

## Evidence-Based Medicine

# Using “Get With The Guidelines” to Improve Cardiovascular Secondary Prevention

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**C**ardiovascular disease remains the leading cause of morbidity and mortality in the United States.<sup>1</sup> Advances in medical therapy have provided significant improvements in the survival and quality of life in patients with coronary artery disease (CAD). However, medical therapy in such patients is often underused.<sup>2,3</sup> Clinical practice guidelines for secondary prevention of heart disease have been developed to facilitate and improve the overall quality of patient care while maximizing the efficient use of resources.<sup>4,5</sup> Yet, as a result of a treatment gap between guideline use and clinical practice,<sup>2</sup> many patients do not receive optimal preventive therapy on hospital discharge following a cardiovascular event.<sup>6</sup>

Implementation of clinical practice guidelines requires motivation, leadership, systems, financial resources, time, and data feedback to improve performance. Conversely, barriers to adherence to clinical practice guidelines include the lack of systems, financial resources, time, and data feedback; insufficient expertise; concerns about their legal implications; lack of understanding about their purpose; and conflicting organizational objectives.<sup>7-12</sup> Reasons for lack of effective systems for guideline adherence include lack of knowledge, information overload, inadequate documentation, patient refusal, and poor communication.<sup>13</sup> Lack of champions who understand the purpose of clinical practice guidelines and can internally fit guidelines within the framework of diverse organizational objectives may be another barrier. An analysis of barriers to the successful implementation of unstable angina guidelines highlighted the need to address organizational barriers

## Article-at-a-Glance

**Background:** “Get With The Guidelines (GWTG)” was developed and piloted by the American Heart Association (AHA), New England Affiliate; MassPRO, Inc.; and other organizations to reduce the gap in the application of secondary prevention guidelines in hospitalized cardiovascular disease patients. Collaborative learning programs and technology solutions were created for the project.

**The Patient Management Tool (PMT):** The interactive Web-based patient management tool (PMT) was developed using quality measures derived from the AHA/American College of Cardiology secondary prevention guidelines. It provided data entry, embedded reminders and guideline summaries, and online reports of quality measure performance, including comparisons with the aggregate performance of all hospitals.

**Learning Sessions:** Multidisciplinary teams from 24 hospitals participated in the 2000–2001 pilot. Four collaborative learning sessions and monthly conference calls supported team interaction. Best-practices sharing and the use of an Internet tool enabled hospitals to change systems and collect data on 1,738 patients.

**Summary and conclusions:** The GWTG program, a template of learning sessions with didactic presentations, best-practices sharing, and collaborative multidisciplinary team meetings supported by the Internet-based data collection and reporting system, can be extended to multiple regions without requiring additional development. Following the completion of the pilot, the AHA adopted GWTG as a national program.

and adapt guidelines to specific institutions.<sup>14</sup> Guidelines must be introduced into an organization's systems in ways that do not necessarily require the ongoing direct effort of physicians and others to maintain adherence.<sup>15</sup>

A strong body of evidence suggests that in-hospital initiation of medical therapies during an acute coronary event is critical to success.<sup>16,17</sup> Failure to initiate medical therapy in the hospital may be one of the causes of a large treatment gap because outpatient initiation may be less consistent.<sup>18</sup> Initiation of medical therapy in patients at time of discharge has been shown to improve adherence to drug therapy and improve both short- and long-term outcomes.<sup>17,19-21</sup>

Electronic data management tools offer specific potential advantages over the use of paper-based guidelines. Such tools can efficiently disseminate guidelines and facilitate decision support and benchmarking<sup>22</sup> and may address and overcome many of the obstacles that have been shown to contribute to the underuse of preventive guidelines<sup>23</sup>:

- When positioned at the point of care, they can interactively check patient data against coded algorithms derived from the guidelines to alert the care provider to patients who have not received applicable, evidence-based care
- They can provide standardized data collection measures; track performance for entire organizations; and be used to benchmark individual physicians, institutions, or systems
- Some electronic tools have been shown to increase adherence to clinical practice guidelines in a medical staff setting<sup>24</sup>

Barriers to collecting patient data at the point of care relate to workflow and the use of resources. Traditional data collection is done via retrospective chart review, typically by reviewers who are not providing the care. Moving data collection into the process of care requires reallocation of resources and a change in the way care is delivered. It is therefore important to demonstrate to organizations implementing guidelines that these tools and processes can provide additional benefits. Thus, the ideal electronic tool requires minimal data entry or uses existing hospital information systems and generates multiple benefits, such as managing other data requirements for hospitals such as those of Centers for Medicare &

Medicaid Services (CMS) and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). A tool that can provide reminders and guideline prompts during the patient care encounter can affect guideline adherence for each patient, in contrast to traditional continuous quality improvement in which data from the prior quarter can be used to change systems for subsequent patients but does not correct omissions of care that have already occurred.

