Volunteer eHealth Initiative

Business Case Overview
January 31st, 2005

accenture

High performance. Delivered.

The three-county region of Fayette, Shelby, and Tipton counties represents over 900,000 individuals whose care could benefit from information exchange of clinical information.

Three-County Region Population

Payor	Fayette	Shelby	Tipton	Total	% of Total
Medicare	3,738	89,581	5,079	98,398	10%
Medicaid	6,684	232,611	12,201	251,496	25%
Commercial	17,036	477,080	29,744	523,860	53%
Uninsured*	3,744	108,992	6,412	119,148	12%
Total	31,202	908,264	53,436	992,902	100%

The uninsured population is expected to increase by ~36,000 within the three-county region due to the changes in the TennCare program.

Sources:
1 – Kaiser Foundation - www.statehealthfacts.org
2 – The Tennessean – January 20th, 2005
3 – Medicare population calculated based on population over 65; data provided on www.fedstats.gov
4 – Population analysis based on 2002 statistics

Emergency department utilization shows that information exchange among providers will benefit the care of patients in the region's emergency rooms.

Emergency Department Activity

- Approximately 11% of the three-county population used the Emergency Department more than once a year
- 99% of the patients treated were seen in two or more Emergency Departments
- On average patients used the Emergency Department five times a year
- 7% of the patients used the Emergency Department more than 10 times in a year

Information sharing will enable clinicians in the emergency departments access to emergency department history across the region as well as other clinical care settings to provide the patient with the most appropriate care.

Sources:
1 – Data supplied by Memphis Managed Care 07/2003-07/2004

Data exchange among the core hospitals alone provides a significant volume of activity and clinical data.

For every visit, admission, and procedure information regarding that event would be published to the data exchange to be viewed by the patient's care providers.

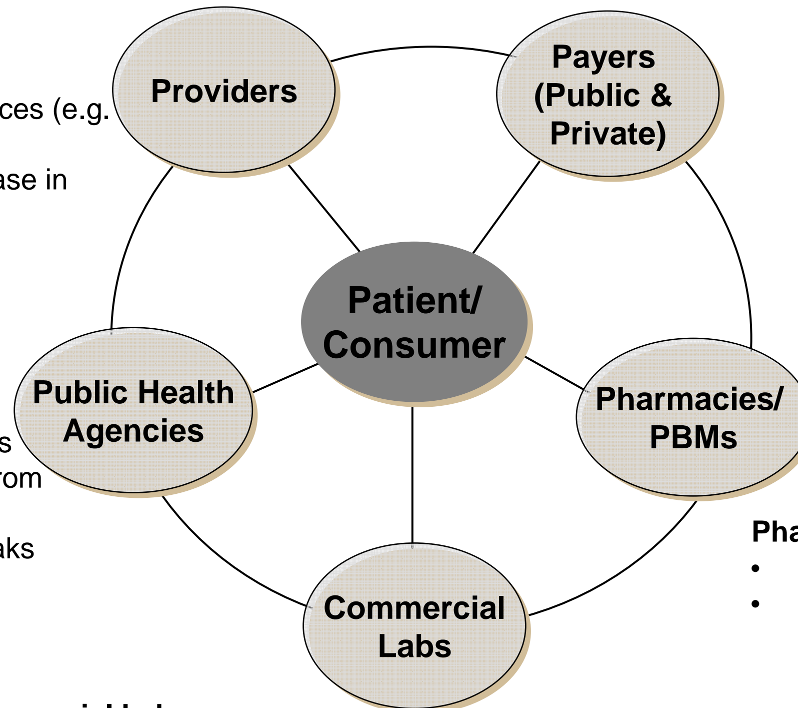
Volume Statistics	#
Ambulatory Visits	1.2 M
Emergency Department Visits	460 K
Admissions	130K
Births	16K
Radiology Procedures	1.2 M

Sources:
1 – Core hospitals include: The MED, Baptist Memphis, Methodist University Hospital, St. Jude Children's Research Hospital, St. Francis Hospital
2 – Data sources: www.usnews.com

The value of information exchange can benefit many stakeholders; most importantly, when health information is shared – the patient benefits.

