

GGT		
HbA1C		
FBS/Glucose		
Lipid Profile		
- Cholesterol	220	mg/dL
- Triglyceride	170	mg/dL
- HDL-C	40	mg/dL
- LDL-C	146	mg/dL
Total protein		g/dL



A MILLION HEARTS® ACTION GUIDE

Cholesterol Management

CHANGE PACKAGE

March 2024



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Individual health care settings are shown in **bold** font.

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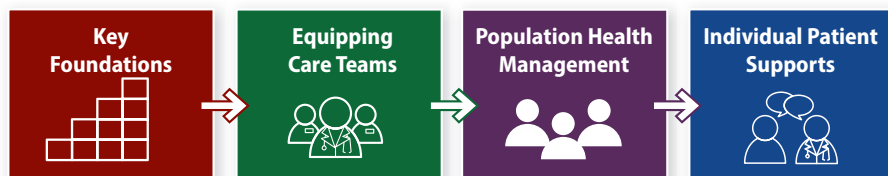
[‡]American Medical Association

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Cholesterol Management Change Package—Quick Reference

Focus Areas



Change Concepts and Change Ideas

Key Foundations
Make Cholesterol Management a Practice or System Priority >>
Designate a cholesterol champion in the practice
Engage care team in cholesterol management
Create a lipid clinic
Expand the care team
Implement a Policy and Process to Address Dyslipidemia for Every Patient With High Cholesterol at Every Visit >>
Develop policies and procedures to reflect prioritization of cholesterol management
Develop a flowchart/workflow for proactively tracking and managing patients for cholesterol management
Deploy cholesterol management treatment protocols and algorithms
Equipping Care Teams
Train Direct Care Staff on Cholesterol Management >>
Provide training on clinical guidelines
Provide guidance on cholesterol screening (including fasting vs. nonfasting)
Provide guidance on assessing for secondary causes of dyslipidemia
Provide guidance on statin-associated side effects
Provide guidance on atherosclerotic cardiovascular disease (ASCVD) risk estimation
Overcome diagnostic and treatment inertia
Provide guidance on appropriate use of nonstatin therapies
Provide guidance on familial hypercholesterolemia (FH)
Optimize Lipid Panel Procedures >>
Redesign electronic health record (EHR) lab order template to include fasting and nonfasting lipid panels
Implement point-of-care lipid testing
Equip Direct Care Staff to Facilitate Patient Self-Management >>
Ensure the care team is skilled in supporting patient medication adherence
Prepare the Care Team Beforehand for Effective Cholesterol Management During Office Visits >>
Use a flowchart or dashboard with care gaps highlighted in team huddles to help care teams better support patients
Implement pre-visit planning into workflows and use clinical decision support tools to ensure that indicated orders/actions occur during the visit
Equip Care Teams to Provide Appropriate Medications >>
Facilitate patient access to statin therapies as appropriate
Facilitate patient access to nonstatin therapies as appropriate
Use protocols and follow up with patients to find a statin that works (SASE work-around, generic vs. brand, etc.)

Population Health Management
Identify Patients at High Risk for an ASCVD Event Who Could Benefit From a Statin >>
Use guideline-based clinical criteria to define high-risk patients who could benefit from statin use
Search EHR data for patients who meet the guideline-based clinical criteria
Implement a plan to ensure high-risk patients are on a statin
Identify Patients With Potentially Undiagnosed Familial Hypercholesterolemia (FH) >>
Screen patients for FH; conduct cascade screening and genetic testing as appropriate
Use EHR data and algorithms/predictive analytics to find patients with potentially undiagnosed FH
Ensure Accurate Coding and Diagnosis >>
Assess problem list diagnosis codes for use of “pure hypercholesterolemia”; recode to hyperlipidemia as appropriate
Use a Registry to Track and Manage High-Risk Patients Who Could Benefit From Statin Use >>
Implement a cholesterol management registry
Use a defined process for outreach (e.g., via phone, mail, email, text message) to patients who could benefit from statin use and those otherwise needing follow-up
Use Clinician-Managed Protocols for Medication Adjustments and Lifestyle Recommendations >>
Use protocols to cover proactive outreach driven by registry use
Use Practice Data to Drive Improvement >>
Determine cholesterol management and related process metrics for the practice
Regularly provide a dashboard with cholesterol goals, metrics, and performance; consider stratification by demographics or comorbidities
Individual Patient Supports
Prepare Patients Before the Office Visit via Pre-Visit Patient Outreach >>
Contact patients to confirm upcoming appointments and provide instructions on how to prepare for their visit
Optimize Patient Intake to Support Cholesterol Management >>
Provide patients with educational materials to help them understand the benefits of cholesterol management, including statins
Provide patient support for cholesterol screening
Provide cholesterol management educational material specific to women
Provide patients with tools to support their visit agenda and goal setting
Reconcile medications that the patient is taking with the record’s medication list
Optimize the Patient-Clinician Encounter >>
Use documentation templates to help capture key data, such as patient treatment goals and barriers to adherence
Use order sets and standing orders to support evidence-based and individualized care
Assess individual risk and therapy impact
Address patient-specific risk factors and medication adherence through motivational interviewing, shared decision making, and “teach back”
Assess patients’ social drivers/determinants of health
Support Patients in Cholesterol Self-Management During Their Routine Daily Activities >>
Provide patient supports for medication adherence
Provide patient supports on what to do if they experience statin-associated side effects
Provide patient supports for tobacco cessation
Provide patient supports for increasing physical activity
Provide patient supports for dietary changes
Provide patient supports related to non-evidence-based supplements
Provide patient supports related to secondary causes of hyperlipidemia
Provide patient supports related to FH
Optimize the Encounter Closing >>
Provide patients with a written self-management plan, visit summary, and follow-up guidance at the end of each visit
Follow Up to Monitor and Reinforce Cholesterol Management Plans >>
Create a protocol to simplify the prescription refill process
Implement frequent follow-ups (e.g., email, phone calls, text messages) with patients to make sure they are continuing their medication

What Is the Cholesterol Management Change Package?

The Cholesterol Management Change Package (CMCP) presents a listing of evidence-based process improvements that outpatient clinical settings can implement as they seek optimal cholesterol management. It is composed of **change concepts, change ideas, and evidence- or practice-based tools and resources**.

- **Change concepts** are general notions that are useful in the development of more specific ideas for changes that lead to improvement.
- **Change ideas** are specific, actionable ideas for changing a process. Change ideas can be rapidly tested on a small scale to determine whether they result in improvements in the local environment.
- Within each change idea, the CMCP lists evidence- or practice-based **tools and resources** that can be adapted or adopted in a health care setting to improve cholesterol management.

While the science behind cardiovascular risk reduction is continually evolving, there is strong evidence that a systematic approach to cholesterol management can significantly improve cholesterol-related care processes and outcomes. The purpose of the CMCP is to help health care practices put systems in place to care for patients with dyslipidemia more efficiently and effectively.

Cholesterol Management Guideline and Patient Management Groups

The 2018 American Heart Association (AHA)/ American College of Cardiology (ACC) multisociety Guideline on the Management of Blood Cholesterol specifies indications for screening, identifies groups that benefit from cholesterol-lowering therapies, and emphasizes the importance of shared decision making between patients and their clinicians.¹ Identifying patients appropriate for screening and treatment can serve as a starting point for targeted quality improvement efforts to improve cholesterol management at a population level.

Screening for Dyslipidemia

Screening for dyslipidemia may be performed with a nonfasting lipid panel. The current guideline recommends that adults age 20 or older undergo screening and atherosclerotic cardiovascular disease (ASCVD) risk assessment every 4 to 6 years.¹ More frequent assessment is reasonable in those with risk factors or borderline cholesterol levels.

Identifying patients appropriate for screening and treatment can serve as a starting point for targeted quality improvement efforts to improve cholesterol management at a population level.

Treatment of Dyslipidemia

In addition to lifestyle modification, statins are the cornerstone pharmacologic intervention in cholesterol management. Statins are cost-effective, with well-proven safety and cardiovascular morbidity and mortality benefit in those with or at risk of ASCVD. Four patient groups have been identified as having high risk for ASCVD events and receiving benefit from statin therapy:¹

- History of clinical ASCVD
- Severe hypercholesterolemia (LDL \geq 190 mg/dL)
- Ages 40–75 with diabetes mellitus
- Ages 40–75 without diabetes and with a 10-year risk of at least 20%

The guideline also reinforces the need for appropriate statin intensity. See [Table 1](#) for statin intensity and expected lipid lowering.