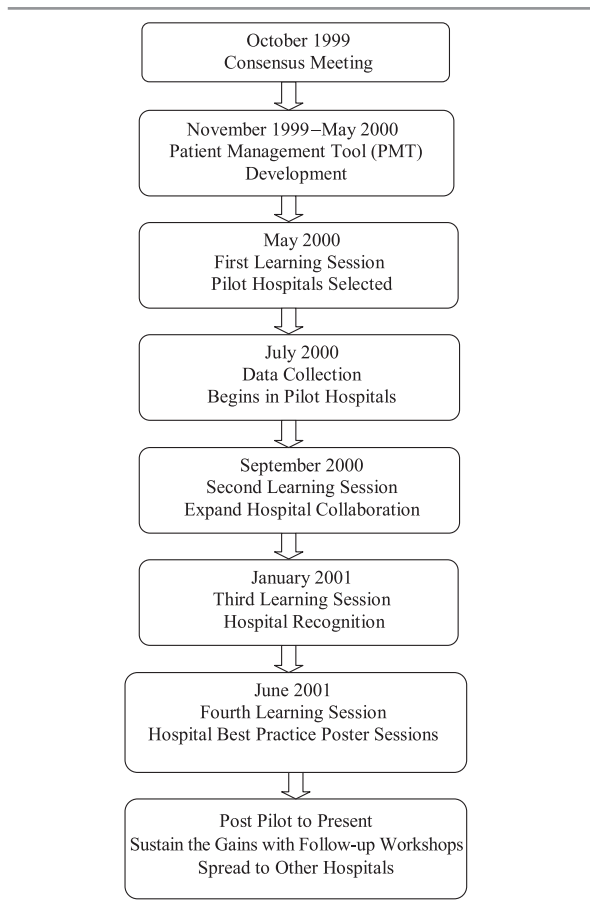
Point-of-care collection also enables hospitals to provide more timely communication of the results of guideline implementation in the hospital to the physician caring for the patient following discharge. Finally, patient education materials customized to the individual patient's risks and intervention can be embedded in electronic tools to provide more specific and meaningful information resources for each patient.

This article describes a pilot of "Get With The Guidelines (GWTG)," a hospital-based program, which the New England Affiliate of the American Heart Association (AHA) and MassPRO, Inc., a health care quality improvement organization, began developing and pilot testing in 1999 to expand and accelerate the use of the AHA/American College of Cardiology (ACC) secondary prevention guidelines.<sup>25</sup> The guidelines recommend specific drug use for atherosclerosis, including aspirin and other antithrombotics, beta-blockers, angiotensin-converting enzyme inhibitors, and lipid-lowering therapy, as well as risk factor management, including pharmacological therapy and lifestyle changes (dietary change, diabetes care, hypertension care, physical activity, smoking cessation, weight management).

## Developing the Pilot

The New England pilot provided multidisciplinary hospital teams with interactive, collaborative workshops to set goals, develop protocols, identify barriers, and implement solutions. This effort was based on earlier single-hospital efforts in Rhode Island<sup>26</sup> and California<sup>17</sup> and a previous multihospital, pharmaceutical company-initiated program, Heart Care Partnership™. The pilot was intended to develop hospital-based protocols to implement the AHA/ACC secondary prevention guidelines to reduce mortality and morbidity by increasing the number of patients with coronary

### Project Time Line



**Figure 1.** This figure shows the time line and steps in the development process for the New England pilot.

heart disease who were treated with appropriate secondary prevention interventions. The time line and steps in the development process are illustrated in Figure 1 (above).

#### Organizational Stakeholders

The organizations represented in the stakeholder group (Table 1, right) agreed to adopt GWTG as their collective project and formed the Massachusetts Prevention Partnership as the steering committee for the New England pilot. The group’s overarching goal was to reduce death and other cardiovascular events by efficiently and effectively implementing the guidelines in as many hospitals as possible by creating a uniform approach with the power of a diverse group of important state organizations and opinion leaders.

