



Summary Report

Closing the Quality Gap: Revisiting the State of the Science



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Evidence-Based
Practice

For more copies: Printed copies of Executive Summaries in the Closing the Quality Gap: Revisiting the State of the Science series can be ordered separately or as a kit that contains a complete set of all eight summaries and this Summary Report. To order copies, please call the AHRQ Publications Clearinghouse at 800–358–9295 or email ahrqpubs@ahrq.gov. Publication numbers for the Executive Summaries are as follows:

Bundled Payment: Effects on Health Care Spending and Quality (Publication No. 12-E007-1)

The Patient-Centered Medical Home (Publication No. 12-E008-1)

Quality Improvement Interventions To Address Health Disparities (Publication No. 12-E009-1)

Medication Adherence Interventions: Comparative Effectiveness (Publication No. 12-E010-1)

Public Reporting as a Quality Improvement Strategy (Publication No. 12-E011-1)

Prevention of Healthcare-Associated Infections (Publication No. 12(13)-E012-1)

Quality Improvement Measurement of Outcomes for People With Disabilities (Publication No. 12(13)-E013-1)

Improving Health Care and Palliative Care for Advanced and Serious Illness (Publication No. 12(13)-E014-1)

To order the kit that contains the eight executive summaries and this Summary Report, use Publication No. OM 13-0014.

Summary Report

Closing the Quality Gap: Revisiting the State of the Science

Prepared for:

Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
540 Gaither Road
Rockville, MD 20850
www.ahrq.gov

Contract No. 290-2007-10062-I

Prepared by:

Stanford-UCSF Evidence-based Practice Center
(Operating under RAND Evidence-based Practice Center)
Stanford, CA

Authors:

Kathryn M. McDonald, M.M.
Christine Chang, M.D., M.P.H.
Ellen Schultz, M.S.

AHRQ Publication No. 12(13)-E017
January 2013

This report is based on research conducted by the RAND Evidence-based Practice Center (EPC) under contract to the Agency for Healthcare Research and Quality (AHRQ), Rockville, MD (Contract No. 290-2007-10062-I). The findings and conclusions in this document are those of the authors, who are responsible for its contents; the findings and conclusions do not necessarily represent the views of AHRQ. Therefore, no statement in this report should be construed as an official position of AHRQ or of the U.S. Department of Health and Human Services.

The information in this report is intended to help health care decisionmakers—patients and clinicians, health system leaders, and policymakers, among others—make well-informed decisions and thereby improve the quality of health care services. This report is not intended to be a substitute for the application of clinical judgment. Anyone who makes decisions concerning the provision of clinical care should consider this report in the same way as any medical reference and in conjunction with all other pertinent information, i.e., in the context of available resources and circumstances presented by individual patients.

This report may be used, in whole or in part, as the basis for development of clinical practice guidelines and other quality enhancement tools, or as a basis for reimbursement and coverage policies. AHRQ or U.S. Department of Health and Human Services endorsement of such derivative products may not be stated or implied.

This document is in the public domain and may be used and reprinted without special permission. Citation of the source is appreciated. Persons using assistive technology may not be able to fully access information in this report. For assistance contact info@ahrq.gov.

None of the authors have any affiliations or financial involvement that conflicts with the material presented in this report.

Suggested citation: McDonald KM, Chang C, Schultz E. Closing the Quality Gap: Revisiting the State of the Science. Summary Report. (Prepared by Stanford-UCSF Evidence-based Practice Center under Contract No. 290-2007-10062-I.) AHRQ Publication No. 12(13)-E017. Rockville, MD: Agency for Healthcare Research and Quality. January 2013.
www.effectivehealthcare.ahrq.gov/reports/final.cfm.

Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of evidence reports and technology assessments to assist public- and private-sector organizations in their efforts to improve the quality of health care in the United States. The reports and assessments provide organizations with comprehensive, science-based information on common, costly medical conditions, and new health care technologies and strategies. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses when appropriate prior to developing their reports and assessments.

In 2004, AHRQ launched a collection of evidence reports, *Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies*, to bring data to bear on quality improvement opportunities. These reports summarized the evidence on quality improvement strategies related to chronic conditions, practice areas, and cross-cutting priorities.

This Summary Report is part of a new series, *Closing the Quality Gap: Revisiting the State of the Science*. This series broadens the scope of settings, interventions, and clinical conditions, while continuing the focus on improving the quality of health care through critical assessment of relevant evidence. Targeting multiple audiences and uses, this series assembles evidence about strategies aimed at closing the “quality gap,” the difference between what is expected to work well for patients based on known evidence and what actually happens in day-to-day clinical practice across populations of patients. All readers of these reports may expect a deeper understanding of the nature and extent of selected high-priority quality gaps, as well as the systemic changes and scientific advances necessary to close them. This Summary Report is an introduction to the Executive Summaries of the eight reports in the series and summarizes elements across the series for readers.

AHRQ expects that the EPC evidence reports will inform consumers, health plans, other purchasers, providers, and policymakers, as well as the health care system as a whole, by providing important information to help improve health care quality.

We welcome comments on this report or the series as a whole. Comments may be sent by mail to the Task Order Officer named in this report at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by email to epc@ahrq.hhs.gov.