Additional cholesterol-lowering therapies, such as ezetimibe and PCSK9 inhibitors, are indicated in certain patients at high risk for ASCVD, as detailed in the cholesterol management guideline.¹ Other agents, such as bempedoic acid or inclisiran, may also be appropriate for specific patients. Nonstatin therapies are typically used in combination with maximally tolerated statin therapy or as an alternative therapy in the uncommon event of serious statin-associated side effects (SASE).²⁻³

Table 1. Statin Intensity Chart¹

Statin Intensity	LDL-C Lowering Capability	Primary Statins	Secondary Statins*
HIGH	\geq 50%	Atorvastatin, 40-80 mg Rosuvastatin, 20 mg	N/A
MODERATE	30-49%	Atorvastatin, 10 mg Rosuvastatin, 10 mg Simvastatin, 20-40 mg	Pravastatin, 40 mg Lovastatin, 40 mg Fluvastatin, XL 80 mg Fluvastatin, 40 mg BID Pitavastatin, 1-4 mg
LOW	<30%	Simvastatin, 10 mg	Pravastatin, 10-20 mg Lovastatin, 20 mg Fluvastatin, 20-40 mg

*As delineated in the 2018 clinical guideline¹, LDL-C lowering capacity for primary statins was derived from the VOYAGER database. LDL-C lowering capacity of secondary statins was derived from FDA-approved product labeling.

Statin-Associated Side Effects

Concern about SASE is the most common reason for statin nonadherence. The most common SASE include statin-associated muscle symptoms (SAMS). In clinical practice, subjective myalgia is reported in up to 20% of patients on statins, a higher rate than is attributed to statins compared with placebo in randomized controlled trials. Many of these subjective muscle symptoms appear to be driven by the “nocebo effect,” in which the expectation of side effects is manifested with the ingestion of a pill, regardless of whether an active drug is present. Randomized trials have demonstrated that both placebo and statin elicit similar rates of muscle symptoms.⁴⁻⁶ Subjective myalgia can often be successfully managed with rechallenge, dose adjustment, or trial of a different statin.

Rarer SAMS include those with objective evidence of muscle injury, such as myositis, rhabdomyolysis, and statin-associated autoimmune myopathy. Other uncommon SASE include new-onset diabetes in susceptible patients, elevated transaminases, and hepatic failure. Although some case reports suggest an effect on memory and cognition, larger randomized controlled trials have not supported this.

Areas for Quality Improvement

Focusing initial quality improvement initiatives on appropriate dyslipidemia screening and prescribing high-intensity statins in the highest-risk groups will have the greatest impact on cholesterol management. Patients who either do not have a recent documented lipid panel or fall in a patient management group known to benefit from statins but are not on statin therapy may be considered as “hiding in plain sight.” These patients may be easily identified within a practice or system’s EHRs and targeted for recall

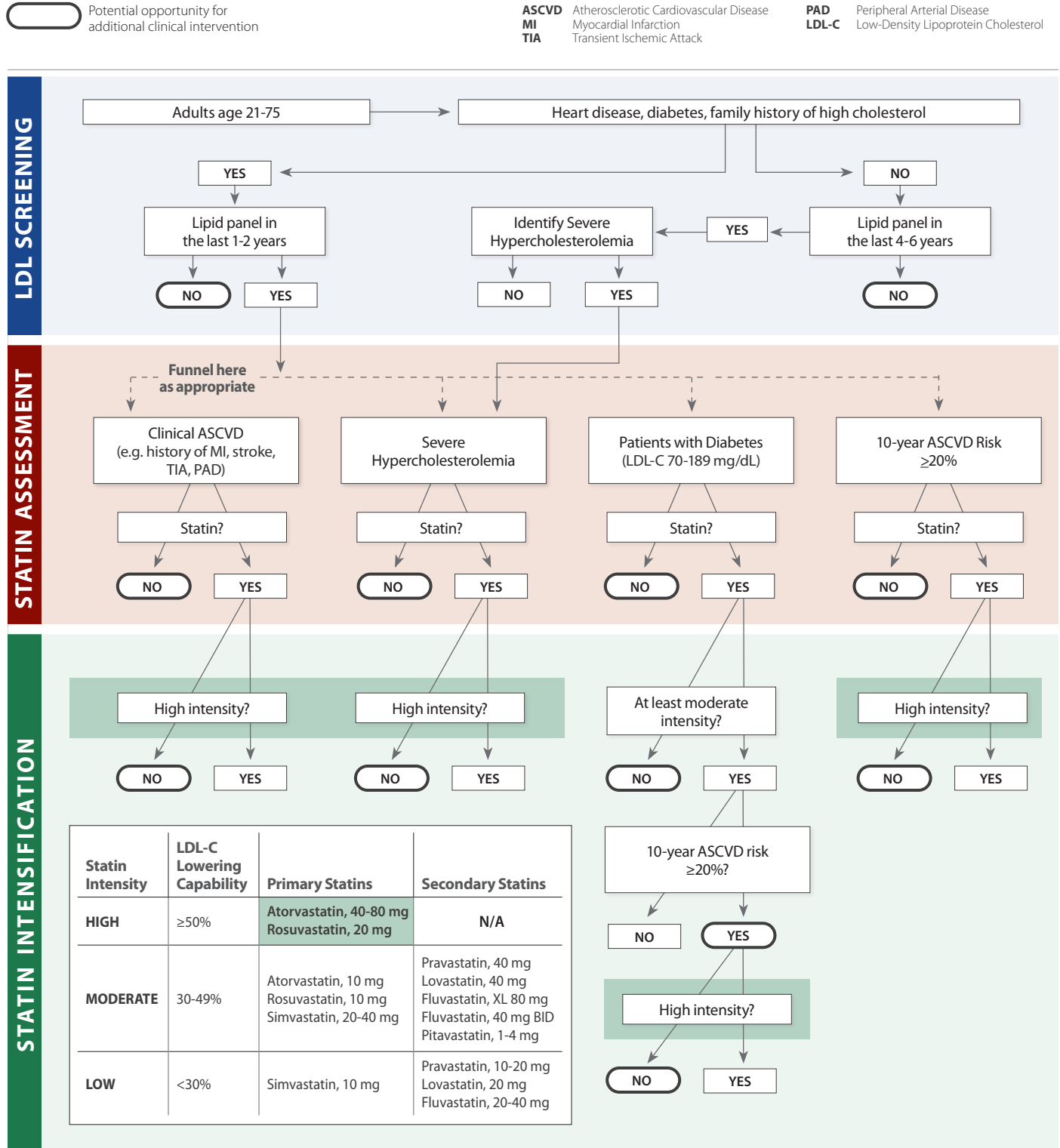
In clinical practice, subjective myalgia is reported in up to 20% of patients on statins, a higher rate than is attributed to statins compared with placebo in randomized controlled trials. Many of these subjective muscle symptoms appear to be driven by the “nocebo effect,” in which the expectation of side effects is manifested with the ingestion of a pill, regardless of whether an active drug is present.

and intervention (**Figure 1**). Surveillance data suggest that there are 24.2 million people in the United States who are recommended to take a statin but are not currently taking one.⁷

After appropriate lipid screening and statin prescribing in high-risk groups are ensured, attention can then be directed toward achieving lipid-lowering goals with additional nonstatin therapies, to incrementally improve outcomes in a population at high risk for ASCVD.

Stratifying data within patient management groups by race, ethnicity, sex, age, insurance status, preferred language, transportation, and other social drivers of health is an important step to identify care gaps that may represent health disparities. Assessing and addressing disparities in dyslipidemia screening and statin prescribing for high-risk groups are key actions toward achieving health equity in preventing heart attacks and strokes.

Figure 1. Potential Cholesterol Management Quality Improvement Opportunities



How Can I Use the Cholesterol Management Change Package (CMCP)?

The CMCP is meant to serve as a menu of options from which practices can select specific interventions to improve cholesterol management. We do not recommend that any practice attempt to implement all of the interventions at once, nor is it likely that all interventions will be applicable to any single clinical setting.

Start by assembling a team of physicians, pharmacists, nurses, medical assistants, and administrators to discuss the aspects of cholesterol management that are most in need of improvement (see [Appendix A](#) for additional quality improvement resources that can be useful in planning improvement activities). The team can then select corresponding interventions from the CMCP that best address those issues.

