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## SEARCH STRATEGY

Set No.	Searched for	Databases	Results
S1	American Journal of Public Health	Ebook Central, Public Health Database, Publicly Available Content Database	595124*

\* Duplicates are removed from your search, but included in your result count.

# Aligning Public Health Infrastructure and Medicaid to Fight COVID-19

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## FULL TEXT

In 2016, Governor John Bel Edwards expanded Medicaid in Louisiana. As secretary of health, I oversaw the implementation of this historic expansion of health care coverage. As a result of the Medicaid expansion, more than 500 000 Louisianians have access to health insurance. The Medicaid expansion means that Louisiana's uninsured rate has been cut by more than half, to 8%, and billions of additional federal health care dollars have enhanced our economy. The new dollars accompanying Medicaid expansion allowed us to make new investments in public health infrastructure while shielding our Office of Public Health from budget cuts. Louisiana continues to have a public health unit in every parish (or county), and statewide resources such as experts in epidemiology, infectious disease, and reproductive health advise these structures. Our commitment to public health combined with Medicaid expansion means that Louisiana has been positioned as one of the nation's leaders in COVID-19 response. As a result of health care coverage because of Medicaid expansion, we have screened more than 85 000 women for breast cancer, screened 49 000 people for colon cancer, and completed more than 200 000 behavioral health visits. We now rank eighth in the nation on primary care utilization. Medicaid expansion enabled the creation of a novel subscription model that allowed near universal access for hepatitis C treatment. To ensure success of this model, we amended the sanitary code so that the Louisiana Department of Health receives both positive and negative infectious disease test results. We bolstered community partnerships and developed some of the nation's best dashboards on health care access. The combination of strong local relationships, good data, and a robust public health system has helped Louisiana rank first in the nation on the number of people tested for COVID-19. Louisiana already has a statewide, state-led test and track plan, which includes the hiring of 700 contact tracers. Furthermore, the creation of the Office of Health Equity and Community Partnerships at the Louisiana Department of Health is now a foundation for equity efforts addressing COVID-19. Investments matter. COVID-19 reminds us of the importance of not only public health but also access to health care as critical tools to fight the spread of infectious disease. Medicaid expansion has ensured that during the COVID-19 pandemic, the majority of Louisiana citizens have health care coverage. Primary care offices, not just emergency departments, have cared for the sick, and the fear of not being able to pay for tests and treatment is diminished. Compared with our neighboring states that do not have a Medicaid expansion, at present we are crushing the first wave of the curve. Many factors, including an exemplary governor and assistant secretary for public health, have influenced these outcomes. However, Louisiana's Medicaid expansion, and the health care infrastructure it supports, has played a decisive role. In the era of COVID-19, states that have denied their low-income working citizens health care and underinvested in public health will find themselves at a great disadvantage. Although Louisiana historically has ranked at or near the bottom in most health metrics, for once we have been leading the way. Other governors, if not for moral reasons, should recognize the economic imperative of connecting their states fragmented medical, social, and public health systems. COVID-19 is a national wake-up call about the consequences of underinvestment in public health and presents an opportunity for states to press the reset button on petty political opposition to Medicaid expansion. States and the nation must invest in public health infrastructure and work toward universal health care coverage for

all citizens. The future of our nation and the health of our communities depends on it.

## DETAILS

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# The Growing Divide in the Composition of Public Health Delivery Systems in US Rural and Urban Communities, 2014–2018

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## ABSTRACT (ENGLISH)

**Objectives.** To examine changes in the scope of activity and organizational composition of public health delivery systems serving rural and urban US communities between 2014 and 2018. **Methods.** We used data from the National Longitudinal Survey of Public Health Systems to measure the implementation of recommended public health activities and the network of organizations contributing to these activities in a nationally representative cohort of US communities. We used multivariable regression models to test for rural-urban differences between 2014 and 2018. **Results.** The scope of recommended activities implemented in rural areas declined by 3.4 percentage points between 2014 and 2018, whereas it increased by 1.4 percentage points in urban areas. The rural-urban disparity in scope of activities grew by a total of 4.8 percentage points ( $P < .05$ ) over this time. The disparity in network density grew by 2.3 percentage points ( $P < .05$ ). **Conclusions.** Urban public health systems have enhanced their scope of activities and organizational networks since 2014, whereas rural systems have lost capacity. These trends suggest that system improvement initiatives have had uneven success, and they may contribute to growing rural-urban disparities in population health status.

## FULL TEXT

### Headnote

**Objectives.** To examine changes in the scope of activity and organizational composition of public health delivery systems serving rural and urban US communities between 2014 and 2018.).

**Methods.** We used data from the National Longitudinal Survey of Public Health Systems to measure the implementation of recommended public health activities and the network of organizations contributing to these activities in a nationally representative cohort of US communities. We used multivariable regression models to test for rural-urban differences between 2014 and 2018.).

**Results.** The scope of recommended activities implemented in rural areas declined by 3.4 percentage points

between 2014 and 2018, whereas it increased by 1.4 percentage points in urban areas. The rural-urban disparity in scope of activities grew by a total of 4.8 percentage points ( $P < .05$ ) over this time. The disparity in network density grew by 2.3 percentage points ( $P < .05$ ).

Conclusions. Urban public health systems have enhanced their scope of activities and organizational networks since 2014, whereas rural systems have lost capacity. These trends suggest that system improvement initiatives have had uneven success, and they may contribute to growing rural-urban disparities in population health status. (Am J Public Health. 2020;110:S204-S210. doi:10.2105/AJPH.2020.305801)

Significant disparities in health care access and outcomes exist for the approximately 59 million people living in rural communities in the United States.<sup>1,2</sup> Overall life expectancy, infant mortality, chronic disease, and cancer outcomes are all worse for rural populations than for their urban and suburban counterparts.<sup>2</sup> The Affordable Care Act (ACA) coupled with calls to action for greater attention to social determinants of health have made progress in improving access to care and addressing preventable health concerns.<sup>3</sup> However, whereas urban areas have seen significant improvements in some health indicators, rural areas continue to lag, which has widened rural-urban health disparities.<sup>2,4</sup> From 2007 to 2017, rural-urban mortality disparities increased for 5 of 7 major causes of death tracked by Healthy People 2020: coronary heart disease, cancer, diabetes, chronic obstructive pulmonary disease, and suicide.<sup>5</sup>

Important demographic differences partially explain rural-urban health care disparities. People living in rural communities are more likely to be older and less affluent than are their urban peers.<sup>6</sup> Rural populations are more likely to experience barriers to health care, including provider shortages, longer travel times, hospital closures, and high health care costs.<sup>7</sup> Furthermore, health risks such as tobacco use, poor diet, inadequate physical activity, and adiposity are more prevalent among rural populations.<sup>8,9</sup> A strong public health infrastructure is needed to change the policies and the social and environmental structures that impede good health in rural communities.

The federal government's Public Health 3.0 framework calls for public health systems to play stronger roles in addressing social determinants of health by forging community partnerships with the medical and social service sectors.<sup>10</sup> Greater collaboration among diverse partners may increase the efficiency of the allocation of community resources and bring a variety of voices and approaches to bear in solving community problems.<sup>11</sup> Additionally, multisectoral partnerships in public health systems have been shown to reduce health care utilization<sup>12</sup> and preventable deaths.<sup>13</sup> Specifically, cardiovascular disease, diabetes, and influenza deaths declined significantly over time in communities that expanded multisector networks supporting population health activities.<sup>13</sup> Rural communities may realize even greater benefits of strong public health networks if they reduce duplicative services and maximize limited resources.

Historically, rural health departments provided fewer health services and had fewer multisectoral partnerships than did urban health departments.<sup>14</sup> However, service delivery and partnerships have not been studied in the context of recent initiatives like Public Health 3.0 and the ACA. Policies such as the ACA's provision to require hospitals to conduct a community health needs assessment and the insurer mandate to cover individuals with preexisting conditions may have incentivized collaboration with local public health systems.<sup>3</sup> On the other hand, funding for federal, state, and local public health departments has decreased in recent years. From 2015 to 2016, 31 states reduced their public health budgets.<sup>15</sup> Moreover, 25% of local public health departments reported decreasing their budget for fiscal year 2016.<sup>15</sup> This may limit the capacity of public health systems to provide additional services and develop community partnerships.

We used information from a nationally representative cohort of US communities to examine (1) the extent and nature of differences between rural and urban public health systems regarding the scope of activities they implement and the network of organizations they engage, and (2) the extent to which these differences changed from 2014 to 2018.

## METHODS

We used data from the National Longitudinal Survey of Public Health Systems, which follows a nationally representative cohort of US communities with survey data originally collected in 1998 and in 5 subsequent waves through 2018. The survey expanded in 2014 to include a cohort of communities with less than 100 000 residents.

The survey used a validated questionnaire administered to collect information about 20 public health activities recommended by national guidelines and federal consensus panels for use in improving community health status. These activities were derived from research-tested models of community health improvement and include periodic assessments of community health needs and risks, multisector priority setting and planning, community engagement in selecting and implementing health improvement strategies, resource allocation to support implementation of priority strategies, and monitoring and evaluation activities to track progress (see supplemental materials for a complete list of survey questions [available as a supplement to the online version of this article at <http://www.ajph.org>]). The activities correspond to activities recommended by the Institute of Medicine's periodic studies of public health systems, the US Department of Health and Human Service's Public Health 3.0 framework, and the Public Health Accreditation Board's national accreditation standards for state and local public health 10,16,17 agencies.

We administered the survey to local public health officials in each community who were instructed to report information about public health activities implemented for residents of their community, regardless of whether activities were implemented by public health agencies or by other organizations. To facilitate reporting accuracy, we instructed respondents to define their community based on the geopolitical jurisdiction served by their public health agency (county, city, town, or district). For each of the public health activities on the survey, local public health officials reported (1) whether the activity was implemented in the community during the past 3 years; and (2) if so, the network of organizations involved in activity implementation, including categories for public health agencies, hospitals, primary care providers, health insurers, employers, schools, community- and faith-based organizations, and other governmental agencies.

Our analysis included 2014, 2016, and 2018 survey data. Overall, 82% of the cohort communities were single-county jurisdictions, 12% were multicounty districts, and 6% were cities or towns. In 2014, response rates were 74.6% and 50.9% for urban and rural cohorts, respectively. We excluded 12 observations with missing data.

#### Measures

**Public health system composition.** We focused on 3 primary measures of public health system composition. First, we measured the proportion of recommended public health activities that were implemented in each community (scope of activity). We also examined each individual activity. Second, we measured the network of community organizations that work together in implementing these activities (network density). We constructed a measure of public health network density for each community using the 13 types of organizations listed on the survey instrument. For each pair of organization type (dyads), we counted the number of public health activities in which both types of organizations participated, divided this count by the total number of public health activities listed on the survey instrument, and then computed the mean of these ratios across all possible dyads. The resulting measure had a theoretical range of 0 to 100, with larger values indicating higher levels of connectivity between organizations through joint participation in public health activities. Because the survey instrument collected information on organization types (sectors) rather than individual organizations, the network density measure can be interpreted as an indicator of cross-sector cooperation in public health. We also performed analyses on the proportion of activity participation by organization type.

Third, we constructed a composite measure of public health system capability that combined the 2 measures of scope of activity and network density into a single categorical measure. This measure, based on a previously developed and validated typology identified through latent class analysis,<sup>18</sup> classified communities into ordinal categories: (1) comprehensive systems, which implemented the broadest scope of activities and engaged the most dense networks of organizations contributing to these activities; (2) conventional systems, which had moderate to high levels of activity scope and intermediate network density; and (3) limited systems, which had relatively low levels of activity scope and network density.<sup>18</sup>

**Rurality and other community characteristics.** We linked our survey data with existing county-level community characteristics from the Area Health Resources Files.<sup>19</sup> We identified rural and urban communities using the US Health and Human Services Office of Rural Health Policy's definition of rurality based on rural-urban commuting



area codes.<sup>20</sup> We classified counties that we did not include as part of metropolitan areas as rural. For communities spanning multiple counties, we used the county with the lowest (i.e., most urban) rural-urban commuting area code for rural-urban classification. Additionally, we used Area Health Resources Files to construct county-level measures indicating racial and age composition, poverty, household income, unemployment, and educational attainment (Table 1). To estimate the population size of each public health jurisdiction, we used data from the National Association of County and City Health Officials periodic national surveys of local health departments,<sup>21</sup> adjusting for population growth using county growth rates estimated by the US Census Bureau.<sup>22</sup>

#### Statistical Analysis

We used generalized linear models with a Gaussian family and identity link to estimate rural-urban differences over time for measures of scope of activity, network density, and activity participation by specific organizations. We estimated the binary measures for individual activity participation with logistic regression. To estimate rural-urban differences in trends for the composite measure of public health system capability, we used ordered logistic regression. The ordered logistic model satisfied tests for the proportional odds assumption. All models included the same set of county-level controls for community demographic and socioeconomic characteristics (Table 1). We controlled for within-survey unit correlation over time by including a community-specific random effect and used clustered SEs at the community level.

To determine whether rural-urban differences in public health systems changed over time, we estimated models using year by rurality indicator terms. We used urban communities in 2014 as the reference group. We estimated additional model specifications using year, rural, and rural-year interaction terms. The interaction terms between year and rural indicators allowed us to test differential trends between rural and urban communities. The coefficient on the interaction term tested whether the time trend in rural communities was significantly different in direction and magnitude compared with the trend in urban communities, after controlling for covariates. For the logistic regression models, we report marginal effects, which represent the average change in probability of the outcome for a small change or category change in the predictor variables. We display estimated models using rurality-year group for ease of interpretability. Model specifications testing the differences in trends are included in Tables A and B (available as a supplement to the online version of this article at <http://www.ajph.org>).

We conducted a sensitivity analysis using a balanced panel to ensure that our findings were not a result of attrition. The results were robust to balancing the sample; however, balancing resulted in a significant loss of precision because of dropping almost half of the sample size (unbalanced  $n = 1661$ ; balanced  $n = 816$ ). Thus, we used the unbalanced panel to preserve sample size.

We completed all analyses using Stata version 15.1 (StataCorp LP, College Station, TX).

#### RESULTS

Table 1 summarizes the public health system scope of activity and network density as well as demographic and socioeconomic characteristics of the rural and urban community cohorts in 2014 and 2018. Rural communities had a lower scope of activity and network density than did urban communities and were less likely to be categorized as a comprehensive system. Rural communities had higher poverty and uninsurance rates, and lower per capita income and percentage of residents with a 4-year college degree. Rural communities also had significantly higher proportions of older adults (older than 65 years) and non-Hispanic White residents than did their urban counterparts. Rural and urban communities did not significantly differ in percentage unemployed or whether the local public health department's jurisdiction covered multiple counties. From 2014 to 2018, rural population sizes decreased, whereas urban populations grew. These changes over time confirmed our choice to include time-varying demographic variables as covariates.

Table 2 displays differences in public health system trends between rural and urban communities, adjusting for the socioeconomic and demographic covariates from Table 1. The parameter estimate for the rural 2014 variable indicates the baseline difference (i.e., difference in 2014) between rural and urban communities. In 2014, public health systems in rural communities on average implemented 5.2 percentage points fewer public health activities (confidence intervals [CI] = -9.7, -0.7;  $P < .05$ ) and had a 3.2 percentage point lower network density (CI = -5.0, -1.4;

P = .001) compared with urban communities. Similarly, rural communities were significantly less likely than were urban communities to achieve higher ratings of public health system composition (odds ratio [OR] =0.50; CI = 0.27, 0.91; P <.05).

From 2014 to 2016, the results suggest that there were limited changes in public health infrastructure. Urban and rural communities experienced a small and statistically insignificant increase in both scope of activity and organization density relative to 2014. However, it appears that from 2014 to 2018 rural public health systems were worsening compared with their urban counterparts. Scope of public health activities declined by an adjusted average of 3.4 percentage points in rural communities and increased by 1.4 percentage points in urban areas, resulting in a statistically significant difference in trend of -4.8 percentage points (P <.05). Similarly, network density declined by -0.6 percentage points in rural areas and increased in urban areas by 1.7 percentage points, resulting in a -2.3 percentage point difference in trend (P < .05). The composite measure of public health system capability also declined for rural areas, but the rural-urban differences in trend were not statistically significant (P > .05). Community characteristics were not independently associated with public health system characteristics after controlling for rurality.

Looking individually at organizations, we found that hospitals, higher education (e.g., universities and colleges), other nonprofits, and insurance groups were responsible for the largest rural-urban differences in organization density (Table 3). From 2014 to 2018, the proportion of activities contributed by hospitals declined by an adjusted average of 4.1 percentage points in rural areas and increased by 1.4 percentage points in urban areas, resulting in a -5.5 percentage point difference in trend (P < .05). Higher education and insurance groups declined by a -5.5 and -4.3 percentage point difference in trend, respectively (P < .001). Other nonprofits declined by an average of 4.7 percentage points difference in trend (P <.05). Significant rural-urban differences in scope were also found for other (nonhealth) state agencies and federal agencies (P < .05; Table A [available as a supplement to the online version of this article at <http://www.ajph.org>]).

Table 4 displays results for individual public health activities. Decreases in the total scope of activity measure were driven by changes in the following individual activities: whether a community health needs assessment was conducted in the past 3 years, whether the public health jurisdiction identified community health priorities in the past 3 years, and whether a community health action plan was developed to address community health needs in the past 3 years. These 3 activities had ORs suggesting a decline in activity implementation in rural communities from 2014 to 2018. The results for all organization types and recommended activities can be found in Tables A and B.

## DISCUSSION

These results provide the first, to our knowledge, nationally representative comparison of the structure and function of public health systems in rural and urban US communities. We found that systems serving rural areas implement fewer recommended public health activities and engage narrower networks of partners compared with their urban counterparts. These differences have grown larger since 2014, with systems growing stronger in urban areas and weaker in rural areas. In 2018, rural public health systems implemented fewer activities and engaged fewer partners in these activities than they had in 2014, even as the systems in urban communities gained strength. Because rural public health systems had significantly lower baseline levels of activity and network density in 2014, these negative trends over the ensuing 4 years widened an existing disparity.

Despite the constellation of initiatives to strengthen public health systems in recent years, urban systems have gained significant strength, whereas rural systems have yet to realize similar gains. These initiatives include enhanced community benefit requirements for nonprofit hospitals, national accreditation standards for public health agencies, expanded federal funding opportunities through the Prevention and Public Health Fund, and multisector demonstration programs such as the Accountable Health Communities Model.<sup>3</sup>16'23'24 Previous research provides evidence that policies such as the Medicare Hospital Readmissions Reduction Program<sup>25</sup> and the federal 340B Drug Discount Program<sup>26</sup> unintentionally benefit affluent communities and potentially exacerbate health disparities. Further research should explore whether these policies have similar unintended effects.

As a possible explanation for the diverging trends we found, rural public health systems operate with lower baseline

levels of funding and staffing, which likely places them at a significant disadvantage in participating in new initiatives, particularly when participation is selective and competitive. For example, urban systems may be better positioned to advocate effectively to receive hospital community benefit investments, to demonstrate compliance with national accreditation standards, to compete for discretionary grants, and to negotiate for inclusion in demonstration programs. In these ways, initiatives designed to improve systems may unintentionally exacerbate preexisting rural-urban differences in system strength, consistent with the trends we observed.

Additionally, rural communities are vulnerable to marketplace and policy dynamics that constrain public health systems. Hospital closures and health insurer consolidations have disproportionately affected rural communities in recent years, reducing potential collaborators for public health activities.<sup>27,28</sup> During our study period, there were 70 rural hospital closures<sup>27</sup> and an increasing number of rural hospitals in financial distress.<sup>29</sup> At the same time, gains in health insurance coverage under the ACA have been less pronounced in rural areas, in part owing to the rural composition of the 14 states that have not yet expanded their Medicaid programs.<sup>30,31</sup> Lower insurance coverage results in higher demand for charity care provision, potentially at the expense of other types of public health activities. Structurally, rural communities have smaller tax bases available to support government services of any type, reducing the fiscal capacity to finance activities requiring high fixed costs, such as water and sewer systems, and activities requiring high-cost staff, such as physicians and epidemiologists.<sup>14,32</sup> Collectively, these dynamics leave rural areas with fewer resources and more competing unmet needs, relative to their size, than their urban counterparts.

#### Limitations

Several study limitations must be kept in mind when interpreting these results. The data on public health system characteristics we used in this analysis derive from information reported by local public health officials and, therefore, are limited by the knowledge and perspectives of these respondents. Survey respondents may not have full knowledge of all public health activities occurring in their communities, particularly of activities that do not involve the local public health agency. Changes in respondents over time because of agency leadership turnover may increase measurement error and limit the study's ability to detect meaningful trends over time. The difference in survey response rates between rural and urban communities may also bias our study findings. However, we believe that rural health departments who have greater capability would be more likely to respond to the survey. If rural health departments that were limited in capability were less likely to respond to the survey, our findings may underestimate the disparity between urban and rural health departments.

Furthermore, the scope of activity measured only the quantity of activities performed and not the quality of implementation. Thus, it is possible that rural public health systems choose to concentrate their efforts on fewer activities and may perform those activities with higher quality. We believe this concern is mitigated by the fact that these activities are recommended by multiple governing agencies and viewed as basic activities for a functioning public health system.<sup>10,33</sup> Additionally, these measures have been linked to a reduction in preventable deaths in urban communities<sup>13</sup>; however, further research should explore whether findings can be generalized to rural communities. Finally, the observational research design we used did not allow us to identify causal mechanisms that generate rural-urban differences in public health systems. Our analysis controlled for an array of demographic and socioeconomic characteristics beyond rurality, and these adjustments had little impact on the estimated direction and magnitude of rural-urban differences. Nevertheless, unobserved factors may have confounded our estimated relationships between rurality and system composition.

#### Public Health Implications

The US health care system faces mounting pressure to reduce persistent and widening disparities in health status between rural and urban communities. Local public health systems are often overlooked in scientific and public policy discussions as potential solutions to these rural disparities, despite evidence of their effectiveness in improving population health. To our knowledge, our study is the first to estimate the magnitude of rural-urban disparities in public health system composition using nationally representative data and the first to document increases in these disparities since the enactment of the ACA. The results indicate that current efforts to strengthen

public health systems may primarily benefit urban communities while leaving rural communities behind. These findings demonstrate a need for greater targeting and tailoring of public health system improvement initiatives to the needs and resources of rural communities. Because state and federal governments are significant sources of funding for local public health activities, these entities should explore new mechanisms for allocating resources to communities in ways that mitigate rural-urban differences in fiscal capacity and opportunities for collaboration. At the same time, public officials at all levels should accelerate the implementation of cross-jurisdictional sharing arrangements that allow small and rural communities to combine systems and pool their resources and collaborators across neighboring jurisdictional boundaries.<sup>34</sup>

These arrangements may include consolidated regional public health districts, joint purchasing and staffing models, multi-jurisdictional governance and advisory bodies, and other forms of pooling that allow systems to support a broader scope of activities and engage larger networks of collaborators. These arrangements have the additional potential to strengthen collaboration by achieving greater congruence among the geographic areas served by public health agencies, hospitals, social service agencies, schools, and other community organizations operating in rural areas. By recognizing and working together to reduce rural-urban disparities in public health systems, leaders in government and the private sector can make meaningful progress toward the promise of equality of opportunity in health. /4JPI-I

#### CONTRIBUTORS

K. M. Owsley completed the analyses, interpreted the data, and led the preparation of the article. K. M. Owsley and G. P. Mays conceptualized the study design. M. K. Hamer assisted with verification of analytical methods and data interpretation. G. P. Mays supervised the study design and analysis. All authors discussed the results and contributed to the final article.

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#### CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

#### HUMAN PARTICIPANT PROTECTION

This study was determined to not be human participant research by the Colorado Multiple institutional review board.

#### Sidebar

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## DETAILS

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# Aligning Systems for Health

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[ProQuest document link](#)

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## FULL TEXT

We are pleased to present this supplement of AJPH. At its core the intent of cross-sector alignment is to find practical ways to combine medical care, public health, and social services. Although many will agree with this approach, in practice it has been difficult to implement systematically. This supplement aims to bridge that gap. The articles in the supplement fall into four categories: system design, funding, fostering multisectoral linkage, and practical examples.

### SYSTEM DESIGN

A good introduction to the general approach is provided by Landers et al. (p. S178), working in conjunction with the Robert Wood Johnson Foundation's Aligning Systems for Health program. Using an example developed in the state of Georgia and tailored to the coronavirus pandemic, the authors elaborate a health systems theory of change. They identify four core areas through which to organize efforts:

1. refining a shared purpose,
2. providing shared data with all partners,
3. ensuring long-term financing, and
4. building a governance structure emphasizing representation.

Bultema et al. (p. S235) describe another organizational rubric using the accountable communities of health model. This model is constructed around improving the holistic experience of health from the perspective of the individual. Firmly rooted in social determinants of health, the four parts of the goal are to improve sickness care, improve overall health, reduce costs, and improve the health care provider experience. The accountable communities

ofhealth model is relatively new, and its successful implementation in Eastern Washington shows how organizations became less siloed through this intentional approach. (Meyer et al. (p. S219) also used the accountable communities ofhealth model in their implementation evaluation.)

The Washington example suggests that rural areas have unique public health workforce challenges. Owsley et al. (p. S204) point out public health activities shows rural areas lagging behind urban areas. In addition to having less comprehensive programming, rural areas also lost delivery capacity from 2014 to 2018. These findings reinforce the need for special attention to respond to rural needs.

#### ROLE OF FUNDING

For translating theory into practice, securing funding for cross-sectorial alignment is a fundamental impediment. Envision the difficulty in establishing an annual budget when juggling government-funded social work case management and fee-for-service private insurance for medical care-and that is not considering the even rarer funding for systems-level coordination. McCullough et al. present two perspectives on financing. They point out that the financing even within government is complex, with silos between local, state, tribal, and federal governments (p. S197). In another article (p. S181), McCullough et al. update the health impact pyramid to illustrate the tremendous misalignment between clinical care and social determinants of health.

To better understand public funding for public health, Leider et al. (p. S194) uncovered systematic bias in how expenditures are reported by government agencies. They found that a half to a third of official estimates of population-based public health spending include individual health services. This means that actual funding for populationlevel systems for health are even less funded than it seems. Of course, this will not come as a surprise to those working on the ground.

Directly related to funding is the development of the public health workforce. Ross and de Saxe Zerden (p. S186) turn a critical eye to building a workforce for health. And Islam et al. (p. S191) integrate multiple lines of research to provide practical examples of sustaining the health workforce. From New Mexico to New York, they compiled programs that have addressed sustainable personnel development.

#### MULTISECTORAL EFFORTS

A rich set of editorials and research reports dig deeper into the practicalities of multisectoral collaboration. To start with, Hamer and Mays et al. (p. S232) quantified public health engagement between housing, food assistance, economic development, environmental protection, and law and justice organizations. Their nationwide study reveals that cross-sectional relationships are fairly shallow, but housing and food security sectors are a bright point for integrated service delivery. Laurent et al. (p. S222) take another data-based approach connecting Medicaid and Seattle Housing Authority information to arrive at a shared understanding of health care utilization and opportunities for promotion. Using these data they identified new avenues for intervention, for example by observing that asthma diagnoses were two to three times higher for people in supportive housing than for the Medicaid population.

#### IMPLEMENTATION IN PRACTICE

Continuing along the theme of improving medical care delivery, some of the most robust studies came from evaluations of integrating social determinants of health in large urban hospital and health care settings.

Fiori et al. (p. S242) take an innovative approach by using primary care no-show visits to identify target populations with unmet social needs. In addition to accruing medical costs and inefficiencies, no-show visits serve as a proxy for unmet health needs. They report that a staggering number of nonshow visits are primarily owing to inadequate attention to social determinants of health.

Meyer et al. (p. S219) present the first results of implementing universal social determinants of health screening at four primary care practices in a Latinx neighborhood of New York City. With an emphasis on patient health literacy and an enabling information technology solution, the experience serves as a promising model for implementation elsewhere. Their experience pairs well with efforts at three primary care provider offices that are a part of the public New York City Health + Hospitals. They independently implemented screening for social determinants of health and created a linked workflow to make referrals.

Finally, three compelling articles articulate how integrated systems of care are needed to improve specific disease



states and health needs. These cover preventative mental health (Nelson, p. S225), pediatric weight management (Atkins et al., p. S251), and postpartum visits (Howell et al., p. S215).

#### WHAT IS NEXT

The breadth of response encompassed by these articles is impressive. Although it is heartening to see such innovation, we also notice gaps for future research. First, the inherently linked nature of this field makes it difficult to disentangle intervention effects using a reductionist approach, and alternative methods would be welcome. Second, many implementation projects have evaluation as a goal secondary to service provision. As such, the data needed for rigorous impact assessment may be limited, such as data from control groups. It may behoove program designers to think more critically of evaluation and publication standards during inception.

Finally, readers may note an absence of articles enumerating biological health benefits resulting from paying attention to social determinants of health. Despite the inherent complexities, the next phase of health system integration would ideally focus on situational, behavioral, and biological outcomes. In the interim, reductions in financial cost may be put forward as a proxy for success. Although the cost-saving imperative is practical and a potential hook for sustainability, we should not lose sight of the humanity and lived experience of participants. >4jPI-I

Nabarun Dasgupta, PhD, MPH

#### CONFLICTS OF INTEREST

The author has no conflicts of interest to declare.

#### Sidebar

This editorial was accepted June 3, 2020.

## DETAILS

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# Linking Health and Housing Data to Create a Sustainable Cross-Sector Partnership

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[ProQuest document link](#)

## ABSTRACT (ENGLISH)

In response to the growing regional (and national) focus on health and housing intersections, two public housing authorities (PHAs) in Washington-the King County Housing Authority and the Seattle Housing Authority- joined with Public Health-Seattle & King County to form the Housing and Health (H&H) partnership in 2016. H&H linked Medicaid health claims with PHA administrative data to create a sustainable public-facing dashboard that informs health and housing stakeholders such as an Accountable Community of Health (a governing body that oversees local Medicaid transformation projects), managed care organizations, and PHAs, allowing insights into the low-income communities they serve. (Am J Public Health. 2020; 110:S222-S224. doi:10.21 05/ AJPH.2020.305693)

## FULL TEXT

### Headnote

In response to the growing regional (and national) focus on health and housing intersections, two public housing

authorities (PHAs) in Washington-the King County Housing Authority and the Seattle Housing Authority- joined with Public Health-Seattle &King County to form the Housing and Health (H&H) partnership in 2016. H&H linked Medicaid health claims with PHA administrative data to create a sustainable public-facing dashboard that informs health and housing stakeholders such as an Accountable Community of Health (a governing body that oversees local Medicaid transformation projects), managed care organizations, and PHAs, allowing insights into the low-income communities they serve. (Am J Public Health. 2020; 110:S222-S224. doi:10.21 05/ AJPH.2020.305693) Housing is recognized as a significant social determinant of health, yet data siloes limit comprehensive insights into the relationships between housing and health outcomes.

