

The literature related to local public health performance as it pertains to the organization, financing, structure, size and capacity of local health departments (LHDs) continues to grow. Performance has most often been measured by the 10 Essential Public Health Services (EPHS), as self-assessed by LHDs. Recently the literature has examined LHD factors with respect to population health outcomes, such as infectious disease morbidity and mortality associated with cardiovascular disease, diabetes, cancer, influenza and infant death (Erwin 2011, Mays & Smith 2011). Most of the studies reviewed still use the EHS model for performance measures, but it is notable that more recent articles are focusing on indicators of population health to assess LHD performance.

Most of the previous studies have relied on cross-sectional designs, therefore observed associations or correlations may not translate into evidence for cause and effect. For example, if higher funding is associated with higher authority, it should not be assumed that increased funding levels predict higher performance. It could be that higher performing agencies are more effective at obtaining higher levels of funding. Of note, two recent studies incorporated a time element to try and determine whether factors were predictive of population health outcomes (Erwin, Mays & Smith).

Methods

This literature review aimed to update previous work presented in the State Community Health Services Advisory Committee (SCHSAC) Updating Minnesota's Blueprint for Health (December 2010). The search focused on reviewing the public health systems and services research (PHSSR) webliography, as well as searching MedLine using the following search terms: "local health departments" and "(performance, funding, leadership, management, governance, local human services department, local human service agency, organizational structure, mission)"; "local health departments within human service agencies."

At A Glance

Until recently, most of the public health systems and services research related to local health department (LHD) performance relied on cross-sectional data sources that made it difficult to determine cause and effect of various factors associated with performance.

Two recent studies used longitudinal approaches to study factors related to local health department structure, financing and capacity. These studies were also unique in that they examined those factors with respect to population health outcomes. They found strong associations between LHD spending and staffing with respect to measures of morbidity and mortality.

Overall, the factors most strongly associated with LHD performance included: population size served, expenditures, funding, staffing, and organizational structure. Weaker associations were found with Director qualifications, partnerships, community characteristics and organizational leadership. Research is needed related to newly merged organizations, such as health departments joining with human services agencies, and how that has affected LHD performance.

Factors Associated with LHD Performance

Population Size

Overall, population size was strongly associated with LHD performance. It appears the optimal range of population covered by a local health agency ranges from 50,000-500,000 (Suen 2004, Mays 2006). Santerre (2009) demonstrated that there were significant reductions in per capita spending by health agencies as they approached a population size of 100,000. He concluded that small departments are at a serious cost disadvantage when it comes to producing local health services and that cost-savings could be produced when such agencies consolidated into larger districts. Mays et al. (2006) also studied population size and found that increasing population size was positively associated with LHD performance. However, improvements in performance were not found past a population size of 500,000. This supports findings from a previous study that also found performance increased with population size, but leveled off around 500,000 (Suen & Magruder, 2004).

LHD Expenditures

Two recent studies have linked increases in LHD per capita expenditures with significant decreases in morbidity and mortality (Erwin 2011 and Mays 2011). These studies tracked expenditures over time and controlled for social indicators, including unemployment rates and availability of selected medical resources. These studies, with a longitudinal design, provide some of the strongest evidence for an association between increased local public health expenditures and decreases in all-cause mortality, infant mortality, and mortality from cardiovascular disease (CVD), diabetes, influenza and cancer. Mays et al. found that for each 10% increase in per capita public health spending there was a decrease in mortality rates ranging from 1.1-6.9% (2011). Erwin et al. found that increases in LHD per capita expenditures were significantly associated with decreases in infectious disease morbidity (2011).

Previous cross-sectional studies found associations between local health spending and performance on the 10 EPHS (Mays 2005, Bates 2008). A review article by Hyde (2010) provides support that per capita spending at the local level is related to public health performance. One study was found that showed a negative association between worse health outcomes in counties with higher expenditures (Boeke 2008). However, that could be explained by those LHDs with greater population needs being better advocates for obtaining higher levels of funding which were then translated into higher spending.

Sources of LHD Funding

Local public health agencies receive funding from multiple sources and the relative contributions from those sources can fluctuate from year to year (Riley, 2011). Honore et al. found associations between higher

jurisdiction taxes per capita and performance on the 10 EPHS (2004). Further, higher performing counties had a greater percentage of total revenues from taxes, higher taxes per capita and higher tax rates. Hyde's review article concluded that contributions from local funding sources contributed the most to positive health outcomes (2010). Interestingly, Bernet found that local agencies that receive more from federal and state sources also raise more money at the local level (2007). This suggests that given the effectiveness of local funding in improving agency performance, non-local revenues may be amplified at the local level (Bernet 2007).

