



March 2013

## Monitoring QI Maturity of Public Health Organizations and Systems in Minnesota: Promising Early Findings and Suggested Next Steps

Kimberly J. Miner Gearin

*Minnesota Department of Health, Kim.Gearin@state.mn.us*

M. Elizabeth Gyllstrom

*Minnesota Department of Health, beth.gyllstrom@state.mn.us*

Brenda M. Joly

*University of Southern Maine, bjoly@usm.maine.edu*

Renee S. Frauendienst


*Stearns County Department of Human Serv, Renee.frauendienst@co.stearns.mn.us*

Julie Myhre

*Carlton-Cook-Lake-St. Louis Community Health Board, myhrej@communityhealthboard.org*

William Riley

Follow this and additional works at: <https://uknowledge.uky.edu/frontiersinphssr>  
*Arizona State University, william.j.riley@asu.edu*

 Part of the [Health and Medical Administration Commons](#), [Health Policy Commons](#), [Health Services Administration Commons](#), and the [Health Services Research Commons](#)

### Recommended Citation

Miner Gearin KJ, Gyllstrom M, Joly BM, Frauendienst RS, Myhre J, Riley W. Monitoring QI Maturity of Public Health Organizations and Systems in Minnesota: Promising Early Findings and Suggested Next Steps. *Front Public Health Serv Syst Res* 2013; 2(3).

DOI: 10.13023/FPHSSR.0203.03

This Article is brought to you for free and open access by the Center for Public Health Systems and Services Research at UKnowledge. It has been accepted for inclusion in Frontiers in Public Health Services and Systems Research by an authorized administrator of UKnowledge. For more information, please contact [UKnowledge@lsv.uky.edu](mailto:UKnowledge@lsv.uky.edu).

---

# Monitoring QI Maturity of Public Health Organizations and Systems in Minnesota: Promising Early Findings and Suggested Next Steps

## Abstract

Public health departments and systems are increasing investments in quality improvement. This paper presents methods used to identify a select number of items from a previously validated QI Maturity Tool as the basis for calculating organizational and system-level QI maturity scores that could be followed over time. Findings suggest that the abbreviated tool measures variation in QI maturity across LHDs, and differences in scores among divisions within a state health department. Minnesota has incorporated the abbreviated tool into an annual reporting system for the MN Local Public Health Act, thereby enabling stakeholders to monitor a system median score and distribution of scores every year. Such information will be used by state and local partners to identify opportunities for system-wide improvements.

## Keywords

Quality Improvement, QI Maturity, Public Health, Practice Based Research Network

## Cover Page Footnote

The authors express appreciation to the local health directors and administrators, and employees of the Minnesota Department of Health, who participated in this study. Authors also acknowledge the crucial role of Minnesota Public Health Research to Action Network. This practice-based research network includes members of the Minnesota Local Public Health Association, the State Community Health Services Advisory Committee, the Minnesota Department of Health, and the University of Minnesota, School of Public Health. This study was supported by the national Public Health Practice-Based Research Network Program of the Robert Wood Johnson Foundation.

## INTRODUCTION

Managing performance and strengthening accountability have emerged as prevailing themes confronting public health (1). Several studies have reported substantial and concerning variation in the services and performance of local health departments (LHDs) nationwide (2). The literature and national standards emphasize that quality improvement (QI) should pervade the health department to increase efficiency and effectiveness, and thereby reduce unnecessary variation (3). Yet, establishing and sustaining QI maturity necessitates transformational changes in an organization's structure and management mindset, as well as many years of collaborative, organization-wide effort (1).

The Multi-State Learning Collaborative was supported by the Robert Wood Johnson Foundation to improve public health services by implementing QI practices. The impact of the collaborative was evaluated, in part, through the 37-item *QI Maturity Tool*, developed by the University of Southern Maine and administered to top public health officials in 16 participating states. The tool, which continues to undergo testing and refinement, spans four domains (organizational culture, capacity/competency, practice and alignment/spread) to gauge the QI sophistication of public health departments (4).

Minnesota's practice-based research network (PBRN) viewed this tool as a potentially valuable resource to monitor trends in organizational and system-wide QI maturity. Yet local public health directors believed it would be important to expand administration of the survey beyond the executive level in order to reflect the QI principles of broad engagement across all levels and areas of an organization. Local directors further advised that a shorter instrument would facilitate broad participation in the survey, and support the frequent administrations desired to monitor progress. Given the level of on-going commitment needed to transform an organization, local directors advised that efficient measurement of progress – even incremental progress – would be important to sustain staff morale and momentum.