#### INTERVENTION

In 2016, Washington States King County Housing Authority and Seattle Housing Authority collaborated with Public HealthSeattle &King County (PHSKC) to form the Housing and Health (H&H) partnership, which aims to build system alignment between public health and housing. It does so through a sustainable, integrated data system<sup>1</sup> that supports exploration of existing health needs of public housing residents via an accessible, interactive platform; longitudinal analyses of interventions aimed at improving the health and well-being of public housing authority (PHA) residents; and shared governance and development of goals common to PHAs and PHSKC.

#### PLACE AND TIME

In 2016, PHSKC received an 18-month grant from the Robert Wood Johnson Foundation to initiate the project. PHSKC serves 2.2 million residents of the most populous county in the state.

The King County Housing Authority provides affordable housing opportunities to low-income individuals and families residing in suburban King County, and the Seattle Housing Authority does the same in Seattle. The PHAs shared administrative data from 2004 onward, whereas PHSKC used Medicaid data from 2012 to 2018. Administrative housing data provided by PHAs were matched with Medicaid enrollment and claims data to create a longitudinal data set that illustrates use of housing and health care services from 2012 to 2018. This merged data set allowed exploration of population overlaps between the Medicaid and PHA service systems.

#### PERSON

PHAs shared administrative data from the US Department of Housing and Urban Development 50058 form, which contained demographic information on more than 70 000 housing residents in 2017. Medicaid data included information on almost 800 000 individuals between 2012 and 2018. More than 80% of PHA residents are also enrolled in Medicaid, representing 11% of King Countys Medicaid population.

Relative to non-PHA Medicaid enrollees, PHA residents enrolled in Medicaid were more likely to be female, to self-identify as Black or African American, and to be dually enrolled in Medicaid and Medicare (Table 1).

#### PURPOSE

Although housing has long been recognized as a key social determinant of health,<sup>2,3</sup> research on health and housing has often focused on investigating links between specific housing conditions and singular health outcomes. PHAs and local health departments such as PHSKC had a desire to gain a broad, foundational understanding of the health and well-being of residents. To that end, they sought to develop an enduring resource that covers a wide range of health conditions and allows for longitudinal analyses and evaluations of future health interventions.

#### IMPLEMENTATION

An interval of nine months to two years was required to establish data sharing agreements between PHSKC and the Washington State Health Care Agency (which operates the Medicaid program), as well as the PHAs, after which data were transferred to PHSKC. R statistical software<sup>4</sup> was used to manipulate, clean, and link data. Stakeholders participated in routine meetings to address data issues, set priorities for the collaborative, and interpret and create meaning from the data. These meetings focused on shared governance, data caveats and strengths, data findings, and data-driven decision-making approaches. The linked data set was translated into a public-facing, interactive dashboard for use by the PHAs, PHSKC, managed care organizations, and other stakeholders.<sup>5</sup> The dashboard included events and conditions such as emergency department visits, hospitalizations, diabetes, cardiovascular diseases, depression, and well-child checks.

## EVALUATION

Dashboard reviews provided insights into numerous health conditions of interest to the PHAs, PHSKC, and others. Relative to the non-PHA Medicaid population, PHA residents on Medicaid had higher rates of many of the chronic and mental health conditions analyzed (Table 2). For example, across age, gender, and race/ ethnicity categories, PHA residents were two to three times more likely than non-PHA Medicaid enrollees to meet the definition for asthma. This finding could have been due to a greater prevalence of asthma among PHA residents or higher levels of care seeking.

The H&H project has implemented continuous process improvements when needed. With an early focus on developing data standardization and automation, the partnership allows for continued integrity, accuracy, and usability of the data system over time. The collaborative has been sustained for four years, including updates with more recent data and new conditions. Also, additional funding has expanded the linkage to include Medicare data. Washington has a designated Medicaid transformation site to test new and innovative approaches to providing health coverage and care. Given that public housing residents account for 11% of the total Medicaid population, the Accountable Community of Health working on Medicaid transformation brought housing to the governance table and used the information to identify issues among a high-use population. By illuminating the health disparities present in the low-income housing population, the H&H partnership provided an opportunity for PHAs to collaborate with partners to develop programs and systems that address residents' health needs.

## ADVERSE EFFECTS

The population studied did not experience any adverse effects. The linked data set is user access controlled in a PHSKC system that meets the data security and storage standards of both the Washington State Office of the Chief Information Officer and the Health Insurance Portability and Accountability Act.<sup>6</sup> The dashboard contains only aggregate information; small numbers are suppressed to prevent accidental disclosure or identification of an individual.

## SUSTAINABILITY

The King County Housing Authority, the Seattle Housing Authority, and PHSKC have continued this partnership beyond the initial grant by leveraging funds available through the Department of Housing and Urban Development's Moving to Work program and other flexible funding sources. At a minimum, through use of the identified resources, the data set will continue to be updated with more recent Medicaid, Medicare, and PHA resident data on an annual basis. Linking other data sets or more frequent data refreshes will require additional dedicated funds. PHSKC's sharing of analytic codes through GitHub<sup>7</sup> allows for replicability in other localities among other PHAs, researchers, and local public health agencies.

## PUBLIC HEALTH SIGNIFICANCE

This type of cross-sector data linkage with nontraditional health partners allows for a shared understanding of health care use and offers the opportunity to design policies, programs, and systems to address health inequities experienced by PHA populations. Whereas previously PHAs relied on anecdotal evidence of higher rates of disease in segments of their populations, they can now quantify disparities and develop data-driven interventions accordingly. In addition to a demographic picture, the linked data set allows for longitudinal analyses to examine the impact of longer-term housing on health. PHAs are using the information collected to share resident needs with providers and are beginning to develop pilot programs with health and social service agencies, as well as other partners, to address identified needs.

The continued development and expansion of the H&H data set and dashboard has served as a critical resource for strengthening cross-sector partnerships and understanding how housing plays a role in health. It has also led to a better understanding of the effects of policy and system changes and how linked data can be used to improve the health and wellbeing of vulnerable King County residents. <sup>1</sup>PU

## CONTRIBUTORS

A.A. Laurent supervised the project and led the writing of the article. A. Matheson worked on the project, contributed to the article, performed the analyses, and created the dashboard. K. Escudero and A. Lazaga facilitated data

sharing, participated in the project, contributed to the article, and reviewed the dashboard.

## Sidebar

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Note. The data product described here uses HCA data but has not yet been reviewed or approved by the HCA.

## CONFLICTS OF INTEREST

The authors report no conflicts of interest.

## HUMAN PARTICIPANT PROTECTION

The research described here was approved by the University of Washington Human Subjects Division.

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## DETAILS

**Subject:** Population; Public health; Datasets; Linked Data; Collaboration; Medicaid; Public housing; Health care policy; Health disparities; Housing; Housing authorities; Information sharing; Government programs; Medicare; Dashboards; Partnership; Asthma; Low income areas; Partnerships; Low income groups; Affordable housing

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# Unmet Social Needs and Adherence to Pediatric Weight Management Interventions: Massachusetts, 2017–2019

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## ABSTRACT (ENGLISH)

**Objectives.** To examine effects of unmet social needs on adherence to pediatric weight management intervention (PWMI). **Methods.** We examined individual associations of positive screens for parental stress, parental depression, food insecurity, and housing insecurity with intervention adherence, and associations of 0,1 or 2, and 3 or 4 unmet social needs with adherence, among children enrolled in a 2017-2019 comparative effectiveness trial for 2 high-intensity PWMI in Massachusetts. Models were adjusted for child age, body mass index (BMI), parent BMI, and intervention arm. **Results.** Families with versus without housing insecurity received a mean of 5.3 (SD = 8.0) versus 8.3 (SD=10.9) contact hours ( $P < .01$ ). There were no statistically significant differences in adherence for families reporting other unmet social needs. Children with 3 to 4 unmet social needs versus without received a mean of 5.2 (SD = 8.1) versus 9.2 (SD = 11.8) contact hours ( $P < .01$ ). In fully adjusted models, those with housing insecurity attended a mean difference of -3.14 (95% confidence interval [CI]= -5.41, -0.88) hours versus those without. Those with 3 or 4 unmet social needs attended -3.74 (95% CI= -6.64, -0.84) hours less than those with none. **Conclusions.** Adherence to PWMI was lower among children with housing insecurity and in families with 3 or 4 unmet social needs. Addressing social needs should be a priority of PWMI to improve intervention adherence and reduce disparities in childhood obesity.

## FULL TEXT

### Headnote

**Objectives.** To examine effects of unmet social needs on adherence to pediatric weight management intervention (PWMI).

**Methods.** We examined individual associations of positive screens for parental stress, parental depression, food insecurity, and housing insecurity with intervention adherence, and associations of 0,1 or 2, and 3 or 4 unmet social needs with adherence, among children enrolled in a 2017-2019 comparative effectiveness trial for 2 high-intensity PWMI in Massachusetts. Models were adjusted for child age, body mass index (BMI), parent BMI, and intervention arm.

**Results.** Families with versus without housing insecurity received a mean of 5.3 (SD = 8.0) versus 8.3 (SD=10.9) contact hours ( $P < .01$ ). There were no statistically significant differences in adherence for families reporting other unmet social needs. Children with 3 to 4 unmet social needs versus without received a mean of 5.2 (SD = 8.1) versus 9.2 (SD = 11.8) contact hours ( $P < .01$ ). In fully adjusted models, those with housing insecurity attended a mean difference of -3.14 (95% confidence interval [CI]= -5.41, -0.88) hours versus those without. Those with 3 or 4 unmet social needs attended -3.74 (95% CI= -6.64, -0.84) hours less than those with none.

**Conclusions.** Adherence to PWMI was lower among children with housing insecurity and in families with 3 or 4 unmet social needs. Addressing social needs should be a priority of PWMI to improve intervention adherence and reduce disparities in childhood obesity.

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While trends in childhood obesity show that prevalence is plateauing in some populations, childhood obesity continues to disproportionately affect low-income families and those of racial and ethnic minorities.<sup>1 3</sup> Despite ongoing efforts, the development of successful interventions for these groups has proven challenging.<sup>4</sup> To help address this public health crisis, the US Preventive Services Task Force (USPSTF) evaluated behavior-based pediatric weight management interventions (PWMI) and determined that larger benefits were seen with higher number of intervention or "contact" hours.<sup>5</sup> A total of 26 or more contact hours in a period of 2 to 12 months was found to be effective in reducing body mass index (BMI). However, the report acknowledges that adherence to such time-intensive interventions is a major factor in determining the success of the interventions.<sup>6</sup>



Unmet social needs are those that may have immediate mitigation opportunities by the health care system such as providing food from a food pantry for those struggling with food security, but do not actually modify the underlying social and economic conditions children are living in.<sup>7</sup> Those most affected by childhood obesity are affected by unmet social needs such as parental stress, parental depression, food insecurity, and housing insecurity.<sup>8</sup> Food security is defined by the US Department of Agriculture as "access by all people at all times to enough food for an active, healthy life."<sup>9</sup>(p2) In 2017, 15.7% of US households with children were food insecure at some time during the year.<sup>9</sup> The US Department of Health and Human Services identifies 5 conditions that contribute to the definition of housing insecurity: high housing costs, poor housing quality, overcrowding, homelessness, and unstable neighborhoods (characterized by poverty, crime, and unemployment).<sup>10</sup>

With more research focusing on the psychosocial aspects of childhood obesity, evidence linking childhood obesity to specific unmet social needs such as parental stress, depression, and food and housing insecurity is growing. A recent meta-analysis demonstrated that maternal psychological stress was associated with greater risk of obesity in children,<sup>11</sup> and another study with exclusively Hispanic/Latino youths and their families showed that the number of caregivers' chronic stressors was positively correlated with obesity in their children.<sup>12</sup> The association with parental depression is less well studied, but previous studies have hypothesized that parental depression negatively affects parenting quality, which in turn increases sedentary behavior and decreases active leisure activity.<sup>13</sup> One study of parents and their 17-year-old children found that parental major depressive disorder was associated with their child's obesity risk.<sup>14</sup> Although it is clear that the household food environment, including the amount and type of food available, plays a major role in children's nutritional intake and weight status, studies to assess the relationship between food insecurity and obesity have shown inconsistent associations.<sup>15,16</sup> Housing insecurity and obesity is less well-studied, but 1 study from Los Angeles, California, showed that preschool children living in housing-cost-burdened households were more likely to have obesity.<sup>17</sup>

Research in both adult and pediatric patients suggests that unmet social needs are associated with poor engagement with treatment strategies, resulting in worse health outcomes.<sup>18,19</sup> One study examining the rate of participation in a caregiver-mediated intervention for young children with autism spectrum disorder showed that families with higher socioeconomic status were more likely to have higher rates of attendance.<sup>18</sup> Another study describing unmet needs for services, such as housing and psychiatric treatment, and their relationship with health care outcomes among individuals receiving HIV care in the southeastern United States showed that participants with 1 or more unmet needs were less likely to be taking any HIV medications.<sup>17</sup> However, the specific link between unmet social needs and adherence has not been studied in childhood obesity. An exploration of potential factors related to limited PWMI contact hours is critically important, as decreased adherence could prevent children at highest risk from experiencing the full benefits of PWMI, which in turn worsens health disparities.

This study seeks to explore the association between unmet social needs and adherence (both attendance of treatment sessions and adherence to 1 treatment recommendation- completing health coaching calls in the Healthy Weight Clinics [HWCs]), to PWMI meeting the USPSTF recommendation of at least 26 contact hours. We hypothesized that families who screened positively for unmet social needs would have fewer completed contact hours over the 1-year intervention period. We chose to focus on parental stress, parental depression, food insecurity, and housing insecurity as we felt that these areas would affect our families' ability to attend the PWMI and these were areas our clinical partners could help address.

## METHODS

Study participants were children enrolled in the Clinic and Community Approaches to Healthy Weight study, a randomized controlled trial in 2 communities in Massachusetts with large populations of low-income families. Study design is described in detail elsewhere.<sup>19</sup> The 2-arm trial compares the effects of HWCs embedded in a federally qualified community health center versus the Modified Healthy Weight and Your Child (M-HWYC) programs delivered at local YMCAs. Participants included children aged 6 to 12 years with a body mass index (BMI) of greater than or equal to 85th percentile seen in primary care at the 2 federally qualified community health centers. The study used a simple a priori randomization by health center where each participant had a 50% chance to be in either



intervention arm.

Each of the 2 intervention groups received an intensive 6-month intervention followed by a 6-month maintenance period that delivered 30 or more hours of contact time—30 hours for the HWC and 50 hours for the M-HWYC—over the 1-year intervention period, consistent with the current USPSTF guidelines.<sup>20</sup> The M-HWYC program delivered in this study is different than the current program that is being implemented nationally by the YMCA, which offers 25 sessions delivered over 4 months to children with obesity and severe obesity.

Parents of study participants were surveyed at baseline (enrollment in the program) and after 6 and 12 months from first program interaction through a phone-based interview conducted by trained research assistants who were blinded to the intervention assignment. The study preserved blinding of the research coordinators during the baseline assessment and further assessments at 6 months and 1 year. All data were collected and stored on REDCap. Parents were given a set of incentives that included a \$25 gift card for completion of each phone-based survey and up to 3 \$25 gift cards for attending the visits. Parents were also offered transportation vouchers by the intervention staff to accommodate travel to and from the sites for all HWC or M-HWYC visits. These vouchers were not offered universally; we relied on the HWC and M-HWYC staff to identify those families who needed help with transportation. All participants who were enrolled in the study were included in these analyses. Thirty-two participants were missing parent BMI and so were not included in fully adjusted models.

### Main Exposures

The main exposures for this analysis were individual positive screens at baseline to parental stress, parental depression, food insecurity, and housing insecurity. Stress was measured by the single-item question validated by Elo et al.<sup>21</sup> and recommended by the Institute of Medicine,<sup>22</sup> which asked, "Stress means a situation in which a person feels tense, restless, nervous, or anxious or is unable to sleep at night because his or her mind is troubled all the time. Do you feel this kind of stress these days?" A positive screen was identified if a parent answered "rather much" or "very much" to this question.

Depression was assessed with a single question asking parents if they had ever been diagnosed with depression: "Did you ever see a health care professional who said that you were depressed?" A positive screen was an affirmative answer to this question.

Housing insecurity was measured by 2 questions taken from the National Survey of America's Families asking parent participants (1) "During the last 12 months, was there a time when you and your family were not able to pay your mortgage, rent or utility bills?" and (2) "During the last 12 months, did you or your children move in with other people even for a little while because you could not afford to pay your mortgage, rent or utility bills?"<sup>23</sup> A positive screen was an affirmative answer to either of these questions.

Food insecurity was assessed by a pair of questions addressing food costs within the context of the family budget: (1) "Within the past 12 months we worried whether our food would run out before we got money to buy more" and (2) "Within the past 12 months the food we bought just didn't last and we didn't have money to get more."<sup>24</sup> A positive screen was determined if the parents answered "sometimes true" or "often true" to either question.

We also created a cumulative score to summarize the total number of unmet social needs reported by participants. We first counted the number of unmet social needs reported as a continuous score, which ranges from 0 to 4. Next, we categorized this score into 3 levels: 0, 1 or 2, and 3 or 4 unmet social needs. If participants did not answer 1 or more questions about the 4 unmet social needs listed previously, the cumulative score was set to missing.

### Outcome

Program adherence in hours was the main outcome. This was defined as the number of contact hours, which included attending in-person visits (HWC and the M-HWYC), in addition to completing health coaching phone calls (HWC only). Total contact hours were determined by intervention site attendance reports. Nobles et al. denote an engagement pathway, or "extent to which, and how, individuals participate in weight management services," and define the key concepts of adherence and attendance to an intervention.<sup>25</sup><sup>133</sup><sup>1</sup> Attendance refers to "individual's presence in a weight management session." <sup>25</sup>(p136) Adherence is the "extent to which individuals follow treatment recommendations," and can capture multiple dimensions of a service so that it encompasses both adherence to

treatment sessions and adherence to treatment recommendations.<sup>25</sup>(p136) We felt that adherence encompassed both attendance of treatment sessions and adherence to 1 portion of treatment recommendations, which was the health coaching calls. On average, the HWC visits were 1.5 hours in duration and the M-HWYC visits were 2 hours in duration, resulting in an intended 30 hours total and 50 hours total, respectively. Study staff did quarterly observations of the programs at the HWC and the M-HWYC to confirm average visit length was as intended. Coaching calls were approximately 10 minutes in duration, as reported by the dietitians and community health workers completing these calls.

#### Barriers to Adherence

Parents and guardians were asked on the 12-month survey about the barriers to attending the PWMI. The question was asked, "Were any of the following a problem in attending the program?" Participants could endorse more than 1 option. Answer choices were

1. getting to or from the program,
2. day or time program was scheduled,
3. how many times the program met over the past 12 months,
4. how long each visit or class was,
5. didn't like the program,
6. my family or friends didn't think the program was important for my child,
7. family changes (such as illness, moving, pregnancy),
8. didn't have child care for other children, and
9. an optional "other" box.

#### Statistical Analysis

We performed descriptive analysis of the exposures, outcomes, and covariates. We conducted the  $\chi^2$  test and 2-sample t test to compare baseline demographics between HWC and M-HWYC programs. We then examined associations of individual positive screens for unmet social needs (i.e., parental stress, parental depression, food insecurity, and housing insecurity) at baseline with adherence using the 2-sample t test. We stratified the sample by the HWC and M-HWYC programs and again analyzed them with the 2-sample t test. In addition, we examined the associations of 0, 1 or 2, and 3 or 4 unmet social needs with contact hours using unadjusted linear regression. Finally, we conducted multivariate linear regression adjusting for child age, child BMI category at baseline, parent BMI category, and intervention arm examining the associations between the individual unmet social needs and contact hours as well as the cumulative social needs and contact hours. We also examined number of visits as the outcome and engagement as attending at least 1 visit (Tables C to F, available as supplements to the online version of this article at <http://www.ajph.org>). We conducted statistical analyses with SAS version 9.3(SAS Institute Inc, Cary, NC).

#### RESULTS

At baseline, the mean child age was 9.6 years (SD = 1.8), 27% of children had overweight, 43% had obesity, and 30% had severe obesity (defined as greater than or equal to 120thpercent ofthe 95thpercentile; Table 1). Of the participants, 93% were Hispanic and 69% lived in families with an annual income of \$20 000 or less. Overall, 64.9% ofkids (264 out of 407) attended at least 1 visit, 67.7% (136/201) at HWC and 62.1% (128/206) at M-HWYC. The contact hours received ranged from 0 to 46 among all participants, with mean contact hours of 7.4 (SD = 10.2). In the HWC, contact hours received ranged from0 to 23.3, with a mean of4.8 (SD = 5.7). In the M-HWYC, contact hours received ranged from 0 to 46 hours with mean contact hours of 9.9 (12.7) hours. At baseline, 30% of parents reported experiencing stress "rather much" or "very much," 36% reported a health care professional said they were depressed, 30% reported housing insecurity, and 49% reported food insecurity.

Families with housing insecurity received a mean of 5.3 (SD = 8.0) contact hours versus 8.3(SD = 10.9) contact hours for families without housing insecurity (P <.01; Table 2). There were no statistically significant differences in adherence for children whose parent had a diagnosis of depression or had high levels of stress at baseline or for those with food insecurity, although there was a trend for fewer contact hours for those unmet social needs as well.

These trends were similar when the programs were stratified (Table A, available as a supplement to the online version of this article at <http://www.ajph.org>). In fully adjusted models, those families suffering from housing insecurity attended -3.18 (95% confidence interval [CI] = -5.36, -1.00) hours compared with those without housing insecurity. Again, the other unmet social needs were not statistically significantly associated with adherence but trended toward fewer contact hours for the other unmet social needs.

When we examined the number of unmet social needs per family, we found that those with several unmet social needs had significantly lower adherence than families without (Table 3). Families with no unmet social needs received a mean of 9.2 (SD = 11.8) contact hours, while families with 3 or 4 unmet social needs received a mean of 5.2 (SD = 8.1) contact hours ( $P < .01$ ). In fully adjusted models, those with 3 or 4 unmet social needs attended -3.74 (95% CI = -6.64, -0.84) hours less than those with no unmet social needs. The most common barriers to adherence endorsed on the 12-month survey (Table 4) included "day or time the program was scheduled" (23%) and "getting to or from the program" (19%).

## DISCUSSION

In this randomized trial of children with overweight and obesity enrolled in 2 high-intensity PWMIs, we found that unmet social needs were highly prevalent and associated with lower program adherence. Families with housing insecurity at baseline attended fewer contact hours than those in stable housing. Children whose parents reported any of the other unmet social needs assessed (parental stress, parental depression, or food insecurity) received fewer contact hours, but this was not statistically significant. We did find that regardless of the unmet social need reported, the total number of unmet social needs was significantly associated with program adherence. Families with 3 or 4 unmet social needs had significantly fewer contact hours than families without unmet social needs, suggesting a cumulative effect of unmet social needs.

Previous studies have demonstrated that people who screen positively for unmet social needs have an increased risk for obesity and its comorbidities.<sup>16,17</sup> While other studies have demonstrated the significance of unmet social needs on health outcomes, this study provides evidence that unmet social needs have an impact on the number of contact hours a participant receives, which is a marker of the most effective PWMIs. In line with effective weight management, there exists a robust body of literature to support whole-family integration into ongoing PWMIs instead of focusing on a patient.<sup>19</sup> It is critical, then, to screen and include an entire family's needs at the onset of a program. If a parent or guardian is expressing a barrier, then the family approach is undermined and impedes the success of the patient.

While it is presumed that unmet social needs are associated with increased risk of obesity, this study explores 1 potential mechanism behind this association, specifically the adherence to the PWMI. A lower program adherence may occur because families with unmet social needs, and particularly several of them, may have competing priorities and prioritize nonurgent appointments lower than other needs. The immediate need for stable housing may take precedence over attending an appointment to mitigate the longer-term consequence of their child's obesity. For example, there is evidence that suggests that a family's stress of competing demands such as home heating and cooling costs may have an adverse impact on the health and nutritional status of children and other vulnerable populations, particularly for low-income families in states with severe seasons such as Massachusetts.<sup>26</sup> Findings from the report by Frank et al. on the Low Income Home Energy Assistance Program raise the concern that a confluence of home energy costs may exacerbate possible risks to the health and growth of young children.<sup>26</sup> Furthermore, studies that look at how unmet social needs affect individuals' health decisions highlight the tradeoffs that exist between household and individual needs. Focus groups in 1 study described a prioritization of household needs such as food, rent, and utilities over paying for nonurgent medical care.<sup>27</sup> Families also relayed a reluctance to discuss financial strain in clinical settings, citing a perceived "lack of openness, embarrassment and stigma."<sup>27</sup>(p406) Although weight management intervention participants may value and prioritize adherence to physician-recommended therapies when possible, there is evidence to suggest that adherence may be affected when resources are lacking.

Although research on housing and obesity is scarce, a few studies have shown that obesity is highly prevalent in the

adult homeless population.<sup>28</sup> Our result, that families with housing insecurity had lower adherence, is in line with existing research on housing insecurity and treatment adherence in other fields of medicine. For example, in a study of diabetes treatment, participants described housing as a "foundational need" that, when not met, inhibited diabetes self-management.<sup>29</sup> In 1 case-control study looking to examine a link between home foreclosure and health care utilization, patients were more likely to have a no-show appointment and less likely to have a primary care physician visit in the 6 months immediately before the receipt of a foreclosure notice. These results suggest changes in health care utilization in the time period around foreclosure.<sup>30</sup>

Our results did not show a significant association between other individual unmet social needs (reported food insecurity, parental stress, and parental diagnosis of depression) with adherence to the PWMI. This may be because housing has a greater impact on ability to attend appointments while food insecurity, parental stress, and a diagnosis of depression may have greater impact on families' ability to make healthy lifestyle change. With regard to food insecurity, both PWMI offered healthy snacks at the group visits and supermarket gift cards for attendance, so families reporting food insecurity may have had a stronger impetus to attend the PWMI. We did, however, see a trend between each unmet social need and fewer contact hours, so it is possible that the questions to screen for these needs were not sensitive or that we were not powered to see these effects.

Intervention attrition (if individuals "permanently do not re-engage" in a service)<sup>25</sup> and poor adherence has been an ongoing challenge in this field; recent reviews reported mean attrition rates of 30% to 40%.<sup>31</sup> In the USPSTF report,<sup>5</sup> there are 9 studies that look at change in BMI in behavior-based weight loss intervention trials with an estimated contact of 26 to 51 hours.<sup>32</sup> Of these studies, 3 report "number of intervention sessions" attended by a participant, with attendance ranging from 63% to 86% of total sessions offered.<sup>33-35</sup> In our study, only 7% of participants met the threshold attendance of at least 26 hours even with incentives for adherence. However, our study population had a higher prevalence of Hispanic ethnicity and low-income participants. Race and ethnicity, low family income, age of children, and public health insurance have all been described in the literature as significantly associated with attrition or poor adherence.<sup>31</sup> In our primarily Hispanic, low-income study population, 72.4% of families reported at least 1 unmet social need, and this high prevalence may explain the low treatment adherence. We did not adjust for income or race/ethnicity as our study population was homogenous and income value was frequently missing when less than \$20 000 per year.

#### Limitations

As in any study, this study has its limitations. First, this study was cross-sectional in design, so no causal conclusions can be made. Second, when screening for depression, a single question was used to determine whether a parent had a previous diagnosis of depression. We are aware that a positive or absent diagnosis of depression does not reliably indicate the presence of signs or symptoms of depression, nor does it indicate the presence of behavioral health support. We also used a single-item screener of stress instead of longer measures to reduce participant burden. And last, the generalizability of these results is limited based on the predominantly Hispanic, low-income sociodemographic profile of the participants who received incentives for attendance and adherence such as snacks at the group visits and supermarket gift cards.

#### Public Health Implications

As PWMI strive to meet the USPSTF guidelines of offering at least 26 contact hours, it will be increasingly important to identify potential reasons for low adherence and design PWMI to address those reasons. Among all participants in this study, independent of prevalence of unmet social needs, the mean program attendance was low at a mean of 7.4 (SD = 10.2) hours (out of 30 hours for the HWC and 50 hours for M-HWYC) despite research and clinical staff efforts to keep the participants engaged, with incentives for attendance. Given the challenge of attrition in these high-intensity PWMI, future work should investigate the threshold of contact hours necessary for clinically important BMI improvements.

Finally, given our results, we strongly suggest that PWMI and health care providers for children with overweight and obesity work concurrently on mitigating unmet social needs and healthy lifestyle changes to help reduce the disparities experienced in this disease. Possible avenues for patient retention include hosting the PWMI in local

schools, public housing developments, or community venues, such as a church or playground, where patients and families already attend regularly. >4jPI-I

## CONTRIBUTORS

M. Atkins and I. Castro wrote the initial draft of the article. L. Fiechtner supervised the writing of the initial draft. All authors assisted with the conceptualization and design of the study as well as the interpretation of the data analysis, revised the article, and approved the final version of the study. M. Luo completed the statistical analyses. E. Taveras obtained funding and originated and supervised as principal investigator of the larger study.

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## CONFLICTS OF INTEREST

The authors report no conflicts of interest.

## HUMAN PARTICIPANT PROTECTION

All study procedures were approved by the Massachusetts Department of Public Health institutional review board. All participants provided informed consent.

## Sidebar

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## DETAILS

<b>Subject:</b>	Parents &parenting; Housing; Body mass index; Children; Families &family life; Statistical analysis; Food security; Intervention; Confidence intervals; Low income groups; Body mass; Body size; Obesity; Pediatrics; Childhood; Weight; Public health
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# Social Needs Screening and Referral Program at a Large US Public Hospital System, 2017

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## ABSTRACT (ENGLISH)

Many health care providers and systems are developing and implementing processes to screen patients for social determinants of health and to refer patients to appropriate nonclinical and communitybased resources. The largest public health care system in the United States, New York City Health + Hospitals, piloted such a program in 2017. Aqualitative evaluation yielded insights into the implementation and feasibility of such screening and referral programs in health care systems serving lowincome, minority, immigrant, and underserved populations.

