

Factors Determining the Success of Computerized Decision Support in Prescribing: A Systematic Review

Mollon, B., Chong, J.J.R., Holbrook, A.M., Thabane, L., Foster, G.

Centre for Evaluation of Medicines and Division of Clinical Pharmacology & Therapeutics,
McMaster University, Hamilton, Ontario, Canada.

Abstract:

Introduction:

Computerized decision support systems (CDSS) which can provide intelligent patient-specific recommendations are believed to improve the quality of health care delivery, but recent systematic reviews caution that the evidence is still inconclusive. However, these reviews pool many different types of CDSS and use subjective and variable definitions of success. We conducted a quantitative systematic review to determine factors that can predict success for CDSS devoted to prescribing (RxCDSS).

Methods:

We searched Medline, EMBASE, CINAHL and INSPEC databases for randomized controlled trials of electronic RxCDSS reporting outcomes categorized as system implementation, impact on clinical processes, and impact on clinical outcomes. We found data on 29 of 40 factors in 6 domains: general features, user-system interaction features, content features, organizational features, alignment of objectives, and other features. We used logistic regression (LR) to determine their association with CDSS success.

Results:

Of 2,117 citations, 26 met the inclusion criteria. Of these, 88.2% reported successful implementation (the system was used), 42.3% reported impact on process (changed clinician behaviour) and 3.8% reported improvement in patient outcomes. No study provided a rigorous analysis of factors predicting success or failure of the RxCDSS and LR was unhelpful. Those factors mentioned in > 75% of successful implementations largely reflect system speed, convenience of use, quality, relevance to the task at hand and integration with workflow.

Conclusions:

Very few high quality studies demonstrate improved patient outcomes with RxCDSS. The features associated with a system's success or failure are inadequately studied, thus making it difficult for system design to improve.