[Figure 2](#) provides the Institute for Healthcare Improvement (IHI) Model for Improvement.⁸ This model suggests posing three questions:

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes can we make that will result in improvement?

The answers will help identify specific quality improvement objectives and related metrics, and you can choose relevant strategies from the CMCP that have been shown to result in improvement. Each strategy you choose should first be tested on a small scale (i.e., with “small tests of change”) to assess feasibility and allow the team to evaluate and adjust before instituting the change on a broader, more permanent scale. This approach can be accomplished using [Plan-Do-Study-Act \(PDSA\) cycles](#).

Figure 2. Institute for Healthcare Improvement (IHI) Model for Improvement⁷

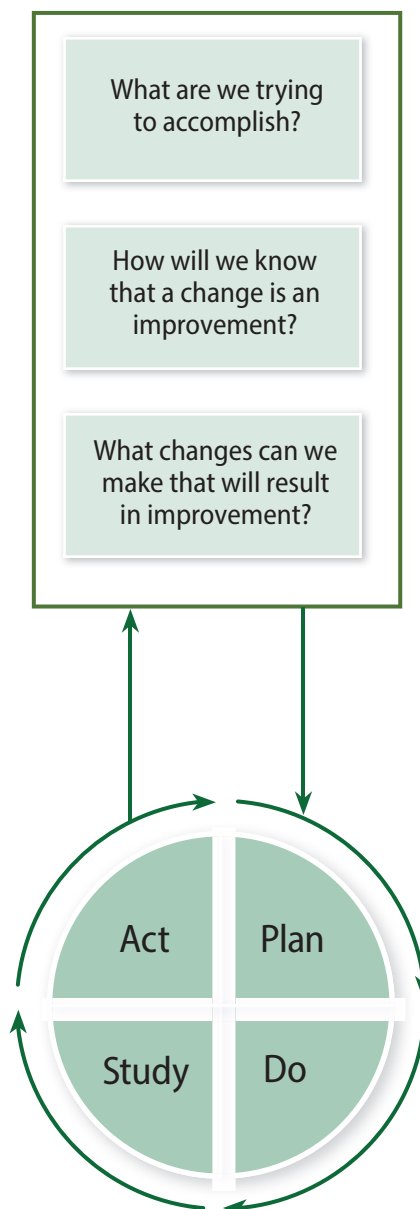
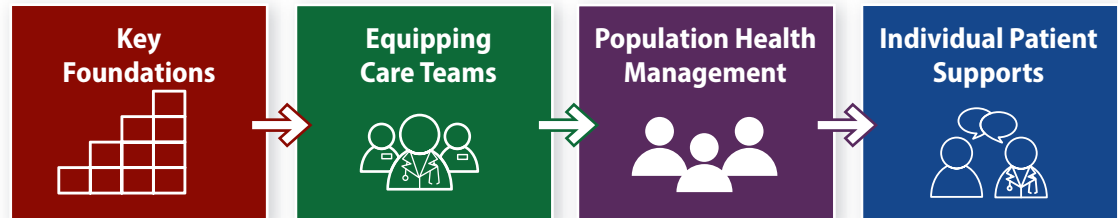


Figure 3. Cholesterol Management Change Package Focus Areas

The CMCP is broken down into four focus areas ([Figure 3](#)). For each focus area, [Tables 2 through 5](#) contain a list of change concepts and change ideas that clinicians and practices have successfully implemented to improve cholesterol management for their patient population. Each change idea is paired with several tools and resources suggested by experts in the field who have used them successfully.

- **Key Foundations** ([Table 2](#)) offers ways to establish practice foundations for effective cholesterol management efforts and is likely the best place on which to focus initial quality improvement efforts. These include identifying a champion to provide leadership on focused quality improvement efforts and making cholesterol management a practice priority.
- **Equipping Care Teams** ([Table 3](#)) lists strategies related to training and preparing clinicians and other care team members to focus on cholesterol management. Strategies include supporting patient medication adherence and other forms of self-management.

- **Population Health Management** ([Table 4](#)) presents population management tools and approaches to proactively monitor and manage cholesterol management on a practice level. Tools and approaches include clinician-driven treatment protocols and using practice data to drive improvement.

- **Individual Patient Supports** ([Table 5](#)) lists ways that practices can leverage all care steps to better manage blood cholesterol for individual patients. These supports span the patient care spectrum, from pre-visit patient outreach, check-in opportunities, interactions during the visit, check-out, to after-visit reinforcement.

Outpatient health care settings vary, so we have provided a number of different tools and resources that users can choose to tailor to their specific practice settings. We suggest selecting a single tool to begin quality improvement efforts and exploring others if you are interested in alternative approaches.

Additional quality improvement resources can be found in [Appendix A](#).

Outpatient health care settings vary, so we have provided a number of different tools and resources that users can choose to tailor to their specific practice settings. We suggest selecting a single tool to begin quality improvement efforts and exploring others if you are interested in alternative approaches.

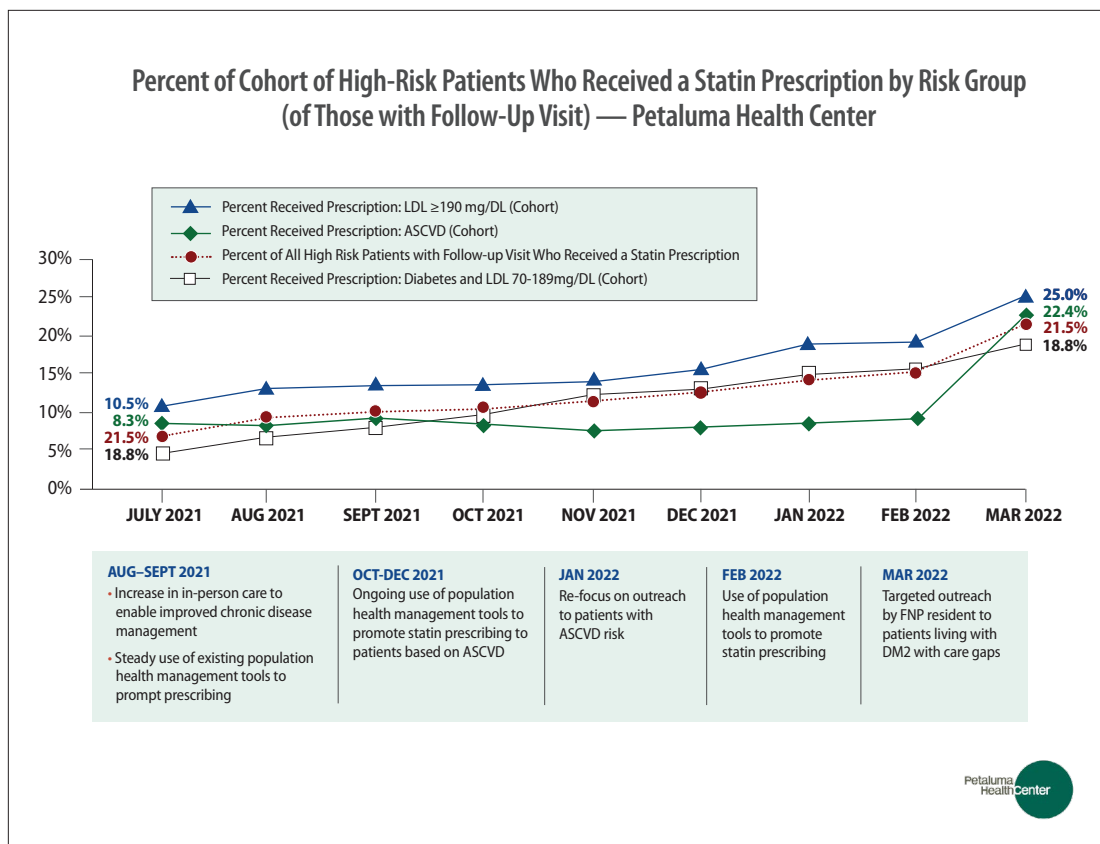
How to Measure Quality Improvement Efforts

Monitoring and measuring both outcomes and processes are essential for quality improvement (QI). Overall outcomes, such as improved cholesterol management, are an important measure of the effectiveness of change. Process measures, such as the percentage of newly diagnosed patients with dyslipidemia who are brought back for a follow-up visit within a designated period of time, can provide much-needed feedback on whether interventions are being successfully implemented. Begin by identifying a process that you are interested in improving, then collect baseline data on that process. Test your change ideas on a small scale to identify potential barriers to implementation.