#### Hospital Recruitment

The GWTG program introduction and marketing materials were sent to the chief executive officers at potential hospital sites, and cardiologists and quality improvement (QI) personnel were contacted. An initial informational meeting of hospital and organizational stakeholders was held in October 1999. Of the 40 hospitals that attended, 24 were selected to participate in the pilot on the basis of interest, the presence of a physician champion, senior leader support, and the diversity of sites (large/small, teaching/nonteaching characteristics, and urban/nonurban locations). On-site team meetings were held at the participating hospitals to identify implementation barriers and to choose an appropriate venue for implementing the AHA/ACC guidelines.

Feedback from hospitals indicated that multiple organizations were requesting that they participate in cardiovascular projects, each project including a portion of the secondary prevention guideline interventions. These competing small projects, each with separate data-collection requirements, were a barrier to the adoption of any new program. Further, some stakeholder organizations, particularly managed care organizations (MCOs), were initially more focused on the outpatient arena.

A series of subsequent meetings through May 2000 helped to establish that a single hospital-based project to improve adherence to all the secondary prevention guidelines would provide Massachusetts hospitals with a more focused approach and a higher probability of

**Table 1. Massachusetts Prevention Partnership**

- American Heart Association New England Affiliate
- Institute for Healthcare Improvement
- Massachusetts Blue Cross/Blue Shield
- Massachusetts Chapter, American College of Cardiology
- Massachusetts Department of Public Health
- Massachusetts Health Quality Partnership
- Massachusetts Peer Review Organization, Inc.
- Medical Outcomes Management, Inc.
- Outcome Sciences, Inc.
- Unicare

**Table 2. Role of the Patient Management Tool in the “Get With The Guidelines” Process\***

Secondary prevention guidelines project components	Patient Management Tool role
I. Organizational stakeholder meeting	<ol style="list-style-type: none"> <li>1. Supports JCAHO and CMS performance measures for AMI and HF</li> <li>2. Simplifies hospital data self-collection for QIOs</li> </ol>
II. Physician opinion leader meeting	<ol style="list-style-type: none"> <li>1. Enables opinion leaders to provide real-time feedback and easily demonstrate value</li> </ol>
III. Hospital collaborative meetings	<ol style="list-style-type: none"> <li>1. Easy to enter data to collect relevant performance measures</li> <li>2. Drop-down reminders and guidelines summaries</li> <li>3. Customized patient education summary</li> <li>4. Standardized and customized hospital performance reports on demand.</li> </ol>
IV. Hospital improvement cycles	<ol style="list-style-type: none"> <li>1. Supports rapid-cycle improvement</li> <li>2. Reminder features used prior to discharge become a safety net for patients</li> </ol>

\* JCAHO, Joint Commission on Accreditation of Healthcare Organizations; CMS, Centers for Medicare & Medicaid Services; AMI, acute myocardial infarction; HF, heart failure; QIOs, quality improvement organizations.

myocardial infarction and heart failure performance indicators.<sup>27</sup> It also wished to position itself to comply with the upcoming JCAHO core measures<sup>28</sup> and with the partner organizations’ secondary prevention goals. Thus, collecting a minimal data set that would satisfy these various indicators obviated multiple data abstraction requirements for the same patient population for different organizations. (Table 2, left, and Table 3, page 543).

The PMT, developed and maintained by a medical information services company, was a required part of the one-year AHA New England pilot and was provided to the hospitals at no charge. It requires no on-site maintenance or information technology department support and can be integrated with handheld devices and used offline. Its features, which include interactive presentation of the guidelines, generation of notes and letters, and access to real-time benchmarking information, are listed in Table 4 (page 544). The Internet was selected as the delivery medium for the data tool because it allows centralized data management, easy updating, real-time reporting, and dissemination, without the need for software installations.

success. Data presented to the MCOs demonstrating the enhanced adherence to medication following initiation in the hospital setting<sup>17</sup> helped to secure their support.

On the basis of the high level of interest in and specific hospital feedback about the need for a single easy-to-use data collection system for hospital secondary prevention, the program was refined, and the Patient Management Tool (PMT) was created.

### The PMT

The Massachusetts Prevention Partnership worked with a medical information services company to create an interactive data collection, reporting, and management tool. One of the Partnership’s goals was to allow participating hospitals, with the support of MassPro, Inc., to meet the CMS requirements concerning its acute

Data are stored in an electronic database. All patient data are de-identified in the system. Patients are tracked for subsequent admissions via a unique patient number that is defined and known only by the hospital that entered the patient’s data into the tool. In addition, multiple levels of security are in place. Strict confidentiality of hospital data and hospital identity are ensured through a confidentiality agreement; hospitals retain ownership of their own data. Users receive training and technical support via a centralized support center.