Carolyn M. Clancy, M.D.
Director
Agency for Healthcare Research and Quality

Jean Slutsky, P.A., M.S.P.H.
Director, Center for Outcomes and Evidence
Agency for Healthcare Research and Quality

Stephanie Chang, M.D., M.P.H.
Director
Evidence-based Practice Program
Center for Outcomes and Evidence
Agency for Healthcare Research and Quality

Christine Chang, M.D., M.P.H.
Task Order Officer
Closing the Quality Gap Series
Center for Outcomes and Evidence
Agency for Healthcare Research and Quality

Kathryn M. McDonald, M.M.
Lead EPC Investigator and Associate Editor,
Closing the Quality Gap Series
Stanford University

Author Affiliations

Kathryn M. McDonald, M.M.
Center for Health Policy/Center for Primary Care and Outcomes Research
Stanford University
Stanford, CA

Christine Chang, M.D., M.P.H.
Agency for Healthcare Research and Quality
Rockville, MD

Ellen Schultz, M.S.
Center for Health Policy/Center for Primary Care and Outcomes Research
Stanford University
Stanford, CA

Acknowledgments

The authors gratefully acknowledge the following individuals for their contributions to this project. We thank John Ovreteit for motivational discussions about improving evidence synthesis of complex interventions in ways that support managerial decisionmaking. We also thank Beth Collins-Sharp and Margaret Coopey for their assistance in launching this series. We are grateful to Victor Fuchs for candid critiques of quality improvement research, Julia Lonhart for coordination with the eight contributing topic teams, and Holly McDonald for helping review and summarize reports. We also thank the author teams and Task Order Officers from each of the Closing Quality Gap reports in the series for undertaking these challenging topics, while maintaining willingness to support the lead EPC effort by the series overview investigators to identify crosscutting lessons.

Summary Report

Closing the Quality Gap: Revisiting the State of the Science

Structured Abstract

Background. The United States devotes significant resources for the provision of health care, yet quality is often elusive or lacking. In 2004, the Agency for Healthcare Research and Quality launched a collection of evidence reports to bring data to bear on quality improvement (QI) opportunities. This new series, *Closing the Quality Gap: Revisiting the State of the Science*, consists of eight reports that continue the focus on improving the quality of health care through critical assessment of relevant evidence for selected settings, interventions, and clinical conditions. This report is an introduction to the Executive Summaries of the eight reports in the series and summarizes elements across the series for readers.

Overview. The topics are effectiveness of bundled payment programs, effectiveness of the patient-centered medical home, QI strategies to address health disparities, effectiveness of medication adherence interventions, effectiveness of public reporting, prevention of healthcare-associated infections, QI measurement of outcomes for people with disabilities, and health care and palliative care for patients with advanced and serious illness. The overview describes the scope of the eight reports; describes the scope of the series by summarizing the quality levers, populations, interventions, outcomes, and other features across the reports; and discusses key messages by audience (patient/consumer/caregiver, health care professional, health care delivery organization, policymaker, and research community).

Conclusions. The series covers many important aspects of quality improvement in health care. This Summary is intended to show how topics relate and complement each other, and how together they provide a picture of the state of the science. It will help readers, as they read the Executive Summaries for the individual topics, to gain a deeper understanding of the nature and extent of quality gaps across health care, as well as the systemic changes necessary to close them.

Contents

Background	1
Series Overview	3
Topics.....	3
Scope.....	5
Findings.....	8
Conclusion	13
References	15

Tables

Table 1. Summary of selected elements across the series	5
Table 2. Messages for improving quality for the patient/consumer/caregiver perspective	9
Table 3. Messages for improving quality for the clinician/health professional perspective	9
Table 4. Messages for improving quality for the health delivery organization perspective.....	10
Table 5. Messages for improving quality for the policymaker perspective.....	10
Table 6. Messages for the research community.....	11

Background

The United States devotes significant resources for the provision of health care, yet quality is often elusive or lacking.¹ No matter the aspects of the health care system or population studied, research consistently demonstrates shortfalls in health care quality and patient outcomes in the United States.²⁻⁶ For every patient who receives optimal care, the evidence suggests that, on average, another patient does not.^{2,3}

In its seminal report on quality gaps and strategies for improving quality, the Institute of Medicine (IOM) defined six key dimensions of high-quality care: that it be safe, effective, patient centered, timely, efficient, and equitable.⁷ Although most patients have an intuitive sense of what constitutes high-quality care, quality is conceptually complex because it must encompass many different features of context and perspectives (e.g., patient, family, provider, health system, society). In addition, the health care system is a complex web of people, organizations, technologies, and processes. Complex systems entice and vex researchers, but ultimately they need to be understood to facilitate effective interventions and improvement.

There are three core approaches (“3 I’s”) to achieving improvements. These come from a quotation from Victor Fuchs, who said that real reform “requires changes in the organization and delivery of care that provide physicians with the *information, infrastructure, and incentives* they need to improve quality and control costs” (italics provided by Summary authors).⁸ In today’s complex health system, these leverage points for improvement apply beyond the physician to include other clinicians, systems managers, and patients themselves.

In 2004, the Agency for Healthcare Research and Quality (AHRQ) launched a collection of evidence reports to bring data to bear on quality improvement (QI) opportunities identified by an IOM study, *Priority Areas for National Action: Transforming Health Care Quality*.⁹ AHRQ’s 2004–07 collection of reports—*Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies*—summarized the evidence on QI strategies related to chronic conditions, practice areas, and cross-cutting priorities.¹⁰⁻¹⁶

This new *Closing the Quality Gap (CQG)* series of eight reports continues the focus on improving the quality of health care through critical assessment of relevant evidence for selected settings, interventions, and clinical conditions. As before, this CQG series aims to assemble the evidence about effective strategies to close the “quality gap,” which in simple terms refers to the difference between what is expected to work well for patients based on known evidence and what actually happens in day-to-day clinical practice across populations of patients.

This Summary is intended to show how topics relate to and complement each other, and how together they provide a picture of the state of the science. This information will help readers, as they proceed to the Executive Summaries of the individual topic reports accompanying the Summary, to gain a deeper understanding of the nature and extent of quality gaps across health care, as well as the systemic changes necessary to close them. The Summary is a companion to a *Methods Research Report*¹⁷ that describes the methodology for the CQG series, synthesizes lessons across topics, and presents implications for future systematic reviewers and the state of the science of QI. Together, these summative documents provide readers high-level views of the series.

Series Overview

In this section, we introduce each topic and present the scope across the Closing the Quality Gap series. We conclude this section with messages for key audiences across the eight topics.