Providers
- Timely access to relevant data for improved decision making
- Rapid access -- anywhere, anytime
- Reduced clerical and administrative costs
- More efficient and appropriate referrals
- Increased safety in prescribing/ monitoring compliance; alerts to contraindications
- Better coordinated care
- Potential additional revenue sources (e.g. preventive care)
- Enhance revenue through decrease in rejected claims

Overall Value



Payers
- Improved customer service
- Improved disease and care management programs
- Improved information to support research, audit and policy development

Patient
- Improved quality of care through better informed caregivers
- Safer care
- Decreased cost of care

Public Health Agencies
- More comprehensive data
- Greater participation by physicians
- Easier integration of information from disparate sources
- Early detection of disease outbreaks or cases that suggest a local epidemic
- Outcomes analysis
- Bio-terrorism preparedness

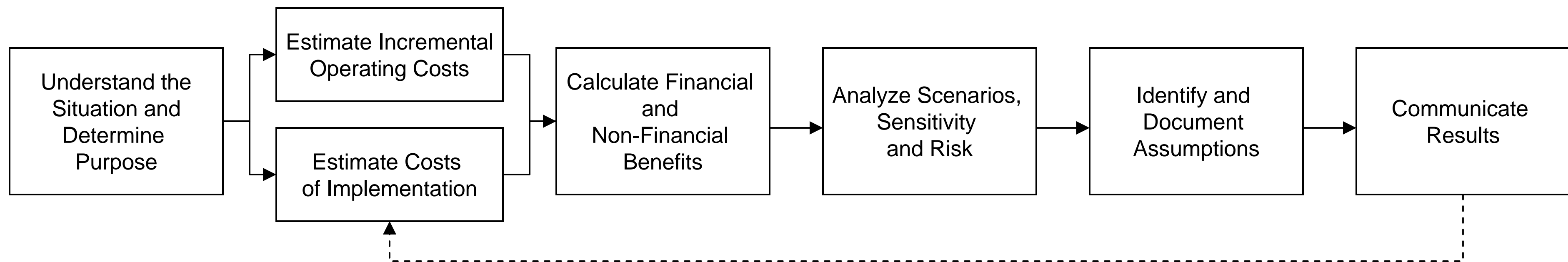
Pharmacies/PBMs
- Reduced administrative costs
- Increased medication compliance

Commercial Labs
- Enhanced public relations; exclusive contracts
- Decreased write-offs from unnecessary tests
- Decreased EDI costs; increase efficiencies

To understand the financial value that could be realized from implementing data exchange, a business case was created based on the initial data to be exchanged and clinical focus areas.

Business Case Approach

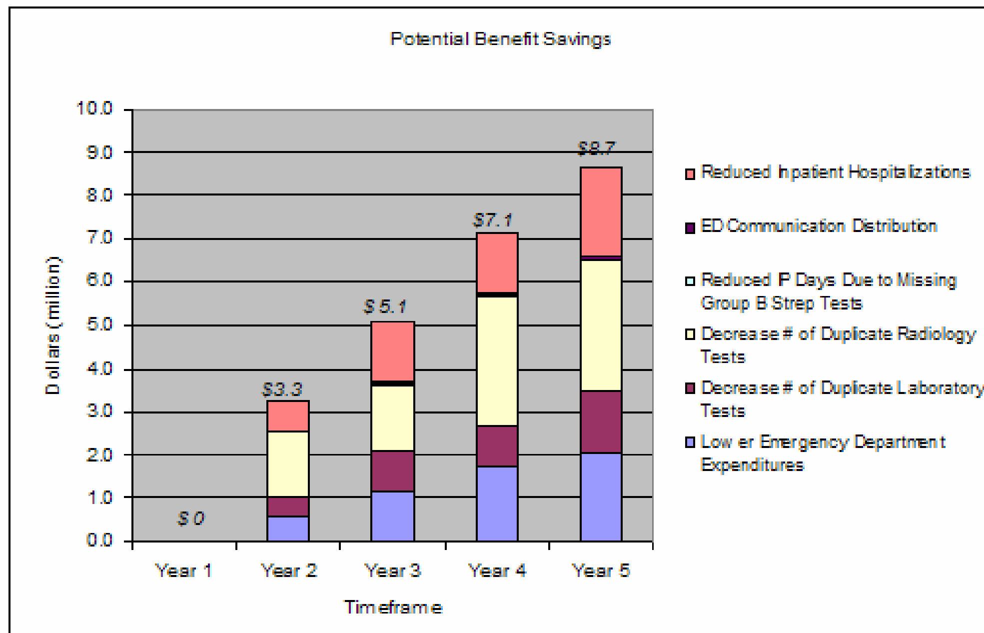
As the project progresses, the initial business case will be further defined and updated to reflect the current assumptions, costs and benefits.



