

Current Return on Investment (ROI) Literature for EHRs in Small- to Medium-Sized Physician Offices

What is the current state of EHR ROI in Small- to Medium-Sized Physician Offices?

Given the relatively new state of EHR implementation in small- to medium-sized practices and lack of current widespread adoption, only office-specific case studies of EHR implementations currently exist (see below), but fail to provide meaningful average estimated ROI that can be generalized to a state or national population of physician offices¹. The following reasons have been offered to explain why generalizing the findings of current case studies would not offer meaningful ROI².

<p>Smaller physician offices that have implemented EHRs have realized considerably different EHR ROI due to the variations in the determinate variables for ROI³.</p>	<ul style="list-style-type: none"> → Variations in physician support of EHR implementation → Variations in EHR implementation support → Variation in office activities and expenditures (e.g., office square footage, staffing hours, patient volume, and physician numbers)^{4,5,6} → Variation in EHR software and data management⁷ → Variation in EHR component selection, implementation and use (the wide menu of EHR components offer varied ROI when selected in different combinations by the physician offices)
<p>Smaller physician offices have just recently begun implementing EHRs and exploring issues that directly affect ROI⁸.</p>	<ul style="list-style-type: none"> → Patient privacy issues → Private and government insurance reimbursement systems that are not compatible with EHR systems → Lack of current, national interoperability of EHR applications⁹ → Clinical office workflow design is generally not yet compatible with EHR needs

How long is it taking to see a ROI and how much is being realized?

Though case studies have presented conflicting ROI results^{10,11,12}, the most comprehensive case study to date¹³ has made the following findings:

EHR ROI Per Physician Per Year over a 5-year Implementation Period

ROI	Year 1	Year 2	Year 3	Year 4	Year 5
Average	-\$21,700	\$21,200	\$14,600	\$47,200	\$47,200
Minimum	-\$11,900	\$8,000	\$4,700	\$20,100	\$20,100
Maximum	-\$26,600	\$41,300	\$31,400	\$85,100	\$85,100

5-Year EHR ROI Per Physician based on range of EHR Features Implemented

Feature	Light EHR	Medium EHR	Full EHR
Online Patient Charts	√	√	√
Electronic Prescribing		√	√
Laboratory Ordering			√
Radiology Ordering			√
Electronic Charge Capturing			√
Average ROI	-\$18,200*	\$44,600*	\$86,400*

*Assumes a 5% discount rate

What is working?

By reviewing a wide range of case studies that have been conducted to study small- to medium-sized physician office implementation of EHRs, the general findings are that ROI can be maximized if common barriers and benefits are addressed at implementation onset^{14,15,16,17}.

Attributes of physician offices that have realized qualitative and quantitative ROI from EHR implementation.	<ul style="list-style-type: none">→ EHR office champion identified at onset→ Office physicians committed to EHR implementation at onset→ Electronic data exchange with labs and vendors is maximized→ Comprehensive EHR support is established at onset→ Office identified specific opportunities for improvement that the EHR system would address—this led EHR vendor selection and focused EHR implementation efforts→ Complete conversion to a paperless system from onset
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¹ Podichetty V, Penn D. (2004). The progressive roles of electronic medicine: benefits, concerns, and costs. *Am J Med Sci.* 328(2):94-9.

² Miller R, Sim I, Newman J. (2003). **Electronic medical records: lessons from small physician practices.** University of California, San Francisco. Oakland, CA: California Healthcare Foundation.

³ Wager, K. A., Lee, F. W., White, A. W., (2000). *Life after a disastrous electronic medical record implementation: one clinic's experience.* Idea Group Publishing.

⁴ Erstad, T., (2003). Analyzing computer-based Patient Records: A Review of Literature. *Journal of Healthcare Information Management,* 17(4), 51-57.

⁵ Bingham, A., (1997). Computerized patient records benefit physician offices. *Healthcare Financial Management,* 51(9), 68-70.

⁶ Wang, A., Middleton, B., et al., (2003). A cost-benefit analysis of electronic medical records in primary care. *The American Journal of Medicine,* 114(5), 397-403.

⁷ MacDonald K, Metzger J. (2002). **Achieving tangible benefits in small physician practices.** First Consulting Group. Oakland, CA: California Healthcare Foundation.

⁸ Bodenheimer T, Grumbach, K. (2003). Electronic technology. A spark to revitalize primary care? *JAMA* 290: 259-264.

⁹ Hammond WE. (2004). Perspective: The Role Of Standards In Electronic Prescribing. *Health Aff (Millwood).* 2004 May 25

¹⁰ Miller et al (2003).

¹¹ MacDonald K, Metzger J. (2002).

¹² Cooper JD. (2004). **Organization, management, implementation and value of ehr implementation in a solo pediatric practice.** *Healthc Inf Manag.* 18(3):51-5.

¹³ Tables and data adapted from Wang, S. J. et al (2003).

¹⁴ MacDonald K, Metzger J. (2002).

¹⁵ Miller et al (2003).

¹⁶ Wager et al (2000).

¹⁷ Wang et al (2003).