The PMT was designed as a single Web page requiring approximately 21 clicks to completely add the data for an individual patient (Figure 2, page 545) and thereby collect all the information needed to track the implementation of the secondary prevention guidelines (Table 3). Data definitions, including denominator

**Table 3. Patient Data Collection Elements\***

Category	Data elements
Administrative	<ul style="list-style-type: none"> <li>■ Admit date</li> <li>■ Discharge date</li> <li>■ Discharge diagnosis</li> <li>■ Physician</li> </ul>
Patient Demographics	<ul style="list-style-type: none"> <li>■ Age or date of birth</li> <li>■ Sex</li> <li>■ Race/ethnicity</li> </ul>
Cardiac Diagnosis	<ul style="list-style-type: none"> <li>■ Acute MI, HF, coronary artery disease, unstable angina, cerebral vascular disease, peripheral vascular disease</li> </ul>
Cardiac Procedures	<ul style="list-style-type: none"> <li>■ Cardiac catheterization, PCI, echocardiogram, radionuclide ventriculogram, exercise tolerance test, coronary artery bypass graft, cardiac valve replacement</li> </ul>
Patient History	<ul style="list-style-type: none"> <li>■ Previous MI, angina, HF, hypertension, diabetes mellitus, smoking in the last 12 months, peripheral vascular disease, stroke, exercise history</li> </ul>
Clinical and Laboratory Findings	<ul style="list-style-type: none"> <li>■ Height, weight, body mass index, blood pressure at discharge, total cholesterol, HDL-C, LDL-C, triglycerides, HbA1c, ejection fraction</li> </ul>
Medications at Discharge	<ul style="list-style-type: none"> <li>■ Antiplatelets or anticoagulants, ACE inhibitors, beta-blockers, lipid-lowering medications, other medications</li> </ul>
Lifestyle Modification	<ul style="list-style-type: none"> <li>■ Smoking cessation counseling, exercise recommendations, referral to cardiac rehabilitation, dietary counseling</li> </ul>

\* MI, myocardial infarction; HF, heart failure; PCI, percutaneous coronary intervention; HDL-C, high-density-lipoprotein cholesterol; LDL-C, low-density-lipoprotein cholesterol; HbA1c, glycohemoglobin; ACE, angiotensin-converting enzyme.

exclusions, were chosen to be consistent with CMS indicators, and subsequently, JCAHO core measures. Although the PMT can collect data either concurrently or retrospectively via chart audit, many of its built-in QI tools are best used when data are entered at the point of care.

Guideline summaries are available online to support clinical decision making without the need to search for printed protocols and guidelines. A “Check Guidelines” feature lists a patient’s risks, identified by the medical history, demographics, laboratory, and other patient data entered, along with a recommendation for any intervention missed. This serves as a prompt to ensure that each risk has been addressed with guidelines-based counseling and pharmacologic therapy. The system is centrally maintained, so new guideline and measure updates can be added after AHA’s science review to speed the adoption of new published guidelines. A fax letter containing the patient’s risk evaluation and interventions to the referring physician can be created and automatically sent at the time of discharge to enhance continuity of care.

The PMT generates online, on-demand reports of the eight quality measures in several formats. The initial entry of 30 patients for each hospital is used as its baseline reference group. Data can be compared with the aggregate performance of all the hospitals in a bar-graph format (Figure 3, p 546) or tracked as a line graph over time to monitor progress on a measure-by-measure basis. Data can be displayed with 95% confidence intervals. Each hospital can do additional analysis by downloading its data into a spreadsheet. The graphs and charts generated by the tool can also be downloaded onto slides for presentation to hospital staff. Hospitals may enter coded identifiers for the physician caring for each patient entered and use the subsequent aggregate data by physician for individual, confidential physician feedback.

