

Supplementary File

Authors	Study Characteristics	Facilitators	Barriers
Wolf L, et al. (2012). Hospitals ineligible for federal meaningful use incentives have dismally low rates of adoption of EHR. ⁴	<ul style="list-style-type: none"> • Secondary data analysis, 2009 health IT supplement to the AHA survey. • Hospitals reported on 32 clinical functions of an EHR system and extent of implementation. 	<ul style="list-style-type: none"> • Emerging payment methods could encourage EHR adoption. • “Quality Improvement Organizations” may increase adoption because they provide technical support that many LTC facilities need. 	<ul style="list-style-type: none"> • HITECH incentives only focus on acute care and primary physicians. • Expanding the incentives to LTC facilities may be too costly.
Wang T, et al. (2012). Adoption and utilization of EHR systems by LTC in Texas. ⁵	<ul style="list-style-type: none"> • Survey instrument mailed to all Texas LTC facilities. • Data were self-reported rates of adoption. 	<ul style="list-style-type: none"> • Anticipating state and federal requirements. • Good communication between vendors and LTC facilities. • Education and training programs. 	<ul style="list-style-type: none"> • Lack of initial investment resources. • No technical infrastructure. • Not enough time to implement the EHR. • Lack of space for the new system.
Resnick H, et al. (2009). Use of Electronic Information Systems in Nursing Homes: United States. ⁶	<ul style="list-style-type: none"> • Secondary data analysis from the National Nursing Home Survey (NNHS). • The data reported a wide range in level of adoption. 	<ul style="list-style-type: none"> • Error reduction. • Quality. • Efficiency. • Better health outcomes. 	<ul style="list-style-type: none"> • Cost. • Complex systems (implementation). • No standards (external).
Davidson J. (2009). Electronic Medical Records: what they are and how they will revolutionize the delivery of care. ⁷	<ul style="list-style-type: none"> • Summary of articles (non-study) and concepts justifying the creation of the Canadian Health Infoway.. 	<ul style="list-style-type: none"> • Comprehensive implementation planning. • Governmental initiatives. • Management and staff support. 	<ul style="list-style-type: none"> • Cost. • Privacy issues. • Incorrect vendor.
Hamid F, et al. (2013). Providers Acceptance Factors and	<ul style="list-style-type: none"> • Survey instrument given to physicians (n=24), nurse practitioners and PAs (n= 20) in acute-care settings. 	<ul style="list-style-type: none"> • EHR satisfaction increases when the users understand the benefits. • Supportive 	<ul style="list-style-type: none"> • Cost. • Perceived lack of usefulness. • Time consuming.

their Perceived Barriers to Electronic Health Record EHR Adoption. ⁸		<p>management.</p> <ul style="list-style-type: none"> • Training programs. 	
Alexander G, et al. (2009). IT Sophistication and Quality Measures in Nursing Homes. ⁹	<ul style="list-style-type: none"> • Survey instrument of 210 nursing homes in Missouri. • Two groups of measurements collected: level of IT sophistication and quality measures, as defined by the U.S. Center for Medicare and Medicaid Services. 	<ul style="list-style-type: none"> • Improve clinical decision making. • Earlier intervention. • Time savings. 	<ul style="list-style-type: none"> • IT sophistication negatively correlated with detection of incontinence (implementation issue?)
Phillips K, et al. (2010). Electronic medical records in long-term care. ¹⁰	<ul style="list-style-type: none"> • Systematic literature review. 	<ul style="list-style-type: none"> • Government financial incentives. • Reduced errors and adverse drug events. • Including users in the design and implementation process. 	<ul style="list-style-type: none"> • Adoption costs. • Efficiency outcomes were inconsistent. • Incongruent cost savings. • Lack of interoperability. • Fear of changing the facility culture.
Wilkins M. (2009). Factors influencing acceptance of electronic health records in hospitals. ¹¹	<ul style="list-style-type: none"> • Survey instrument to members of the Arkansas Hospital Association. • LTC hospitals were cross-tabbed separately from other hospitals. 	<ul style="list-style-type: none"> • Training and learning the system increases adoption. • Understanding the usefulness of the EHR technology. 	<ul style="list-style-type: none"> • Facility size. • Lack of change agents or leaders in the facility. • Lack of interoperability. • Cost. • Resistance to change.
Filipova AA. (2013). Electronic Health Records Use and Barriers and Benefits to Use in Skilled Nursing	<ul style="list-style-type: none"> • Cross-sectional design. • Mail and web survey instruments. 	<ul style="list-style-type: none"> • Federal and state government incentives or policy initiatives could offset financial barriers. • Aligning organizational strategic plans could also encourage adoption. 	<ul style="list-style-type: none"> • Financial barriers like no capital to implement an EHR and the cost of hardware and infrastructure. • Organizational barriers. • Legal and regulatory

