Subset disproportionality analysis within a global database to uncover adverse drug reactions in risk groups

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Methods

Dataset: 15.4 million reports retrieved on 28 August 2017 from VigiBase, the WHO global database of individual case safety reports

Subset disproportionality analysis

Disproportionality analyses performed for drug-adverse event (AE) pairs in (1) the entire database and (2) across a range of data subsets. Drug-AE pairs disproportionally overrepresented in such subsets but not in the whole data, and with the observed-to-expected ratio in the subset at least twice that in the whole data, were identified.

Prioritization

Identified drug-AE-subset associations ordered by (1) upfrank (2) for strength of evidence, and (2) weighted random sampling for subset balancing.

Initial review

Manual review of sup-ordered drug-AE-subset associations including review of the reports and consultation of literature in search for support for possible risk group.

In-depth review

In-depth review of potential signals performed by clinical experts.

Results

Out of 386 manually reviewed drug-AE-subset associations, 18 (4.6%) were classified as potential signals. The highest yield was identified in females (5), underweight adults (3), and the elderly (3).

In-depth review

As of August 2018, in-depth clinical reviews have been completed for 14 out of 18 potential signals, resulting in seven signals describing potential risk groups for ADRs.

Conclusions

Signals of suspected adverse drug reactions in risk groups can be identified through subset disproportionality analyses within a global database. Further development of such methods could usher in a new era of “precision pharmacovigilance”.

References

1 Hopstadius J, Norén GN. Robust discovery of local patterns: Subsets and disproportionality analysis within a global database. Further development of such methods could usher in a new era of “precision pharmacovigilance”.

Disclosure

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