Predicting computerized physician order entry system adoption in US hospitals: can the federal mandate be met?

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Abstract

OBJECTIVES: The purpose of this study is fourfold. First, the hospitals' current level of computerized physician order entry (CPOE) adoption is reported; second, internal and external influence factors' roles in determining CPOE adoption rates are described; third, the future diffusion rate of CPOE systems in US hospitals is empirically predicted; finally, the current technology's state-of-the-art is assessed.


STUDY DESIGN: This study estimates CPOE market penetration rates applying technology diffusion theory and Bass modeling techniques for three future CPOE adoption scenarios-'Optimistic,' 'Best estimate', and 'Conservative' are empirically derived.

PRINCIPAL FINDINGS: Two of the CPOE adoption scenarios have diffusion S-curve that indicates a technology will achieve significant market penetration. Under current conditions, CPOE adoption in urban hospitals will not reach 80% penetration until 2029.

CONCLUSIONS: The promise of improved quality of care through medication error reductions and significant cost controls prompted the Institute of Medicine to call for universal CPOE adoption by 1999. However, the CPOE products available as of 2006 represent only a 'second generation technology', characterized by many limitations.
Without increased external and internal pressures, such CPOE systems are unlikely to achieve full diffusion in US hospitals in a timely manner. Alternatively, developing a new generation of CPOE technology that is more 'user-friendly' and easily integrated into hospitals' legacy systems may be a more expedient approach to achieving widespread adoption.

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