### Learning Sessions

The GWTG project was a departure from traditional continuing medical education lecture programs, which

**Table 4. Patient Management Tool Elements**

Management	Comments
I. Guidelines content reminders	<ul style="list-style-type: none"> <li>Can be rapidly updated when guidelines change</li> </ul>
II. Patient note	<ul style="list-style-type: none"> <li>Provides information for customized patient education</li> </ul>
III. Letter to referring physician	<ul style="list-style-type: none"> <li>Provides timely, concise communication for outpatient follow-up</li> </ul>
IV. Check guidelines reminder	<ul style="list-style-type: none"> <li>Alerts care team to gaps in guideline adherence that can be addressed prior to discharge</li> </ul>
Measurement	Comments
I. Risk factor history check-off	<ul style="list-style-type: none"> <li>Easily captures risk factors.</li> </ul>
II. Laboratory results	<ul style="list-style-type: none"> <li>Captures relevant values in an easy-to-find location.</li> </ul>
III. Data fields customized by diagnosis	<ul style="list-style-type: none"> <li>Simplifies data entry by showing only the fields that require completion based on diagnosis.</li> </ul>
IV. Data definitions in drop-downs	<ul style="list-style-type: none"> <li>Promotes accurate data collection by making definitions easily accessible.</li> </ul>
V. Documents treatment for hospital records	<ul style="list-style-type: none"> <li>Summary note at discharge simplifies subsequent dictation and forms completion.</li> </ul>
VI. Captures CMS and JCAHO core measures	<ul style="list-style-type: none"> <li>Can be used to transmit core measures for AMI and HF and to share data with QIOs.</li> </ul>
Reporting	Comments
I. Reports available on demand	<ul style="list-style-type: none"> <li>Can access reports online</li> </ul>
II. Single measure change over time	<ul style="list-style-type: none"> <li>Track any measure by month or quarter.</li> </ul>
III. Multiple measures compared to AHA targets and/or other hospital groups	<ul style="list-style-type: none"> <li>Compare hospital performance with like-hospital groups or the project as a whole.</li> </ul>
IV. Real-time feedback on measures for each patient prior to discharge	<ul style="list-style-type: none"> <li>Support safety net to improve care in each patient as he or she moves through the system</li> </ul>

\* CMS, Centers for Medicare & Medicaid Services; JCAHO, Joint Commission on Accreditation of Healthcare Organizations; AMI, acute myocardial infarction; HF, heart failure; QIO, quality improvement organization.

behavioral change through intense focus on practical patient management strategies in the hospital setting. These strategies were implemented through workshops, teleconferences, data feedback, and individualized support.

The collaborative workshops represented a team approach to risk-factor management.<sup>30</sup> Participating cardiologists were asked to build a multidisciplinary team in each hospital to participate in the workshops. Possible members of the hospital teams were medical directors, cardiologists, case managers, QI directors, pharmacy directors, cardiac rehabilitation nurses, patient education directors, and data information managers. The program's accredited one-day conferences included a didactic session describing the evidence-based medicine supporting secondary prevention of cardiovascular disease, potential methods of guideline implementation, and best-practice presentations from hospital teams. The second half of the day was spent in facilitated breakout sessions to promote team sharing, collaborative learning, and hospital team planning.

The first learning session of the New England pilot was held in May 2000 (Figure 1), with 24 hospitals (8 teaching, 10 urban, 16 with > 250 beds) participating. The facilitated breakout sessions enabled the teams to collaboratively identify barriers and solutions for implementing secondary prevention and share their individual institution-based approaches, such as a preprinted order set, a protocol, and a PMT-based data-collection plan (Table 2).<sup>30</sup> PMT training was performed

are generally not effective in changing practice patterns.<sup>29</sup> A multifaceted, interactive approach to continuing medical education and continuing education units, the GWTG project was designed to effect long-term

after the first learning session via telephone, with the user simultaneously on the Internet. Average training required 20–30 minutes. Additional users at each hospital could receive training and support by calling a toll-free number.

## Web-Based Form

*AHA Discharge Form*

Patient ID:  Physician:   
 Admit Date:  Discharge Date:

