



**A Framework for Evaluating Electronic Health Records
Guidelines for Applying to the Davies Recognition Program
Organizational Healthcare**

January 2009

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Introduction

The Computer-Based Record Institute (CPRI) established the Davies Recognition Program in 1994 to recognize exemplary implementations of electronic health records (EHRs). The rationale was to foster wider adoption in the industry by highlighting and sharing lessons learned from organizations that have successfully used computer-based records to improve healthcare delivery. The first awards were granted in 1995. Management of the Davies Program continues under HIMSS which merged with CPRI-HOST in 2002.

The program is named after Dr. Nicholas E. Davies, who was a practicing physician and President-elect of the American College of Physicians. Dr. Davies, a member of the Institute of Medicine Committee on Improving the Patient Record, died in an airplane crash in 1991. He was a caring and accomplished physician who believed that the computer-based patient record was needed to improve patient care.

The Davies Recognition Program is modeled after the Baldrige Award, in that it requires that staff in the healthcare system applying for the award to assess and document their progress and accomplishments against a framework for thinking about the process of implementing an EHR. *This document provides the framework for conducting the self-assessment.*

Applying for the Organizational Davies Award is a two-step process. First, applicants are asked to complete a short threshold application. Those that appear to be in an appropriate stage of implementation are then encouraged to prepare an essay, based on these guidelines, which constitutes the full application. These guidelines also lay out the organization for the application essay. Any questions can be answered by calling David Collins at 804-550-1619. The members of the Davies Committee believe the guidelines also have educational value for any healthcare organization starting down the path of implementing an EHR. They result from the group effort of a large number of experts and industry leaders with a rich variety of experience in designing and implementing electronic health records.

Who Can Apply?

Any hospital or health system, including academic medical centers, community hospitals, rural health hospitals and critical access hospitals, can apply as long as the institution provides acute care within inpatient beds.

A component of a hospital, such as an ambulatory clinic owned by a hospital, cannot apply on its own, as the entire hospital needs to apply. If a health system contains multiple hospitals, the health system must choose to either apply for its entire system or for designated hospitals within its system.

Behavioral health organizations qualify to apply if they have an integrated system that manages information across diverse levels of care within the organization, such as acute care, 24-hour programs, partial hospitalization and outpatient clinic.

Core Essential Application Requirements

To be considered for the Organizational Davies Award, the organization should meet the following criteria:

- 1) The applicant must show substantial EHR implementation:
 - Substantial is defined as having the systems as described in use for 75 percent of the total patient population across the enterprise. For example, specifically one measure of this would be the % of total acute admissions across the system.
 - All clinical components of the EHR represented in your application submission should have been implemented throughout the organization prior to Dec. 31* of the year previous to the date of the application. Evidence of substantial EHR use will be that the provision of care processes has been transformed. This means that care is supported primarily by the EHR rather than a paper medical record. The EHR should be the primary source of care information and, preferably, the only source of care information in most, if not all of the organization's care settings.
- 2) Where the EHR is implemented, CPOE should be utilized throughout the organization by all providers in the majority of essential care settings. For behavioral healthcare organizations, care plans should summarize all care being provided to a patient and be useable guides for the providers delivering or evaluating care. Where co-signatures are required it should be possible to route a document to another provider for revision or co-signature.
- 3) The EHR implementation should be integral to achieving the organization's strategic objectives. The top leadership of the organization including Board members, executives and physicians should be committed and actively involved in initiating and sustaining the effort.
- 4) The organization should be able to demonstrate that real-time clinical decision support within the EHR systems is used to meet the quality, efficiency, regulatory



and safety goals of the organization. This should include knowledge at the point of care, alerts, order sets, guidelines, etc., integrated into the clinician workflow.

- 5) Rather than a collection of scanned notes or text documents, we're looking for systems that improve care and workflow by making information transferrable and readily available.
- 6) The applicant organization should be able to present evidence that the business case and quality improvement goals it set for their EHR have been met or that significant progress has been made. The management and staff should be convinced by the documented evidence of the EHR's value to their organization.

* The EHR should be implemented in the care settings identified in the [Self-Evaluation Form](#). See [item #10 in Threshold Application below](#).

Step 1. Submittal of Threshold Application

Organizational Davies Threshold Application

The Threshold Application for the Davies Award Program is a brief document that summarizes the electronic health record (EHR) of an organization and should not exceed nine (9) pages plus a cover page and the Setting Self Evaluation forms. Note that the organization means an enterprise or business organization which may include multiple organizations, facilities and care settings.

The organization name, page number and date should be on the footer of each page. The Font should be 12-point Times New Roman. Below is a description of each page and required forms:

On the cover page provide the organization's name, address, a primary point of contact, an alternate point of contact and the year of submission.

1. Description of Organization and EHR Project

On the first page provide a summary of the organization for which this application is being submitted. Describe the corporate structure, entities, services and summary statistics. Indicate which entities or parts of the organization are being submitted for the Davies Award. For example, if the organization has an integrated delivery network with multiple hospitals, clinics, physician practices or long-term care entities, please indicate whether the organization is applying for the entire network or for one or more of the entities. Please note that the Self Evaluation Forms should clearly describe those areas of the organization which have not been implemented. Summarize the story behind the EHR, include the planning, selection process implementation and evaluation. (1/2 page)



Describe the EHR Project by answering the following questions (1/2 page):

- What were the organization's strategic objectives in implementing an EHR?
- How were the business/clinical goals set and who was involved in setting these goals?
- How is achievement of the goals to be measured?
- Who was involved in implementing these goals?
- How was the project organized? (Include the role of the Board, executive leadership, physicians, Information Services and end users)
- How was the project funded?

2. Description of the Entities within the Organization

On the second page describe all the entities in the organization (e.g., hospitals, home care agencies, long-term care facilities, physician offices, behavioral health sites). For each organization/entity, provide the following:

- Entity name, location(s) and major services/care settings provided by that entity (e.g. inpatient, cancer center, emergency department operating room, ambulatory care, rehabilitation services).
- Operating revenue and expenses.
- Total number of employees.
- Number of physicians (staff & non staff) and nurses.
- Key statistics such as admissions, census, visits, patient days, beds, tests, prescriptions or surgeries.
- Type of patients served.
- Note clearly if this entity is implemented on the EHR system and is included in this Davies application.
- Any other information which would be helpful to understand the entity.

You may provide this information in a table or paragraph format. For each of the entities for which you are submitting this application, complete the Setting Self-Evaluation Forms and attach them to the threshold application.

