

Aggressively Treating Global Cardiometabolic Risk Factors to Reduce Cardiovascular Events (AT GOAL) Program: Evaluation Summary

Background

The Centers for Disease Control and Prevention's (CDC) Division for Heart Disease and Stroke Prevention (DHDSPP) selected the Aggressively Treating Global Cardiometabolic Risk Factors to Reduce Cardiovascular Events (AT GOAL) program to evaluate as a potentially promising practice to address cardiovascular disease (CVD). AT GOAL is a practice-level quality improvement (QI) initiative that uses performance metrics, offers monitoring and feedback to practices, and provides physician education.

Incorporated in 1992, the Consortium for Southeastern Hypertension Control (COSEHC)¹ established AT GOAL in 2009 to equip health care professionals with a combination of knowledge, tools, and competencies to improve hypertension, diabetes, and cholesterol management in patients who are at risk for developing CVD. As of 2015, 51 primary care practices have either completed or are currently participating in AT GOAL. These practices are located throughout the Southeastern United States where hypertension and diabetes have the highest prevalence relative to other regions in the United States.

CDC, in collaboration with ICF International and COSEHC, conducted an evaluation of AT GOAL to (1) describe the program's core components and identify lessons that other programs might consider and (2) determine its impact on intended outcomes.

Methods

The evaluation used a mixed-method design that included (1) a process evaluation, (2) an outcome evaluation, and (3) practice-level QI case studies. The process evaluation used qualitative methods, including document review and in-depth telephone interviews, to gather data to develop a comprehensive description of AT GOAL. The outcome evaluation involved quantitative analyses of existing patient-level data provided by AT GOAL program staff. The case studies used document review, administration of a practice-level data collection form, in-depth, in-person interviews, and review of practice performance metrics. The six case studies were selected from AT GOAL primary care practices representing different performance levels.

Evaluation Questions

- ✦ What are the core elements of the program? (Process evaluation)
- ✦ How are the core elements implemented? (Process evaluation)
- ✦ To what extent do practices participating in AT GOAL have improved hypertension-related quality measures upon completing the program? (Outcome evaluation)
- ✦ What is the association between the selection of CQI interventions and improvement on cardiovascular disease-related measures? (Case study evaluation)
- ✦ What is the association between practice-related contextual factors and performance on cardiovascular disease-related measures?
- ✦ How has AT GOAL affected the adoption and implementation of practices that influence improvement on cardiovascular disease-related measures? (Case study evaluation)

¹COSEHC is a nonprofit, university medical center-affiliated organization based in the Hypertension and Vascular Disease Center of Wake Forest University Baptist Medical Center in Winston-Salem, North Carolina.