Key Financial Measures derived from the initial data and clinical focus areas

- Lower emergency department expenditures
- Decrease number of duplicate laboratory tests
- Decrease number of duplicate radiology tests
- Reduced inpatient days due to missing Group B Strep tests
- ED communication distribution
- Reduced inpatient hospitalizations

A data exchange across the core healthcare entities can achieve significant dollar savings over a five year period.



Financial Measures	Dollar Savings (millions)
Reduced inpatient hospitalization	$5.6
ED communication distribution	$0.1
Reduced IP days due to missing Group B strep tests	$0.1
Decrease in # of duplicate radiology tests	$9.0
Decrease in # of duplicate lab tests	$3.8
Lower emergency department expenditures	$5.6
Total Benefit	**$24.2**

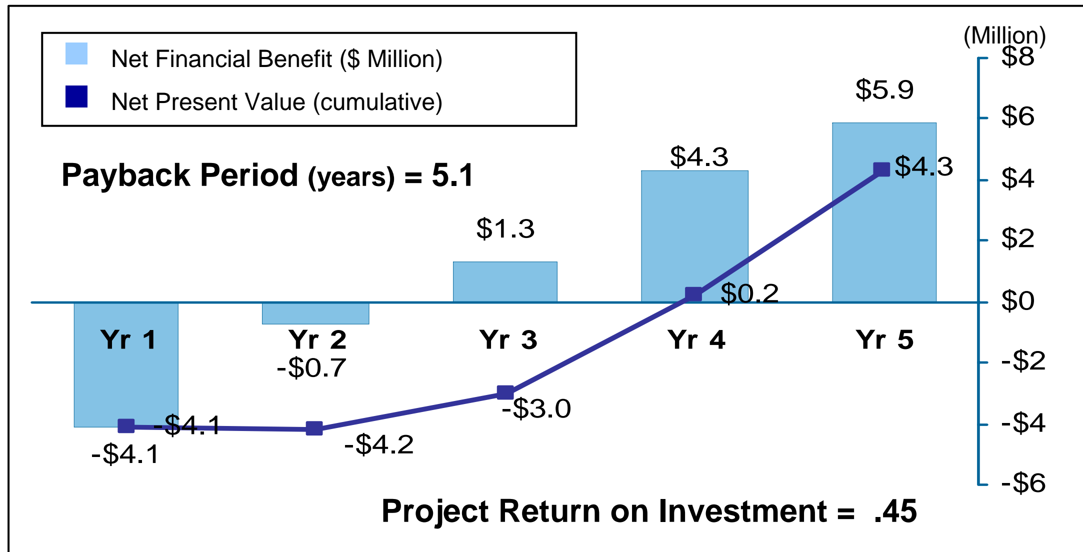
The overall benefit to the core healthcare entities has potential to reach $24.2 million.*

Assumptions

- Based on data obtained from Memphis Managed Care (TLC) and extrapolated for the remaining population
- Research factors are applied to calculate the benefits
- Deployment schedule is limited initially to EDs and Labor & Delivery; years four and five will extend to all healthcare providers
- Inflation and volumes remain constant

*If data is exchanged across all facilities within the three-county region the overall benefit has potential to reach $48.1 million.

Preliminary calculations indicate that the core healthcare entities can expect a NPV of approximately $4.3 million after 5 years.