## FULL TEXT

### Headnote

Many health care providers and systems are developing and implementing processes to screen patients for social determinants of health and to refer patients to appropriate nonclinical and communitybased resources. The largest



public health care system in the United States, New York City Health + Hospitals, piloted such a program in 2017. A qualitative evaluation yielded insights into the implementation and feasibility of such screening and referral programs in health care systems serving low-income, minority, immigrant, and underserved populations. (Am J Public Health. 2020;110:S211-S214. doi:10.2105/AJPH.2020.305642)

It is widely recognized that social determinants of health (SDOH), or the conditions in which people are born, grow, live, work, and age, affect health and well-being.<sup>1,2</sup> A subset of social needs, including housing, food, and safety, are associated with health care utilization and health outcomes, particularly among low-income populations.<sup>3</sup> The push toward value-based care in the United States at both state and federal levels has sparked a growing impetus among physician groups and hospital systems to identify these needs in the clinical setting and refer patients to appropriate social services.<sup>4,5</sup>

## INTERVENTION

We report on lessons learned from the implementation of such a SDOH screening and referral program at New York City Health + Hospitals (NYC H+H), the largest public health care system in the United States.

## PLACE AND TIME

NYC H+H provides essential inpatient, outpatient, and home-based services to more than one million New Yorkers every year in more than 70 locations, including 11 acute care hospitals, across the city's five boroughs.<sup>6</sup> In 2017, NYC H+H piloted the SDOH screening and referral programs in three of its ambulatory care clinics: an adult outpatient clinic and a pediatric clinic in Manhattan and an adult outpatient clinic in the South Bronx.

## PERSON

The intervention was designed to serve patients of NYC H+Hs ambulatory care clinics. Most of NYC H+Hs patients are low income: nearly one third (30%) are uninsured, and nearly half (49%) are Medicaid or Medicare beneficiaries.<sup>6</sup> Additionally, nearly 90% of patients are people of color, many of whom are recent immigrants.

## PURPOSE

The overarching goal of this initiative was to mitigate the impact of social risk factors on the health of patients receiving care at NYC H+H primary care clinics by identifying and addressing a predefined set of SDOH-related needs and, ultimately, to inform expansion of SDOH screening and referral across the entire NYC H+H system. Although studies have assessed SDOH screening and referral interventions in diverse settings both nationally and internationally, few studies have assessed such interventions within safety net (Appendix A provides the Institute of Medicine definition of safety net [available as a supplement to the online version of this article at <http://www.ajph.org>]) or public hospital systems. The findings we present can inform the development and implementation of SDOH screening and referral programs in primary care clinics at other similar hospitals and health systems across the United States.

## IMPLEMENTATION

Primary care providers and staff at each of the three pilot clinics worked with NYC H+H Office of Population Health staff (Appendix B provides a list of the individuals involved in screening tool development [available as a supplement to the online version of this article at <http://www.ajph.org>]) to develop patient-administered (self-report) screening tools based on the Center for Medicare and Medicaid Innovation Accountable Health Communities screening tool.<sup>4</sup> The screening tools were required to include eight critical domains (food insecurity, health insurance coverage, housing concerns, public income benefits, household interpersonal violence, adult education and literacy, daycare, and general and immigration legal problems) for which government or community-based resources were available to address patients' needs. Clinics were encouraged to retain language from the validated screening tool but were able to edit specific questions and modify wording based on feedback from patients and frontline staff. Finally, each clinic defined its target populations (e.g., only the top 90% of patients with scheduled appointments), developed workflows, and built on existing local referral networks to allow optimal implementation of the program. The screening tool was available in English and Spanish, and translation services were available for other languages.

## EVALUATION

At the request of the NYC H+H Office of Population Health, an evaluation team conducted a qualitative process

evaluation of the pilot SDOH screening and referral program, interviewing 28 key informants (hereafter referred to as "respondents") from the three pilot clinics, including leadership personnel, frontline staff, volunteers, and primary care providers, as well as central H+H leadership (Appendix C provides detailed study methods; Appendix D: interview protocols; Appendix E: a list of respondents [available as a supplement to the online version of this article at <http://www.ajph.org>]). No patients or caregivers of pediatric patients were interviewed.

The evaluation also identified key barriers, facilitators, and other lessons learned from implementation as told by the leadership, staff and volunteers most closely involved in the program's implementation (see the box on page S212). Using these data, we also identified a number of best practices for the expansion and sustainability of the SDOH screening program at all NYC H+H facilities (see the box on this page).

#### ADVERSE EFFECTS

Respondents generally supported the program, but frontline clinical staff at two clinics felt that ensuring proper completion of screens or reviewing them in a meaningful way with patients was time consuming on top of their other responsibilities. Relatedly, an unintended adverse consequence arose among primary care providers: although the program was deliberately designed for nonclinicians to have responsibility for linking patients to appropriate resources, some primary care providers felt that even simply reviewing the screens with patients brought up issues that warranted extended discussion with their patients but that such conversations were challenging to fit in during standard 15-minute patient visits.

#### SUSTAINABILITY

Respondents widely reported that the SDOH screening and referral program had great value for their patients, and they wanted it to continue. However, some respondents expressed concerns about both the sustainability and expansion of the program without additional resources. Frontline clinical staff in particular thought that relying on volunteers would not be sustainable in the long term and suggested that investing in paid staff would enable both sustainability and expansion.

The NYC H+H Office of Population Health was already pursuing expansion of the program during the pilot phase and used the data from this evaluation to guide and support those efforts to the extent possible given resource constraints. A screening tool based on feedback from the pilot has been integrated into the system's electronic health record, which was recently standardized and unified across all facilities in the system, and results of social needs screenings will be available on patient charts (Appendix F provides the standardized screening tool [available as a supplement to the online version of this article at <http://www.ajph.org>]).

Because of resource constraints, hiring additional staff to manage the program was not feasible, so NYC H+H, in partnership with a local nonprofit organization, started the Health Advocate Volunteer program to provide trained volunteers to participating clinics. The Health Advocate program addresses the main concern with the use of volunteers, lack of reliability, and inadequate coverage. In addition, NowPow,<sup>7</sup> an electronic closed-loop referral system has been enabled across all of H+H so that primary care providers can identify whether patients were able to connect with and receive services from community organizations and clinic-based services (e.g., social work) to which they were referred. NYC H+H is exploring integration of these data into the electronic health record. Finally, to further its mission of improving patients' health and enabling them to live their healthiest lives, NYC H+H will use results from SDOH screens to target intensive care management services to patients with multiple health conditions and high health care utilization who also have significant unmet social needs.

#### PUBLIC HEALTH SIGNIFICANCE

Across the country, public health care systems are the primary sources of health care to low-income, minority, immigrant, and underserved populations that have many unmet social needs. Although further research and evaluation are needed to assess the impact of SDOH screening on staff and especially patients, this evaluation provides valuable insights into the implementation and feasibility of such screening and referral programs for vulnerable populations. <sup>1</sup>PU

#### CONTRIBUTORS

C. Berry wrote the article with input from all authors. C. Berry, M. Paul, and R. Massar carried out the research

activities. R. Massar analyzed the data. R. K. Marcello and M. Krauskopf were responsible for the overall direction of the program development. All authors reviewed the final version of the article.

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#### CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

#### HUMAN PARTICIPANT PROTECTION

Institutional review board approval was not needed for this quality improvement study because the project did not constitute human participant research.

#### Sidebar

This article was accepted February 26, 2020.

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## DETAILS

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# Prevention, Health Promotion, and Social Work: Aligning Health and Human Service Systems Through a Workforce for Health

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## ABSTRACT (ENGLISH)

The seminal Consensus Study by the National Academies of Science, Engineering, and Medicine released in September 2019 describes the benefits of integrating health and social care service delivery, underscoring the central role of social determinants of health (SDOH) in health outcomes. Although the report's focus on the integration of health and social care contributes a much needed perspective to the national discourse on SDOH and offers a useful framework for organizing service delivery activities, the omission of prevention and health promotion throughout the report is a substantial limitation.

We call for increased attention to and investment in prevention and health promotion in the proposed 5As framework. We contend that effectively addressing SDOH and improving alignment between health and social systems require reconceptualization of the traditional health care workforce and renewed state and national advocacy efforts.

A paradigm shift encompassing a broader "workforce for health that is well trained in prevention, health promotion, and advocacy is critical to addressing SDOH, improving population health outcomes, and achieving health equity. Given their professional mission, training, expertise, and scope of practice, social workers are well positioned to lead this effort.

## FULL TEXT

The seminal Consensus Study by the National Academies of Science, Engineering, and Medicine released in September 2019 describes the benefits of integrating health and social care service delivery, underscoring the central role of social determinants of health (SDOH) in health outcomes. Although the report's focus on the integration of health and social care contributes a much needed perspective to the national discourse on SDOH and offers a useful framework for organizing service delivery activities, the omission of prevention and health promotion throughout the report is a substantial limitation.

We call for increased attention to and investment in prevention and health promotion in the proposed 5As framework. We contend that effectively addressing SDOH and improving alignment between health and social systems require reconceptualization of the traditional health care workforce and renewed state and national advocacy efforts.

A paradigm shift encompassing a broader "workforce for health that is well trained in prevention, health promotion, and advocacy is critical to addressing SDOH, improving population health outcomes, and achieving health equity. Given their professional mission, training, expertise, and scope of practice, social workers are well positioned to lead this effort. (Am J Public Health. 2020;110:S186-S190. doi: 10.2105/AJPH.2020.305690)

On average, the United

States spends more dollars per person on health care than any other country in the world, yet health outcomes are not commensurate with these expenditures.<sup>1</sup> A well-established body of research suggests that these disparities may be attributable in part to a lack of attention in health systems to the social determinants of health (SDOH), defined as the conditions in the places where people live, learn, work, and play that affect a wide range of health risks and outcomes.<sup>2</sup>

In September 2019, the National Academies of Science, Engineering, and Medicine (NASEM) released a consensus study report titled Integrating Social Care Into the Delivery of Health Care: Moving Upstream to Improve the Nations Health. The report underscores the benefits of integrating social care, defined as services that address health-related

social risk factors and social needs,<sup>3</sup> into traditional health service delivery systems.

The reports emphasis on SDOH and recommendations for health systems reforms offer a critical, yet frequently absent, perspective to the national discourse on US health care. However, the omission of prevention and health promotion, limited scope of advocacy efforts, and constrained conceptualization of the composition of the current health workforce are important limitations to recognize-especially in light of escalating threats to public health and social wellbeing, which are exacerbated by the current US administration.

To that end, we call for an expanded conceptualization of the specific social care activities that make up the 5As Framework (adjustment, assistance, alignment, advocacy, and awareness), as well as the reports recommendations pertaining to the theme of this special issue of the Journal. Improving the alignment of health and social service systems to address SDOH has great potential to enhance population health and advance health equity; attaining these outcomes will undoubtedly also require largescale structural change, recalibration, coordination, and collaboration. We contend that social work-described in the report as a key member of the social care workforce-is well positioned to play a leading role in this collective undertaking. Social workers possess the skill set and the capacity needed to effectively bridge the currently bifurcated US social service and health sectors.

#### CONSENSUS STUDY REPORT OVERVIEW

Findings from the NASEM report provide substantial support for the notion that addressing social needs as a part of health care delivery can help achieve better health outcomes.<sup>3</sup> Specifically, the report defines health sector activities related to social needs as social care, organizing activities into five primary categories (the 5As) designed to mitigate adverse effects of SDOH on care access and health outcomes. Recognition of both the impact of SDOH on health and the added value of delivering interventions that address social needs in health settings is a major step forward, as attending to social needs has long been considered outside the scope of traditional health sector responsibilities in the United States. Two of the 5As, adjustment and assistance, focus on improving care delivery to individual patients based on social risks, and alignment and advocacy describe ways the health care sector can influence or invest in social care resources at local levels. Awareness, the final A, spans the continuum of patients and populations by identifying the individual- and community-level socioeconomic risks and assets located in a specified service delivery catchment area.

Key recommendations center on SDOH and emphasize the social care workforce, financing health service delivery, and using data systems that include functionality of service coordination and monitoring of population health outcomes.<sup>3</sup> The report notes that social workers are integral members of the social care workforce and recommends that social workers be considered eligible for reimbursement under the Centers for Medicare & Medicaid Services. However, the scope of social care activities described in the report-regardless of whether services are provided by social workers or other members of the social care workforce-could be bolstered. With this in mind, we identify how increasing attention to prevention and health promotion, expanding advocacy efforts, and reconceptualizing the current health workforce as a "workforce for health"<sup>4</sup> can strengthen recommendations offered by the report and improve the integration of social and health care service delivery in the United States.

#### INCREASING PREVENTION AND HEALTH PROMOTION

A health service delivery system that not only improves health but also keeps the public healthy requires individual-, family-, community-, and population-level interventions that do more than facilitate timely access to routine or emergent medical visits. Developed in 1994, the Institute of Medicine's protractor depicts a graded series of need and services across what is known as the continuum of care (Figure 1).<sup>5</sup> To effectively address SDOH and truly integrate social care with health service delivery, health sector activities must include both health promotion and prevention services that address health problems before they occur-in addition to the identification and treatment of existing health problems.

Prevention efforts are understood as specific individual- or population-based interventions aimed at minimizing the burden of diseases and associated risk factors.<sup>6</sup> Oriented around empowerment, health promotion is defined as the "process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions."<sup>7</sup> Although prevention and



health promotion are core components of the continuum of care and are essential ingredients for aligning health and human services and improving population health, the word "prevention" appears only 26 times throughout the 195-page report; of these instances, more than half (14 of 26) are in references only. Similarly, the phrase "health promotion" is used only five times, all of which appear in references.

Although the NASEM report does articulate both the adverse impact of unmet social needs and the utility of universal and targeted social risk-screening approaches in service of early detection and case identification, the language of prevention is not used consistently, if at all. Moreover, examples of the 5As pertaining to patient care (awareness, adjustment, and assistance) almost exclusively describe activities designed to circumvent barriers interfering with access to or delivery of routine care, offering solutions designed to either facilitate initial care access or enhance followup visit compliance for the treatment of already present health problems.

This is noted in an exemplar about transportation: asking people about transportation access (awareness), reducing the need for transportation via telehealth (adjustment), and providing transportation vouchers for patients (assistance).<sup>3</sup> Although we do not dispute the importance of activities that enhance access to care, these strategies do not explicitly address SDOH using a prevention or health promotion lens-much less the root causes of any health problems. Although the report recommends that urban planning, zoning, and transportation policy may reduce access barriers through a non-patient-care-re-lated A (advocacy), we contend that integrating evidence-based prevention and health promotion strategies into patient care is equally important and may help reduce the need for medical visits and frequency of unnecessary hospitalizations altogether.

The practice and delivery of health care is fundamentally and critically dependent on effective and efficient communication.<sup>8</sup> Across health settings, poor communication-both among staff and with patients-has been linked to medical errors, poorer patient outcomes, lower patient satisfaction, longer stays, and higher costs.<sup>9</sup> A well-established body of research indicates that health literacy may be the "missing link" to understanding and addressing disparities,<sup>10</sup> and the NASEM report identifies health literacy as a key factor underlying SDOH. However, readily available evidence-based prevention and health promotion strategies that improve communication among providers (e.g., the situation-background-assessment-recommendations technique<sup>11</sup>) and with patients (e.g., the health literacy universal precautions toolkit<sup>12</sup>) are omitted from the report. These strategies, as well as other prevention and health promotion activities, fit in the existing 5As framework and should be included.

#### EXPANDING ALIGNMENT AND ADVOCACY ACTIVITIES

The NASEM report describes two additional As-alignment and advocacy-as essential health care sector activities; it also underscores the importance of using data tools and developing innovations in financing systems of service delivery, dedicating two chapters to these topics. Specifically, the report highlights a number of initiatives in North Carolina, including NCCARE360, a statewide coordinated care network.<sup>13</sup> Designed to electronically connect people with identified needs to community resources, the NCCARE360 data-sharing platform includes a feedback loop that enables health and human service providers to make referrals, track outcomes in real time, and monitor county-level population health outcomes.

Using a value-based service delivery orientation, North Carolina's creative use of the Medicaid 1115 demonstration waiver was also identified as an innovative model for financing social and health care integration. Through regional pilot projects, the waiver was meant to expand the eligibility of state Medicaid dollars to include reimbursement for services that address SDOH (e.g., toxic stress, housing instability, food insecurity, and transportation barriers) and preventative services integrating health and social care delivery.<sup>14</sup> Despite encouraging preliminary outcomes, the demonstration waiver was suspended in November 2019 because of the state's inability to pass a budget to pay for these innovations.<sup>15</sup>

With managed care suspended indefinitely, North Carolina Medicaid continues to operate under its more conventional fee-for-service model, and the number of North Carolina Medicaid beneficiaries served and the types of reimbursement-eligible services offered remains stagnant. This misalignment between federal and state entities has stifled innovation and interrupted the expansion and delivery of programs that improve health. Even though federal policies such as the 1115 waiver do offer states the opportunity to innovate, the fact remains that more than 97% of

current US health care expenditures address sick care-with reductions in dedicated prevention expenditures projected through 2023.<sup>16</sup> Therefore, increased advocacy efforts at both the state and national levels are needed to ensure that prevention and health promotion become national priorities.

#### RECONCEPTUALIZING THE HEALTH CARE WORKFORCE

Access to and quality of health care account for only 20% of a person's health and well-being; the physical environment, social determinants, and behavioral factors account for 80% of health outcomes.<sup>17</sup> The NASEM report states, "The health sector must decide whether to build capacity to directly assist patients' nonmedical needs or, alternatively, to partner with community-based organizations that have experience in addressing social needs and the necessary capacity to address those needs."<sup>3</sup>(p97) We contend that both of these activities are possible and that both will be required to improve our nation's health. Likewise, an expanded definition of the health sector that not only refrains from bifurcating social and health service delivery systems but also reconceptualizes membership in the existing health workforce is paramount to transformation.

The NASEM report defines the composition of the traditional health care workforce as providers of medical care (i.e., physicians and nurses); it also acknowledges critical contributions of the social care workforce in improving patient health outcomes. Across the world, health systems are increasingly recognizing that keeping people healthy and allowing them to thrive require more than access to and delivery of recommended medical care in large hospital settings.<sup>18</sup> As acknowledged in the report, research increasingly points to the need for health care service delivery to shift from hospital to community-based settings.<sup>19</sup> Refocusing on community-based care requires a prepared workforce that can be deployed in nontraditional health care settings with the skills needed to navigate community dynamics, resources, and linkages. Regardless of health setting, effectively addressing SDOH requires a skilled workforce prepared to engage and intervene with individuals, families, and communities; mobilize resources; and work across systems. As a profession, social workers have long been experts in these activities; the profession has its origins in addressing one of the most potent and seemingly intractable SDOH-poverty- and has been bridging social and health care systems for more than 100 years.<sup>20</sup>

#### SOCIAL WORK- HEALTH AND SOCIAL CARE EXPERTS

By the nature of their knowledge base and skill set acquired through masters-level training grounded in person-in-environment and ecological systems approaches,<sup>21</sup> social workers are experts in the delivery of social care. The social work workforce is well versed in how individuals, families, and communities are shaped by their environments. People do not operate in isolation, rather, they are influenced by the physical and social ecology in which they live and interact.<sup>21</sup> Accordingly, social work practitioners are already trained to understand, identify, and address both structural and contextual factors that are rooted in environments in which populations reside-the SDOH. Masters-level social work training employs competency-based approaches structured around engagement, assessment, intervention, and evaluation across individual and group systems. Many of these are designed to directly address many of the barriers to social care delivery identified in the NASEM report, including those related to provider and patient attitudes and discomfort.<sup>4</sup> Social work competencies are directly related to the purpose of the profession, which by definition is "actualized through its quest for social and economic justice, the prevention of conditions that limit human rights, the elimination of poverty, and the enhancement of the quality of life for all persons, locally and globally."<sup>21</sup>(p1) Guided by a commitment to prevention, health promotion, and advocacy, public health social work in particular uses integrated transdisciplinary approaches to promote health equity and mitigate human health problems.<sup>22</sup>

In both hospital and community-based health care settings, social workers frequently work in conjunction with other health providers to screen and assess patients; provide behavioral health interventions, care coordination, and management; facilitate communication among integrated teams, patients, and their families; and connect patients and families to community resources.<sup>23</sup> Research shows that social work involvement in interprofessional teams improves health and utilization outcomes, especially when interventions are led by social workers.<sup>24</sup> Given that the social work workforce is projected to increase by 11.4% to 16.0% by 2026,<sup>25</sup> that 70% of social workers are projected to work in health and health-related settings by 2025,<sup>25</sup> and that health care is increasingly delivered in



community-based settings,<sup>19</sup> we contend that social workers are not members of a "social care" workforce only. Rather, social workers are critical members of a "workforce for health,"<sup>4</sup> ideally working alongside medical professionals as well as community health workers, health education specialists, and others.

## CONCLUSIONS

Although local-level systems alignment and advocacy are necessary and consistent with Public Health 3.0 approaches and goals, they are not sufficient on their own. A broader scope of health sector activities that includes advocacy for both state and national investment and resource mobilization in addition to local efforts will be required to directly affect SDOH, improve population health, and advance health equity. Although many payers do not reimburse social workers, let alone fund prevention or health promotion activities, recent shifts to value-based care financing models offer promise. Expanding insurance coverage to include prevention and health promotion approaches not only will improve individual and population health outcomes but also will likely contain costs, as the need for services will be reduced. Thus, the millions of health care workers already employed in the US health care system as it is traditionally conceptualized must be equipped with the requisite knowledge, skills, and attitudes to function in new models of care that include prevention and health promotion approaches.

Health systems also must recognize the workforce necessary to improve the alignment of health and social services to improve population health—the focus of this special issue of the Journal. Limiting the "health workforce" to medical professionals only does not serve health systems or their patients well. Rather, a broader "workforce for health" that includes social workers and other social care providers—as well as medical professionals, health education specialists, epidemiologists, and others—is warranted and essential.

Since the time of our initial writing, the COVID-19 pandemic has emerged as a devastating threat to public health worldwide and has further underscored the need for alignment between health and social services and a capable workforce that is poised to respond to the social, economic, and mental health sequelae of COVID-19. A unified "workforce for health" that prioritizes prevention and health promotion across systems, delivers care along a continuum, values social workers as core team members, and operates in collaboration with community is necessary to bridge social and health sectors, improve population health, and ultimately achieve health equity. Social workers are well positioned to play a critical role in this endeavor—the fact is, they already do. ÅfPU

## Sidebar

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## CONTRIBUTORS

A. M. Ross conceptualized and wrote the majority of the article. L. de Saxe Zerden contributed substantially to the conceptualization and writing. Both authors contributed to edits and revisions.

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## CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

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## DETAILS

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# Unmet Social Needs and No-Show Visits in Primary Care in a US Northeastern Urban Health System, 2018–2019

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## ABSTRACT (ENGLISH)

**Objectives.** To characterize the association between social needs prevalence and no-show proportion and variation in these associations among specific social needs. **Methods.** In this study, we used results from a 10-item social needs screener conducted across 19 primary care practices in a large urban health system in Bronx County, New York, between April 2018 and July 2019. We estimated the association between unmet needs and 2-year history of missed appointments from 41 637 patients by using negative binomial regression models. **Results.** The overall no-show appointment proportion was 26.6%. Adjusted models suggest that patients with 1 or more social needs had a significantly higher no-show proportion (31.5%) than those without any social needs (26.3%), representing an 19.8% increase ( $P < .001$ ). We observed a positive trend ( $P < .001$ ) between the number of reported social needs and the no-show proportion—26.3% for those with no needs, 30.0% for 1 need, 32.1% for 2 needs, and 33.8% for 3 or more needs. The strongest association was for those with health care transportation need as compared with those without (36.0% vs 26.9%). **Conclusions.** We found unmet social needs to have a significant association with missed primary care appointments with potential implications on cost, quality, and access for health systems. (Am J Public Health. 2020;110:S242-S250. doi:10.2105/AJPH. 2020.305717)

## FULL TEXT

### Headnote

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**Methods.** In this study, we used results from a 10-item social needs screener conducted across 19 primary care practices in a large urban health system in Bronx County, New York, between April 2018 and July 2019. We estimated the association between unmet needs and 2-year history of missed appointments from 41 637 patients by using negative binomial regression models.

**Results.** The overall no-show appointment proportion was 26.6%. Adjusted models suggest that patients with 1 or more social needs had a significantly higher no-show proportion (31.5%) than those without any social needs (26.3%), representing an 19.8% increase ( $P < .001$ ). We observed a positive trend ( $P < .001$ ) between the number of

reported social needs and the no-show proportion-26.3% for those with no needs, 30.0% for 1 need, 32.1% for 2 needs, and 33.8% for 3 or more needs. The strongest association was for those with health care transportation need as compared with those without (36.0% vs 26.9%).

Conclusions. We found unmet social needs to have a significant association with missed primary care appointments with potential implications on cost, quality, and access for health systems. (Am J Public Health. 2020;110:S242-S250. doi:10.2105/AJPH. 2020.305717)

The US poverty rate, established by the US Census Bureau as a measure starting from 1959, has steadily declined since inception but, at 17.8%, remains the second highest among the 35 Organization for Economic Co-operation and Development member countries.<sup>1,2</sup> Furthermore, some US populations are disproportionately affected, with 20% of children on average nationally and 40% of children in the poorest urban and rural communities living below the federal poverty line.<sup>3</sup> There is a growing body of research supporting the impact of poverty on health, often referred to as the social determinants of health<sup>4,5</sup> and defined as "the conditions, in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life."<sup>6</sup> From an individual level, one can describe these drivers of health as unmet social needs.<sup>7</sup> Unmet social needs are linked to increased prevalence of chronic diseases, obesity, and poorer developmental outcomes in children.<sup>4,8</sup> Recent population health studies in the United States suggest that unmet social needs are a contributing factor to increased mortality risk on par with the leading causes of death and may account for upward of 40% of health outcomes.<sup>9-11</sup> However, the actual mechanism by which unmet social needs drive health status is less clear.

Though population health studies continue to support the impact of unmet social needs, there is less evidence on how health systems can address this issue in practical and meaningful ways.<sup>12,13</sup> In 2016, the American Academy of Pediatrics issued a policy statement recommending that providers screen for social needs during primary care visits.<sup>8</sup> More recently, in 2019, the National Academies of Sciences, Engineering, and Medicine put out a report providing more detailed guidance regarding how health systems can integrate social needs assessments in practice.<sup>14</sup>

Missed medical appointments (i.e., no-shows) have an impact on health outcomes as well and may serve as a meaningful outcome for social determinants of health-based interventions. Missed appointments are costly and disruptive to health systems, and some health systems have invested in strategies to reduce no-shows as a business imperative.<sup>15,16</sup> Past research suggests that no-show appointments are associated with increased medical costs and inefficiencies, reduced productivity and quality of care, increased ambulatory-sensitive visits in emergency departments, and suboptimized clinical outcomes.<sup>17</sup> Social needs such as transportation access, financial considerations, health literacy, insurance status (e.g., Medicaid, Medicare, insurance with limited coverage plans), and language barriers have been associated with increased no-show appointments in the primary care setting.<sup>18-20</sup> Unmet social needs may contribute to missed medical appointments and, thus, poorer health outcomes.

Social factors drive health status, yet the associated mechanism by which social needs influence health is unknown. It is clear, however, that health inequities have persisted over time despite changes in disease patterns and advances in medical technology and therapeutics.<sup>21</sup> Some authors have suggested that social condition is a fundamental cause of health inequities. This proposition can be investigated by focusing on how key resources (e.g., money, power, knowledge, and status) ultimately reduce risk and increase protective factors regardless of disease type through multiple factors including access to services.<sup>22</sup>

In this study, our objective was to determine if social needs are associated with missed appointments in the primary care setting. We hypothesized that patients with unmet social needs would have a higher proportion of no-show appointments because of the extra burden imposed by lower levels of key resources. Furthermore, we presumed that this influence was not homogeneous when comparing social needs such as food insecurity or housing quality, but rather that specific social needs may have distinct influences on no-show proportions.<sup>23-25</sup> To better elucidate possible mechanisms, we aimed to characterize the overall association between social needs prevalence and no-show proportion, as well as variation in the associations between specific social needs and no-show rates across

primary care practices in a large, urban health system in Bronx County, New York.

## METHODS

In 2017, the Montefiore Health System (MHS) launched a system-wide social determinants of health screening initiative to identify patients with unmet social needs at more than 19 ambulatory health care practices. A 10-item screening tool (Appendix A, available as a supplement to the online version of this article at <http://www.ajph.org>) was adapted to meet health system needs from a widely used, validated instrument, the Health Leads screening toolkit, after an extensive pilot process involving key stakeholders. Between April 2018 and July 2019, the ambulatory network utilized this tool at 19 participating ambulatory practices in the Bronx (17 sites) and Westchester County (2 sites), New York. Each practice had discretion to determine whom to screen and the frequency of screenings. Practice decisions were informed by a number of factors including the availability of staff (e.g., social workers, community health workers), perceived utility of universal versus targeted screenings, and provider preferences. The tool was available in 9 languages, and parents or guardians completed the screener for patients too young to respond independently. Screener results were entered into Epic, MHS's electronic health record, and providers reviewed the results with patients and offered to connect patients to practice-based resources including community health workers and social workers.

### Outcome Variables

The primary outcome was the number of no-shows to primary care appointments in the 2 years before the index visit (i.e., initial social needs screen). No-shows included same-day cancellations<sup>26</sup> but excluded visits canceled because of changes in provider schedules. Primary care specialties included pediatrics, family medicine, general obstetrics/gynecology, and internal medicine. Appointments included in the outcome were all routine office visits, follow-ups, annual examinations, same-day appointments, nurse visits, and well-child visits. Excluded were laboratory visits, flu shot sessions, and procedure visits. We also included the total number of completed visits to account for individuals with a higher number of appointments, who would have a higher likelihood of having a missed appointment.

### Study Population

We excluded respondents who did not complete 5 or more of the 10 screener questions ( $n = 171$ ) from the analysis, as well as patients with no visits in the 2 years before screening, resulting in a final sample size of 41 637 unique patients.

### Predictors and Covariates

The primary independent variables were the categorized number and types of social needs reported by the patient. We calculated the number of social needs based on the number of questions to which each patient responded "yes." We then grouped this number into none, 1, 2, or 3 or more, with cutpoints selected based on the distribution of social needs. Additional covariates included age (categorized as 0-5; 6-11; 12-20; 21-34; 35-49; 50-64; and  $\geq 65$  years), sex, race/ ethnicity (Hispanic, non-Hispanic Black, non-Hispanic White, non-Hispanic Asian/ Pacific Islander, other, and a missing indicator), health insurance at the time of the screening visit (Medicaid, Medicare, commercial, and a missing indicator), the patient's preferred language (English, Spanish, other, and a missing indicator), and whether the respondent lived in New York City (NYC) public housing (more information later in this section).