Address any barriers and make necessary refinements before implementing the change idea on a broader scale.

One very helpful tool for displaying and monitoring improvement efforts over time is a **run chart**, which is a graph that longitudinally displays performance on a given process or outcome (see **Figure 4** for an example). A run chart can be useful for charting performance over time to visually demonstrate to stakeholders why recommended changes are needed. You can then document when specific changes were made to show the impact that implemented changes yielded on performance. The Safety Net Medical Home Initiative has developed a **Do-It-Yourself Run Chart template** to help you get started.

Figure 4. Example of a Run Chart





Change Concepts, Change Ideas, and Tools and Resources

Bold font indicates health care settings that contributed content.

Table 2. Key Foundations		
Change Concepts	Change Ideas	Tools and Resources
Make Cholesterol Management a Practice or System Priority	Designate a cholesterol champion in the practice	<ul style="list-style-type: none"> • Kaiser Permanente Northern California—Cardiovascular Physician Champion Role Description
	Engage care team in cholesterol management	<ul style="list-style-type: none"> • Team Up for Quality Care: The Role of Primary Care Teams in Prevention of Cardiovascular Disease. Biederman C. 2021.⁹ • The Primary Care Team: LEAP—Share the Care Worksheet
	Create a lipid clinic	<ul style="list-style-type: none"> • NLA—Key Considerations for Designing and Operating Clinically Successful and Solvent Lipid Clinic and Cardiometabolic Risk Reduction Programs
	Expand the care team	<ul style="list-style-type: none"> • CDC—Advancing Team-Based Care Through Collaborative Practice Agreements: A Resource and Implementation Guide for Adding Pharmacists to the Care Team <ul style="list-style-type: none"> » Sample Collaborative Practice Agreement for Hypertension/ Cardiovascular Disease • Sinai Urban Health Institute, Sinai Health System—Best Practice Guidelines for Implementing and Evaluating Community Health Worker Programs in Health Care Settings • Minnesota Department of Health—Community Health Worker (CHW) Toolkit: A Guide for Employers • CPSTF—Interventions Engaging Community Health Workers
Implement a Policy and Process to Address Dyslipidemia for Every Patient With High Cholesterol at Every Visit	Develop policies and procedures to reflect prioritization of cholesterol management	<ul style="list-style-type: none"> • Kaiser Permanente—Atherosclerotic Cardiovascular Disease (ASCVD) Primary Prevention Guideline • NACHC—Improving Use of Statin Therapy Roadmap • Aliados Health—Template: Nursing Standardized Procedure for Use of Statins in the Management of Patients at High Risk for Cardiovascular Events • NYC DOHMH and HealthyHearts NYC—ABCS Toolkit for the Practice Facilitator: Use the 4 Rs to Manage Cholesterol
	Develop a flowchart/ workflow for proactively tracking and managing patients for cholesterol management	<ul style="list-style-type: none"> • Figure 2. Process flow map for hyperlipidaemia screening and ASCVD risk calculation. Bakhai S, et al., 2018.¹⁰ • NYC DOHMH and HealthyHearts NYC—ABCS Toolkit for the Practice Facilitator: Suggested Workflow for Blood Pressure Control
	Deploy cholesterol management treatment protocols and algorithms	<ul style="list-style-type: none"> • Kaiser Permanente—Atherosclerotic Cardiovascular Disease (ASCVD) Primary Prevention Guideline: Recommended Statin Dosing • Kaiser Permanente—Atherosclerotic Cardiovascular Disease (ASCVD) Secondary Prevention Guideline: Recommended Statin Dosing



Table 3. Equipping Care Teams

Change Concepts	Change Ideas	Tools and Resources
Train Direct Care Staff on Cholesterol Management	Provide training on clinical guidelines	<ul style="list-style-type: none"> • PCNA—The 2019 Guideline for Primary Prevention of Cardiovascular Disease (CE Course) • NLA—Four Key Highlights from the 2018 Guideline on the Management of Blood Cholesterol • USPSTF—Statin Use for the Primary Prevention of Cardiovascular Disease in Adults: Preventive Medication: U.S. Preventive Services Task Force Recommendation Statement • Kaiser Permanente—Cholesterol and Cardiovascular Risk: Clinician Guide • 2018 Cholesterol Clinical Practice Guidelines: Synopsis of the 2018 American Heart Association/American College of Cardiology/ Multisociety Cholesterol Guideline. Grundy SM, et al., 2019.¹¹ • NACHC—Statin Therapy for High-Risk Groups Summary Video • AHA & ACC—Cholesterol: Adult Management Guidelines Pocketcard • NACHC—Statin Guideline Snapshot • NYC DOHMH and HealthyHearts NYC—ABCS Toolkit for the Practice Facilitator: Cholesterol FAQs
	Provide guidance on cholesterol screening (including fasting vs. nonfasting)	<ul style="list-style-type: none"> • NLA—Lipid Measurements in the Management of Cardiovascular Diseases: Scientific Statement • NLA—Lipid Measurements in the Management of Cardiovascular Diseases: Practical Recommendations • Fasting or Nonfasting Lipid Measurements: It Depends on the Question. Driver SL, et al., 2016.¹² • Section 2.2. Measurements of LDL-C and Non-HDL-C. Grundy SM, et al., 2019.¹
	Provide guidance on assessing for secondary causes of dyslipidemia	<ul style="list-style-type: none"> • National Lipid Association Annual Summary of Clinical Lipidology 2015. Bays HE, et al., 2014.¹³ » Table 6. Secondary causes of dyslipidemia due to disordered metabolism or disease » Table 7. Secondary causes of dyslipidemia due to drugs
	Provide guidance on statin-associated side effects	<ul style="list-style-type: none"> • Million Hearts®—The Scoop on Statins: What Do You Need to Know? • Statin Safety. Grundy SM, et al., 2019.¹¹ • AHA & ACC—Cholesterol: Adult Management Guidelines Pocket Card: Assessment and Management of Muscle Symptoms During Statin Therapy • ACC—Statin Intolerance App • NACHC—Statin-Associated Side Effects • NLA—Scientific Statement on Statin Intolerance: A New Definition and Key Considerations for ASCVD Risk Reduction in the Statin Intolerant Patient • Side Effect Patterns in a Crossover Trial of Statin, Placebo, and No Treatment. Howard JP, et al., 2021.⁴ • SAMSON—SAMSON Trial (2020): N-of-1 Trial of a Statin, Placebo, or No Treatment to Assess Side Effects (Infographic)

**Table 3. Equipping Care Teams** (continued)

Change Concepts	Change Ideas	Tools and Resources
Train Direct Care Staff on Cholesterol Management (continued)	Provide guidance on ASCVD risk estimation	<ul style="list-style-type: none"> • ACC—ASCVD Risk Estimator Plus • 2018 Cholesterol Clinical Practice Guidelines: Synopsis of the 2018 American Heart Association/American College of Cardiology/Multisociety Cholesterol Guideline. Grundy SM, et al., 2019.¹¹ • ACC—LDL-C Manager App • NLA—Lp(a) Screening for Individuals at High ASCVD Risk
	Overcome diagnostic and treatment inertia	<ul style="list-style-type: none"> • NACHC—Statin Clinical Inertia Assessment Tool • Azara Healthcare—ASCVD Alerts Available on Patient Visit Planning Tool • NACHC—Treating Patients with Statins: Tips from a Clinician to Clinicians
	Provide guidance on appropriate use of nonstatin therapies	<ul style="list-style-type: none"> • 2022 ACC Expert Consensus Decision Pathway on the Role of Nonstatin Therapies for LDL-Cholesterol Lowering in the Management of Atherosclerotic Cardiovascular Disease Risk: A Report of the American College of Cardiology Solution Set Oversight Committee. Writing Committee, et al., 2022.³ » New Expert Consensus Decision Pathway Addresses Use of Newer Nonstatin Therapies for Managing LDL-C in ASCVD Patients • NLA—Enhancing the Value of PCSK9 Monoclonal Antibodies by Identifying Patients Most Likely to Benefit
	Provide guidance on familial hypercholesterolemia (FH)	<ul style="list-style-type: none"> • FH Foundation—Familial Hypercholesterolemia Fact Sheet • FH Foundation—Homozygous Familial Hypercholesterolemia (HoFH) Fact Sheet • FH Foundation—FH Diagnosis, Management, and Family Screening • My Approach to the Patient with Familial Hypercholesterolemia. Safarova MS, Kullo IJ, 2016.¹⁴ » Table 2. Criteria for Diagnosing Homozygous FH » Table 3. Dutch Lipid Clinic Network Clinical Criteria for Diagnosing Heterozygous FH » Figure 1. Evaluation and treatment of patients with familial hypercholesterolemia (FH) • Figure 8. LDL cholesterol burden in individuals with or without familial hypercholesterolaemia as a function of the age of initiation of statin therapy. Nordestgaard MG, et al., 2013.¹⁵ • FH Foundation—2018 Guideline: What does it mean for FH? • The Agenda for Familial Hypercholesterolemia: A Scientific Statement from the American Heart Association. Gidding SS, et al., 2015.¹⁶



