August 2013

Analysis of Local Health Department Factors that Accelerate Population-based Intervention Strategies: Preliminary Findings

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Recommended Citation


DOI: 10.13023/FPHSSR.0205.02

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ABSTRACT

Introduction: This practice-based research study capitalized on the statewide implementation of a comprehensive, locally-driven initiative to implement evidence-based policy, system and environmental changes related to obesity and tobacco use. The study examined local health department (LHD) performance and factors such as organizational quality improvement (QI) maturity, structure and governance.

Methods: State health department staff reviewed grant reports and documentation pertaining to all LHD grantees, which collectively represented all 87 counties and 4 cities in Minnesota (MN), in order to designate grantees as either: “Exceeds Expectations,” “Meets Expectations” or “Approaching Expectations.” A study team of state, local and academic partners then used select measures from the QI Maturity Tool to calculate a QI Maturity Score, and subsequently place grantees into three levels of QI maturity: low, medium and high. Multivariate regression was performed to examine the potential relationship between grantee performance and QI maturity, as well as other covariates.

Results: Of the final sample of 91 counties/cities, 87 had complete data for multivariate analysis. The distribution of grantee performance was: exceeds expectations (29.7%), meets expectations (55.0%) and approaching expectations (15.3%). Organizational QI maturity was strongly, positively associated with grantee performance comparing the “exceeds expectations” to those who “met or approached expectations” (OR=4.29, 95 % CI: 1.90-9.73, p=0.0005).

Implications: Organizational QI maturity was strongly associated with LHD performance. More research is needed to determine whether a more mature approach to quality improvement is merely a marker for overall LHD capacity or has its own unique contribution to performance. Findings have been used to inform the next funding cycle of this initiative and provide support to implementing annual assessment of QI maturity in MN.

Keywords
Quality improvement, evidence-based interventions, local public health

Cover Page Footnote
MDH is a grantee of Public Health Services and Systems Research, a national program of the Robert Wood Johnson Foundation. This research would not be possible without the Minnesota health directors, administrators and SHIP coordinators who completed surveys and annual reports used in this analysis. The authors gratefully acknowledge Bryan Dowd, University of Minnesota School of Public Health, and Brenda Joly, University of Southern Maine, for analytical and technical contributions to this work.
The Minnesota (MN) Statewide Health Improvement Program (SHIP) – an integral component of MN health reform legislation – seeks to improve population health and reduce demands on the health care system by decreasing the percentage of Minnesotans who are obese or overweight or use or are exposed to tobacco. The SHIP initiative is driven by a menu of evidence-based policy, systems and environmental strategies (i.e. interventions) that have demonstrated success in promoting healthy nutrition, increasing opportunities for physical activity, reducing tobacco use and promoting healthy behaviors in the workplace. In the 2009-2011 budget years, SHIP distributed $47 million in grant awards to local health departments (LHDs) covering all 87 counties and 9 of 11 Tribal governments.

There is very little literature that ties public health systems and services research to the success of a statewide roll-out of evidence-based strategies by LHDs and their partners. This study utilized local public health (LPH) performance during the initial two years of SHIP to examine what factors at the LHD level contribute to success in implementing community-based interventions. While all factors were of interest, this study builds on previous work that aimed to characterize organizational quality improvement (QI) at the local level. The literature suggests that to realize the full potential of improvement initiatives, QI should be implemented in a supportive organizational climate, with ongoing executive leadership and the full engagement of a workforce skilled in QI (Duffy 2010). Riley and Moran (2010) propose a continuum of QI for LHDs and identify characteristics of fully implemented QI in public health settings (Riley & Parsons, 2010).

METHODS

There are 87 counties and four city health departments in MN. The Community Health Board, or CHB, is the legally recognized governing body (per statute 145A) for local public health in MN. Locally-governed CHBs oversee local health departments (LHDs) that work cooperatively with the Minnesota Department of Health (MDH). There are single- and multi-county CHBs and LHDs that provide local public health services to 91 counties/cities within the system. Data for the variables of interest were available at various levels: LHD (n=75), CHB (n=52) and SHIP grantee level (n=38). In some instances, CHB or LHD composition varied over the time of data collection, thus for the purposes of analysis, variable values from multi-county LHD, CHB or SHIP grantee level were assigned at the county/city level, for a total sample size of 91. For example, the grantee status for one multi-CHB or multi-county SHIP entity would be applied to all counties within the grantee organization.