LHD Staffing

Until recently, most studies of LHD staffing have been cross-sectional in design. The recent longitudinal study by Erwin et al. (2011) examined staffing levels with regard to CVD mortality. They found that increases in LHD staffing as measured by FTEs per capita were significantly associated with a decrease in CVD mortality. Mays et al. (2006) found that staffing was linked to two of the ten EPHS. Beatty et al. (2010) suggest that LHDs that serve larger jurisdictions are able to capitalize on higher levels of staff, even if per capita staffing levels are comparable, to provide more services than smaller LHDs located in rural or suburban areas. An emerging area of interest deals with shift of many top LHD executives to retirement and the need for succession planning in LHDs. Schmalzried et al. (2007) surveyed current LHD top executives about succession planning and found that 51% of respondents felt having a succession plan as being important. However, local boards of health did not appear as concerned about having such a plan. Only 27% of LHDs reported having a succession plan and half of those were grooming a successor, even though 44% of the top executives interviewed planned to leave their current position within six years. In Minnesota, 43% (n=23) of Community Health Services (CHS) administrators reported they would retire within 5 years, the majority of which worked in a single county LHD (n=17).

Director Qualifications

Director qualifications have been associated with LHD performance. Bhandari et al. (2010) found a strong association between LHD top executive education level and LHD performance, with a nursing degree being more important than a public health degree. It is possible, however, that the negative association with a public health degree or certification, could be explained by a public health specialist's ability to more critically evaluate and rate their system performance. LHDs that had directors with a Master's or Bachelor's (but not doctoral degrees) had significantly higher performance compared to those directors with medical degrees (e.g., MDs). Scutchfield et al. (2004) found that the highest degree of the health agency director appeared important to LHD capacity. Hyde (2010) concluded that strong leadership by agency directors is associated with public health performance.

Organizational Structure

Studies of organizational structure reflect the wide variety of LHD structures across the country (e.g., city-county, single county, multi-county). Combined jurisdictions appear to be more effective than single city or single county (Bhandari 2010, Mays 2005). The literature is varied with respect to a decentralized vs. centralized public health system. Mays et al (2005) found that some services were performed better under each type of structure. Recently, Mays et al. (2011) found that spending was 24% lower among agencies that operated under the centralized administrative control of state agencies, as opposed to independent local agencies. Hyde (2010) concluded that decentralized or mixed models of public health systems were higher performing models than a centralized one. Wetta-Hall et al (2007) formed focus groups of LHD administrators to assess their perspectives on integration. Participants reported that integration was necessary and that it resulted in improved collaboration and communication between LHDs. Yet they also highlighted factors necessary for successful cross-jurisdiction collaboration, including: sufficient funding, documented benefits to participating agencies, commitment from all LHDs, and engagement from local elected officials.

No studies were found that examined the potential relationship between performance and how a health agency is positioned (e.g. stand-alone department vs. within a human services agency). It appears that counties and their boards are giving more consideration to changing their organizational structure within MN. During the one year time frame from May 2009-2010, 28% of county boards considered, proposed or decided to change their organizational structure. Almost all attention to organizational structure focused on merging with another department or division of government. A Research to Action Network (RAN) survey of local health directors in MN (2011) showed that the percentage of directors who reported having a high level of authority was greater among those in stand-alone health departments than for directors in combined organizations. Comments from some officials in combined organizations indicated that while they have influence and input, they do not take the lead on making decisions directly related to local public health services (i.e., budgeting, priorities and new initiatives).

Governance

Local health department governance structure has been associated with performance (Scutchfield, 2004), and spending. The survey of local health directors in MN indicated that most counties considering a change in jurisdiction were related to adding a jurisdiction to the Community Health Board or organizing so that the Human Services Board (HSB) functions as the CHB. This could have implications for the performance of local public health.

MN statute specifies that each health jurisdiction be governed by a Board of Health, which the literature suggests is an important strength for local public health organizations. Mays et al. (2011) found that per capita spending was more than 17% higher in communities governed by a Board of Health. However, Bhandari et al.

(2010) found just having a Board of Health was not enough to affect performance. The key was having a Board that makes policy, which then was associated with local public health performance on the EPHS.

Partnerships

Partnerships have consistently been shown to be important in public health performance. Beatty et al. (2010) studied differences in resources and service provision between urban and rural LHDs. It was noted that urban LHDs typically had more resources, even if per capita staffing was similar to that in rural areas, simply due to overall increased staff. Yet when community partnerships were examined, they found that partnerships were a partial mediator between resources and service provision differences that were observed between rural and urban LHDs. Scutchfield et al. (2004) found that non-provider partnerships were significantly related to public health system performance. Hyde (2010) concluded that some partnerships, particularly academic and health services, were related to public health performance. Hyde suggests that LHDs should form and encourage greater levels of collaboration across governmental and non-governmental partners to improve public health system capacity, but cautions that evidence is lacking as to whether those increases in capacity actually improve population health status.

Community Characteristics

Not surprisingly, community characteristics may influence public health performance. Mays et al. (2011) demonstrated that LHD spending increased with social indicators of community need, such as unemployment rate, while spending decreased with the availability of selected medical resources (e.g., physicians per 100,000; hospital beds per 100,000). Local poverty rate and physician-to-population ratio have been significantly associated with performance. Overall, LHDs in communities with greater economic means, that had more partnerships and community interaction, and support from local elected officials, typically performed better (Erwin 2008).