Table 3. Equipping Care Teams (continued)

Change Concepts	Change Ideas	Tools and Resources
Optimize Lipid Panel Procedures	Redesign EHR lab order template to include fasting and nonfasting lipid panels	<ul style="list-style-type: none"> • Winding Waters Health Center—POC Lipid Screening
	Implement point-of-care lipid testing	<ul style="list-style-type: none"> • Million Hearts®—Million Hearts Learning Lab: Managing Cholesterol Using Technology
Equip Direct Care Staff to Facilitate Patient Self-Management	Ensure the care team is skilled in supporting patient medication adherence	<ul style="list-style-type: none"> • Million Hearts®—Improving Medication Adherence Among Patients with Hypertension: A Tip Sheet for Health Care Professionals • ACC—Statin Intolerance Tool • Kaiser Permanente—Cardiovascular Risk and Dyslipidemia Management Clinician Guide: Statin Drug Interactions • PCNA—Pearls for Medication Adherence • NACHC—Statin Adherence • AMA—Medication Adherence: Improve Patient Outcomes and Reduce Costs <ul style="list-style-type: none"> » Deescalation and Deprescribing Worksheets » Questions to Help Uncover Nonadherence • 2022 ACC Expert Consensus Decision Pathway on the Role of Nonstatin Therapies for LDL-Cholesterol Lowering in the Management of Atherosclerotic Cardiovascular Disease Risk: A Report of the American College of Cardiology Solution Set Oversight Committee. Writing Committee, et al., 2022.³ <ul style="list-style-type: none"> » Figure 7. Adults with Possible Statin-Associated Side Effects
Prepare the Care Team Beforehand for Effective Cholesterol Management During Office Visits	Use a flowchart or dashboard with care gaps highlighted in team huddles to help care teams better support patients	<ul style="list-style-type: none"> • Azara Healthcare—Provider Dashboard • Azara Healthcare—Population Dashboard • Azara Healthcare—PVP Visualizations: LDL Alert Definitions
	Implement pre-visit planning into workflows and use clinical decision support tools to ensure that indicated orders/actions occur during the visit	<ul style="list-style-type: none"> • Azara Healthcare—PVP Alert: ASCVD Risk Calculator Data Missing • Azara Healthcare—PVP Alert: Elevated ASCVD Risk & Statin Rx • Azara Healthcare—PVP Alert: Statin Therapy • Family Health Centers of San Diego—Health Maintenance Reminders • Family Health Centers of San Diego—EHR Decision Aid



Table 3. Equipping Care Teams (continued)

Change Concepts	Change Ideas	Tools and Resources
<p>Equip Care Teams to Provide Appropriate Medications</p>	<p>Facilitate patient access to statin therapies as appropriate</p>	<ul style="list-style-type: none"> • FH Foundation—Affording Treatment for Familial Hypercholesterolemia (also applicable for non-FH)
	<p>Facilitate patient access to nonstatin therapies as appropriate</p>	<ul style="list-style-type: none"> • ABC—ABC Access to Care Prior Authorization Resource Kit for Providers: Lipid Disorders (PCSK9i focused) <ul style="list-style-type: none"> » Facilitating Patient Access to PCSK9 Inhibitors: 10 Actions That Optimize the Approval Process • PCSK9 inhibitor access barriers—issues and recommendations: Improving the access process for patients, clinicians and payers. Baum SJ, et al., 2017.¹⁷ <ul style="list-style-type: none"> » PCSK9 Inhibitor Prior Authorization Form » PCSK9 Inhibitor Appeal Letter Template • FH Foundation—Affording Treatment for Familial Hypercholesterolemia (also applicable for non-FH) • NLA—Checklist for Seeking Approval for a PCSK9 Inhibitor • AMA—Medication Management: Save Time by Simplifying Your Prescribing and Refill Process <ul style="list-style-type: none"> » Tips and Resources to Alleviate Prior Authorization Burdens
	<p>Use protocols and follow up with patients to find a statin that works (SASE work-around, generic vs. brand, etc.)</p>	<ul style="list-style-type: none"> • Kaiser Permanente—Cardiovascular Risk and Dyslipidemia Management: Clinician Guide • Kaiser Permanente—Cholesterol and Cardiovascular Risk: Clinician Guide • AHA & ACC—Cholesterol: Adult Management Guidelines Pocket Card: Statin Therapy: Monitoring Therapeutic Response and Adherence • ACC—Statin Intolerance App • Figure 2: Algorithm for Management of Statin Intolerance. Abdullah K, Rohatgi A., 2014.¹⁸ • Table 1. HMG-CoA Reductase Inhibitors. Kheloussi S, 2018.¹⁹



Table 4. Population Health Management

Change Concepts	Change Ideas	Tools and Resources
<p>Identify Patients at High Risk for an ASCVD Event Who Could Benefit From a Statin</p>	<p>Use guideline-based clinical criteria to define high-risk patients who could benefit from statin use</p>	<ul style="list-style-type: none"> • Kaiser Permanente—Cardiovascular Risk and Dyslipidemia Management Clinician Guide: Figure 1: ASCVD Statin Benefit Groups • See also Figure 1 above
	<p>Search EHR data for patients who meet the guideline-based clinical criteria</p>	<ul style="list-style-type: none"> • Aliados Health—Statin Care Gap for LDL \geq190 mg/dL • Azara Healthcare—Registry • Azara Healthcare—ASCVD Ten Year Risk Registry • Azara Healthcare—Patients “Hiding in Plain Sight” • Azara Healthcare—PVP Alert: Lipid Lower Rx • Figure. Algorithm for determining whether EHR data query accurately detected statin prescription failures in patients with CAD. Shin EY, et al., 2018.²⁰ • Rate of Statin Prescription in Younger Patients with Severe Dyslipidemia. Al-Kindi SG, et al., 2017.²¹ • Keystone Rural Health Consortia, Inc.—Huddle Data Mining and Presentation Program (i2i) • Family Health Centers of San Diego—EHR Decision Aid • Family Health Centers of San Diego—EHR Query
	<p>Implement a plan to ensure high-risk patients are on a statin</p>	<ul style="list-style-type: none"> • Azara Healthcare—ASCVD Alerts Available on Patient Visit Planning Tool • Aliados Health—Statin Care Gap for LDL \geq190 mg/dL
<p>Identify Patients with Potentially Undiagnosed Familial Hypercholesterolemia (FH)</p>	<p>Screen patients for FH; conduct cascade screening and genetic testing as appropriate</p>	<ul style="list-style-type: none"> • FH Foundation—FH Diagnosis, Management, and Family Screening • My Approach to the Patient with Familial Hypercholesterolemia. Safarova MS, Kullo IJ, 2016.¹⁴ <ul style="list-style-type: none"> » Table 2. Criteria for Diagnosing Homozygous FH » Table 3. Dutch Lipid Clinic Network Clinical Criteria for Diagnosing Heterozygous FH » Figure 1. Evaluation and treatment of patients with familial hypercholesterolemia (FH) • The Agenda for Familial Hypercholesterolemia: A Scientific Statement from the American Heart Association. Gidding SS, et al., 2015.¹⁶ • Aliados Health—Statin Care Gap for LDL \geq190 mg/dL
	<p>Use EHR data and algorithms/predictive analytics to find patients with potentially undiagnosed FH</p>	<ul style="list-style-type: none"> • Table 2. Top 20 features in the classifier that flag patients with FH. Banda, JM, et al., 2019.²² • Precision screening for familial hypercholesterolemia: A machine learning study applied to electronic health encounter data. Myers KD, et al., 2019.²³