Topics

The eight topics selected for this series are relevant to ongoing initiatives in health care reflected in the Patient Protection and Affordable Care Act¹⁸ and are consistent with previously identified national priority areas on health care quality.⁹ The methodology for delineating the scope and organizing topics, as well as details of the scope of each report, are described in the methods report.¹⁷

1. **Effects of bundled payment systems on health care spending and quality of care (Bundled Payment).**¹⁹ Bundled payments refer to paying for a defined episode of care, as opposed to a single medical encounter. The report on bundled payment examines the influence on organizations of changing the approach to paying for care and how organizational response to such new incentives either enhances or deters health care quality, including efficiency. Although alternatives have been proposed and piloted, fee-for-service remains the predominant method of paying for health care in the United States. As health care costs have continued to rise dramatically, even while major quality gaps remain, interest has grown in alternative payment methods, including bundled payment programs, which aim to reduce health care spending while maintaining or improving quality of care.
2. **Patient-centered medical home (PCMH).**²⁰ The PCMH model aims to improve both care and patient experience across the full care continuum, from prevention through treatment of chronic and acute illness. It also holds promise for improving providers' experience and potentially reducing costs through greater efficiency. Widely endorsed by professional societies, payers (e.g., Medicare), and large health systems, PCMH-based interventions have been implemented in many different health care organizations. Studies of these interventions have shown that individual elements of the PCMH model are associated with improvements for some specific conditions and outcomes, but much remains unknown about whether implementation of comprehensive PCMH improves care overall for the full population of patients served by a health care organization.
3. **Quality improvement interventions to address health disparities (Disparities).**²¹ There is abundant evidence of health care disparities in the United States. The 2011 National Healthcare Disparities Report found that disparities related to race, ethnicity, and socioeconomic status are widespread throughout the U.S. health care system, that disparities are not decreasing over time, and that lack of health care insurance is an important contributor to these disparities.⁵ However, despite these well-known health disparities, evidence is lacking about how they might be reduced through QI interventions.⁵ This report focuses on the benefits and harms of QI interventions to specifically close the gap in health outcomes for those who suffer disparities in care.
4. **Comparative effectiveness of medication adherence interventions (Medication Adherence).**²² Although pharmacotherapy is available to treat an astounding array of health conditions, even efficacious medications cannot be effective if not taken according to the timing, dosage, frequency, and duration prescribed by health care providers. Yet research suggests that between 20 and 30 percent of prescriptions are never filled and that

half of medications prescribed to treat chronic disease are not taken appropriately.²³⁻²⁶ This review addresses both the efficacy and effectiveness of interventions designed to improve medication adherence for adults with chronic conditions. It updates a previous systematic review completed in 2008,²³ further expanding the scope of that review to include interventions at the health system and policy levels.

5. **Public reporting as a quality improvement strategy (Public Reporting).**²⁷ Public reporting is an important way to motivate delivery of high-quality care. In particular, it provides incentives for engaging in QI activities.^{7,14} Public reporting initiatives have expanded greatly in recent years, as have the availability of health data and the ability to aggregate these data in meaningful ways.²⁸ The amount of publicly reported health care quality data is likely to continue to increase substantially in tandem with a growing focus within the U.S. health care system on transparency and patient-centered care. This report focuses on how public reporting of such information affects behaviors of people and organizations in ways that potentially improve the quality of care received by patients.
6. **Prevention of healthcare-associated infections (HAI).**²⁹ Healthcare-associated infections are widespread and costly in the U.S. health care system. According to an estimate by the Centers for Disease Control and Prevention, in 2002 there were 1.7 million HAIs and 99,000 HAI-associated deaths in hospitals. More than 80 percent of these HAIs were caused by the four most common categories: central line-associated bloodstream infections (14 percent), ventilator-associated pneumonia (15 percent), surgical site infections (22 percent), and catheter-associated urinary tract infections (32 percent).³⁰ Evidence-based strategies to eliminate HAIs are known and endorsed by many professional societies,³¹ but these preventive interventions have not been fully implemented into clinical practice throughout the United States. Information is needed about QI strategies that lead to effective adoption of these preventive interventions. In light of much recent research on the topic, this review updates a previous review published in 2007¹² and expands that review to include additional settings (e.g., ambulatory surgical centers, dialysis centers, and long-term care facilities) in addition to hospitals.
7. **Quality improvement measurement of outcomes for people with disabilities (Disability Outcomes).**³² This report identifies available measures pertinent to people with disabilities for the purpose of improving the quality of their health care and their experiences with the health care system. Measures shed light on areas in which more work is needed. Evaluating care through outcomes well matched to the population of interest is critical to QI efforts, as ultimately those efforts are aimed toward improvements that directly and meaningfully benefit patients.
8. **Interventions to improve health care and palliative care for advanced and serious illness (Palliative Care).**³³ Evidence abounds that there is room for much improvement in the quality of palliative care for patients with advanced and serious illness. Pain remains undertreated for many patients despite effective therapies and clinical practice guidelines to facilitate pain management;^{34,35} patients with terminal cancer frequently are not offered alternatives to chemotherapy, are not educated about the uncertain benefits of such treatment, or are unaware of their prognosis;³⁶ and in 2009, fewer than half of patients who died in the United States received any hospice care.³⁷ Furthermore, a previous systematic review of hospice care reported that family members experienced unmet needs for family support (18.2 percent) and emotional support (9.8 percent).³⁸

These gaps highlight the need for QI interventions that improve outcomes for patients with advanced and serious illness and their caregivers. The review authors specifically target evidence regarding palliative care in hospice, an area for which a previous systematic review had identified quality gaps,³⁸ and in nursing homes, an area for which prior systematic reviews related to end-of-life care are lacking.

Scope

In addition to the relevance of individual reports to audiences interested in individual topics, the reports also have relevance as complementary components of this series to give a fuller picture of QI. In this section, we summarize the scope of the CQG series in terms of the quality levers; selected scoping elements (termed “PICOTS” for population, intervention, comparator, outcomes, timeframe, setting); diversity of focus; and level of analysis.

