

**Table 2**

## Barriers to Personal Health Record (PHR) Interoperability

Source	Barriers
US Department of Health and Human Services (2001)	<ul style="list-style-type: none"> <li>• Code standards are defined by entities such as lab, diagnosis, etc., but not interoperable between entities.</li> <li>• Fragmented electronic health record environment</li> </ul>
US Department of Health and Human Services (2006)	<ul style="list-style-type: none"> <li>• Architecture variations identified               <ul style="list-style-type: none"> <li>○ 3 variations for Mappings and Translations</li> <li>○ 4 variations for Audit and Access Control</li> <li>○ 4 variations for Record Locator Services</li> </ul> </li> </ul>
Kaelber et al. (2008)	<ul style="list-style-type: none"> <li>• 80 percent of healthcare consumers must use PHRs to realize monetary saving projection in healthcare</li> </ul>
Robert Wood Johnson Foundation (2009)	<ul style="list-style-type: none"> <li>• No universal PHR definition defined</li> </ul>
Brennan et al. (2010)	<ul style="list-style-type: none"> <li>• Trusted secure data exchange needed</li> <li>• Access authorization needs further refinement</li> </ul>
Gosfield et al. (2010)	<ul style="list-style-type: none"> <li>• Legal issues regarding possible anticompetitive practices under antitrust law for clinicians</li> </ul>
Jones et al. (2010)	<ul style="list-style-type: none"> <li>• 117 PHRs with varying degrees of function</li> </ul>
Witry et al. (2010)	<ul style="list-style-type: none"> <li>• Legal concerns of clinicians in regard to data accuracy, privacy, and security</li> <li>• Patient data accuracy in question by providers</li> <li>• Assurance of privacy/security questionable</li> </ul>
Kim et al. (2011)	<ul style="list-style-type: none"> <li>• Paper PHRs still in existence</li> </ul>
Bipartisan Policy Center (2012)	<ul style="list-style-type: none"> <li>• 71 percent of surveyed clinicians concerned regarding health exchanges' ability to provide complete, secure, and accessible patient information</li> <li>• 69 percent surveyed clinicians cited concern regarding high cost of interface/exchange maintenance</li> <li>• Lack of unique patient identifier</li> <li>• Cost of matching patient data could run \$500,000 to \$1,000,000 annually in human resources</li> <li>• 25 percent of surveyed clinicians cite privacy and liability concerns as barrier</li> </ul>
National eHealth Collaborative (2012)	<ul style="list-style-type: none"> <li>• Adoption timeline with penalties started in 2014</li> </ul>
Rogoski (2012)	<ul style="list-style-type: none"> <li>• PHR rapid development prior to federal mandate</li> <li>• Multiple disparate systems</li> </ul>
Nazi et al. (2013)	<ul style="list-style-type: none"> <li>• 200 plus PHR systems available</li> </ul>
Sujansky & Associates, LLC (2013)	<ul style="list-style-type: none"> <li>• Trusted third-party data repository needed</li> <li>• Data origin not transparent for clinicians</li> <li>• No interfaces with HealthVault and associated healthcare organizations</li> <li>• Inability to integrate observations of daily living activities of patients</li> <li>• Inability to add patient information to electronic health record</li> </ul>

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| <ul style="list-style-type: none"> <li>• Cost and benefit unbalanced</li> <li>• Patient data ownership</li> </ul> |
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*Sources:*

- Bipartisan Policy Center. *Accelerating Electronic Information Sharing to Improve Quality and Reduce Costs of Health Care*. October 2012. Available at [http://bipartisanpolicy.org/sites/default/files/BPC%20Accelerating%20Health%20Information%20Exchange\\_format.pdf](http://bipartisanpolicy.org/sites/default/files/BPC%20Accelerating%20Health%20Information%20Exchange_format.pdf) (accessed January 11, 2014).
- Brennan, P. F., S. Downs, and G. Casper. "Project HealthDesign: Rethinking the Power and Potential of Personal Health Records." *Journal of Biomedical Informatics* 43, no. 5, suppl. (2010): S3–S5.
- Gosfield, A. G., and J. L. Reinertsen. *Achieving Clinical Integration with Highly Engaged Physicians*. 2010. Available at <http://www.reinertsen.com/publications/documents/True%20Clinical%20Integration%20Gosfield%20Reinertsen%202010.pdf> (accessed May 28, 2014).
- Jones, D. A., J. P. Shipman, D. A. Plaut, and C. R. Seiden. "Characteristics of Personal Health Records: Findings of the Medical Library Association/National Library of Medicine Joint Electronic Personal Health Record Task Force." *Journal of the Medical Library Association* 98, no. 3 (2010): 243–49.
- Kaelber, D. C., S. Shah, A. Vincent, E. Pan, J. M. Hook, D. Johnston, D. W. Bates, and B. Middleton. *The Value of Personal Health Records*. Charlestown, MA: Center for Information Technology Leadership, 2008. Available at [http://www.partners.org/cird/pdfs/CITL\\_PHR\\_Report.pdf](http://www.partners.org/cird/pdfs/CITL_PHR_Report.pdf) (accessed November 4, 2013).
- Kim, J., H. Jung, and D. Bates. "History and Trends of 'Personal Health Record' Research in PubMed." *Healthcare Informatics Research* 17, no. 1 (2011): 3–17.
- National eHealth Collaborative. "The Patient Engagement Framework." 2012. <http://www.nationalehealth.org/patient-engagement-framework> (accessed September 16, 2013).
- Nazi, K., T. Hogan, D. McInnes, S. Woods, and G. Graham. "Evaluating Patient Access to Electronic Health Records: Results from a Survey of Veterans." *Medical Care* 51, no. 3, suppl. 1 (2013): S52–S56.
- Robert Wood Johnson Foundation. "Personal Health Records 101." October 1, 2009. Available at <http://www.rwjf.org/en/research-publications/find-rwjf-research/2010/01/feature-the-power-and-potential-of-personal-health-records/chapter-1-personal-health-records-101.html> (accessed October 15, 2013).
- Rogoski, R. R. "Bridging the EHR Divide: Hospitals, Physician Practices Work toward True Interoperability." *Healthcare Informatics* 29, no. 10 (2012): 8–12.
- Sujansky & Associates, LLC, on behalf of Project HealthDesign. *A Standards-based Model for the Sharing of Patient-generated Health Information with Electronic Health Records*. 2013. Available at [http://www.projecthealthdesign.org/media/file/Standard-Model-For-Collecting-And-Reporting-PGHI\\_Sujansky\\_Assoc\\_2013-07-18.pdf](http://www.projecthealthdesign.org/media/file/Standard-Model-For-Collecting-And-Reporting-PGHI_Sujansky_Assoc_2013-07-18.pdf) (accessed October 26, 2013).
- US Department of Health and Human Services. *Information for Health: A Strategy for Building the National Health Information Infrastructure*. 2001. Available at <http://www.ncvhs.hhs.gov/nhiilayo.pdf> (accessed October 1, 2013).
- US Department of Health and Human Services. *Report to the Secretary of the U.S. Department of Health and Human Services on Functional Requirements Needed for the Initial Definition of a Nationwide Health Information Network (NHIN)*. 2006. Available at <http://www.ncvhs.hhs.gov/061030lt.pdf> (accessed September 18, 2013).
- Witry, M., W. Doucette, J. Daly, B. Levy, and E. Chrischilles. "Family Physician Perceptions of Personal Health Records." *Perspectives in Health Information Management* (2010).