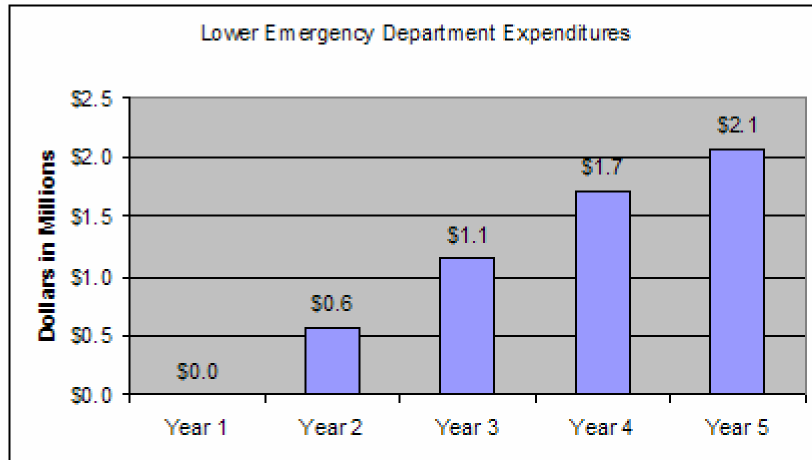
The State of Tennessee and the Core Healthcare Entities realize a higher financial gain when you consider the different stakeholder contributions.

<u>State of Tennessee</u>	<u>Core Healthcare Entities</u>
Payback Period = 2.7	Payback Period = 1.2
Return on Investment = 1.6	Return on Investment = 8.18

<u>Assumptions</u>

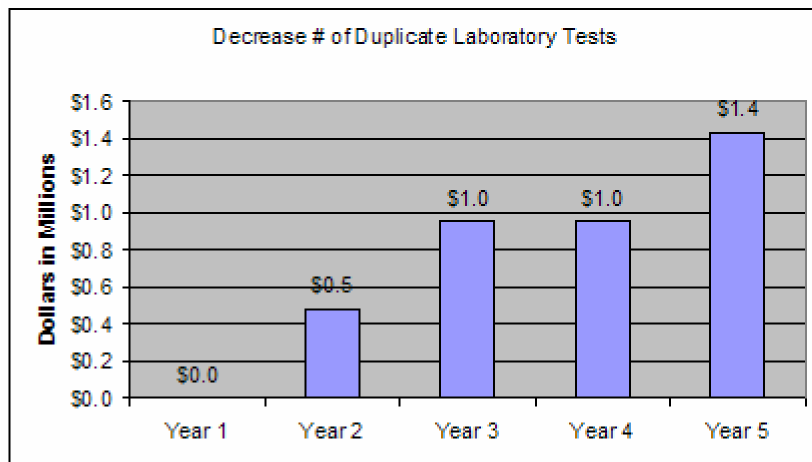
- Based on data obtained on the core healthcare entities and Memphis Managed Care
- Research factors are applied to calculate the benefits
- Deployment schedule is limited initially to EDs and Labor & Delivery; years four and five will extend to all healthcare providers
- Inflation and volumes remain constant
- The costs to move and support the RHIO data center are not included in the five-year forecasts
- The RHIO support desk infrastructure is not established; Vanderbilt will provide this service
- Labcorp will not charge the project for their effort
- The average cost for a core healthcare entity for implementation and operation activities is $30,000 per year.

