

# Transylvania Community Hospital Project Evaluation Plan

For the 2007 federal Health Resources & Services  
Administration HRSA-08-004 Rural Health Network  
Development Implementation Grant (RHND)

(Using HRSA and other materials)



**Prepared by Rural Health IT  
Corporation**

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## **Transylvania Community Hospital Project Project Evaluation Plan**

### **INTRODUCTION:**

Rural Health IT Corporation (RHITC) has prepared this 16-page summary, dealing with the HRSA-08-004 Rural Health Network Development Grant (RHND) Program.

Note also that this summary is based upon Rural Health IT Corporation's experience with its clients, extensive discussions with federal Health Resources & Services Administration (HRSA) and Agency for Health Research & Quality (AHRQ) officials, as well as a thorough review of HRSA and AHRQ's official, written program guidance and its application forms packages.

### **The Transylvania Community Hospital Project includes:**

1. Transylvania Community Hospital, a not for profit Critical Access Hospital (CAH) in Brevard, NC
2. Brevard Family Practice 187 Medical Park Drive Brevard, NC 28712  
Timothy J. Shea, MD Caren Schau, Practice Manager (828) 884-9362,  
Ext 228 [cschau@citcom.net](mailto:cschau@citcom.net) Family Medicine
3. Sylvan Valley OB/GYN 87 Medical Park Drive Brevard, NC 28712  
Camelo A. Hernandez, MD Alise Corn, Office Manager  
(828) 884-8860, ext 108 OB/GYN
4. Medical Associates of Transylvania 377 Gallimore Road Brevard, NC  
28712 James Shaw, MD Katie Curtis, Administrator (828) 862-6218  
[matpakatie@citcom.net](mailto:matpakatie@citcom.net) Family Medicine

### **I. SHORT DESCRIPTION OF THE PROJECT:**

Rural Health IT Corp. can create for the Transylvania Community Hospital Project a workable model to integrate, or impose interoperability on, legacy Information Technology (IT) systems. These IT systems are typical of rural, as well as of other, healthcare organizations.

Under its current AHRQ Regional Health Information (RHIE) grant program operating at hospitals in Vermont and New Hampshire, Rural Health IT Corp. has identified a proven, mature IT solution that has a substantial track record in the real healthcare world. The solution, an Integration Engine and Clinical Portal, has the following advantages:

- It is essentially an “off the shelf” or “plug-and play” solution, which will overlay incumbent, legacy information systems, incorporating them into a framework that will be the basis for an Electronic Medical Record (EMR) system.
- As a “plug-and-play” solution, there is **no software development involved. No new software code needs to be written.** All that is required is the ability to utilize existing messaging standards, primarily HL-7.

This Clinical Portal and Integration Engine system is appropriate for use in rural and other healthcare settings, to overlay what the Transylvania Community Hospital already has, to allow each of its current IT applications to communicate seamlessly, on the basis of existing information standards, particularly an HL-7 stream.

On the basis of the research and implementation efforts we have done thus far for our other clients, our company’s team is confident this Portal and Engine solution can be applied to Transylvania Community Hospital and then expanded to the project’s three (3) other primary care partners, Brevard Family Practice, Sylvan Valley OB/GYN and Medical Associates of Transylvania. Finally, this solution can be duplicated successfully throughout North Carolina and elsewhere, as the system is expanded in the future.

## II. GOALS OF THE PROJECT:

- Anywhere, anytime provider access to medical records and information
- Portability to numerous common devices and interfaces
- Ultimate reduction in overall costs, by obviating the need for couriers, faxes, and other methods of transfer of paper records
- Enhanced collaboration with healthcare organizations, government agencies, payers and other third parties
- Medication tracking and electronic ordering, to address medication errors and attendant adverse drug reactions and errors (ADE)
- Reduction of information-related errors in treatment and overall care
- Creation of a framework to allow for the installation of future technologies and addendums to the Electronic Medical Record (EMR) system
- Creation of a system which can be scaled up and duplicated repeatedly in other places, so that other partners may be added
- HIPAA compliance and dependable security of patient records
- Creation of a stringent, dependable back-up and disaster-recovery system
- Improved rates of clinician and other healthcare provider adoption, because they will be able to go to a single place to get all relevant information on a patient, rather than today’s system of having to open multiple applications.