Facilities. ¹²			barriers. <ul style="list-style-type: none"> • Technological barriers. • Network barriers.
Bezboruah KC, et al. (2014). Management attitudes and technology adoption in long-term care facilities. ¹³	<ul style="list-style-type: none"> • Exploratory, qualitative case study. 	<ul style="list-style-type: none"> • Institutional pressure like anticipated regulations and competition pressures increase EHR adoption. 	<ul style="list-style-type: none"> • Cost of the electronic system and projected upgrades. • Leaders perceiving staff's resistance to change. • Misunderstanding how EHRs could be useful or not having enough information to choose the right system.
Cherry B. (2011). Management attitudes and technology adoption in long-term care facilities. ¹⁴	<ul style="list-style-type: none"> • Survey instrument to LTC facilities in Texas. 	<ul style="list-style-type: none"> • Fast-growing elder populations mean quality of care in LTC facilities must be addressed with EHRs. • A strong implementation plan within the facility that aligns with strategic plans. • Initial and follow-up training programs. • A perception shift about the benefits of EHR adoption. 	<ul style="list-style-type: none"> • Cost and a lack of capital resources. • Lack of industry standards. • Complicated implementation processes. • Lack of technical support. • Not enough evidence to support EHR's proposed benefits.
Grabenbauer L, et al. (2011). Electronic Health Record Adoption - Maybe It's not about the Money: Physician Super-Users, Electronic Health	<ul style="list-style-type: none"> • Qualitative study conducted to compare two robust EHR solutions. • EHR- savvy users from multiple organizations interviewed through focus groups.. 	<ul style="list-style-type: none"> • Improved communication. • Patient data access and sharing. 	<ul style="list-style-type: none"> • Cost. • Reduced time with patients. • Currently EHRs do not impact population health.

Records and Patient Care. ¹⁵			
Cherry B, et al. (2011). Experiences with electronic health records: Early adopters in long-term care facilities. ²⁰	<ul style="list-style-type: none"> • Semi-structured interviews conducted at 10 LTC sites. • Interviewees consisted of administrators, nurse managers, nurses, certified nurse aides, and other system users. 	<ul style="list-style-type: none"> • Rapid patient record retrieval. • Better document consistency, quality, and accuracy. • Improvements in employee satisfaction and retention. • Better patient assessments, oversight, and order processing. • Better time management. 	<ul style="list-style-type: none"> • Technology and maintenance problems like downtime or learning the new system. • Residents thought providers were more focused on the computers than on them.
Tabar P. (2013). Why EHRs matter to LTC's future. ²³	<ul style="list-style-type: none"> • Editorial. 	<ul style="list-style-type: none"> • Perceptions are changing in long-term care; EHRs are becoming a cost of doing business. 	<ul style="list-style-type: none"> • Most EHRs were built for acute care and LTC facilities had trouble finding a system that met the organization's needs.
Vendor group develops EHR code of conduct. (2013). ²⁴	<ul style="list-style-type: none"> • Journal bulletin board post. 	<ul style="list-style-type: none"> • Cost reductions. • Improve patient outcomes. • State programs could help fund a facility's EHR adoption. 	
Yu P, et al. (2013). Unintended adverse consequences of introducing electronic health records in residential aged care homes. ²⁵	<ul style="list-style-type: none"> • Qualitative semi-structured interview study of 9 residential aged care homes. • User perceptions evaluated. 	<ul style="list-style-type: none"> • Continuous training. • Open dialogue with vendors. • Balancing EHR accuracy with patient care. 	<ul style="list-style-type: none"> • Staff resisted the new system because personal perceptions about their age, lack of documentation skills, or other reasons created limitations. • Information management became too difficult and documents lacked consistency. • Providers complained about spending less time with residents.

