) in relation to cimetidine were calculated. Finally, clinical efficacy rates for roxatidine, famotidine and ranitidine were estimated by either multiplying RR in each drug group with CHH or subtracting RD in each drug group from CHH.

Results: Hemostatic rates for roxatidine, famotidine and ranitidine at 36 hrs after initiation of treatment ranged from 0.436 to 0.658 when RRs were used and from 0.436 to 0.624 when RDs were used, indicating that there were no large differences between the drug groups.

Conclusion: The calculation techniques used in this study may be useful for estimation of the probability of a clinical outcome associated with a medical intervention. Such probability values can be employed in pharmacoeconomic analyses using principles of decision analysis.

Keywords: pharmacoeconomics, decision analysis, probability, meta-analysis