- Time savings to clinicians and other providers, because the portal's unified, "single-view" environment integrates and displays clinical data derived from multiple IT systems around the project.
- Clinicians and other providers will be able to view, update and add new data to multiple systems and applications from within a single user interface.
- A comprehensive view of each patient's status and medical history will be gained from within one window, allowing for improved and timely clinical decisions.

### **III. GOALS OF THE EVALUATION:**

The goals of the evaluation are to measure the technological and human impacts and the business case of the systems integration and Clinical Portal solution. Key stakeholders for the purposes of this evaluation are identified as the North Carolina Department of Health, the North Carolina State Office of Rural Health, Transylvania County Public Health, HRSA, the four (4) Consortium partners' respective Boards of Directors and their Institutional Review Boards, other healthcare providers, and patients.

- **Technological Impacts:**
  1. Data will be available from both the current and potential IT systems to be accessed.
  2. Data from all systems will be accurately displayed.
  3. Data in all systems will be accurately synchronized.
  4. Data in all systems will be synchronized and displayed in a timely manner.
  5. Data synchronized and displayed in the Clinical Portal will be the correct data for the needs of authorized providers and patients in the formation of an Electronic Medical Record (EMR).
  6. Data will remain secure in legacy systems and will also be secure in the Clinical Portal solution. The single sign-on feature will translate to all legacy systems, to reduce the number of passwords to be managed by providers. Data will be easily available from remote locations and will remain secure in those locations and everywhere else it will be accessed and displayed.
  
- **Human Impacts:**
  1. Provider adoption
  2. Provider usability
  3. Quality of images (such as in radiology, for example)
  4. Provider satisfaction
  5. Patient satisfaction
  6. Reduced patient time in waiting rooms
  7. More provider/patient interaction

8. Reductions of the number of adverse drug events, by having accurate medication and allergy information available at the point of care
9. Decreased visit-cycle time

□ **Business Case:**

1. Reduction of duplications of patient registration in multiple systems during each visit
2. Reduced provider time-on-task
3. Elimination of duplicate costs for multiple interfaces, including elimination of reliance on vendors to program and maintain interfaces
4. Reduction in travel by Consortium partners
5. Reduction in time-on-task to manually scan records from one system to another
6. Reduced delays in billing because of notes remaining uncompleted while awaiting additional documentation, such as scanned documents, radiology reports, laboratory and test results, advanced directives, etc.
7. Incorporate HRSA Disease Management Goals:

**IV. MAJOR EVALUATION GOALS and METRICS:**

□ **Third HRSA-Required Evaluation Measurements (with baselines):**

a) "Disease Management for Diabetes (DM):

1. Average HbA1c for diabetic patients in the electronic patient registry system
2. Patients with blood pressure <130/80 mm/Hg
3. Patients with LDL <100 mg/dL

b) "Disease Management for Cardiovascular Disease (CVD):

1. Patients with blood pressure <140/90 mm/Hg
2. Patients with LDL <130 mg/dL
3. Patients who are current smokers

c) "Disease Management for Addictive Diseases

1. Patients with negative random urine drug screens
2. Patients with compliance profiles on continuous alcohol monitor database
3. Patients with no emergency room visits for substance use related emergencies
4. Patients with no hospital admissions for substance use related conditions
5. Patients with no work absences
6. Patients with no arrests for substance use related offenses

Each measure must have a baseline at the time of application; this will allow computation of percentage increases in measures overtime:

- Transylvania Community Hospital:
  1. Average HbA1c for diabetic patients in the electronic patient registry system  
Taking the most recent A1C for all registry patients. Counting only data since 1/1/2005 (proxy for "active" registry patient). Average is: 8.15477933736  
Patients with blood pressure <130/80 mm/Hg Assume: Systolic < 130 and diastolic < 80  
Counting only data since 1/1/2005 (proxy for "active" registry patient)  
# of Patients: 1055
  2. Patients with LDL <100 mg/dL  
Counting only data since 1/1/2005 (proxy for "active" registry patient)  
# of Patients: 1602
  3. Percent of DM patients with dilated eye exam in last year  
Numerator: All patients in registry that have had an "eye exam" since 6/1/2006: 1785  
Denominator: All patients in registry that have had a result since 1/1/2005 (proxy for "active" registry patient): 5756  
That gives a percentage of 31.01%
  4. Percent of DM patients with foot exam in last year  
Numerator: All patients in registry that have had a "foot exam" since 6/1/2006: 1928  
Denominator: All patients in registry that have had a result since 1/1/2005 (proxy for "active" registry patient): 5756  
That gives us a percentage of 33.5
  