Each measure is calculated based on a number of assumptions



Assumptions

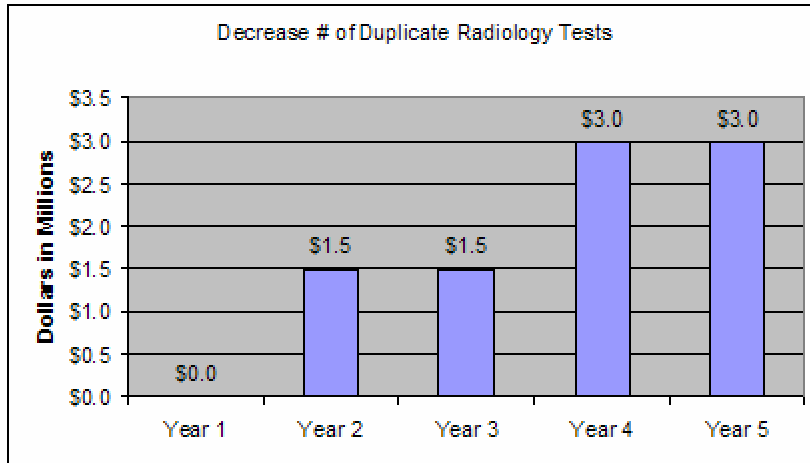
- The calculation is:
  - # of ED visits/yr X % of ED visits to benefit X % to benefit due to implementation schedule X $ savings/visit
- The project assumed 50% of the ED visits will have a savings of $10 per visit
  - PSI and Indianapolis indicate 50% of ED visits will benefit between $10 - $26 savings per ED visit
- Benefits realized are adjusted to reflect the implementation schedule, data elements available and end user adoption
- Number of ED visits and inflation remain constant



Assumptions

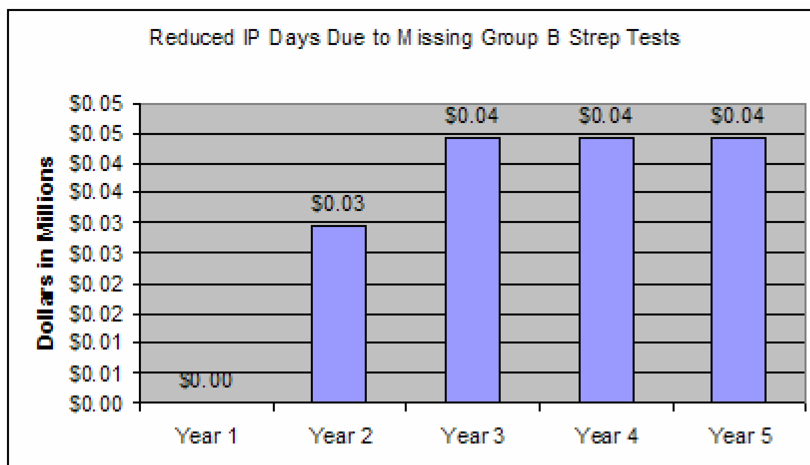
- The calculation is:
  - # of tests/yr X % of repeat tests X % to benefit due to implementation schedule X $ savings test
- Targeted a limited number of tests that are not necessary to duplicate within a year; lab test volumes remain constant
- Assumed a cost of $28 per test; cost remains constant
- The project assumed a 13% decrease in test ordering
  - A study conducted at Regenstrief identified a 13% decrease in test ordering; Santa Barbara indicated 20%
- Benefits realized are adjusted to reflect the implementation schedule, data elements available and end user adoption

Continued. . .



Assumptions

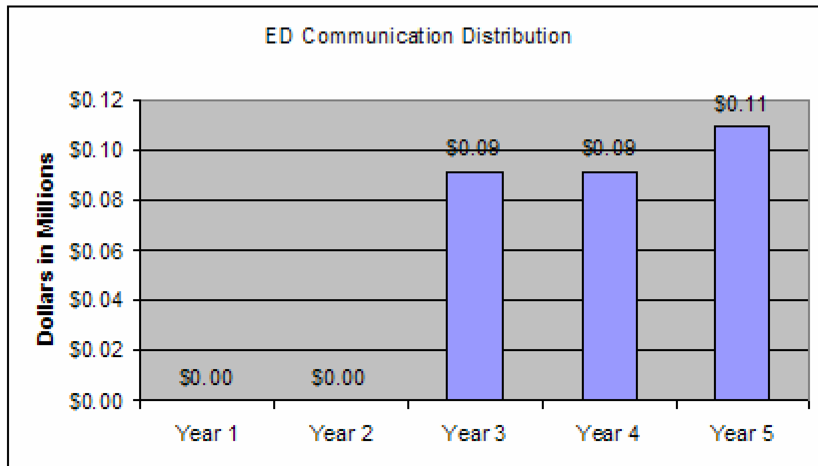
- The calculation is:
  - # of tests/yr X % of repeat tests X % to benefit due to implementation schedule X $ savings test
- Targeted a limited number of tests that are not necessary to duplicate within a year; radiology test volumes remain constant
- Assumed a cost of $60 per test; cost remains constant
- The project assumed a 13% decrease in test ordering
  - A study conducted at Regenstrief identified a 13% decrease in test ordering; Santa Barbara indicated 20%
- Benefits realized are adjusted to reflect the implementation schedule, data elements available and end user adoption



