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Linkage of Primary Care Prescribing Records and Pharmacy Dispensing Records in Asthma Controller Medications

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Background

In the UK, issued prescriptions are typically taken to pharmacies, where medications are prepared, recorded, and dispensed. Data Linkage between prescribing and pharmacy dispensing records is not routinely conducted at the individual prescription level for clinical care in England and Wales, however it can be particularly useful for the study of pharmacoepidemiology. With no unique prescribing event identifiers between records, an algorithmic approach is required for this linkage.

Aims

To create a linkage system for primary care prescribed asthma controller medications and pharmacy dispensing records.

Methods

Free text labels were used to populate fields for data linkage, relating to medication strength, medication type (active ingredients; allows matching of generic substitutions to named brands), doses per medication unit, prescribed units, and prescribed doses. Prescribing and dispensing records were merged using an inner (many to many) join; generating a candidate link for every combination of records matching on unique patient identifier and medicine. A recursive algorithm was developed and applied, working backwards chronologically through dispensing records and finding the most appropriate match based on the time since prescribing and agreement between the medication description fields. Unmatched records were assessed for quality assurance, and the distribution of linkage strength for matches was examined.

Results

We developed a harmonisation algorithm in a dataset of over 3 million asthma controller medication prescription records, for

which almost 3 in 4 were coded according to the number of units (predominantly inhalers). Incorporating the estimated number of doses prescribed/dispensed into our wider matching algorithm, we were able to find unique prescription records for almost 95% of our dispensing records.

Conclusions

Early findings demonstrate the accuracy of the developed algorithm linking prescribing and dispensing records. This algorithm can easily be generalised to other conditions.

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