

Clinical Decision Support Systems in Nursing Homes: A Scoping Review

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Background

- Population ageing with high prevalence of disability
- Increasing number of aged people living in nursing homes (NHs)
- Adverse preventable events in nursing homes explained by reduced staff and resources, and nurses' lack of time and knowledge.
- Clinical decision support systems (CDSSs) connected to electronic health record (EHR) improve the quality of care in hospitals and primary healthcare centers.



Purpose

To conduct a scoping review of the literature to analyze CDSSs used in NHs and assess the key factors of these systems regarding nurse's satisfaction, care process improvement, and NH residents' clinical outcomes.

Method

- Studies describing CDSSs used in NHs.
- Published in PubMed between 2010 and 2019.
- Two groups of MeSH terms and key words related to "Nursing homes" and the use of CDSSs "Decision support system, Clinical"
- Selected articles were analyzed according to the specific clinical application of the CDSS, the design of the study, CDSS characteristics, impact of the CDSS, users' acceptance

Results

Fig 1. PRISMA Flow Diagram

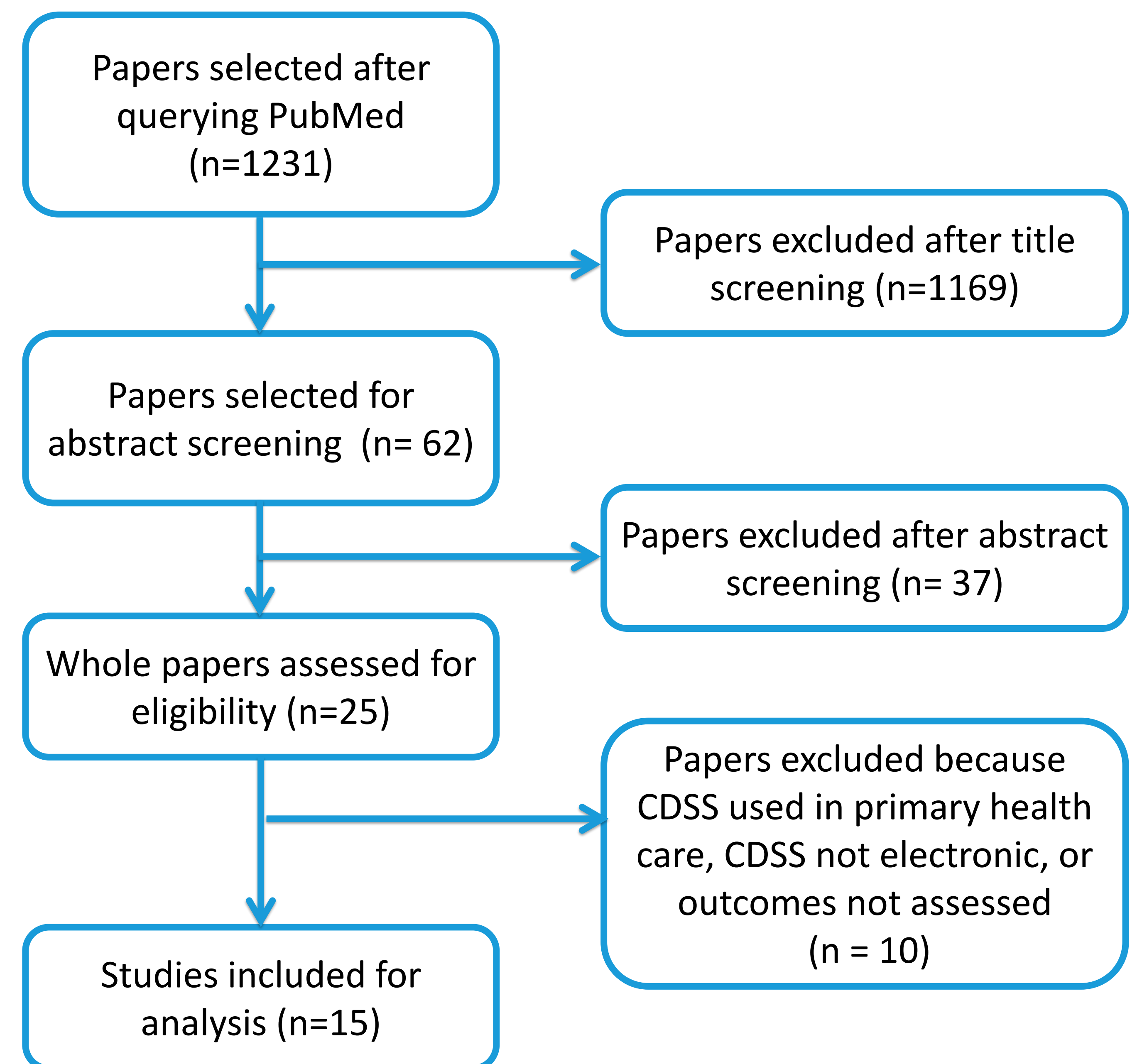
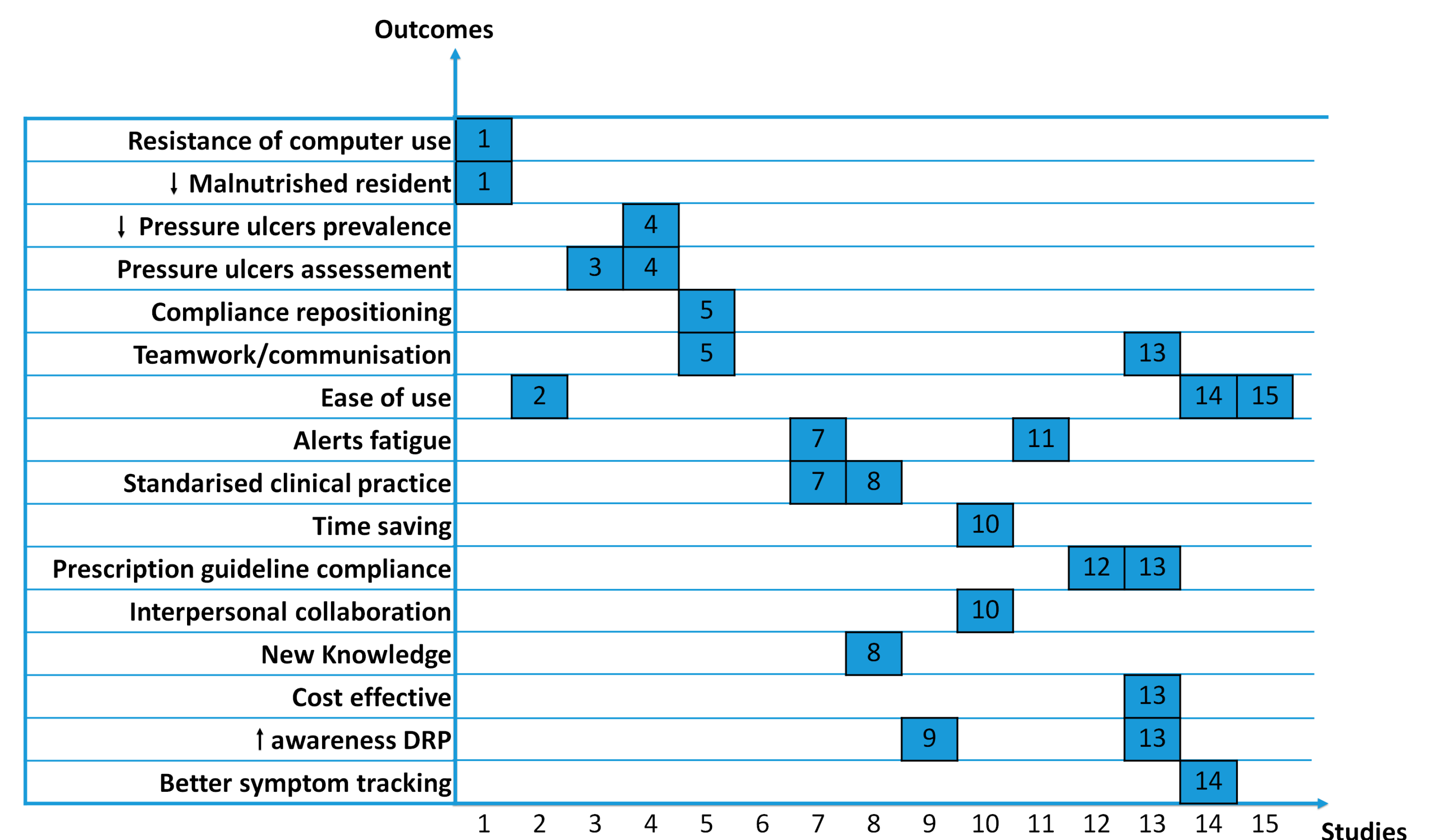