Three levers can impact the quality of health care: information, incentives, and infrastructure.⁸ The topics in the series each relate to a primary lever (Table 1), with the other two levers often playing a supporting role. For example, Bundled Payment is an incentive lever; by grouping payments to health care providers into a single prospective payment for services over a period of time, it can influence spending. By virtue of bundling these payments, it can also encourage coordination among providers and establish changes in care organization (infrastructure), and encourage the use and uptake of harmonized measures (information).

Table 1. Summary of selected elements across the Closing the Quality Gap series

Topic	Quality Lever (Information, Incentives, or Infrastructure)	Population	Intervention	Outcomes
Bundled Payment	Incentives (influencing quality)	Delivery organizations	Topic = Intervention	Patient-centered outcomes: quality of care Harms: average risk/disease severity of patients treated Economic outcomes: health care spending per episode, utilization rates for specific services, provider cost/resource use to deliver episodes of care
Patient-Centered Medical Home	Infrastructure (improving quality)	Adult primary care patients Children with special health care needs	Topic = Intervention	Patient-centered outcomes: patient experience, staff experience, clinical outcomes Intermediate outcomes: processes of care Economic outcomes Unintended consequences/harms
Disparities	Infrastructure (improving quality)	Patient population with established disparity in health care quality	Quality improvement strategies	Topic = Outcome Patient-centered outcomes Unintended consequences and harms

Table 1. Summary of selected elements across the Closing the Quality Gap series (continued)

Topic	Quality Lever (Information, Incentives, or Infrastructure)	Population	Intervention	Outcomes
Medication Adherence	Infrastructure (improving quality)	Patients with self-administered medication for chronic diseases	Includes original CQG quality improvement strategies ^a (provider reminders, patient education, organizational changes, etc.) Directed at patients, providers, systems, and policy	Topic = Outcome Patient-centered outcomes: biomarkers, clinical outcomes, quality of life, patient satisfaction, quality of care Economic outcomes: health care utilization Harms
Public Reporting	Incentives (influencing quality)	Individuals and organizations that deliver care Patients and their representatives, and organizations that purchase care	Topic = Intervention	Patient-centered outcomes Intermediate outcomes: processes, delivery structures, changes in patient or purchaser behavior Economic outcomes Unintended consequences/harms
Healthcare-Associated Infections	Infrastructure (improving quality)	Patients in diverse settings Clinicians Health care leaders	Includes original CQG quality improvement strategies ^a Directed at providers and systems	Topic = Outcome Process outcomes Clinical outcomes Economic outcomes Harms
Disability Outcomes	Information (measuring quality)	People with disabilities (except those with severe and persistent mental illness)	Context: medical (cure), rehabilitative (restore), and adaptive (support)	Topic = Outcome Person-centered outcomes
Palliative Care	Infrastructure (improving quality)	Topic = Target Population and Service	Includes original CQG quality improvement strategies ^a (provider reminders, patient education, organizational changes, etc.) related to domains, targets, and settings	Patient- and family-centered outcomes related to targets such as pain, distress, coordination Health care utilization

^aThe Closing the Quality Gap taxonomy from Shojania et al. Series Overview and Methodology. Vol. 1 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, editors. Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290-02-0017). AHRQ Publication No. 04-0051-1. Rockville, MD: Agency for Healthcare Research and Quality. 2004.
Note: CQG = Closing the Quality Gap.

While all of the reports in the series supply information that is potentially actionable for improving quality, only the report on Disability Outcomes focuses exclusively on information development.

Two of the reports in the series target incentives to foster high-quality care (care that is safe, effective, patient centered, timely, efficient, and equitable)⁷ and improvements that lead to better care, healthy people and communities, and affordable care.³⁹ These are the Bundled Payment and Public Reporting topics.

The remaining five reports in the series examine interventions that directly alter parts of the delivery system: the infrastructures undergirding health care provision. Disparities, HAI, and Medication Adherence each address ways in which organizations can implement changes to improve these issues, and the types and characteristics of interventions that are successful in making improvements. The Palliative Care report focuses on ways to intervene in the delivery system to improve the care of a specific population, those who face serious or advanced illness with few to no prospects for cure. Finally, the PCMH is itself an intervention focused on changes in infrastructure.

Topics generally are approached broadly and include a wide range of populations, organizations, clinical conditions, and settings (with the exception of Palliative Care, which focuses on a particular population). For example, the Medication Adherence topic includes patients with a variety of common clinical conditions in an effort to synthesize evidence across conditions whenever possible. Similarly, the HAI topic includes hospitals, outpatient surgical centers, dialysis centers, and long-term care facilities. This affords the opportunity to look across settings and to improve relevance to a broader arena of interested stakeholders.

Three topics focus on a particular intervention for improving quality (PCMH, Bundled Payment, and Public Reporting), while four other topics (Disparities, Palliative Care, HAI, and Medication Adherence) include a broad array of QI interventions based on the original CQG taxonomy (provider reminders, patient education, organizational changes, etc.).¹⁴ These four reports take various approaches to synthesizing and presenting the evidence about single-component and multifaceted interventions.

The outcomes included across the series reflect elements of quality care: patient-centered outcomes, economic outcomes, harms and/or unintended consequences, and process and other intermediate outcomes (Table 1). Each topic includes an array of outcomes intended to assist stakeholders in making decisions, and all follow a patient-centered approach. All topics include patient-centered outcomes, and six (excluding Disability Outcomes and Palliative Care) present evidence about harms and unintended consequences. Five include economic outcomes (Bundled Payment, Public Reporting, PCMH, HAI, and Medication Adherence). The focus of four topics is a particular outcome (Disability Outcomes, Disparities, HAI, and Medication Adherence), but these reports also include other outcomes important to decisionmakers.

The aim of this series is to provide actionable evidence for audiences and a deeper understanding of how QI interventions can improve care. Topics across the series also include questions to better understand the underlying mechanism of other impacts on outcomes. These questions relate to the impact of context (Bundled Payment, Public Reporting, HAI), implementation (PCMH, HAI), subgroups (Disability Outcomes, Disparities, Medication Adherence), and intervention characteristics (Medication Adherence, Public Reporting, PCMH, Bundled Payment). These analyses further focus the lens of inquiry to improve our understanding of how to improve quality.