We used the Elixhauser Comorbidity Index to capture patient health status.<sup>27</sup> Briefly, the Elixhauser Comorbidity Index is the number of 31 diagnostic criteria (e.g., uncomplicated hypertension, complicated hypertension, depression) based on International Classification of Diseases, Tenth Revision, Clinical Modification, codes from the 2 years before baseline. We categorized the measure as 0, 1, 2, 3 to 5, and 6 or more. We extracted respondent data by using MySQL to query data from the Epic Electronic Health Record Data Warehouse and using Looking Glass Clinical Analytics, version 4.4.2 (Streamline Health, Atlanta, GA), an online application supporting extraction of clinical data.<sup>28</sup> As a proxy marker of individual socioeconomic status variables, we included the proportion of the population living below poverty at the census block group level. Area-based poverty came from the 2013-2017 American Community Survey at the block group level,<sup>29</sup> the smallest geographic unit for which those data are available.



To geocode patient addresses to obtain public housing status and area-based measures, we used the New York State Street and Address Composite geocoding services tool for New York State addresses, and the US Census Address Batch Geocoder for non- New York State addresses.<sup>30,31</sup> Across both methods, we successfully geocoded 97.9% of respondents. We identified patients living in NYC public housing by flagging addresses that geocoded to tax lots associated with public housing.<sup>32</sup> We included a missing indicator for area-based poverty and public housing status for patients who were not geocoded successfully.

#### Analysis Approach

We calculated the overall and subgroup-specific no-show proportion. Because of evidence of overdispersion, we used negative binomial regression to derive the covariate-adjusted no-show proportion for overall social needs and each individual social need. While we also considered a zero-inflated negative binomial regression model, both models had essentially identical Akaike information criterion data and minimal quantitative differences, so we used the negative binomial model. To understand how the no-show proportion varied by subgroup, we also estimated the no-show proportion ratio, which compares the no-show proportion for those with social need(s) to those without. We incorporated robust standard errors into the models to reduce concerns regarding heteroskedasticity.

We used a 3-stepped analytic approach. First, we fit unadjusted models (model 1) that only accounted for the number of appointments as an offset variable, followed by models (model 2) similar to model 1 but also adjusting for sociodemographic variables described previously (age, sex, race/ethnicity, preferred language, payer, area-based poverty, public housing status, and patient health status via the Elixhauser Comorbidity Index). Lastly, a final set of models (model 3) adjusts for the sociodemographic variables in model 2 but also for all other social needs, as there was a modest correlation between many of these needs. Thus, model 3 estimates the association between the no-show proportion and each individual social need, taking into account all of the other social needs. To ensure that multicollinearity between social needs would not be an issue for model 3, we also estimated the variance inflation factors for each social need. We accounted for clustering of individuals by census block group in variance estimation for all analyses including area-based poverty.

Additional analyses used a similar 3-stepped approach to examine whether the association between the number and types of social needs and the no-show proportion varied for children (aged <18 years) versus adults and, among adults, whether the association varied for those with higher health status (Elixhauser comorbidity score <3) versus lower health status (score  $\geq$ 3). We tested potential effect modification in the ratio of no-show proportions by age and number of comorbid conditions by including multiplicative interaction terms in the models while accounting for the full set of covariates (e.g., model 2 for overall risks and model 3 for individual risks). Because of the number of tests for interaction, we considered an interaction with a P level of less than .01 to be statistically significant. We completed statistical analyses by using Stata version 13.1 (StataCorp LP, College Station, TX) and for mapping we used ArcGIS version 10.3 (Environmental Systems Research Institute, Redlands, CA). We analyzed data in summer 2019.

## RESULTS

The overall no-show appointment proportion in this sample of 41 637 participants was 26.6% in the 2 years before the social needs screening, with an average of 8 appointments and 2 no-shows per patient (Table 1). Certain population subgroups had a higher proportion of no-shows, including those who were Hispanic or non-Hispanic Black, who preferred English, who were insured through Medicaid, who lived in public housing or in a higher poverty block group, and who had a Elixhauser comorbidity index of less than or equal to 2. Our demographic data regarding representativeness of the screened population to the primary care population at participating clinics, the distribution of social needs by sociodemographics, and on the screener itself are similar to previous findings.<sup>33</sup> Both unadjusted and adjusted models suggest that those with 1 or more social needs had a significantly higher no-show proportion (31.5%) than those without any social needs (26.3%), a 5.2 percentage-point difference representing an 19.8% increase in comparison.

Figure 1 provides the no-show proportion ratio for the number of needs and need categories. Adjusted models reveal a positive, dose-response relationship between number of social needs and the no-show proportion. These

models also highlight elevated no-show proportions for those with specific needs, including health transportation or health cost needs. Table 2 further details a significant dose-response relationship between increasing number of social needs and the no-show proportion. The dose-response between number of social needs and no-shows only modestly attenuated upon adjustment for covariates. In both unadjusted and covariate-adjusted models, there was a significant positive association between the no-show proportion and having each individual social need. The strongest association was for those with health care transportation and health care affordability needs: 33.8% and 26.2% higher, respectively, than those without (36.0% vs 26.9% and 34.2% vs 27.1%).

In the fully adjusted model that included adjusting for each social need, the difference in the no-show proportions for those with and without each individual need attenuated. Health care transportation needs nevertheless retained the strongest statistically significant association with the no-show proportion. Specifically, those with a health care transportation need had a 24.4% higher no-show proportion than those without (33.6% vs 27.0%), the largest differential for any of the adjusted estimates in social needs.

We conducted stratified analyses based on age group and comorbidities as summarized in Table 3. We did not find any significant differences in the associations between the number and types of social needs and the no-show proportion for children versus adults. In the covariate-adjusted models, for both children and adults, the no-show proportion was positively and significantly associated with each individual social need, although for some individual needs (e.g., care need for children), the relationship was not meaningful. After we fully adjusted for each individual social need, the difference in the no-show proportions for those with and without each individual social need decreased. For adults, similar to children, the strongest association between individual social needs and the no-show proportion in the fully adjusted model was for the health care transportation need. The no-show proportion for adults with the need was 32.4% versus 26.4% for those without. Adults with a housing security need, a utilities shut-off need, and a health care cost need also had a significantly higher no-show proportion than did their counterparts without each need, while children with a getting-along need had a significantly higher no-show proportion than did their counterparts without the need.

When examining the relationship by comorbidity score subgroup, we found there was a significant positive association between the presence and number of social needs and the no-show proportion for those with both lower and higher comorbidities. As with age, however, there were no significant differences in the associations between the number and types of social needs and the no-show proportion for those with lower versus higher number of comorbidities. In the fully adjusted model, the strength of the associations attenuated for each individual social need in both comorbidity groups. However, the no-show proportion remained significantly higher for those with housing security and health care transportation needs, where the largest relative difference for both groups was for those with a health care transportation need versus those without. For the higher comorbidity group only, those with a utilities shut-off need had a significantly higher no-show proportion than did those without the need (26.6% vs 23.9%, respectively).

## DISCUSSION

These findings from a study conducted in a large, diverse urban population present several important implications for health systems that serve similar communities and may have generalizable policy and operational considerations. We believe this is the first health system-wide study focused on examining the strength of association of social needs and no-show appointments in primary care. There was a significant difference in no-show behaviors and social needs in our sample of 41 637 individuals in all models. We found that after we adjusted for several covariates including demographics, census tract poverty estimates, and clinical complexity, the no-show proportion for those with 1 or more social needs was 5 percentage points higher than those without, and increasing number of social needs ( $\pm 2$  and  $\pm 3$ ) was associated with a significantly higher proportion of missed appointments. Though, to our knowledge, previous studies have not assessed possible dose relationships, our findings are similar to a recent cross-sectional study that examined the association of any self-reported social need and patients missing more than 1 appointment in a calendar year in 2 urban primary care practices.

Regarding the implications of these findings, we found that across this health system during the same study time

period, there were 3 525 975 primary care visits. Therefore, this 5-point difference in missed appointment proportion after adjustment represents 176 298 no-show appointments that may be attributable to social needs, a stream of forgone revenue to the health system exceeding \$18 million over 2 years. This finding has important health access, quality, and cost implications for health systems, especially those that serve large low-income communities. Given that the data indicate there is not high collinearity between the social needs (variance inflation factors less than 1.33 for all needs), the attenuation in parameter estimates from model 2 to model 3 are not a result of multicollinearity, but rather can be interpreted as reflecting the independent association between each social need and the no-show proportion. Thus, in addition to a positive, graded relationship between the proportion of no-shows and number of social needs, we were able to identify the individual social needs, including health care transportation and health care cost, with the strongest association with the no-show proportion. This finding is similar to what has been reported in other studies, suggesting the influence of transportation on missed appointments.<sup>17,26</sup> More specifically, our study prompted focused efforts to maximize patient access to non-emergency medical transport benefits and supported our health system's advocacy efforts to optimize and preserve existing public transportation options. These may represent opportunities for health systems to target specific social needs that may disproportionately contribute to no-show appointments.

Our findings appear plausible as one could imagine how a lack of key resources may influence health-seeking behaviors. For example, our findings support that lack of access to transportation will make it harder to attend routine primary care visits. This finding supports the theory of other authors' proposed mechanism that lack of key resources (i.e., social needs) increases risk and decreases protective factors related to health care access independent of disease type.<sup>22</sup> Finally, we found that the strength of the association between no-show proportion and social needs did not vary for children versus adults or by comorbidity status.

#### Limitations

Despite the findings and possible implications of this study, there are important limitations, including significant issues related to establishing causation and temporality. First, we cannot attribute this difference in no-show appointments to a single factor, as we know patient behavior is multifactorial. We also assume that the social needs assessment taken at 1 time point is stable enough of a proxy for social risk over time. It is likely that these needs are dynamic in nature and vary. Furthermore, the timeframe of the social needs as measured in the screener vary and the outcome of interest, no-shows, is defined in the 2 years before the screener. While it would be preferable to define the outcome closer to the screener date, limiting the timeframe would have biased the sample toward less-healthy patients, as fewer healthy patients would have had at least 1 primary care visit in the 2 years before the screener. All data were collected retrospectively, and social needs assessments were cross-sectional, so it is not possible to establish temporality.

Next, although the study was large in size with more than 40 000 participants, we utilized a convenience sample with data extracted from electronic health records, which presents issues related to sampling and classification biases. We did not assess the representativeness of sample vis-a-vis the more than 300 000 patients served by this ambulatory network. These data utilized patients' self-reported social needs that were then entered into an electronic health record by non-research staff. Patients may underreport social needs because of a multitude of concerns ranging from stigma to a perceived lack of benefits.

Regarding the regression modeling, we included several covariates that may have colinear relationships around measurements of relative poverty. There is also potential for an ecological fallacy in our results, as we utilized population-level data to make inferences on individual behaviors. Finally, because of this study design, even if one could address these social needs, our data do not shed any light on whether this would result in changes in health-seeking behaviors.

#### Public Health Implications

These data suggest that unmet social needs may contribute to health access disparities attributable to reduced primary care visits. This finding may require health systems to work more closely with public health and social service sectors as these needs may be better addressed through partnership. Understanding the epidemiology of

social risk and extent of the problem through prevalence assessments is a critical first step. Next steps involve aligning public health, community-based, and practice-oriented approaches that aim to address social needs. Our data suggest that the burden or influence of certain social needs, such as transportation, may place a disproportionately higher burden on patients trying to keep medical appointments, an important finding. Our health system has invested in and continues to examine multiple approaches that may mitigate the burden of social needs, as it is unlikely 1 approach or actor alone will be sufficient to address the complexity and multifactorial influence. Public health, social service, and health service researchers need to align strategies and advance evidence-based practice through community-engaged scholarship, implementation research, and pragmatic study designs. Health systems that welcome such collaboration and acknowledge the critical impact of social needs on individual health will be best positioned to deliver the highest quality of services to the communities they serve. ÁFPU

#### CONTRIBUTORS

AH authors participated in the concept, design, data interpretation, and main text of the study. The data analysis was led by C. G. Heller and C. D. Rehm with input and interpretation from all authors.

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#### CONFLICTS OF INTEREST

The authors have no conflicts of interest.

#### HUMAN PARTICIPANT PROTECTION

The study was reviewed and approved by the Albert Einstein College of Medicine institutional review board (2017-8434).

#### Sidebar

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## DETAILS

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# Universal Screening of Social Determinants of Health at a Large US Academic Medical Center, 2018

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## ABSTRACT (ENGLISH)

Universal screenings for social determinants of health (SDOH) are feasible at the health system level and enable institutions to identify unmet social needs that would otherwise go undiscovered. NewYork-Presbyterian Hospital implemented SDOH screenings together with clinical screenings in four outpatient primary care sites. Aligning SDOH screening with clinical screening was crucial for establishing provider buy-in and ensuring sustainability of screening for SDOH. Despite some challenges, universal screening for SDOH has allowed NewYork-Presbyterian Hospital to identify unmet needs to improve population health. (Am J Public Health. 2020;110:S219-S221. doi:10.2105/AJPH.2020.305747)

## FULL TEXT

### Headnote

Universal screenings for social determinants of health (SDOH) are feasible at the health system level and enable institutions to identify unmet social needs that would otherwise go undiscovered. NewYork-Presbyterian Hospital

implemented SDOH screenings together with clinical screenings in four outpatient primary care sites. Aligning SDOH screening with clinical screening was crucial for establishing provider buy-in and ensuring sustainability of screening for SDOH. Despite some challenges, universal screening for SDOH has allowed NewYork-Presbyterian Hospital to identify unmet needs to improve population health. (Am J Public Health. 2020;110:S219-S221. doi:10.2105/AJPH.2020.305747)

Health care systems have been called on to address the social needs of patients to increase health equity and achieve the triple aim of improving patient care, improving population health, and reducing costs.<sup>1</sup> Models for implementing social determinants of health (SDOH) screening in clinical sites have emerged, and most involve use of waiting room time to complete screening.<sup>2</sup> Concurrently screening patients for clinical conditions has become standard of care for primary care disciplines and has emerged as a priority for several regulatory agencies.<sup>3</sup> However, most health care systems work under resource-constrained conditions and lack the infrastructure and incentive to establish universal screening for clinical and psychosocial needs.

#### INTERVENTION

We describe the development, implementation, and feasibility of universal screening for SDOH at a large, urban academic medical center. Through funding from the Centers for Medicare and Medicaid Services Innovation Center's Accountable Health Communities (AHC) Model, NewYork-Presbyterian Hospital at Columbia University implemented universal screening by using the AHC Screening Tool for SDOH in four hospital-affiliated, community-based primary care practices that offer pediatrics, internal medicine, and obstetrics and gynecology services. Screenings were completed on tablets via NowPow,<sup>4</sup> a SDOH screening and referral platform, and were coupled with clinical screenings, including depression, substance use, and asthma, to encourage provider buy-in and ensure sustainability of the model (NewYork-Presbyterian Hospital used the Centers for Medicare and Medicaid Services Innovation Center's Health Related Social Needs Screening Tool to screen for SDOH; the Patient Health Questionnaire-2/9 for depression; the Alcohol Use Disorders Identification Test, Drug Abuse Screening Test, Screening to Brief Intervention, and Car, Relax, Alone, Friends/Family, Forget, Trouble for substance use; and the Asthma Control Test for children 4-11 years or 12 years and older for asthma).

#### PLACE AND TIME

The program took place in four primary care practices located in northern Manhattan, New York. The pilot screening program was launched in May 2018 with full implementation in September 2018.

#### PERSON

Northern Manhattan is home to largely Latino neighborhoods where nearly half the population is foreign-born, 18% live below the poverty line, and 40% are limited English speakers.<sup>5</sup> All dual-beneficiary patients were eligible for screening. A screening frequency logic was established by discipline and built into the electronic medical record (Appendix A, available as a supplement to the online version of this article at <http://www.ajph.org>).

#### PURPOSE

This program was driven by a hospital mission to improve population health and address health equity in surrounding communities. Given the large role that SDOH play in the health of populations, identifying unmet needs through a universal screening program is a promising tool to begin to address root causes and improve overall health.

#### IMPLEMENTATION

The program was implemented in a stepwise approach to establish proof of concept before scaling to all sites. Multidisciplinary teams consisting of physician champions and practice administrators were formed to develop site-specific workflows, taking into consideration each site's culture, workforce, and other competing priorities. Clinical screens were incorporated into workflows, and results were integrated into the electronic medical record. We chose a pediatrics primary care site to pilot the full model, and we used quality improvement Plan-Do-Study-Act cycles to inform implementation (Appendix B, available as a supplement to the online version of this article at <http://www.ajph.org>). Once screening was implemented in the waiting room without jeopardizing clinical workflow, the program expanded to all four sites and three disciplines over a period of twelve months. To prepare practices, a

series of lectures were given to physicians and practice staff that focused on the role of SDOH in health care and the importance of identifying and addressing social needs.

A cohort of volunteers assisted sites with the screening process, which took approximately 10 minutes to complete. Volunteers helped patients with computer and health literacy issues, provided community resources to patients based on identified needs, and collected data to support ongoing performance improvement.

Program and site leadership met regularly to discuss implementation challenges such as information technology and clinical workflow. Run charts were developed to track progress at each site, and screening data were shared regularly with site leadership to monitor and improve performance. Each discipline was supported with their unique challenges with adoption. Elderly internal medicine patients struggled with computer literacy, and the high volume of obstetrical patients limited the time available to complete screening before the clinical encounter.

After screening, NowPow automatically stratified patients according to risk level and produced customized referrals to social services for identified needs (Appendix C, available as a supplement to the online version of this article at <http://www.ajph.org>). High-risk patients (defined as having two or more emergency room visits in the last 12 months and at least one social need identified through the AHC Screening Tool) who consented to social services navigation received closed-loop referrals to collaborating community service providers through information technology connectivity established by NowPow (Appendix D, available as a supplement to the online version of this article at <http://www.ajph.org>).

## EVALUATION

Preliminary data revealed that between September 2018 and August 2019, 13 273 patients were screened across four sites and three disciplines: 1939 patients were identified with previously undetected needs, and 944 were enrolled in navigation to address social service needs (Figure 1). An accurate screening rate has been difficult to determine because of data extraction limitations. Of the population, 27% screened positive for food insecurity, 25% screened positive for housing insecurity, 12% screened positive for transportation needs, 8% screened positive for utility needs, and 1% screened positive for safety needs (Figure 2). Of the population screened, 82% identified as Hispanic, 14% identified as Black/African American, and 68% identified as female. The average household size was 3.6, with an average household income of \$24000.

## ADVERSE EFFECTS

Implementation brought to light the complexities of a decentralized clinical delivery system. Despite hospital mandates for standardization across sites, it became clear that to facilitate practice ownership of the screening program, each site would require the flexibility to change and adapt its workflows. Technological problems between the screening platform and the electronic medical record interface resulted in workflow disruptions.

Patients who seek care at these practices often feel overwhelmed by the health care system. Introducing a new program in the waiting room that requires computer and narrative literacy adds to this burden. Volunteers were encouraged to approach patients and offer assistance with screenings, to minimize the potential embarrassment that comes with actively seeking help. Staff and volunteers also were encouraged to explain the importance of screening to patients but to emphasize that SDOH screenings were voluntary.

## SUSTAINABILITY

The decision to embed SDOH screenings with routine clinical screenings has been key to sustainability because the latter are mandated by myriad regulatory bodies governing the hospital. Incorporating technology, despite difficulties, ensures that all screening efforts can be tracked and offers data that can be used to understand drivers of health care use and cost.

In response to resource gaps identified by the screening process, two groups were formed to work with community partners on food insecurity and housing instability. As practice staff learned more about the needs of the community and the potential effect that addressing these needs could have on patients, they became increasingly motivated and positively engaged in the screening process.

## PUBLIC HEALTH SIGNIFICANCE

Screening for SDOH has enabled NewYork-Presbyterian Hospital to identify the social and environmental conditions

affecting its patients and address needs that extend beyond standard clinical care. The data collected over the course of implementation were the most robust and standardized social and demographic information the hospital had compiled to date. They have been used to inform programming and interventions at both the practice and the community levels, including engaging a nutritional referral program for families identified as food insecure. In addition, SDOH screening has helped to identify a not previously detected population of "rising risk" patients, who are socially but not yet medically complex. >4jPI-I

#### CONTRIBUTORS

D. Meyer and E. Lerner wrote the article and provided the data for Figures 1 and 2. A. Phillips contributed to writing and editing of the article. K. Zumwalt contributed to editing of the article. All authors reviewed the final article.

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Note. The contents provided are solely the responsibility of the authors and do not necessarily represent the official views of the US Department of Health and Human Services or any of its agencies.

#### CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

#### HUMAN PARTICIPANT PROTECTION

This project was reviewed and has been approved by the Columbia University institutional review board.

#### Sidebar

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#### DETAILS

<b>Subject:</b>	Primary care; Medical records; Population; Public health; Medicaid; Health care policy; Internal medicine; Hospitals; Sustainability; Pediatrics; Medicare; Patients; Health care facilities; Electronic health records; Asthma; Drug use; Information technology
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# Aligning Health and Social Systems to Promote Population Health, Well-Being, and Equity

Wojcik, Oktawia, PhD; Miller, Carolyn E, MSHP; Plough, Alonzo L, PhD

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## FULL TEXT

Strengthening the integration and alignment of health care, public health, and social service systems is a vital part of promoting health equity and building a culture of health in which everyone has a fair and just opportunity to be as healthy as possible.<sup>1</sup> The need to promote alignment across sectors to address persistent inequities in marginalized populations has become more acute as we face the COVID-19 pandemic and plan for an equitable recovery.

This AJPH special issue, *Aligning Health and Social Systems*, presents some of the important work that is of heightened relevance in the context of COVID-19. The variety of topic areas and systems involved in the research reflects the breadth of this work. This issue includes articles on such diverse topics as health and housing; health- and social servicespending patterns; aligning funding streams across mental health, criminal justice, and public health; integrating social determinants information into electronic health records; ruralurban differences in multisector public health systems; and links between public health and social service organizations.

The COVID-19 pandemic has challenged the nation in a multitude of ways, including the unprecedented stress it has placed on health care, public health, and social service systems. Never in our lifetime have we seen such a need for these systems to respond rapidly, equitably, and collectively. The economic fallout of COVID-19 will severely affect Americans for years to come, and the same can be said for health care, public health, and social service systems.

The pandemic has exposed, in the harshest light, overwhelming inequities in the United States, such as housing instability and cost burden, lack of living wage income, and lack of access to healthy and affordable foods. Inequities in health care- in the form of COVID-19 testing and antibody screening availability, as well as access to medical professionals and hospitals-have never been more obvious. What is the cause of the myriad disparities that we see? Structural racism, other forms of discrimination, and a history of disinvestment in low-income communities and communities of color fuel COVIDs unequal impacts on African Americans, Latinos, Asian Americans, Pacific Islanders, and indigenous people; and sexism amplifies the effects of community closures and the economic downturn on women.

What has become clear in this pandemic is that health care and public health must work together and make appropriate connections to social services that provide housing, transportation, nutrition, income, and education supports. We must look to the alignment of these systems and services as we navigate this pandemic and plan for



an equitable recovery. This emerging field can provide evidence and guidance on how to most effectively and efficiently coordinate and align finance and delivery systems across these key sectors to support those most in need. Such alignment and coordination becomes even more important as we anticipate greater need and fewer resources to serve vulnerable populations.

Systems alignment is a core component of a culture of health.<sup>2</sup> The Robert Wood Johnson Foundations (RWJFs) Systems for Action research program was established to build the evidence base for system alignment through grant support for research to test new ways of connecting the nations fragmented medical, social, and public health systems. The program supports scientific studies that evaluate the implementation and impact of novel approaches to systems alignment. As seen in several articles in this issue of AJPH, the system alignment mechanisms studied through Systems for Action take many forms, including shared governance models, platforms for data exchange and integration, bundled and blended payment models, and cross-cutting workforce components such as navigators and integrators.

More recently, RWJF has launched Aligning Systems for Health, a new initiative focused on identifying, testing, and sharing what works to align health care, public health, and social services to better address the goals and needs of the people and communities they serve.<sup>3</sup> Specifically, this initiative supports original research and evaluation, the synthesis and dissemination of existing research findings, and relationship building with those already working in the field.

Those working in these and other research programs must now consider how to take advantage of the opportunity that this pandemic has created to plan and implement equitable recovery efforts. The foundation recently released an issue brief titled Health Equity Principles for State and Local Leaders in Responding to, Reopening and Recovering From COVID-19" (<https://rwjf.ws/3fjOHOI>) to inform and guide these efforts.

Multisector collaboration between health care, public health, and social services must be at the core of supporting equitable, healthy, and resilient communities during pandemic recovery. The first step is to examine how inequity is a consequence of policies and practices undergirding these systems. Next, recovery efforts should include community engagement so that change is led by those most affected by the inequities. We also need to maintain focus on population health and well-being- but not only on individual clinical conditions, as has frequently been the case in the past. The alignment of financing mechanisms across health care, public health, and social service systems and data sharing across systems need to be at the forefront of all equitable recovery efforts. As we navigate through equitable recovery, we need to test innovations, adaptations in alignment mechanisms, and the integration of service delivery that have emerged out of necessity during the pandemic.

A review of work in systems alignment also suggests a need for future studies to focus on replication and sustainability of successful alignment models. Many promising models of alignment, including those examined in this journal issue, have been tested in only one setting and for relatively brief periods. Differences in community context, populations, and systems can affect whether models that work in one location can be successful in another. Issues of replicability will likely become more important as communities approach and move through pandemic recovery in different ways. Similarly, it will be important to build evidence about successful sustainability strategies that guard against these systems backtracking into silos because of the unprecedented burdens placed on them as well as to identify how they can reinforce and support each other through collaboration, integration, and alignment.

Many of the studies included in this special issue derive from RWJF's Systems for Action research program, and we encourage readers to consider how these findings can be moved into action in advancing health and health equity across the United States. Key actions to consider include the following:

1. disseminating findings to policymakers and other stakeholders,
2. building evidence about replication, spread, and sustainability,
3. strengthening connections among the implementers of systems alignment strategies to continue to share and build on this work to further the field, and
4. translating systems alignment research for the new context of COVID-19 pandemic recovery and rebuilding.

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## Sidebar

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### CONTRIBUTORS

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### CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

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# Accountable Communities of Health, Health and Social Service Systems Alignment, and Population Health: Eastern Washington State, 2017–2019

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## ABSTRACT (ENGLISH)

**Objectives.** To assess health system transformation and alignment in the Better Health Together (BHT) accountable community of health (ACH) region of Eastern Washington. **Methods.** This trend study leveraged cross-sectional data collected in 2017 and 2019 in Eastern Washington. A total of 165 responses from individuals representing 112 organizations were collected in 2017, and 211 responses from individuals representing 92 organizations were

collected in 2019. More than one third (38%; n = 35 organizations) of cases overlapped between the 2 samples. Implementation of the ACH model is the exposure. Outcomes of interest included indicators of system transformation and alignment. Results. Organizations throughout BHT's region became more engaged, less siloed, and better connected from 2017 to 2019. At least some of the increased connectivity observed was directly attributable to the role BHT played in facilitating the creation or maintenance of interorganizational relationships across Eastern Washington. Conclusions. The ACH model is a promising approach to aligning health and social service systems for population health improvement. Evidence shows that ACH organizations can serve as trusted conveners able to facilitate interorganizational relationships across sectors. (Am J Public Health. 2020;110:S235-S241. doi:10.2105/AJPH.2020.305773)

## FULL TEXT

### Headnote

**Objectives.** To assess health system transformation and alignment in the Better Health Together (BHT) accountable community of health (ACH) region of Eastern Washington.

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**Results.** Organizations throughout BHT's region became more engaged, less siloed, and better connected from 2017 to 2019. At least some of the increased connectivity observed was directly attributable to the role BHT played in facilitating the creation or maintenance of interorganizational relationships across Eastern Washington.

**Conclusions.** The ACH model is a promising approach to aligning health and social service systems for population health improvement. Evidence shows that ACH organizations can serve as trusted conveners able to facilitate interorganizational relationships across sectors. (Am J Public Health. 2020;110:S235-S241. doi:10.2105/AJPH.2020.305773)

Public health has evolved to champion the importance of improving social determinants of health, working across sectors, and engaging diverse communities.<sup>1</sup> This has resulted in a widespread acceptance that collaboration and alignment across the social service, medical care, and public health sectors are necessary components to health system transformation.<sup>2</sup> Although public health experts agree it is necessary to work with diverse stakeholders to improve population health, there is not consensus on how to go about the hard work of achieving successful cross-sector collaboration and alignment in practice.<sup>3</sup> Various approaches have been presented as solutions to achieving alignment across sectors, yet there is little evidence to guide practitioners and policymakers as they determine which approach is best suited to their needs. A promising model that seeks to guide health system transformation through crosssector collaboration and alignment is the accountable communities of health (ACH) model.

### THE ACCOUNTABLE COMMUNITIES OF HEALTH MODEL

The ACH model offers one approach to aligning resources and activities to achieve the quadruple aim, which strives for better care, better health, reduced costs, and improved health care provider experience.<sup>4-7</sup> With its grounding in the collective impact framework and its focus on the social determinants of health, the ACH model takes a holistic perspective of population health by aligning social services, medical care, and public health services at the local level with additional coordination at the state level.<sup>8,9</sup> Unlike the traditional conception of a health care delivery system that focuses on health care providers treating ill people with services, "ACHs address health from a community perspective and consider the total investment in health across all sectors."<sup>10</sup>(p365) The ACH model brings cross-sector stakeholders together to improve population health at the local level and is a significant step toward integrating traditional public health and health care services with community efforts that address the social determinants of health.

Several states and dozens of communities across the United States have taken various approaches to

implementation of the ACH model. Although there are differences in key elements such as the source of initiating leadership, funding models, and governance structure, there are also underlying similarities across implementation sites. These similarities can be seen in implementation approaches in the 4 states that were first to implement the model (CA, MN, VT, WA). First, adoption started at the state level with subsequent implementation at the local level. Second, every ACH region received some support from a state-level sponsor at their outset. Third, each ACH region has a coordinating entity that serves as the backbone organization for their community.<sup>11</sup> Variations seen in model implementation provide the flexibility needed for ACH leaders to be responsive to the local community context, while common features provide a foundational structure that can be assessed for effectiveness across cases.

#### SIMILAR ACCOUNTABLE HEALTH MODELS

Various ACH-like models have also been implemented across the country. Similar models include accountable care communities, coordinated care organizations, and accountable health communities.<sup>4</sup> These models differ from the ACH model in numerous ways, such as being adopted at the local level (vs state) or using different guiding frameworks (other than the collective impact framework). The Center for Medicare and Medicaid Innovation invested \$157 million in 2017 to test the accountable health communities model, which focuses on improving clinical-community linkages.<sup>12</sup> This example is noteworthy because it demonstrates the sizable investments being made in collaborative approaches to health system transformation.<sup>13</sup> The Funders Forum on Accountable Health, a project of the George Washington University Milken Institute School of Public Health Department of Health Policy and Management, explains that ACHs are "focused on community-based strategies for integrating the health care and social needs of individuals and differ from Accountable Care Organizations (ACOs), which are health care provider-driven initiatives."<sup>14</sup> At its core, critical requirements of the ACH model include (1) local, community-driven implementation and (2) an emphasis on social determinants of health, including active participation of community members and social sector organizations in ACH work.