**Table 4. Population Health Management** (continued)

Change Concepts	Change Ideas	Tools and Resources
Ensure Accurate Coding and Diagnosis	Assess problem list diagnosis codes for use of “pure hypercholesterolemia”; recode to hyperlipidemia as appropriate	<ul style="list-style-type: none"> NLA—Commonly Used Lipidcentric ICD-10 (ICD-9) Codes
Use a Registry to Track and Manage High-Risk Patients Who Could Benefit From Statin Use	Implement a cholesterol management registry	<ul style="list-style-type: none"> Azara Healthcare—Registry Azara Healthcare—ASCVD Ten Year Risk Registry Effect of an Automated Patient Dashboard Using Active Choice and Peer Comparison Performance Feedback to Physicians on Statin Prescribing: The PRESCRIBE Cluster Randomized Clinical Trial. Patel MS, et al., 2018.²⁴ <ul style="list-style-type: none"> » eFigure 1. Active Choice Intervention Dashboard (example 1)
	Use a defined process for outreach (e.g., via phone, mail, email, text message) to patients who could benefit from statin use and those otherwise needing follow-up	<ul style="list-style-type: none"> <i>JAMA</i>—Automated Outreach to Increase Primary Adherence to Cholesterol-Lowering Medications. Derosé SF, et al., 2013.²⁵ <ul style="list-style-type: none"> » eAppendix. Call Script CC. » Figure 2. Flowchart of Study Intervention.
Use Clinician-Managed Protocols for Medication Adjustments and Lifestyle Recommendations	Use protocols to cover proactive outreach driven by registry use	<ul style="list-style-type: none"> <i>JAMA</i>—Automated Outreach to Increase Primary Adherence to Cholesterol-Lowering Medications. Derosé SF, et al., 2013.²⁵ Aliados Health—Template: Nursing Standardized Procedure for Use of Statins in the Management of Patients at High Risk for Cardiovascular Events
Use Practice Data to Drive Improvement	Determine cholesterol management and related process metrics for the practice	<ul style="list-style-type: none"> Statin Therapy for the Prevention and Treatment of Cardiovascular Disease—CMS 347 specification Azara Healthcare—Statin Measures
	Regularly provide a dashboard with cholesterol goals, metrics, and performance; consider stratification by demographics and comorbidities	<ul style="list-style-type: none"> Miami Beach Community Health Center—Dashboard with Provider Scorecard Azara Healthcare—Provider Dashboard Azara Healthcare—Population Dashboard Azara Healthcare—Statin Measures



Table 5. Individual Patient Supports

Change Concepts	Change Ideas	Tools and Resources
<p>Prepare Patients Before the Office Visit via Pre-Visit Patient Outreach</p>	<p>Contact patients to confirm upcoming appointments and provide instructions on how to prepare for their visit</p>	<ul style="list-style-type: none"> • AMA—Pre-Visit Laboratory Testing (CME module) and resources: <ul style="list-style-type: none"> » Visit planner checklist: Order sheet for patient visits » Pre-visit laboratory testing implementation checklist
<p>Optimize Patient Intake to Support Cholesterol Management</p>	<p>Provide patients with educational materials to help them understand the benefits of cholesterol management, including statins</p>	<ul style="list-style-type: none"> • Intermountain Healthcare—Understanding Cholesterol English Spanish • Health Information Translations—Cholesterol (multiple languages) • PCNA—Diabetes and Your Heart: Close Connections English Spanish • NACHC—How Do Statins Prevent Heart Attacks and Strokes? [video] English Spanish • NACHC—How Do Statins Prevent Heart Attacks and Strokes: Patient Education Infographic English Spanish • NACHC—Statins and Lifestyle: Patient Education Infographic English Spanish • NACHC—Million Hearts®: Common Patient Questions About Statins • CardioSmart—What is Cholesterol? • CardioSmart—Straight Talk About Statins • AHA—How Do My Cholesterol Levels Affect My Risk of Heart Attack and Stroke? English Spanish • FDA—Cholesterol and Statins • PCNA—Cholesterol: What You Need to Know English Spanish
	<p>Provide patient supports for cholesterol screening</p>	<ul style="list-style-type: none"> • CDC—Get a Cholesterol Test • Mayo Clinic—Cholesterol Test • Intermountain Healthcare—Coronary Calcium CT Scan
	<p>Provide cholesterol management educational material specific to women</p>	<ul style="list-style-type: none"> • NLA—Lipid Treatment in Conception, Pregnancy, and Lactation • NLA—Polycystic Ovarian Syndrome and Heart Disease Risk • CardioSmart—Be Your Own Heart Hero


Table 5. Individual Patient Supports (continued)

Change Concepts	Change Ideas	Tools and Resources
Optimize Patient Intake to Support Cholesterol Management (continued)	Provide patients with tools to support their visit agenda and goal setting	<ul style="list-style-type: none"> • AHA—Check. Change. Control. Cholesterol: Take Action. Live Healthy! My Cholesterol Guide <ul style="list-style-type: none"> » Your Treatment Plan & Lifestyle Changes • PCNA—Heart Healthy Toolbox: Helping Your Patients Overcome Barriers to a Healthier Lifestyle: Navigating the Hurdles • AMA—Step 2: Create an Accurate List by Reconciling Medications • Table 1. MedRec gap analysis questionnaire. Elbeddini A, et al., 2021.²⁶ • CardioSmart—My Plan for Starting a PCSK9 Inhibitor
	Reconcile medications that a patient is taking with the record's medication list	<ul style="list-style-type: none"> • NYC DOHMH—My Medication Log — Keep it Handy
Optimize the Patient-Clinician Encounter	Use documentation templates to help capture key data, such as patient treatment goals and barriers to adherence	<ul style="list-style-type: none"> • Family Health Centers of San Diego—SMART Goal Setting Template • St. Charles Health System—EHR Care Plan Template
	Use order sets and standing orders to support evidence-based and individualized care	<ul style="list-style-type: none"> • AMA—Medication Management: Save Time by Simplifying Your Prescribing and Refill Process <ul style="list-style-type: none"> » Refill Standing Order Sample Medication List
	Assess individual risk and therapy impact	<ul style="list-style-type: none"> • Mayo Clinic—Statin Choice Decision Aid <ul style="list-style-type: none"> » Demo Statin/Aspirin Choice Decision Aid [video] • ACC—ASCVD Risk Estimator Plus
	Address patient-specific risk factors and medication adherence through motivational interviewing, shared decision making, and “teach back”	<ul style="list-style-type: none"> • NLA—Motivational Interviewing to Promote Behavior Change • NLA—Setting SMART Goals with Your Patients • NLA—The 5-Minute Nutrition Counseling Guide • Million Hearts®—Protocol for Identifying and Treating Patients Who Use Tobacco • Physical Activity Counseling. Meriwether RA, et al., 2008.²⁷ • Intermountain Healthcare—A Primary Care Guide to Lifestyle and Weight Management: Helping patients find their way to LiVe Well <ul style="list-style-type: none"> » LiVe Well Readiness Worksheet » Rx to LiVe Well » LiVe Well Action Plan

**Table 5. Individual Patient Supports** (continued)

Change Concepts	Change Ideas	Tools and Resources
Optimize the Patient-Clinician Encounter (continued)	Assess patients' social drivers/determinants of health	<ul style="list-style-type: none"> • Intermountain Healthcare—Care Process Model: Social Determinants of Health • NACHC—PRAPARE Screening Tool • UCSF—Guide to Implementing Social Risk Screening and Referral-making • OPCA—Empathic Inquiry <ul style="list-style-type: none"> » Patient Support Questionnaire (English and Spanish) » Patient-Centered Social Needs Screening Conversation Guide • Findhelp.org (formerly known as Aunt Bertha) • Azara Healthcare—Statin Therapy Treatment by Race • Azara Healthcare—Inequities in ASCVD, Hyperlipidemia, and Diabetes Diagnoses • KFF—Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity
Support Patients in Cholesterol Self-Management During Their Routine Daily Activities	Provide patient supports for medication adherence	<ul style="list-style-type: none"> • AHA—Check. Change. Control. Cholesterol: Take Action. Live Healthy! My Cholesterol Guide • NYC DOHMH—Protect Your Heart—Control Your Cholesterol: Take Your Medicine—Statins • CardioSmart—My Plan for Starting a PCSK9 Inhibitor
	Provide patient supports on what to do if they experience statin-associated side effects	<ul style="list-style-type: none"> • NACHC—Million Hearts®: Common Patient Questions About Statins • Million Hearts®—The Scoop on Statins: What Do You Need to Know? English Spanish • CardioSmart—Statins: What You Need to Know
	Provide patient supports for tobacco cessation	<ul style="list-style-type: none"> • AAFP—Quit Smoking Guide • VA—Patient Guide: Tobacco Cessation Therapy English Spanish • NYC DOHMH and NY State Smokers' Quitline—NYC Quits Kit
	Provide patient supports for increasing physical activity	<ul style="list-style-type: none"> • CardioSmart—My Plan for Heart Healthier Living: Commit to Regular Exercise • AHA—Check. Change. Control. Cholesterol: Take Action. Live Healthy! My Cholesterol Guide <ul style="list-style-type: none"> » Your Treatment Plan & Lifestyle Changes • PCNA—Daily Exercise Log • PCNA—Exercise Program for Individuals with Heart Disease • CardioSmart—Active and Mindful Living infographic



