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).
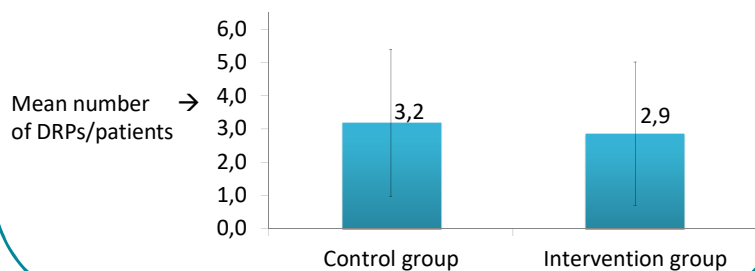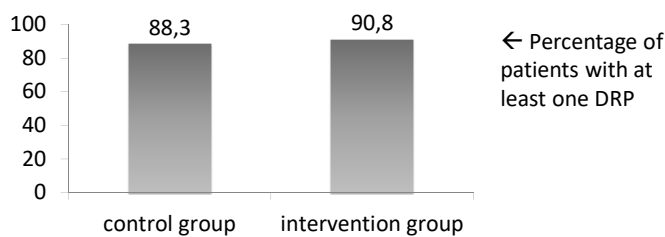
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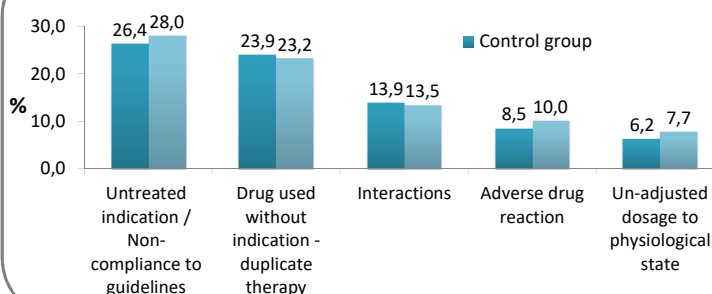
Patients characteristics

➢ **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).
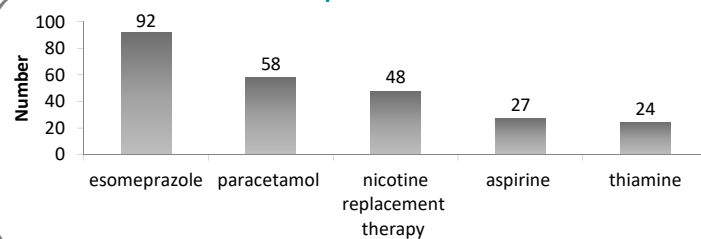
Number of DRPs

➢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)

← Percentage of patients with at least one DRP

control group 88,3
intervention group 90,8

Mean number of DRPs/patients →

Control group 3,2
Intervention group 2,9

Top 5 DRP subtypes identified in both groups

■ Control group

Untreated indication / Non-compliance to guidelines 26,4 / 28,0
Drug used without indication - duplicate therapy 23,9 / 23,2
Interactions 13,9 / 13,5
Adverse drug reaction 8,5 / 10,0
Un-adjusted dosage to physiological state 6,2 / 7,7

Top 5 medications involved in DRPs

esomeprazole 92
paracetamol 58
nicotine replacement therapy 48
aspirine 27
thiamine 24

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.