Assumptions

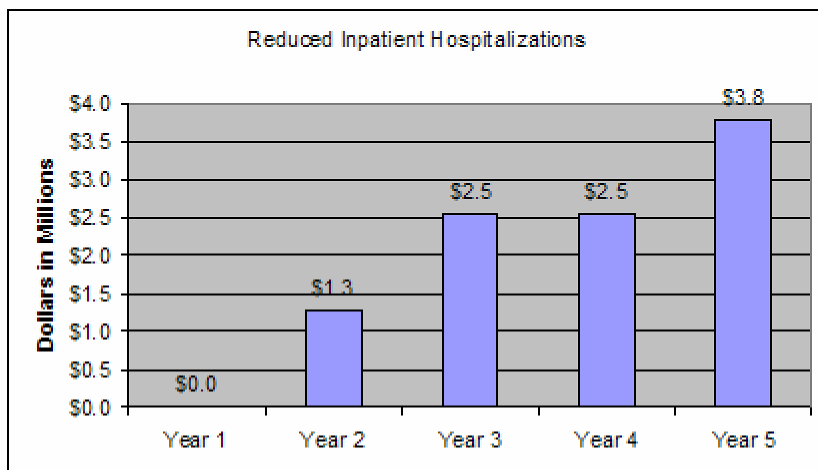
- The calculation is:
  - # of pregnancies/yr X % admitted for group b strep X % with the test performed X avoidance rate X benefit to be achieved due to implementation X saving /visit
- Number of pregnancies is adjusted to focus on the high-risk population (Medicaid population)
- Data indicated that 6% of those admitted for group b strep had the appropriate testing conducted; assumed 66% of those admitted could have been avoided if the test result was available
- Additional benefit could be realized if case management has access to the data to actively ensure the mother has the test or the appropriate treatment is provided four hours prior to delivery
- Assumed an additional five inpatient days are necessary at $1,000/day

Continued. . .



Assumptions

- The calculation is:
  - # of ED visit/yr X % of benefits to benefit X % to benefit due to implementation schedule X $ savings/visit
- The project assumed 50% of the ED visits will have a savings of $0.20 per visit to send the report to physicians
- Benefits realized are adjusted to reflect the implementation schedule, data elements available and end user adoption
- Number of ED visits and inflation remain constant