Table 5. Individual Patient Supports (continued)

Change Concepts	Change Ideas	Tools and Resources
<p>Support Patients in Cholesterol Self-Management During Their Routine Daily Activities (continued)</p>	<p>Provide patient supports for dietary changes</p>	<ul style="list-style-type: none"> • London Health Sciences Centre—In Depth: The Portfolio Diet • FDA—Cholesterol in Nutrition • ABC—Cooking for Your Heart and Soul • CardioSmart—My Plan for Heart Healthier Living: Nutrition and Eating Heart Healthy • AHA—Check. Change. Control. Cholesterol: Take Action. Live Healthy! My Cholesterol Guide <ul style="list-style-type: none"> » Your Treatment Plan & Lifestyle Changes • NLA—Clinician’s Lifestyle Modification Toolbox (see Cardioprotective Dietary Patterns) [also available in Spanish and Hindi] <ul style="list-style-type: none"> » Heart-Healthy Eating on a Budget » Heart-Healthy Eating Mediterranean Style » Heart-Healthy Eating Latino Style » Heart-Healthy Eating South Asian/Indian Style » Heart-Healthy Eating: Plant-Based Style • NLA—The Newest Nutrition Recommendations to Prevent Heart Disease • ADA—Nutrition Therapy for High Cholesterol • VA/DoD—Mediterranean Diet • NYC DOHMH—Protect Your Heart—Lower Your Cholesterol: Learn to Read Food Labels • AHA—How Can I Improve My Cholesterol?
	<p>Provide patient supports related to non–evidence-based supplements (e.g., red yeast rice, coenzyme Q10)</p>	<ul style="list-style-type: none"> • NACHC—Million Hearts®: Common Patient Questions About Statins • NIH—Cholesterol Management at a Glance
	<p>Provide patient supports related to secondary causes of hyperlipidemia (e.g., steroid use)</p>	<ul style="list-style-type: none"> • NLA—Effects of Low-Carbohydrate and Very-Low-Carbohydrate Diets (Including Ketogenic) - Cardiometabolic Impact • NLA—Polycystic Ovarian Syndrome and Heart Disease Risk
	<p>Provide patient supports related to FH</p>	<ul style="list-style-type: none"> • PCNA—What is Familial Hypercholesterolemia? English Spanish • NLA—What You Need to Know: Familial Hypercholesterolemia • FH Foundation—Affording Treatment for Familial Hypercholesterolemia: Where to Look for Help • FH Foundation—Do You #KnowFH Infographic • FH Foundation—Dear Family Member Letter Template • FH Foundation—CASCADE FH® Registry Digital Brochure • FH Foundation—Homozygous Familial Hypercholesterolemia (HoFH) Infographic • FH Foundation—Navigating Insurance Guide


Table 5. Individual Patient Supports (continued)

Change Concepts	Change Ideas	Tools and Resources
Optimize the Encounter Closing	Provide patients with a written self-management plan, visit summary, and follow-up guidance at the end of each visit	<ul style="list-style-type: none"> • ONC—Providing Patients in Ambulatory Care Settings with a Clinical Summary of the Office Visit • AHA—Check. Change. Control. Cholesterol: Take Action. Live Healthy! My Cholesterol Guide • AHA—What Does My LDL Cholesterol Number Mean? English Spanish • CardioSmart—My Plan for Starting a PCSK9 Inhibitor • Foundation of the National Lipid Association—How to Read a Lipid Panel • Mended Hearts—Expert Answers to Your Frequently Asked Questions about Managing Lipids [video]
Follow Up to Monitor and Reinforce Cholesterol Management Plans	Create a protocol to simplify the prescription refill process Implement frequent follow-ups (e.g., email, phone calls, text messages) with patients to make sure they are continuing their medication	<ul style="list-style-type: none"> • AMA—Figure 1. Techniques to Improve and Simplify Prescription Renewals • JAMA—Automated Outreach to Increase Primary Adherence to Cholesterol-Lowering Medications. Derose SF, et al., 2013.²⁵ <ul style="list-style-type: none"> » eAppendix. Call Script CC » Figure 2. Flowchart of Study Intervention

Appendix A: Additional Quality Improvement Resources

If you are new to continuous quality improvement (QI), there are many useful QI tools to assist you in your efforts. For example, the Institute for Healthcare Improvement (IHI) provides a number of QI tools that support its Model for Improvement (**Figure 2**). Their **Quality Improvement Essentials Toolkit** provides an excellent introduction for starting QI initiatives. It includes a **Project Planning Form** to help teams think systematically about their improvement project; the **Cause and Effect Diagram (or “fishbone”)** to identify specific areas for improvement; and the **Plan-Do-Study-Act Worksheet**, which walks the user through documenting a test of change. These resources may be helpful for planning, assigning responsibilities, and carrying out small tests of change for improving cholesterol management.

Another useful QI reference and toolkit is the **Guide to Improving Care Processes and Outcomes in Health Centers**, available from the Health Resources and Services Administration (HRSA) Health Information Technology, Evaluation, and Quality Center (HITEQ), which supports the U.S. health care safety net. This resource includes worksheets, such as the **Clinical Decision Support-enabled Quality Improvement Worksheet**, for analyzing current work processes and information flows and considering improvements for targets such as improving cholesterol management.

The ACC’s **QI Toolkit** provides useful resources on QI using the stepwise FOCUS-PDSA method. The QI Toolkit includes downloadable resources for brainstorming, creating prioritization matrices and flow charts, and performing root cause analysis.

Alternatively, you may also find the **ABCS Toolkit for the Practice Facilitator—Workflow Mapping Worksheet**, from the New York City (NYC) Department of Health and Mental Hygiene and HealthyHearts NYC, useful for laying out current care processes, identifying gaps, and brainstorming solutions. The CMCP can help identify promising, evidence-based approaches to enhancing care processes to improve cholesterol management.

Finally, the Healthcare Information and Management Systems Society (HIMSS) publishes a guidebook series on improving care delivery and outcomes with clinical decision support (CDS).²⁸⁻²⁹ These guidebooks can help you apply the **CDS 5 Rights framework** to ensure that all the right people, including patients, get the right information in the right formats via the right channels at the right times to optimize health-related decisions and actions. The guidebooks help health care practices and their partners set up programs that deliver CDS interventions to reliably improve outcomes. They also provide detailed guidance on how to successfully develop, launch, and monitor such interventions so that all stakeholders benefit.