The questions asked must be relevant and sufficiently focused to yield the information needed. For this reason, Key Questions address specific areas in greater detail, reflecting the scope and the state of the science for a topic. For example, in addition to assessing the evidence for patient-centered outcomes and harms, the Public Reporting topic also includes intermediate outcomes specifically related to behavior change and changes in health care delivery structures and processes for different audiences. Similarly, the PCMH topic assesses both clinical and process outcomes, and also includes questions about implementation strategies and financial models to better understand how this intervention has been supported across settings. The Palliative Care topic examines models of care to assess how the organization of care impacts outcomes.

Topics also vary in the level of granularity in analysis. The Palliative Care topic focuses on interventions more broadly; it organizes and synthesizes the evidence along care-related targets, such as pain, continuity, and communication and decisionmaking. In contrast, other topics focus on intervention components in more detail (Medication Adherence, HAI, Disparities, PCMH). Some define intervention by its components and assess the impact of various bundles on outcomes (HAI, PCMH). All seek to include information of sufficient detail to be useful to audiences, although with varied approaches to organization and analysis tailored to each topic.

Findings

The Executive Summary for each of the eight topic reports, which accompany this Summary report, provides findings for Key Questions addressed in the full report. A more comprehensive summary of key findings may be found in the methods report,¹⁷ and complete details may be found in each of the topic reports.^{19-22,27,29,32,33}

As in the previous Closing the Quality Gap series, these reports target multiple audiences and associated uses. For example, policymakers may be interested in the range of topics and convergence of the research evidence for strategies to improve quality of care. Research funders may be most interested in the gaps in the evidence base for QI. Those at the helm of health care delivery organizations may care most about what works and what does not within a particular topic area, as well as evidence on resource implications. Meanwhile, clinicians and patients (including patient advocacy organizations) may find these reports useful as an introduction to the broad spectrum of approaches to improving quality of care and may consider implementing those approaches that fall within their control.

In this section, we organize the key messages across the series by perspective: patient/consumer/caregiver, health care professional, delivery organization, policymaker, and research community. Detailed crosstopic synthesis and lessons are presented in the companion methods report.¹⁷

Consistent with the Effective Health Care principles for systematic reviews,⁴⁰ the reports in this series include the assessment of circumstances and outcomes of importance to patients, consumers, and caregivers (Table 2). Although not directly targeted by some interventions in this series, this audience has a role in improving health care quality by advocating for specific changes, engaging in future research, and understanding the current evidence about the impact of QI efforts on outcomes.

Table 2. Messages for improving quality for the patient/consumer/caregiver perspective

Topic	Take-Home Messages Motivating Potential Actions
Bundled Payment	The impact of bundled payment on quality of care is unknown.
Patient-Centered Medical Home	Small positive effects on patient experience were associated with patient-centered medical homes.
Disparities	Little research has focused on quality improvement strategies to reduce health care disparities.
Medication Adherence	Reducing out-of-pocket medication costs improved adherence.
Public Reporting	Slight improvements in quality were associated with public reporting. It is unclear whether public reporting limits patient access. Public reporting had little impact on patient choice.
Healthcare-Associated Infections	Little evidence is available about patients' roles in reducing healthcare-associated infections.
Disability Outcomes	There is a need to advocate for more inclusive research and engage in consensus efforts.
Palliative Care	Interventions targeting continuity, coordination, and transitions of care improved patient and caregiver satisfaction. Interventions targeting communication and decisionmaking did not improve patient satisfaction. Little is known about interventions to decrease patient distress.

QI interventions addressed in the series were often directed at health care professionals (Table 3). An understanding of the benefits and harms, as well as unintended consequences and potential contextual influences, will facilitate application of findings to professionals' circumstances. With evidence, this audience can better engage in, support, and improve QI initiatives among colleagues and organizations; understand their contribution to QI; and ultimately improve the health of patients.

Table 3. Messages for improving quality for the clinician/health professional perspective

Topic	Take-Home Messages Motivating Potential Actions
Bundled Payment	Providers' response to bundled payment programs is largely unexplored.
Patient-Centered Medical Home	PCMH had small positive effects on staff experience. The extent of unanticipated consequences of implementation is not known. Various organizational learning and implementation strategies were used. Various financial models have supported PCMH implementation.
Disparities	Evidence about effective quality improvement strategies is inconclusive.
Medication Adherence	Evidence for effectiveness varied considerably by patient condition. Interventions improved medication adherence in most vulnerable populations studied. Choosing interventions for many patient populations will require extrapolation.
Public Reporting	Limited evidence suggests that individual clinicians make positive changes in response to public reporting. Potential harms of public reporting were not confirmed. Improvements were more likely among providers with lower scores in initial public reports.
Healthcare-Associated Infections	Methods to prevent HAIs are known, but reducing HAI rates requires that providers consistently use those methods. Some combinations of quality improvement strategies focusing on provider behavior work.
Disability Outcomes	When working to improve quality of care for disabled patients, professionals from different specialty contexts may have different perceptions and knowledge of potentially applicable outcomes measures.
Palliative Care	Provider-centered interventions are not effective for continuity, coordination, and transitions.

Note: HAI = healthcare-associated infections; PCMH = patient-centered medical home.

Health delivery organizations (Table 4) not only consider the impact of interventions on patients but also consider the impact across systems. Often they balance health outcomes, harms, and resource utilization with other factors of implementation and sustainability, and determine the applicability of evidence to their circumstances.