3. EHR Applications Implemented

On the third page should be a summary of the EHR applications implemented. Prepare a table of the applications implemented including

:

- Functionality, major vendor(s) and major application capabilities implemented (for example, order management, CPOE, clinical decision support, clinical documentation, patient registration, appointment scheduling, billing, laboratory, pharmacy, medication administration or closed loop medication administration,



- surgery, intensive care, emergency department, cardiology, radiology, PACS, etc.).
- For the entities for which the organization is submitting this application, list the date of the initial EHR implementation; or status of deployment, if in process or planned.
 - Plans for non-implemented areas must be included to help paint a complete picture of the organization.

4. Map of the Physical Locations and Table of Users

The fourth page should provide a map of the physical locations supported by the EHR. For each location or group of similar locations provide the total number of staff and user type/categories as follows: physicians (staff and non-staff), clinical, technical, administrative or other categories of staff at the location.

5. Graphic Description of Information Flow

The fifth page should provide a graphic description of information flow into, through, and out of the EHR, identifying major vendors/application capabilities (including ancillary and departmental), sources, and repositories **depicting the information management cycle of the EHR system**. Identify any differences by entity if needed.

6. Narrative Description of Information Flow and Process Automation

The sixth page should provide a narrative description of how the system acquires, stores, transmits, and retrieves data, information and knowledge from multiple sources, (1/2 page) and a table of the key work/care process automated by the EHR (1/2 page)

7. Clinical Decision Support, Transformation of Care Processes and Outcomes

The seventh page should describe the tools that provide added value in supporting clinical decisions (clinical decision support, or CDS). Provide a table summarizing the real time decision support (rules, prompts and reminders) that physicians and other caregivers are currently using. For each CDS tool, describe how the CDS tool is used by the care providers and if there is any measure to indicate its effect. (1/2 page)

Answer the following questions (1/2 page):

How has the EHR transformed care processes and outcomes?

How does the system guide and inform standard practices and promote evidence-based care? (Provide examples)

How has the organization impacted patient safety and quality of care with the EHR system? (include specific measures for those impacts)



8. System Capabilities for Analysis and Reporting; and User Satisfaction

On the eighth page, describe the system capabilities for analysis and reporting and user satisfaction with the system. Describe how the system design provides for the capture and storage of interpretable and consistent data that is used for analysis to improve clinical practice and patient safety: (1/2 page)

Describe which type of data in the EHR is available in discrete data elements that the organization is able to report against.

Describe how the organization uses the EHR data in reports to improve its efficiency and quality of care.

Describe how the users view the system and how satisfied they are in using the system to view patient records and document care. Describe and include the following: (1/2 page)

How does the organization measure physician and other caregiver satisfaction with the EHR?

Please provide physician and other caregiver satisfaction level statistics.

How is the data from multiple vendors integrated to provide a comprehensive display that meets the need of the providers of care?

What methods are used to assure continuous quality improvement based on feedback from providers?

9. Value/Quantifiable Benefits

On the ninth page, describe the value/quantifiable benefits the organization has achieved through its use of the EHR. Provide quantifiable, measurable results of value (business case and quality improvement goals). Relate these measurable results to the goals set at the beginning of the project, where applicable. These could include ROI, dollar savings, measures of quality improvements, and achievement of organizational objectives. Describe other improvements achieved through the use of the EHR even if measures are not quantifiable.

10. EHR Implementation Self Evaluation Form(s)

For each type of care setting in each of the entities for which you are submitting this application, complete the [Setting Self Evaluation Form](#) (included in the appendix). Similar care settings can be grouped on one form if the answers for each are identical. For example, if the organization is applying for a hospital which includes inpatient, ambulatory and surgical care settings, complete a Setting Self Evaluation Form for each of those settings. If the EHR is used the same way in all care settings, combine those into one form on which those settings are identified. The form is provided for the organization to evaluate the extent of the implementation and the pervasiveness of EHR use by care providers and staff in the delivery of care.



Applicants are encouraged to call David Collins at 804-550-1619 with any questions. Submit the Threshold Application electronically as a .PDF to David Collins at dcollins@himss.org by **Tuesday, March 31, 2009, 5p ET**.

Applicants are urged to submit the Threshold Application as soon as possible. Feedback from the Davies Committee will be communicated within a month of your submission. Earlier submissions allow applicants more time to complete the Full Application.

***NOTE:** Completion of the Threshold Application is mandatory to be considered for the Nicholas E. Davies Award. Only healthcare provider organizations may apply for Davies recognition. While vendors and consultants cannot be the official respondent, they are encouraged to assist their clients. The provider organization is the applicant and the award recipient.*



Step 2. Full Application

Organizations submitting Threshold Applications will be contacted by phone with the Review Committee's decision on whether or not they will be invited to complete a full application, and provided feedback. After receiving notification, the organization may proceed with the preparation of the Full Application. All organizations preparing a full application should review previous Davies applications on the HIMSS Davies website at http://www.himss.org/davies/pastRecipients_org.asp.

The full application should be at least fifteen pages and must not exceed fifty pages in length, including graphics and appendices. The application should be submitted in as a PDF in Times New Roman font no less than 12 point. Margins shall be no less than 1 inch with page numbers on all but first page. Incorporate any of the information needed from the threshold application including illustrations and graphics. Include all information needed to respond to the questions within the pertinent Section and Subheading.

A list (bibliography) of published references supporting important points in the application may be included as an **attachment**. These references may be peer or non-peer reviewed published articles. They may also be documents published within the organization.

A CD containing an electronic copy of the full application should be received by David Collins at 10359 Aspen Grove Terrace, Mechanicsville, VA 23116, by the deadline date of **May 29, 2009**. All applicants will be notified of results by **mid-July 2009**.

Organizational Davies Full Application

The content of the application is organized into four sections:

- Management - the organizational aspects of EHR implementation: strategy, planning, project management and governance.
- Functionality - the capabilities the EHR delivers to meet the needs of users and the objectives of the organization.
- Technology - technical design and architecture that enable the EHR to deliver the required functionality and performance.
- Value – the benefit to the organization, caregivers and patients from implementing the EHR.

Management

Successful introduction and use of EHR systems requires developing a strategy, providing leadership, engaging widespread support, and proactively managing throughout



the planning, implementation and ongoing operation. This section addresses how the health care organization manages these important facets of the EHR system.

