Identification and weighting of the most critical "real-life" drug-drug interactions with acenocoumarol in a tertiary care hospital

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Purpose: The objective of this study was to identify the most clinically relevant drug-drug interactions (DDIs) at risk of affecting acenocoumarol safety in our tertiary care university hospital, a 2,000 bed institution.

Methods: We identified DDIs occurring with acenocoumarol by combining two different sources of information: a 1-year retrospective analysis of acenocoumarol prescriptions and comedications from our Computerized Physician Order Entry (CPOE) system (n = 2,439 hospitalizations) and a retrospective study of clinical pharmacology consultations involving acenocoumarol over the past 14 years (1994-2007) (n = 407). We classified these DDIs using an original risk-analysis method. A criticality index was calculated for each associated drug by multiplying three scores based on mechanism of interaction, involvement in a supratherapeutic international normalized ratio (INR) (≥ 6) and involvement in a severe bleeding.

Results: One hundred and twenty-six DDIs were identified and weighted. Twenty-eight drugs had a criticality index ≥ 20 and were therefore considered at high risk for interacting with acenocoumarol by increasing its effect: 75% of these drugs involved a pharmacokinetic mechanism and 14 % a pharmacodynamic mechanism. An unknown mechanism of interaction was involved in 11 % of drugs.

Conclusion: Twenty-eight specific drugs were identified as being at high risk for interacting with acenocoumarol in our hospital using an original risk-analysis method. Most analyzed drugs interact with acenocoumarol via a pharmacokinetic mechanism. Actions such as the implementation of alerts in our CPOE system should be specifically developed for these drugs.

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