This paper presents methods used by the MN PBRN to identify a select number of items from the *QI Maturity Tool* as the basis for calculating organizational and system-level QI maturity scores. The findings suggest that the abbreviated tool measures variation in QI maturity across LHDs, and differences in scores among divisions within the larger state health department. The results have several implications. This modified tool shows promise and may accelerate measurement of QI in practice settings. Future additional testing may help refine the score and assure that it reflects emerging research related to QI maturity.

## METHODS

The *QI Maturity Tool* was administered to the top official of all MN LHDs in January 2011 as part of an evaluation of the Robert Wood Johnson Foundation Multi-State Learning Collaborative. The Minnesota Department of Health (MDH) administered the *QI Maturity Tool* to all employees in June, 2011, and re-administered a subset of 10 items to all employees as part of a larger survey in October, 2012.

To select this subset of questions, the MN PBRN study team of academic and practice partners initially examined factor loading scores generated in psychometric testing previously performed on the *QI Maturity Tool* (5). The team identified 19 questions with high factor loading scores. These

questions, along with three additional questions added to the *QI Maturity Tool* in 2011, were selected for more intense consideration. Ultimately, the team selected 10 questions that collectively spanned the three domains of culture, alignment/spread and capacity/competency, aligned with national standards of the Public Health Accreditation Board, and were judged by practice partners to be most relevant and actionable for LHDs (See Table 1).

To produce an organizational QI maturity score, a numerical value was assigned to each response option on the Likert scale (strongly agree=5, agree=4, neutral=3, disagree=2, strongly disagree or don't know=1). The numerical values associated with each response were summed and then averaged to create a score. Thus, an organization could have a score ranging from 1.0-5.0. A QI maturity score for the local public health system was calculated as the median score of participating LHDs. A QI maturity score for MDH was calculated as the median score of participating employees. In order to compare responses by division and employee classification, the MDH administrations included all employees. This differs significantly from the local administrations of the survey, which targeted the top official or designee.

Conceptually, these scores correspond to the *Roadmap to an Organizational Culture of Quality Improvement* produced by the National Association of County and City Health Officials, with scores in the 1.0-2.9 range representing no knowledge of QI or lack of involvement in QI; scores in the 3.0-3.9 range representing informal or ad hoc QI; and scores of 4.0 and above representing more formalized QI. The scores also conceptually align with a classification scheme that has emerged through recent research on a newer version of the full *QI Maturity Tool*.

## RESULTS

### Local Health Department Administration

Fifty-six (78%) of MN's LHDs completed the *QI Maturity Tool* in 2011 as part of a national study. Fifty-five LHDs (n=55, 98%) provided written consent to provide MDH with the MN results. There was some regional variation in response (58-100%). LHD QI maturity scores ranged from 2.0-4.5, with a median for the system of 3.2 (Table 2). This median system level QI maturity score was slightly lower than a similarly calculated score based on the full QI Maturity Tool (3.4). The Spearman correlation coefficient for the two scores (full set vs. subset) was 0.89, indicating the two were highly correlated across LHDs ( $p < 0.0001$ ).

### State Health Department Administration

The response rate for the 2011 MDH administration of the *QI Maturity Tool* was 73%, with a completion rate of 92%. MDH response rates varied by division, ranging from 65-92%. The response rate for the 2012 MDH administration of the 10-item subset (which was incorporated into a larger employee survey) was 65%, with division-specific response rates ranging from 40-100%. A decrease in the percentage of respondents using the "don't know" response category may have driven the improved overall maturity score between the 2011 and 2012 administrations (data not shown). The median QI maturity score for MDH in 2011 was 2.28, and the division-specific median scores ranged from 1.71-3.14. By comparison, in 2012, the median MDH QI maturity score rose to 2.70, and the division-specific median scores ranged from 2.00-3.30. MDH median score was slightly lower when all employees were included in the analysis, compared to when the score was generated for only those employees classified as managers/supervisors (2.28 vs. 3.0, respectively).

## IMPLICATIONS

This preliminary QI maturity score appears to measure variation in QI maturity at the LHD level. In addition, it also detects variation and change by division within a much larger state health department. Our broader administration of the tool with all employees has provided more complete and actionable baseline data. The MDH Quality Council is actively using these findings to assist in setting agency-wide priorities and developing a comprehensive internal communication plan to reduce variation in QI score across divisions, and close the gap between managers and supervisors, and professional, technical and administrative staff. The Council is also using the 10-question subset and associated QI maturity score to evaluate the implementation of the agency QI Plan.

