
How Effective are Decision Support Systems?



Computerised clinical decision support (CDS) systems are intended to enhance decision-making for better delivery of care. However, a study on the use of CDS systems regarding orders for advanced diagnostic imaging shows that the systems failed to identify relevant appropriateness criteria for the majority of orders.

“Implementing CDS systems in real-world settings has many challenges that must be addressed to meaningfully affect patient care,” Peter S. Hussey, PhD, of RAND, Boston, and co-authors write in a research letter published in *JAMA*.

Decision support systems that match patient characteristics against appropriateness criteria to produce algorithmic treatment recommendations are a potential means of improving care. To evaluate the relationship of CDS system use with the appropriateness of ordered images, Dr. Hussey and colleagues analysed data from the Medicare Imaging Demonstration.

Between October 2011 and November 2013, clinicians used computerised radiology order entry systems and CDS systems for selected magnetic resonance imaging, computed tomography, and nuclear medicine procedures. During a six-month baseline period, the CDS systems tracked whether orders were linked with appropriateness criteria but did not provide clinicians with feedback on appropriateness of orders.

During the 18-month intervention period, the CDS systems provided immediate appropriateness rating feedback to clinicians, including recommendations for alternative orders. Clinicians also could cancel or change orders during this period, but did so following exposure to appropriateness ratings and alternative order recommendations, if available. The appropriateness criteria have been developed by national medical specialty societies using expert panels that reviewed evidence and completed a structured rating process.

The 3,340 participating clinicians placed 117,348 orders for advanced diagnostic imaging procedures. Analysis of data revealed the following:

- The CDS systems did not identify relevant appropriateness criteria for 63.3 percent of orders during the baseline period and for 66.5 percent during the intervention period.
- During the baseline period, 11.1 percent of final rated orders were inappropriate (vs. 6.4 percent during the intervention period), while 73.7 percent of final rated orders were appropriate (vs. 81.0 percent during the intervention period).
- Of orders initially rated as inappropriate, 4.8 percent were changed and 1.9 percent were cancelled.

“Most orders were unable to be matched by the CDS systems to appropriateness criteria. Of those matched, there was a small increase in the percentage of orders rated appropriate between the baseline and intervention periods, although few inappropriate orders were changed or cancelled immediately following feedback from the CDS systems,” the researchers point out.

Based on the results, “improvements in appropriate imaging ordering do not appear related to immediate feedback and instead may be related to physician learning or secular changes,” the researchers conclude.

Source: [JAMA](#)

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