A team of SHIP staff and external evaluators systematically reviewed administrative records to categorize grantees as either “Exceeds Expectations,” “Meets Expectations” or “Approaching Expectations.” Reviewers used a scoring sheet to guide independent reviews of the annual and final reports submitted by each grantee. The following five topics were equally weighted to calculate an overall score (maximum 50 points) for each grantee: engagement of community leadership teams; coverage of at risk/high risk populations; communications; progress implementing each evidence-based intervention; and implementation and findings from a local evaluation. As a final step before collaboratively categorizing grantee performance, reviewers met together to discuss their respective scores and consider additional indicators of grantee compliance (e.g., timeliness of annual and
financial reporting, attendance at mandatory trainings). Although this document review and performance categorization was initiated by SHIP evaluation staff for purposes of grants administration and accountability, the study team capitalized on this analysis for practice-based research. The overall SHIP categorization ranking for each grantee (which could be comprised of multiple local health departments), was applied to all counties represented by that grantee. For purposes of logistic regression, this variable was dichotomized into “Exceeds Expectations” vs. “Meets/Approaching Expectations.”

Organizational QI questions were identified from the QI Maturity Tool, administered in MN and other participating states in 2011 as part of the Multi-State Learning Collaborative (MLC-3), and were used to calculate a QI Maturity Score (Gearin, 2013). Please see Gearin et al. for a more detailed description of the methods used to create the QI maturity score. The continuous QI maturity score was categorized into three levels of QI maturity (low, medium, high). Since the preliminary scores were based exclusively on self-reported data, the study team asked MDH regional public health nurse consultants and MDH QI consultants to review the preliminary QI maturity scores. These consultants were chosen for their long history and close ties to the LHDs they serve. Based on their expert reviews, the study team reclassified 3 LHDs, who were believed to have assessed themselves as having inappropriately high or low QI maturity. Additionally, for the 18 LHDs that did not participate in the 2011 MLC-3 survey (20%) and therefore did not have a preliminary score, these MDH experts were asked to assign them to one of the three categories of QI maturity. This adjusted QI level was used for analysis.

Other variables of interest were obtained from existing data sources, including MLC-3 (readiness for accreditation), administrative records (participation in a SHIP QI collaborative, organizational structure and governance), annual reporting from LHDs to MDH (per capita expenditures data that included funds designated for SHIP), and previous practice-based research in MN (a survey of the authorities of top health officials in MN, Gearin 2012). Descriptive statistics and multivariate logistic regression was used for analysis. Analysis was performed using SAS 9.2.

RESULTS

Of the final sample of 91 counties/cities, 87 had complete data for multivariate analysis. The distribution of grantee performance was: exceeds expectations (29.7%), meets expectations (55.0%) and approaching expectations (15.3%). For the purposes of regression, the meets and approaching expectations were combined as the referent group. QI maturity scores ranged from low (40.6%), medium (41.8%) and high (17.6%) (Table 1). Per capita expenditures ranged from $6.27-$68.54.
Table 1. Selected Descriptive Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Data Source, Level and Year</th>
<th>Response Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final SHIP Performance</td>
<td>SHIP Grantee Evaluation 2011</td>
<td>29.7% 55.0% 15.3%</td>
</tr>
<tr>
<td>Adjusted QI Maturity Level</td>
<td>MLC-3, LHD or CHB, 2011</td>
<td>Low 40.6%  Medium 41.8%  High 17.6%</td>
</tr>
<tr>
<td>Structure</td>
<td>MDH Data, LHD, 2011</td>
<td>Single-County 35.2%  Multi-County 64.8%</td>
</tr>
<tr>
<td>Governance</td>
<td>MDH Data, CHB, 2011</td>
<td>Community Health Board 85.7%  Human Services Board 14.3%</td>
</tr>
<tr>
<td>Authority of Top Health Official</td>
<td>Authorities Survey, LHD or CHB, 2010</td>
<td>All Six Authorities 65.2%  Five or Fewer Authorities 34.8%</td>
</tr>
<tr>
<td>Participation in SHIP-related QI Collaborative</td>
<td>MDH Data, LHD or CHB, 2009-2011</td>
<td>High 46.7%  Low 53.3%</td>
</tr>
<tr>
<td>Public Health Agency has begun preparing for national accreditation</td>
<td>MLC-3, LHD or CHB, 2011</td>
<td>Strongly Agree/Agree 27.3%</td>
</tr>
<tr>
<td>Median per capita expenditures for the reporting entity*</td>
<td>MDH Data, LHD or CHB, 2010 Fiscal Year</td>
<td>$21.46</td>
</tr>
</tbody>
</table>

