Assessment Tool for Hospital Admissions Related to Medications (AT-HARM10) -development and validation

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Introduction:

MedBridge, a study with the aim to evaluate the effects of medication reviews, performed by hospital based clinical pharmacists on elderly patients' health-care consumption, started in February 2017. One outcome measure will be the prevalence of drug-related (re)admissions (DRAs) to hospital. (www.akademiska.se/medbridge) The process of identifying DRAs is inevitably subjective and often time-consuming. Therefore, quick, reliable and standardized methods are warranted.

Aim:

The aim of this study was to develop and validate a practical/feasible tool to identify possible DRA's.

Methods:

The study was undertaken in three steps;

(i) Survey of the field to identify existing tools that met with the predefined requirements
(ii) The development of a tool including tests of content validity (CV) and feasibility resulting in iterative changes
(iii) Assessment of the final product's criterion-related validity (CRV) and inter-rater reliability (IRR).

A tool consisting of Yes/no questions was developed based on existing methods in literature used to identify DRAs. IRR and CRV was determined using four couples, consisting of clinical pharmacists and advanced pharmacy students, separately applying the tool to 50 + 50 hospital admissions. The same admissions had previously undergone assessments by two experienced clinicians/experts, making up the "Gold Standard". The results were analyzed statistically using Cohen's kappa and Fleiss kappa for IRR, and sensitivity and specificity for CRV.

AT-HARM10

U1. Was the admission caused by an infection or a previously undiagnosed disease (e.g. diabetes or heart failure) that was not medication-related?

U2. Was the admission caused by a progression of a previously diagnosed disease that was not medication-related?

U3. Was the admission caused by a physical trauma, substance intoxication, social circumstances or allergies that was not medication-related?

P4. Is it hinted or stated in the medical record that the admission is medication-related?

P5. Could side effects of the drugs the patient was taking (prescribed or not prescribed) prior to the hospitalisation have caused the admission?

P6. Are there abnormal laboratory results or vital signs that could be medication-related and could have caused the admission?

P7. Was there any medication-medication interaction or medication-disease interaction (i.e. a contraindication) that could have caused the admission?

P8. Did the patient have any, previously diagnosed, untreated or sub-optimally treated indications that could have caused the admission?

P9. Was the patient admitted due to a problem with the dosage form or drug formulation? (i.e. failure to receive drug)

P10. Is the cause of the admission a response to cessation or withdrawal of drug-therapy?

Results:

The final tool, AT-HARM10, consisted of ten yes/no questions to identify unlikely and possibly medication-related admissions. The tool showed sufficient CV and feasibility and had a moderate to substantial IRR with Cohen's kappa values ranging between 0.45 - 0.75 and Fleiss kappa values of 0.46 and 0.58.

For the CRV, the sensitivity and specificity ranged between 68 - 82 % and 64 - 89 % respectively. Both the gold standard and the AT-HARM10 assessors identified approximately 50% of the admissions as DRAs.

Conclusion:

The validity and reliability of AT-HARM10 was found to be satisfactory. Advanced pharmacy students showed sufficient competence to use the tool when provided with adequate instructions and training.