Table 4. Messages for improving quality for the health delivery organization perspective

Topic	Take-Home Messages Motivating Potential Actions
Bundled Payment	Bundled payment programs lower utilization slightly, with greater effects seen with for-profit providers and hospitals under greater financial pressure compared to those under less financial pressure.
Patient-Centered Medical Home	The jury is still out about the impact of PCMH interventions on clinical outcomes and care processes. High variability in PCMH implementation confounds research conclusions.
Disparities	Evidence about effective quality improvement strategies is inconclusive.
Medication Adherence	There is no single “silver bullet” for improving medication adherence. The evidence base points to some starting places for choosing an intervention. However, little is known about which intervention characteristics are likely to lead to success.
Public Reporting	Health delivery organizations make positive changes in response to public reporting. Limited evidence exists of “gaming” of public reports in the long-term care setting. Few patients used public reports to select health care providers. Public reporting had greater impact in competitive markets.
Healthcare-Associated Infections	Moderate strength of evidence exists for audit and feedback with or without provider reminder systems as an effective quality improvement strategy. Key questions remain unanswered.
Disability Outcomes	Access is a key concern for patients with disabilities.
Palliative Care	Patient-focused quality improvement interventions can be used to improve patient-centered outcomes. Some evidence supports both integrative and consultative palliative care models.

Note: PCMH = patient-centered medical home.

Policymakers (Table 5) are also concerned with health care quality and the systems-level effects of interventions. They are able to implement widespread change. Important considerations in decisionmaking to improve health care quality include the balance of benefits and harms, impact of context, implementation strategies, and resources.

Table 5. Messages for improving quality for the policymaker perspective

Topic	Take-Home Messages Motivating Potential Actions
Bundled Payment	Bundled payments reduce spending and utilization slightly. The impact of bundled payment programs on quality of care is unclear. Potential unintended consequences of bundled payment programs remain unexplored.
Patient-Centered Medical Home	Not much is conclusive yet regarding the impact of PCMH on clinical outcomes and care processes. PCMH as a quality improvement approach is still in its infancy. From studies to date, the medical home is not a magic bullet to solve America’s high cost of providing health care. The amount of data that we have to bring to bear on this issue is expected to more than double in a few years.
Disparities	Additional study is warranted for collaborative care and patient education strategies.
Medication Adherence	Decreasing out-of-pocket costs can improve medication adherence for patients with cardiovascular disease and diabetes. Improved medication adherence does not necessarily mean improvement in other outcomes.

Table 5. Messages for improving quality for the policymaker perspective (continued)

Topic	Take-Home Messages Motivating Potential Actions
Public Reporting	Current public reporting efforts are poorly matched to patient needs. Health care delivery organizations are more responsive to public reporting than patients or clinicians are. Little evidence exists that public reporting leads to harm.
Healthcare-Associated Infections	Meaningful reductions in HAI rates are possible through quality improvement.
Disability Outcomes	Consensus around a core measure set is needed. Collaboration among researchers from the medical (curative), rehabilitation (restorative), and social services (supportive) perspectives is essential for advancing the field of disability research. The choice of outcomes and populations can contribute to disparities.
Palliative Care	Few intervention targets decrease health care utilization. The effectiveness of policy-focused interventions is unknown.

Note: HAI = healthcare-associated infections; PCMH = patient-centered medical home.

The systematic reviews of the series identify potential areas for action as well as evidence gaps. In addition, they provide insight into the reasons for these gaps, the gaps that are crucial to fill, and how research can move the field forward. Researchers and research funders (Table 6) can improve research design, continue the focus on outcomes of interest to patients and other decisionmakers, harmonize research, develop theory underlying logic models, and focus on critical gaps.

Table 6. Messages for the research community

Topic	Take-Home Messages Motivating Potential Actions
Bundled Payment	More frequent use of robust evaluation designs is needed. For synthesis of primary studies, cost and quality outcomes need to be harmonized. Measures of program design and context should be incorporated into evaluations. Unintended consequences should be assessed.
Patient-Centered Medical Home	There is a need to describe and support more consistent nomenclature, outcomes, and measures related to PCMH. The relative impact of PCMH components is key for applications of evidence. Impacts on mortality should continue to be investigated.
Disparities	More robust studies that specifically address effectiveness of quality improvement interventions in reducing disparities should be designed and supported. Additional study is warranted for collaborative care and patient education strategies. Additional disparities beyond a limited set thus far (mostly race/ethnicity) should be investigated. Potential harms resulting from efforts to reduce disparities need exploration.
Medication Adherence	Medication adherence interventions are a “black box.” Greater consistency in outcomes would strengthen the evidence base. Mechanisms of effectiveness should be examined. Additional outcomes beyond medication adherence should be included in evaluations.
Public Reporting	The reporting format and context should be specified in research publications. The full range of public reporting programs should be investigated.

Table 6. Messages for the research community (continued)

Topic	Take-Home Messages Motivating Potential Actions
Healthcare-Associated Infections	Effective strategies outside the hospital setting are unknown. Preintervention data are critical to strengthen the evidence base. Contextual factors should be included in reports; investigations of the role of context are needed. Information on the impact of quality improvement strategies on economic outcomes is urgently needed.
Disability Outcomes	More focused searches are needed for comprehensive review. Measures identified in this review are a starting place for choosing research instruments. Further efforts are needed to assemble and assess measurement tools. Multidisciplinary and inclusive research should be conducted and supported
Palliative Care	Broader populations should be included. There should be a focus on key research gaps. Quality improvement should be integrated into palliative care interventions.

Note: PCMH = patient-centered medical home.

Conclusion

This report summarizes key features across the topics of the Closing the Quality Gap series. Each of the topics concerns a distinct set of questions that reflect the state of the science and address the priorities of key stakeholders. Collectively, these reports cover a broad range of populations, interventions, and outcomes, and additionally explore the impact of other factors on outcomes. Guided by a common methodology,¹⁷ this series provides opportunities for synergy and synthesis across topics. This Summary highlights selected elements and messages for readers as they delve into the Executive Summaries of individual topics.

Each topic offers potential steps for action for various audiences. While interventions do not target all levers for potential action, each audience has an important role in improving quality. Each audience will consider the evidence in light of its values and available resources. Audiences will also have to consider how to best apply the evidence to their specific circumstances.

All audiences have the same aim: to improve health by improving health care quality. These reports are intended to inform action to achieve this aim. Ultimately, the overarching hope for the series remains the same as that of the earlier collection: “To become an essential source of accessible and critical analyses of the evidence supporting techniques for implementing state-of-the-art best practices (related to each topic), while stimulating ideas for ongoing quality improvement activity nationally, in individual health systems, and among individual caregivers” (p. 3).¹⁴

References

1. Institute of Medicine. *Best Care at Lower Cost: The Path to Continuously Learning Health Care in America*. Washington, DC: The National Academies Press; 2012.
2. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. 2003 Jun 26;348(26):2635-45. PMID: 12826639.
3. Mangione-Smith R, DeCristofaro AH, Setodji CM, et al. The quality of ambulatory care delivered to children in the United States. *N Engl J Med*. 2007 Oct 11;357(15):1515-23. PMID: 17928599.
4. National Healthcare Quality Report, 2011. AHRQ Publication No. 12-0005. Rockville, MD: Agency for Healthcare Research and Quality; March 2012. www.ahrq.gov/qual/qdr11.htm.
5. National Healthcare Disparities Report, 2011. AHRQ Publication No. 12-0006. Rockville, MD: Agency for Healthcare Research and Quality; March 2012. www.ahrq.gov/qual/qdr11.htm.
6. Asch SM, Kerr EA, Keeseey J, et al. Who is at greatest risk for receiving poor-quality health care? *N Engl J Med*. 2006 Mar 16;354(11):1147-56. PMID: 16540615.
7. Committee on Quality Health Care in America, Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: The National Academies Press; 2001.
8. Fuchs VR. The proposed government health insurance company—no substitute for real reform. *N Engl J Med*. 2009 May 28;360(22):2273-5. PMID: 19474424.
9. Committee on Identifying Priority Areas for Quality Improvement. *Priority Areas for National Action: Transforming Health Care Quality*. Washington, DC: The National Academies Press; 2003.
10. Bravata DM, Sundaram V, Lewis R, et al. Asthma Care. Vol. 5 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, eds. *Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies*. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290-02-0017). AHRQ Publication No. 04(07)-0051-5. Rockville, MD: Agency for Healthcare Research and Quality. January 2007. <http://purl.access.gpo.gov/GPO/LPS81286>.
11. McDonald KM, Sundaram V, Bravata DM, et al. Care Coordination. Vol. 7 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, eds. *Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies*. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290-02-0017). AHRQ Publication No. 04(07)-0051-7. Rockville, MD: Agency for Healthcare Research and Quality. June 2007.
12. Ranji SR, Shetty K, Posley KA, et al. Prevention of Healthcare-Associated Infections. Vol. 6 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, eds. *Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies*. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290-02-0017). AHRQ Publication No. 04(07)-0051-6. Rockville, MD: Agency for Healthcare Research and Quality. January 2007. www.ncbi.nlm.nih.gov/pubmed/20734530.
13. Ranji SR, Steinman MA, Shojania KG, et al. Antibiotic Prescribing Behavior. Vol. 4 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, eds. *Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies*. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290-02-0017). AHRQ Publication No. 04(06)-0051-4. Rockville, MD: Agency for Healthcare Research and Quality. January 2006.

14. Shojania KG, McDonald KM, Wachter RM, et al. Series Overview and Methodology. Vol. 1 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, eds. Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290-02-0017). AHRQ Publication No. 04-0051-1. Rockville, MD: Agency for Healthcare Research and Quality. 2004.
www.ncbi.nlm.nih.gov/books/NBK43908.
15. Walsh J, McDonald KM, Shojania KG, et al. Hypertension Care. Vol. 3 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, eds. Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290-02-0017). AHRQ Publication No. 04-0051-3. Rockville, MD: Agency for Healthcare Research and Quality. January 2005.
16. Shojania KG, Ranji SR, Shaw LK, et al. Diabetes Mellitus Care. Vol. 2 of: Shojania KG, McDonald KM, Wachter RM, Owens DK, eds. Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Technical Review 9 (Prepared by the Stanford University-UCSF Evidence-based Practice Center under Contract No. 290-02-0017). AHRQ Publication No. 04-0051-2. Rockville, MD: Agency for Healthcare Research and Quality. September 2004.
17. McDonald KM, Chang C, Schultz E. Through the Quality Kaleidoscope: Reflections on the Science and Practice of Improving Health Care Quality. Closing the Quality Gap: Revisiting the State of the Science. Methods Research Report. (Prepared by the Stanford-UCSF Evidence-based Practice Center under Contract No. 290-2007-10062-I.) AHRQ Publication No. 13-EHC041-EF. Rockville, MD: Agency for Healthcare Research and Quality. To be published.
www.effectivehealthcare.ahrq.gov/reports/final.cfm.
18. Patient Protection and Affordable Care Act. Public Law No. 111-148; 2010.
19. Hussey PS, Mulcahy AW, Schnyer C, et al. Bundled Payment: Effects on Health Care Spending and Quality. Closing the Quality Gap: Revisiting the State of the Science. Evidence Report/Technology Assessment No. 208. (Prepared by the RAND Evidence-based Practice Center under Contract No. 290-2007-10062-I.) AHRQ Publication No. 12-E007-EF. Rockville, MD: Agency for Healthcare Research and Quality. August 2012.
www.effectivehealthcare.ahrq.gov/reports/final.cfm.
20. Williams JW, Jackson GL, Powers BJ, et al. The Patient-Centered Medical Home. Closing the Quality Gap: Revisiting the State of the Science. Evidence Report/Technology Assessment No. 208. (Prepared by the Duke Evidence-based Practice Center under Contract No. 290-2007-10066-I.) AHRQ Publication No. 12-E008-EF. Rockville, MD: Agency for Healthcare Research and Quality. July 2012.
www.effectivehealthcare.ahrq.gov/reports/final.cfm.
21. McPheeters ML, Kripalani S, Peterson NB, et al. Quality Improvement Interventions To Address Health Disparities. Closing the Quality Gap: Revisiting the State of the Science. Evidence Report/Technology Assessment No. 208. (Prepared by the Vanderbilt University Evidence-based Practice Center under Contract No. 290-2007-10065.) AHRQ Publication No. 12-E009-EF. Rockville, MD: Agency for Healthcare Research and Quality. August 2012.
www.effectivehealthcare.ahrq.gov/reports/final.cfm.
22. Viswanathan M, Golin CE, Jones CD, et al. Medication Adherence Interventions: Comparative Effectiveness. Closing the Quality Gap: Revisiting the State of the Science. Evidence Report/Technology Assessment No. 208. (Prepared by the RTI International-University of North Carolina Evidence-based Practice Center under Contract No. 290-2007-10056-I.) AHRQ Publication No. 12-E010-EF. Rockville, MD: Agency for Healthcare Research and Quality. September 2012.
www.effectivehealthcare.ahrq.gov/reports/final.cfm.

