



Title Computerized Decision Support Systems in Order Communication for Diagnostic, Screening or Monitoring Test Ordering: Systematic Reviews of the Effects and Cost Effectiveness of Systems

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Aim

- 1) To investigate which computerized decision support systems (CDSS) are used in order communication systems (OCS) in the UK and the impact of CDSS in OCS for diagnostic, screening or monitoring test ordering compared to OCS without CDSS.
- 2) To determine what features of CDSS are associated with clinician or patient acceptance of CDSS in OCS and what is known about the cost effectiveness of CDSS in diagnostic, screening or monitoring test OCS compared to OCS without CDSS.

Conclusions and results

Results of included studies were mixed and equivocal, but showed benefits from using CDSS in conjunction with OCS over and above OCS alone. Considering the findings of primary and secondary outcomes, CDSS significantly improved practitioner performance in 15 of 24 studies. Only 2 studies covered the cost effectiveness of CDSS: a Dutch study reported a mean cost decrease of 3% for blood tests orders (639 euros [EUR]) in each of the intervention clinics compared with a 2% (EUR 208) increase in control clinics in test costs. A Spanish study reported a significant increase in the cost of laboratory tests from EUR 41.8 per patient per annum to EUR 47.2 after implementation of the system. Considering the findings of primary and secondary outcomes, CDSS showed a statistically significant benefit on either process or practitioner performance outcomes in nearly two-thirds of the studies. Four studies that assessed adverse effects of test cancellation or delay found no significant detrimental effects of additional utilization of healthcare resources or adverse events. We believe that a well-designed, comprehensive survey is needed and possibly evaluation studies, eg, cluster randomized controlled trials, and full economic evaluations alongside trials to assess the impact of CDSS in conjunction with OCS versus OCS alone for diagnostic, screening or monitoring test ordering in the NHS. Economic evaluation should incorporate the full costs of potentially

developing, testing, and installing the system, including staff training costs.

Recommendations

See Executive Summary link www.hta.ac.uk/project/1786.asp.

Methods

See Executive Summary link www.hta.ac.uk/project/1786.asp.

Further research/reviews required

We need to establish which CDSS in OCS are being piloted, implemented, or deployed in the NHS and the type of systems (eg, hospital or laboratory information systems) with which they interface. A comprehensive survey, eg, of individual Strategic Health Authorities, user sites, primary care trusts, and pathology services, is warranted to establish which systems are in place or likely to be implemented in the context of the National Project for Information Technology (NpFIT). The results of such a survey would hopefully inform system commissioners of the best way to rigorously evaluate the CDSS in OCS that are being implemented. Scant evidence from the UK addresses the impact of CDSS in OCS versus OCS alone. We found no evidence on the impact of 'off the shelf' CDSS of relevance to the NpFIT and the NHS. Hence, we need to establish whether any 'grey' literature is available from NHS Trusts that have implemented OCS. Such information could be useful in designing and implementing evaluation studies of CDSS within OCS in the NHS.