1. EHR System Planning

Assess the planning process for the EHR system: the relationship between system planning and the business strategy of the healthcare organization and the business case used to justify and guide the investment.

a. Overview of the Organization

Describe the organization, its entities and services updating what was Page 2 of the Threshold Application, as needed. Specify what entities within the organization are included in this Davies application. Describe future EHR system expansion planned within the organization.

b. Organization Strategic Goals & Objectives

Identify the strategic goals and objectives for the organization and describe how they guided the vision, goals and objectives for the EHR.

c. EHR Vision, Goals & Objectives

State the vision for the EHR system. Describe how the vision was developed, reviewed and accepted. List the EHR project goals and objectives. Illustrate the relationship of these goals and objectives to the organization's strategic goals and objectives. Define the measures to be used to determine the achievement of the objectives.

d. Leadership & Governance

Describe how the governing board(s) and executives of the organization defined, guided, and supported the EHR system project. Describe the EHR project leadership team. Include an EHR project organization chart during planning phase. Include any groups or committees that oversee EHR features (such as decision support) and content (such as rules, order sets, note templates, etc.).

e. Key Stakeholder Involvement

Discuss how key stakeholders were identified. Identify key stakeholder groups. Define the involvement of key stakeholder groups (particularly physicians) in planning for the EHR system. Describe the process for gaining agreement/consensus among stakeholders.

f. Needs Identification & System Acquisition

Describe how the organization defined its needs/functional requirements for an EHR. Outline how the organization acquired and/or built an EHR system to meet those identified needs/functional requirements. Describe the decision making process used in acquiring the EHR system.



g. Business Case

Explain how the organization justified the investment in the EHR system. Include a description of any return on investment (ROI) models used with projected costs (one time and ongoing) and benefits. The benefit metrics might be both clinical and financial. (These should be identified again in the Value section of this application to demonstrate how the organization met identified metrics with the EHR implementation.)

h. Marketing and Communications

Explain how the EHR project vision, goals, objectives and progress were communicated and marketed to stakeholders during the planning and implementation phase. Outline any formal communications plan.

i. Project Risk Management

Discuss how the organization identified the risks of implementing the EHR. Describe how the organization monitored, mitigated, and managed those risks.

2. EHR System Implementation

Assess the approach to implementation of the EHR system.

a. Implementation Planning

Explain how the organization planned for the implementation of the EHR system. Describe how the organization identified the phases and roll out schedule.

b. Implementation Phases

List each phase of the implementation. For each phase, list the functionality installed, process change implemented, user groups involved, physical locations and the projected schedule. Compare the projected schedule with the actual implementation timeline. Clearly identify any pilot phases.

c. Implementation Staffing

Describe how the organization planned to staff the implementation of the EHR system. Include an EHR project organization chart for the implementation phase (if different than for the planning phase.) Share any strategies utilized to minimize disruptions to patient care during the implementation. Include any data that illustrates planned compared to actual staffing during implementation.

d. Transition to New Processes

Describe how the organization improved processes during the implementation of the EHR. Include approaches for managing change in the organization's culture and encouraging adoption. Explain how the organization achieved a balance between process standardization and local flexibility in the use of the EHR.



e. **Training and Support During Implementation**

Relate the overall strategy and approach to training and support of users during implementation. Discuss how training time was minimized and user competency was maximized. Elaborate on any methods used to target specific user groups (especially physicians). Outline successes and challenges in gaining broad participation in training. Describe how the organization measured training effectiveness.

f. **Implementation Lessons Learned**

Identify the challenges and lessons learned during the implementation of the EHR system. Include successful and not-so-successful strategies utilized. Describe any unintended consequences, positive or negative resulting from the system implementation and describe how you dealt with any such issues.

3. Ongoing Operation of the EHR System

Assess the management of ongoing operation of the EHR system.

a. **Management Policies & Procedures**

Summarize changes to policies and procedures needed to support the EHR data capture and management. Describe how these changes were developed and managed within the process of the implementation.

b. **Impact on Operations**

Communicate the organization's success in incorporating the EHR system into routine operations such that users are able to use the system proficiently and effectively in providing care.

c. **Approach to Paper Medical Record**

Identify any remaining portions of the medical record that are maintained on paper during or after the patient encounter. Discuss the organization's approach to ongoing management of any remaining paper medical records (e.g. replace paper totally or incrementally, scan paper document, provide sufficient information online to meet most routine needs). Please address the clinical workflow related to any hybrid record environment. Provide an estimate of the percent of clinical documents that are scanned into the system, as well as the timing of the scanning (at discharge, within 24 hours, etc.).

d. **Ongoing Planning**

Describe the organization's ongoing planning process that guides resource allocation and decision-making for the EHR system. Include how the organization assures that new or modified organizational strategies are incorporated into EHR system planning. Discuss the process for evaluating and incorporating emerging technologies and new knowledge regarding best practices in EHR system use.



e. Ongoing User Support

Describe how the organization supports EHR system users post implementation. Include the process for handling requests for changes and enhancements. Describe how the organization provides ongoing support for users, including types of support provided (phone, remote access, etc.) and the hours of availability. In addition, describe how the organization deals with the infrequent physician user.

f. Ongoing User Training

Delineate the organization's approach to ongoing user training, including training for new system users, training on enhancements and training for software version upgrades.

g. Upgrades and Enhancements

Describe plans or actual experience in implementing application release changes that leverage new capability for users of the EHR system and for the business of the health care organization. Discuss how upgrades are/will be implemented in an orderly process with minimum impact on users and patient care processes.

4. Evaluation of Management of the EHR Project and System

Step back to review and assess the overall successes and challenges in managing the EHR system planning, implementation and operations.

- a. Successes - Select and describe the biggest successes in the management of the EHR system. Elaborate particularly on those that represent innovation or breakthroughs to managing the many challenges of a project of this magnitude.
- b. Challenges - Select and describe the areas where implementation efforts to date have not been as successful. Include areas that required a rethinking of strategy or approach. These are the areas where the organization learned through experience. Give clear examples of areas where the organization evaluated the effort and chose a new path to achieve success. Include those areas where "we wish we'd known that from the beginning" of the project.

Functionality

Given the strategic objectives of the organization and the business case outlined above, the functionality of an EHR system must support patient care, management, and other key processes of the organization. This section addresses the needs for information and process support that the EHR system is intended to meet, how the EHR system is designed to meet those needs, and the methods used to evaluate the EHR system's



effectiveness. This section also addresses the extent to which users and other customers of the EHR system adapted to the new computerized workflow processes and the methods used to measure their satisfaction with those processes. Not all functional areas may be equally important to an individual organization's strategic objectives or business case.