Demographics (6 clicks)	Demographic	Age: <input type="text"/> years Gender: <input type="radio"/> female <input type="radio"/> male Race: <input type="text"/>	
	Cardiac diagnosis:	<input type="text"/>	
	Procedures:	None <input type="text"/>	
Clinical/lab (8 clicks)	What does the patient's past history include?	<input type="checkbox"/> previous MI <input type="checkbox"/> angina <input type="checkbox"/> heart failure <input type="checkbox"/> hypertension <input type="checkbox"/> diabetes <input type="checkbox"/> renal insufficiency <input type="checkbox"/> smoker (within the past year) <input type="checkbox"/> no regular exercise (<30 min., 3x/wk) <input type="checkbox"/> none of the above	
	Height/Weight:	Hgt: <input type="text"/> inches Wgt: <input type="text"/> lbs BMI: <input type="text"/> kg/m2 Waist Circumference: <input type="text"/> inches	
	Blood pressure:	<input type="text"/> / <input type="text"/> mmHg	
	Lipids, HbA1C (if diabetic):	Total Chol: <input type="text"/> mg/dL HDL: <input type="text"/> mg/dL LDL: <input type="text"/> mg/dL Triglycerides: <input type="text"/> mg/dL HbA1C: <input type="text"/> mg/dL	
	Ejection fraction:	<input type="text"/> %	
	Discharge Status:	<input type="text"/>	
Discharge meds and interventions (7 clicks)	Anti-platelets/coagulants:	<input type="checkbox"/> Aspirin (80-325mg/d) <input type="checkbox"/> Coumadin (Warfarin) <input type="checkbox"/> ticlid/plavix/other <input type="checkbox"/> check if taking one of these meds prior to admission <input type="checkbox"/> contraindications	<input checked="" type="checkbox"/>
	ACE Inhibitors:	None <input type="text"/> <input type="checkbox"/> taking prior to admission	<input checked="" type="checkbox"/>
	Beta Blockers:	None <input type="text"/> <input type="checkbox"/> taking prior to admission	<input checked="" type="checkbox"/>
	Cholesterol Reducer:	None <input type="text"/> <input type="checkbox"/> taking prior to admission	<input checked="" type="checkbox"/>
	Other meds at discharge:	<input type="checkbox"/> Ca++ Channel Blockers <input type="checkbox"/> Other Anti-hypertensive <input type="checkbox"/> Nitrates <input type="checkbox"/> Digoxin <input type="checkbox"/> Diuretic <input type="checkbox"/> Diabetes Medication <input type="checkbox"/> Other <input type="checkbox"/> None	<input checked="" type="checkbox"/>
	Referred to Cardiac Rehab Program:	<input type="radio"/> yes <input type="radio"/> no <input type="radio"/> unknown	
	Risk interventions:	<input type="checkbox"/> smoking cessation <input type="checkbox"/> weight management <input type="checkbox"/> activity recommendations <input type="checkbox"/> low cholesterol diet (Step II AHA or equivalent) <input type="checkbox"/> anti-hypertensive diet	<input checked="" type="checkbox"/>

Interactively checks patient's data with the AHA guidelines

**Figure 2.** This figure shows an example of the simple, one-page online form.

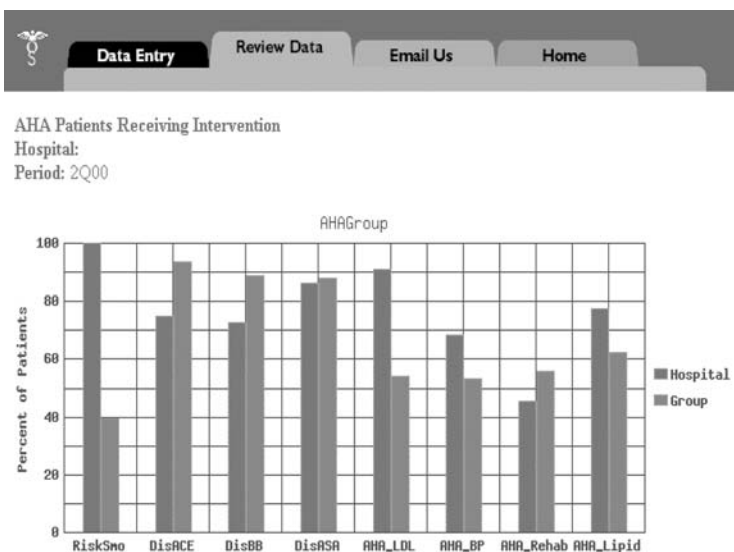
### Using the PMT

One purpose of the pilot was to determine how the PMT could be most effectively fit into hospital workflow, given that approaches would vary with organizational culture. Although pilot hospitals could incorporate the PMT in several different ways, implementation at the point of care was the preferred modality. Actual online data entry for the entire form required just minutes to complete after the data were identified in the chart, time that was offset by the generation of documentation for the patient, hospital, and referring physician, as well as simultaneous capture of data for QI, operations improvement, and accreditation needs. Hospitals incorporating the PMT at the point of care selected high-volume cardiac units or floors as a starting

point and then spread the use of the PMT to other hospital areas. Actual integration of the program into routine workflow can require weeks to months, depending on the size of the hospital and the nature of the department using the program. Some hospitals have used the PMT to replace other abstraction activities in their QI departments.