Table 2. Relevant studies outcomes



Results

Table 1. Characteristics of the included studies and CDSSs

Studies				CDSS		
N	Author & year	Type	Users	Type	Clinical application	Interface
1	Fossum et al 2011	NRCT	Nurses	Linked EHR	PU & Malnutrition	Alerts
2	Fossum et al 2011	OS	Nurses	Linked EHR	PU & Malnutrition	Alerts
3	Fossum et al 2013	RCT	Nurses	Linked EHR	PU & Malnutrition	Alerts
4	Beeckman et al 2013	RCT	NH staff	Standalone	PU & Malnutrition	Alerts
5	Yap et al 2019	OS	Nurses	Standalone	Pressure Ulcers	Alerts
6	De wit et al 2013	OS	Pharmacists/Physicians	Standalone	Medication review	Alerts
7	De wit et al 2015	OS	Pharmacists/Physicians	Standalone	Medication review	Alerts
8	Johansson et al 2017	OS	Nurses	Linked EHR	Medication review	Alerts
9	Johansson et al 2018	NRCT	Nurses	Linked EHR	Medication review	Alerts
10	Johansson 2019	OS	Nurses	Linked EHR	Medication review	Alerts
11	Donovan et al 2010	RCT	Pharmacists	Linked EHR	Daily prescription	Alerts
12	Kennedy et al 2011	OS	Physicians	Standalone	Daily prescription	Alerts
13	Ulfvarson et al 2010	OS	Physicians	Standalone	Daily prescription	Alerts
14	Zhu et al 2017	OS	Physicians	Linked EHR	Heart disease	Graph
15	Jones et al 2017	OS	NH staff	Standalone	Urinary tract infection	Alerts

OS: Observational study; RCT: Randomized controlled trial ; NRCT: Non-randomized controlled trial; PUs: Pressure Ulcers

Discussion & Conclusion

- In France, CDSSs are not widely used in NHs despite the great number of residents, the insufficient staff and resources, and the lack of doctors.
- Whether linked or not to an EHR, used by physicians, nurses, or pharmacists, generating or not alerts at the point of care, CDSSs can be effective in NHs.
- CDSSs improve nurses' daily practice and residents' clinical outcomes in several domains: malnutrition and pressure ulcers prevention, drug prescription quality, and disease management.
- End users' involvement in the CDSS elaboration is crucial to make CDSS deployment successful