1. Targeted Processes

a. Processes

Describe specific processes targeted for improvements in quality, efficiency, or reliability that drove design of the EHR system: these may be clinical, administrative, or financial processes. For each of these processes indicate to which EHR project goal in the management section it relates, which EHR functions were intended to support it and how the changes were to be measured.

Identify functionality issues that complicated attaining the objectives. These issues hindering conversion to electronic processes could include inadequacy in the vendor software; problems with organizational readiness or training; or lack of software to support selected media or devices.

If the EHR system is still being phased in or evolved, differentiate the current process(es) from the eventual processes or options.

b. Provider Roles

Describe the role of physicians and other caregivers in designing the process changes and in defining the EHR system functions needed to enable the change.

c. Overall Staff Response

Elaborate on the response of the organization to the change in work processes. Discuss how well the staff adapted to the EHR system functionality.

2. Information Access

Describe the extent to which information managed by the EHR system meets critical organizational needs.

a. Comprehensive Data

Insert and revise, if needed, the Information Flow graphic and narrative submitted with the Threshold Application. Describe the extent to which the EHR system captures the data necessary for a longitudinal health care record (i.e., continuous, lifetime record) from multiple systems. Describe any data that is needed by the clinician that does not presently reside in the EHR system and how that data is accessed.

b. Data Capture



Discuss data capture from the point of care and from other sources. This should include a description of the means whereby patient data are captured, including data collected/generated by health care professionals and patients, interfaces and linkages with external systems.

1. Data entered directly by health care professionals - list the methods or options for accomplishing data entry, the types of information that are entered by each mode, and the system features geared to the ease and speed of data entry.
2. Automatic data capture – address data captured from other sources including:
 - Information systems (i.e. ancillary systems)
 - Devices (monitors, dispensing devices, vital sign instruments, bar codes, etc.)
 - Other
3. Computerized provider order entry (CPOE) – Indicate how providers enter orders into the EHR, and whether entered orders are compared in real-time with rules or standards to reduce errors and improve care quality. Mention types and percentage of orders entered (medications, laboratory, etc) through CPOE. Identify any orders not entered into system and discuss why. Indicate types of orders generated without using CPOE and specify the reasoning for this.
4. Care documentation by nurses, doctors, and other providers.
 - Include which types of documentation are entered into the EHR and describe whether and how health care team members use the EHR to assess, plan, and document care. Include a description of how documentation is entered using structured and unstructured notes and whether it is keyed or dictated.
 - Describe how medication administration and reconciliation is handled
 - Also address overall medication management, methods of documenting medication administration and if the organization has achieved a closed loop medication process.
 - Describe any other methods for capturing data from providers and where relevant, mention use of technical approaches such as automated medical devices, voice capture, and natural language processing.

d. Information Availability and Access

Describe the extent to which data are integrated across sites of care and can be assembled to support care management. Describe the availability of the EHR system both in relevant health care provider organizations (e.g., hospital, practitioner office, clinic) and sites within those locations (e.g., terminals in practitioner offices, nursing units, or patient triage areas). Also describe any remote or dial-in access, linkages with external health care organizations or providers from off-campus sites and from their homes. Include any functions of the EHR system that assist in management and retrieval of information (e.g., medical record tracking, image management).

e. User Access



List the numbers and types of users who have direct access to the EHR system, what data are available to them, and what functions they can perform (e.g., access patient information, enter health history, schedule appointments, conduct patient education, etc.) Include any users outside of the health care organization that owns and operates the EHR system.

3. Decision Support

Describe the extent to which the EHR system provides tools for supporting clinical decisions at the point of care and for improving clinical practice and care delivery. The mix and specifics of decision support capabilities may differ according to the setting and organizational objectives. Where relevant within each of the topic areas below, include system support for ensuring and improving the accuracy, completeness and usefulness of patient data captured by the EHR system (e.g., editing, defaults, guided choices, templates, etc.)

a. Tailored Information Integration

Illustrate how the system facilitates access to patient specific information in the way that users need for review and use in specific patient care situations. Include features that combine, integrate, and format patient specific information (within the core EHR or interfaced systems) in displays tailored to particular user groups (e.g., practitioner, clinic receptionist, case manager, community health nurse, clinical psychologist) and patient care situations (e.g., follow-up visit with patient in a disease management program, nurse triage, routine physical examination, specialist consultation follow-up). (Include sample screen shots and/or printed products that illustrate information integration as **attachments**.)

b. Decision Support Applied During CPOE

Describe the features that alert users to possible indications or contraindications for specific interventions during the CPOE process. These may be prompts, alerts, rules, medication algorithms, or other system features that are presented when the order is generated. Include medication-related interaction and dosage checking, duplicate checking, substitute therapy checks, display of linked appropriateness criteria, rules-based alerts (e.g., triggered by new laboratory results on renal function). Include sample screen shots as **attachments** and provide a table identifying examples of different implemented prompts. Describe the organization's approach to deciding which of these decision support categories, and specific rules within each category, are made available for use during CPOE. Describe any monitoring of the frequency with which decision support tools are used, and whether prompts are overridden or accepted by ordering clinicians.

c. Order/Clinical Practice Standardization



Discuss the system features that guide users to incorporate recommended practices in patient assessments and care plans and to enter complete orders and documentation. Include features such as branching assessments or assessments that are triggered by patient condition, order and note templates, order sets, clinical pathways, time-based care plans based on risk or population group (e.g., patient with newly diagnosed diabetes or high-risk CHF), common choices (individual and departmental), and personal favorites. Indicate prompts and alerts that occur during the assessment process and any type of treatment recommendations generated by assessments. Where preferred treatment algorithms are defined, show how these are implemented, how patient progress is assessed, and how variance from preferred treatment is monitored. (Include sample screen shots **as attachments** to illustrate how these are integrated into routine EHR interactions of physicians and other caregivers and provide a table with example applications for each feature.)

d. Knowledge Access

Explain the system features that provide clinicians with easy access to relevant (context sensitive) institutional and external knowledge, such as policies, clinical guidelines, and the latest clinical research.

e. Patient Decision Support

Describe the system features that support collaborative decision making about options and approaches for health management, coaching/teaching by caregivers, and patient self-management outside of the face-to-face encounter. Include displays and printouts for use in discussion/teaching, as well as linked patient supporter sources such as home health monitoring with communication to the provider, personal web sites providing access to personalized health care content, and personal health records.

f. Aggregated Data Analysis and Reporting

Describe which type of data in the EHR is available in discrete data elements that the organization is able to report against. Describe the system features and tools for extracting and aggregating patient information for purposes such as practice analysis/improvement, population-based care, community wellness assessment, quality assurance, research, and external performance “report cards” (e.g., HEDIS, Joint Commission, NCQA FDA, CDC, Core Measures, state requirements). Include the types of reports easily available to physicians and other caregivers, to local or organizational committees working on patient safety or quality improvement, and to organization management/clinical leadership.