Core Components of the AT GOAL Intervention

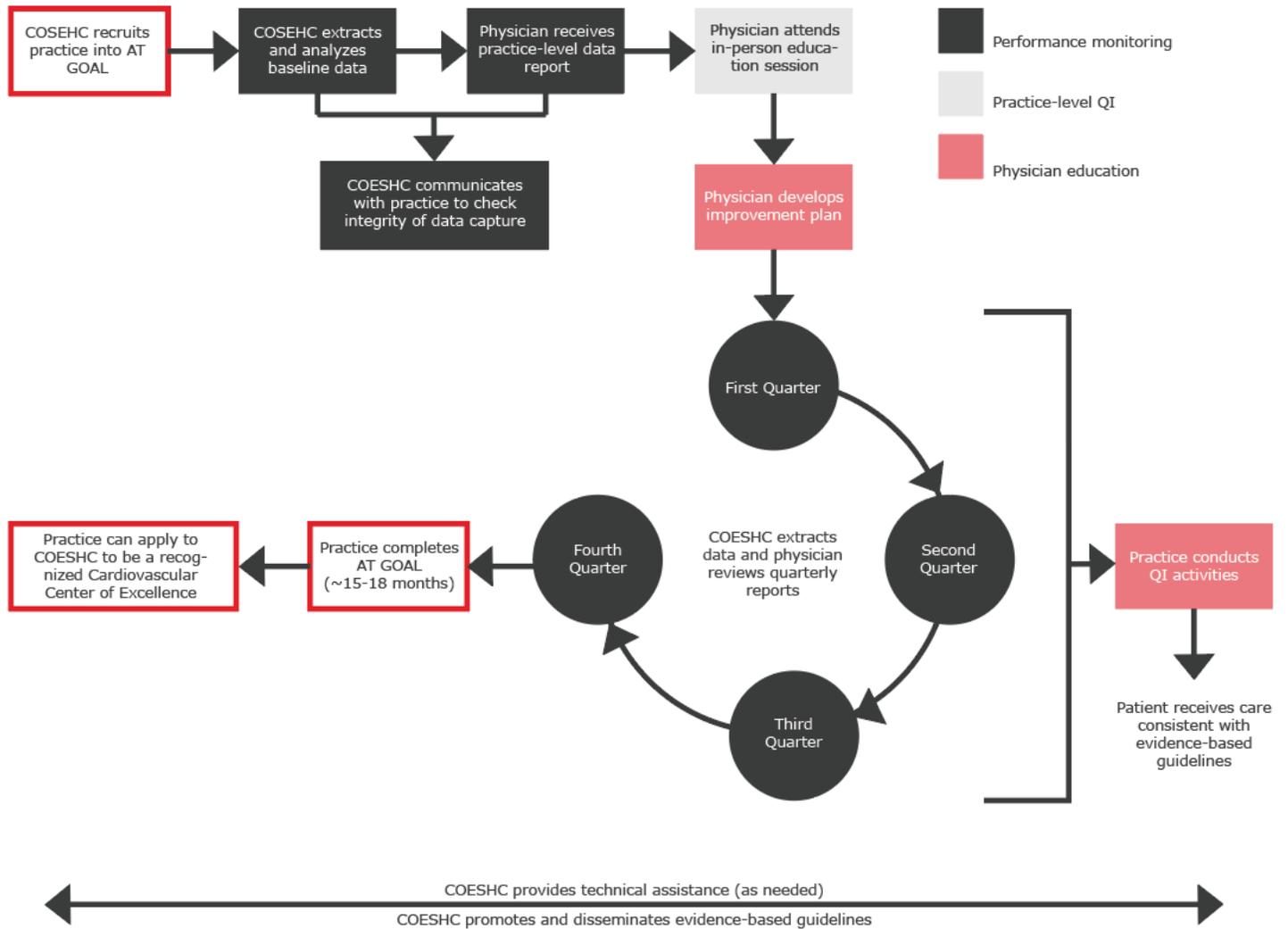
AT GOAL is composed of three core components: (1) performance monitoring, (2) physician education, (3) and practice-level QI, as outlined in Table 1.

Table 1: Core Components of the AT GOAL Intervention

Core Components	Description
Performance Monitoring	Performance monitoring involves extraction of data on the basis of key metrics, analyzing the data, and reviewing the results with primary care providers. AT GOAL performance monitoring is cyclical. It begins at baseline with data extraction, analysis, and review, and continues on a quarterly basis (schedules permitting), following an in-person physician education session.
Physician Education	The purpose of the physician education component is to improve the knowledge, competency, and performance of physicians and health care providers in the targeted practices. COSEHC developed a cardiovascular disease risk reduction model that outlines lifestyle and treatment recommendations to guide physician education activities. In the AT GOAL model, physician education is provided in three formats: (1) an in-person, expert faculty-led education session for continuing medical education (CME) credits; (2) electronic and print educational materials made available to practices; and (3) education and technical assistance provided through quarterly webinars and conference calls. COSEHC also provides opportunities for participating AT GOAL practices to network and collaborate by inviting them to participate in COSEHC's annual meeting. Although the meeting is not exclusive to AT GOAL, participating practices are targeted in COSEHC's marketing and promotion efforts for the meeting.
Practice-Level Quality Improvement	AT GOAL practices assume responsibility for applying what they learn to implement various QI interventions that will impact their patients. The actual QI interventions employed by each practice may vary and are selected on the basis of that practice's particular needs and goals. Ideally, this process involves five activities: (1) reviewing data reports with other providers and primary care practice staff members (e.g., nursing staff and administrative) to inform QI activities; (2) establishing an AT GOAL continuous quality improvement (CQI) intervention plan; (3) engaging clinical and nonclinical staff, as appropriate; (4) implementing the AT GOAL CQI intervention plan through strategic QI efforts, using the Plan-Do-Study-Act (PDSA) approach; and (5) providing quality patient care according to evidence-based guidelines.

Figure 1 depicts the AT GOAL process, from COSEHC’s efforts to recruit a practice into the program to practice-level quality improvement and the completion of the program².

Figure 1: The AT GOAL Program Model



Key Findings

The following are key findings related to (1) improved CVD outcomes for nondiabetic and diabetic patients and (2) contextual factors and staff member perceptions regarding how AT GOAL improved CVD outcomes.

Improved CVD Outcomes

For the study period of June 2009 to April 2014, 43 primary care practices participated in AT GOAL. 7,527 patients were included in the study sample, out of the total patient population of 27,128. The study sample was restricted to patients between the ages of 18 and 85 years, patients with at least one blood pressure (systolic and diastolic) and one cholesterol measure recorded post-baseline, and patients with demographic and insurance status data. On average, these 43 practices had 175 patients. Program staff provided a data set to the evaluation team that was de-identified at the practice and patient levels. Sixty percent of the patient population had a diagnosis of diabetes.