- **Technological Impacts – Goals:**
  1. Goal: All data that is available in all internal and external systems that store patient data across the continuum of care will be accessed, synchronized and displayed in the new EMR Clinical Portal, as part of the patient record. Measure: All relevant data will be available and accessible to authorized providers in a timely and usable form when this project is completed, whereas today it is not.
  2. Goal: Data from all systems being accessed will be displayed accurately. Measure: Displayed data = Accessed data
  3. Goal: Data in all systems will be accurately synchronized. Measure: Synchronized data = disparate system data and synchronized data = displayed data

4. Goal: Data in all systems will be synchronized and displayed in a timely manner. Measure: Short length of time to display data from back-end queries that provide data to the Clinical Portal
5. Goal: Data synchronized and displayed in the Clinical Portal will be the correct data for the needs of authorized providers and patients, in the form of an Electronic Medical Record (EMR). Measure: Data provided = Data needs of providers and patients
6. Goal: Data will remain secure in both the legacy IT systems and in the new Clinical Portal. Measure: The system will be secure and HIPAA-compliant, both internally and remotely.
7. Goal: The single-sign-on feature will translate to all legacy IT systems, to reduce the number of passwords to be managed by providers. Measure: There will be fewer IT systems that cannot be accessed using single-sign-on and therefore must be launched individually from the Clinical Portal, along with an increased number of IT systems authorized providers can access to provide care.
8. Goal: Data will be available from remote locations. Measure: As the project progresses there will be fewer failed attempts to review patient records via the Clinical Portal, with an increased number of valid attempts.

□ **Human Impacts – Goals:**

9. Goal: a) “Disease Management for Diabetes (DM):
    1. Average HbA1c for diabetic patients in the electronic patient registry system
    2. Patients with blood pressure <130/80 mm/Hg
    3. Patients with LDL <100 mg/dL
  - b) “Disease Management for Cardiovascular Disease (CVD):
    1. Patients with blood pressure <140/90 mm/Hg
    2. Patients with LDL <130 mg/dL
    3. Patients who are current smokers
- Measure: 1. Collect and calculate Average Hgb A1C for diabetic patients in registry
2. Collect and graph reported blood pressures for Hypertensive patients in registry
  3. Collect and graph LDL levels for patients in registry
  4. Collect and calculate percentage of diabetic patients who have a dilated eye exam per year
  5. Collect and calculate percentage of diabetic patients who have a foot exam per year
10. Goal: Provider adoption. Measure: There will be an increased number of authorized providers using the IT system, along with an increased number of providers treating patients.
  11. Goal: Provider Usability. Measure: There will be easy data flow into the Clinical Portal, formatted how individual providers want data displayed and configured to their individual specifications.

12. Goal: There will be high quality of images, such as radiology images, for instance. Measure: Usable images will be routinely transmitted to the Clinical Portal, as needed.
13. Goal: Provider Satisfaction with tools. Measure: Likert scale of satisfaction with technology to assist with patient care decision-making (Balanced Scorecard survey and baseline measures in place outside of project)
14. Goal: Patient Satisfaction with provider encounters. Measure: Likert scale of satisfaction with visit. (Press-Ganey survey and baseline measures currently in place outside of project for inpatient visits, In-house survey and baseline measures currently in place outside of project for outpatient clinic visits, as part of IHI Access and Efficiency project)
15. Goal: There will be reduced time for patients in waiting rooms. Measure: There will be an overall cycle-time reduction, from check-in to completion, of patient visits.
16. Goal: There will be reductions of adverse drug events, causing a decrease in subsequent admissions, by having accurate medication and allergy information available at the point of care. Measure: There will be a decrease in medication-interaction and allergy admissions from undocumented conditions and a decrease in all medication-interaction and allergy admissions.
17. Goal: There will be adequate provider training in the use of the Clinical Portal tools. Measures:
- Training of Total Staff
  - Estimated Duration vs. Actual Duration of Training
  - Number of Attendees - Estimated vs. Actual
  - Percent of Total Attended
  - Percent of Estimated Attended
- Business Case – Goals:**
18. Goal: There will be a reduced number of actual patient registrations in systems and of the number of department encounters by patients.
19. Goal: There will be reduced healthcare provider time-on-task. Measure: There will be less time spent looking up records, with more time available for appointments.
20. Goal: There will be a reduction in travel by the Consortium's members. Measure: We will compare pre-implementation miles traveled vs. post-implementation miles traveled.
21. Goal: We will eliminate duplicate costs for multiple interfaces, including elimination of reliance on vendors to program and maintain interfaces. Measure: Cost reduction Savings will come from committed interfaces, by programming these interfaces with existing staff, using our Rural Health IT vendor tools set.
22. Goal: We will reduce delays in billing, by the elimination of notes remaining uncompleted awaiting additional

