

Clinical decision support systems: a systematic review of implementation in community pharmacies

Laure Sillis, Veerle Foulon, Mitja Kos.

Background A clinical decision support system (CDSS) is a health information technology (IT) system that is designed to enhance physicians' and other health professionals' decisions and actions. CDSS can assist in the safe use of medicines and optimization of medication management, key tasks of community pharmacists in preventing and solving drug-related problems.

Purpose The aim of the study was to investigate the development, implementation, use and optimisation of CDSS in community pharmacies.

Method A systematic search through PubMed was conducted from inception up to April 2019. Articles were included if they researched the development, implementation, use and optimisation of IT systems that provided clinical decision support. MeSH terms used were: 'decision support systems, management?', 'decision support techniques?', 'decision support systems, clinical?', 'clinical pharmacy information systems?' and 'decision making, computer-assisted?'. The database was further searched with the terms 'decision support?' and 'community pharmacy?'. Only original articles written in English were included. Studies were only included if the research was conducted in a community pharmacy setting. The overall quality of this review was determined with the PRISMA statement.

Findings Twenty-three articles met the inclusion criteria, including one systematic review. Fourteen articles presented a specific example of the use of CDSS in community pharmacies: some CDSS assist pharmacists in self medication counselling; others are used to prevent and resolve drug related problems or to assist in the observance of adherence. The CDSS that were researched covered a wide variety of therapeutic areas, including anticoagulation therapy, antibiotics and diabetes management. Evaluation of effectiveness of CDSS was the aim in three articles; five articles aimed to optimize the current use of the CDSS. CDSS seemed to be low in specificity: many alerts are generated but little are useful in the patients' specific situation, mainly due to the narrow set of patient information available to provide patient specific advice. For only a few articles, there was a specification of guidelines used in the CDSS. Concerning the stage of development, four systems were only in the development phase; ten were tested in a small test group or in a pilot study. None of the systems was yet implemented on a large scale.

Conclusion CDSS could become important health IT systems in community pharmacy practice, but there are obstacles that need to be overcome before a wide adoption is possible. CDSS implementation leads to higher alert generation but the resolution rate is lower. Various strategies that have been developed to optimize the specificity of the alerts, need further research.