**Quality improvement**

**Review: computerised reminders and feedback can improve provider medication management**

**By:** Bennett JW, Glasser P.


**QUESTION:** What is the effectiveness of computer generated medication reminders or feedback directed at healthcare providers or patients?

**Data sources**


**Study selection**

Randomised controlled trials (RCTs) were included if they assessed the use of computers to assist in identifying patients and generating reminders or feedback. Studies of systems that calculated drug doses were excluded.

**Data extraction**

Data were extracted on setting, participants, nature of reminders, and rates of compliance. Quality of individual studies was scored for randomisation method (3 points), attention to comparability of baseline data (2), objectivity of primary outcome (4), loss to follow up (4), clarity of inclusion criteria (1), unit of allocation (1), case of implementation of reminder system (1), and statistical analysis (1) (total possible points = 17).

**Main results**

26 trials (29 comparisons) were included in the analysis. Mean quality score was 13.6 (range 9–17). Meta-analysis was not possible because of heterogeneity among the individual studies. The results are summarised in the table.

**Conclusions**

Despite considerable variability in study quality and findings, some evidence shows that computerised feedback and reminders to providers improve management of medication; reminders are more effective than feedback.

**Table: Computerised decision support systems v control for medication management**

<table>
<thead>
<tr>
<th>Intervention (number of comparisons)</th>
<th>Compliance with reminders/feedback (range of relative rates [RRs])*</th>
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<tbody>
<tr>
<td>Reminders to providers in outpatient settings (12)</td>
<td>6 of 12 comparisons found improved provider behaviour (RRs 0.9 to 2.0)</td>
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<tr>
<td>Feedback to providers in outpatient settings (7)</td>
<td>5 of 7 comparisons found improved provider behaviour (RRs 0.9 to 2.5)</td>
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<tr>
<td>Reminders plus feedback v reminders alone to providers in outpatient settings (1)</td>
<td>1 comparison found no difference in provider behaviour (RR 1.0)</td>
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<tr>
<td>Reminders to providers in inpatient settings (5)</td>
<td>3 of 5 comparisons found improved provider behaviour (RR 0.7 to 2.1)</td>
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<tr>
<td>Reminders to patients (4)</td>
<td>2 of 4 comparisons found improved patient compliance (RR 0.7 to 1.4)</td>
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*Relative rates = intervention rates/control rates. Some RRs favouring the intervention are <1.0 because the outcome was a reduction in costs or prescribing of certain medications.

**COMMENTARY**

Great attention has been paid recently to reducing medical errors in general, and medication errors in particular. Computerised physician order entry coupled with computerised decision support systems (DSSs) is being promoted as part of the solution. The systematic review by Bennett et al is a timely examination of the effectiveness of DSSs for medication management.

Bennett et al offer some sobering conclusions: only 16 of 29 comparisons (55%) showed improvement with DSSs, effect sizes were modest, and no data were available on patient outcomes. Taking into account the tendency for positive studies to be disproportionately published, the current evidence can be summarised as being suggestive, but on the whole equivocal.

Moreover, the reported successes may not be easily generalisable. Some of the studies with larger effect sizes were done on internally developed systems in large medical centres with electronic medical records (EMRs). However, EMR use occurs in only 13% of hospitals and 5% of ambulatory clinics in the US. Bennett et al rate 69% of the systems as “easy to implement” elsewhere, but better reporting on the financial costs and organisational challenges of implementation is needed for physicians to properly weigh the costs and benefits of using DSSs. For now, the low use of DSSs appears reasonable. More research is needed on DSS use in more typical care settings and on which DSS features predict success.

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