² AT GOAL program completion means implementing all three elements of AT GOAL (performance monitoring, physician education, and practice-level QI) and that the practice has baseline performance monitoring and either at least four follow-up performance monitoring periods or at least 15 months of program engagement.

Because of the presence of statistically significant differences between diabetic patients and nondiabetic patients, analyses were stratified by diabetic status, as appropriate.

Findings for Nondiabetic Patients

- ✦ Among the nondiabetic population (n=3,021), there were statistically significant increases in control rates for overall blood pressure (74.3% to 78.0%) where controlled was defined as less than 140/90 mm Hg; systolic blood pressure of less than 140 mm Hg (73.8% to 80.6%); diastolic blood pressure less than 90 mm Hg (90.1% to 92.7%); and low-density lipoprotein (LDL) less than 100mg/dL (48.6% to 53.1%) at the patient-level between baseline and end line. Multivariate models confirmed the increasing trend toward blood pressure and LDL control when controlling for gender, race, age, health insurance status, diabetes diagnosis, and body mass index (BMI).
- ✦ Among nondiabetic patients with uncontrolled diastolic blood pressure at baseline defined as higher than 90 mm Hg (n=298), there was a statistically significant average decrease of 11.3 mm Hg for diastolic blood pressure from baseline to end line (93.7 mm Hg to 82.4 mm Hg).
- ✦ Among the 1,552 nondiabetic patients with uncontrolled LDL at baseline, there was a statistically significant decrease of 14.8 mg/dL for LDL between baseline and end line (130.1 mg/dL to 115.3 mg/dL).
- ✦ Results from supplemental analyses that focused on individuals who had uncontrolled risk factors³ at baseline showed a statistically significant average decrease of 14.9 mm Hg for systolic blood pressure from baseline to end line (149.6 mm Hg to 134.7 mm Hg) among nondiabetic patients with uncontrolled systolic blood pressure at baseline (n=657).

Findings for Diabetic Patients

- ✦ Among the diabetic population (4,506), there was a statistically significant increase in diastolic blood pressure control (59.8% to 61.9%) at the patient level from baseline to end line. There were also increases in control rates for overall blood pressure (35.2% to 36.2%), systolic blood pressure (44.6% to 46.1%), and LDL (62.6% to 63.6%) between baseline and end line; however, these changes were not statistically significant.
- ✦ From baseline to end line, a lower percentage of diabetic patients (58.2% to 55.2%) had controlled hemoglobin A1c (HbA1c) at less than 7%; this change was statistically significant⁴.
- ✦ Results from supplemental analyses that focused on individuals who had uncontrolled risk factors at baseline (n=2,496) showed a statistically significant average decrease of 8.1 mm Hg for systolic blood pressure from baseline to end line (143.0 mm Hg to 134.9 mm Hg) among diabetics with uncontrolled systolic blood pressure at baseline.
- ✦ Among diabetic patients with uncontrolled diastolic blood pressure at baseline (n=1,812), there was a statistically significant average decrease of 6.3 mm Hg for diastolic blood pressure from baseline to end line (85.5 mm Hg to 79.2 mm Hg).
- ✦ Among the 1,684 diabetic patients with uncontrolled LDL at baseline, there was a statistically significant average decrease of 14.3 mg/dL for LDL between baseline and end line (128.5 mg/dL to 114.2 mg/dL).
- ✦ Among diabetic patients with uncontrolled HbA1c at baseline (n=1,719), there was a statistically significant decrease of 0.2% for HbA1c between baseline and end line (8.4% and 8.2%).

³Risk factors include systolic blood pressure, diastolic blood pressure, LDL, and HbA1c. AT GOAL criteria for "control" are based on guidelines as specified by the Joint National Commission (JNC) 7, the Adult Treatment Panel (ATP) III, and the American Diabetes Association. Control for systolic blood pressure was defined as less than 130 mm Hg for diabetic patients and less than 140 mm Hg for non-diabetic patients. Control for diastolic blood pressure was defined as less than 80 mm Hg for diabetic patients and less than 90 mm Hg for non-diabetic patients. LDL control was defined as less than 100 mg/dL for both diabetic patients and non-diabetic patients. HbA1c control was only assessed in diabetic patients and was defined as less than 7%.

⁴This study's results should be interpreted keeping in mind that 44% of the diabetic patients in this analysis fall into the age range of 65-85 years. A goal of < 7% for A1c is being questioned for elderly patients (older than 65), for whom both the risk of hypoglycemic events and associated adverse CV events is heightened, and the benefits of tight glucose control less evident. Emerging guidance indicates older adults A1c range can be between 7.5% to 8.0% (See American Diabetes Association. Standards of medical care in diabetes—2013. Diabetes Care 2013; 36 Suppl 1: S11–S66.)

