The effects of computerised decision support systems on nursing and allied health professional performance and patient outcomes: a systematic review and user contextualisation

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Plain language summary

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Computerised decision support systems (CDSS) are software or computer-based technologies providing advice to professionals making clinical decisions – for example, which patients to treat first in emergency departments. CDSS improve some doctors' decisions and patients' outcomes, but we don't know if they improve nurses', midwives' and therapists' or other staff decisions and patient outcomes. Research into, and health professionals' use of, technology – for example, in video consultations – has grown since the last relevant systematic review in 2009.

We systematically searched electronic databases for research measuring how well nurses, midwifes and other therapists/staff followed CDSS advice, how CDSS influence their decisions, how safe CDSS are, and their financial costs and benefits. We interviewed CDSS users and developers and some patient representatives from a general practice to help understand our findings.

Of 35 relevant studies – from 36,106 initially found – most (71%) focused on nurses. Just over half (57%) involved hospital-based staff, and three-quarters (75%) were from richer countries like the USA or the UK. Research quality had not noticeably improved since 2009 and all studies were at risk of potentially misleading readers. CDSS improved care in just under half (47%) of professional behaviours, such as following hand-disinfection guidance, working out insulin doses, and sampling blood on time. Patient care – judged using outcomes like falls, pressure ulcers, diabetes control and triage accuracy – was better in 41% of the care measured. There wasn't enough evidence to judge CDSS safety or the financial costs and benefits of systems.

CDSS can improve *some* nursing and therapist decisions and *some* patient outcomes. Studies mostly measure different behaviours and outcomes, making comparing them hard. Theories explaining or predicting how decision support systems might work are not used enough when designing, implementing or evaluating CDSS. More research into the financial costs and benefits of CDSS and higher-quality evidence of their effects are still needed. Whether decision support for nurses, midwives and other therapists reliably improves decision-making remains uncertain.