Cost-Benefit Analysis for the Alabama Health Information Exchange

Conducted by the Finance Workgroup

October 8, 2010
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Executive Summary

Blue Cross and Blue Shield of Alabama, on behalf of the Alabama Health Information Exchange (AHIE) Finance Workgroup, performed a cost benefit analysis for the AHIE. We found the number of existing studies was limited. Based on a literature review of national and localized studies of the benefits of Health Information Exchanges, a national study, cited numerous times, showed the potential benefit of a health information exchange for providers, payers and other healthcare providers. We extrapolated the national study to the State of Alabama, based on health cost and utilization information from the Kaiser Family Foundation. In addition to the national study, we performed an analysis using private payer data to determine cost avoidance from the reduction in duplicate imaging and laboratory procedures.

Study Data & Methods

We used a variety of sources to gather information for this study, including literature reviews, interviews with other Blue Cross and Blue Shield Plans’ staff, interviews of experts in the Health Information Exchange (HIE) field outside Alabama, discussions with a medical cost management company and verified with utilization reports from private payer claims experience.

Literature Review

Our external research included academic journals containing studies on the benefits and net value of health information exchange. Determining that the number of existing studies was limited, we expanded our search to include studies on the symptoms of redundant emergency department and ambulatory visits and the ensuing consequences. Below is an abbreviated list of articles reviewed for relevant information:

• Poenitske, A. Update: Two-Year Actuarial Analysis of a MedSolutions State Medicaid Radiology Management Program. (February 2009).

Experts
We contacted experts in the HIE field outside Alabama for insight on how to properly conduct a Return on Investment (ROI) study. We spoke directly with three HIEs – New Mexico Health Information Collaborative (NMHIC), North Carolina Healthcare Information and Communications Alliance and HEALTHeLINK™ (Western New York) – and reviewed several state HIE Strategic and Operational Plans for strategic information. In addition, we spoke with insurers to access their knowledge about ROI analysis they are conducting in their states. Information from the NMHIC proved to be the most beneficial and is referenced later in this summary.

We also spoke with a medical cost management company that has experience performing ROI studies. This company consulted with us about our approach and methodology for the ROI process, as well as their methodology for determining duplication of procedures.

Projection of Benefits
As previously mentioned, we searched for studies and journal articles that quantified the actual or projected benefits of real or hypothetical health information exchanges. The literature was primarily void of such information, and data available is not current. In 2005, Walker, J., et al., produced an estimated value of standardized, nationwide HIE by stakeholder (provider, payer and other healthcare organizations). Walker also found a proportion of lab tests that are redundant and avoidable, and the proportion of those lab tests that will be avoided by HIE. We found this study to be cited by other academics as well as the federal government, including the Agency for Healthcare Research and Quality’s April 2006 Evidence Report on Costs and Benefits of Health Information Technology.

Interviews of three individuals at other state HIEs provided limited insight on performing the ROI study. Both the North Carolina Healthcare Information and Communications Alliance and HEALTHeLINK in Western New York hired consulting firms to estimate the costs and potential benefits of a clinical health information exchange. Their methods are proprietary. In its HIE sustainability plan for NHIN Trial Implementation, the New Mexico Health Information Collaborative (NMHIC) quantified the benefits to NMHIC stakeholders from the above-mentioned study of nationwide HIE value performed by Walker, J. et al., and through the Center for Information Technology Leadership study titled, The Value of Healthcare Information Exchange and Interoperability. NMHIC took the value generated by HIEs and interoperability at the national level and projected the value to New Mexico based upon the percentage of national versus state expenditures on healthcare. The NMHIC methodology is used as a baseline in formulating a methodology for this ROI study for the State of Alabama. Alabama healthcare costs were determined to constitute one percent of the national expenditure, based on the Kaiser Family Foundation’s statehealthfacts.org (2004).
Estimated Adoption Rates
The impact of the health information exchange is based on NMHIC’s estimate of 33 percent. The annual adoption rates for health information exchange are based on Blue Cross and Blue Shield of Alabama’s experience with InfoSolutions® and other electronic interconnectivity utilization. At the peak of InfoSolutions, 25 percent of physicians were registered and only 10 percent were active users. In addition to InfoSolutions, only 40 percent of providers are signed up for electronic funds transfer (EFT).