4. Workflow and Communications

Assess the extent to which the EHR supports the work and workflow of care delivery and local and cross-setting communications between and among clinicians and patients, support staff, other departments.

a. Workflow

Illustrate how the system supports improved clinical workflow within the local clinical unit and across units. Include diagrams of order and results management, referral management, and patient flow and any capabilities designed to close process loops and ensure timely and appropriate completion of the many tasks of care delivery.

b. Communications

Discuss the capabilities of the EHR system designed to facilitate communication among personnel participating in the care delivery process, including patients. Include any functions that support hand-offs among entities, care teams, and care professionals, and cross-entity communication in general. Describe any communications issues that have emerged from the use of an EHR rather than paper reminders. Discuss electronic communication between care providers and patients, if relevant.

5. Data Sharing with Other Organizations and Patients.

Discuss how data from outside the organization are incorporated in the EHR, and how patient information is communicated to other organizations when needed for patient care outside organizational boundaries.

a. Data Sharing with External Organizations

Describe any data sharing of electronic data with external (non- owned) organizations. Include not only closely related organizations such as labs, long term care, and physicians without formal affiliation with the organization, but also data sharing related to reporting quality measures, pay for performance systems, or syndromic surveillance.

b. RHIO/HIE

Describe any participation in community RHIO/HIE efforts. Describe any electronic reports or data sent or received for the health information exchanges. List any standards adopted to facilitate participation in the information exchange. Provide data to show the extent of usage of the collected data in the RHIO or HIE by providers.

c. Patient Communications

Describe any data sharing with patients including access to organization's portal, physician communications, and/or personal health record (PHR). Include any capability of patients to input data into the EHR.



6. Other Operational and Strategic Activities

Describe the extent to which the EHR supports other key organizational activities, as relevant. (Note that this list provides the overall organization for the third section under Value.)

a. Administrative

Discuss which administrative and financial management functions such as quality management and assurance, patient accounting, managed care, and cost accounting are integrated with or supported by the EHR system.

b. Patient Safety

Address how the system supports the organization's processes to reduce medical errors and improve the overall quality of patient care.

c. Research

Relate how the EHR system supports research and education, clinical trials, epidemiological surveillance, technology assessment, and linkages to larger, multi-institution research and evaluation databases.

7. User Satisfaction, Productivity, and Effectiveness

Method of assessing the overall success of the implemented EHR in supporting essential users of the system and care delivery processes of the organization as perceived by the users.

a. System Use

Explain, and expand upon the self-evaluation forms provided with the Threshold Application. Comment upon the proportions of users in identified care settings who have adopted major types of functionality in the EHR such as utilization of knowledge bases or direct entry of information. Identify any areas where EHR is not yet implemented such as anesthesiology, oncology, etc. Describe how utilization is monitored and measured

b. User Satisfaction

Describe both formal and informal assessment of user satisfaction. Include a copy of any instruments/survey forms used to assess user satisfaction as an **attachment**. Include which types of users were assessed, any specific activities or processes assessed, and how the results influenced subsequent actions such as changes to the EHR. (Note: include results of any user surveys in the Value Section)



Technology

The technology employed in the EHR system affects the ability to meet user functional needs, the flexibility to evolve, the ability to provide reliable and responsive support to patient care, and the resources that must be invested to acquire and maintain the system. This section addresses specific technologies and how these are integrated with each other and with external systems. More importantly, it addresses the ability of the EHR technology to support business requirements and to deliver the required functionality and performance to the organization.

1. Scope and Design of EHR System

Describe the scope and technical design of the EHR system, including software applications and tools used to implement and operate the system.

a. System Description

Provide an overall description of the EHR system, including hardware, database management, data input technologies, linkages with external systems and databases, image processing and storage, etc. Describe use and experience with portable and wireless point-of-care devices.

b. System Architecture

Describe the system architecture and the underlying rationale for its selection, including the approach to data storage (e.g., central versus distributed).

c. Integration

Explain the approach to integrating the EHR system with other current systems within the health care organization, as well as those owned and operated by external parties. Document the approaches to enabling integration of patient information of all types and from multiple care settings so that users can effectively manage patient care across the continuum. (Include a diagram describing application architecture).

d. Transferability

Describe the organization's rationale used for making design tradeoffs between standardization and flexibility, between general and setting-specific solutions.

e. Scalability

Explain the organization's approach to ensuring that the EHR system can be scaled up or down (e.g., physical access, applications, growth of the health care business) without compromising functionality, performance, and integration.

f. Emerging Technologies



State the organization strategy and approach to ensuring that the system can accommodate emerging technologies and innovations in medical technology. Describe the rationale and process employed for updating technology to maximize the value of the EHR system for users and minimize disruption during transition.

2. Security and Data Integrity

Describe the strategy and approaches for managing, maintaining, and enabling audits of system security, data confidentiality, and data integrity in support of the standards and business objectives of the health care organization. Compliance with HIPAA security and privacy requirements should be addressed.

a. Security/Confidentiality and HIPAA Compliance

Identify technologies and design features employed to secure and protect access to confidential patient data and to ensure accountability for user updates and accesses. Discuss how the organization maintains a balance between the need to maintain system security and patient confidentiality and the needs of care practitioners for access to patient information. Provide evidence that the EHR system provides adequate protection against unauthorized and inappropriate data access and entry. Include a description of relevant policies and procedures geared towards leveraging system security features and meeting the needs of the health care organization. Include processes for user education, monitoring, and enforcement. Indicate whether all clinicians are covered by these policies of education, monitoring and enforcement. Describe any efforts made for specific patient populations, e.g. psychiatric, over and above the normal security provisions.

b. Data Quality and Integrity

Present the system design features that ensure the reliable collection of complete and accurate data in a timely fashion. Give an overview of the relevant policies and procedures relating to data capture and management. Outline technologies and design features employed to ensure data integrity, including those used to restore data integrity once a problem has been detected. Describe the process and elapsed down time to accomplish recovery.

c. System Integrity and Disaster Recovery

Describe the technologies and features employed to ensure system integrity and restore it when hardware or software components fail. Show evidence that the EHR system is adequately protected from accidental or deliberate loss or destruction of data. Describe the backup systems in place to minimize interruptions in system availability, and the process and elapsed down time for recovery in the event of system failure. Indicate specifically the Recovery Point Objective and the Recovery Time Objective for the significant systems. Describe any parallel technical or paper systems used for scheduled and unscheduled downtime.



d. Data Archiving and Storage

Explain the extent and manner in which the EHR system design and policies and procedures meet legal requirements concerning the longevity and indelibility of patient record information. Describe how patient records are made available to surveyors and outside parties (such as legal bodies and courts of law) when subpoenaed.

