The Outcomes Study: UpToDate is Associated with Better Outcomes

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Outcomes Study overview

Study Title: "Use of UpToDate and Outcomes in U.S. Hospitals"

Journal name: Journal of Hospital Medicine Early View

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Research Question: Is there an association between the adoption of UpToDate with the fully adjusted outcomes?

Authors:

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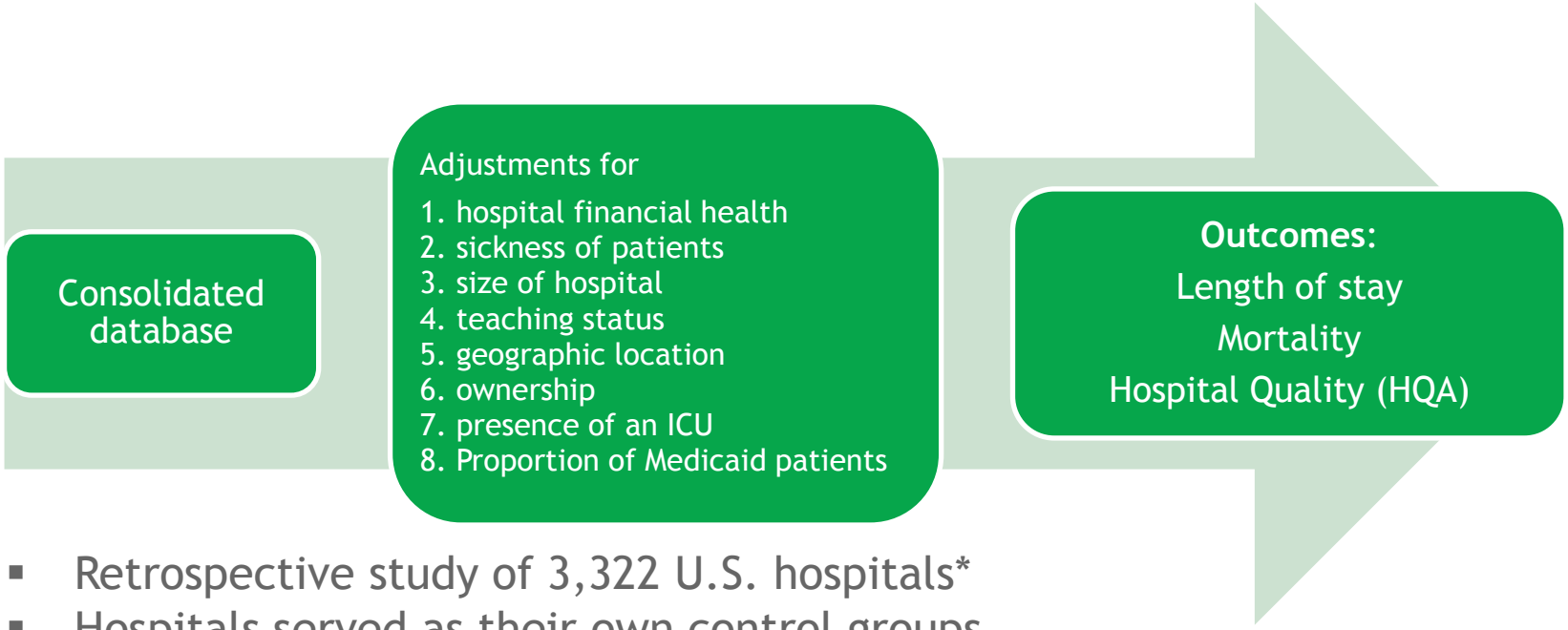
Study design and methodology

Research question: Is there an association between the adoption of UpToDate with the fully adjusted outcomes?



- Retrospective study of 3,322 U.S. hospitals*
- Hospitals served as their own control groups

* 1,107 using UpToDate; 2,305 not using UpToDate

Outcomes Study results

"The data suggests computerized tools like UpToDate lead to better decisions, better outcomes and better care."

Ashish Jha, MD, MPH, Harvard, Study Author

"UpToDate was associated with improvements for all three quality measures -- patient length of stay, hospital quality performance and mortality rate."