The Funders Forum on Accountable Health has addressed the overlap and divergence among these models in 2 important ways. First, they compiled an inventory of 127 ACHs and ACH-like initiatives across the country.<sup>14</sup> This public-facing database captures key data points such as primary funding source, backbone organization, and interventions used by each community. Second, they established key characteristics of ACHs by developing an ACH logic model and a common framework for assessing ACHs.<sup>4</sup> These tools serve as valuable resources for understanding the ACH landscape and key requirements of the ACH model.

#### ACCOUNTABLE COMMUNITIES OF HEALTH MODEL EFFECTIVENESS

Evidence of the ACH model's effectiveness is nascent but growing. States and local ACHs are working alongside external evaluators and consultants to help guide and continuously improve their work. Early evidence from a statewide evaluation of Washington ACHs conducted by the Center for Community Health and Evaluation shows that "the Washington ACH model that evolved in practice has been largely successful to date."<sup>15</sup>(p2) Although early results point to the ACH model's promise, there is still much to be learned about when, why, and to what extent the ACH model succeeds in aligning health and social services for population health improvement.<sup>4</sup> This study adds to the growing body of evidence that elucidates how ACHs are beginning to transform health systems.

#### BETTER HEALTH TOGETHER

In this study, we investigated health system transformation and alignment through the lens of one ACH in Eastern Washington called Better Health Together (BHT). The BHT region is led by a nonprofit organization of the same name (BHT), with a vision to "create an integrated community health system, accountable to improving health through delivering culturally competent, whole person care to all community members."<sup>16</sup> BHT acts as a convener of health system actors across the diverse region of Eastern Washington, which comprises 6 counties and 3 tribal nations. The BHT region, shown in the upper-right-hand corner of Figure 1, was home to an estimated 613 500 people in 2019.<sup>17</sup> Counties in Eastern Washington include municipalities ranging from midsized cities to remote rural towns. Population density ranged from 3.55 persons per square mile in the rural county of Ferry to 292.13 persons per square mile in the mostly urban and suburban county of Spokane. The stark contrast in needs between rural, urban, and tribal communities creates complexity that must be carefully considered when working to align

health and social services across boundaries.

Early in BHT's development, the ACH's leaders understood the importance of gaining an empirical understanding of how the regional health system functioned. They accomplished this objective by asking regional health system participants to share their perspective by responding to a health system survey.<sup>18</sup> Survey results were used to inform BHT's strategy to improve alignment across sectors and geographic service areas. Two years later, BHT sought to learn the extent to which their efforts had achieved the desired effect. This follow-up study showed that the health system has indeed started to transform in this short period of time and that BHT has helped facilitate these first steps toward health system transformation.

## CONTRIBUTION

This study makes a unique contribution to the growing body of evidence pointing to the ACH model's effectiveness by measuring relational and structural aspects of health system transformation and alignment via network analysis. It contributes to the dearth of literature demonstrating the effectiveness of novel models—such as the ACH model—focused on aligning determinants with medical services and public health programs. One notable gap in ACH evaluation and research is the lack of a standard set of measures to guide the monitoring, continuous improvement, and shared learning related to ACH outcomes.<sup>4</sup> This study demonstrates how network analysis can be used to operationalize indicators of system change and measure process outcomes before seeing population-level impacts of health system transformation. Ultimately, this study contributes evidence of the ACH model's utility for health system transformation and alignment and provides an example for how similar models can be assessed at the system level.

## METHODS

The Spokane Regional Health District Data Center, in partnership with BHT and Bultema Consulting LLC, conducted this study as public health surveillance. Four conceptual lenses guided research question development, data collection, variable operationalization, and interpretation of findings: (1) the ACH model, which provides an overall framework for the phenomenon of study<sup>4,10</sup>; (2) Public Health 3.0, which establishes the links between the social determinants of health, cross-sector partnerships, and population health improvement<sup>1,19</sup>; (3) theories of collaboration, which yield insight into common challenges faced by collaborative networks and the conditions under which joint endeavors are likely to succeed<sup>20,22</sup>; and (4) network theory, which guides measurement and interpretation of findings.<sup>23,24</sup> Although space limits our ability to provide an in-depth exploration of these conceptual lenses, references to relevant theories and frameworks can guide further inquiry.

### Population

The population of study includes all organizations identified as health system participants in the BHT region of Eastern Washington. The project team first developed a list of known organizational participants to use as an organization roster for the 2017 health system survey. Organizations were categorized by sector (health, social, public, education, or business) and county. When responding to the survey, organization representatives were asked to identify organizations with which they worked on issues related to population health that were not listed on the roster. These organizations were added to the roster and this process was repeated. Ultimately, a 3-phase snowball approach to sampling identified a study population of 565 organizations in 2017, which served as the 2019 organization roster. A fourth snowball sample in 2019 resulted in a study population of 613 cross-sector organizations. Study participants were recruited by e-mail invitation and through BHT meetings, newsletters, and individual outreach. An overview of the study population is provided in Table 1.

### Data Sources

This study used primary and secondary data from 4 sources. The first 2 data sources were the identified health system surveys administered to organizational representatives using online and in-person formats in 2017 and 2019. These survey instruments are provided in Appendices A and B (available as supplements to the online version of this article at <http://www.ajph.org>). Surveys collected qualitative and quantitative data about ACH participant organizations' population health focus areas, referral and care coordination practices, and interorganizational relationships. The 2019 survey was incentivized with a raffle for 5 \$1000 prizes awarded to participant organizations.



The third data source was an anonymous survey administered in 2019 in tandem with the identified survey. The anonymous survey collected data about participant perceptions of BHT and other organizations in BHT's health system. The fourth data source is public media, including directories and publicly available results found via Internet search, which were used to collect organization information such as sector and physical location. These data sources provided the evidence needed to gain an empirical understanding of BHT's regional health system.

#### Data Analysis

We analyzed data in Gephi version 9.2 (Gephi Consortium, Paris, France) and Stata version 16 (StataCorp LP, College Station, TX) using 3 units of analysis: the network (health system), the organization (health system participant), and the dyad (linkage or partnership). Multiple respondents from a single organization were collapsed to create a single, weighted organization-level linkage. A partnership represents a connection of any type or weight between 2 organizations and may represent multiple linkages of various types. A linkage represents a single report of a specific relationship (collaboration, referral, or data exchange).

We analyzed survey data by using network analysis as the primary mode of inquiry. Network analysis includes a set of methods for visualizing networks, describing structural and node-level characteristics of networks, and modeling network dynamics and structures.<sup>24-28</sup> We analyzed collaboration networks as undirected networks with edges weighted by collaboration level (i.e., cooperative, coordinated, or integrated).<sup>29</sup> We analyzed referral and data exchange networks as directed networks with edges weighted by the number of linkage reports.

#### RESULTS

Organizations throughout BHT's region became more engaged, less siloed, and better connected from 2017 to 2019. Table 2 provides a summary of network trends, and Appendix C (available as a supplement to the online version of this article at <http://www.ajph.org>) provides geographic network maps for both time periods. Evidence also points to the important role BHT played in facilitating the creation and maintenance of interorganizational relationships across Eastern Washington. When asked how BHT can help organizations contribute to improving Eastern Washington's health system, one anonymous survey respondent said "Keep the convening work moving forward. It's been a tremendous opportunity and resource for growth and development."

Organizational engagement in BHT's health system increased over the 2-year study period. An organization was engaged in the health system if it had at least 1 reported partnership with another organization. Research shows that strong participant engagement is a key ingredient for succeeding in collaborative endeavors like health system transformation.<sup>30,31</sup> In 2019, 97% (n = 593) of organizations were active in BHT's health system, as compared with 72% (n = 404) in 2017. This 47% increase in the number of organizations engaged means that more organizations reported working with one another to improve the health and well-being of individuals living in Eastern Washington. This finding was confirmed by analysis of our stable sample, in which 97% (n = 34) of organizations were engaged in 2017 and 100% (n = 35) were engaged in 2019. Respondents' self-reported levels of engagement in 2019 reflect this increase, with 76% (n = 113) of individuals reporting that their organization was "very engaged" (53%; n = 79) or "moderately engaged" (23%; n = 34) in the work of BHT. This increased engagement is a first step toward aligning health and social service systems for population health improvement.

The BHT health system became less siloed over the 2-year exposure period. When a network is siloed, it can be difficult to share resources or efficiently transmit information across the network.<sup>25,32</sup> We measured silos by using a community detection algorithm called modularity, which identifies communities within a larger network by assessing the strength of division of a network into modules (i.e., silos).<sup>33</sup> In 2017, there were 168 silos across the BHT regional health system. The number of silos sharply decreased to 28 in 2019. These findings were supported by analysis of the stable sample, which found fewer siloes in 2019 (n = 2) than in 2017 (n = 4). The reduction in working silos is reflected in the high levels of perceived trust and credibility among organizational representatives who responded to the anonymous survey: after we excluded responses of "don't know" and "not applicable," 99% of respondents agreed or strongly agreed that most organizations involved in BHT are trustworthy (n = 118) and credible (n = 121). ACHs have the potential to help bridge silos across sectoral and geographic boundaries as a first step toward aligning organizations across 31 sectors.

Density of connections among organizations in Eastern Washington's health system also increased. Networks with dense connections are associated with higher credibility, reduced transaction costs, and greater levels of perceived trust and value among network participants.<sup>31,34,35</sup> We measured the extent of connectivity among organizations by using a network statistic called graph density and by the number of partnerships reported. Graph density is a measure of how close the network is to being complete; a complete network is one in which every possible connection is recorded among actors in a network and has a graph density equal to 1.0.<sup>25,26</sup> In 2017, the BHT health system had a graph density of 0.018, meaning about 2% of all possible interorganizational partnerships were reported (5887 reported partnerships out of 320 922 possible). In 2019, graph density increased slightly to 0.019 (7219 reported partnerships out of 380 072 possible). Although the health system's increase in density was marginal, there was a sizable increase in the percentage of reported partnerships. Analysis of the stable sample confirms findings in the full health system, with graph density increasing from 0.34 in 2017 to 0.52 in 2019. Table 3 provides an overview of linkages by sector in both time periods. The increased connectivity in BHT is indicative of a health system in which organizations work collaboratively across boundaries to improve population health.<sup>31</sup> BHT's role as an independent convener and health system facilitator was a driving force behind the nascent transformation observed in Eastern Washington's health system. When responding to the identified survey, a school district representative said BHT "has been a huge source of connection to a variety of organizations, [with] which we hope to foster strategic partnerships." In the 2019 health system assessment, survey respondents indicated that BHT helped facilitate 350 partnerships totaling 1907 linkages among 130 cross-sector organizations throughout the BHT region. This means that 5% of reported partnerships and 8% of reported linkages were in some way facilitated by the ACH's backbone organization, BHT.

In addition to facilitating interorganizational partnerships, BHT helped organizations gain access to new sources of knowledge through participation in the ACH's work; 95% (n = 114) of anonymous survey respondents agreed (55%; n = 66) or strongly agreed (40%; n = 48) with this statement. One anonymous survey respondent representing a social services organization shared that "By investing more time and resources in promoting expanded and deeper linkages between health care and social determinant of health providers, BHT can help organizations like mine be able to be more engaged in improving Eastern Washington's health system." These findings provide evidence of the importance of backbone organizations in facilitating health system transformation.

## DISCUSSION

The 2019 network analysis shows that the siloed and largely disconnected health system recorded in 2017 now more closely resembles an aligned system of organizations working cohesively across sectors for population health improvement. "BHT is the best thing that has come out of the state's plan for integrated managed care," said one anonymous survey respondent. "What an accomplishment to bring so many diverse and sometimes hardheaded organizations together and successfully get them to collaborate. [We are] already seeing such positive results in just a few years."

This study adds to the growing body of evidence that supports the ACH model's utility as an effective approach to aligning organizations across boundaries by showing measurable improvements in health system engagement, cohesion, and connectivity in BHT, Eastern Washington's ACH. Findings show structural improvements to the regional health system over the 2-year study period. More importantly, they provide evidence of the crucial role BHT plays in aligning health system actors across various sectors and jurisdictions. This can be seen today as communities work to respond to the COVID-19 pandemic. BHT is "coordinating the coordinators" by aligning highly connected organizations in each sector and county that are best positioned to act as communication hubs facilitating a coordinated, regional response to the crisis. They used node-level network statistics to verify the most influential partners are at the table so that trusted and up-to-date information could be quickly shared across the network. This is just 1 example from the field that complements evidence of the ACH model's effectiveness and potential to help align health and social services to improve population health.

## Limitations

Several limitations should be considered when reviewing study findings, including generalizability, sampling

approach, survey response rate, respondent burden, and comparability of data sets. As results describe findings related to a single ACH, they cannot be generalized to all ACHs. The multistage snowball approach to sampling resulted in a current, comprehensive sampling frame but posed challenges for making direct contact with each identified organization and for comparing samples across time periods. In total, 211 representatives of 92 organizations responded to the 2019 survey, which yielded a 20% individual and 15% network response rate. Respondents were asked to identify sending and receiving linkages to create as complete a picture of the health system as possible from limited reports.

The survey instrument also posed limitations, as there is notable respondent burden associated with reporting relationships with more than 600 other organizations. The Web survey was designed with conditional display logic to minimize respondent burden. Health system comparability across time periods is another limitation because participants largely varied from 2017 to 2019. For this reason, networks were assessed using both full samples (2017: n = 567; 2019: n = 613) and stable samples (n = 35) for each measure. The stable sample included 35 regional, cross-sector organizations that participated in the survey in both 2017 and 2019. Study results should be considered with these limitations in mind while also recognizing the valuable contribution this study makes to providing insight into the potential of the ACH model.

#### Public Health Implications

This study has several public health implications. First, it provides evidence of the ACH model's utility for increasing crosssector engagement in health system transformation efforts, reducing silos across health systems, and increasing connectivity among health system participants. This information can be used by decision-makers considering various models as tools to guide health system transformation.

Second, this study demonstrates how network analysis can be used to assess health system transformation. This example can be used to guide future efforts to evaluate system change over time. However, it is worth noting that conducting network studies can be cost-prohibitive because they require significant investments of time and expertise.

Third, it has implications for local health jurisdictions (i.e., governmental public health). In BHT, the 3 local health jurisdictions are some of the best-connected organizations in the region. The Spokane Regional Health District-the region's largest local health jurisdiction-had the highest overall connectivity of any organization in the region. This finding points to the important role of public health's involvement in health system transformation efforts. Overall, this study can inform decisionmakers about ACHs as a promising approach to aligning health and social sector organizations, aid evaluators and researchers in measuring health system transformation, and reinforce the vital role of local health jurisdictions as key ACH partners in the work of health system transformation. /4JPI-I

#### CONTRIBUTORS

S.Bultema led the research project, analyzed data, and wrote the first draft of the article. H. Morrow and S. Wenzl contributed to study design and implementation and provided substantive review of the article before submission.

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Every innovation owes its existence and vitality to generations from around the world who contributed their hope and energy to making the history that led us to this moment. This study aimed to measure and improve connection across many diverse organizations, and truth and acknowledgment are critical to building mutual respect and connection across barriers and difference. The authors acknowledge that this work was conducted across territory that has been an ancestral homeland and gathering place for many tribes across the inland northwest region of the United States, including the Spokane, Colville, Coeur d'Alene, Kalispel, and Salish Kootenai people. We pay respects to their elders past and present. We ask our readers to take a moment to consider the many legacies of violence, displacement, migration, and settlement that bring us here together and to join us in uncovering such truths in public spaces. The authors would like to acknowledge the valuable contributions of Spokane Regional Health District and Better Health Together staff who helped with this project. We are particularly grateful for Alison Poulsen's

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#### CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

#### HUMAN PARTICIPANT PROTECTION

Institutional review board approval was not needed because this study was conducted by the Spokane Regional Health District as public health surveillance.

#### Sidebar

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## DETAILS



<b>Subject:</b>	Population; Public health; Alignment; Collaboration; Health care policy; Social services; Organizations; Interorganizational relations; Health services; Leadership; Transformation; Rural areas; Accountable care organizations; Social systems; Regions
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# A Theory of Change for Aligning Health Care, Public Health, and Social Services in the Time of COVID-19

Landers, Glenn M, ScD; Minyard, Karen J, PhD; Lanford, Daniel, PhD; Heishman, Hilary, MPH

[ProQuest document link](#)

## ABSTRACT (ENGLISH)

With the nation now in the fight against the COVID-19 pandemic, the health care, public health, and social services sectors are rapidly adapting to new ways of working together as resources are stretched and both workers and the public are more socially distant from one another. The coronavirus creates a new sense of urgency for how we design interactions among the three systems. Efforts to collaborate in new ways have generally been supported by one-off opportunities, whether positive or negative. Onetime grant funding and pilot policies are examples of positive opportunities. Hurricane Katrina and the COVID-19 pandemic are examples of negative opportunities.

Based on their learning from years of their own grant making and that of others, the Robert Wood Johnson Foundation (RWJF) supports and learns from work that seeks to better align health care, public health, and social services. They envision alignment among systems that goes beyond onetime efforts, that better values the unique contributions of each sector, and that gives power and voice to community members. We describe a cross-sector alignment theory of change that aligns with the foundation's vision of a culture of health that provides everyone in the United States a fair and just opportunity for health and wellbeing.

## FULL TEXT

With the nation now in the fight against the COVID-19 pandemic, the health care, public health, and social services sectors are rapidly adapting to new ways of working together as resources are stretched and both workers and the public are more socially distant from one another. The coronavirus creates a new sense of urgency for how we design interactions among the three systems. Efforts to collaborate in new ways have generally been supported by one-off opportunities, whether positive or negative. Onetime grant funding and pilot policies are examples of positive opportunities. Hurricane Katrina and the COVID-19 pandemic are examples of negative opportunities.

Based on their learning from years of their own grant making and that of others, the Robert Wood Johnson Foundation (RWJF) supports and learns from work that seeks to better align health care, public health, and social services. They envision alignment among systems that goes beyond onetime efforts, that better values the unique contributions of each sector, and that gives power and voice to community members. We describe a cross-sector alignment theory of change that aligns with the foundation's vision of a culture of health that provides everyone in the United States a fair and just opportunity for health and wellbeing.<sup>1</sup>

### CROSS-SECTOR ALIGNMENT THEORY OF CHANGE

The Georgia Health Policy Center coordinates the national initiative Aligning Systems for Health: Health Care + Public Health + Social Services in partnership with RWJF. It focuses on learning about effective ways to align health care, public health, and social services to better address the goals and needs of the people and communities they serve.<sup>2</sup> Aligning Systems for Health is testing a cross-sector alignment theory of change (Figure 1) that was created

by RWJF from years of their own, and others', supported research and learning. The Georgia Health Policy Center, in its initial work, has adapted definitions of the three sectors from RWJF's complementary research program, Systems for Action.<sup>3</sup> To sustain impact, cross-sector collaboratives should consider activating four core components of cross-sector alignment:

- \* Purpose: The focus of the cross-sector effort, informed by and supportive of community voice
- \* Data: Shared data that is meaningful to all partners and that enables sectors to effectively coordinate activities and measure shared progress
- \* Financing: Long-term financing that supports partnerships with incentives and accountability
- \* Governance: Robust governance structures that include local representation and voice

Each of these core components may operate at the individual, organizational, or system level and should be driven by the voice and participation of community members. The impetus to align systems is shaped by external factors that might be considered drivers of cross-sector alignment: crises such as the COVID-19 pandemic; policy, statutory, and regulatory changes such as the movement toward value-based payment; state or federal grant initiatives; and public-private partnerships; among others.

The core components are further affected by internal factors that shape organizational and system readiness, including backbone capabilities, financial management capabilities, leadership, a workforce with appropriate skills, and an information infrastructure. Cross-sector alignment is moderated by factors such as individual and organizational trust, the ability and degree to which communities are engaged, the ability to hold each other accountable for community members' goals and needs, and the availability of evidence to implement change. As we build our understanding of cross-sector alignment, we have surfaced a number of observations about the theory of change from what is known about collaboration. Many (but not all) of the suggested elements require sometimes extensive resources. This means that, in situations involving scarcity, less sophisticated alignment may be optimal. This does not mean that interested parties should avoid aligning. Rather, it suggests that cross-sector alignment may involve tough decisions and the establishment of priorities that will be optimal only in certain contexts. The complexity and potential for variation in collaborations and collaborative context suggest that cross-sector alignment will emerge in different ways and face different challenges. It may make sense to try to formally and explicitly make sense of these different paths so that individuals and organizations wishing to align are aware of potential entry points and have tools for identifying and addressing the most relevant challenges and opportunities. The core components of cross-sector alignment overlap. In other words, they reinforce each other in a number of ways, both in real time and over time. Accordingly, they could be understood not only linearly but also cyclically. A shared purpose is not necessarily a primary purpose. There are many reasons to join health-oriented collaboratives, and each partner comes with a different set of priorities. While establishing shared purpose may be an important process, it may also be important to develop a means of managing the distinct and divergent priorities of the partners involved. Equity, a key component of cross-sector alignment outcomes, is closely linked to community voice. However, we have not yet fully elaborated best practices for prioritizing community voice.

#### EXAMPLES OF CROSS-SECTOR ALIGNMENT

RWJF and others have supported cross-sector alignment for several years, and its impact is beginning to be realized. The Accountable Health Communities Model, supported by the Centers for Medicare & Medicaid Services, was launched to address the critical gap between clinical care and community services in the current health care delivery system. Early work has developed standardized screening for health-related social needs in clinical settings (<https://bit.ly/2AHjZje>). Washington State launched nine accountable communities of health that are supporting the Delivery System Reform Incentive Payment program's goals to build health system capacity and integrate physical and behavioral health services (<https://bit.ly/3dyNJgF>). Through a braided funding model, the State of Rhode Island directed more than \$10.4 million in public health funding to community-led health equity zones to address the social determinants of health to eliminate health disparities.<sup>4</sup> Public and private partners are supporting the California Accountable Communities for Health Initiative to realize a more forward-looking approach to building a healthier California; this initiative is creating new ways to sustainably finance cross-sector work.<sup>5</sup>

## CONCLUSIONS

The cross-sector alignment theory of change builds on previous public health and social change models and focuses specifically on how health care, public health, and social services can better meet the goals and needs of the people and communities they serve in a way that is built to last. Like the spectrum of prevention model, the theory includes the roles of providers, coalitions, and networks; internal factors such as organizational practices; and external factors such as the roles of policy and legislation.<sup>6</sup> Similar to the collective impact model, the theory highlights the role of purpose (common agenda) and shared data and measurement.<sup>7</sup> The crosssector alignment theory of change adds to these models by focusing on the well-being of individuals and communities and the roles of individual and community voices in determining desired outcomes. It challenges us to think beyond onetime, limited term efforts.

The cross-sector alignment theory of change will continue to evolve as more evidence emerges from research and evaluation on aligning health care, public health, and social services. Creating sustainable cross-sector alignment may take generations, although the COVID-19 pandemic presents an unprecedented opportunity to rethink the future. The cross-sector alignment theory of change is one tool that can help guide the work of individuals, organizations, and systems to redesign that future.

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## CONTRIBUTORS

Each author made substantial contributions to the editorial's conceptualization, design, writing, and rewriting.

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Note. The views presented here are those of the authors and should not be attributed to the Robert Wood Johnson Foundation.

## CONFLICTS OF INTEREST

None of the authors has a conflict of interest to disclose.

## Sidebar

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# Timely Postpartum Visits for Low-Income Women: A Health System and Medicaid Payer Partnership

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## ABSTRACT (ENGLISH)

A health care system and a Medicaid payer partnered to develop an educational intervention and payment redesign program to improve timely postpartum visits for low-income, high-risk mothers in New York City between April 2015 and October 2016. The timely postpartum visit rate was higher for 363 mothers continuously enrolled in the program than for a control group matched by propensity score (67% [243/363] and 56% [407/726], respectively;  $P < .001$ ). An innovative partnership between a health care system and Medicaid payer improved access to health care services and community resources for high-risk mothers. (Am J Public Health. 2020;110: S215-S218. doi:10.2105/AJPH.2020.305689)

## FULL TEXT

### Headnote

A health care system and a Medicaid payer partnered to develop an educational intervention and payment redesign program to improve timely postpartum visits for low-income, high-risk mothers in New York City between April 2015 and October 2016. The timely postpartum visit rate was higher for 363 mothers continuously enrolled in the program than for a control group matched by propensity score (67% [243/363] and 56% [407/726], respectively;  $P < .001$ ). An innovative partnership between a health care system and Medicaid payer improved access to health care services

and community resources for high-risk mothers. (Am J Public Health. 2020;110: S215-S218. doi:10.2105/AJPH.2020.305689)

Many low-income women fail to get appropriate medical follow-up after delivery, putting their long-term health at risk. We evaluate a multifaceted program (behavioral educational intervention and payment redesign) designed to increase rates of timely postpartum visits according to Healthcare Effectiveness Data and Information Set (HEDIS) guidelines from the National Committee for Quality Assurance. A large health system and a Medicaid payer partnered to implement this program for women identified as high risk.<sup>1</sup>

#### INTERVENTION

Our evidence-based behavioral intervention provided education about health conditions (hypertension, gestational diabetes, and depression), important health behaviors (nutrition and exercise), and common postpartum symptoms; taught selfmanagement skills; enhanced social support; and connected patients with community resources and health care services.<sup>1</sup> The intervention addressed transportation needs, linked participants with community resources, and addressed specific psychosocial needs of enrollees. A payment reform component included a cost-sharing arrangement between the health care system and the Medicaid payer to cover costs related to employing a social worker and community health worker, and financial incentives for completed postpartum visits.

#### PLACE AND TIME

The program enrolled women insured by Healthfirst who delivered between April 2015 and October 2016 at Mount Sinai Hospital, a large tertiary hospital in New York City.

#### PERSON

Eligible participants included women aged 18 years and older who spoke Spanish or English and had at least 1 of the following: gestational diabetes, hypertension, positive screen for depression, late registration for prenatal care (> 20 weeks), or residence in neighborhoods considered at high risk for diabetes or hypertension according to the New York City Department of Health and Mental Hygiene. A total of 217 women refused to participate, three withdrew from the program, and three were not found in the health insurance claims database. Claims data were available for 506 mothers.

#### PURPOSE

The purpose of the program was to increase the number of low-income, high-risk women who have a timely postpartum care visit using a behavioral educational intervention and payment redesign.

#### IMPLEMENTATION

The intervention was implemented by a social worker and a community health worker in English and Spanish. The program combined education during the postpartum hospital stay, a call at one to two weeks after delivery, 3 to 12 additional calls depending on patient needs, and written educational materials. The payment reform component included a cost-sharing arrangement between the health care system and the Medicaid payer to cover costs related to employing the social worker and community health worker. Small financial incentives (\$10) in the form of enhanced payments for completed postpartum visits by the payer were rolled out 12 months following the implementation of the intervention. Patients received round-trip public transportation and incentives (\$10) for attending their postpartum visit. Nonfinancial incentives included education for physicians, nurses, social workers, and registrars on the importance of the postpartum visit and on the clinical topics of gestational diabetes, hypertension, and postpartum depression.

#### EVALUATION

The primary outcome was completion of the postpartum visit as defined by HEDIS (i.e., a visit with an obstetrics or primary care clinician between 21 and 56 days after delivery<sup>2,3</sup>); 363 women were eligible for this measure by meeting HEDIS continuous enrollment requirements. Secondary outcomes included rates of any postpartum or gynecologic health care visit up to 90 days after delivery and plan enrollment at six months and one year after delivery. A total of 377 women in the intervention group had at least 90 days of enrollment in the plan after delivery.<sup>4</sup> To measure plan enrollment at 6 and 12 months, we included all 506 women identified in Healthfirst data systems (Figure 1).



We used claims data from 2014 to 2017, with the episode of care defined as 9 months prior to delivery and up to 12 months after delivery. We used propensity score matching to compare timely postpartum visits for mothers enrolled in the program versus a similar group of mothers enrolled in the same Medicaid plan who gave birth in 2015 and 2016. We generated matched comparison groups using a greedy nearest neighbor matching method at a 2:1 control-to-intervention ratio; to perform this method, we used the MatchIt package in R.5 We generated propensity scores through logistic regression using enrollment in the intervention as the dependent variable. Explanatory variables included mother's age, language, neighborhood<sup>6</sup>; days enrolled in plan prior to delivery; and diagnoses of hypertension, gestational diabetes, or mental illness in claims from the prior 12 months.

Of 506 women enrolled in the intervention, 29% spoke Spanish, 13% had hypertension, 10% had diabetes, and 3% had depression or mental illness (Table 1).

In analyses using propensity score matching, compared with women in the control group, program participants had higher rates of postpartum visits in the HEDIS-defined time period (66.9% vs 56.0%;  $P < .001$ ) and higher rates of all postpartum outpatient or gynecologic care up to 90 days after delivery (90.2% vs 83.4%;  $P = .002$ ). Similarly, program participants were more likely to be enrolled with the Medicaid plan than mothers in the matched comparison group at six months after delivery (79.1% [400/506] vs 73.3% [742/1012];  $P = .015$ ) and at one year after delivery (71.0% [359/506] vs 66.3% [671/1012];  $P = .067$ ), although this was not statistically significant at one year after delivery.

#### ADVERSE EFFECTS

Assessing postpartum care utilization of low-income, high-risk women with Medicaid coverage is challenging given plan enrollment and disenrollment patterns.

#### SUSTAINABILITY

Lessons learned from this initiative include the importance of aligning incentives between a Medicaid managed care organization and a large health care system, the need to cost share to support team-based care, and the value and challenges of advancing an equity agenda within a health care system that can meaningfully improve outcomes. Our findings should be of interest to health care systems and payers as the landscape of health care delivery continues to move toward value-based models.

#### PUBLIC HEALTH SIGNIFICANCE

A novel partnership between a health care system and a Medicaid payer increased postpartum visits among high-risk, low-income mothers. The follow-up rate was higher for visits that occurred within 90 days after delivery, a period consistent with current recommendations for postpartum care from the American College of Obstetricians and Gynecologists.<sup>7</sup>

Our program demonstrates the importance of including multiple stakeholders, patient education, care coordination, clinician and staff education, and community and medical resources to implement a successful new care model. The current gap in the literature is sizable regarding the needs of underserved women, especially in relation to the complex factors affecting postpartum nonattendance; these include barriers due to limited flexibility of services offered by facilities, proficiency of providers, and health insurance coverage. Our study attempted to comprehensively address these challenges.