Concluding Thoughts

While the body of literature related to LHD performance continues to grow, much remains unknown. Overall, population size and the move toward regionalization appear to be supported in the literature as ways to improve LHD performance. This improvement likely results from a consolidation of resources and the ability for health departments to capitalize on economies of scale. The addition of longitudinal studies to the body of literature is an important next step in moving from association and correlation to prediction. These studies suggest that an

increased investment in public health is important for improving population health outcomes, which is the ultimate goal of the public health system.

About the Research to Action Network

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Table 1. Summary of Factors Associated with LHD Performance

Factor	Highlights	Citation(s)
Jurisdiction size/ population served	<ul style="list-style-type: none"> Population size served was strongly associated with LHD performance consistently across studies. The optimal size for a local agency appears to range between 50,000-500,000 population size, with more recent studies suggesting a size greater than 100,000. Small systems may face special challenges, even if they have comparable funding and staffing per capita as those of their larger peers. The authors suggest that public health systems could realize economics of scale in the delivery of services by consolidating into larger agencies. 	Bhandari, 2010; Mays, 2005; Suen, 2004; Santerre, 2009.
Expenditures: <ul style="list-style-type: none"> Total Per Capita Per Staff FTE 	<ul style="list-style-type: none"> Cross-sectional studies have consistently shown a relationship between per capita local public health spending and public health performance. Recent longitudinal studies have found strong associations between LHD per capita expenditures and health outcomes, including all-cause mortality. 	Erwin, 2011; Mays 2011; Hyde, 2010; Bates 2008; Mays 2005
Funding <ul style="list-style-type: none"> Per capita Local tax levy 	<ul style="list-style-type: none"> Increased per capita funding is associated with higher LHD performance on the 10 EPHS. Local funding appears to contribute the most to performance, however it is possible that state and federal funding serves to stimulate additional local funding. 	Hyde, 2010; Bernet, 2007; Honore, 2004;



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Factor	Highlights	Citation(s)
Staffing Level	<ul style="list-style-type: none"> Staffing is associated with reductions in CVD mortality as well as performance on two of the 10 EPHS. Larger LHDs can capitalize on their increased overall staffing, even if they have similar per capita staffing as smaller or rural counties. Although a high percentage of LHD top executives plan to leave their current position within the next six years, succession planning among the majority of LHDs is not a high priority. 	Erwin, 2011; Beatty, 2010; Schmalzried, 2007; Mays, 2005.
Director Qualifications	<ul style="list-style-type: none"> Agencies that had directors with a nursing degree performed higher than those with public health degrees or certification, however authors suggest that directors with public health training may more critically evaluate and rate their system performance. The highest degree of the health agency director appeared important to LHD capacity. Hyde’s review article concluded that strong leadership was associated with LHD performance. 	Bhandari, 2010; Hyde, 2010; Erwin, 2008; Scutchfield, 2004.
Management Team Operations	<ul style="list-style-type: none"> There are few studies comparing management operations to LHD performance. One study found that LHDs often use multi-disciplinary top management teams (TMTs) to organize the work of the agency. This study found that use of TMTs was correlated with performance. This could be attributed to TMTs having more extensive interactions with the community and having broader public health expertise when making decisions. 	Lovelace, 2001; Erwin, 2008.
Organizational Structure	<ul style="list-style-type: none"> Performance varied by the type of governmental structure, with single city or single county entities performing lower than city-county or multi-county jurisdictions. Decentralized systems (like MN) performed better in three EHS (health status monitoring, educating the public, workforce development), but not as well on investigation and research. Overall, decentralized or mixed models appear more effective than centralized models. No literature was found comparing human service agencies with local health departments or hospital-based agencies. Wealthier municipalities (with more dense populations) were less likely to consolidate health departments. 	Mays, 2011; Bhandari, 2010; Hyde, 2010; Bates, 2008; Wetta-Hall, 2007; Mays, 2005
Organizational Leadership <ul style="list-style-type: none"> Board of Health Governing role of Board 	<ul style="list-style-type: none"> A Board of Health has been associated with higher performance, particularly if the Board influences policy. A recent study found per capita local public health spending was 17% higher in communities governed by a Board of Health. Contracting of public health services to health systems (privatization) may benefit some core functions, however it can result in greater time demands of top officials related to management and administration. 	Mays, 2011; Bhandari, 2010; Scutchfield, 2004; Keane, 2002;



Factor	Highlights	Citation(s)
Partnerships	<ul style="list-style-type: none"> • A wide variety of partnerships exist between LHDs and other community entities. • Partnerships have been linked to public health performance. • One study suggests that partnerships may mediate some of the differences in resources received by LHDs. 	Beatty, 2010; Hyde, 2010; Scutchfield, 2004
Community Characteristics	<ul style="list-style-type: none"> • LHD spending has been shown to increase with greater community need (e.g. high unemployment rate), but seems to decrease with greater availability of health services (e.g. physicians per 100,000; hospital beds per 100,000). • Indicators of community health, such as local poverty rate and physician-to-population ratio, have been associated with performance. • Overall, LHDs with greater economic means, more partnerships and community interactions, and support of elected officials, typically performed better. 	Mays, 2011; Erwin, 2008; Mays, 2006

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