COMMUNITY SYSTEMS ANALYSIS:

A Mixed Methods Approach to Evaluating the Integrated Effects of Public Health Interventions

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Government funding is increasingly being provided to communities to achieve system-level outcomes (rather than or in addition to individual-level behavior change). For example, support is provided to develop collaborative relationships with community partners, build service delivery infrastructure, enhance organizational and leadership capacity, change policies, and provide prevention and other services to meet the *Healthy People 2020* objectives. Private national foundations are also supplementing traditional support to targeted grantees with institutional investments intended to have broad catalytic community effects. Evaluating the success of this type of initiative requires analytic designs that examine system-level outcomes as well as contextual factors within a community that promote or impede intervention effectiveness.

Community Systems Analysis (CSA) is a longitudinal, community-matrixed approach MayaTech developed to analyze multiple sources of data from targeted communities to assess contextual factors, facilitators of, and barriers to intervention success and sustainability.[1] CSA uses each study community as its own comparison or control, collecting data to reflect changes over time (retrospectively and prospectively), particularly when locating and replicating the study design in an independent comparison community is functionally or fiscally impractical.

CSA is used to assess integrated effects of multi-component and/or multi-site initiatives at the system level (e.g., changes in the community's norms, epidemiological data, policies, environments, or other structural changes). The primary data sources are groups of community stakeholders identified in collaboration with the grantee community. Conceptually, this approach captures reflective data on planning (stakeholders, such as community planning groups; advisory councils; health department managers; community-based organizations (CBO) board members; and intervention funders); intervention programming (stakeholders, such as staff of CBOs or coalitions including front-line staff and project directors; social services staff at partnering agencies; health department staff; and program participants); and policy (including elected and appointed officials; watchdog groups; and advocacy organizations). Perspectives from each source offer data that are critical to broad intervention impacts. This includes variables such as community awareness of and receptivity to prevention or other public health efforts; availability and leveraging of community resources; enhancement of organizational, leadership and policy capacity; and plans for sustainability of processes or outcomes.

CSA allows key stakeholders (community partners and funders) to assess changes in such outcome variables and the contextual factors that might influence them over the course of a funding cycle. It is a culturally competent approach to conducting embedded case study research (i.e., with the broad intervention or initiative as the overall case and the individual communities as single case studies embedded within the larger initiative). For example, in evaluating the Minority AIDS Initiative (MAI) of the Centers for Disease Control and Prevention (CDC), MayaTech implemented CSA with four local communities, conducting multiple focus groups and interviews with stakeholders (300 participants over three years) with varied roles and of diverse demographic backgrounds who worked and lived in the communities. The resulting comprehensive time-series data proved to be the only information available for CDC's responses to the Congressional Black Caucus and Congressional Hispanic Caucus on questions of MAI funding effectiveness. Moreover, CDC staff used the data to produce two peer-reviewed journal articles.[2,3]

In CSA, each community is studied as a single entity; and single-case and cross-case analyses are conducted. This approach is consistent with best practices in studying the effects of initiatives that are anchored by partnerships, coalitions, collaborations, or linkages.[4-6] Moreover, CSA is guided by the Social-Ecological Model (SEM) and CDC's *Framework for Public Health Evaluation*.[7] The SEM is an approach to health promotion and prevention that recognizes that most public health system approaches are complex and need to be evaluated

using comprehensive approaches to determine the extent to which multiple levels of influence are integrated to impact health behavior and ultimately health outcomes. Those levels of influence include intra- and inter-personal factors, community and organizational/institutional factors, and public policies.[8-12] Several important indicators should be tracked in comprehensive public health systems approaches that incorporate a socio-ecological framework. These indicators include the following system-level constructs, for which data should be collected as fully as practical: ***Awareness, Receptivity, Collaboration***, ***Coordination***, ***Capacity Enhancement, Leveraging of Resources***, and ***Sustainability Planning***.

All too often, attempts at addressing public health challenges have been focused only on the individual and his/her behavior, for understandable funding and political constraints. Furthermore, those attempts yield desired outcomes that are short-lived, if realized at all. Of course, individual or person-level outcomes (changes in knowledge, behavior, and/or attitudes of participants in interventions) are critically important and often the central focus of evaluations. However, those individual outcomes are subject to withering away in the absence of the community's capacity and will to change. The Community Systems Analysis model recognizes that public health interventions targeted at individual behavior change exist in a rich and dynamic community context that can be supportive or subversive of the desired outcome. To assess whether those investments are worthwhile, we need to understand how they actually are being absorbed by and integrated in targeted communities. To be sure, this approach takes effort and resources. However, it produces highly nuanced information for intervention management and public policy assessment.

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[1] Randolph, S.M., & Mayas, J-M. (2003, June). Community systems analysis: A conceptual approach to policy-oriented prevention research. Paper presented at the annual meeting of the Society for Prevention Research, Washington, DC.

[2] Eshel A, Moore A, Mishra M, Wooster J, Toledo C, Uhl G, Agüero LW. (2008). Community stakeholders' perspectives on the impact of the minority AIDS initiative in strengthening HIV prevention capacity in four communities. *Ethnicity & Health*, 13(1), 39-54.

[3] Wooster J, Eshel A, Moore A, Mishra M, Toledo C, Uhl G, Aguero LW. (2011). Opening up their doors: perspectives on the involvement of the African American faith community in HIV prevention in four communities. *Health Promotion & Practice*. 12(5), 769-78.

[4] LoConte NK, Weeth-Feinstein L, Conlon A, Scott S. (2013). Engaging health systems to increase colorectal cancer screening: Community–clinical outreach in underserved areas of Wisconsin. *Preventing Chronic Disease*, *10*:130180. DOI: http://dx.doi.org/10.5888/pcd10.130180.

[5] Dowda, M; Sallis, F; McKenzie, TL; Rosengard, P; Koh, HW. (2005). Evaluating the sustainability of SPARK physical education: A case study of translating research into practice. *Research Quarterly for Exercise and Sport*, 76(1), 11-17.

[6] Porterfield, D, Hinnant, L, Kane, H, Horne, J, McAleer, K, & Roussel, A. (2012). Linkages Between Clinical Practices and Community Organizations for Prevention: A Literature Review and Environmental Scan. *Am J Public Health*. June, 102(Suppl 3): S375–S382. Published online 2012 June. doi:10.2105/AJPH.2012.300692. Retrieved June 6, 2018 at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3478082/.

[7] Centers for Disease Control and Prevention (1999). Framework for program evaluation in public health. *Morbidity and Mortality Weekly Report,* 48(RR-11), 1-41.

[8] McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, 15, 351–377.

[9] Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion,* 10, 282–298.

[10] Richards, L., Potvin, L., Kishchuk, N., Prlic, H., & Green, L. (1996). Assessment of the Integration of the ecological approach in health promotion programs. *American Journal of Health Promotion*, 10, 318–327.

[11] National Cancer Institute. (2005) Theory at a Glance – A Guide For Health Promotion Practice. 2nd ed. Available at https://cancercontrol.cancer.gov/brp/research/theories_project/theory.pdf.

[12] Green, L., Richard, L., & Potvin, L. (1996). Ecological foundations for health promotion. *American Journal of Health Promotion,* 10, 270–281.

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