This is one of few initiatives that have integrated health care systems, payers, physicians, and social workers to address access to care and social determinants of health for underserved women. Although our program had challenges with the provision of financial incentives and the refusal rate, our study adds important knowledge regarding the types of interventions that are needed by health care systems and payers to increase access to maternal care for underserved women. <sup>1</sup>PU

#### CONTRIBUTORS

E. A. Howell conceptualized and designed the study, interpreted data, drafted the manuscript and critically revised it for important intellectual content, obtained funding, and provided supervision. A. Balbierz acquired and interpreted data, critically revised the manuscript for important intellectual content, obtained funding and administrative support, and provided supervision. S. Beane conceptualized and designed the study, critically revised the manuscript for

important intellectual content, and provided supervision. R. Kumar analyzed and interpreted data, critically revised the manuscript for important intellectual content, performed statistical analysis and administrative support, and provided supervision. T. Wang analyzed and interpreted data, critically revised the manuscript for important intellectual content, and performed statistical analysis. K. Fei interpreted data, critically revised the manuscript for important intellectual content, and performed statistical analysis. Z. Ahmed acquired and interpreted data and drafted the manuscript and critically revised it for important intellectual content. J. A. Pagán conceptualized and designed the study, interpreted data, critically revised the manuscript for important intellectual content, and performed statistical analysis.

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#### CONFLICTS OF INTEREST

The authors have no conflicts ofinterest to disclose.

#### HUMAN PARTICIPANT PROTECTION

The Program for the Protection of Human Subjects (the institutional review board) at the Icahn School ofMedicine at Mount Sinai approved this study under GCO#14-1033.

#### Sidebar

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# Integration of Health and Social Services at the Systems Level: A Framework for Addressing Funding and Jurisdictional Silos

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## ABSTRACT (ENGLISH)

**Objectives.** To examine spending and resource allocation decision-making to address health and social service integration challenges within and between governments. **Methods.** We performed a mixed methods case study to examine the integration of health and social services in a large US metropolitan area, including a city and a county government. Analyses incorporated annual budget data from the city and the county from 2009 to 2018 and semistructured interviews with 41 key leaders, including directors, deputies, or finance officers from all health care-, health-, or social service-oriented city and county agencies; lead budget and finance managers; and city and county executive offices. **Results.** Participants viewed public health and social services as qualitatively important, although together these constituted only \$157 or \$1250 total per capita spending in 2018, and per capita public health spending has declined since 2009. Funding streams can be siloed and budget approaches can facilitate or impede service integration. **Conclusions.** Health and social services should be integrated through greater attention to the budgetary, jurisdictional, and programmatic realities of health and social service agencies and to the budget models used for driving the systems-level pursuit of population health. (Am J Public Health. 2020;110:S197-S203. doi:10.2105/AJPH.2020.305735)

## FULL TEXT

### Headnote

**Objectives.** To examine spending and resource allocation decision-making to address health and social service integration challenges within and between governments.

**Methods.** We performed a mixed methods case study to examine the integration of health and social services in a large US metropolitan area, including a city and a county government. Analyses incorporated annual budget data from the city and the county from 2009 to 2018 and semistructured interviews with 41 key leaders, including directors, deputies, or finance officers from all health care-, health-, or social service-oriented city and county agencies; lead budget and finance managers; and city and county executive offices.

**Results.** Participants viewed public health and social services as qualitatively important, although together these constituted only \$157 or \$1250 total per capita spending in 2018, and per capita public health spending has declined since 2009. Funding streams can be siloed and budget approaches can facilitate or impede service integration.

**Conclusions.** Health and social services should be integrated through greater attention to the budgetary, jurisdictional,

and programmatic realities of health and social service agencies and to the budget models used for driving the systems-level pursuit of population health. (Am J Public Health. 2020;110:S197-S203.

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Local government employees are the "boots on the ground" of the public sector. Local public health staff are much more likely to provide direct services than are their peers in state or federal government.<sup>1</sup> This means local government workers are often client facing,<sup>2</sup> and integrating clientfacing services is particularly important.<sup>3-7</sup> Research from health care, public health, and the public sector more broadly shows that better integration of services can result in more efficient delivery of services. In some cases, the benefits of improved service integration can include better health outcomes, such as reduced readmission rates or shorter lengths of hospital stays.<sup>6,8 10</sup> The successful integration of health and social services may depend on several components, including the level at which integration occurs (e.g., agency or program levels), the partners taking part, whether the partners have shared goals and roughly equal willingness and ability to contribute, and the degree of integration.<sup>11</sup> Reviews have explored the various aspects of integration, and the majority of findings indicate that having shared goals or other strategic alignment improves the likelihood of successful integration.

The general notion of public sector service integration is decades old,<sup>3,5,6</sup> but the literature is still emerging on strategies and best practices for the integration of specific services or portfolios in the health and social services spaces. There is relatively little research in the scientific literature regarding the overall environments in which integration initiatives take place and what systems-level factors may promote or hinder the likelihood of largescale, long-term integration successes.<sup>12,13,16</sup>

Numerous practical, political, and financial incentive problems may face entities pursuing greater integration. The first is a problem of integration within the government's departments, divisions, and bureaus.<sup>3,7,12,13</sup> Different departments might be serving largely the same clientele, but political, financial, and historical barriers may <sup>12,17,18</sup> prevent greater integration.

The second problem is, perhaps, more intractable: jurisdiction. The United States has approximately 90 000 governments, encompassing cities, towns, county governments, and special districts.<sup>19</sup> These governments generally function independently but may serve the same populations of other governments. Working across governments has become a particular focus in the public health and health care spaces, given the significant challenges faced by those that might benefit from population-based prevention programs.

Integration holds potential for improving outcomes and efficiencies.<sup>6,8</sup> However, communities and policymakers face complex, multifaceted barriers to the integration of health and social services across an entire community.<sup>12,13</sup> There is a deficit of empirically driven systems-level evidence regarding how health and social agencies in a community encounter integration barriers and how the individuals leading these agencies see and address barriers to systems-level health and social service integration. A systems-level view of biggerpicture strategies and solutions that make integration more likely to occur or more likely to succeed may help to promote larger-scale, longer-term success of integration's goals-namely improved efficiency and better outcomes. We used a case study of spending and resource allocation decisionmaking by 2 multibillion dollar city and county governments to examine the questions of "within" and "between" integration challenges.

## METHODS

To characterize the current state of, barriers to, and facilitators of integration of health care within and between health and human service agencies, we performed a mixed methods case study to examine the integration of health and social services in a large US metropolitan area. We conceptualized integration as occurring across 2 dimensions. First, integration would occur within a government, because the same city, county, or state government may operate multiple programs separated by political, financial, and historical barriers yet largely serve similarpopulations.<sup>12</sup> Second, integration would occur between governments, because both a city and a county or state government may operate complementary programs targeting similar health-related outcomes or populations. We examined revenues from city, county, state, federal, fee, and nongovernmental sources and the programmatic integration of programs, outputs, and outcomes from the full suite of city and county agencies.

Our study's setting was a very large, diverse, urban city ("City 1") and the county ("County 2") that includes City 1, its surrounding cities, and the unincorporated areas in its jurisdiction. The city and county are located in a state that did not expand Medicaid under the Affordable Care Act. Both the city and the county provide full portfolios of government services to their constituents. The city is focused heavily on serving city residents, and most-but not all-county services are focused on serving residents in unincorporated areas of the county outside the city limits.

In this mixed methods analysis, we used multiple data collection and analysis procedures. We obtained annual budget data from the city and the county from 2009 to 2018. One challenge in comparing spending across governmental entities is that although generally accepted accounting principles apply, governments categorize and report spending to meet their own needs. There has been a recent movement to standardize expenditures across governments for specific services such as public health.<sup>8-10</sup> To enable valid comparisons of spending across jurisdictions, we obtained data at the object level (i.e., granular budget data for salaries, equipment, travel, etc. as opposed to aggregate service- or program-level expenditure data) from city and county governments. We categorized data on more than 1 000 000 expenditure and revenue records in accordance with existing frameworks and categories as defined by the US Census Bureau.<sup>8-10</sup> We relied on previous expertise with these definitions and frameworks when making initial categorizations. In the event of uncertainty or potential category discrepancy, multiple authors reviewed the spending to make a final determination. The majority of spending could be clearly classified; only approximately 30 of 430 categories required discussion among the authors.

With crosswalked spending data, we were able to compare spending across these 2 large governmental entities. We adjusted spending totals to constant 2018 dollars using the Bureau of Economic Analysis's state and local government deflator. We tracked and analyzed spending estimates and patterns over time. Given the differences in statutory authorities and scope of responsibilities, our purpose was not to identify who was spending more, but rather to explore differences in how funds were allocated for health care, health, and social services by the 2 separate local government entities. In addition, we obtained data from the Dartmouth Atlas on per capita Medicare expenditures and data from the state's Medicaid authority on Medicaid expenditure totals for this county. Combined with data on the estimated number of Medicare and Medicaid enrollees in the county and reports of uncompensated care supported by local property taxes, we used these data to calculate estimated per capita health care spending from public sources in this city and county area.

In addition to budget analyses, we conducted semistructured interviews with 41 key city and county leaders. The sample frame for these interviews included directors, deputies, or finance officers from all health care-, health-, or social service-oriented city and county agencies as well as lead budget and finance managers and city and county executive offices. We conducted interviews with 41 leaders at 21 different organizations: 8 City 1 departments, 10 County 2 departments, and 3 other quasipublic entities in the county area. The regional public hospital system, public behavioral health system, and children's advocacy center are partially supplemented by local government funds and we included them in this study. A complete list of all agencies represented in these interviews is shown in the Appendix (available as a supplement to the online version of this article at <http://www.ajph.org>). We used an interview guide to ensure coverage of all relevant topics in each interview (the Appendix contains a list of topics). Before most interviews, we reviewed budget data and, where possible, discussed that organization's budgets, budget history, and budgeting processes. We completed the majority of interviews in person, with approximately 5 taking place via telephone. All interviewees granted oral permission to record interviews. We transcribed recordings and analyzed them using NVivo (QSR International, Melbourne, Australia). Multiple team members analyzed all transcripts to ensure that all potentially relevant findings were surfaced. We performed a comprehensive review of the themes and findings using a constant comparison approach to code and analyze the data to develop concepts.<sup>21</sup> We made every attempt to respect the privacy of interviewees, and we have omitted identifying details linking individuals to any quotations in this report.

## RESULTS

The case in question was a large metropolitan county in the Southern United States. Although there are other municipal governments in the county area, City 1 and County 2 account for 92% of all noneducation, nonspecial



district spending in the county area. Overall, the 2 governments spent approximately \$1455 per capita in 2009, \$1184 in 2013, and \$1250 in 2017 (all in 2018 dollars; Figure 1). Although spending increased to \$1475 per capita in 2018, this growth is almost entirely attributable to large pension expenditures for City 1 police; spending across most of the rest of the 2 governments has increased nominally, but decreased after accounting for population growth and inflation between 2009 and 2018. The largest areas of spending were public safety (\$682 per capita in 2009 and \$728 in 2018), health and social services (\$195 in 2009 and \$157 in 2018), and other county services (\$578 in 2009 and \$590 in 2018). Excluded from our analyses were businesslike operations, public works, and debt service.

Activity definitions are available in the Appendix.

#### Health Care vs Public Health and Population-Based Prevention

Combined Medicaid, Medicare, and hospital uncompensated care expenditure estimates show that at least \$1.6 billion public were spent annually on health in County 2 and \$4.6 billion in City 1, on average, between 2010 and 2016. The city and county leadership (n = 15) identified adequate access to health care as a major issue.

Approximately 3.3% of health spending with public dollars went toward public health, whereas 96.7% went toward health care, as shown in Figure 2. Interviewees talked about crowd out, both between public health and health care specifically (n = 12) and between health and social services more broadly (n = 18). The problem of prioritizing treatment versus prevention is well known in the county, and several interviewees talked about this as an intractable issue. One interviewee said, "Somebody who is dying of a heart attack in the street, you can't say we're not going to take care of that individual. You absolutely will take care of that individual."

Between City 1 and County 2 governments, \$57 per capita was spent on public health in 2009, decreasing to \$48 per capita in 2018. In the County 2 government, operations in 2018 were supported 68% by federal grants and related funds, 14% by Medicaid and Medicare revenue, 9% by state revenue, 6% by fees and fines, 1% by local funds, and 1% by other revenue. Interviewees consistently noted that funding from local sources was of outsized importance. Local funds tended to offer at least some flexibility in spending decisions. Other major streams of revenue were reported to be appreciated but offered substantially less flexibility, as they often could only be used in support of specific, siloed activities.

#### Integrating Health and Social Services in Governments

We identified several key barriers to the intragovernmental integration of health and social services. As detailed in the box on page S201, intragovernmental barriers precluding the integration of agencies within a single local government included structural and procedural obstacles. For example, interviewees reported that annual budgets tended to be built based on the previous year's. Budgeting is most often performed on a department-by-department basis, making annual expenditure tracking easier but also making integration of multiple departments in crosssector efforts harder. Distinct departmental business administrative services and physical separation of agencies also discourage better collaboration. Many interviewees stated that there could be more data sharing between departments to better track the relationship between social services and health. Intragovernmental barriers can also exist within an agency because of siloed department budgets, physically separated working locations, and employee turnover. We identified as facilitators to better collaboration the integration of relevant offices into public health agencies—such as public policy, environmental health, and veterinary services—as well as program-based budgeting across departments within agencies.

As with the question of barriers to integrating health care and public health, interviewees raised revenue stream inflexibility as a significant issue. Different agencies reported receiving funding from differing sources (local, state, federal), and even when funding was received from a similar source there were often limits on how much flexibility each agency had for using that money. For example, federal funds from the US Department of Housing and Urban Development may be limited to mold abatement, and federal funds from the Centers for Disease Control and Prevention (CDC) might be directed toward prevention of insect-borne disease; these funding sources could not be integrated regardless of the level of cooperation between the agencies.

These same barriers can also be intergovernmental, limiting the collaboration between multiple local governments serving overlapping populations. To truly address population health, more collaborative governmental processes

must be established to encourage integration.

#### Integration Between Governments

Between-government integration was a particular issue that surfaced in interviews. Although a small number of respondents noted that they collaborated with their analog in the other government, most said services were delivered distinctly. Collaboration is complicated by several factors: financial, cultural, and statutory authorities. Redundancies were also discussed at some length- but more as political issues than functional problems. Another theme interviewees explicitly discussed was the idea of collaborations being win-lose or zero-sum. The potential for greater collaboration or integration also means that certain services may be redundant or prioritized to one government versus the other. As one interviewee said, "The biggest challenge is that the county and the city don't collaborate together well on anything that they do. ... If it's giving dollars and power to the county and taking away from the city, that's not good for the city."

Expenditure patterns across the 2 jurisdictions tended to support this. Funding for many service areas tended to move change in the same direction-albeit by different amounts-for both City 1 and County 2 between 2009 and 2017 (Table 1). For example, between 2009 and 2017, City 1 decreased library spending by \$13 per capita (-35% from 2009, after accounting for inflation and population changes), whereas County 2 decreased spending by \$4 per capita (-25% from 2009). Public health spending decreased to \$64 per capita (-5%) in 2017 in City 1 and to \$39 (-13%) in 2017 in County 2. Parks and recreation spending decreased to \$54 (-11%) in 2017 in the city and to \$33 (-32%) in the county.

#### DISCUSSION

The integration of health and social services can improve the health of individuals and communities.<sup>11,13</sup> However, empirically derived frameworks are uncommon for common systems-level policy and political challenges facing communities working toward integration. We analyzed the budgets and perspectives of 2 large local government agencies that share a very large, diverse, urban area in the United States to advance such systems-oriented frameworks.

#### Integration Barriers Observed in Practice

For most service areas we analyzed, both city and county actors were involved in providing services to the community. The needs of residents of any given city are complex and often do not respect the distinctions between government agencies. Funding for each service can come from 1 or more sources, including federal, state, and local revenue streams. Therefore, improving systems-level capacity for health across a community requires that multiple jurisdictions work together and that multiple funding sources be "braided" together. Funding and jurisdictional barriers have been mentioned briefly in previous literature, yet nearly all our interviewees stressed the seriousness of the challenge of integration in the face of jurisdictional or funding silos.

Resolving this barrier may require adding flexibility to budgeting processes, even if it does not require additional funds. Although the Institute of Medicine has recognized the need to coordinate funding streams, the scope of the recommendation extended mainly to the Health Resources and Services Administration and the CDC; even then, the Institute of Medicine found that as of 2012 the current funding system was not well positioned for promoting integration.<sup>11</sup> Our work shows the clear need for an even larger-scale approach that could enable integration across multiple federal agencies and across federal, state, or local sources.

#### Identifying Solutions to Observed Barriers

Solving funding and jurisdictional integration issues may be informed by examples from across the United States and internationally. Some cities or states have used performance or outcomes-based budgeting in an attempt to ensure that spending is aligned with city priorities. Baltimore, Maryland, developed an outcome budgeting system to use data and evidence to focus resources on the most effective and promising services and programs.<sup>22</sup> Georgia has experimented with using performance-based budgeting linked to public health outcomes.<sup>23</sup> To the extent that certain sectors, such as public health, may feel underfunded under current budgeting approaches, this approach could conceivably offer a path to rightsizing investments based on a community's priorities and perceptions of program impacts.

Even if a major budgeting overhaul is not possible—many agency interviewees mentioned the importance of working collaboratively on multisector projects—budgetary processes may need to be adapted to ensure that funding silos do not impede progress toward an integrated, multisector pursuit of improved health. For instance, a top-level budget line that aggregates predetermined existing budget lines could be developed to track spending on social determinants of health. This would not be new spending but could be used to allow clear tracking of all investments that a community makes in the health of its citizens, similar to an approach New Zealand recently adopted.<sup>24</sup> Although agencies may have differing statutory authorities and funding sources, the potential for alignment is in agencies' complementary big-picture mission and vision, as well as the constituents they serve. Key stakeholders broadly understood and agreed that their work contributed not only to sector-specific objectives (e.g., well-run parks, affordable housing availability, safe streets) but also to broader impacts on the health, well-being, and happiness of residents. This is big-picture goal alignment that is hypothesized to be fundamental to integration efforts.<sup>11</sup> To take advantage of this, it may be beneficial to consider approaches proposed and implemented elsewhere. For example, Healthy People 2020 recommends a chief health strategist to support cross-sector partnerships to promote community health and prioritize prevention and wellness.<sup>25</sup> Atlanta, Georgia, recently appointed their first-ever chief health officer to focus on developing relationships between local governments and stakeholders.<sup>26</sup> San Antonio, Texas, and Austin, Texas, use a chief equity officer to address health disparities, promote diversity and inclusion, and improve connectivity and data sharing across public and private sectors.<sup>27</sup> A systems-level office or officer could serve as an organizing or convening entity to address the observed integration barriers within and across jurisdictions. This may help to ensure that strategies and tactics are originated and constructed to support integrative work rather than patching individual programs or services together after the fact. In light of our findings, it may be reasonable to consider these strategies as potentially promising practices for the integration barriers we have identified. Further research would be needed to determine their efficacy and their impact on promoting systems-level integrated service provision.

#### Limitations

Our findings should be viewed in light of several limitations. First, we conducted our study in a very large and diverse setting, but because of its intensely localized focus its results may not generalize to other settings. We carefully considered this and attempted to differentiate our findings, which are likely to be context specific (e.g., because of unique local administrative or regulatory issues), unlike those that may be common across jurisdictions. Second, our 10-year retrospective budgetary review includes the Great Recession (2007- 2009) and its aftermath, which may have uniquely affected public budgets. We note, however, that this period also included lengthy periods of continued, if modest, economic expansion and job growth. A review of any given 10-year budget window will often include periods of economic expansion and contraction, and therefore the inclusion of budgets representing a range of macroeconomic conditions is relevant and important for this type of research. Third, our study's sample frame was limited to organizations for which comparable budget data were available (i.e., public and quasipublic agencies). Additional nongovernmental integration efforts are likely ongoing and may be important for maximizing the impact of public health and social services on population health.

#### Public Health Implications

Our findings suggest the presence of a critical set of systems-level considerations that may promote or hinder integration efforts. Integration efforts may need to be embedded upstream into budgeting processes to promote more than one-off efforts to integrate otherwise fragmented services. Integration efforts may also benefit from linkage to an overall community-wide strategy for the pursuit of improved population health. Our findings also suggest that integration efforts may be beneficial if supported by purposeful evidence, partnerships, and workforce initiatives.

Given that state and federal funders are often funding multiple local governments in a community, there is a clear role for these entities in aligning metrics and mechanisms for collaboration across cities and counties in a community. Strong political and bureaucratic will is likely essential. Budget structures can facilitate service integration, and greater attention should be given to the budget models used in a community. Budgeting globally,

budgeting based on an integrated health and social service project, and including aggregate social determinants of health spending in the annual budget (such as the novel estimate calculated here) could promote more integration of health and social services. Our findings suggest a path to improving the prospects for the integration of health and social services through greater attention to the budgetary, jurisdictional, and programmatic realities of health and social service agencies. >4jPI-I

#### CONTRIBUTORS

J. M. McCullough led the preparation of the initial article draft and was responsible for obtaining funding for the study. J. M. McCullough and J. P. Leider conceptualized the study. All authors contributed to data collection and analysis, the initial article draft, and critical revision of the article.

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#### CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

#### HUMAN PARTICIPANT PROTECTION

The Arizona State University institutional review board reviewed and approved the study protocol.

#### Sidebar

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## DETAILS

**Subject:** Resource allocation; Government agencies; Finance; Public health; Medicaid; Public finance; Cities; Health care policy; Politics; City managers; Local government; Decision making; Social services; Expenditures; Public sector; State budgets; Interviews; Medicare; Budgets; Jurisdiction; Per capita; Health services; Metropolitan areas; Integration; Funding; Social agencies; Health care; Social systems; Health care expenditures

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# Associations Between Cross-Sector Partnerships and Local Health Department Participation in Population-Based Activities to Prevent Mental Health



# Conditions

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[ProQuest document link](#)

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## ABSTRACT (ENGLISH)

**Objectives.**To describe partnerships between US local health departments (LHDs) and community organizations and assess the relationship between the types of activities performed in these partnerships and LHD engagement in population-based activities to prevent mental health conditions. **Methods.** Data were derived from 457 LHDs that responded to module 1 of the 2016 Profile Study conducted by the National Association of County and City Health Officials. These data were used to assess the presence of partnerships with community organizations and examine associations between the types of activities performed in such partnerships and LHDs' participation in population-based activities to prevent mental health conditions. **Results.** LHDs had higher odds of participating in population-based activities to prevent mental health conditions if they shared personnel or resources or had written agreements with mental health or substance use disorder providers, held regularly scheduled meetings with hospitals, or shared personnel or resources with community health centers. Odds were reduced if they exchanged information with community health centers or shared personnel or resources with faith-based organizations. **Conclusions.** This study offers an improved understanding of how the types of activities performed in cross-sector partnerships affect LHDs' participation in population-based activities to prevent mental health conditions, which is important as public policies, programs, and funding initiatives continue to encourage cross-sector partnership building.

## FULL TEXT

### Headnote

**Objectives.**To describe partnerships between US local health departments (LHDs) and community organizations and assess the relationship between the types of activities performed in these partnerships and LHD engagement in population-based activities to prevent mental health conditions.

**Methods.** Data were derived from 457 LHDs that responded to module 1 of the 2016 Profile Study conducted by the National Association of County and City Health Officials. These data were used to assess the presence of partnerships with community organizations and examine associations between the types of activities performed in such partnerships and LHDs' participation in population-based activities to prevent mental health conditions.

**Results.** LHDs had higher odds of participating in population-based activities to prevent mental health conditions if they shared personnel or resources or had written agreements with mental health or substance use disorder providers, held regularly scheduled meetings with hospitals, or shared personnel or resources with community health centers. Odds were reduced if they exchanged information with community health centers or shared personnel or resources with faith-based organizations.

**Conclusions.** This study offers an improved understanding of how the types of activities performed in cross-sector partnerships affect LHDs' participation in population-based activities to prevent mental health conditions, which is important as public policies, programs, and funding initiatives continue to encourage cross-sector partnership building. (Am J Public Health. 2020;110:S225-S231. doi:10.2105/AJPH.2020.305646)

Approximately 1 in 5 adults have a mental health condition, and rates of depression, suicide, and anxiety among youths have increased significantly in the past decade.<sup>1,2</sup> However, a majority of adults and children with mental health conditions are not using mental health services.<sup>1</sup>

Population-based approaches to mental health, or nonclinical interventions and activities intended to improve mental health outcomes and the determinants of such outcomes (e.g., convening cross-sector stakeholders to coordinate

mental health initiatives or advocate for public policies that improve population mental health), are gaining momentum as an opportunity to combat rising rates of mental health conditions.<sup>3</sup> National initiatives such as the Affordable Care Act and prioritization of mental health as one of the 12 Healthy People 2020 objectives demonstrate substantial interest in integrating mental health into public health practice.<sup>4, 6</sup> Consequently, several national initiatives have identified local health departments (LHDs) as a stakeholder group that could address population mental health by integrating population-based mental health approaches into their prevention and programming work.

LHDs are well suited to engage in population-based mental health primary prevention, or activities focused on targeting the population before mental health conditions occur, because approximately three quarters of these departments report doing community primary prevention work focused on nutrition and tobacco and half report doing work focused on physical activity, chronic disease, and unintended pregnancy.<sup>9</sup> Despite momentum at the national level to encourage LHDs to address mental health,<sup>10-16</sup> less than a quarter of LHDs participate in population-based primary prevention work focused on mental health conditions.<sup>9</sup>

Research suggests that perceived organizational boundaries with other local organizations and agencies, as well as limited internal knowledge about mental health may be potential barriers for LHDs to participate in population-based activities to prevent mental health conditions (hereafter "mental health prevention").<sup>16</sup> In recent years, the role of LHDs has shifted significantly from addressing infectious disease and sanitation to addressing the social determinants of health<sup>17, 18</sup> (e.g., transportation, housing, access to food).

Many programs and policies that address social determinants of health traditionally fall under the purview of other local agencies or departments. As a result, public health now includes nontraditional partners such as housing agencies, local planning and development agencies, and faith communities in addition to traditional health partners such as hospitals, health insurance companies, and community health centers.<sup>19</sup> The new model for public health practice, Public Health 3.0 (outlined by the Office of the Assistant Secretary of Health in 2016), acknowledges the importance of nontraditional and traditional health partners as well as the downfall of the existing public health infrastructure by listing "cross-sector community partnerships" as one of 5 key recommendations for public health moving forward.<sup>4, 7</sup>

Cross-sector partnerships may provide an opportunity for LHDs to maximize use of community knowledge and resources by developing complementary strategies to address mental health in the populations they serve.<sup>18, 20, 21</sup> Previous studies leveraging theories from network science have shown that the numbers and types of organizations in each public health collaborative (a network of diverse organizations in a community with the intent to work on public health issues) vary according to the goal of the collaborative (e.g., chronic disease vs infant mortality).<sup>19, 22</sup> Research suggests that partnerships that succeed in creating change in communities and systems need to be cross-sectoral, engaging partners at different levels and across different sectors (e.g., private industry, nonprofit organizations).<sup>22, 23</sup> LHDs can strategically form relationships to improve their own structural capacity by engaging with organizations to leverage additional funding or access technical assistance.<sup>24</sup>

The Process Framework for Public Health Collaboratives provides a way to measure how organizations work together to achieve specific public health outcomes.<sup>23</sup> Collective decision-making, resource sharing, and connectivity are crucial characteristics of public health partnerships that may lead to improved outcomes.<sup>23</sup> Several studies have explored the composition of public health collaboratives and key characteristics of successful partnerships, but no investigations to my knowledge have looked quantitatively at how specific types of activities (e.g., sharing personnel or resources, exchanging information) engaged in by LHDs and their collaborative partners influence LHDs' population-based mental health prevention work.

This study sought to build on previous research by (1) describing the presence of partnerships between LHDs and community organizations and (2) assessing associations between the types of activities performed in partnership with community organizations and LHDs' participation in population-based mental health prevention.

## METHODS

This study incorporated data from 457 LHDs that responded to module 1 of the 2016 Profile Study, a Web-based

survey conducted by the National Association of County and City Health Officials (NACCHO) that is widely used to characterize the function and structure of LHDs.<sup>9,25</sup> NACCHO maintains a comprehensive list of LHDs in the United States, and this list served as the sampling frame for the core 2016 Profile Study questionnaire (n = 2533). A total of 1930 LHDs completed the core questionnaire (response rate = 76%).

In addition to the core questionnaire, NACCHO selected 2 groups of LHDs, using stratified random sampling with strata defined by the size of the population served by the LHD, to receive one of 2 sets of supplemental questions (module 1 and module 2).<sup>9</sup> Questions on partnerships and collaborations were part of module 1 (n = 484 LHDs; response rate = 80%).<sup>9</sup> The Profile Study does not include local behavioral health departments or agencies.

LHDs were excluded from the present analysis if they did not respond to the item in the core questionnaire related to participation in population-based mental health prevention (n = 16) or the items in module 1 related to partnerships and collaborations (n = 11).

#### Dependent Variable

The primary dependent variable was LHD participation in population-based mental health prevention. Respondents were queried regarding "whether and how your LHD and other organizations provided [population-based mental health prevention] in your jurisdiction during the past year." Five response options were provided ("performed by LHD directly," "contracted out by LHD," "provided by others in community independent of LHD funding," "not available in community," and "don't know"). Consistent with how Profile Study service variables have been collapsed in previous research,<sup>14,15</sup> departments that responded either "performed by LHD directly" or "contracted out by LHD" were coded as participating in population-based mental health prevention.

#### Independent Variables

The primary independent variables were presence of partnerships with organizations and the type of activities performed in these organizational partnerships. LHDs were instructed as follows: "Check each way that your LHD has worked with each organization in the past year." Organization types were "mental health/substance use disorder providers," "hospitals," "community health centers," "colleges or universities," "community-based nonprofits," "local planning and developmental agencies," "housing agencies," "transportation," "libraries," and "faith communities." LHDs were coded as having a relationship with an organization if they reported that they had "shared personnel or resources," had a "written agreement," had "regularly scheduled meetings," or "exchanged information" with the organization in the past year. Binary variables were created to measure the presence of a partnership with each organization.

As noted, the secondary primary variable of interest was the type of activity in which the LHD engaged with the organization (sharing of personnel or resources, written agreement, regularly scheduled meetings, exchange of information, or no relationship). Binary variables (yes or no) were created to assess the types of activities performed between LHDs and organizations. An LHD could perform more than 1 type of activity with an organization.

Other LHD-level covariates were also included. Environmental variables included LHD population size (less than 25 000, 25 000-49 999, 50 000-99 999, 100 000-499 999, 500 000 or more), jurisdiction type (city, county, multicounty, multicounty), and LHD governance classification (state government, local government, governed by both state and local authorities). Structural capacity was measured according to membership in a combined health and human services agency (yes or no).

