Evaluation of a predictive model for suspected drug-drug interactions in routine signal detection

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Background

Reports in VigiBase, the WHO global database of individual case safety reports, often concern multi-drug users at risk of drug-drug interactions, and should be valuable for finding interaction signals. A dedicated signal detection algorithm, vigiRank for Interactions1, has been developed at Uppsala Monitoring Centre.

Aim

To apply and evaluate vigiRank for Interactions in routine signal detection.

Methods

Statistical screening and filtering

Drug-drug-ADR combinations were retrieved from VigiBase after removal of suspected duplicate reports identified by vigiMatch2. Five exclusion criteria were applied.

Exclusion criteria

- Reports in two years
- Combinations classified as potential signals according to the UMC expert review panel
- No new reports in two years
- No new reports in 5 years
- Labelling status of drug-drug interactions was controlled in relevant sources3,4. Stockley's Drug Interactions and5 were integrated in the interface to automatically exclude known interactions.

Manual assessment

A Microsoft Access interface was developed to facilitate assessment of combinations, and provide fields for documentation.

Results

Seventy-five of 668 assessed drug-drug-ADR combinations were selected for further review, representing eight potential signals, where some included several similar combinations. Another eight combinations were decided to be kept under review, and 585 were dismissed. Of the latter, 246 were non-suggestive of an interaction where some included several similar combinations. Another eight combinations were assigned vigiRank scores between 0 and 1.00, where higher values indicate higher likelihood for an interaction signal.

Conclusions

Signals of drug-drug interactions can be identified in VigiBase using a predictive algorithm to direct clinical review. There were no newly marketed drugs among the detected potential signals. Examples of obstacles were lack of sufficient information on many reports, and remaining duplicates. Effectiveness of exclusion criteria will be further evaluated in future UMC signal screenings.

References