Medicaid’s QTool has 182 offices/ 305 providers set up as users. There are close to 10,000 physicians in the State of Alabama and 1,200 are Medicaid providers.

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated Adoption Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>4</td>
<td>18%</td>
</tr>
<tr>
<td>5</td>
<td>20%</td>
</tr>
</tbody>
</table>

Results

Finance Workgroup Methodology
In addition to NMHIC’s method of projecting national value to the state level, the Finance Workgroup conducted research on utilization for six months, from private payer data, to determine the percent of duplicated services for laboratory and imaging services. It was found that five percent of the services were duplicated. In addition to the data warehouse reports, the workgroup collaborated with a medical-cost management company to determine an average duplication of services.

Imaging
To determine a potential level of duplication for imaging services, an analysis was performed on hi-tech imaging of three modalities: PET scans, MRIs, and CT Scans. The analysis looked for a repeat scan of the same modality within 30 days. The repeat scan was not limited to a particular body part, but rather modality only; CT scans were duplicated to CT scans, MRIs to MRIs, and PET scans to PET scans. The level of duplication found was five percent.

The Alabama imaging expenditure is determined by taking one percent of the national imaging expenditure of $100 billion as stated by Poenitske, in the white paper titled, Update: Two-Year Actuarial Analysis of a MedSolutions State Medicaid Radiology Management Program (2009).

The Alabama imaging expenditure is one billion dollars, and with a potential reduction by five percent of duplicate services, the expenditure is reduced by $50 million. The estimated impact of the health information exchange is 33 percent (NMHIC estimate), and the annual adoption rates start at five percent for year one, and range to 20 percent for year five. Based on the impact of the exchange and projected adoption rates, the cumulative five-year cost avoidance is estimated at $11,222,000.

Laboratory
To determine the potential level of duplication for laboratory services, an analysis was performed on any lab code billed from a professional or independent laboratory setting using private payer claims data. The analysis looked for a repeat lab code for the same customer within one week.
The total Alabama laboratory expenditure of $517 million is calculated by taking one percent of the national laboratory expenditure, or $ 51.7 billion, based on the data in the report, Under the Microscope: Trends in Laboratory Medicine (2007).
The Alabama laboratory expenditure is $517 million, with a potential of five percent duplicate services valued at $25.8 million. The estimated impact of the health information exchange is 33 percent and the annual adoption rates start at five percent for year one and range to 20 percent for year five. Based on the impact of the exchange and projected adoption rates, the cumulative five-year cost avoidance is $5,800,740.

Emergency Room Visits

Emergency room visits are based on data from statehealthfacts.org (2003) and show 476 visits per 1,000 persons in Alabama per year. The Centers for Disease Control FastStats (2006) estimates 47.7 emergency room visits per 100 persons in the South and 14,436,899 office visits each year in Alabama.

The NMHIC estimates that widespread use of the health information exchange can result in the reduction of one emergency room visit for every 5,000 office visits, resulting in a reduction of 2,887 emergency room visits in Alabama. The average emergency room visit cost is $1,038, based on consumerhealthratings.com (2007). The estimated impact of the health information exchange is 33 percent, and the annual adoption rates start at 5 percent for year one and range to 20 percent for year five. Based on the impact of the exchange and projected adoption rates, the cumulative five-year cost avoidance is $2,038,028.

See Appendix A: Finance Workgroup Methodology

Center for Health Information Technology Leadership (CITL) Study

The estimated value in this methodology is based on the study Walker, J., et al., produced. The study proposes benefits are achieved for providers through connectivity with other providers, radiology centers, payers and laboratories. The study also takes into account the costs incurred by providers to reach full connectivity. Payers’ value is based on efficiency of provider transactions and reduced laboratory and radiology tests. The proposed benefit for other healthcare providers, such as laboratories, radiology centers, pharmacies and public health departments, is received through the overall value of improved efficiency of transactions.

A national annual estimate was given in the CITL study to show net value in a steady state after implementation. Based on the CITL study, the steady state is slated to begin in year 11 of an information exchange. The value was measured and the breakdown of stakeholder benefits is shown in the pie chart in Appendix B. In addition to the breakdown of stakeholder benefits, the Finance Workgroup methodology is used to determine the dollar value for the other stakeholder groups. The value for cost avoidance is listed in the table in Appendix B.