documentation, including scanned documents, radiology reports, laboratory and test results, advanced directives, etc. Measure: Delays in billing have a negative impact on cash flow, because of uncompleted notes. Delay in note completion results from the time awaiting additional test and/or lab results, scanned documents, radiology reports, etc., to document within patient visits. We will measure the average number of days to complete a note for billing, pre-implementation vs. the expected decreased average number of days to complete a note for billing, post-implementation.

## **V. QUALITATIVE METRICS:**

Here are several of our typical, recent client healthcare provider statements that have been favorably changed by our work:

- Emergency Department Doctor: “We do not access the medication lists in EMR because they are found to be inaccurate.”
- Hospital Clinic Doctor: “Most clinic physicians do not access the patient’s electronic chart in EMR because it is too time-consuming. They do not access data in the inpatient system because it is too difficult to learn.” (This clinic is part of a hospital, located on the hospital’s campus.)
- Clinic Doctor: “The existing electronic communication systems are not efficient and available to all providers that need the documentation.”
- Clinic Doctor: “I run behind on my visits because I am waiting for documentation to be gathered from other systems. These include order results and other reports.”
- Clinic Doctor: “The system does not display information that is easily identified from past visits, so I have to spend too much time searching.”
- Clinic Manager: “The built-in canned reports are not comprehensive enough to assist with decision making and I need a programmer to get me the data.”

## **VI. OTHER METRICS THAT CAN BE EASILY MEASURED:**

Existing work processes and information systems provide survey data for the Balanced Score Card, Press-Ganey patient survey results compared to other facilities of like size, scheduling information, capacity, billing information, and security auditing. These systems can be leveraged to assist with the evaluation.

## **VII. SAMPLE SIZE:**

In planning how to study our metrics, we will have to determine the number of observations we will need to make. In general terms, we will need enough observations so that we can feel confident about the conclusions drawn from the collected data.

All data is available electronically in existing systems. Survey systems that currently provide success measures have been determined. Appropriate power calculations will be used in determining sample size as needed, however all data is readily available for the required analyses. For random sampling pre-and post-implementation, two (2) sample T-Tests can be accomplished to validate the studies.

## **VIII. CHOSEN METRICS:**

Now that our team has a list of metrics it will measure, it will grade each metric in order of importance to our stakeholders, i.e., HRSA, the partners' boards of directors, clinicians, patients, etc. We will use the scale of: 1 = Not Important; 2 = Moderately Important; 3 = Very Important. We will filter out those metrics that seem interesting to do, but which will not provide us with information that is of interest to our stakeholders at the completion of the evaluation.

Goals which we consider to be Very Important, listed by number, as shown in **Section IV**, above: 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 21  
Moderately Important Goals: 4, 12, 17, 18, 19, 20, 22

## **IX. FEASIBLE MEASUREMENTS:**

We have determined which items on the above list are realistically achievable. We will focus on what is achievable, considering what needs to be measured to determine if these goals have been met. We have used the following scale to rank them as follows: 1 = Most Feasible 2 = Feasible with moderate Effort; 3 = Not Feasible

Goals which we consider to be Most Feasible, listed by number, as shown in **Section IV**, above: 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 17, 20, 21, 22  
Moderate Effort: 4, 12, 13, 14, 15, 17, 18, 19  
Not feasible: 16

The technical project plan dictates: