

# A Primer on Quality in Public Health:

## What's Needed to Advance CQI in Ontario Public Health?

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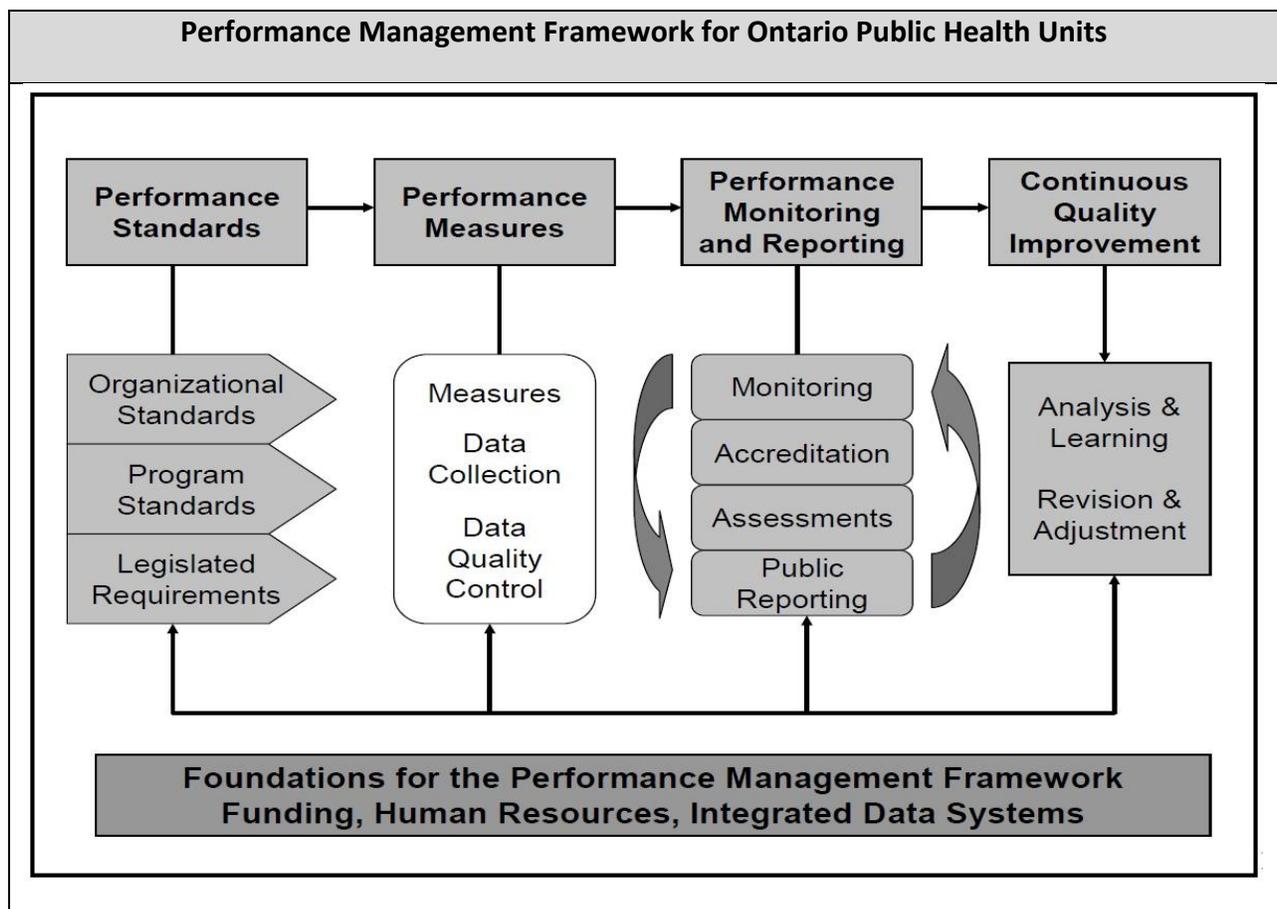
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## Background

Elements of continuous quality improvement (CQI) philosophy have arguably been a longstanding part of public health practice in Ontario. However, CQI only became a formal priority for the sector when the Capacity Review Committee, formed to provide recommendations to the government on public health renewal, unanimously recommended (a) “that continuous quality improvement should be the foundation of an effective performance management system for public health in Ontario” (2006, p. 24-25), and (b) that “every health unit should have a minimum of one quality and performance specialist to lead the implementation of local performance management activities, coordinate accreditation, manage reporting to the province and the public, and create a culture of continuous quality improvement” (2006, p. 25).[1]

CQI then became a component of the provincial *Performance Management Framework* (see below) and in 2011, became a requirement for all health units (PHUs) through the *Public Health Accountability Agreements* between boards of health and the Ministry.[2]



This primer and associated meeting aim to further advance CQI in the Ontario public health sector. While the foundational policy work described above has been vital to the advancement of CQI thus far, there is much more to be done. Specifically, Ontario public health CQI professionals reported (via a preliminary survey) their need to:

- 1) Learn about CQI excellence and its application, the current state of CQI at Ontario PHUs, and available resources
- 2) Network and share knowledge between colleagues and stakeholders
- 3) Discuss factors to foster advancement of CQI across the sector

This primer provides an overview of CQI philosophy and its application to the Ontario public health sector. The primer also outlines what is known about the “dimensions” of quality in public health, and the factors that impact adoption and successful implementation of CQI. A common understanding of these concepts among meeting participants will support rich discussion at the event.

It is indeed an exciting time to be part of public health practice, policy and research in Ontario. Advancement of CQI has the potential to transform how we plan and provide services, and in-turn support Ontarians to achieve optimal health. We look forward to seeing you at the meeting on September 20<sup>th</sup>, 2013. Please do not hesitate to contact us for more information.

Sincerely,



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## EXECUTIVE SUMMARY

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This primer was created to provide background and context in the area of continuous quality improvement (CQI) in public health in an effort to advance improvement efforts across Ontario's public health sector. The goal of this primer is to highlight CQI philosophy, what is known about the "dimensions" of quality in public health, and the factors that impact adoption and successful implementation of CQI in public health.

Through a scoping review methodology, a number of core themes emerged. They can be summarized in four main key takeaway messages.

### ***1. There is a Relevant CQI Evidence Base. However, it is Small and Requires Some Interpretation***

It is clear that much of the relevant literature and organization websites come from the United States (US). Although the US is a different context, the *10 Essential Public Health Services* [3] provided by local health departments are more similar than they are different from public health services in Ontario. The US literature provides an excellent foundation to guide efforts in Ontario, where similar challenges may exist, and where similar enablers may lead to advancement of CQI. However, while there is limited literature and a lack of consensus on optimal methods and applications for CQI, there *is* consensus on the tremendous potential that CQI and QI hold for public health.

### ***2. Learning and "Doing" CQI are Critical for Success***

Successful CQI application requires practitioners to have an understanding of the philosophy, terminology and methods. It also requires practitioners to "learn through doing" (which aligns with known adult learning principles). Ontario public health practitioners must have opportunities to learn about methods of creating change, measuring outcomes, making improvements, and ultimately have the opportunity to apply these in practice to gain a deeper understanding of the value of CQI. Fortunately, the translation of CQI philosophy to public health practice has become clearer with recent attention from researchers and practitioners. CQI is an overarching philosophy and framework that refers to the ongoing (i.e., continuous) efforts to improve public health services. Quality improvement (QI) processes are those activities and actions taken to make the improvements. CQI and QI can happen at four levels within the public health organization: (a) organization-wide, (b) with program or service functions, (c) with administrative and management functions, and (d) at the individual level. Understanding and reaching consensus on the dimensions of quality in public health (which have yet to be defined in Ontario) may also advance CQI and QI activities in the sector.

Furthermore, as work in this area moves forward, it will be essential to clarify the commonalities and differences between (a) CQI and QI, vs. (b) the research and evaluation methods which dominate Ontario public health performance improvement activities. Once practitioners have distinguished research from evaluation from QI, they should shift toward using CQI and QI methods where appropriate.

### ***3. Regional Collaborations Have Played an Important Role in CQI Advancement***

Numerous regional and national collaborations in the US support education, knowledge-exchange regarding the application of CQI in public health. While these collaborations stem from both practice and academic settings, they have collective goals of advancing CQI implementation in public health practice. The CQI mandate given to all Boards of Health, the inclusion of CQI in the Ministry's *Performance Management Framework* [2] as well as the public health units' desire to learn about CQI indicates that a similar collaborative or centre could be considered to support research and training that will advance CQI across the sector.

### ***4. Creating a Culture of CQI Requires "All Hands on Deck"***

It appears that a culture of CQI is fostered through coordination and commitment from policymakers, organizational leadership, middle-management and frontline service providers. A multifaceted approach is recommended to create a culture of CQI. This approach includes leadership training and engagement, advanced education for CQI practitioners, and accreditation. Leadership support for CQI is a critical element of creating a culture for CQI. Leadership support for CQI is evident when CQI becomes an organization's strategic objective, as well as when leaders provide CQI training opportunities for staff, and when staff are supported in QI efforts in their daily work. Additionally, it is clear that educational supports for the current public health workforce along with the early exposure at the undergraduate and graduate levels for future public health practitioners will help build future capacity for CQI. Accreditation has also been reported as supportive of CQI adoption, as it supports the philosophy of performance management and making enhancements to current practice. However, accreditation should not be relied upon as the only driver toward a culture supportive of CQI.

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## ***PROCESS IMPROVEMENT & CQI***

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Please see Appendix B for the description of the scoping review methodology that was used to create this primer.

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## ***PROCESS IMPROVEMENT & CQI***

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Maintaining status quo is not an expression you hear in the health sector, nor should it be. This is because of the many opportunities which exist to enhance current practices across health sectors, including in public health. Continuous quality improvement (CQI) is a philosophy and a framework that can facilitate enhancements to public health services. A CQI framework, including use of QI approaches, can support public health agencies to create and refine processes that yield “high-value” services for their community (i.e., services that are efficient, effective and embody other *Dimensions of Quality* explored below). However, the paucity of literature translates to a lack of consensus on the optimal roles and applications of CQI in public health. To begin, it is important to discuss the foundations of quality to better understand its application in the Ontario public health sector.

### ***What Exactly is CQI?***

Continuous Quality Improvement has been defined and applied in various ways and at varying levels of sophistication in public health.[4] This is due to the evolution of the CQI field in both the business and acute care sectors. Broadly speaking, CQI is both a philosophy and a framework designed to achieve increasing levels of performance (i.e., outcomes of greater and greater value). CQI is “a continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality in services or processes which achieve equity and improve the health of the community”.[5]

More specifically, CQI is a “commitment to systems change to execute a continuous flow of improvements that meets or exceeds the expectations of the customer (communities) and generally includes a link to the organization’s strategic plan and goals; a quality council made up of the organization’s top leadership; QI training for staff; a mechanism for prioritizing QI projects based on performance data; and supporting and recognizing staff for their QI activities”. [6]

Within CQI is Quality Improvement (QI), which is “the use of a deliberate and defined improvement process, which is focused on activities that are responsive to community needs and improving population health”. [5]

For the purposes of this primer, we define CQI in alignment with Riley et al. (2010) as the “act” of engaging in changes to an existing system that will improve specific processes, programs or services, and ultimately improve the health of the community.

To support the application of CQI, there are numerous tools and resources gleaned from other industries that have been applied in public health. Most notably are the methodologies of Plan-do-check/study-act (PDCA), Lean, Six Sigma, and the Model for Improvement. These methods and others are highlighted on numerous websites where excellent descriptions are provided and templates can be accessed and utilized by the public. Those interested in QI tools should review (a) *The Public Health Quality Improvement Handbook*[7], b) Tagues Quality Toolkit[8] and (c) Appendix C and D, which provides a brief description of these tools and relevant organization with links to additional resources.

### **Where Does CQI Occur?**

CQI can happen at all levels of the organizations.[9] This could include a frontline immunization clinic, premise inspection or health promotion campaign, or an administrative process that supports frontline work. The literature written on CQI in public health has conceptualized CQI and QI “activities” in a few different ways. We present examples below of the four main categories in which CQI work has been examined in public health, which assimilates the different conceptualizations (to provide greater clarity). Those interested in the extent of CQI and QI application in public health should investigate (a) a recent systematic review by Dilley et al.[10] which outlines 18 QI interventions in public health, (b) the online US Public Health Quality Improvement Exchange (PHQIX) ([www.phqix.org](http://www.phqix.org)) which is a collection of user-submitted QI projects in public health, and (c) the complete findings of this primer, which are summarized in Appendix E.

Categories of QI Activities	Public Health Example
<p><b>Organization-Wide QI:</b></p> <p>Interventions in this area tend to influence multiple programs and services at one time (Dilley et al., 2012).</p>	<p><b><i>Mason et al., (2010) Taking improvement action based on performance results: Washington State’s experience. [11]</i></b></p> <p>This study illustrates the methods and results of using performance data for QI at the system, the state health department, and the local health department levels. Performance data was used to identify areas where QI was required. Four local QI teams and one state QI team received training in QI principles, methods and tools, as well as development of logic models and quantifiable outcomes measures. The teams developed their QI plans with the use of fishbone diagrams, Pareto charts and PDSA cycles. At the end of</p>

	<p>the initiative, all of the teams developed a QI council, an annual QI plan and calendar as well as an annual QI evaluation. The results from this organization-wide QI initiative were presented through performance reviews, which indicated sizable improvements. For instance, tracking of program performance measures increased from 19% to 84%. This shows improvement in developing and sustaining QI infrastructure and processes.</p>
<p><b>Programs and Services QI:</b></p> <p>Interventions in this area focus on specific programs or services (Dilley et al., 2012). At this level, the focus is to address issues (i.e., make improvements) within specific programs or services.</p>	<p><b>Lotsein et al., (2008). Using quality improvement methods to improve public health emergency preparedness: PREPARE for pandemic influenza. [12]</b></p> <p>This paper outlines a QI program to improve pandemic preparedness. The researchers in this study adapted the IHI model for public health agencies. Five local (n=3) and state public health departments (N=2) agreed to send staff to participate in half-day sessions to discuss QI topics and pandemic preparedness frameworks. The teams used performance measures, strategies and ideas for change, as well as the PDSA cycle to guide improvement activities. The teams also developed process maps for each of their targeted areas. The authors report that QI tools were helpful in improving preparedness. They also report QI methods were sustained even after the pilot project ended, as the teams indicated a desire to continue using QI tools in their work.</p>
<p><b>Administrative/ Management Processes QI:</b></p> <p>Interventions in this area focus on overall operating procedures at the administrative and management level.</p>	<p><b>Swain et al., (2004). Three hundred sixty degree feedback: Program implementation in a local health department. [13]</b></p> <p>This study reported the results of a pilot effort to improve the implementation and quality of performance reviews (PRs) for health department staff using 360-degree feedback. The PR model was designed to reflect the values of the organization as well as focus on positive staff development. QI tools were used to evaluate the current PR process, and design and improved process. The results of their initiative were sufficient to recommend full adoption of the revised PR model, helping with many elements of human resources planning.</p>
<p><b>Individual QI:</b></p>	<p>This category has only been outlined conceptually and has not examined in the public health context. However, it has been</p>

At this level, staffs focus on improving their individual performance and behaviors in the work environment.	viewed as an important and interesting application of QI in public health and warrants further investigation[14].
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### ***Where are the Origins of CQI?***

W. Edward Deming, one of the founding scientists of improvement research, focused on the ideas of “Profound Knowledge” and the “Science of Improvement.” Deming’s ideas outline the need for workers to have deep (i.e., profound) knowledge on *how* to make changes that result in improvement, while also understanding the *system* in which the improvement must occur.

When applying Deming’s idea to process improvement, it is important to consider the complex interactions between people, products and programs. These factors are related and impact each other. According to Deming, it is essential to (a) understand *variation* in a system, (b) be able to interpret why variation may be happening, (c) make *predictions* about system improvement, (d) evaluate these predictions, and (e) realize that systems will always have some level of variation (i.e., opportunity for improvement). It is also critical that individuals desiring to make an improvement be encouraged by management to make predictions about what they believe will create an effective change in a process. These predictions are then evaluated to measure whether the change was an improvement. Lastly, having an understanding of the *psychology* behind (a) human behavior and (b) reaction to change is essential when considering the barriers and facilitators to successful implementation[15].

## **QUALITY IN PUBLIC HEALTH**

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CQI is of greater importance to the Ontario public health sector than ever before. This is true given the challenging fiscal environment requiring PHUs to “do more with less” and the public demand for accountability and excellence from public services. As well, CQI was identified as a top research priority by practitioners and stakeholders at the 2012 Public Health Services Research Think-Tank.[16]

Defining *quality* provides an aspiration goal for CQI efforts and a lens for the *type* of improvements that should be made to programs and services. In a public health context, the definition of quality would align with the dimensions of excellence in public health program and service delivery. While a definition has not been developed for the Canadian or Ontario public health context, there are two definitions that could easily be adopted: The Health Quality Ontario (HQO) definition and the US definition (see below).

HQO is the agency mandated to advance quality across Ontario health services by the Excellent Care for All Act 2010 (ECFAA).[17] As part of this work, HQO outlined the attributes of a high-performing health system (i.e., the dimensions of quality).[18] However, the HQO definition may not include or apply to public health, given public health’s absence in ECFAA. Furthermore, while much of public health aligns with HQO’s attributes, perhaps quality in public health has a stronger focus on prevention, or collaboration with non-health sectors. A more appropriate definition and dimensions of quality in public health may then be *The Consensus Statement on Quality in the Public Health System*[19] from the US Department of Health and Human Services. In addition to their dimension of quality, they provide a succinct definition: “Quality in public health is the degree to which policies, programs, services, and research for the population increase desired health outcomes and conditions in which the population can be healthy.”

<p><b>US Consensus Statement on Quality in the Public Health System (2008)[19]</b></p>	<p><b>HQO Attributes of a High-Performing Health System (2013)[18]</b></p>
<ul style="list-style-type: none"> <li>• <b>Population-centered</b> – protecting and promoting healthy conditions and the health of the entire population</li> <li>• <b>Equitable</b> – working to achieve health equity</li> <li>• <b>Proactive</b> – formulating policies and sustainable practices in a timely manner, while mobilizing rapidly to address new and emerging threats and vulnerabilities</li> <li>• <b>Health promoting</b> – ensuring policies and strategies that advance safe practices by providers and the population and increase the probability of positive health behaviors</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Accessible</b> - People should be able to get timely and appropriate healthcare services to achieve the best possible health outcomes</li> <li>• <b>Effective</b> - People should receive care that works and is based on the best available scientific information</li> <li>• <b>Safe</b> - People should not be harmed by an accident or mistakes when they receive care</li> <li>• <b>Patient-centred</b> - Healthcare providers should offer services in a way that is sensitive to an individual’s needs and</li> </ul>

<p>and outcomes</p> <ul style="list-style-type: none"> <li>• <b>Risk-reducing</b> – diminishing adverse environmental and social events by implementing policies and strategies to reduce the probability of preventable injuries and illness or other negative outcomes</li> <li>• <b>Vigilant</b> – intensifying practices and enacting policies to support enhancements to surveillance activities (e.g., technology, standardization, systems thinking/modeling)</li> <li>• <b>Transparent</b> – ensuring openness in the delivery of services and practices with particular emphasis on valid, reliable, accessible, timely, and meaningful data that is readily available to stakeholders, including the public</li> <li>• <b>Effective</b> – justifying investments by utilizing evidence, science, and best practices to achieve optimal results in</li> </ul>	<p>preferences</p> <ul style="list-style-type: none"> <li>• <b>Equitable</b> - People should get the same quality of care regardless of who they are and where they live</li> <li>• <b>Efficient</b> - The health system should continually look for ways to reduce waste, including waste of supplies, equipment, time, ideas and information</li> <li>• <b>Appropriately Resourced</b> - The health system should have enough qualified providers, funding, information, equipment, supplies and facilities to look after people’s health needs</li> <li>• <b>Integrated</b> - All parts of the health system should be organized, connected and work with one another to provide high quality care</li> <li>• <b>Focused on Population Health</b>- The health system should work to prevent sickness and improve the health of the people of Ontario</li> </ul>
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<p>areas of greatest need</p> <ul style="list-style-type: none"><li>• <b>Efficient</b> – understanding costs and benefits of public health interventions and to facilitate the optimal utilization of resources to achieve desired outcomes</li></ul>	
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## WHAT THE RESEARCH TELLS US

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Due to the relatively new focus on CQI in public health, much of the relevant research either outlines efforts to explore quality, or reported on the current state of QI/CQI within public health. Therefore, the research summarized below is segmented in two sections: 1) key messages on the current state of CQI in public health, and 2) factors critical to the implementation and advancement of CQI in public health.

### Key Messages on the Current State of CQI in Public Health

***CQI is Not Yet a Formal Part of Local Health Dept. Operations:*** A few studies reported local health departments (LHDs) having formal QI efforts or plans in place (Beitsch et al., 2010, N=56%; Madamala et al 2010, N=82%; Leep et al., N=81%)[20-22], but the operationalization of these plans appears to be lacking in most cases (Madamala et al 2010, N=33%)[21].

***Most QI is Occurring in “Clinical” Areas:*** More than half of QI efforts occurred in clinical areas[21] and another study it appears that approximately 30% of the QI efforts were occurring agency-wide.[22]

***There is Variation in How Many Staff Receive CQI Training:*** Studies report between 30-70% of public health managers and staff receiving CQI training as a prerequisite to CQI implementation. [6, 20, 23]

***Large Public Health Agencies are Most Involved in CQI Activities:*** Larger public health agencies, as well as LHDs that serve large populations, appear to be more engaged in quality efforts.[20, 22]

***Lack of Leadership Support Appears to be a Common Issue:*** A number of studies reported there is a lack of support and understanding from leadership in their respective organizations regarding CQI.[24-29]

***There is A Public Health Agency QI Maturity Tool:*** US researchers have piloted and tested a QI Maturity Tool, which allows public health organizations to understand their QI sophistication. Specifically, the tool measures *how far along* a public health agency is regarding QI organizational culture, capacity and competency, practice, as well as alignment/spread of the QI interventions. [30] Two important findings with the tool thus far have been (a) advanced understanding of QI proliferation at US LHDs, and (b) that managers consistently have higher perceptions of QI sophistication as compared to their staff.

### Factors Critical to CQI Implementation and Application in Public Health

**Leadership Support:** Leaders in PHUs must be committed to CQI. This can be demonstrated through their support of frontline workers training and education, as well as establishing CQI as an agency priority to help drive implementation at all levels.[6, 26] A number of papers reported that having CQI as an overarching philosophy and not just a project-by-project focus is important and needs to be supported by agency leadership.[26]

**Education and Networking Opportunities:** A number of papers outlined that educational programs for public health staff are essential in order to develop greater capacity for participation in QI projects and applying QI tools.[20, 22, 23] A multifaceted training approach through the use of in-person sessions, online activities and large meetings (i.e., conferences and professional development sessions) help to instill a common understanding of tools and resources for QI. This networking can also be seen through structure collaborative and networks which focus on CQI initiatives (See Appendix F for three examples of collaborative activities). The lack of curricula at the undergraduate and graduate level was also highlighted as an area that needs to be addressed. This curricula is needed to develop the next generation of public health professionals who are equipped with CQI knowledge.[6]

**Shifting Paradigms:** It is important to note the distinction between CQI, evaluation and scientific methods, as well as research methods that involve CQI. [31] Instead of focusing on implementing a large scale project and measuring/evaluating the results at a specified one year or two year interval, CQI requires continuous rapid cycles of testing and improvement (e.g., PDSA cycles) as well as frontline staff engagement in all these activities. This has been reported as a shift from traditional public health performance measurement approaches.[32, 33] The sector needs to expand upon existing research oriented approaches to include methodologies that are reflective of continuous process improvement in order to increase the pace of learning and improvement.

**Integration Across the System:** Creating integrated services, programs and care pathways is an important priority in our health system (e.g., HQO's bestPATH). This requires communication and coordination between all sectors of the health system, including public health. Advancement of CQI in public health may support improved system integration given that ECFAA has made CQI and QI commonplace in other sectors of the health system. ECFAA includes requirements that organizations in the acute care, long-term care, and primary care sectors to (a) have an executive-level quality committee, (b) create and publish quality improvement plans that include patient satisfaction, and (c) link executive pay with targets of the quality improvement plans.[17] CQI presents an opportunity for public health to adopt language and methods being used across the system, which may support improved collaboration between sectors.

**Focus on Fiscal Constraints:** PHUs are increasingly asked to *do more with less*. CQI is a philosophy and framework that supports agencies to find efficiencies, and can assist health units achieve their service delivery goals (and perhaps even increase value) within fiscal constraints.[6]

**Accreditation:** Research on public health accreditation demonstrates that it is viewed as a positive performance management practice in itself, as well as a foundation to promote QI efforts and CQI philosophy.[34, 35] Furthermore, research has reported that many public health professionals were in favor of voluntary accreditation, which they felt was an effective and feasible performance improvement process for their organizations.[36, 37] Notably, there have been reports that LHDs have become more involved in QI when their organizations pursue

accreditation.[24] Accreditation can also assist agencies foster a 'culture of quality' by demonstrating a commitment to quality.[34]

**The Importance of How CQI is Launched:** CQI should not be viewed as an *add-on*, but as the more effective way to do the work that public health already has to complete.[24] As well, it appears to be advantageous when QI is introduced with a *quick win* activity to foster organizational buy-in for future QI projects. Authors suggest that QI should begin with a small project that will be relatively easy, with a high probability of success. This will also help to develop QI skills and allow staff to gain confidence and motivation to tackle more complex processes using QI approaches.[38]

**Cultural Transformation:** Truly creating a culture of quality likely requires all of the above facilitators. It is essential that organizations use multiple approaches to advance a culture of quality.[5, 24, 26, 28, 38] Generally, it appears that cultural transformation takes upwards of 5-7 years. Use of a CQI framework to foster a gradual shift in culture[28], as well as an established vision with corresponding operational practices that are both top-down and bottom-up will support a culture shift. Without a comprehensive approach, it may be challenging to instill new values regarding the importance of CQI, and make CQI a routine part of the “way we do things around here”.[39]

**Lack of Evidence Linking Health Outcomes & CQI:** There are only a few studies that attempt to link CQI activities, process improvement, and health outcomes.[10, 40, 41] This is not surprising given CQI's history of improving processes and outcomes in industry. Nonetheless, the paucity of literature linking CQI to health outcomes should not impede efforts to implement QI in public health. If public health programs are built on evidence-informed practices, then improving program, process and structure based on quality dimensions should lead to improved health. That said, the relationship between CQI and health status certainly warrants further investigation.

**Appendix A – Meeting Registrants**

	<b>Full Name</b>	<b>Organization</b>
1	Suzanne Irwin	Algoma Public Health
2	Sendi Struna	Durham Region Health Department
3	Vicky Olmstead	Durham Region Health Department
4	Sandra Labelle	Eastern Ontario Health Unit
5	Darrell Jutzi	Elgin St. Thomas Public Health
6	Maureen Handley	Grey Bruce Health Unit
7	Wendy Holmes	Haldimand Norfolk Health Unit
8	Lynn Gates	Halton Region Health Department
9	Patricia Hewitt	Halton Region Health Department
10	Debra Clarke	City of Hamilton Public Health
11	Eric Serwotka	Hastings & Prince Edward Counties Health Unit
12	Anne-Marie Cyr	Haliburton, Kawartha, Pine Ridge District Health Unit
13	Tony Button	Kingston, Frontenac and Lennox & Addington Public Health
14	Sudit Ranade	Lambton Community Health Services Department
15	Shani Gates	Leeds, Grenville & Lanark District Health Unit
16	Ross Graham	Middlesex-London Health Unit
17	Diane Vanecko	Niagara Region Public Health
18	Nicole Stefanovici	Niagara Region Public Health
19	Sheri Hueston	North Bay Parry Sound District Health Unit
20	Alex Berry	Northwestern Health Unit
21	Esther Moghadam	Ottawa Public Health
22	Michael Ferguson	Ottawa Public Health
23	Susan MacIsaac	Oxford Public Health & Emergency Services

24	Isabelle Mogck	Peel Public Health
25	Rebecca Spark	Peel Public Health
26	Jennifer Duffin	Perth District Health Unit
27	Patti Fitzgerald	Peterborough County-City Health Unit
28	Rosana Pellizzari	Peterborough County-City Health Unit
29	Susan Yuskow	Porcupine Health Unit
30	Carla Walters	Renfrew County and District
31	Brenda Guarda	Simcoe Muskoka District Health Unit
32	Krista Galic	Sudbury & District Health Unit
33	Georgina Daniels	Thunder Bay District Health Unit
34	Marlene Spruyt	Timiskaming Health Unit
35	Karen Beckermann	Toronto Public Health
36	Robert Coughlin	Toronto Public Health
37	Anne Schlorff	Region of Waterloo Public Health
38	Celina Sousa	Region of Waterloo Public Health
39	Carole Desmeules	Wellington-Dufferin-Guelph Public Health
40	Rita Sethi	Wellington-Dufferin-Guelph Public Health
41	Julie Fraser	Windsor-Essex County Health Unit
42	Nadine d'Entremont	York Region Public Health
43	Zahra Kassam	York Region Public Health
44	Andrea Smith	Ministry of Health & Long-Term Care
45	Paulina Salamo	Ministry of Health & Long-Term Care
46	Michele Weidinger	Ministry of Health & Long-Term Care
47	Tricia Willis	Ministry of Health & Long-Term Care

48	Zareen Butt	Ministry of Health & Long-Term Care
49	Lisa Vankay	Ministry of Health & Long-Term Care
50	Sara Cave	Ministry of Children & Youth Services
51	Anne Simard	Public Health Ontario
52	Siu Mee Cheng	Ontario Public Health Association
53	Robert Schwartz	University of Toronto
54	Cameron Norman	University of Toronto
55	Natalie Allen	Western University
56	Greg Randolph	Center for Public Health Quality
57	Julie Nicholls	Health Quality Ontario
58	Madelyn Law	Brock University

## Appendix B – Scoping Review Methodology Details

### Primer Methodology

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A scoping review methodology is used to map out the literature in a specific area and identify the type of evidence, study designs and high level findings that are available. This is an approach that helps to bring together research in a broad area regardless of the design or evidence[42] and provides a high level overview of the topic of interest. This methodology has six steps to ensure a robust search of the literature, which includes, identifying the research question, identifying relevant studies, study selection, charting the data, collating and summarizing the results and a consultation exercise. This scoping review resulted in the 31 articles which are displayed in Appendix E and 22 number of organizations websites that were reviewed which are provided in Appendix C.

#### **Step 1: Identifying the research question.**

The research question was created by examining the work in the Think Tank report together with what PHUs were interested in learning.

*How has quality improvement been conceptualized and applied in the public health settings?*

#### **Step 2: Identifying Relevant Studies**

In order to identify studies and papers that would be relevant for this report we used a number of methods that would allow for a broad scan of the field. Figure A below outlined the process of the search and selection of the studies for steps 2 and 3.

**Academic Search:** One search focused on academic literature through research databases of OVID, Medline, CINHAI using the keywords of public health linked together with Public Health+ quality Improvement\*continuous quality improvement\*process improvement\*transformational change\* performance improvement; Organizational change+public health\* public health practice\*health promotion\* health prevention. Key journals of Journal of Public Health Management Practice and....were hand searched to identify any other important papers.

**Internet Search:** An internet search with the focus of sourcing information from provincial, national and international organizations focus on quality improvement in public health was conducted.

This search resulted in 444 abstracts and 22 organizations websites.

***Step 3: Study Selection***

The inclusion and exclusion criteria were then applied to the academic articles. Two research assistants reviewed the abstracts and included the articles if they: 1) focused on the application of quality improvement principles and concepts in public health or 2) provided a review of the current state of QI in public health; or 3) provided descriptions of current efforts to implement CQI and lessons learned (barriers and enablers, 4) identified issues of defining and conceptualization of CQI in public health. The year limit of 2000 to present was applied, however a hand search did identify one article outside of this range from 1997 (Kahan et al., 1997). This resulted in the selection of 75 articles which were then downloaded in the full article form. Each article was then read completely and the inclusion criteria was applied a second time to determine if the article was relevant for inclusion. This resulted in the inclusion of 31 articles and 21 organizations website.

***Step 4: Charting the Data***

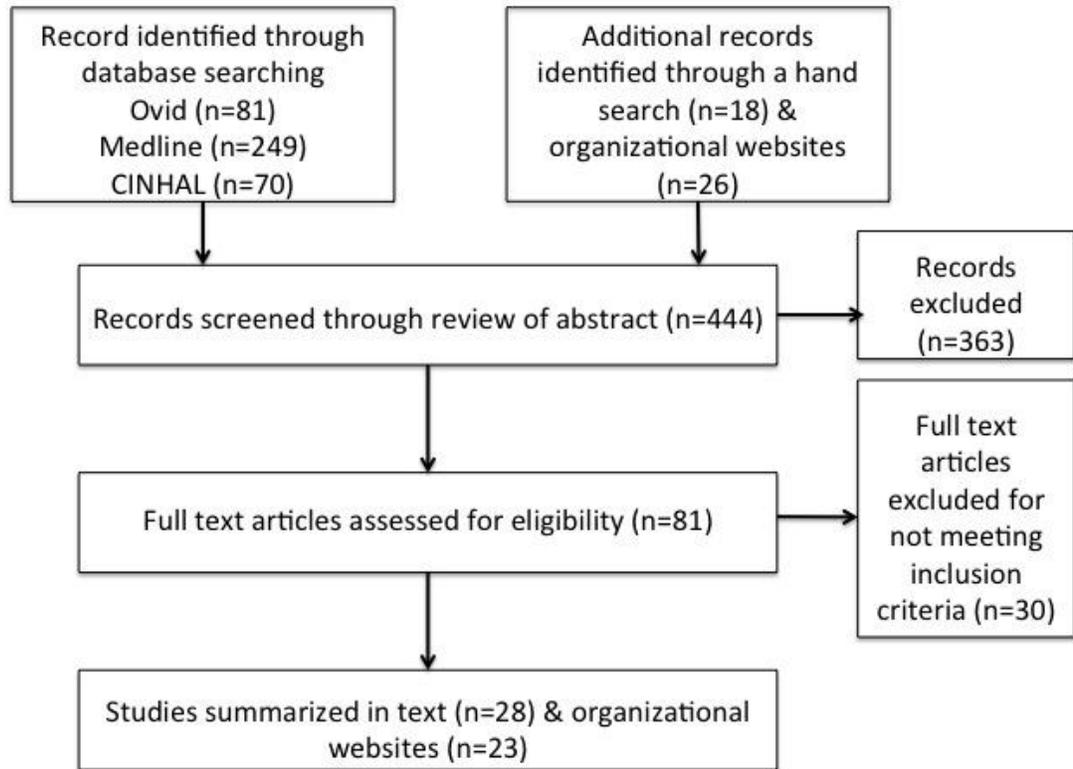
The information for the research articles is available in Appendix C and the information for each organization is charted in Appendix D. This was done through a structured approach with Dr. Law and the two research assistants Erica Bridge and Katie Ross, both of whom divided the articles but also had five that overlapped so that they could triangulate the way in which they were inputting the information to ensure consistency.

***Step 5: Collating and summarizing the results***

Once the charts were created Dr. Law reviewed the data in a 3 hour meeting with the research assistants at which time the articles were then themed in to specific categories that reflected the focus of the research. Organization websites were reviewed with specific examples used to highlight innovative practices that appeared within these organizations.

***Step 6: Consultation exercise***

In order to ensure that the work done by the researcher and the research assistant is accurate, this document has been reviewed by Ross Graham (Public Health professional) and those individuals who will be providing a guest talk at the CQI event. The primer can be further refined based on feedback obtained at the event as well.



### Appendix C Public Health Organizations

Organization Name	Website Link	Q.I. Philosophy	Framework & Tools
American Society for Quality (ASQ)	<a href="http://asq.org/index.aspx">http://asq.org/index.aspx</a>	“By making quality a global priority, an organizational imperative, and a personal ethic, ASQ becomes the community for everyone who seeks quality concepts, technology or tools to improve themselves and their world.”	<ul style="list-style-type: none"> <li>-Courses &amp; Training</li> <li>-Certifications</li> <li>-Lean</li> <li>-Six Sigma</li> <li>-Quality Management</li> <li>-All tools available</li> </ul>
“Baldrige Performance Excellence Program” National Institute of Standards and Technology, Baldrige National Quality Program	<a href="http://www.nist.gov/baldrige/">http://www.nist.gov/baldrige/</a>	<p>“To improve the competitiveness and performance of U.S. organizations for the benefits of all U.S. residents, the Baldrige Performance Excellence Program is a customer-focused federal change agent that:</p> <ul style="list-style-type: none"> <li>-Develops and disseminates evaluation criteria</li> <li>-Manages the Malcom Baldrige National Quality Award</li> <li>-Promotes performance excellence</li> <li>-Provides global leadership in the learning and sharing of successful strategies and performance practices, principles and methodologies”</li> </ul>	<ul style="list-style-type: none"> <li>-Lean</li> <li>-Six Sigma</li> <li>-ISO</li> <li>-Baldrige Criteria</li> <li>-Self-assessment</li> </ul>
Robert Wood Johnson Foundation	<a href="http://www.rwjf.org/en/about-rwjf/program-areas/quality-equality.html">http://www.rwjf.org/en/about-rwjf/program-areas/quality-equality.html</a>	“The Robert Wood Johnson Foundation’s Quality/Equality team is committed to improving the quality of health care for all Americans. Specifically, we aim to help communities across the country set and achieve ambitious goals to improve the quality of health care in ways that matter to patients and their families. Our approach is shaped by what we’ve learned through extensive investments in improving chronic care and the knowledge that everyone who gets care, gives care, and pays for care must work together to achieve meaningful improvement”	<ul style="list-style-type: none"> <li>-Framework</li> <li>1.Aligning forces for quality</li> <li>2.Measuring progress</li> <li>3.Transparency</li> <li>4.Communications</li> </ul>
Centre for Public Health Quality	<a href="http://www.centerforpublichealthquality.org/">www.centerforpublichealthquality.org/</a>	“To collaborate with local, state, and national partners to transform the public health system to foster and support continuous quality improvement (QI). We achieve this by providing training and tools, sharing what works in public health, promoting performance measurement, leading strategic QI initiatives, and engaging leadership to drive organizational change.”	<ul style="list-style-type: none"> <li>Lean and Model for Improvement used as frameworks</li> <li>-Collaborative training programs for teams and for QI leaders</li> <li>-QI Toolbox</li> <li>-Return on Investment (ROI)</li> </ul>

Institute for Healthcare Improvement (IHI):Public Health Resources	<a href="http://www.ihl.org/knowledge/Pages/Tools/ResourcesforPublicHealth.aspx">http://www.ihl.org/knowledge/Pages/Tools/ResourcesforPublicHealth.aspx</a>	“A future in which everyone has the best care and health possible”	-A number of resources can be found on the website
National Network of Public Health Institutes	<a href="http://nnphi.org">http://nnphi.org</a>	“Public Health Institutes (PHIs) are non-profit organizations that improve the public’s health by fostering innovation, leveraging resources, and building partnerships across sectors including government agencies, communities, the health care delivery system, media, and academia.”	-Public Health Performance Improvement Toolkit -E-catalogue (you can find specific tools)
Public Health Foundation (PHF)	<a href="http://www.phf.org/focusareas/qualityimprovement/Pages/Quality_Improvement.aspx">http://www.phf.org/focusareas/qualityimprovement/Pages/Quality_Improvement.aspx</a>	“We improve the public’s health by strengthening the quality and performance of public health practice”	-A number of tools can be found on the website
Public Health Informatics Institute (PHII)	<a href="http://www.phii.org/subjectareas/performanceimprovement.aspx">http://www.phii.org/subjectareas/performanceimprovement.aspx</a>	“The PHII works with public health professionals and their stakeholders on projects centered around requirements development, practice support, and informatics training. Our mission is to improve health outcomes worldwide by transforming health practitioner’s ability to apply information effectively.”	-Public Health preparedness Framework Animated Walk Through -Developing performance measures
National Association of Local Boards of Health (NALBOH)	<a href="http://www.nalboh.org/Board_Governance.htm">http://www.nalboh.org/Board_Governance.htm</a>	“NALBOH is dedicated to assisting in the governing and leadership role of boards of health by providing them with guidance in areas such as advocacy, public health law, financial planning, strategic planning, and health officer relationships”	-PDCA -QI Definition -NPHPSP Governance Assessment
National Institute for Health and Care Excellence	<a href="http://guidance.nice.org.uk/PHG">http://guidance.nice.org.uk/PHG</a>	“NICE guidance supports healthcare professionals and others to make sure that the care they provide is of the best possible quality and offers the best value for money.”	-Quality Standards -Quality guide
The National Association of County and City Health Officials (NACCHO)	<a href="http://www.naccho.org/topics/infrastructure/accreditation/quality.cfm">http://www.naccho.org/topics/infrastructure/accreditation/quality.cfm</a>	A comprehensive approach where Local Health Departments (LHD’s) aim to transform organizational culture where the concepts of Q.I. are ingrained in the shared attitudes, values, goals and practices of all individuals in the agency	- Change Management Model (i.e., Unfreeze, Transition, Freeze) - ABC’s of Plan-Do-Check-Act -Q.I. plan page
Association of State and Territorial Health Officials (ASTHO)	<a href="http://www.astho.org/Programs/Accreditation-and-Performance/Quality-Improvement/">http://www.astho.org/Programs/Accreditation-and-Performance/Quality-Improvement/</a>	The Association of State and Territorial Health Officials (ASTHO) support state and territorial health agencies’ efforts to improve agency performance, with the ultimate goal of improved health outcomes in the United States. Through its performance projects ASTHO fosters a culture of quality	-The Balanced Scorecard -The Quality Toolbox

		improvement in state health agencies and systems. ASTHO provides technical and program support to the Public Health Accreditation Board and regularly provides custom technical assistance to states preparing for voluntary.	
Public Health Accreditation Board (PHAB)	<a href="http://www.phaboard.org/wp-content/uploads/PHAB-Standards-and-Measures-Version-1.0.pdf">http://www.phaboard.org/wp-content/uploads/PHAB-Standards-and-Measures-Version-1.0.pdf</a>	PHAB is working to promote and protect the health of the public by advancing the quality and performance of all public health departments in the US through national public health department accreditation. PHAB's vision is a high-performing governmental public health system that will make us a healthier nation. The integration of a quality improvement component into staff training, organizational structures, processes, services, and activities. It requires application of an improvement model and the ongoing use of quality improvement tools and techniques to improve the public's health.	-Think Tanks -Q.I. project work plans -Storyboards
The Ontario Council on Community Health Accreditation (OCCHA)	<a href="http://www.occha.org/quality_framework.htm">http://www.occha.org/quality_framework.htm</a>	To promote a culture of continuous quality improvement in public health units. Their mission is to promote accountability and excellence. The OCCHA Quality Framework for Public Health Units includes three focus areas (Community, Integration and Results) and six quality components (Leadership, Organizational Capacity, Workforce, Partnerships, Programs and Communication) in public health programs and services.	-Accreditation Process -Quality Surveys for PHU's -CQI Advisory Group
Accreditation Canada	<a href="http://www.accreditation.ca/uploadedFiles/About_Us/Strategic_Plan/Accreditation%20Canada%20Strategic%20Plan%202010%20to%202013.pdf">http://www.accreditation.ca/uploadedFiles/About_Us/Strategic_Plan/Accreditation%20Canada%20Strategic%20Plan%202010%20to%202013.pdf</a>	Accreditation Canada is committed to a pan-Canadian approach to quality improvement, including patient safety, in health care. Accreditation Canada will be a catalyst, provide leadership, and collaborate with stakeholders, in particular those with provincial and territorial jurisdictions, to work toward achieving alignment of quality standards and initiatives, to the greatest extent possible.	-Lean -Six Sigma -Governance Functioning Tool -Patient Safety Culture Tool -Worklife Pulse Tool
The Public Health Quality Improvement Exchange	<a href="http://www.rwjf.org/en/blogs/new-public-health/2012/12/public_health_qualit.html">http://www.rwjf.org/en/blogs/new-public-health/2012/12/public_health_qualit.html</a>	Public health departments are looking for ways to be more and more efficient and to eliminate waste and to make their limited budgets have the maximum possible impact. That's the major value of QI, to show what works and where you can improve. The purpose of PHQIX is to amplify information learned through QI initiatives and facilitate increased use of QI in public health practice.	-An online database of QI efforts conducted by governmental public health departments across the country -Search and query functions to enable users to find interventions and tools relevant to their own health department and community needs

			<ul style="list-style-type: none"> <li>-A forum for dialogue and learning among the site's users</li> <li>-Process Decision Program Chart</li> <li>-SMART Chart</li> <li>-Fishbone Diagrams</li> </ul>
Public Health Services and Systems Research (PHSSR)	<a href="http://www.publichealthsystems.org/search.aspx?q=quality">http://www.publichealthsystems.org/search.aspx?q=quality</a>	<p>“Public health services and systems research (PHSSR) aims to find those answers - and turn them into results by providing policy-makers and practitioners with information they need to make decisions. PHSSR examines questions that relate to the financing, organization and delivery of public health services – and how those factors translate to population health.”</p>	<ul style="list-style-type: none"> <li>-Webinars for QI in Public Health</li> <li>-Publications</li> <li>-QI sessions</li> </ul>
Public Health Practice-Based Research Networks (PBRN)	<a href="http://www.publichealthsystems.org/pbrn.aspx">http://www.publichealthsystems.org/pbrn.aspx</a>	<p>“The Public Health Practice-Based Research Networks (PBRN) Program is a national program of the Robert Wood Johnson Foundation that supports the development of research networks for studying the comparative effectiveness, efficiency and equity of public health strategies in real-world practice settings.</p> <p>Practice-based research networks have been used successfully to study medical care innovations and test quality improvement strategies in clinical settings. Building on this model, the Public Health PBRN Program, launched in 2008, is the first national initiative in the United States to develop PBRNs for research in public health practice settings.”</p>	<ul style="list-style-type: none"> <li>-Webinars</li> <li>-Monthly meetings</li> </ul>
American Public Health Association (APHA)	<a href="http://www.apha.org/programs/standards/">http://www.apha.org/programs/standards/</a>	<p>“APHA is committed to promoting quality improvements in public health systems in a comprehensive way across the nation. This effort is in keeping with the recent consensus statement developed by the Public Health Quality Forum (PHQF) under the leadership of the Assistant Secretary for Health (ASH), U.S. Department of Human Services (HHS).”</p>	<ul style="list-style-type: none"> <li>-QI brochures</li> <li>-Reporting on QI initiatives</li> </ul>
Turning Point Performance Management	<a href="http://www.turningpointprogram.org">http://www.turningpointprogram.org</a>	<p>To transform and strengthen the public health system in the United States to make the system more effective, more community-based, and more collaborative.</p>	<ul style="list-style-type: none"> <li>-Public Health Improvement Plans for certain states</li> <li>-Newsletters</li> <li>-Publications</li> <li>-Reports</li> <li>-Turning Point Initiatives</li> <li>-Turning Point Products</li> </ul>
Ministry of	<a href="http://www.health.gov.on.ca/e">http://www.health.gov.on.ca/e</a>	<p>“Continuous quality improvement should be the foundation of an</p>	<ul style="list-style-type: none"> <li>-Revitalizing Ontario’s Public</li> </ul>

Health and Long Term Care	<a href="http://www.health.gov.on.ca/en/common/ministry/publications/reports/capacity_review06/capacity_review06.pdf">n/common/ministry/publications/reports/capacity_review06/capacity_review06.pdf</a>  <a href="http://www.health.gov.on.ca/en/pro/programs/publichealth/performance/docs/technical_document.pdf">http://www.health.gov.on.ca/en/pro/programs/publichealth/performance/docs/technical_document.pdf</a>	effective performance management system for public health in Ontario”	<p>Health Capacity: The Final Report of the Capacity Review Committee (CQI chapter, p.24)</p> <p>-Accountability Indicators for Public Health</p>
National Network of Public Health Institutes	<a href="http://nnphi.org/tools/public-health-performance-improvement-toolkit-2?view=file&amp;topic=59#QI%20Tools%20&amp;%20Frameworks">http://nnphi.org/tools/public-health-performance-improvement-toolkit-2?view=file&amp;topic=59#QI%20Tools%20&amp;%20Frameworks</a>	Public Health Institutes is a nonprofit organization that improves the public’s health by fostering innovation, leveraging resources, and building partnerships across sectors including government agencies, communities, the health care delivery system, media and academic.	<p>-QI plans (examples) Tools &amp; Frameworks</p> <ol style="list-style-type: none"> <li>1.Aim statements</li> <li>2.Balanced scorecard</li> <li>3.Brainstorming</li> <li>4.Cause &amp; effect diagrams</li> <li>5. Process mapping</li> <li>6. Forcefield analysis</li> <li>7.Gantt Chart</li> <li>8. IHI Breakthrough seires model</li> <li>9.Inter-relationship diagram</li> <li>10.Kaizen</li> <li>11. Lean</li> <li>12. Logic Model</li> <li>13. Model for improvement</li> <li>14.PDCA</li> <li>15.Radar Chart</li> <li>16.Storyboard</li> <li>17.Tree Diagram</li> </ol>
Institute for clinical evaluative services	<a href="http://www.ices.on.ca/file/scorecard_report_final.pdf">http://www.ices.on.ca/file/scorecard_report_final.pdf</a>	Enhancing the effectiveness of health care for Ontarians through research	-Developing a balanced scorecard for public health

## Appendix D - Five Models of Quality Improvement (Powell, Rushmer &amp; Davies, 2009)

Model	Definition	Core Principles	Tools	Strengths	Limitations
Total Quality Management (TQM)/Continuous Quality Improvement (CQI)	"An integrated corporately-led programme of organizational change designed to engender and sustain a culture of continuous improvement based on customer-oriented definitions of quality" (Joss & Kogan, 1995).	<ul style="list-style-type: none"> <li>-Strongly emphasizes leadership and the need for management involvement on project teams</li> <li>-Sees quality improvement as a normal and integrated ongoing activity within the organization</li> <li>-Focuses attention on systems rather than individuals and emphasizes CI and avoiding mistakes before they happen</li> <li>-Emphasizes the important of measurement: data are a key tool for the analysis of variability in work processes and outputs</li> </ul>	<ul style="list-style-type: none"> <li>-Statistical process control</li> <li>-Cause &amp; effect diagrams</li> <li>-PDSA cycle</li> </ul>	<ul style="list-style-type: none"> <li>-Emphasizes determining and meeting the needs and wishes of patients/customers</li> <li>-Holistic approach to QI based on identifying and underlying causes of poor performance</li> <li>-Emphasizes fact-based management and scientific methodology</li> <li>-Emphasizes the need to improve quality on a daily basis</li> </ul>	<ul style="list-style-type: none"> <li>-Limited evidence about whether TQM/CQI works and whether it is more or less successful than other QI approaches</li> <li>-Difficulty to assess whether the reported improvement is attributable to or merely contemporaneous with the TQM/CQI interventions</li> </ul>
Business Process Reengineering (BPR)	"...the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service, and speed" (Hammer & Champy, 1995).	<ul style="list-style-type: none"> <li>-Change is driven from the top by a visionary leader who sets the direction for the requisite radical rethinking</li> <li>-Organizations should be arranged around key processes, not around specialist functions</li> <li>-Tasks and functions are aggregated and narrow specialists are replaced by multi-skilled workers in self-managed teams which are collectively responsible for</li> </ul>	-Redesign principles	<ul style="list-style-type: none"> <li>-Emphasizes on processes</li> <li>-Encourages more creative and bold thinking about existing ways of organizing care than other QI methods</li> </ul>	<ul style="list-style-type: none"> <li>-Need for leadership by senior managers and clinicians</li> <li>-Problems sustaining improvements</li> <li>-Human resource issues (remuneration, management, accountability arrangements, education and training needs)</li> <li>-Relies on a high degree of managerial power and</li> </ul>

		designing work processes and delivering performance			control
Institute for Healthcare Improvement (IHI) and rapid cycle change	<p>-Changes are not imposed; front line staff are closely involved in determining the problems and suggesting and testing potential solutions.</p> <p>-Bottom-up approach with small cycles of change</p>	<p>1.What are we trying to accomplish?</p> <p>2.How will we know that a change is an improvement?</p> <p>3.What changes can we make that will result in improvement?</p>	PDSA cycle	<p>-Control for risk and disruption</p> <p>-Take minimal time</p> <p>-Require little financial investment</p> <p>-PDSA is advantageous in design as they fit a particular set of local circumstance and meet the key criteria for sustaining organizational change</p> <p>-Draw on ideas of frontline staff</p> <p>-Low risk testing of change</p> <p>-Can be scaled up or down</p>	<p>-Issues with data collection</p> <p>-Changes can displace other part of the organization</p> <p>-Difficult to secure participation</p>
Lean Thinking	-Achieve waste reduction and efficiency while improving quality	<p>-Provide 'value' to the customer with minimal wasted time, effort and cost</p> <p><i>Categories of Waste</i></p> <ol style="list-style-type: none"> <li>1. Correction(defects)</li> <li>2. Waiting</li> <li>3. Transportation</li> <li>4. Overprocessing</li> <li>5. Inventory</li> <li>6. Motion</li> </ol>	<p>-5S</p> <p>-CANDO</p> <p>-Kaizen</p> <p>-Value stream mapping</p> <p>-PDSA</p> <p>-Six Sigma</p>	<p>-Encourages staff to look at processes in a customer-or-patient-focused way</p> <p>-Main focus can be addressed in conjunction with other tools and approaches</p> <p>-Bottom-up change process</p> <p>-Assist in identifying and addressing different types of waste in processes</p>	<p>-Requires that demand can be accurately predicted</p> <p>-Requires you to 'define' the customer</p> <p>-Staff believe that it emphasizes cost cutting and staff reduction (job security)</p>

		7. Overproduction			
Six Sigma	Aims to eliminate defects and reduce variation in a process in order to improve the output and outcomes for the system	-Statistical tools and analysis to identify the root cause of variation	-Define, measure, analyze, improve, control (DMAIC) methodology  -Process mapping  -Statistical process control  -Theory of constraints	-Statistical process control have the potential to improve a range of processes at the individual and organizational level  -Analyzing stable processes in an organization	-Effective use of SPC depends on the existence of a number of conditions which are difficult to achieve in a health setting  -Significant risks  -Incorrect application of SPC can lead to erroneous conclusions  -Does not address the cultural or interpersonal aspects of QI  -Examines individual process instead of system-wide processes

## Appendix E

## Research Summaries

Reference	Purpose of Study or Research Question	Setting (country and organization type & number of orgs)	Organization Level (internal process, whole unit/program, region)	Study Design	QI Principles/tools and application summary (so the “what did they do”) What dimension of quality are they trying to improve?	Outcomes
Beitsch et al., 2010	To assess the current status of QI within local health departments and examine the characteristics associated with such QI efforts.	545 local health departments across the USA 82% response rate	QI in each local health departments	Organizational report of the LHDs across USA	QI module included along with the core instrument in NACCHO’s 2008 National Profile of local health departments (profile) survey of LHDs.	-55% of LHDs engaged in performance & QI activities in last 2 years -44% used framework (21% TQM, 12% balanced scorecard, 11% Baldrige, 10% Turnpoint performance management) - 68% engaged in QI used QI tools in last year (51% PDSA, 50% process map, 41% fishbone, 37% control chart) - 12% reported using whole package in last year - 78% reported that some or all managers received QI training -65% reported that managers had provided QI training to staff
Bender et al., 2007	To make recommendations for a voluntary national accreditation program for state and local health departments (to describe key aspects of steering committee recommendations made in a previous report of the <i>Exploring Accreditation Project</i> )	informed by 10 month inquiry with 650 PH professionals	National-US	Report summarizing key aspects of steering committee recommendations	Overall quality and performance improvement through making public health departments accountable- accreditation is a tool for QI	There is a general consensus that accreditation is needed and that QI and performance improvement would be the most important benefits of this
Bender & Halverson, 2010	Discuss the specific components necessary to achieve transformational change within public health departments as a means for creating sustained performance	USA State and local PH departments	Organization Wide	Commentary	Offer thoughts based on familiarity with lessons learned from state and local PH experiences, as well as other sections, deploying QI initiatives including	1. Public Health Accreditation Board (PHAB) Development: designing a model -PHAB conducted a 14-month exploration process to determine the feasibility and desirability of a national accreditation process -Created draft standards and measures, assessment process and application process for state, local and tribal health departments to be able to apply for

	improvement and better outcomes in the health of the community.				accreditation	<p>accreditation (Beta test of the products being conducted until 2010, with results available in 2011)</p> <ul style="list-style-type: none"> <li>-Achievement of accreditation will provide a mechanism for recognizing high-performing health departments, that despite the demands of their work take a step back to ensure the inclusion of QI to perform for effectively and efficiently</li> <li>2.Relationship between QI and accreditation             <ul style="list-style-type: none"> <li>-Multi-State Learning Collaborative (MLC) has engaged 16 states in a learning laboratory to learn how to implement QI practices from one another</li> <li>-Teams test and measure practice innovations and then share their experiences in a an effort to accelerate learning and widespread implementation of best practices (rapid cycle improvement)</li> <li>-Assessment tools include: National PH performance standards program, National association of County and city health officials local health department self-assessment tool for accreditation preparation</li> <li>-Accreditation provides a framework in which evidence-based PH is expected, documented and rewarded</li> </ul> </li> <li>3.Linking accreditation and QI to better community-level health status outcomes             <ul style="list-style-type: none"> <li>-Must continually evaluate the accreditation model to ensure it is meeting the needs</li> <li>-Developing follow-up plans related to their specific opportunities for improvement</li> <li>-Building online learning communities of practice modeled on the work of other PH departments</li> </ul> </li> </ul>
Bialek et al., 2010	Sharing lessons learned in the implementation of QI	USA 200 QI consultations over the last decade	All organizational levels	Commentary	Observations of nearly 200 QI consultations provided by the PHF and its consultants over the past decade.	<ul style="list-style-type: none"> <li>-Public health departments are more engaged in QI due to upcoming accreditation</li> <li>-Use well established assessment and performance management tools</li> <li>-Tie information and data to goals</li> <li>-Set priorities to avoid confusion</li> <li>-Ensure a clear vision: Integrate/align operational and strategic goals and objectives</li> <li>-Shared insights: document process and share best practices</li> <li>-Eliminate spectacles: maximize the effectiveness of QI</li> <li>-Select experienced facilitators</li> <li>-Identify champions and designate health department teams and team leaders</li> <li>-Using QI tools &amp; processes is not a work add-on but a replacement for less effective activities within the</li> </ul>

						<p>health department operations</p> <ul style="list-style-type: none"> <li>-QI process should be simple and sustainable, allowing teams to start small , gain comfort with QI processes and tools and then expand the complexity of the improvements as teams and leadership gain critical skills</li> </ul>
Corso et al., 2010	To describe how the National Public Health Performance standards program NPHPSP has promoted QI through its instruments and guidance and how it has continually strengthened the focus on QI over the years.	USA Centers for Disease Control and Prevention’s National Public Health Performance Standards Program (NPHPSP)	National	A <b>review</b> of current state- instruments that were used in 2005 to assess presented challenges when trying to use assessment to improve performance, therefore Version 2 was developed which seems more promising	Version 2 of NPHPSP instruments and enhanced guidance are discussed as progress where version 1 “failed”	<ul style="list-style-type: none"> <li>- conducting a NPHPSP performance assessment is intended to be an important step in a broader improvement process.</li> <li>There is an understandable challenge in conceptualizing QI for a public health system, given the diversity of organizations that are part of each system.</li> <li>- Another challenge has been the understanding and application of QI concepts and techniques among the public health workforce- need stronger QI culture</li> </ul>
Davis et al., 2010	To understand what tools, resources, and assistance are needed for local health departments (LHDs) to successfully engage in quality improvement (QI) and to generate examples of successful QI efforts	USA NACCHO-with funding from CDC Included 66 local health departments between 2007-2009	Internal process	Compared sites to national standards	Measured the sites against National QI standards -got participant feedback to determine the usefulness of resources that were provided for QI efforts	<ul style="list-style-type: none"> <li>-Participating LHDs lack a common understanding of formal QI.</li> <li>-Several existing QI resources specifically geared to public health are very useful, and in-person assistance is highly valued</li> </ul>
Duffy et al., 2010	Review of Quality in Public Health	USA		Commentary		<ul style="list-style-type: none"> <li>-When starting QI journey, organizations use small qi, which means striving for quality in a limited or specific improvement project area (using value map, key quality characteristics, analyze process performance, reengineer the process and lock in improvements)</li> <li>-Use model for improvement</li> <li>-BIG QI is a strategic or macro systems approach to implementing quality (into daily work and agency wide)</li> <li>-Use tools such as: MAPP, Baldrige Criteria, Lean, Turning Point</li> <li>-Macro-, Meso, &amp; Micro-level of CQI relate to BIG QI and small qi</li> <li>-Tools: flowcharts, histograms, force field analysis, interrelationship digraphs, Quality Function Development, Lean Six Sigma</li> <li>-Individual qi practice by QI professionals within the</li> </ul>

						scope of their work assignment
Fallon et al., 2010	To make suggestions for how we can improve PH for 2026	USA	Whole process	NONE	Speculated on the current system and what needs to happen in the future	<ul style="list-style-type: none"> <li>-Suggests that leaders need to step up in their organizations and create environments for change</li> <li>-Need collaboration and a common mission</li> <li>-Incentives and training reinforce adoption of best practices</li> <li>-PH staff turned into researchers determining root causes of problems</li> </ul>
Gearing et al., 2013	Presents the methods used by the MN PBRN to identify a select number of items from the QI maturity tool as the basis for calculating organization and system level QI maturity scores	USA Minnesota	All	Self-report survey	<p>QI maturity tool was administered to all the employees of the Minnesota Department of health in June 2011 and re-administered a subset of 10 items to all employees as a part of a larger survey in October 2012</p> <ul style="list-style-type: none"> <li>-Selected 10 questions that spanned the 3 domains of culture, alignment/spread and capacity/competency that aligned with national standards of the Public Health Accreditation Broad</li> <li>-Numerical value assigned to each response (strongly agree=5, strongly disagree=1)</li> <li>-Summed up and the averages to create a score</li> </ul>	<ul style="list-style-type: none"> <li>-73% response rate with completion rate of 92% for QI maturity tool</li> <li>-10-item subset was 65% with division specific response rates ranging from 40-100%</li> <li>-Decrease in the # of respondents using the "I don't know" response category</li> <li>-Median maturity score for MDH in 2011 was 2.28 and the division-specific median scores ranged from 1.71-3.14</li> <li>-By comparison in 2012, the median MDH QI maturity score rose to 2.7 and the division specific median scores ranged from 2-3.3</li> <li>-MDH median score was slightly lower when all employees were included in analysis compared to when the score was generated for only those employees classified as managers/supervisors (2.28 vs. 3.0)</li> </ul>
Gorenflo, 2010	NACCHO shares lessons learned in QI to LHD that wish to embark on the QI journey	USA, local health departments (general)	All organizational levels	Summary	NACCHO cohorts share their lessons learned for success	<ol style="list-style-type: none"> <li>1. Start small with problems that are relatively easy to tackle. <ul style="list-style-type: none"> <li>-Determine and prioritize criteria to guide the identification of what problem to address through QI</li> <li>-Problem should be simple, easy to complete in short period of time, etc.</li> <li>-Over time, staff have more experience with QI and can move to bigger more long term issues</li> </ul> </li> <li>2. Know what you are doing <ul style="list-style-type: none"> <li>-Set aside time to document and analyze processes as it yields rich information about issues that may</li> </ul> </li> </ol>

						<p>not be considered or tended to</p> <p>3. Get the facts</p> <ul style="list-style-type: none"> <li>-Do not presume that there is a reason for a certain problem, find the root cause</li> <li>-Use a root cause analysis to ask why instead of jumping to conclusions</li> </ul> <p>4. Leave no staff behind</p> <ul style="list-style-type: none"> <li>-Staff need to be able to freely offer their thoughts and opinions</li> </ul>
Gunzenhauser et al., 2010	<p>To show the unique approach to QI taken by a health department in LA</p> <p>To describe the evolution and status of LA county's current efforts, as well as their vision for future improvements</p>	Los Angeles County	Internal	Review- describe current state	Show that in order to achieve effective QI, it is important to look at professional practice, performance improvement, and public health science	<p>Three Areas (professional practice, performance improvement, and public health science) and broadening the focus of quality-improvement efforts to include these three areas (rather than performance improvement alone) provides additional opportunities to address key infrastructure issues that may affect the quality of services that are provided to the public and, thus, health outcomes</p>
Hamm, 2007	Realize the benefits of developing credible accreditation programs as a means of defining quality or acceptable standards of performance in PH	USA	Report to Robert Woods Johnson Foundation			<ul style="list-style-type: none"> <li>-Defining and measuring quality indicators, educating potential applicants in best practices in a particular field, and facilitating comparisons and benchmarking on the part of applicants and other stakeholders</li> <li>-Accreditation standards have 3 categories: structure, process or operation and outcome or performance</li> <li>-Use PDCA cycle (Deming or Shewart cycle)</li> <li>-PH accreditation programs can act as change agents and help modify the behaviour of applicant organizations to place more emphasis on continuous quality improvement</li> <li>-Securing a commitment from the top staff and volunteer leadership is one of the important attributes of initiating the accreditation process</li> <li>-Accreditation standards should focus n the entire applicant organization including its structure, operation, performance, ethics and conduct</li> <li>-Accreditation standards should be established with formal measurement components even if achievement with specific benchmarks is not required at the beginning of this process</li> <li>-Standards should emphasize the development of quality management systems that involve preventive actions, corrective action, constant monitoring and continuous improvement</li> <li>-Strategic planning standards should be a QI component of any accreditation program geared</li> </ul>

						<p>toward public health organizations</p> <ul style="list-style-type: none"> <li>-PH accreditation programs should be incorporating QI concepts into their own structure and operation to ensure a continuous improvement focus in all accreditation activity</li> <li>-Should encourage CQI by rewarding applicant that exceed or surpass required standards</li> <li>-Build incentives</li> <li>-Pursue all avenue of training and education</li> <li>-Research/evaluation components should be built into all PH accreditation efforts</li> </ul>
Joly et al., 2007	To review whether accreditation programs are generally linked to positive outcomes, and to develop a logic model that can be used as a tool to convey the breadth of research needed to link accreditation to health outcomes	USA	Large scale	A review and model development	Reviewed the current state of the link between accreditation and outcomes	<p>Found there was not much research in this area but seems cautiously positive</p> <ul style="list-style-type: none"> <li>-Developed the logic model (Figure 1) showing how inputs (i.e. an accreditation program) may be linked to short term, intermediate, and long term outcomes</li> </ul>
Joly et al., 2010	<p>Overview of the MLC, a methodological description of its evaluation and preliminary findings</p> <ol style="list-style-type: none"> <li>1.To what extent and how have participating states positioned themselves for national voluntary accreditation?</li> <li>2.Are learning collaboratives an effective vehicle for enhancing quality improvement capacity and application in health departments and achieving targets</li> <li>3.What factors are associated with successful quality improvement initiatives</li> <li>4. Does a quality</li> </ol>	USA	PH in general	Commentary	<p>Data collection include quarterly reports submitted by all grantees</p> <p>An annual survey administered to all state and local health departments in the 16 participating states</p> <p>Case studies in selected states working on specific MLC targets areas</p> <p>Follow-up survey with mini-collaborative members in each state</p> <p>Key informant interviews</p> <p>Participant survey administered to all MLC partners and grantees</p>	<ul style="list-style-type: none"> <li>-Grantees are actively engaged in PHAB related activities and PH agencies are preparing for national voluntary accreditation</li> <li>-82% of LPHA reported being familiar with efforts to develop a program for national voluntary accreditation</li> <li>-27% indicate they have begun to prepare for national accreditation</li> <li>-54% of local respondents indicate that they would seek accreditation under the national voluntary program and 29% report plans to pursue national accreditation within the first 2 years of the programs initiation</li> <li>-56% of LPHA report implementing a formal process to improve the performance of a specific service or program, process or outcome</li> <li>-30% indicate that their PH agency has been engaged in established and consistent efforts to improve the quality of services for less than 2 years</li> <li>-56% report implementing fewer than 3 QI projects</li> <li>-QI tools used: brainstorming, priority setting, flow charts, PDSAs, trend charts, run charts, control charts, fishbone diagram</li> <li>-89% of LPHA report that the impetus for QI has been largely driven by an internal desire to make</li> </ul>

	improvement initiatives in one MLC target area lead to spread in another area of the health department					services and outcomes better -49% of leaders and 34% of staff report training in basic methods for evaluating and improving quality -23% report routinely using systematic methods to understand root causes of problems -65% report routinely using best or promising practices when selecting intervention -57% report routinely monitoring the quality of agency programs and services
Kahan et al., 1999	To explore the potential benefits of CQI in health promotion and some of the issues	Canada	Overall review, but state that the decision to adopt CQI is based on the decision of individual organizations	Speculation	Speculated on whether CQI is a good fit for health promotion	There is no proof at this point that CQI is effective in health promotion, however based on this article it should be considered. Many things been to be taken into consideration in order for CQI to be a good fit such as the context, organizational goals...
Leep, Beitsch, Gorenflo, Solomon & Brooks, 2009	To assess the current deployment of quality improvement approaches within local health departments and gain a better understanding of the depth and intensity of QI activities	Local Health Departments USA	Local Health Departments		-Qualitative and quantitative -Respondents from 2005 NACCHO who indicated that their LHD was involved in QI activities received a follow-up survey in 2007 -Convenience sample of 30 LHDs were selected for interview	-62% response rate -81% of LHDs reported QI programmatic activities, 39% occurring agency wide -74% of LHD had staff training in QI methods -28% had external funding source for QI -LHDs that are serving large jurisdictions are more likely to engage in QI activities
Lenaway et al., 2007	A national accreditation program for state and local public health agencies could be the vehicle that would elevate, and bring recognition to, our effectiveness, efficiency, and community health impact.	USA, state & local public health agencies	All organizational levels	Editorial	CDC is looking to create an accreditation process for public health organizations in order to bring consistency, accountability and quality improvement to public health.	-Strongly believe that the accreditation model's emphasis on quality improvement is essential in creating the capacities and competencies necessary to leverage political and community investments in public health. -Getting accreditation would convey to funders and policy makers that PH has made a commitment to quality and performance that exceeds standards of excellence Steps for accreditation 1. CDC provide necessary financial support to move the process from start to finish 2. Having incentives so that organizations will join 3. CDC can provide knowledge and resources to aid in the development of a national program.
Lotsein et al., 2008	Describe a successful model for promoting QI in PHEP – The	USA 5 State and local health departments		Team reports, online survey & team interviews for	1. Adapted IHI Breakthrough QI learning collaborative	Health Departments' Experiences with QI: (1) Command & control: organization reach & mobilize staff and activate the ICS quickly and to

	<p>Promoting Emergency Preparedness and Readiness for Pandemic Influenza, a pilot QI learning collaborative specifically around pandemic influenza preparedness and discuss lessons learned about what is needed to promote QI approach</p>			<p>evaluating team performance</p>	<p>model for PH agencies for overall objective of improving pandemic influenza preparedness                  2. Each agency made a team                  3. Expert panel of nationally recognized public health leaders developed a conceptual framework for PHEP and adapted a model for applying QI to PHEP                  4. Teams used the PREPARE framework to identify focal points for QI efforts</p> <p>TOOLS:                  (1) aims &amp; goals                  (2) performance measures                  (3) strategies and ideas for changes                  (4) PDSA cycles                  (5) Process maps</p>	<p>work effectively in its response roles while coordinating with relevant partners                  (2) Disease control and treatment: implement community mitigation strategies to implement rapid triage and to support the surge capacity of the medical system to care for those who are ill                  (3) Risk communication: during an emergency, health departments must quickly disseminate critical health messages to the public                  Assessment of the collaborative experience:                  (1) Improved agency preparedness                  (2) Successful adoption of QI methods for PHEP                  -4.2 of 5 indicate that they would use QI methods in their future work                  Policy Implications:                  (1) Clarify public health processes and develop reliable measures                  (2) Create the right incentives                  (3) Create a base of expertise in QI in PH                  (4) Demonstrate and evaluate large scale QI efforts</p>
<p>Madamala et al., 2010</p>	<p>1. Explore how consistently QI methods were used across SPHA's                  2. Observe the presence of a QI management philosophy.                  3. Explore how SPHA's PM and QI processes were affected by factors previously found to influence LPHA performance</p>	<p>USA                  Survey was sent to senior deputies in the 57 state and territorial health agencies (50 states, 6 territories and district of Columbia)</p> <p>Response rate of 89.5%</p>	<p>All organizational levels</p>	<p>Survey</p>	<p>ASTHO conducted a web-based State Public Health Survey (SPHS), between October and December 2007 to document the structures and functions of state health agencies</p> <p>-72-item questionnaire</p> <p>1. Respondents noted if they had performance management or QI process and they</p>	<p>-80.4% of SPHAs has a state health improvement plan with 23.5% completing that plan in the last 3 years and 56.9% in more than 3 years before the survey                  *68.2% developed the plan by using the results of their state health assessment                  -59% said their state plan linked to their local health improvement plan, with 29.5% linked to all local plans and 29.5% linked to some local plans                  -96% of SPHA respondents reported intentions of updated the plan within the next 3 years                  -68.2% developed the plan by using the results of their state health assessment                  -82.4% has QI process in place, with 9.8% implemented dep.-wide, 29% partially dep.wide, 21.6 fully implemented for specific programs and 33.3% partially implemented for specific programs                  -76% PM process in place, 16% fully implemented dep.wide, 30% partially dep.wide, 10% fully for</p>

					<p>could explain them (definition was based on Turning Point Performance Management Collaborative)</p> <p>2.Extent that QI and PM were practices, observations of QI practice patterns in particular areas, priority ranking f QI and PM by respondents, and connection between QI process with organizations mission and strategic plan</p> <p>3.Capacity measured by SPHA staff size, leadership (educational degree, executive management experience and year of ph practice of the SHOs)</p>	<p>specific programs, and 26% partially specific programs</p> <ul style="list-style-type: none"> <li>-Clinical practice areas are generally implemented each of the four PM process more frequently than did nonclinical practice areas</li> <li>-Nonclinical areas were management areas</li> <li>-QI used 56% of the time in four clinical areas</li> <li>-38% of SPHAs use QI process for management practices</li> <li>-Only 3 SPHAs ranked QI/PM as their top priority</li> <li>-As staff size increased, the percentage of SPHAs that have QI and PM processes increase</li> </ul>
Mason et al., 2010	To describe the methods and results of using performance data for quality improvement at the statewide system level, the state health department level, and LHD level.	Washington State	State wide	Review what was done in one county and one state and whether their initiatives were successful	<p>MLC grant supported systemwide Performance Measures and the Chlamydia Collaboratives as well as individual local and state health departments to take improvement action on their individual site performance results- they describe 2 of these QI efforts in depth in this article.</p> <ul style="list-style-type: none"> <li>-used fishbone diagrams to help identify root causes of the problem, and Pareto charts to</li> </ul>	<p>Performance reviews indicated huge improvements (ex. Standard: tracking of program performance measures raised from 19% to 84%) - improvement in developing and sustaining QI infrastructure and processes;</p>

					understand the frequency of factors related to the problem, Rapid cycle improvement-PDSA -Developed a QI Council, developing an annual QI plan and calendar, and an annual QI evaluation	
Randolph & Lea (2012)	The purpose of this paper was to use the same terms and methods for QI and CQI across all public health departments in order to facilitate collaboration between departments and system partners.	North Carolina, USA	Organization wide	Editorial		-Clarify key terms and concepts by providing definitions and comments (QI, performance management, CQI, QA, and public health accreditation) -Describes drivers of QI in public health including: influential national organizations, accreditation -Describes constraints of QI in PH including: lack of knowledge and experience, organizational culture and paradigms -Describes important opportunities: build QI capacity within the public health workforce, importance for graduate and undergraduate programs in public health to incorporate QI knowledge and skills into the curricula, and governmental fiscal austerity that pressure agencies to do more with less.
Randolph et al., 2012	Describes a local public health agency's multiyear effort to establish an infrastructure and organizational culture for continuous quality improvement, using data from interviews with the agency's senior leaders, managers, and frontline staff.	USA, North Carolina	Organization Wide	Case study	Describes Cabarrus Health Alliance's 10-year CQI journey, from getting started in quality improvement to developing a CQI infrastructure and changing the organization's culture.	Lessons learned include the importance of setting stretch goals, engaging leaders at all levels of the organization, empowering frontline staff to make changes, providing quality improvement training for staff and leaders, starting with small projects first, spreading quality improvement efforts to involve all parts of the agency, and sustaining momentum by creating a supporting infrastructure for continuous quality improvement and continually initiating new projects.
Riley & Brewer, 2009	Review and analyze quality improvement (QI) techniques in police departments as a	USA 6 police departments 1 sheriffs department		Qualitative comparative analysis using mixed methods evaluation design	-Literature review and interviews with academic experts in law enforcement	-QI is characterized by an integrated management approach, a comprehensive system for the entire agency, a top management focus on results, a continual and renewable focus on improvements,

	<p>background for assessing ways to introduce QI into public health departments.</p>	<p>2 state level police executives</p>		<p>based on semistructured interviews and document review</p>	<p>management and senior police officials          -10-item interview guide developed to gather information from participants over the telephone</p>	<p>and emphasis on community measures and being intensely proactive.          -Management system is based on timely intelligence, rapid response, relentless follow-up, and holding people accountable.          -Changing organizational culture from the inside out          -Use leadership principles, quality techniques and continual improvement</p> <p><u>Barriers to QI</u>          -police unions and civil service          -perception that QI was an academic concept          -resistance to change due to disagreement on measurements          -lack of time          -poor relevance          -low priority by leadership</p> <p><u>Enablers of QI</u>          -Political leadership          -Performance coupled with top agency leadership that established a clear vision, provided clear direction, constantly communicated the mission and expected vigilance in accountability</p> <p>-Police departments have introduced QI both intended and unintended outcomes which can be managed through effective leadership          -Metrics and measurements are very important in the implementation of successful QI programs          -profit motive found in for profit industry is not a deterrent to implementing QI in government agencies</p> <p><u>Recommendations for QI in PH</u>          1. Implement QI as a comprehensive management philosophy rather than a project-by-project approach          2. Top officials must set a vision for the agency and exhibit leadership          3. Use the lessons from police departments to overcome barriers          4. The focus on QI should not be narrow and solely focus on numbers. The focus should be on mission and vision, continuously.          5. Find creative ways to secure the resources necessary to implement QI in your agency          6. Selectively integrate proven methods from police departments and medical care          7. Build on existing tools and capabilities currently available, which are specifically developed for public</p>
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						health and lessons from public health departments that have applied QI techniques to improve their processes, capacity, and health outcomes. 8. Conduct a self-assessment for QI readiness in your agency
Riley et al., 2009	To test the feasibility and assess the preliminary impact of a unique state- wide quality improvement (QI) training program designed for public health departments.	-One hundred and ninety-five public health employees/managers from 38 local health departments throughout Minnesota -June 2007-March 2008	State-wide invitation to local health departments	Piloted and evaluated a QI distance education program	Developed a distance training program with expert facilitation -selected 8 projects -all participants got comprehensive training, 65 members got experiential learning through the QI project -day long learning sessions -Project teams given action periods with specific assignments -mixed methods evaluation	- 1) high levels of satisfaction with the training sessions, (2) increased perception of the relevance of the QI techniques, (3) increased perceived knowledge of all specific QI methods and techniques, (4) increased confidence in applying QI techniques on future projects, (5) increased intention to apply techniques on future QI projects, and (6) high perceived success of, and satisfaction with, the QI projects. -moderate to large improvements in quality and/or efficiency for six out of eight projects.
Riley et al., 2010	Discuss a definition of QI in PH and describes a continuum of QI applications for PH departments	USA, public health departments (General)	Project level QI (internal) & Organization-wide QI (whole department)	Commentary	Accreditation Coalition, a group of organizations supported by the Robert Wood Johnston Foundation & the CDC came to a consensus on a common definition for QI in PH	"Quality improvement in public health is the use of a deliberate and defined improvement process, such as Plan-Do-Check-Act, which is focused on activities that are responsive to community needs and improving population health. It refers to a continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality in services or processes which achieve equity and improve the health of the community".
Riley et al., 2010	Discuss the specific component necessary to achieve the transformational change within PH departments as a means for creating sustained performance improvement and better outcomes in the health of the community	Not specifically stated	All levels	Review	Review from a number of articles. Authors discuss key points in their summary.	-Transformational change for PH departments need to be designed and modified to achieve high performance -BIG QI and small qi are required to achieve transformational change -small qi is focused on improving a specific process -BIG QI is a management approach to improve the entire organization and the culture(improve outcomes and add value to PH processes) -Change is not the equivalent of improvement. -PH leaders need to address issues of leadership buy-in, cultural change and QI techniques

						<p>-Changing mindsets, attitudes, and culture in organizations requires different techniques applied over time, even after the project has finished</p> <p>-Transformational change begins with a vision; identifying where the organization needs to go to meet changing external needs and to pursue the relentless elimination of waste</p> <p><u>Key Learnings</u></p> <p>-Process improvement is led from the top but occurs from the bottom up.</p> <p>-Engage those who do the QI work</p> <p>-Goals are achieved through improved processes by creating better value streams</p> <p>-Better skills = better change</p> <p>-Right investment = right impact</p> <p>-To achieve maximum organizational effectiveness, it is necessary to standardize approaches to provide PH services</p> <p>-Transformational change occurs from the top down</p> <p>-Process improvement occurs from the bottom-up</p> <p>-Transformational change is possible in PH when small improvements are linked with large scale management changes to continually improve PH performance resulting in better population outcomes</p>
Swain et al., 2004	The focus of the study was to report on the results of a pilot project efforts to improve the implementation and quality of performance reviews for staff within their health department using a 360-degree feedback model.	USA	Administrative QI	Case study	The 360-degree feedback model was designed to reflect on the values of the organization as well as a focus on positive staff development	<p>The results of this QI initiative were sufficient to recommend a full adoption of this 360-degree feedback model.</p> <p>The new tool helped to improve workforce management.</p>
Wright et al., 2012	“Quality improvement project initiated to increase breast feeding rates by enhancing the overall environment that support breast feeding at the Beaufort County Health Department”	USA	Local Health Department	Case study	<p>-QI 101 training program</p> <p>-Model for improvement</p> <p>-PDSA cycles</p> <p>-Small scale implementation</p> <p>-Surveys</p> <p>-Open ended questionnaires</p> <p>-Interviews</p>	<ol style="list-style-type: none"> <li>1. Creating a nurturing location to breast-feed while at the health department</li> <li>2. Actively telephoning new mothers to provide breast feeding support</li> <li>3. Incentivizing adoption of educational messages by providing a breast feeding tote bag</li> <li>4. Promoting new WIC food packages</li> </ol> <p>Involve staff in QI planning and implementation improved breast feeding improved for WIC clients during the year following project completion</p>

## Appendix F

### *Collaborative Activities*

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**Multi-State Learning Collaborative:** In 2007, during the second phase of the Multi-State Learning Collaborative, the state of Minnesota joined the collaborative.[43, 44] The Multi-State Learning Collaborative aims to inform the national accreditation program, incorporate quality improvement practice into public health systems and promote collaborative learning across states in the United States in order to expand the knowledge base in Public Health.[45] At this time, the Minnesota Public Health Collaborative for Quality Improvement was established as a partnership among the Minnesota Department of Health, the local Public Health Association, and the University of Minnesota School of Public Health with the aim of building a public health workforce to use quality improvement tools and methods in order to establish a performance management system that is aligned with the national accreditation standards. [14] This collaborative organized eight projects that involved 34 local health departments to test the systematic integration of quality improvement tools and techniques based on the model for improvement.[14] Through this collaborative, approximately 250 state, local, and university public health professional have been trained in quality improvement methods and 34 local public health departments now have quality improvement initiatives.[14] Seven of the eight projects undertaken during this initiative throughout the state have been proven successful.[14] A survey was conducted in order to determine if the Minnesota Public Health Collaborative for Quality improvement was useful to the state of Minnesota and the results are as follows:

- 75% of respondents indicated that quality improvement was relevant to their organization
- 60% strongly agreed that the collaborative gave them useful information in regards to QI
- 72% intended to use QI in their future projects
- 79% rated management's interests in QI as very supportive

**North Carolina Centre for Public Health Quality:** The North Carolina Centre for Public Health Quality is a collaborative training program of the Centre for Public Health Quality that aims to “create an infrastructure to foster and support continuous QI and learning among all public health professionals in North Carolina”. This program does so by providing QI training and tools, sharing best practices, providing performance measurement and feedback, leading in QI initiatives and engaging leadership at the North Carolina Division of Public Health as well as at the local level. Some of the tools this program offers include: training programs, return on investment model, QI toolbox, and on site lean kaizen events.

**National Network of Public Health Institutes:** The National Network of Public Health Institutes is a non-profit organization that improves the public’s health by fostering innovation, creating resources and building partnerships across a number of sectors. This organization has a number of resources for continuous quality improvement that can be applied to the public health sector. They have templates for tools such as: aim statements, balanced scorecard, cause and effect diagrams, process mapping, forcefield analysis, Gantt chart, Kaizen, Lean, logic model, model for improvement, PDCA, radar chart, story board and tree diagram. On top of this, the organization includes real case studies of QI initiatives that are going on at different levels in the US.

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