<p>Hamann DJ, et al. (2013). Utilization of Technology by Long-Term Care Providers Comparisons Between For-Profit and Nonprofit Institutions.²⁶</p>	<ul style="list-style-type: none"> • Secondary data analysis of multiple surveys conducted by the CDC. • 	<ul style="list-style-type: none"> • Nonprofit facilities were 40% more likely to adopt EHRs. • Nonprofits have more regulations, so may need the benefits of EHRs. 	<ul style="list-style-type: none"> • For-profit facilities lagged behind in EHR adoption rates. • Fewer regulations enable for-profit facilities to invest in cost-effective endeavors and avoid the expense of EHR implementation.
<p>Vest JR, et al. (2013). Changes to the electronic health records market in light of health information technology certification and meaningful use.²⁷</p>	<ul style="list-style-type: none"> • Secondary data analysis of HIMSS data. • Hospital referral regions were used to define local markets. • Analysis was changes over time. 	<ul style="list-style-type: none"> • More EHR vendors. • Trends show electronic record use is on the rise. • Meaningful use makes EHRs more prevalent. 	<ul style="list-style-type: none"> • Lagging widespread EHR adoption. • Misaligned incentives.
<p>Weaver. (2005). EHR adoption in LTC and the HIM value.²⁸</p>	<ul style="list-style-type: none"> • Practice brief (a regular section in the journal). • A publication of practice guidelines for managing health information. 	<ul style="list-style-type: none"> • Error reduction (quality). • Improved efficiency. • Consumer (user) perceptions • Improved health outcomes 	<ul style="list-style-type: none"> • Difficulties transitioning from paper to EHR. (Implementation .) • Training becomes paramount.
<p>Gruber N, et al. (2010). Embracing change to improve performance: implementation of an electronic health record system.²⁹</p>	<ul style="list-style-type: none"> • Case study of an implementation of an EHR in a facility. • Includes cost, staffing, and experience over 2 years. 	<ul style="list-style-type: none"> • Strong implementation team. • Communicate often and thoroughly. • Set goals, tasks, and schedules for the implementation. • Reduced errors. • Improved documentation. 	<ul style="list-style-type: none"> • Minor increases in operating expenses. • Training.
<p>Holup AA, et al. (2014).</p>	<ul style="list-style-type: none"> • Pilot study examining 	<ul style="list-style-type: none"> • Rapidly aging populations stresses the 	<ul style="list-style-type: none"> • Long-term care EHRs are not as

<p>Going Digital Adoption of Electronic Health Records in Assisted Living Facilities.³⁰</p>	<p>associations between structural characteristics and adoption and use of EHR as a process characteristic in assisted living.</p>	<p>need to create interoperable, coordinated EHRs for LTC facilities.</p>	<p>comprehensive as acute care EHRs.</p>
<p>Holup AA, et al. (2013). Facility characteristics associated with the use of electronic health records in residential care facilities.³¹</p>	<ul style="list-style-type: none"> • Secondary data analysis of annual survey instrument of the National Survey of Residential Care Facilities. 	<ul style="list-style-type: none"> • Created better health outcomes. • Reduced extra costs. • Improved delivery and quality. • An increasing elder population makes implementing EHRs a necessity. • Nonprofits were more likely to utilize EHRs. 	<ul style="list-style-type: none"> • High initial investment means slower adoption in facilities that cannot afford the EHR system, which slows the rate of becoming better integrated with acute care. • Facility characteristics determine EHR adoption.