3. Standards

Describe the adoption of standards to facilitate data standardization and data sharing within the health care organization and with external organizations and parties.

a. Common User Interface Standards

Indicate the extent to which the EHR system has achieved a consistent user interface, including in different physical locations and entities within the health care organization.

b. Data Model

Document the data modeling methodology and approach to defining, standardizing, and maintaining data definitions. Describe any efforts made to standardize terminology between sites and providers. If any software tools have been used describe the functionality and vendor. Describe any data dictionaries and rules engine, in terms of the scope of the EHR database it supports.

c. Data Exchange Standards

Describe the extent to which industry standards (i.e., HL7) are employed for messaging between systems and to increase user access to all needed data. Describe lessons learned in the time required and costs of creating interfaces between systems.

d. Data and Document Standards

Describe the extent to which the EHR system adopts industry and professionally developed interoperability standards to ensure consistency in documents and data; and to permit electronic data to be exchanged among systems.

Identify standards used including:

- Standard data collection/business rule, standard protocols, standard use cases, etc.
- Standards implementation framework (i.e. IHE Patient Identifier Cross-reference, Sharing Lab Documents, Radiology Schedule Workflow, etc.)
- Document standards - HL7 Clinical Document Architecture (CDA) including Continuity of Care Record CCR, Lab Reports, etc.)
- Document naming standards (i.e. LOINC)
- Data content standards including
 - i. Codes (i.e. NPI - National Provider Identifier, etc.),



- ii. Classification terminologies (i.e. ICD, CPT, etc.), or
- iii. Reference terminologies (i.e. LOINC, SNOMED, RxNorm, etc.).

4. Performance

Assess how the technology for the EHR system has supported its end-users such that it 1) ensures that the EHR system meets desired levels of performance necessary to support key users and business processes on a reliable, sustained basis, and 2) supports advances in technology and growth and organizational changes in the business of the health care organization.

a. Availability

Describe how the EHR system is accessed for direct patient care functions whenever and wherever it is needed (ability to minimize down time and not adversely affect patient care). Provide actual uptime performance and scheduled and unscheduled downtime as precisely as possible.

b. Response Time

Give system response time consistently meeting data entry and retrieval requirements of direct patient care processes (and physicians and other providers) at peak usage periods. Provide actual results and discuss physician feedback and satisfaction with response times.

c. Continuity Planning

Give an overview of the organization's operational plans for access to patient information and provision of uninterrupted patient care in the event that the system becomes unavailable.

d. Service Level Agreements

Describe the commitment to the consistent and reliable operation of the EHR system by Information Technology staff. Summarize any the standards set in Service Level Agreements and compare to actual performance.

Value

Documenting the actual value of the EHR system serves several important purposes:

- The investments in system components and implementation are huge. Consequently many organizations set very explicit expectations for the implemented system in terms of its impact on overall quality improvement. Important areas to consider include patient safety, effective care delivery, patient care efficiency, clinician efficiency, regulatory compliance, user satisfaction, access to care, equity in care,



ROI and other strategic objectives. The ability to understand and articulate actual progress is important to justify the investment to those who funded it and to obtain funding and approval for pushing ahead. It takes years to achieve the maximum benefit from such an investment. The Value section should highlight the initial benefits derived, the metrics and methodology which have been chosen to evaluate these benefits and the plans for future measurement of improvements and ROI.

- For those managing the project, a clear understanding regarding the results actually achieved can be extremely useful as a checkpoint to verify the success of implementation (both during pilot implementations and full-scale roll-outs), to guide expectations for further rollout within the organization and to indicate opportunities for increasing value through enhancements to capabilities and fine-tuning the implementation strategy.
- Implementing an EHR is a community effort, requiring extra work and energy from virtually every employee of the organization. Publicizing and celebrating EHR achievements validates the accomplishments of individuals and the community as a whole.
- The EHR projects that have had the greatest influence on the health care industry have communicated their experience with achieving value from their EHR projects by providing detailed analyses of both the resources expended and return gained from their project.

For all of these reasons, demonstrated value is an important and required element of a successful EHR implementation in the Davies Recognition Program. This section addresses the value achieved in terms of meeting objectives for the system and in bringing about the desired change in processes.

1. Success in Meeting Expectations of the Project Goals and Business Case

The value proposition for each EHR project logically flows from the strategic objectives and justification and this is the appropriate framework for presenting evidence of success. Organizations take different approaches in framing the value proposition or business case. Some who expect impacts that can be dollar-quantified perform a cost-benefit analysis comparing the EHR-supported process with a paper-based one or examine the ROI. However, increasingly the EHR system is viewed as a strategic investment with many objectives that are difficult to measure or express in dollars. In some organizations the major objective is to improve quality of care, with operational cost savings viewed as a way to offset the investment in systems and organizational change to achieve quality goals.

Among the barriers to broader adoption of EHRs is uncertainty whether the large expenditure required will have demonstrable ROI, or whether such return should be expected. Rigorous ROI analysis is difficult for many reasons, but explicit description of



whether an ROI study was performed, and its results if performed, is of great interest to organizations considering an investment in EHR. In discussing ROI, it is important to include both the costs incurred as well as the gains achieved. Using the framework of the business case (how the organization framed its expectations that justified the investment), describe the evidence that expectations have been met. Include specific milestones and metrics, as relevant, and as much quantitative (cost savings or other measures of success) evidence as possible. Formal research is ideal but not required, as it is not within the reach of many organizations. However, the organization must have made a concerted effort to validate what it set out to accomplish with its EHR system. A good test of whether there is sufficient evidence to present a compelling case is whether the available evidence has convinced the organization's own management and board.

The actual outline for this section will vary depending upon the value proposition or business case presented previously in the Management section. If applicable provide a publication Reference List as an **Attachment** and provide copies of any abstracts, book chapters, or publications based on the organization's EHR project. However, make certain to include within the application the basic information necessary to respond to all the questions.