Acronyms

AAFP	American Academy of Family Physicians	LDL	Low-density lipoprotein
ABC	Association of Black Cardiologists, Inc.	LEAP	Learning from Effective Ambulatory Practices
ABCS	Aspirin as appropriate, blood pressure control, cholesterol management, smoking cessation	Lp(a)	Lipoprotein (a)
ACC	American College of Cardiology	NACHC	National Association of Community Health Centers
ADA	American Dietetic Association	NIH	National Institutes of Health
AHA	American Heart Association	NLA	National Lipid Association
AMA	American Medical Association	NYC DOHMH	New York City Department of Health and Mental Hygiene
ASCVD	Atherosclerotic cardiovascular disease	ONC	Office of the National Coordinator for Health Information Technology
CDC	Centers for Disease Control and Prevention	OPCA	Oregon Primary Care Association
CDS	Clinical decision support	PCSK9i	Proprotein convertase subtilisin/kevin type 9 inhibitor
CE	Continuing education	PDSA	Plan-Do-Study-Act
CHW	Community health worker	PRAPARE	Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences
CPSTF	Community Preventive Services Task Force	PCNA	Preventive Cardiovascular Nurses Association
EHR	Electronic health record	PVP	Patient visit planning
FDA	U.S. Food and Drug Administration	QI	Quality improvement
FH	Familial hypercholesterolemia	SASE	Statin-associated side effects
FH	Family Heart (Foundation)	SAMS	Statin-associated muscle symptoms
HIMSS	Healthcare Information and Management Systems Society	UCSF	University of California, San Francisco
HITEQ	Health Information Technology, Evaluation, and Quality Center	USPSTF	United States Preventive Services Task Force
HRSA	Health Resources and Services Administration	VA	Department of Veterans Affairs
IHI	Institute for Healthcare Improvement	VA/DoD	Department of Veterans Affairs/ Department of Defense
KFF	Kaiser Family Foundation		

References

1. Grundy SM, Stone NJ, Bailey AL, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines [published correction appears in *Circulation*. 2019 Jun 18;139(25):e1182-e1186]. *Circulation*. 2019;139(25):e1082-e1143.
2. Nissen SE, Lincoff AM, Brennan D, et al. Bempedoic Acid and Cardiovascular Outcomes in Statin-Intolerant Patients. *N Engl J Med*. 2023;388(15):1353-1364.
3. Writing Committee, Lloyd-Jones DM, Morris PB, et al. 2022 ACC Expert Consensus Decision Pathway on the Role of Nonstatin Therapies for LDL-Cholesterol Lowering in the Management of Atherosclerotic Cardiovascular Disease Risk: A Report of the American College of Cardiology Solution Set Oversight Committee [published correction appears in *J Am Coll Cardiol*. 2023 Jan 3;81(1):104]. *J Am Coll Cardiol*. 2022;80(14):1366-1418.
4. Howard JP, Wood FA, Finegold JA, et al. Side Effect Patterns in a Crossover Trial of Statin, Placebo, and No Treatment. *J Am Coll Cardiol*. 2021;78(12):1210-1222.
5. Finegold J.A., Manisty C.H., Goldacre B., Barron A.J., Francis D.P. What proportion of symptomatic side effects in patients taking statins are genuinely caused by the drug? Systematic review of randomized placebo-controlled trials to aid individual patient choice. *Eur J Prev Cardiol*. 2014;21:464-474.
6. Gupta A., Thompson D., Whitehouse A., et al. Adverse events associated with unblinded, but not with blinded, statin therapy in the Anglo-Scandinavian Cardiac Outcomes Trial–Lipid-Lowering Arm (ASCOT-LLA): a randomised double-blind placebo-controlled trial and its non-randomised non-blind extension phase. *Lancet*. 2017;389:2473-2481.
7. Thompson-Paul AM, Gillespie C, Wall HK, Loustalot F, Sperling L, Hong Y. Recommended and observed statin use among U.S. adults - National Health and Nutrition Examination Survey, 2011-2018. *J Clin Lipidol*. 2023 Mar-Apr;17(2):225-235.
8. Institute for Healthcare Improvement. The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement. IHI Innovation Series white paper. Boston, MA: Institute for Healthcare Improvement; 2003.
9. Biederman C. Team Up For Quality Care:: The Role of Primary Care Teams in Prevention Of Cardiovascular Disease. *Delta J Public Health*. 2021;7(5):80-90. Published 2021 Dec 15.
10. Bakhai S, Bhardwaj A, Sandhu P, Reynolds JL. Optimisation of lipids for prevention of cardiovascular disease in a primary care. *BMJ Open Qual*. 2018;7(3):e000071.
11. Grundy SM, Stone NJ; Guideline Writing Committee for the 2018 Cholesterol Guidelines. 2018 Cholesterol Clinical Practice Guidelines: Synopsis of the 2018 American Heart Association/American College of Cardiology/Multisociety Cholesterol Guideline. *Ann Intern Med*. 2019;170(11):779-783.
12. Driver SL, Martin SS, Gluckman TJ, Clary JM, Blumenthal RS, Stone NJ. Fasting or Nonfasting Lipid Measurements: It Depends on the Question. *J Am Coll Cardiol*. 2016;67(10):1227-1234.
13. Bays HE, Jones PH, Brown WV, Jacobson TA; National Lipid Association. National Lipid Association Annual Summary of Clinical Lipidology 2015. *J Clin Lipidol*. 2014; 8(6 Suppl):S1-S36.

14. Safarova MS, Kullo IJ. My Approach to the Patient With Familial Hypercholesterolemia. *Mayo Clin Proc.* 2016;91(6):770-786.
15. Nordestgaard BG, Chapman MJ, Humphries SE, et al. Familial hypercholesterolaemia is underdiagnosed and undertreated in the general population: guidance for clinicians to prevent coronary heart disease: consensus statement of the European Atherosclerosis Society [published correction appears in *Eur Heart J.* 2020 Dec 14;41(47):4517]. *Eur Heart J.* 2013;34(45):3478-90a.
16. Gidding SS, Champagne MA, de Ferranti SD, et al. The Agenda for Familial Hypercholesterolemia: A Scientific Statement From the American Heart Association [published correction appears in *Circulation.* 2015 Dec 22;132(25):e397]. *Circulation.* 2015;132(22):2167-2192.
17. Baum SJ, Toth PP, Underberg JA, Jellinger P, Ross J, Wilemon K. PCSK9 inhibitor access barriers-issues and recommendations: Improving the access process for patients, clinicians and payers. *Clin Cardiol.* 2017;40(4):243-254.
18. Abdullah K, Rohatgi A. Statins: Practical Considerations – A Review. *European Cardiology Review.* 2014;9(2):71–5.
19. Kheloussi S. Considerations in the Approach to Appropriate Statin Selection. *US Pharm.* 2018;43(7):22-26.
20. Shin EY, Ochuko P, Bhatt K, et al. Errors in Electronic Health Record-Based Data Query of Statin Prescriptions in Patients With Coronary Artery Disease in a Large, Academic, Multispecialty Clinic Practice. *J Am Heart Assoc.* 2018;7(8):e007762.
21. Al-Kindi SG, DeCicco A, Longenecker CT, Dalton J, Simon DI, Zidar DA. Rate of Statin Prescription in Younger Patients With Severe Dyslipidemia. *JAMA Cardiol.* 2017;2(4):451-452.
22. Banda JM, Sarraju A, Abbasi F, et al. Finding missed cases of familial hypercholesterolemia in health systems using machine learning. *NPJ Digit Med.* 2019;2:23.
23. Myers KD, Knowles JW, Staszak D, et al. Precision screening for familial hypercholesterolaemia: a machine learning study applied to electronic health encounter data. *Lancet Digit Health.* 2019;1(8):e393-e402.
24. Patel MS, Kurtzman GW, Kannan S, et al. Effect of an Automated Patient Dashboard Using Active Choice and Peer Comparison Performance Feedback to Physicians on Statin Prescribing: The PRESCRIBE Cluster Randomized Clinical Trial. *JAMA Netw Open.* 2018;1(3):e180818.
25. Derose SF, Green K, Marrett E, et al. Automated outreach to increase primary adherence to cholesterol-lowering medications. *JAMA Intern Med.* 2013;173(1):38-43.
26. Elbeddini A, Almasalkhi S, Prabakaran T, Tran C, Gazarin M, Elshahawi A. Avoiding a Med-Wreck: a structured medication reconciliation framework and standardized auditing tool utilized to optimize patient safety and reallocate hospital resources. *J Pharm Policy Pract.* 2021;14(1):10.
27. Meriwether RA, Lee JA, LaFleur AS, et al. Physical Activity Counseling. *Am Fam Physician.* 2008;77(8):1129-1136
28. Osheroff JA, Teich JM, Levick D, et al. *Improving Outcomes with Clinical Decision Support: An Implementer's Guide.* 2nd ed. Chicago, IL: HIMSS; 2012.
29. Osheroff JA, ed. *Improving Medication Use and Outcomes with Clinical Decision Support: A Step-by-Step Guide.* Chicago, IL: HIMSS; 2009.



Million Hearts® is a U.S. Department of Health and Human Services initiative that is co-led by the Centers for Disease Control and Prevention and the Centers for Medicare & Medicaid Services, with the goal of preventing one million heart attacks and strokes by 2027.

millionhearts.hhs.gov