Contextual Factors and Staff Perceptions Regarding How AT GOAL Improved CVD Outcomes

For the case study component of the evaluation, practices were stratified according to performance to allow for comparisons between and across practices with higher performance on AT GOAL metrics and lower-performing practices to identify factors that may contribute to performance on CVD-related metrics. The final six cases were selected on the basis of a purposive and convenience sample of four higher-performing primary care practices and two lower-performing practices. The case study results yielded contextual factors and staff member perceptions about how AT GOAL improved CVD outcomes.

- ✦ **Role of performance metrics and benchmarking.** Participants in each of the six practices indicated that the program monitoring component of AT GOAL was essential. Many providers noted that they were committed to treating patients with borderline risk factors more aggressively, which suggests that providers intentionally avoided clinical inertia. This finding is consistent with the scientific literature, which suggests that the process of auditing performance and providing feedback on performance can, in and of itself, lead to quality improvement.
- ✦ **Data accuracy of electronic health records (EHRs).** Careful review of baseline and follow-up performance reports can alert practice staff if data elements are not being captured in AT GOAL's data extraction process. Practice staff may need to make changes in how entries are documented in EHRs to help ensure the accuracy of data reported in performance monitoring reports. For example, interview participants in one practice learned that they were documenting some data elements on a memo or notes page of a patient's electronic chart, but that this information was not duplicated in the vital signs section of the patient chart. By identifying such documentation issues, practices improved data reporting to more accurately reflect their performance.
- ✦ **System factors.** Participants in higher-performing practices (as well as program documentation from both lower-performing practices) indicated that they experienced challenges implementing some of AT GOAL's recommended CQI interventions because of factors outside of the providers' control. For example, these practices indicated that some providers did not implement CQI interventions concerning the use of combination therapies because of limitations in patient insurance plans. Also, some participating practices were part of a provider and noted some challenges in coordinating with their central office to implement changes to their EHR to allow for better monitoring of process metrics.
- ✦ **Culture of QI and staff engagement.** Practices more engaged in practice-level QI had an existing culture of QI. These practices had protocols and processes in place, before their involvement with AT GOAL, to engage staff at all levels in the practices in QI. For example, these practices had regular all-staff meetings (quarterly meetings in one practice and monthly meetings in the other), at which performance and QI were emphasized. Also, practices highly engaged in CQI interventions regularly shared information about their performance on AT GOAL metrics and other performance metrics, such as physician network QI metrics related to cancer screening and Uniform Data System reports, with all staff.
- ✦ **AT GOAL physician education activities served as reminders to physicians.** Physicians in higher-performing practices indicated that the material presented in the AT GOAL in-person education sessions and recorded webinars was not new information for them. Instead, the education activities helped reinforce effective protocols in managing hypertension, high cholesterol, and diabetes.

Conclusion

Practices that participated in AT GOAL had statistically significant improvements on several key metrics associated with cardiovascular disease. Specifically, results showed an increasing trend in blood pressure and LDL control rates between baseline and end line, when controlling for gender, race, age, health insurance, diabetes diagnosis, and BMI. These results can inform practice by highlighting the importance of a multi-pronged approach for a practice-level QI intervention—physician education in combination with performance monitoring. To further understand the relationships between QI strategies, primary care practice, and patient outcomes, additional research is needed at the primary care practice level to better understand which strategies are effective in which settings to affect CVD-related outcomes. Additional research could also explore how the level of provider familiarity with QI is associated with CVD-related outcomes.

Considerations for Program Replication

The following are some key lessons learned that are important to take into consideration when replicating the AT GOAL program in other settings.

- ✦ For a program such as AT GOAL to be beneficial to primary care practices, program implementers must have accurate and reliable data from patient records.
- ✦ To understand patient, provider, and system factors that may affect implementation of practice-level QI efforts, it is recommended that program implementers have a solid understanding of the practice context.
- ✦ Routinely sharing performance data with all practice staff helps promote buy-in and implementation of practice-level QI efforts.
- ✦ Given the potential challenges faced in convening busy health care professionals for education, public health practitioners might consider making physician education available on-demand in an online platform so that program participants can access material at their convenience.

Notes:

For more information on the evaluation study findings, implications, and recommendations, please send an e-mail to arebheartinfo@cdc.gov.

Disclaimer: The opinions and conclusions are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention (CDC).

Financial Disclosure/Funding: This work was supported in part by a contract (Contract Number 200-2008-27957) from the Centers for Disease Control and Prevention.