*Per capita expenditures related to a specific segment of local public health services, which included SHIP-specific funding.

Organizational QI maturity was strongly, positively associated with grantee performance on SHIP (OR=4.29, 95% CI: 1.90-9.73, p=0.0005) (Figure 1). Increasing LHD per capita expenditures were also positively associated with higher performance (OR=1.04 for a $1/per capita increase in expenditures, 95% CI: 1.00, 1.08, p=0.07), although this association was not statistically significant. None of the other variables were significant in multivariate regression analysis.
The strong association between QI organizational maturity level and performance on SHIP lends further support to the importance of promoting QI culture within LHDs. It is unclear whether a more mature quality culture is merely a marker for overall capacity or has its own unique contribution. It was surprising that other variables of interest did not appear related to SHIP performance. The authors expected organizational structure and governance, in particular differences between stand-alone health departments versus those within human services structures, to perhaps influence performance. Yet these data did not find any association. This representation may not be refined enough to detect important differences in organizational structure. Also, it is possible that there are important characteristics of high-performing LHDs, regardless of organizational structure. Additional qualitative information (results not shown) provides support for a more refined examination of structure.

Other limitations stem from assumptions necessary to create a full data set with a common denominator. This practice-based research relied on data collected from a variety of sources with varying jurisdictional boundaries. Improving consistency of reporting across different data sets (e.g., having a common reporting entity) could simplify future PHSSR studies, but may prove difficult in real-world settings. This study was able to capitalize on administrative records required for all grantees or CHBs, but also relied on voluntary, self-reported information. However, MN did have the highest response rate of all participating states in the MLC-3 survey, and expert reviewers and consultants helped to validate and fill in missing data.

Also, while a priori power calculations predicted sufficient power, the “exceeds” and “approaching” expectations strata were sparse, which likely resulted in wide confidence intervals. Thus, the results suggest a strong positive relationship between QI maturity level and SHIP performance, but the magnitude of that association is less precise. In addition, this distribution of the dependent variable
could have lowered the ability to detect associations with the other variables of interest. Future studies would be greatly enhanced by a multi-state approach, which would both increase the sample size as well as the generalizability to states with local systems organized differently. Another potential limitation relates to the self-report nature of some of the independent variables of interest. While an attempt was made to reduce potential misclassification of the QI maturity level by reviewing and amending the raw scores, variables related to readiness for accreditation, expenditures and authority were all self-reported by LPH.

The MN practice-based research network, which has representatives from LPH and the University of MN, School of Public Health, was instrumental in guiding this research and interpreting results. This group has suggested that the association between QI and performance provides further support for the important work of promoting QI maturity within LHDs, and reinforces MN’s use of the 10 organizational QI measures in an annual LPH reporting system. In addition, SHIP staff is using these results to inform the development of the next funding cycle of the project. The next iteration of SHIP may use baseline measures of local public health capacity, for example measures of organizational QI maturity, to assist in determining how to allocate future funding to LHDs.

**SUMMARY BOX**
Organizational QI maturity was strongly associated with LPH performance on implementing evidence-based strategies around obesity and tobacco reduction and increasing physical activities in communities. It is unclear whether a more mature quality culture is merely a marker for overall capacity or has its own unique contribution.
REFERENCES