Statewide Scale of Data

The most recent Alabama population estimate is dated July 2009 and is based on the April 2000 census. The population distribution for the State of Alabama is shown in Appendix C. The Alabama insurance coverage information was obtained from multiple sources, including Kaiser State Health Facts (2007) and Health Leaders Interstudy (2010). The insurance coverage in the table does not represent the potential impact of healthcare reform.
Table 2: Alabama Insurance Coverage

<table>
<thead>
<tr>
<th>Alabama Insurance Coverage</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Uninsured</td>
<td>11.8%</td>
</tr>
<tr>
<td>Medicare</td>
<td>17.7%</td>
</tr>
<tr>
<td>Medicaid</td>
<td>18.4%</td>
</tr>
<tr>
<td>Commercial</td>
<td>52.1%</td>
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</tbody>
</table>

Broadband connectivity for the State of Alabama is shown in Appendix D.

**Limitations**

Based on the literature reviewed, it was difficult to determine quantitative benefits for health information exchange. A report from the Congressional Budget Office (CBO) points out that the CITL study (Walker, J., et al.) estimates that avoidable tests will be decreased by 95 percent. They predict a 5 percent override rate among providers, while other reports have override rates figured as much as 69 percent. Cost avoidance was also determined for providers and payers by increased electronic transactions. Many stakeholders have been utilizing electronic transactions and there is no future cost avoidance from this.

Many benefits from a fully integrated system are currently difficult to measure, and there are few research studies available. In addition to lacking concrete quantitative studies, it is also too early to measure improved quality of care. Qualitative benefits are difficult to measure, including increased continuity of care and chronic disease management through clinical decision support systems.
Appendix A

Finance Workgroup Methodology

<table>
<thead>
<tr>
<th>Estimated Ala.</th>
<th>5% Duplica-</th>
<th>HIE</th>
<th>Annual Adoption</th>
<th>Cumulative Total - 5 Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spend</td>
<td>5% Duplica-</td>
<td>5% Yr 1</td>
<td>10% Yr 2</td>
<td>15% Yr 3</td>
</tr>
<tr>
<td>Imaging (Total)</td>
<td>$1,000,000,000</td>
<td>$16,500,000</td>
<td>$825,000</td>
<td>$1,650,000</td>
</tr>
<tr>
<td>Lab (total)</td>
<td>$517,000,000</td>
<td>$8,530,500</td>
<td>$426,525</td>
<td>$853,050</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated Ala.</th>
<th>1/5000 Reduction</th>
<th>HIE Potential Impact</th>
<th>Annual Adoption</th>
<th>Cumulative Total - 5 Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Visits</td>
<td>1/5000 Reduction</td>
<td>$2,997,100</td>
<td>$149,855</td>
<td>$299,710</td>
</tr>
<tr>
<td>ER Visits</td>
<td>14,436,899</td>
<td>$2,997,100</td>
<td>$149,855</td>
<td>$299,710</td>
</tr>
</tbody>
</table>

Summary

| Ala. HIE Benefit | $11,220,000 |
| Lab (total)      | $5,800,740  |
| ER Visits        | $2,038,028  |
| Total            | $19,058,768 |
Appendix B

Center for Information Technology Leadership Study

CITL Percentages & Finance Workgroup Methodology

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payer</td>
<td>28%</td>
<td>$19,058,768</td>
</tr>
<tr>
<td>Other Healthcare Organizations</td>
<td>29%</td>
<td>$19,739,438</td>
</tr>
<tr>
<td>Providers</td>
<td>43%</td>
<td>$29,268,822</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>$68,067,028</td>
</tr>
</tbody>
</table>
Appendix C

State of Alabama Population Distribution

Population by Metro Area
Total: 4,708,708
Birmingham: 1,212,848
Mobile: 540,258
Huntsville: 406,316
Montgomery: 346,528
Dothan: 137,916
Tuscaloosa: 93,215

Source: U.S. Census Bureau
Census 2000 Summary File 1
population by census tract.
Appendix D

State of Alabama Broadband Connectivity

Unserved Roads (No Adv 768kbps)