2. Success in Achieving Desired Change in Targeted Processes

Another measure of success of the EHR project is in bringing about desired change in targeted processes. Organizations take on predicted system costs with anticipated qualitative and occasionally quantitative benefits in key processes and outcomes. An emerging approach is to specify improvements in key performance indicators ("rates of compliance with guideline-based preventive and health screening services for our patients will improve from the current 30-60 percent to 80 percent within 2 years" or "specialist physician satisfaction with access to information concerning referred patients will increase by 30 percent within one year and by 60 percent within two years."). Through both system design and change management during implementation, successful organizations accomplish improvements in key processes. This section provides another perspective on success by providing an opportunity to highlight those accomplishments.

Using the information presented previously in Functionality as the framework, discuss the evidence that targeted processes have changed in the desired direction following introduction of EHR-enabled process and workflow. It is important to utilize quantitative evidence (e.g., adverse event rates, mean length of hospital stay, STAT turn around time) of improvement wherever possible, but some qualitative evidence (e.g., testimonials of key participants, feedback from physicians or patients) is also acceptable in this section.

Include new processes made possible by the EHR (e.g., real-time ability to study practice variation, ability to perform outreach to patients enrolled in a population management



program, ability to contact patients on a medication recalled by the manufacturer). Additional areas to be considered in this evaluation include:

- Improvement in important patient safety metrics
- Enhanced effectiveness of care delivery
- Reduced admission or re-admission rates
- Reduce infection rates
- Greater efficiencies in patient care or with clinicians
- Improved compliance with “standard protocols”
- Improved documentation compliance
- Improved compliance with regulatory agencies
- Enhanced customer satisfaction
- Improved access to the care within the organization
- Improvements in equitable care delivery
- Important additional gains may include streamlining information access and reducing time spent searching for missing information, improving continuity of care across providers and settings, improving timeliness and reliability in communicating test results to patients and/or improving the effectiveness of teams by facilitating communication and organized work flow.

Show evidence (user survey results) that the targeted community of users is satisfied with the EHR System, changes to their workflow processes, and satisfaction with the ability of the system to meet their needs. If available, present quantitative survey results organized by types of users with different needs. These may be primary care physicians, specialist physicians, attending physicians, house staff, mental health professionals, nurses, ancillary staff, etc.

3. Success in Meeting Other Corporate Objectives

Organizations often have other important objectives not explicitly included in the business case and not likely to be addressed in 2 above. This section provides an opportunity to present evidence relating to these. Using the previous information in Functionality (Other Operational and Strategic Activities) as the organizing framework, discuss evidence that the EHR has brought value. Include any unanticipated or negative impacts that occurred. Additional specific areas which may have benefited from the EHR project should be considered including research, community health, public health and education.

Attachments:

Expanded Self Evaluation Forms
Screen Shots
Satisfaction Surveys



Reference List (if applicable)

Step 3. Site Visit

Based on review by the Davies Organizational Award Committee, finalist candidates are selected in late June and contacted shortly thereafter to schedule a site visit for sometime in late July or August. Specific instructions for the site visit will be provided at that time. Visits are usually a full day in length but may be somewhat shorter or longer depending upon the diversity of sites in the applicant organization. Organizations selected for site visit should plan to arrange interviews with key people from management, information systems, users, and others and provide access to at least one ancillary site. The site visit is conducted by several members of the Davies Award Committee who report back their findings to the other Committee members. The final award determination is made by vote of the entire Committee.

Step 4. Submission of Final Paper for Proceedings and Presentation Material

Davies Award winners may be asked to emphasize exemplary aspects of their approaches or accomplishments in the final submission of the paper and the presentation. Following acceptance, presenters will be required to provide one paper copy and an electronic version of the final paper by a date in late October or early November to be specified by the Committee. Providers who apply and are accepted for consideration must accommodate a site visit, comply with all deadlines for submittal of materials, prepare application paper, sign a copyright agreement for inclusion of the application paper in the symposium proceedings, and agree to present the paper and serve on a lessons learned panel at the HIMSS Annual Conference.



Appendix

Setting Self Evaluation Form [as referenced in [Step 1, part 10 “EHR Implementation Self Evaluation Form\(s\)”](#)]

Please complete a separate self evaluation for your organizations and major types of care settings applied for in this application (e.g. inpatient, cancer care, emergency department, operating rooms, anesthesiology, ambulatory clinics, physician offices, long term care, home care etc.) Care settings or locations can be aggregated where use and proportions are similar. Add more columns for locations or rows for types of EHR users where appropriate (e.g., case managers, triage nurses, community health nurses, clinical psychologists.) Tally users who work across locations in their primary location. The percentage of users should be the percentage of users of that type, i.e. % of physicians.

Type of Care Setting(s): _____

Location(s) _____

1. How prevalent is use of the EHR?

	# of possible EHR users at these locations	% of users of EHR at these locations
Physicians		
Nurse Practitioners/Physician Assistants		
Nursing		
Ancillary/Other		

2. Provide the percentage of providers* using CPOE in these care settings.

3. Generation of patient care orders. Indicate below the percentage of each category of orders which are entered electronically.

Types of Orders	Inpatient % directly entered electronically by provider*	Outpatient % directly entered electronically by provider*	ED % directly entered electronically by provider*	Ambulatory Physician Practices
Medications				
Non-Medications				

* Provider is defined as the individual originating the order.

Please describe areas throughout the organization in which CPOE is not being used.



4. What form does clinical documentation take in this care setting? Enter percentages based on the total number of documents entered.

Source of Documentation	% Paper documents	% Scanned documents	% Text documents (e.g., dictated and transcribed or entered)	% Template level (discrete field capture of clinical information)	Total %
Physicians ¹					100
Nursing ²					100
Allied Health					100
Labs					100
Pharmacy					100
Radiology					100

¹ Physician documentation including H&Ps, progress notes, discharge summaries, transfer summaries, procedures notes, etc.

² Nursing documentation including medication administration, vitals, flow sheets, assessment, plans, progress notes, etc.

3. Do all clinicians use the EHR as the primary tool for retrieving, documenting and communicating with others on the care of their patients? Yes/No. Describe any exceptions

5. In 2005, HIMSS Analytics launched the EMR Adoption ModelSM (EMRAM) to track EMR adoption progress at hospitals and health systems, see http://www.himssanalytics.org/hc_providers/emr_adoption.asp. The EMRAM scores hospitals in the HIMSS AnalyticsTM Database on their progress in completing 8 stages (0-7).

Describe the major areas of functionality of your system in relation to this model.

If you participate with HIMSS Analytics, please provide your EMRAM score.

