Impact of Hospital Clinical Decision Support Systems on medication errors, adverse drug events or other patient outcomes. A scoping review

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Background

Hospitalized patients are highly vulnerable to **medication errors** (MEs) and **adverse drug events** (ADEs).

Clinical Decision Support Systems (CDSS) integrated into electronic prescribing (EP) may reduce preventable harm and improve patient safety.

Aim

To **map** and **summarise** the available **evidence** on the **impact** of CDSS embedded within EP on MEs, ADEs, and other patient-related outcomes in hospital settings.

Material and Methods

Scoping review (PRISMA-ScR guidelines)

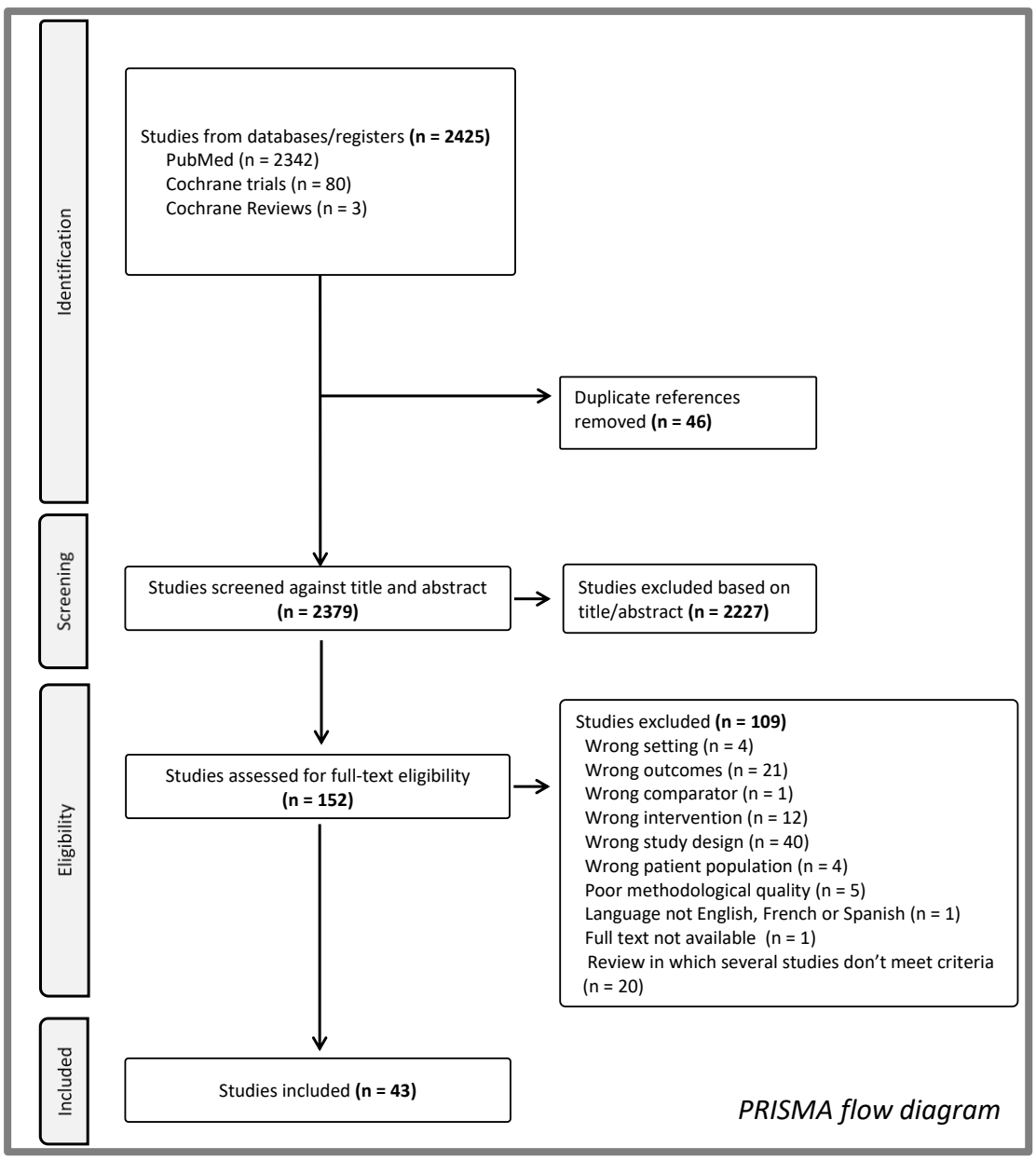
Databases: PubMed (Medline), Cochrane Trials, Cochrane Reviews. Search until March 2024

Study selection based on **PICO framework**

Quality assessment: **Joanna Briggs Institute tools**

Results

2,425 records identified → **43 studies included** grouped into seven clinical categories (PRISMA flow diagram).



PRISMA flow diagram

Outcome Category	Studies Evaluated	Main Findings
Medication Errors	40	**100%** showed significant reduction • Improved **anti-infective** prescribing • ↓ Potentially inappropriate medication in **elderly** • ≥50% reduction in **pediatric** dosing errors • Improved **high-alert drug** monitoring
Adverse Drug Events	12	**58%** showed significant reduction (7/12) • Strongest impact in **antimicrobials and pediatrics**
Other patient outcomes	19	Mixed or non-significant impact on LOS, mortality and readmissions

Conclusions

- CDSS consistently **reduce MEs(100%)** and have relevant impact on reducing ADEs
- Strongest benefit in **anti-infectives** and **vulnerable populations**
- Clinical outcome benefits remain uncertain
- Further high-quality randomized controlled trials are needed

References