The specific methodology for data entry varied by hospital setting and evolved during the pilot. Several hospitals entered data directly via the Internet at the point of service. Two hospitals used a personal digital assistant (PDA) version of the tool to collect data offline and synchronized to the online version at the end of the day. Some hospitals used a paper version of the data fields attached to the front of the chart, and

## Sample Hospital Quarterly Report



**Figure 3.** This sample Web-based quarterly report compares a hospital's performance on the eight indicators with the aggregate performance of all 24 hospitals in a bar-graph format. RiskSmo, smoking-cessation counseling; DisACE, discharged on angiotensin-converting enzyme inhibitor; DisBB, discharged on beta-blocker; DisASA, discharged on aspirin; LDL = lipid profile measured; BP, blood pressure managed; Rehab, referred to cardiac rehabilitation; Lipid, discharged on lipid-lowering agent.

did electronic entry later in the admission or prior to discharge. Unit nurses, medical house staff, case managers, cardiac rehabilitation nurses, and nurse practitioners performed data entry. In one hospital, nursing staff entered data on the paper version of the form, which was placed on the front of each patient's chart during the day, and trained ward secretaries logged on to the tool for data entry from the paper form in the evening when the work load was typically lighter.

An example of the evolution of the method of data entry is provided by a 399-bed teaching hospital in a small community setting (Sidebar 1, p 547). However, not all the pilot hospitals used the tool's multiple levels of checks and reminders as proficiently as this organization.

Quarterly follow-up meetings between May 2000 and June 2001 were held for all participating hospitals (Figure 1) to expand and enhance collaboration between the participating hospital teams and maintain momentum. The format was similar to that of the initial meeting, combining limited didactic presentations, best-practice presentations by participating hospitals, and interactive breakout

sessions to support the continued sharing of solutions and tools that the hospitals developed to address barriers. Examples of barriers and solutions are summarized in Table 5 (pages 548–549). The content of the didactic presentations was based on needs identified by hospital teams and the gaps in care identified by the data in the PMT. Hospital teams were also asked to display storyboards of their progress.

Follow-up breakout sessions were held at these meetings, with hospitals grouped with complementary expertise and needs on the basis of PMT data reports. For example, Hospital A, which was providing smoking-cessation counseling for more than 90% of eligible patients, was assigned to a group session at which several teams were performing at 30%–40% to support the

transfer of this expertise. Some of the hospitals performing very well in other measures were able to share their solutions for other measures to assist Hospital A, thereby helping to enhance the sense of community.

Although we did not survey provider or patient satisfaction or measure the resources required for implementation, workshop evaluations and comments demonstrated a high level of satisfaction with the program from participating nurses, physicians, pharmacists, and QI staff.

The New England Affiliate of the AHA recognized the 24 hospitals for their pilot participation through the GWTG-CAD hospital award. This recognition was communicated to hospital senior leaders of the participating hospitals and publicized in their local communities to help hospital teams make a business case for further support of their efforts.<sup>28</sup> Communicating the participation and successes of these early adopters also helped to encourage other hospitals' participation in the next phase of the project.<sup>31</sup>

## Sidebar 1. Evolution of the Data Entry Method at One Hospital

The PMT was used initially as an abstraction tool for the first 30 baseline patients. This retrospective evaluation was used to focus improvement efforts by identifying gaps in care and set the stage for performance enhancement. Over time, tool use evolved from retrospective data entry to concurrent use of the tool to capture data (including use of the embedded reminders to aid in management). In this phase, case managers or QI specialists partnered with a chief medical resident in using the PMT during the patient's hospitalization, starting with patient identification. Data were captured and entered online on a daily basis. Any potentially missed measures identified by the PMT reminders were communicated to the physicians on the wards for correction or for documentation of contraindications that could then be placed in the patient's chart. Medical records of all patients admitted with acute coronary syndromes were queried monthly to identify any patients that had been missed during concurrent patient capture. Any patient identified retrospectively through medical records was also entered into the PMT to provide a complete review of adherence to the AHA measures. The reporting features of the PMT were further leveraged to identify patients in whom any intervention was missed. The hospital team then called the patient's physician when a true miss, without contraindications, was identified so that the patient could receive the intervention.

## Summary and Conclusions

The GWTG program, a template of learning sessions with didactic presentations, best-practice sharing, and collaborative multidisciplinary team meetings supported by an Internet-based data collection and reporting system, can be extended to multiple regions without requiring additional development.

The pilot demonstrated the benefits of facilitating guideline implementation at the point of care and making available on-demand reports of current performance

that is benchmarked against that of similar hospitals. Even when used retrospectively, feedback reports could be processed to ascertain change in performance to complete continuous quality improvement cycles.