23. Haynes RB, Ackloo E, Sahota N, et al. Interventions for enhancing medication adherence. *Cochrane Database Syst Rev.* 2008;(2):CD000011. PMID: 18425859.
24. World Health Organization Noncommunicable Diseases and Mental Health Cluster. *Adherence to Long Term Therapies: Evidence for Action.* Geneva, Switzerland: World Health Organization; 2003.
25. Osterberg L, Blaschke T. Adherence to medication. *N Engl J Med.* 2005 Aug 4;353(5):487-97. PMID: 16079372.
26. Peterson AM, Takiya L, Finley R. Meta-analysis of trials of interventions to improve medication adherence. *Am J Health-System Pharm.* 2003 Apr 1;60(7):657-65. PMID: 12701547.
27. Totten AM, Wagner J, Tiwari A, et al. Public Reporting as a Quality Improvement Strategy. *Closing the Quality Gap: Revisiting the State of the Science. Evidence Report/Technology Assessment No. 208.* (Prepared by the Oregon Evidence-based Practice Center under Contract No. 290-2007-10057-I.) AHRQ Publication No. 12-E011-EF. Rockville, MD: Agency for Healthcare Research and Quality. July 2012. www.effectivehealthcare.ahrq.gov/reports/final.cfm.
28. Health 2.0. San Francisco, CA; 2011. www.health2con.com. Accessed on March 1, 2011.
29. Mauger Rothenberg B, Marbella A, Pines E, et al. Prevention of Healthcare-Associated Infections. *Closing the Quality Gap: Revisiting the State of the Science. Evidence Report/Technology Assessment No. 208.* (Prepared by the Blue Cross and Blue Shield Association Technology Evaluation Center Evidence-based Practice Center under Contract No. 290-2007-10058.) AHRQ Publication No. 12(13)-E012-EF. Rockville, MD: Agency for Healthcare Research and Quality; November 2012. www.effectivehealthcare.ahrq.gov/reports/final.cfm.
30. Klevens RM, Edwards JR, Richards CL Jr, et al. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Rep.* 2007 Mar-Apr;122(2):160-6. PMID: 17357358.
31. Cardo D, Dennehy PH, Halverson P, et al. Moving toward elimination of healthcare-associated infections: a call to action. *Am J Infect Control.* 2010 Nov;38(9):671-5. PMID: 21058460.
32. Butler M, Kane RL, Larson S, et al. Quality Improvement Measurement of Outcomes for People With Disabilities. *Closing the Quality Gap: Revisiting the State of the Science. Evidence Report/Technology Assessment No. 208.* (Prepared by the Minnesota Evidence-based Practice Center under Contract No. 290-2007-10064-I.) AHRQ Publication No. 12(13)-E013-EF. Rockville, MD: Agency for Healthcare Research and Quality. October 2012. www.effectivehealthcare.ahrq.gov/reports/final.cfm.
33. Dy SM, Aslakson R, Wilson RF, et al. Improving Health Care and Palliative Care for Advanced and Serious Illness. *Closing the Quality Gap: Revisiting the State of the Science. Evidence Report No. 208.* (Prepared by the Johns Hopkins University Evidence-based Practice Center under Contract No. 290-2007-10061-I.) AHRQ Publication No. 12(13)-E014-EF. Rockville, MD: Agency for Healthcare Research and Quality. October 2012. www.effectivehealthcare.ahrq.gov/reports/final.cfm.
34. Johnson VM, Teno JM, Bourbonniere M, et al. Palliative care needs of cancer patients in U.S. nursing homes. *J Palliative Med.* 2005 Apr;8(2):273-9. PMID: 15890038.
35. Deandrea S, Montanari M, Moja L, et al. Prevalence of undertreatment in cancer pain. A review of published literature. *Ann Oncol.* 2008;19(12):1985-91. PMID: 18632721.
36. Gattellari M, Voigt KJ, Butow PN, et al. When the treatment goal is not cure: are cancer patients equipped to make informed decisions? *J Clin Oncol.* 2002;20(2):503-13. PMID: 1786580.
37. Kirshen AJ, Roff SL. Defining palliative care competencies in Canadian geriatric medicine subspecialty training. *J Am Geriatr Soc.* 2011;59(10):1981-3. PMID: 2091522.
38. National Hospice and Palliative Care Organization. *NHPCO Facts and Figures: Hospice Care in America, 2010.* Alexandria, VA; 2012. www.nhpco.org.

39. Department of Health and Human Services. Report to Congress: National Strategy for Quality Improvement in Health Care. 2011. www.healthcare.gov/law/resources/reports/quality03212011a.html#top.
40. Helfand M, Balshem H. AHRQ series paper 2: principles for developing guidance: AHRQ and the effective health-care program. *J Clin Epidemiol*. 2010 May;63(5):484-90. PMID: 19716268.

**U.S. Department of
Health and Human Services**

Agency for Healthcare Research and Quality
540 Gaither Road
Rockville, MD 20850



AHRQ Pub. No. 12(13)-E017
January 2013