Study Author Thomas Isaac, MD, MBA, MPH
Beth Israel Deaconess and Harvard Medical School

UpToDate was associated with shorter length of stay

TABLE 2. Risk-Adjusted Length of Stay for Hospitals Using *UpToDate* Compared to Non-Users

Conditions	Using *UpToDate* (Days)	Not Using *UpToDate* (Days)	Difference (CI) (Days)	*P* Value
Total	5.6	5.7	−0.1 (−0.2 to −0.0)	0.001
AMI	5.3	5.5	−0.2 (−0.3 to −0.2)	<0.001
CHF	5.6	5.7	−0.2 (−0.2 to −0.1)	<0.001
PN	6.3	6.5	−0.2 (−0.2 to −0.1)	<0.001
Stroke	5.9	6.0	−0.1 (−0.2 to −0.1)	<0.001
GIH	5.3	5.4	−0.2 (−0.3 to −0.2)	<0.001
Hip fracture	6.7	6.8	−0.1 (−0.2 to −0.1)	<0.001

NOTE: Quarterly data from 2004 through 2006. All analyses are adjusted for hospital characteristics including size, census region, urban vs rural location, ownership (for-profit, not-for-profit private, not-for-profit public), teaching status (member of the Council of Teaching Hospital vs not), and the presence or absence of a medical intensive care unit (ICU). Analyses were also adjusted for patient-level factors and comorbidites using methodology developed by Elixhauser.

Abbreviations: AMI, acute myocardial infarction; CHF, congestive heart failure; CI, confidence interval; GIH, gastrointestinal hemorrhage; PN, pneumonia.

UpToDate saved approximately 372,500 hospital days per year

If non-UpToDate hospitals would achieve a similar LOS, it would potentially lead to an additional 523,000 fewer hospital days per year among Medicare beneficiaries

UpToDate was associated with lower mortality

TABLE 3. Risk-Adjusted 30-Day Mortality Rates Among Hospitals Using *UpToDate* Compared to Non-Users

Conditions	Using *UpToDate* (%)	Not Using *UpToDate* (%)	% Difference (CI)	*P* Value
Total	9.0	9.1	−0.1 (−0.2 to 0.0)	0.04
AMI	18.4	19.0	−0.7 (−1.2 to −0.2)	0.03
CHF	11.1	11.3	−0.2 (−0.4 to −0.1)	0.21
PN	12.1	12.6	−0.5 (−0.7 to −0.2)	<0.001
Stroke	19.9	19.9	−0.02 (−0.5 to 0.5)	0.91
GIH	6.9	7.3	−0.4 (−0.7 to −0.2)	0.001
Hip fracture	8.8	8.6	0.2 (−0.2 to 0.5)	0.41

NOTE: Rates from 2004 through 2006. All analyses are adjusted for hospital characteristics and patient characteristics.
Abbreviations: AMI, acute myocardial infarction; CHF, congestive heart failure; CI, confidence interval; GIH, gastrointestinal hemorrhage; PN, pneumonia.

UpToDate hospitals saved 11,500 lives over a three-year period

Had all hospitals had similar risk-adjusted mortality, an additional 16,650 lives would have been saved over a three-year period – filling Boston's Fenway Park stadium in 4 years

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UpToDate was associated with better hospital quality

TABLE 4. *UpToDate* Use and Performance on the Standard Quality Indicators

Conditions	Using *UpToDate* (%)	Not Using *UpToDate* (%)	% Difference (CI)	*P* Value
AMI summary score	93.4	90.2	3.2 (2.6, 3.6)	< 0.001
CHF summary score	81.0	75.1	5.9 (5.0, 6.8)	< 0.001
PN summary score	83.7	83.1	0.6 (0.3, 0.9)	0.003
SIP summary score	80.0	78.1	1.9 (1.0, 2.9)	0.002

NOTE: All analyses are adjusted for hospital characteristics and patient characteristics. Data are based on performance on the Hospital Quality Alliance (HQA) indicators; *UpToDate* use and HQA scores among all hospitals, 2004 through 2007.

Abbreviations: AMI, acute myocardial infarction; CHF, congestive heart failure; CI, confidence interval; PN, pneumonia, SIP, surgical infection prevention.

These measures are publicly reported and represent 4 of the 6 measures that will be used in Medicare's Value Based Purchasing Program (beginning October 2012)

UpToDate is critical at the Point of Care

UpToDate is the only clinical knowledge system associated with improved outcomes

- ✓ **Lowers mortality** - UpToDate hospitals saved 11,500 lives over a three-year period
- ✓ **Shortens lengths of stay** – UpToDate hospitals saved approximately 372,500 hospital days per year
- ✓ **Improves hospital quality** – UpToDate hospitals had better quality performance for every condition on the Hospital Quality Alliance metrics

Bottom line

UpToDate is the
only clinical knowledge system
associated with improved outcomes.