Small tests and rapid-cycle improvement have become important concepts in producing breakthrough change during short periods.<sup>32</sup> By providing reminders and feedback to health care professionals the cycle of improvement can be reduced to one patient at a time. Only the volume of patients moving through the system limits the feedback for more macrochanges in preprinted orders and protocols.

## Postpilot Scale-up and Spread

Following the demonstration of the feasibility of a collaborative model for QI and the use of the PMT in the New England pilot program, the AHA adopted GWTG as a national program. There are currently nine regional directors supporting GWTG workshops throughout the United States. In Massachusetts the original 24 hospitals have continued to maintain and spread their changes in their own care systems; 36 hospitals are continuing to attend workshops and collect data on patients with cardiovascular disease. Fifteen of the 36 hospitals are applying the system changes developed in this CAD pilot to the acute and preventive care of patients hospitalized with stroke as a GWTG-Stroke pilot.

In hospitals with sophisticated electronic data collection already in place, PMT use is not required for participation.\* GWTG now includes the early use of aspirin, beta-blockers, and time to reperfusion, using CMS and JCAHO definitions to allow hospitals to work on all the CMS and JCAHO core measures for acute myocardial infarction and heart failure.

The AHA's credibility, science, and reach helped to produce the coordination and collaborative spirit necessary to make GWTG a successful pilot program. The hard work and collaboration of the health care professionals provided the energy and solutions to many barriers, while the PMT provided the infrastructure and data collection capability to improve care. Now is the time to "Get With The Guidelines." **L**

\* GWTG charges a minimal team fee for participating in the accredited workshops. The cost for hospitals to use the PMT is \$900 per year.

**Table 5. “Get With The Guidelines (GWTG)” Barriers and Solutions**

Barrier	Description	GWTG solutions
<i>Knowledge</i>		
Lack of familiarity with the guidelines	Practitioner knowledgeable enough of detail of guideline to apply	PMT has details including inclusion and exclusion criteria, collaborative sessions review guidelines in depth
Lack of awareness	Practitioner unaware of guidelines	AHA/ACC guidelines disseminated at collaborative sessions, grand rounds, and conferences by GWTG faculty
<i>Attitudes</i>		
Lack of agreement with AHA/ACC guidelines	Practitioner wary of literature interpretation, lack of cost-effectiveness	Rigorous AHA/ACC guidelines development process In-depth presentation of science at collaborative meetings and in hospitals Clear statements in PMT of guidelines and patient eligibility
Lack of agreement with guidelines in general	Practitioners view as cookbook, a challenge to autonomy, impractical	GWTG program recruits opinion leaders to address such attitudes Hospital teams add credibility to guidelines effort
Lack of outcome expectancy	Physician believes that implementing guidelines will not improve outcomes	Present the data linking guideline implementation to improved outcomes in teleconference calls, collaborative meetings, and hospital conferences
Lack of self-efficacy	Practitioner does not believe she or he can perform recommendations	Most interventions are simple prescriptions of common medications or referral to other hospital experts (e.g., tobacco counseling by cardiac rehabilitation nurse, pharmacist, or tobacco professional) who can provide intervention
Lack of motivation	Inertia, habit, routines, belief that performance is already adequate	GWTG hospital opinion leader provides motivation Use reminders in the PMT and prompts from checklists and preprinted orders Display hospital data reports in the physician lounge to create the tension for change and sense of participation

**Table 5. “Get With The Guidelines (GWTG)” Barriers and Solutions (continued)**

<i>Behavior</i>		
Patient factors	Patient preferences not aligned with guideline recommendations	Most recommendations in GWTG have a clear benefit risk advantage in eligible patients Patient summary notes and educational materials in the PMT inform and engage patients
Guidelines factors	Guideline characteristics or presence of contradictory guideline	AHA/ACC secondary prevention guidelines are clear and concise (1 page) and are aligned with ADA and NCEP recommendations to avoid contradiction
Environmental factors	Lack of time, resources, organization constraints, perceived malpractice liability	Hospital team develops time-efficient tools and systems in collaboratives to assist practitioner Organization commits to redistribute resources by engaging senior leaders with AHA recognition and support of AHA volunteers in the community Creating systems to avoid errors of omission reduces liability risk Rigorous science and decision support on patient eligibility available through guidelines and PMT

\* PMT, Patient Management Tool; AHA, American Heart Association; ACC, American College of Cardiology; ADA, American Diabetes Association; NCEP, National Cholesterol Education Program; AHA, American Heart Association.

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