6. Please be more specific about how the EHR is used in this setting. Which of these descriptions of EHR use is most accurate for this care setting? _____ (select one A - E and describe your selection at the end of this section)

A. The EHR is the only source of care information (i.e. a paper chart is never created). Any paper information (signed consents, information from other health care providers, etc.) is scanned during the patient visit/admission to immediately become a part of the EHR. Describe what type of information is scanned into the EHR and how clinicians view the information once it is scanned:



- B. A partial paper record is created during the patient visit. The partial paper record is used in conjunction with the EHR. The partial paper record is scanned after the visit to become a part of the EHR. Describe what type of information is in the partial paper record:
- C. A partial paper record is created during the patient visit. The partial paper record is used in conjunction with the EHR. The partial paper record is filed and maintained on paper after the visit. Describe what type of information is in the partial paper record:
- D. A full paper record is created during the patient visit. The paper record is used in conjunction with the EHR. The paper record is scanned after the visit to become a part of the EHR. Describe how the EHR is utilized. Is the EHR used for historical records only? Is the EHR used as a redundant source of information?
- E. A full paper record is created during the patient visit. The paper record is used in conjunction with the EHR. The paper record is filed and maintained on paper after the visit. Describe how the EHR is utilized? Historical records? Redundant source of information?



Acknowledgments

The first version of this document was prepared by members of CPRI's Work Group on CPR Systems Evaluation in 1993. When the effort began, the Work Group was co-chaired by Paul Tang and Elaine Steen. Subsequent co-chairpersons include Ned Simpson and Charlene Underwood. For Version 1.0, the subgroup leaders (Blackford Middleton, Susan Miller, Ned Simpson, Charlene Underwood, and Joe Weber) drafted the major sections of the document with input from participants at the regular meetings of the Work Group on CPR Systems Evaluation. Jane Metzger edited and redrafted the final version. Special thanks are due to Alan Perkins and Carl Thor, whose past experience with the Baldrige Award provided guidance during the formative stages.

Special tribute is paid to external reviewers whose thoughtful review and comments led to many substantive improvements in the document. External reviewers included the following: Rick Abrams, Don Berwick, Patricia Brennan, William Braithwaite, Joel Buchanan, Morris Collen, Don Connelly, Ted Cooper, Daniel Davis, Gary Dickinson, Michael Fitzmaurice, John Glaser, Barbara Heller, Thomas Lincoln, Roger Longenerfer, Dan Masys, Leo Mercer, Edwin organ, Ron Ribitzky, William Reed, Hack Schoolman, Robert Seale, Kathy Shibata, Dean Sittig, Claudia Tessier, and William Tierney.

A large number of individuals also contributed to the further development and refinement of the criteria reflected in Version 2.0. Kathy Shibata provided additional review comments in response to the invitation in the Version 1.0 document. Staff from organizations that applied for consideration as presenters at the 1995 Annual Davies Symposium were surveyed via fax, and many responded to this request for specific input on improvements. In order to gain experience with actually applying the criteria to self-assessment/ evaluation, two health care organizations and a panel of experts volunteered their time in 1995 to conduct a pilot geared to identifying improvements/enhancements to the structure and content of the criteria document.

Two different branches of Kaiser Permanente prepared a self-assessment report, guided by the outline and topics in the criteria, and then participated in a one-day evaluation session:

- Ted Cooper directed a team at Kaiser Permanente Northern California and hosted the evaluation session. Other contributors included Homer Chin, Yan Chow, Jim Greendale, Dam Meenan, George Peredy, Joe Yanov, Rosalba Carillo-Vassel, Toby Dunn, Chris Grant, Jansin Lee, Dan Meehan, Elaine Sill, Stephanie Sales, Silvia Sorell, and Gerry Gaintner.
- John Dewey of Kaiser Mid-Atlantic States performed a self-assessment of their system efforts.

Both CPR projects involved rollout of direct system support to large numbers of physicians, nurses, and other care practitioners in the ambulatory care setting.

Five external experts, with experience in developing/evaluating CPR systems for ambulatory care, volunteered to participate in the pilot as the expert review panel:

- Paul Clayton, Columbia Presbyterian Medical Center
- Erica Drazen, First Consulting Group



- W. Ed Hammond, Duke University Medical Center
- Robin Stoupa, University of Nebraska Medical Center
- Paul Tang, Northwestern Memorial Hospital

Panelists received copies of the self-assessment documents to review and then joined representatives of the two health care organizations for an all-day evaluation session on April 1, 1995. This meeting provided an opportunity to present results of self-assessments, discuss approaches and progress, and recommend changes to the structure and content of the criteria document based on their respective experience using the criteria for self-assessment or external review.

Jane Metzger (First Consulting Group) coordinated the pilot and prepared Version 2.0 based on the input received. Version 2.0 was subsequently reviewed and approved by mail ballot of the Work Group on CPR Systems Evaluation and approved by the CPRI Board of Directors at their meeting on July 22, 1995.

Following review of the papers submitted for the Second Annual Davies CPR Recognition Symposium, it was determined by CPRI's Work Group on CPR Systems Evaluation that the criteria in Version 2.0 were sufficiently stable to promote the Program to the level of award and used the criteria in the selection process. In 1998 the Davies Organizing Committee made some revisions to the instructions relating to the impact section based on the review of applications and feedback from the applicants.

The Year 2000 marked the sixth year of the Davies Program and a significant review of the criteria. The Organizing Committee assigned a subgroup to review and update the criteria document to reflect evolved thinking about technology and the function and use of the CPR and to clarify and streamline the guidelines. The effort was led by Tommy Bozeman and Gail Mills, who were assisted by Tom Trabin, Keith MacDonald, and Jane Metzger. A third revision of the original criteria was lead by Dr. Tom Payne, the 2002 Davies Chairperson with significant contributions from Jane Metzger and the members of the 2002 Davies Committee. Minor revisions in the criteria were accomplished in 2003 and 2004. The current version was adopted by the Davies Committee in January 2006. The Threshold Application was revised and adopted by the Davies Committee in December 2006.

This document including the Full and Threshold Applications guidelines was revised in December 2007 by a work group of the Davies Organizational Committee. The group was lead by Joan Duke and included Brian Jacobs, MD, Organization Committee Chair, and members: Denni McColm, Frank Stevens, Tom Smith, and Mark Zirkelbach. The group was assisted by Tom Trabin. This document including the Full and Threshold Applications guidelines was revised in December 2008 by a work group of the Davies Organizational Committee. The group was lead by Michael Blackman, MD, and included Brian Jacobs, MD, Organization Committee Chair, and members: Susan Heichert, Frank Stevens, and Suzanne Carter.