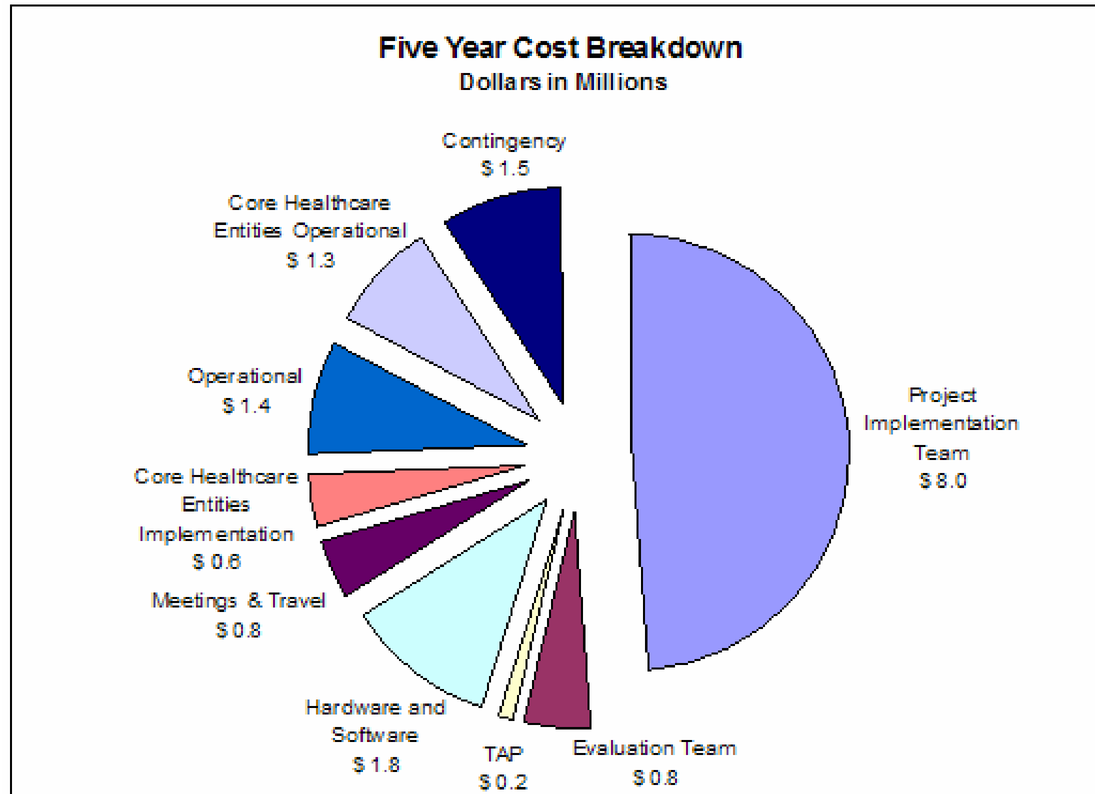


Assumptions

- The calculation is:
  - # of IP hospitalizations X Avg cost/ day X % of admissions resulting from missing information X % of visits to benefit X % of admits from EDs X % to benefit due to implementation schedule
- Research indicates that one in seven (14%) of admissions are due to missing information from the ED or PCP; of those 50% could have been avoided by using the data
- An average of 30% of admissions come from the ED
- Assumed a 23-hour observation cost at $1000
- Benefits realized are adjusted to reflect the implementation schedule, data elements available and end user adoption

The cost to achieve these benefits is captured by implementation and ongoing operational effort.

Program Costs



Assumptions

- The costs represent the total effort of the five-year project
- A 15% contingency is applied to the implementation effort
- The costs to move and support the RHIO data center are not included in the five-year forecasts
- The RHIO support desk infrastructure is not established; Vanderbilt will provide this service
- Labcorp will not charge the project for their effort
- Does not include operational costs for Health Loop Clinics or programming time for integrating meds for Methodist
- The project implementation category includes the cost associated with the planning project

The average yearly cost across the initial five years is $30,000, a relatively low cost given the potential benefit outlined.

Entity Cost

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Institution One	$17,400	$14,400	$16,800	$7,200	$7,200	$63,000
Institution Two	$37,900	$31,600	$26,000	$11,600	$11,600	$118,700
Institution Three	$34,300	$29,600	$18,800	$10,400	$10,400	$103,500
Institution Four	$50,200	$30,400	$38,400	$10,400	$10,400	$139,800
Institution Five	$41,900	$30,400	$42,000	$20,800	$20,800	$155,900
Institution Six	$26,500	$58,000	$58,000	$52,000	$52,000	$246,500
Institution Seven	$37,800	$34,320	$39,120	$22,320	$22,320	$155,880
Institution Eight	$56,612	$38,568	$73,256	$22,440	$22,440	$213,316
Institution Nine	$63,600	$32,600	$32,600	$26,600	$26,600	$182,000
Avg Cost	**$40,690**	**$33,321**	**$38,331**	**$20,418**	**$20,418**	**$153,177**

- Does not include time to fix misidentified information
- The estimated annual run rate to maintain the RHIO once established is $1.3m. This does not account for moving the data center and running it if it is moved from Nashville to Memphis.