MN's public health system has embraced the concept of QI maturity for organizations and systems. A number of LHDs have independently administered the *QI Maturity Tool* to all staff, or to managers and supervisors, as part of their QI plans. The Performance Improvement Steering Committee (PISC) has incorporated the 10-question subset into an annual reporting system for the MN Local Public Health Act, thereby enabling stakeholders to monitor a system median score and distribution of scores every year. Such information will be used by state and local partners to identify opportunities for system-wide improvements.

Our findings also suggest that the 10-question median score is highly correlated with the full *QI Maturity Tool* based on a similarly calculated median score. This modified 10-item tool shows promise and may accelerate measurement of QI maturity in practice settings. Reliance on a subset of measures increases the feasibility of expanding administration to engage all employees, and balances measurement of QI maturity with the many other performance measures monitored by public health departments and systems. The study and its translation at the local, state and system levels, demonstrate the feasibility and utility of repeated administrations to monitor progress and target improvement efforts.

## SUMMARY BOX:

The Minnesota PBRN has developed and used a 10-question subset of the *QI Maturity Tool* to create QI maturity scores at the division, organization and system levels. The score shows promise as a practical way to monitor changes in QI maturity over time.

**Table 1. 10-Questions Included in the QI Maturity Score**

<b>QI Maturity Tool Item*</b>	<b>Factor Loading**</b>	<b>Standard***</b>
<b>Organizational Culture</b>		
Staff are routinely asked to contribute to decisions	0.87	9.1.1A Engage staff at all organizational levels
Agency has a pervasive culture of QI	n/a	9.1.2A Implement a performance management system.
<b>QI Capacity and Competency</b>		
Leaders are trained in basic QI methods	0.93	9.1.5A Provide staff development opportunities
Agency has a QI Plan	n/a	9.2.1A Establish a QI program
Agency has high level of capacity to engage in QI efforts	n/a	9.1.3A Use a process to determine and report on achievement of goals, objectives and measures set by the PMS.
<b>Alignment and Spread</b>		
When trying to facilitate change, staff has the authority to work within and across program boundaries.	0.87	9.1.1A Engage staff at all organizational levels
Job descriptions include QI responsibilities	0.87	9.2.2A Implement QI activities.
Customer satisfaction information routinely used	0.68	9.1.4A Implement a systematic process for assessing customer satisfaction with health department services.
Key decision-makers think QI is important	n/a	9.1.1A Engage staff at all organizational levels
Agency has aligned commitment to quality with policies, plans and efforts	n/a	9.2.1A Establish a QI program based on organizational policies and direction.

\* Items are abbreviated from their original format

\*\* Factor loading scores presented here are from previous testing of the QI Maturity Tool based on 2009 administration in 16 states. The 2009 version of the instrument did not include the questions indicated with “n/a.” Those questions were added into subsequent versions.

\*\*\* National Standards for State and Local Health Departments developed by the Public Health Accreditation Board

**Table 2. QI Maturity Scores**

	<b>MN LPH System</b>	<b>MDH 2011</b>	<b>MDH 2012</b>
Median	3.20	2.28	2.70
System or Division/Office Distribution	2.0-2.9: 28.3% 3.0-3.9: 60.4% 4.0-4.5: 11.3%	1.0-1.9: 20% 2.0-2.9: 73.3% 3.0-4.5: 6.7%	1.0-1.9: 0% 2.0-2.9: 82.3% 3.0-4.5: 17.7%
Range of Scores (LHD or Division/Office)	2.00-4.50	1.71-3.14	2.0-3.30

## REFERENCES

1. Riley WJ, Parsons HM, Duffy GL et al. Realizing transformational change through quality improvement in public health. *JPHMP* 2010; 16(1): 72-78.
2. Centers for Disease Control and Prevention. Performance improvement. <http://www.cdc.gov/od/ocphp/nphpsp/PerformanceImprovement/Index.htm>. Published 2007. Accessed November 21, 2007.
3. Bialek R, Carden J, Duffy GL. Supporting public health departments' quality improvement initiatives: lessons learned from the Public Health Foundation. *JPHMP* 2010; 16(1): 14-18.
4. Muskie School of Public Service, University of Southern Maine. (July 2008). *Tool for Assessing Public Health Agency QI Maturity*. White paper.
5. Joly BM, Booth M, Mittal P et al. Measuring quality improvement in public health: the development and psychometric testing of a QI Maturity Tool. *Eval Health Prof* 2012; 35(2): 119-47.