PIM-Check used by physicians to reduce drug-related problems in internal medicine

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Background

Drug related problems (DRPs) are associated with:
- adverse drug events,
- increased length of stay
- Increased hospital costs

Potentially inappropriate medication (PIM) includes over-prescription, under-prescription or mis-prescription and is a risk factor for DRPs.

PIM-Check has recently been developed to detect PIM in internal medicine patients.

Objective

To determine if PIM-Check electronic application, used by physicians, can decrease DRPs in internal medicine patients.

Method

- Open label prospective study (2 consecutive periods of 1 month)
- Patients admitted for > 48h in 7 internal medicine wards
- Period 1: patients treated with usual care (control group).
- Period 2: patients treated with usual care and a medication review performed by chief residents within 24h after admission using PIM-Check electronic application (intervention group).
- At 48h, collection of: all medications, lab results, comorbidities and active diagnosis.
- Endpoints: DRPs identified by a “gold standard” group (1 clinical pharmacist, 1 clinical pharmacologist, 2 attending-physicians of internal medicine), analysing all patients-dataset (blinded to period group).

Results

Patients characteristics

- 297 patients: 188 in control group and 109 in intervention group
- Demographic characteristics are similar in control and intervention groups (age, sex, comorbidities, alcohol/tobacco consumption and number of drug prescribed).

Number of DRPs

- Entire population: 909 DRP were detected (mean of 3.1 ± 2.2 DRP/patients)
- Mean DRP and subtype are distributed similarly in both group (p-value 0.12)

Top 5 DRP subtypes identified in both groups

- Untreated indication / Non-compliance to guidelines
- Drug used without indication - duplicate therapy
- Interactions
- Adverse drug reaction
- Un-adjusted dosage to physiological state

Top 5 medications involved in DRPs

- esomeprazole
- paracetamol
- nicotine replacement therapy
- aspirine
- thiamine

In Intervention group: DRP detection by PIM-Check

- Mean number of statements provided: 13.9 ± 7 per patients
- 33.4 % of DRPs identified by the gold standard group were highlighted by PIM-Check
- However no treatment modification was performed by prescribers

Conclusion

- PIM-Check allowed identifying 1/3 of DRPs approved by a gold standard group
- Lack of impact on DRP can be explained by:
  - The high number of statements displayed by the electronic application
  - The reluctance of hospital physicians to modify treatment plan established by the general practitioner for chronic medical conditions, especially in the first 48h of the hospitalisation.

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