#### Statistical Analysis

Bivariate analyses, including  $\chi^2$  tests and 2-tailed t-tests, assessed differences in covariates by LHD participation in population-based primary prevention. Logistic regression was used to examine associations between LHD participation in population-based primary prevention and (1) partnerships with community organizations and (2) the types of activities performed in organizational partnerships. All analyses were conducted in Stata version 15.2 using survey weights produced by NACCHO to be representative of all LHDs in the United States.<sup>9,14</sup> The study was completed in 2018.

## RESULTS

Table 1 shows weighted descriptive statistics for LHD characteristics and partnership characteristics stratified by

LHD participation in population-based mental health prevention (additional details on the stratified sample are provided in Table A, available as a supplement to the online version of this article at <http://www.ajph.org>). LHDs that did and did not participate in population-based mental health prevention differed significantly with respect to population size, membership in a combined health and human services agency, and average number of partnerships. A higher percentage of LHDs participating in population-based mental health prevention served populations of 50 000 to 99 999 residents (20.7% vs 14.2%;  $P = .001$ ) and populations of 500 000 or more residents (11.4% vs 3.4%;  $P = .001$ ).

LHDs that participated in population-based mental health prevention were more likely to be part of a combined local health and human services agency (27.7% vs 16.8%;  $P = .023$ ) and less likely to be governed solely by a local government (65.1% vs 72.9%,  $P = .03$ ). LHDs that participated in population-based mental health prevention had a significantly higher average number of partnerships than LHDs that did not (8.8 vs 7.5;  $P < .001$ ).

The numbers and types of cross-sector partnerships for LHDs that participated in population-based mental health prevention differed significantly. LHDs that participated in population-based mental health prevention were more likely than those that did not to partner with hospitals (97.8% vs 85.7%;  $P = .004$ ), mental health or substance use disorder providers (93.9% vs 75.4%;  $P < .001$ ), universities (75.4% vs 63.3%;  $P = .05$ ), local planning and development agencies (78.0% vs 63.5%;  $P = .013$ ), housing agencies (69.2% vs 51.3%;  $P = .004$ ), transportation (62.4% vs 46.8%;  $P = .01$ ), and libraries (77.5% vs 64.3%;  $P = .022$ ). Also, they were more likely to be involved in partnerships in which they shared personnel or resources (46.5% vs 30.3%;  $P = .004$ ), had written agreements (58.4% vs 37.9%;  $P < .001$ ), and had regularly scheduled meetings (82.9% vs 66.5%;  $P = .003$ ).

Table 2 shows adjusted associations between the presence of an organizational partnership and LHD participation in population-based mental health prevention. After adjustment for average number of partnerships, governance structure, population size, and LHD membership in a combined health and human services agency, partnerships with specific types of organizations were significantly associated with LHDs' participation in population-based mental health prevention. The odds of participating in population-based mental health prevention were approximately 5 times higher among LHDs that had partnerships with mental health or substance use disorder providers (adjusted odds ratio [AOR] = 4.71; 95% confidence interval [CI] = 1.39, 15.97) or hospitals (AOR = 5.19; 95% CI = 1.21, 22.18) than among LHDs that did not have partnerships with these types of organizations.

Table 3 shows adjusted associations between types of activities performed in an organizational partnership and LHD participation in population-based mental health prevention. After adjustment for average number of partnerships, governance structure, population size, and LHD membership in a combined health and human services agency, specific types of activities performed with specific types of organizations were significantly associated with LHD participation in population-based mental health prevention. The odds of participating in population-based mental health prevention were 4 times higher among LHDs that shared personnel or resources with mental health or substance use disorder providers (AOR = 3.96; 95% CI = 1.38, 11.36) and 3 times higher among LHDs that had written agreements with mental health or substance use disorder providers (AOR = 2.91; 95% CI = 1.07, 7.94) than among LHDs that did not perform such activities with these types of organizations.

The odds of participating in population-based mental health prevention were 4.5 times higher among LHDs that shared personnel or resources with community health centers (AOR = 4.55; 95% CI = 1.40, 14.74) than among LHDs that did not do so. However, the odds of participating in population-based mental health prevention decreased by 68% among LHDs that exchanged information with community health centers (AOR = 0.32; 95% CI = 0.15, 0.70). The odds of participating in population-based mental health prevention were 2.25 times higher among LHDs that had regularly scheduled meetings with hospitals (AOR = 2.25; 95% CI = 1.12, 4.52) than among LHDs that did not have such meetings. The odds of participating in population-based mental health prevention decreased by 87% among LHDs that shared personnel or resources with faith-based organizations (AOR = 0.13; 95% CI = 0.02, 0.81).

## DISCUSSION

The purpose of this study was to describe LHD cross-sector partnerships and assess associations between the types of activities performed in these partnerships and LHD participation in population-based mental health

prevention. The study's results suggest that (1) there are differences in cross-sectoral partnerships between LHDs that do and do not participate in population-based mental health prevention and (2) the types of activities performed in partnership with specific organizations are significantly associated with LHD participation in population-based mental health prevention.

National initiatives support the integration of mental health into public health.<sup>4-6</sup> For this reason, clear expectations for how LHDs should engage in population-based mental health prevention are crucial. Public Health 3.0 and the 10 Essential Public Health Services encourage LHDs to embrace a population-based approach, which means that these departments should not necessarily be responsible for providing treatment for mental health conditions but rather should be responsible for promoting mental health. Examples of population-based mental health approaches that LHDs could consider include conducting community training on mental health or trauma-informed practice, leveraging electronic health record data to monitor population-level mental health, and including mental health as a potential health impact when evaluating proposed policies or planning decisions.<sup>3</sup> If these population-based mental health approaches and others are to be successfully implemented by LHDs, cross-sector partnerships need to be leveraged.

In the present study, LHDs that participated in population-based mental health prevention were more likely to be part of a combined health and human services agency than LHDs that did not. This result, in line with the findings of Purtle et al., suggests that even in communities with local behavioral health departments, LHDs still have a crucial role to play in population-based mental health prevention.

Local behavioral health agencies have traditionally focused on secondary and tertiary prevention, using their funding and resources to ensure access to services for individuals and families.<sup>16</sup> LHDs can complement the current efforts of local behavioral health departments by focusing on primary prevention activities aimed at improving population mental health (e.g., supporting policies to increase access to green space or monitoring population-level mental health indicators through existing health surveys). Policies, programs, and accrediting boards should consider how the presence of a local health and human services agency might influence the delineation of responsibility for population-based mental health prevention work in a community.

This study revealed that LHDs that participated in population-based mental health prevention were more likely than those that did not to collaborate with both traditional health partners (e.g., mental health and substance use disorder providers, community health centers, hospitals) and nontraditional partners (e.g., local planning and development agencies, housing agencies, transportation agencies). In the fully adjusted model, LHDs were more likely to participate in population-based mental health prevention if they shared personnel or resources, had written agreements, or had regularly scheduled meetings with traditional health partners. Previous research has shown that organizations in public health collaboratives exhibit preferences for partnering with similar organizations<sup>19,27</sup> and that traditional health partners are most trusted and valued by other members of the collaborative.

Traditional health partnerships often have the most impact because they bring together community organizations that can mutually benefit from improvements in health outcomes.<sup>24</sup> For example, health care providers (e.g., hospitals and community health centers) may be motivated to work with LHDs on population-based mental health prevention to minimize mental health conditions in their patient populations. Such mutual benefits might be one reason that partnerships with traditional health organizations were stronger predictors of LHDs participating in population-based mental health prevention than partnerships with nontraditional organizations.

This study suggests that the type of activity performed in partnership with a specific community organization, rather than simply the presence of a community partnership, influences LHD participation in population-based mental health prevention. For example, the presence of a partnership with a community health center had no significant impact on the odds of an LHD engaging in population-based mental health prevention. However, partnerships with community health centers in which LHDs shared personnel or resources or exchanged information had a significant impact on odds of participating in population-based mental health prevention.

The odds of participation in population-based mental health prevention were increased if LHDs shared personnel or resources or had a written agreement with mental health or substance use disorder providers. The responsibility and



role of LHDs in population mental health have shifted significantly over the past decade.<sup>7</sup> A lack of internal knowledge or internal experience in population-based mental health approaches may compel LHDs to form partnerships focused on shared personnel or resources with organizations that have this expertise (e.g., mental health providers).<sup>4,16</sup> This has important implications for policies and programs and suggests that capacity building and technical assistance for population-based mental health activities may be crucial aspects of encouraging LHD engagement in population-based mental health prevention.

Faith-based organizations provide an array of health-related services and programming to their communities.<sup>28,29</sup> However, LHDs that shared personnel or resources with such organizations were less likely to participate in population-based mental health prevention. Previous research involving the 2005 Profile Study showed that a similar percentage of LHDs had partnerships with faith-based communities (83% vs 82.4% in this study) and that sharing personnel or resources was the least common type of activity performed in these partnerships.<sup>30</sup> Although faith-based organizations may be playing a significant role in the health of their community, it remains unclear whether their efforts are synergistic with other local public health efforts. Further research is needed to understand how faith-based organizations contribute to population-based mental health prevention in their communities.

#### Limitations

This study is not without limitations. For example, the data were self-reported by LHD staff members, which is relevant with respect to the partnership and collaboration questions. Unlike questionnaires designed to assess networks or collaborations (i.e., network science), data were not collected from the organizations with which LHDs partnered. As a result, I was unable to verify that LHDs' relationships with other organizations were reciprocal. In addition, there is potential for different interpretations of certain questions owing to a lack of explicit definitions on the part of NACCHO. For example, NACCHO did not provide a definition or example of "population-based mental health prevention," which could lead to underreporting or overreporting of LHDs' participation in this type of work. Also, no definitions were provided for the different types of partnerships (e.g., partnerships involving an exchange of information), and this could lead to different interpretations of what each type of partnership implies.

Finally, the sample size was limited in terms of the types of activities performed with some types of organizations (e.g., libraries, faith-based organizations). Although this study makes an important contribution to science by demonstrating the importance of the various types of activities performed by LHDs in partnership with community organizations, further research is needed to better understand the role of nontraditional health organizations in supporting population-based mental health prevention in their communities.

#### Public Health Implications

Collaborations between LHDs and traditional health partners might be a solution to fill gaps in LHDs' resources and improve their capabilities to participate in population-based mental health prevention. The outcomes of cross-sector partnerships could be improved by promoting meaningful types of partnership activities (e.g., resource sharing, regular meetings). The specific type of activity performed in a cross-sector partnership, not simply the presence of such a partnership, is important to consider as public policies and funding initiatives continue to encourage collaboration as a means of addressing population mental health.

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#### CONFLICTS OF INTEREST

The author reports no conflicts of interest.

#### HUMAN PARTICIPANT PROTECTION

No protocol approval was needed for this study because no human participants were involved.

#### Sidebar

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## DETAILS

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## A Cross-Cutting Workforce Solution for Implementing Community–Clinical Linkage Models

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## ABSTRACT (ENGLISH)

Federal agencies have identified the need to foster integration between health care and social services to address the underlying role of social determinants of health and achieve health equity. Community-clinical linkage models are partnerships to help connect health care providers, community organizations, and public health agencies so that they can improve patients' access to preventive, chronic care, and social services. Models for linkage have proliferated to tackle the complexity of addressing social needs from health care settings. Examples include using electronic community referrals systems to facilitate connections between patients and organizations that offer social services, creating medical-legal partnerships, and employing community health workers (CHWs) to navigate complex health systems and facilitate access to community resources such as affordable housing and food banks. Most community-clinic linkage approaches have been tested, implemented, and disseminated across large health systems, academic medical centers, or federally qualified health centers—largely to the exclusion of small, independently owned practices. As of 2016, approximately 40% of primary care physicians in the United States were working in practices with fewer than five physicians.<sup>1</sup> From a quality-of-care perspective, small, independently owned practices may offer certain advantages compared with hospital-owned primary care practices, including a greater level of personalization and responsiveness, higher-quality care, lower average cost per patient, and fewer preventable hospital admissions.<sup>2</sup> For small, independently owned practices whose focus is on serving low-income, underserved patients, community-clinical linkage programs that connect patients to resources addressing social and cultural issues may be particularly impactful. However, small, independently owned practices struggle with limited staff, financial resources, and technological expertise to implement system changes, and they are often organizationally isolated, which impedes their ability to network with community organizations and identify resources.

## FULL TEXT

Federal agencies have identified the need to foster integration between health care and social services to address the underlying role of social determinants of health and achieve health equity. Community-clinical linkage models are partnerships to help connect health care providers, community organizations, and public health agencies so that they can improve patients' access to preventive, chronic care, and social services. Models for linkage have proliferated to tackle the complexity of addressing social needs from health care settings. Examples include using electronic community referrals systems to facilitate connections between patients and organizations that offer social services, creating medical-legal partnerships, and employing community health workers (CHWs) to navigate complex health systems and facilitate access to community resources such as affordable housing and food banks. Most community-clinic linkage approaches have been tested, implemented, and disseminated across large health systems, academic medical centers, or federally qualified health centers—largely to the exclusion of small, independently owned practices. As of 2016, approximately 40% of primary care physicians in the United States were working in practices with fewer than five physicians.<sup>1</sup> From a quality-of-care perspective, small, independently owned practices may offer certain advantages compared with hospital-owned primary care practices, including a greater level of personalization and responsiveness, higher-quality care, lower average cost per patient, and fewer preventable hospital admissions.<sup>2</sup> For small, independently owned practices whose focus is on serving low-income, underserved patients, community-clinical linkage programs that connect patients to resources addressing social and cultural issues may be particularly impactful. However, small, independently owned practices struggle with limited staff, financial resources, and technological expertise to implement system changes, and they are often organizationally isolated, which impedes their ability to network with community organizations and identify resources. On recognizing these barriers, numerous federal initiatives (e.g., EvidenceNOW, Million Hearts) have supported a renewed focus on small, independently owned practices to enhance their role in effectively improving health outcomes in the communities they serve. These initiatives emphasize the role of practice facilitation, a process led by a trained facilitator that focuses on fostering collaborative team-based problem solving, building effective communication, establishing and sharing common goals between members of the health care team, and helping practices integrate tools that leverage health information technology and promote data-driven improvement in patient outcomes. Also known as quality improvement coaching,<sup>3</sup> practice facilitation is a strategy for building capacity

among small, independently owned practices to adopt and implement evidence-based systems and care processes—like the integration of CHWs into primary care to facilitate community-clinical linkages—for improving patient care. CHWs, a US Department of Labor-recognized workforce, are frontline public health professionals who are trusted members of the communities they serve. CHWs represent a cost-effective strategy to improve patients' self-management, adherence to treatment of chronic disease, and connections to community resources.<sup>4,5</sup> However, information is lacking on how to integrate CHWs successfully into small, independently owned practice settings, which tend to lack the infrastructure and resources to integrate a new workforce.

Drawing from different streams of literature on (1) the effectiveness of CHWs in addressing patients' social needs and (2) the effectiveness of practice facilitation in building practice capacity to integrate evidence-based strategies to improve care, we propose that small, independently owned practices strategically employ practice facilitators, who are specially trained quality improvement coaches, to integrate CHWs into their primary care teams to support the effective implementation of community-clinical linkage models. We argue that the role of practice facilitators is well aligned with the goal of implementing innovative team care models that link patients to community services through the addition of CHWs to the primary care team, representing a cross-cutting workforce solution for small, independently owned practices to address upstream factors affecting the health of their patients.

### STRATEGIES FOR IMPLEMENTATION

Small, independently owned practices are eager to integrate CHWs into their practices. However, effective partnerships between practices and CHWs require a "population health management" infrastructure, for which practice facilitators are trained to offer support. Specifically, practice facilitators build practices' capacity to integrate evidence-based interventions into organizational workflow by offering coaching, training, and assistance in planning and performing a range of specific tasks, such as electronic health record template management or report building and supporting more complex change processes (such as team building or workflow redesign).<sup>3</sup> With the support of a facilitator, primary care practices are almost three times more likely than usual care practices to implement recommended evidence-based interventions for preventive services, and research suggests that the effects of practice facilitation are sustained one year post-intervention.<sup>3</sup> Small, independently owned practices, in particular, value the facilitator's role in connecting them to the external health care environment to overcome organizational isolation. This can include teaching the practice through information sharing, promoting networking with other practices, and linking practices to resources and opportunities to enhance quality and reimbursement.<sup>6</sup> Thus, practice facilitators can provide the skills and a process for integrating CHWs into the care team as a central resource for addressing social determinants of health. Table 1 outlines several ways that practice facilitation can help small, independently owned practices mitigate their unique challenges and successfully integrate CHWs to foster the bidirectional nature of community-clinical linkages.

### SUSTAINING THIS CROSS-CUTTING WORKFORCE

Some emerging public models and regional solutions focus on creating a sustainable workforce of practice facilitators and CHWs. In New York City, the local health department supports a practice facilitation program, providing services for more than 1000 small, independently owned practices to promote high-quality primary care and advance population health and prevention. States like Washington, Texas, and New York also have leveraged Delivery System Reform Incentive Payment waivers to create regional networks of providers, with resources and mechanisms to sustain CHW services through value-based payment models. Several new laws and Centers for Medicare and Medicaid Services rules, as well as managed care organization rules designed to engage enrollees in care, provide sustainable mechanisms to support CHWs in primary care practice settings.

Payer organizations, in collaboration with independent practice associations and Accountable Care Organizations, also can play a role in supporting practice facilitation and CHW services. Payment models can include payers directly hiring practice coaches and CHWs as staff and deploying them to member practices. Alternatively, payers may directly reimburse practice facilitation or CHW efforts through independent practice association or other hub models, whereby groups of practices with a natural affiliation pay into shared services, a strategy that has been successfully used in Oregon and California.

The Affordable Care Act authorized-but did not fund-the creation of a Primary Care Extension Program, which policy researchers have cited as a way to "accelerate changes in primary care, integrate primary care with public health, and translate research into practice to improve health outcomes, health care, and costs."7(p176) New Mexico's Health Extension Rural Offices program was built on the Primary Care Extension Program model. Health Extension Rural Offices agents have roles that include components of practice facilitators and CHWs, suggesting a hybrid workforce model that may be more cost-effective.

## CONCLUSIONS

Strong evidence that CHWs are effective, coupled with evidence that practice facilitation can optimize implementation of evidence-based models of care, should inform decisions about future funding of practice facilitation to support CHW integration in small, independently owned practices. However, research is necessary to examine strategies to optimize the implementation of this community- clinical linkage model in small, independently owned practices through the use of practice facilitation and the cost and return on investment of these strategies. Such evidence can provide much-needed support for the role of small, independently owned practices in addressing the social determinants of health and affirm their relevance in a rapidly changing health care context.2 ÂjPU

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## CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

## Sidebar

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# Public Health Systems and Social Services: Breadth and Depth of Cross-Sector Collaboration

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[ProQuest document link](#)

## ABSTRACT (ENGLISH)

**Objectives.** To examine the extent to which social service organizations participate in the organizational networks that implement public health activities in US communities, consistent with recent national recommendations. **Methods.** Using data from a national sample of US communities, we measured the breadth and depth of engagement in public health activities among specific types of social and community service organizations. **Results.** Engagement was most prevalent (breadth) among organizations providing housing and food assistance, with engagement present in more than 70% of communities. Engagement was least prevalent among economic development, environmental protection, and law and justice organizations (less than 33% of communities). Depth of engagement was shallow and focused on a narrow range of public health activities. **Conclusions.** Cross-sector relationships between public health and the housing and food sectors are now widespread across the United States, giving most communities viable avenues for addressing selected social determinants of health. Relationships with many other social and community service organizations are more limited. **Public Health Implications.** Public health leaders should prioritize opportunities for engagement with low-connectivity social sectors in their communities such as law, justice, and economic development. (Am J Public Health. 2020;110:S232-S234. doi: 10.2105/AJPH.2020.305694)

## FULL TEXT

### Headnote

**Objectives.** To examine the extent to which social service organizations participate in the organizational networks that implement public health activities in US communities, consistent with recent national recommendations.

**Methods.** Using data from a national sample of US communities, we measured the breadth and depth of engagement in public health activities among specific types of social and community service organizations. **Results.** Engagement was most prevalent (breadth) among organizations providing housing and food assistance, with engagement present in more than 70% of communities. Engagement was least prevalent among economic development, environmental protection, and law and justice organizations (less than 33% of communities). **Depth of engagement** was shallow and focused on a narrow range of public health activities. **Conclusions.** Cross-sector relationships between public health and the housing and food sectors are now widespread across the United States, giving most communities viable avenues for addressing selected social determinants of health. Relationships with many other social and community service organizations are more limited. **Public Health Implications.** Public health leaders should prioritize opportunities for engagement with low-connectivity social sectors in their communities such as law, justice, and economic development. (Am J Public Health. 2020;110:S232-S234. doi: 10.2105/AJPH.2020.305694)

Cross-sector collaboration has gained momentum over the past decade as a catalyst to improve population health and health equity. The Robert Wood Johnson Foundation (RWJF) Culture of Health Action Framework encourages communities to strengthen connections between organizations that work in the medical and public health sectors and those that focus on social and community services (e.g., housing, law enforcement, transportation) to strengthen capacities for addressing social, economic, and environmental determinants of health.<sup>1,2</sup> Toward this same end, the US Department of Health and Human Services launched the Public Health 3.0 initiative in 2016. This model calls for new cross-sector partnerships between public health agencies and community stakeholders, including social services, to enhance the collective impact on health.<sup>3</sup>

To date, the scientific community has focused on emerging relationships between medical and social service organizations, with much less focus on cross-sector relationships in public health. Although some large-scale studies have characterized cross-sector community health networks,<sup>4</sup> there are no national estimates of the extent to which these relationships span public health and social service sectors. We addressed this gap by examining the breadth and depth of social service involvement in public health activities. This information is critical for tracking progress in strengthening collaborations to address social determinants of health.

### METHODS

We analyzed recently collected data from the National Longitudinal Survey of Public Health Systems (NALSYS), which follows a nationally representative cohort of US communities to assess implementation of public health activities and the networks of organizations contributing to these activities. The 2018 survey included an expanded set of questions measuring specific types of social and community organizations contributing to public health activities in local communities. Additional details about the NALSYS have been published elsewhere.<sup>5</sup>

### Measures

We surveyed local public health officials in a stratified random sample of 776 communities regarding the implementation of 19 public health activities and the types of organizations engaged in these activities. Sample characteristics of the 554 responding communities (response rate = 71%) are shown in Table 1. For each public health activity, respondents reported specific types of social and community service organizations involved in implementing the activity from a list of 19 service types. For ease of interpretation, we grouped service types into 5 categories:

1. Basic needs, including assistance with housing, shelter, or utilities; food and nutrition; cash assistance for low-income households; transportation services; and employment or job training

2. Special populations, including support for veterans, children and families, people with disabilities, and older adults
3. Community and infrastructure, including agriculture or cooperative extension; land use, zoning, or community development; economic development; and environmental protection programs
4. Criminal justice, including law enforcement; corrections, criminal justice, or juvenile justice; and legal assistance
5. Culture and recreation, including library, arts, or cultural programs and parks, recreation, or physical activity programs

Respondents could also select "none of the services listed above."

## Analysis

Borrowing from economic production theory, we characterized the breadth and depth of social service involvement in public health activities using concepts of extensive and intensive margins, respectively. The extensive margin for each social service was defined as the percentage of communities in which social service organizations participated in implementing at least 1 public health activity. The intensive margin for each social service was defined as the percentage of public health activities in which social services participated, averaged across communities. A fully collaborative community would exhibit high extensive and intensive margins, meaning collaboration with many social services across many public health activities.

## RESULTS

In 2018, the extensive margins for social service involvement ranged from 25.3% of communities engaging parks, recreation, and physical activity organizations to 73.8% of communities engaging organizations that provide assistance with housing, shelter, or utilities (Table 2). Engagement was highest with organizations supporting basic needs such as housing and food. Notably low was collaboration with justice-related organizations such as legal assistance and law enforcement. Only 33 communities (5.96%) implemented all public health activities without the involvement of any social services listed on the survey.

The intensive margins ranged from 5.0% of activities involving corrections, criminal justice, or juvenile justice to 24.3% of activities involving organizations providing assistance with housing, shelter, or utilities. Organizations serving special populations such as veterans or children and families engaged in a higher percentage of public health activities than did organizations providing more niche services such as economic development or recreation. In the average community, nearly 20% of public health activities did not involve any of the social services examined. Communities exhibited a high correlation between extensive and intensive margins ( $p = 0.71$ ). However, collaborations involving housing services (as an example) varied notably according to community rurality, with fewer such collaborations occurring in rural than urban communities (extensive margin: 62.6% vs 79.2%;  $t = 3.97$ ;  $P < .001$ ). When rural communities did collaborate with housing services, it was to a lesser degree than in urban communities (intensive margin: 26.9% vs 35.2%;  $t = 3.50$ ;  $P < .001$ ). Other community characteristics were not associated with statistically significant differences in margins.

## DISCUSSION

To our knowledge, this study is the first to quantify the breadth and depth of social service engagement in public health activities across a nationally representative sample of US communities. Our work establishes a baseline for measuring progress toward the goals of cross-sector collaboration emphasized in the RWJF Culture of Health Action Framework and the Public Health 3.0 model. The extensive margins observed demonstrate that cross-sector relationships spanning the public health, housing, and food sectors are now widespread across the United States, giving most communities viable avenues for addressing selected social determinants of health. However, public health relationships with many other social services are considerably less prevalent, highlighting opportunities for public health agencies to expand their reach.

The intensive margins found reveal that social service organizations engage in a narrow range of public health activities in most communities, indicating the focused nature of cross-sector collaboration consistent with relatively early-stage development. Collaborations often begin as focused, single-purpose initiatives but have the potential to expand in scope over time if they successfully achieve goals and secure additional resources. Our results provide a starting point for examining the extent to which collaborations expand and deepen over time and identifying factors

that facilitate or constrain such development.

Our study's limitations should be kept in mind when interpreting the results.

Data were self-reported by local public health officials, who may overreport or underreport collaboration on the basis of their access to information and the extent to which they perceive collaboration as desirable. Because the respondents are important community leaders and public officials, their knowledge and perceptions of cross-sector collaboration provide meaningful signals of national progress despite our data's subjective nature. However, our results may not represent the perspectives of social service sector leaders or other community stakeholders. In addition, we may have omitted collaborations external to public health or with services not included in the NALSYS.

#### PUBLIC HEALTH IMPLICATIONS

This study establishes a timely measure of the extent to which cross-sector relationships are forming that span public health and social service sectors. Our findings suggest that the breadth and depth of collaboration can be improved nearly universally. By monitoring the extent of cross-sector collaborations over time, public health leaders can identify gaps in collaborative relationships and establish priorities for future development. Combined with data from other initiatives (e.g., community health needs assessments), collaboration data can empower community leaders to target areas of greatest need and determine the optimal mix of partners to engage in health improvement initiatives.

#### Sidebar

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#### CONTRIBUTORS

M. K. Hamer analyzed the data and led the preparation of the article. G. P. Mays supervised the study design and analysis. Both of the authors conceptualized the study design and contributed to interpreting the findings and writing the article.

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#### CONFLICTS OF INTEREST

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# Aligning US Spending Priorities Using the Health Impact Pyramid Lens

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## ABSTRACT (ENGLISH)

Thomas Frieden's "health impact pyramid" presents a hierarchy in which the wide base of the pyramid of socioeconomic factors at a population level has more impact on the health of the public than do individually focused interventions at the pyramid's top. From this pyramid perspective, the US spending priorities are misaligned, as expenses targeted at public health and socioeconomic factors are far outstripped by spending on individual health care services at the top of the pyramid. The nation's ongoing debate on health care reform continues to focus on access to individual health care services, despite evidence demonstrating the health impacts of populationlevel efforts at the base of the pyramid and the synergistic health impacts of health and social service collaboration. We examine the need for improved systems alignment through the lens of the health impact pyramid. We catalog the types of misalignments and their social, political, and systems genesis. We identify promising opportunities to realign US health spending toward the socioeconomic factor base of the health impact pyramid and emphasize the need to integrate and align public health, social services, and medical care in the United States. (Am J Public Health. 2020;110:S181-S185. doi: 10.2105/AJPH.2020.305645)

## FULL TEXT

### Headnote

Thomas Frieden's "health impact pyramid" presents a hierarchy in which the wide base of the pyramid of socioeconomic factors at a population level has more impact on the health of the public than do individually focused interventions at the pyramid's top.

From this pyramid perspective, the US spending priorities are misaligned, as expenses targeted at public health and socioeconomic factors are far outstripped by spending on individual health care services at the top of the pyramid. The nation's ongoing debate on health care reform continues to focus on access to individual health care services, despite evidence demonstrating the health impacts of populationlevel efforts at the base of the pyramid and the synergistic health impacts of health and social service collaboration.

We examine the need for improved systems alignment through the lens of the health impact pyramid. We catalog the types of misalignments and their social, political, and systems genesis. We identify promising opportunities to realign US health spending toward the socioeconomic factor base of the health impact pyramid and emphasize the need to integrate and align public health, social services, and medical care in the United States. (Am J Public Health. 2020;110:S181-S185. doi: 10.2105/AJPH.2020.305645)

Thomas Frieden's "health impact pyramid" can be used to highlight an array of factors that determine a population's health.<sup>1</sup> All of the factors in the health impact pyramid can make people healthier, yet the factors at the base of the pyramid are thought to have more impact on a population's health than the individually focused factors at the top of the pyramid. We call attention to the misalignment of the population health impact of the base of the pyramid factors and the relative investments and attention targeted to the base of the pyramid in the United States, with the bulk of spending and political discourse focused on individual health care services rather than population-level activities at the base of the pyramid. Although we point out this inversion, we are not calling for reductions in the personal services utilized to counsel individuals and intervene one-on-one. Our focus is on alignment. We document the magnitude of misalignment as seen through the lens of the health impact pyramid, catalog the contributors to this misalignment, and chart a course toward better alignment and improved population health.

### MISALIGNMENTS IN SPENDING

There is a systematic misalignment in public sector spending in the United States, with health care spending vastly outstripping social services and public health spending at all levels of government.<sup>2 4</sup> A large proportion of public spending on health care is through federal investments in Medicare, Medicaid, and the Veterans Administration, and states and localities also contribute significant sums of money to clinical care through spending on Medicaid and a range of other clinical care programs, resulting from locally driven priorities and needs.<sup>5</sup> As state and local governments are constrained by balanced budget requirements,<sup>6</sup> state and local funding for clinical care results in necessary trade-offs with spending in other areas.<sup>4</sup> It is therefore especially important to consider how states and localities allocate resources to improve the health of the population. Figure 1 shows the health impact pyramid in comparison with state and local government spending for a wide range of relevant categories as of 2017. On both sides of the figure, the most outsized category is shown at the bottom, and visual comparison of the figures reveals the misalignment. Health care spending (the largest category at some \$751 billion in 2017) disproportionately funds individual health care services at the top of the pyramid. High health care spending has an opportunity cost. There is much less investment in population-focused services at the middle and bottom of the health impact pyramid to improve and protect population health by, for example, improving the safety of air, water, roads, homes, workplaces, and food.

The finding that health care spending far surpasses public health and social service spending is not new. However, refined estimates of total public health spending have heightened concerns about the level of trade-off and misalignment. One third to one half of spending categorized in official estimates as "public health" was found to be expenditures for individual health services, such as behavioral health.<sup>7</sup> Thus, addressing misalignment is critical, particularly given continued health care reform debates.

In examining the underlying causes and potential opportunities to address this misalignment of the health impact pyramid, we posit three sets of factors: ideological, psychological, and practical.

#### Ideological Considerations

Ideologically, a commitment to neoliberalism emphasizes the ability and responsibility of individuals to create and execute individual life plans.<sup>8</sup> Conflict can arise when base-of-the-pyramid, socioeconomic policies conflict with individuals' expressed preferences (Figure 2). History is rife with examples in which base-of-the-pyramid policies impinged on personal liberty and provoked backlash.<sup>9</sup> Prohibition of alcohol during the early 20th century is a leading example, as are many other prohibitions under debate today, such as bans on vaping products, vaccination requirements, and state-mandated incursions on reproductive rights. The neoliberal mission is to create a playing field on which each individual's liberty is constrained only when it interferes with the liberty of another. Neoliberal framing sustains unresolved debates about what constitutes an impingement on the liberty of another. For example,

if health care costs across a population are pooled together through insurance, to what extent do personal choices to eat fattening food, smoke, or not get vaccinated constitute cases of too much liberty because the costs of these choices affect others?

A consequence of the neoliberal concept of health is a spotlight on individual choice and the regulation thereof as the foremost policy concern. Yes, individual choices do matter. They are clearly presented in the Frieden pyramid. But neoliberal thinking rivets attention onto individuals and suppresses policy attention on health-determining collective actions. Debates in US health policy focus on the financing of individuals' health insurance plans. Given the magnitude of health care costs, this is a valid concern. However, the focus on health insurance options can overshadow concern for the collective choices needed to improve a population's health. As Figure 1 shows, these collective

choices have an importance to health far larger than their budgetary impact. We claim that neoliberal ideology contributes to this collective attention deficit.

In a perfect storm, a policy focus on individual agency occurs in a medical marketplace eager to sell a belief that health is solely derived from the purchase of information, commodities, and services. It is correct to assert that individual utilization of health services matters (Figure 1), but even with universal access to health financing and equitable access to providers, health gradients among populations persist.<sup>10</sup> Individuals as controllers of their own health outcomes can succeed in achieving health literacy, and some individuals obtain good insurance plans, good doctors, and good advice that they carry out. But success varies significantly by sociodemographic factors such as race, income, education level, and zip code. It is important to highlight the connection between neoliberal thinking and spending for economic and educational opportunities. To the extent that structural barriers give rise to inequity in the factors mentioned, neoliberal thinking would suggest a role for government intervention to ensure each individual's right to liberty.

Health has a special position in neoliberalism as a "primary good." Public efforts to make places congenial to healthier lives and to detoxify the health impacts of social class, minority status, and income are ironically harmonious with the neoliberal model. Thus, framing applicable population-level approaches to public health through a neoliberal lens could be an opportunity to gain support for populationlevel approaches. For example, offering individuals safer transit if they choose to ride a bike or walk as opposed to driving is an effective way within the neoliberal context to promote behavior change. Additional sociopolitical costs may also be necessary to persuade the public about the importance of the health impact of behaviors, either through individual (top of pyramid) or population (bottom of pyramid) approaches. From a political point of view, such proposals may raise opposition from those who evaluate each public expenditure through a lens of individual as opposed to collective benefit. There may be a missing appreciation of the fact that these proposals are collectively beneficial health policies if they consider health solely as the sum of what individuals do for themselves.

#### Psychological Considerations

Moral psychologists have repeatedly observed that humans make moral choices conforming to the "rule of rescue": individuals and societies will spend a great deal of time and money to rescue an identifiable person in need.<sup>11,12</sup> This is not to say that rescue is unimportant or that it is universally expensive. Rather, it is worth considering the relative level of focus and expense occupied by the rule of rescue. Psychologists and philosophers note the role of mental heuristics as shortcuts that we use to guide complex decision-making. The availability heuristic is foremost. Stories can make facts more compelling,<sup>13</sup> and we are motivated by narratives of identifiable persons in need of immediate remediation, such as a child suffering from hunger, a hiker lost on a mountain, or an individual with end-stage renal disease.

An illustrative corollary is that statistically, without question, vaccinations save lives. Yet we usually cannot identify any specific individual whose life was saved by a vaccination. Investing to save "statistical lives" through primary prevention lacks a narrative with the same psychological impact as an identifiable child in need. It becomes cognitively taxing to follow a chain of causation from social determinants to risk exposures, to disease, to death. It thus follows that spending on health care services for an identifiable person would far surpass spending for a

statistical life potentially at risk at some point in the future (even if the risk is extremely high). Compounding this is the "prominence effect," wherein decision-makers overvalue benefit at the expense of cost.<sup>14</sup> Yet, similar to neoliberalism, this focus on identifiable persons may offer opportunities to advance upstream, population-based approaches, for example, emphasizing that the development of parks and recreation areas that people can enjoy now provides long-term benefits.

#### Practical Considerations

The immediacy of people in need right now directs attention and the ability to assess impact. As Jones and Baumgartner note, there are abundant evidence-based, feasible policies that would save lives in the future according to all statistical projections.<sup>15</sup> However, sustaining attention on and awareness of these "unknown" benefits is difficult, especially when the policymakers who decide most governmental spending are elected on two- to six-year cycles. These structural incentives compound policymakers' ideological (dis)interests and personal motivations. A lack of urgency regarding problems that may manifest in the distant future is a form of "institutional friction" and can inhibit policy change,<sup>15</sup> whereas when immediate problems emerge through media attention or special interest groups, attention-driven change can occur.

Thus, from a practical perspective, seeking funds for treatments (including cures) for identifiable people in current need is an easier sell than is population-based prevention with no identifiable individuals and an uncertain benefit timeline that exceeds the election cycle. Without sufficient policymaker support and attention to population-based prevention, the disparities in spending on treatment versus prevention continue to grow. This is compounded by the geometric rise in health care costs and the resultant trade-off of more modest growth or even disinvestment in government-delivered population-based prevention.

The pervasive misalignment of health spending and the continuing attention on reducing costs and improving outcomes offer an opportunity for crosssector alignment to clarify our nation's goals and approaches to protecting and improving population health. The key question is this: How can we do this in a way that focuses on the broadest impact possible, targeting the base of Frieden's impact pyramid, rather than focusing on individual services?

#### PRACTICAL APPROACHES TO INTEGRATION

The health impact pyramid joins a body of evidence showing that improved community health and well-being requires contributions from multiple levels of government and a wide range of social sectors such as education, public safety, and the environment.<sup>16</sup> Yet, too often, health outcomes are viewed through health care access or quality lenses. We outline strategies for achieving improved health through coordinated, multisector contributions. First, it may be important to explicitly consider a multisector system's ability to contribute to population health at both the micro and macro levels. A growing body of work has examined how implementation of multisector health promotion strategies can, when done effectively, improve population health. For example, well-designed neighborhoods with well-integrated bike lanes<sup>17</sup> and public transit<sup>18</sup> are associated with increased physical activity and lower BMI (body mass index). Living in stable housing in safe and accessible built environments has been found to be associated with reduced rates of obesity and other health benefits.<sup>19</sup> The literature certainly suggests that at the level of the individual social service, the Frieden pyramid view of health impact holds true. A growing focus of research has been on how these microlevel population-focused interventions, programs, and policies improve health. Attention is being paid to granular aspects of interventions, including the specifics of the intervention itself and the effects of delivering interventions to communities facing pronounced health inequities.<sup>20</sup>

It is important to consider the macrolevel environment in which a health improvement strategy is ideated, funded, and implemented. Take the example of a bike lane. Adding bike lanes may require approval and funding from one or more transportation departments, depending on the route and roadways used. Integrating the bike lane into a community's parks would also require approval and possible funding from the parks department. Providing appropriate bike parking may require interfacing with housing agencies, private businesses, and a host of other potential actors. In short, there is a macro environment that plays an important and underinvestigated role in determining which bottom-of-the-pyramid interventions can be effectively delivered in a community.

A range of strategies exists for multisector population health alignment and impact. Block grant funding can give

state and local governments flexibility in managing and overseeing crosssector initiatives. For example, community development block grants can align activities such as affordable housing, antipoverty programs, and infrastructure development. Value-based health care payment models can incentivize the integration and alignment of health care and public health and social services.<sup>21</sup> Although macrolevel strategies promise cross-sector innovation and alignment, success has been varied, and developing reliable accountability measures across sectors and ensuring the sustainability of flexible funding streams remains challenging.

The needs of a community are complex and do not always respect jurisdictional and bureaucratic distinctions among government agencies, statutory authorities, and funding streams. Thus, there has been a movement to focus less on system structures and more on mission alignment. Public Health 3.0 promotes a chief health strategist to convene cross-sector stakeholders to collectively develop and implement a community health improvement vision.<sup>22</sup> Cross-sector approaches, such as "health in all policies," seek to improve overall policy environments that make the protection and promotion of health the default in communities.

Strategically aligning missions and resources can allow multiple agencies to work toward unified goals. A handful of cities and states have used budget models that promote the alignment of spending with city priorities by allocating funding to drivers of outcomes rather than specific agencies or departments.<sup>23,24</sup> Even if a major budget overhaul is not possible, budgetary processes may be adapted to ensure that funding siloes do not impede progress toward a multisector pursuit of improved health. For instance, creating an aggregate social determinants of health top-level budget line by aggregating predetermined existing budget lines could allow the tracking of existing investments in bottom-of-the-pyramid approaches to population health. Such efforts require broad thinking about mechanisms to align spending and outcome measures to focus on improved population health.

## CONCLUSIONS

We have presented the Frieden health impact pyramid juxtaposed with state and local public spending to demonstrate the misalignment of health resources. As growth in social investment moderates and worsening health outcomes persist, the national discourse continues to focus on individual health care services. Addressing this inversion may offer a path toward real gains in population health outcomes along with reductions in health care spending.

Investment in populationbased prevention has been shown to improve population health outcomes. As Frieden and others have argued, the United States' inclination toward direct health care services is antithetical to cost-effective social spending. Although many challenges persist to change our spending patterns, it is critical that we continue to highlight the nation's misalignment and strategies for improvement. Debates regarding the nation's high health care costs and poor health outcomes offer an opportunity to emphasize this misalignment and chart a course toward improved population health. <sup>1</sup>PU

## CONTRIBUTORS

All authors contributed to the conceptualization, drafting, and critical revision of this commentary.

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## CONFLICTS OF INTEREST

No authors report any conflicts of interest related to this commentary.

## Sidebar

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# Inaccuracy of Official Estimates of Public Health Spending in the United States, 2000–2018

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## ABSTRACT (ENGLISH)

**Objectives.** To examine the accuracy of official estimates of governmental health spending in the United States. **Methods.** We coded approximately 2.7 million administrative spending records from 2000 to 2018 for public health activities according to a standardized Uniform Chart of Accounts produced by the Public Health Activities and Services Tracking project. The official US Public Health Activity estimate was recalculated using updated estimates from the data coding. **Results.** Although official estimates place governmental public health spending at more than \$93 billion (2.5% of total spending on health), detailed examination of spending records from state governments shows that official estimates include substantial spending on individual health care services (e.g., behavioral health) and that actual spending on population-level public health activities is more likely between \$35 billion and \$64 billion (approximately 1.5% of total health spending). **Conclusions.** Clarity in understanding of public health spending is critical for characterizing its value proposition. Official estimates are likely tens of billions of dollars greater than actual spending. **Public Health Implications.** Precise and clear spending estimates are material for policymakers to accurately understand the effect of their resource allocation decisions. (Am J Public Health. 2020;110:S194-S196. doi:10.2105/AJPH.2020.305709)

## FULL TEXT

### Headnote

**Objectives.** To examine the accuracy of official estimates of governmental health spending in the United States. **Methods.** We coded approximately 2.7 million administrative spending records from 2000 to 2018 for public health activities according to a standardized Uniform Chart of Accounts produced by the Public Health Activities and Services Tracking project. The official US Public Health Activity estimate was recalculated using updated estimates from the data coding. **Results.** Although official estimates place governmental public health spending at more than \$93 billion (2.5% of total spending on health), detailed examination of spending records from state governments shows that official estimates include substantial spending on individual health care services (e.g., behavioral health) and that actual spending on population-level public health activities is more likely between \$35 billion and \$64 billion (approximately 1.5% of total health spending). **Conclusions.** Clarity in understanding of public health spending is critical for characterizing its value proposition. Official estimates are likely tens of billions of dollars greater than actual spending. **Public Health Implications.** Precise and clear spending estimates are material for policymakers to accurately understand the effect of their resource allocation decisions. (Am J Public Health. 2020;110:S194-S196. doi:10.2105/AJPH.2020.305709)

The coronavirus disease 2019 (COVID19) pandemic has illuminated weaknesses in the US public health system.<sup>1</sup> Despite spending \$3.6 trillion each year on health, the vast majority of this spending goes toward health care, with relatively little toward public health.<sup>2,3</sup> Official government estimates indicate that spending on governmental public health accounts for 2.5 cents of every dollar the United States spends on health, which totaled \$93.5 billion in 2018.<sup>2</sup> However, research indicates that the official government estimate (Public Health Activity estimate [PHAE]) is a substantial overestimation of how much is actually spent on governmental public health in the United States and that we spend far less.<sup>4</sup>

Research has shown the PHAE conflates governmental public health spending with other related health care spending, such as disability-related clinical care, behavioral health, and publicly supported outpatient clinics; these health services are counted elsewhere in the National Health Expenditure Accounts.<sup>5</sup> Whether such health care spending is merely misclassified or double counted is unclear.<sup>4</sup> These definitional problems in the PHAE make accurately measuring expenditure alignment between health care, social services, and public health challenging. These problems also may give an incorrect impression about the growth of public health spending over time, relative to other components of national health or social service spending.<sup>6</sup> We report the results of an examination of millions of government expenditure records to elucidate how much is actually spent on public health across the United States.

### METHODS

We coded and analyzed state government expenditure data collected by the US Census Bureau; these census data undergird the PHAE as compiled by the Centers for Medicare and Medicaid Services.<sup>4</sup> Approximately 2.7 million object-level records for census function code 32 (Health - Other) across 49 states were available from 2000 to 2018. In this iteration of the project, the project team coded data from 2013 to 2018, made available by the Census Bureau.<sup>7</sup> Data were coded using the University of Washington Uniform Chart of Accounts crosswalk, which offers a framework for categorizing areas of public health activity.<sup>8</sup> Census records previously coded from 2000 to 2012 were updated to the current version of the University of Washington Uniform Chart of Accounts. Records were collapsed from object level (e.g., salaries) to program level (e.g., HIV screening) and coded. Teams of 2 to 3 coders judged each category and resolved conflicts in agreement iteratively. For categories that accounted for less than \$5 million in total spending across all available years, 1 coder coded each category. Conflicts were reviewed and resolved manually. Data included records of health-related intergovernmental transfers to local governments. The project team disaggregated these intergovernmental transfers as either for public health or for individual services with the same approach as that described earlier. It was then possible to calculate the share of public health activities financed at the local level by state transfers to local governments.

A revised PHAE was created by (1) aggregating individual, recoded records from states that reported to the census

(n = 49 for all years) and (2) adding the publicly available point estimates for 1 state, California, that only reported in aggregate to the census. Total spending on census function code 32 (Health - Other) for states with aggregate-only estimates was reduced proportional to what percentage of public health spending or total function code 32 spending the project team observed nationally after recoding all available data. Local spending on function code 32 estimates was similarly decreased in line with previous approaches.<sup>9</sup> The upper end of the revised function code 32 estimate is based on an approach wherein the project team assumed that local spending was wholly public health related (except for state to local intergovernmental transfers that were measurable in the data). On the low end of the revised estimate, the project team assumed that estimates on local spending on function code 32 should be reduced proportional to state and intergovernmental transfer spending.<sup>9</sup> In all cases, the default assumption was that if the project team could not clearly identify the spending record, then it would remain categorized as "public health spending." As such, the revised estimates are potentially quite conservative in reductions from the PHAE overall. Spending estimates were adjusted over time by using the Bureau of Labor Statistics state and local government deflator.

## RESULTS

Recoding of state government expenditure data collected by the Census Bureau shows that actual public health spending ranged between \$38 billion and \$65 billion in 2017 and between \$35 billion and \$64 billion in 2018. The difference between the nationally reported PHAE and our revised estimate ranges from 36% to 54%, on average, between 2000 and 2018 (Figure 1). The revised PHAE shows more modest growth, compared with the official PHAE, after accounting for inflationary effects. Since 2000, both the official PHAE and the revised estimate show about 2% growth, on average, above inflation. However, the Great Recession blunted the growth of public health spending substantially, and its effects were felt until at least 2014. Thus, the official PHAE continued to rise from 2010 to 2014, but the revised estimate stagnated over this same period. Data from the Census Bureau over the 2000 to 2018 period show that \$15 billion to \$20 billion in PHAE were transferred per year from state governments to local governments. Analysis of these transfers indicates that 28% in 2018 was for public health activities, and 72% was for health care and related activities, suggesting high levels of transfers to finance direct care or other clinical services.

## DISCUSSION

Closer scrutiny of the actual spending records shows that the United States spent far less on public health than the official PHAE of \$93 billion in 2018. Given available data, actual public health spending is estimated to range between \$35 billion and \$64 billion (34%-61% of the official estimate). Along with more funding,<sup>3</sup> improved accuracy in financial reporting is important to enable proper financial planning to cope with the current pressing US public health crisis. Assessing the value proposition of public health becomes challenging in the absence of accurate spending data, which are increasingly of interest to policymakers, particularly in the wake of the COVID-19 pandemic.<sup>3,10,11</sup>

Improving definitional clarity and accuracy of spending estimates will also greatly aid efforts to understand the costs and benefits of integration between social services, health care, and public health.<sup>12</sup> One approach to this, compatible with the data presented here, is to conduct schema-matching exercises-to crosswalk an organization's expenditures with a standardized definition set or chart of accounts.<sup>8</sup> Limitations to this approach are presented in the Appendix (available as a supplement to the online version of this article at <http://www.ajph.org>).

## CONCLUSIONS

Governmental public health is on the front lines in the response to the COVID-19 pandemic. Analysis of government spending data suggests that actual spending on public health is somewhere between one third and two thirds of the official national estimate. Thus, although it may appear somewhat inconsequential whether public health gets 1 cent or 2 cents on the health dollar in the United States, it is extremely consequential, particularly in the context of the COVID-19 pandemic, to have accurate spending data to better understand the value of public health services and ensure necessary resources and capacity to adequately protect the health of the public.

## PUBLIC HEALTH IMPLICATIONS

Detailed analysis of government spending data shows that potentially less than half of the official estimate of public health spending goes toward population-focused activities- the remainder goes to health care and related spending on individual services. It is critical for public health agencies to clearly communicate what they do, what it costs to do so, and the benefits of those activities. Without clear estimates of spending, establishing a value proposition in public health remains elusive. AJPU

### Sidebar

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### CONTRIBUTORS

J. P. Leider, B. Resnick, and D. Bishai performed data cleaning. J. P. Leider performed data analysis and wrote the first draft of the article. AH authors provided critical review of the article.

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### CONFLICTS OF INTEREST

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## DETAILS

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Gee, R. (2020). Aligning public health infrastructure and medicaid to fight COVID-19. *American Journal of Public Health, Suppl.Supplement 2*, 110 doi:<https://doi.org/10.2105/AJPH.2020.305826>

Owsley, K. M., M.P.H., Hamer, M. K., M.P.H., & Mays, Glen P,PhD., M.P.H. (2020). The growing divide in the composition of public health delivery systems in US rural and urban communities, 2014–2018. *American Journal of Public Health, Suppl.Supplement 2*, 110, S204-S210. doi:<https://doi.org/10.2105/AJPH.2020.305801>

**Objectives.** To examine changes in the scope of activity and organizational composition of public health delivery systems serving rural and urban US communities between 2014 and 2018. **Methods.** We used data from the National Longitudinal Survey of Public Health Systems to measure the implementation of recommended public health activities and the network of organizations contributing to these activities in a nationally representative cohort of US communities. We used multivariable regression models to test for rural-urban differences between 2014 and 2018. **Results.** The scope of recommended activities implemented in rural areas declined by 3.4 percentage points between 2014 and 2018, whereas it increased by 1.4 percentage points in urban areas. The rural-urban disparity in scope of activities grew by a total of 4.8 percentage points ( $P < .05$ ) over this time. The disparity in network density grew by 2.3 percentage points ( $P < .05$ ). **Conclusions.** Urban public health systems have enhanced their scope of activities and organizational networks since 2014, whereas rural systems have lost capacity. These trends suggest that system improvement initiatives have had uneven success, and they may contribute to growing rural-urban disparities in population health status.

Dasgupta, N. (2020). Aligning systems for health. *American Journal of Public Health, Suppl.Supplement 2*, 110, S174-S175. doi:<https://doi.org/10.2105/AJPH.2020.305817>

Laurent, A. A., M.S.P.H., Matheson, A.,PhD.M.P.H., Escudero, K., M.P.A., & Lazaga, A., M.P.A. (2020). Linking health and housing data to create a sustainable cross-sector partnership. *American Journal of Public Health, Suppl.Supplement 2*, 110, S222-S224. Retrieved from <https://www.proquest.com/scholarly-journals/linking-health-housing-data-create-sustainable/docview/2531704189/se-2?accountid=211160>

In response to the growing regional (and national) focus on health and housing intersections, two public housing authorities (PHAs) in Washington-the King County Housing Authority and the Seattle Housing Authority- joined with Public Health-Seattle & King County to form the Housing and Health (H&H) partnership in 2016. H&H linked Medicaid health claims with PHA administrative data to create a sustainable public-facing dashboard that informs health and housing stakeholders such as an Accountable Community of Health (a governing body that oversees local Medicaid transformation projects), managed care organizations, and PHAs, allowing insights into the low-income communities they serve. (*Am J Public Health. 2020; 110:S222-S224. doi:10.21 05/ AJPH.2020.305693*)

Atkins, M., M.D., Castro, I., B.A., Sharifi, Mona,M.D., M.P.H., Perkins, M., M.P.H., O'Connor, G., MPH, Luo, M., M.P.H., . . . Fiechtner, Lauren,M.D., M.P.H. (2020). Unmet social needs and adherence to pediatric weight management interventions: Massachusetts, 2017–2019. *American Journal of Public Health, Suppl.Supplement 2*, 110, S251-S257. doi:<https://doi.org/10.2105/AJPH.2020.305772>

**Objectives.** To examine effects of unmet social needs on adherence to pediatric weight management intervention (PWMI). **Methods.** We examined individual associations of positive screens for parental stress, parental depression, food insecurity, and housing insecurity with intervention adherence, and associations of 0,1 or 2, and 3 or 4 unmet social needs with adherence, among children enrolled in a 2017-2019 comparative effectiveness trial for 2 high-intensity PWMI in Massachusetts. Models were adjusted for child age, body mass index (BMI), parent BMI, and intervention arm. **Results.** Families with versus without housing insecurity received a mean of 5.3 (SD = 8.0) versus 8.3 (SD=10.9) contact hours ( $P < .01$ ). There were no statistically significant differences in adherence for families reporting other unmet social needs. Children with 3 to 4 unmet social needs versus without received a mean of 5.2 (SD = 8.1) versus 9.2 (SD = 11.8) contact hours ( $P < .01$ ). In fully adjusted models, those with housing insecurity

attended a mean difference of -3.14 (95% confidence interval CI]= -5.41, -0.88) hours versus those without. Those with 3 or 4 unmet social needs attended -3.74 (95% CI= -6.64, -0.84) hours less than those with none. Conclusions. Adherence to PWMI was lower among children with housing insecurity and in families with 3 or 4 unmet social needs. Addressing social needs should be a priority of PWMI to improve intervention adherence and reduce disparities in childhood obesity.

Berry, C., PhD., Paul, M., PhD., Massar, R., M.P.H., Marcello, R. K., M.P.H., & Krauskopf, M., M.A. (2020). Social needs screening and referral program at a large US public hospital system, 2017. *American Journal of Public Health, Suppl. Supplement 2*, 110, S211-S214. doi:<https://doi.org/10.2105/AJPH.2020.305642>

Many health care providers and systems are developing and implementing processes to screen patients for social determinants of health and to refer patients to appropriate nonclinical and communitybased resources. The largest public health care system in the United States, New York City Health + Hospitals, piloted such a program in 2017. A qualitative evaluation yielded insights into the implementation and feasibility of such screening and referral programs in health care systems serving lowincome, minority, immigrant, and underserved populations.

Ross, A. M., PhD.M.S.W.M.P.H., & Zerden, L. d. S., PhD.M.S.W. (2020). Prevention, health promotion, and social work: Aligning health and human service systems through a workforce for health. *American Journal of Public Health, Suppl. Supplement 2*, 110, S186-S190. Retrieved from <https://www.proquest.com/scholarly-journals/prevention-health-promotion-social-work-aligning/docview/2531702510/se-2?accountid=211160>

The seminal Consensus Study by the National Academies of Science, Engineering, and Medicine released in September 2019 describes the benefits of integrating health and social care service delivery, underscoring the central role of social determinants of health (SDOH) in health outcomes. Although the report's focus on the integration of health and social care contributes a much needed perspective to the national discourse on SDOH and offers a useful framework for organizing service delivery activities, the omission of prevention and health promotion throughout the report is a substantial limitation. We call for increased attention to and investment in prevention and health promotion in the proposed 5As framework. We contend that effectively addressing SDOH and improving alignment between health and social systems require reconceptualization of the traditional health care workforce and renewed state and national advocacy efforts. A paradigm shift encompassing a broader "workforce for health that is well trained in prevention, health promotion, and advocacy is critical to addressing SDOH, improving population health outcomes, and achieving health equity. Given their professional mission, training, expertise, and scope of practice, social workers are well positioned to lead this effort.

Fiori, Kevin P, MD, M.P.H., M.Sc, Heller, C. G., M.P.H., Rehm, Colin D, PhD., M.P.H., Parsons, Amanda, M.D., M.B.A., Flattau, Anna, MD, M.P.H., M.Sc, Braganza, Sandra, M.D., M.P.H., . . . Racine, Andrew, M.D., PhD. (2020). Unmet social needs and no-show visits in primary care in a US northeastern urban health system, 2018–2019. *American Journal of Public Health, Suppl. Supplement 2*, 110, S242-S250. doi:<https://doi.org/10.2105/AJPH.2020.305717>

**Objectives.** To characterize the association between social needs prevalence and no-show proportion and variation in these associations among specific social needs. **Methods.** In this study, we used results from a 10-item social needs screener conducted across 19 primary care practices in a large urban health system in Bronx County, New York, between April 2018 and July 2019. We estimated the association between unmet needs and 2-year history of missed appointments from 41 637 patients by using negative binomial regression models. **Results.** The overall no-show appointment proportion was 26.6%. Adjusted models suggest that patients with 1 or more social needs had a significantly higher no-show proportion (31.5%) than those without any social needs (26.3%), representing an 19.8% increase ( $P < .001$ ). We observed a positive trend ( $P < .001$ ) between the number of reported social needs and the no-show proportion—26.3% for those with no needs, 30.0% for 1 need, 32.1% for 2 needs, and 33.8% for 3 or more needs. The strongest association was for those with health care transportation need as compared with those without (36.0% vs 26.9%). **Conclusions.** We found unmet social needs to have a significant association with missed primary care appointments with potential implications on cost, quality, and access for health systems. (*Am J Public Health*.

2020;110:S242-S250. doi:10.2105/AJPH. 2020.305717)

Meyer, D., M.D., Lerner, Eva, M.P.A., M.S.W., Phillips, A., M.P.H., & Zumwalt, K., M.Sc. (2020). Universal screening of social determinants of health at a large US academic medical center, 2018. *American Journal of Public Health, Suppl. Supplement 2*, 110, S219-S221. doi:https://doi.org/10.2105/AJPH.2020.305747

Universal screenings for social determinants of health (SDOH) are feasible at the health system level and enable institutions to identify unmet social needs that would otherwise go undiscovered. NewYork-Presbyterian Hospital implemented SDOH screenings together with clinical screenings in four outpatient primary care sites. Aligning SDOH screening with clinical screening was crucial for establishing provider buy-in and ensuring sustainability of screening for SDOH. Despite some challenges, universal screening for SDOH has allowed NewYork-Presbyterian Hospital to identify unmet needs to improve population health. (*Am J Public Health. 2020;110:S219-S221. doi:10.2105/AJPH.2020.305747*)

Wojcik, O., PhD., Miller, C. E., M.S.H.P., & Plough, A. L., PhD. (2020). Aligning health and social systems to promote population health, well-being, and equity. *American Journal of Public Health, Suppl. Supplement 2*, 110, S176-S177. doi:https://doi.org/10.2105/AJPH.2020.305831

Bultema, S., M.A.A.L., Morrow, H., B.A., & Wenzl, S., M.H.P.A. (2020). Accountable communities of health, health and social service systems alignment, and population health: Eastern Washington state, 2017–2019. *American Journal of Public Health, Suppl. Supplement 2*, 110, S235-S241. doi:https://doi.org/10.2105/AJPH.2020.305773

**Objectives.** To assess health system transformation and alignment in the Better Health Together (BHT) accountable community of health (ACH) region of Eastern Washington. **Methods.** This trend study leveraged cross-sectional data collected in 2017 and 2019 in Eastern Washington. A total of 165 responses from individuals representing 112 organizations were collected in 2017, and 211 responses from individuals representing 92 organizations were collected in 2019. More than one third (38%; n = 35 organizations) of cases overlapped between the 2 samples. Implementation of the ACH model is the exposure. Outcomes of interest included indicators of system transformation and alignment. **Results.** Organizations throughout BHT's region became more engaged, less siloed, and better connected from 2017 to 2019. At least some of the increased connectivity observed was directly attributable to the role BHT played in facilitating the creation or maintenance of interorganizational relationships across Eastern Washington. **Conclusions.** The ACH model is a promising approach to aligning health and social service systems for population health improvement. Evidence shows that ACH organizations can serve as trusted conveners able to facilitate interorganizational relationships across sectors. (*Am J Public Health. 2020;110:S235-S241. doi:10.2105/AJPH.2020.305773*)

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