

Next Steps in Obesity Prevention: Applying the Systems Approach

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Introduction

Following the publication of the recent article by Nader et al. on a systems science approach to early childhood obesity intervention,¹ substantial interest was generated regarding how a systems lens might be applied in the real world. In an effort to continue to spur dialogue in the field, Terry Huang, PhD, MPH, CPH, co-author of the original article, posed six timely questions to four esteemed leaders in the field of public health research and practice: Ross Brownson, PhD, Professor at Washington University in St. Louis, Missouri; Layla Esposito, PhD, Program Director at the Eunice Kennedy Shriver National Institute of Child Health & Human Development, National Institutes of Health; Lawrence Green, DrPH, Professor at the University of California at San Francisco, and Charles Homer, MD, MPH, CEO and President of the National Initiative for Children's Healthcare Quality (NICHQ).

Terry Huang: *In reflecting on a systems approach to obesity prevention, what are the system feedback loops that the next generation of community interventions needs to explicitly take into account? Specifically, are there important feedback loops between the social and built environment or across sectors, such as healthcare and community prevention, that should be active targets of intervention?*

Lawrence Green: We researchers can each offer the pet topics that we believe warrant priority as targets of intervention and research on intervention, but that will only add up to ratings that reflect the inherent biases of the disciplines we represent. The net impression will be a product of that numerical bias of disciplines and the persuasive writing skills of the respondents reflecting those disciplines. Another approach to this question, for which I would advocate, is a set of feedback loops from the various community-level stakeholders to the researchers and another set between the researchers and the policy makers, creating a triangle of feedback loops for each of the intervention categories that makes the answer to the question more contextually driven.

Terry Huang: *A systems approach expands upon socio-ecological models by further emphasizing the interconnections and feedback loops among actors, factors, sectors, and levels. From the systems perspective, understanding and explicitly intervening on these interconnections and feedback loops may be important in driving systemic changes in the overall system. What are some of the feedback loops that we have not traditionally considered in obesity interventions?*

Lawrence Green: We have generally provided a place in our systems thinking for the science-to-policy and science-to-practice actors or sectors, but have we given

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adequate attention to the feedback loops from the policy makers and practitioners to scientists? These could accelerate the effective communication of science to policy or practice by making scientists and their spokespersons, university public relations offices, and their journals more aware and responsive to what is not working in the communication of science, and even to the need for a different focus of the science.

Charles Homer: There are many feedback loops that we have not considered. In the National Initiative for Children's Healthcare Quality (NICHQ) Collaborate for Healthy Weight program, we have been struck by how little focus there is on measurement—such as of behaviors or BMI—as communities introduce interventions. Not that measurement is easy, but the tendency is just to implement programs, separately, and hope they work, or do formal evaluations of solo activities rather than identifying a population of focus and examining how multiple interventions or a coherent multisector set of interventions can affect behaviors and BMI over time, and allow customization of the approach.

Ross Brownson: A significant disconnect and, to some degree, a paradox (the so-called “inverse evidence law”^{2,3}) is that the level with the highest potential to reduce obesity is the policy level, yet it is the most difficult to predict and study with strong research designs and methods. A key feedback process here is to link researchers with practitioners better so that ongoing policies can be evaluated in a rapid response way.

Layla Esposito: Parenting has not received the attention that it deserves. Feedback between changes in day care or school environments and the impact on parenting and family behaviors need to be examined more closely, as does whether changes at home, or within the family, influence the success of interventions in caregiving or educational settings. Given that parents are the gatekeepers of children's health, especially when children are young, it is important to understand how community interventions and broader policy changes affect parenting behaviors.

Terry Huang: *Taking a lifecycle perspective, how do we apply a systems approach to addressing prevention before, during, and after pregnancy by strengthening the integration of policies, programs, services, and engagement with families and communities? Can we build on the existing links between policies and local environments in communities across the country in which national funders have already invested?*

Lawrence Green: I would agree that it is important to build on the actual experiences of communities that have tried and either succeeded or failed to innovate, implement, or succeed. We have tended to publish what works, in the spirit of evidence-based practices, but practitioners and policy makers can benefit as much, if not more, from reporting on what doesn't work. Both the successful and

unsuccessful experiences, however, need to be communicated as much as possible with attention to the context of the communities reported, not just efficacy data from hyperfunded and supercharged projects that received national funders' financial or technical assistance support.

Charles Homer: Terrific suggestion, Terry. We have so much data supporting the cumulative effect of “toxic stress” on later health, and so much of this is mediated by its impact on women's health—before, during, and after pregnancy. Do we know multisector, integrated efforts that focus not only on women's health but also on well-being will affect the obesity epidemic? I am confident they would positively affect child health (and development), and believe they would also help address the epidemic.

Terry Huang: *How should systems approaches to early childhood obesity prevention be evaluated?*

Charles Homer: I like to think of both monitoring/tracking and evaluation; that is, what can we measure to follow and learn from as we proceed? In addition, what can we measure to reflect on when we have finished? At a formative level, we should look at activities (did people meet across multiple sectors?), outputs (did they establish joint plans, programs, messages, policies?), and the nature of the outputs (were they qualitatively different than non-systems approach interventions?). Also, was the environment changed and how? And how were the changes perceived? Narrowly, one can and should look at health behaviors and at weight distribution. One could also look at some of the same broader outcomes that those looking at life course system interventions monitor—for example, early childhood health and development.

Ross Brownson: The evaluation of systems approaches is naturally very complicated. If one visualized the system as a group of overlapping ecological levels, there is a need for a core set of evaluation indicators both within and across levels. We also have a significant need to track and document indicators outside of the health field. An example here could be promoting physical activity in school children using a systems approach. We have typically tracked health-related outcomes [such as BMI or physical activity (PA)], yet for school leaders a more important outcome might be school achievement or rate of dropout.

Layla Esposito: Modeling techniques can be useful in predicting *potential* outcomes of systems approaches to prevention and intervention strategies, and to help identify unforeseen consequences. Systems science methods can handle the intricacies of a complex system (*e.g.*, feedback loops, dynamic interaction, or nonlinearity). In the real world, however, the evaluation of cost-effectiveness of systems approaches is imperative, because demonstrating cost savings is a key factor that will help to encourage broad adoption and implementation. I agree with the other participants that measurement of less traditional, non-health-related outcomes (*e.g.*, academic

achievement or change in social norms) would help strengthen the case.

Terry Huang: *Are there opportunities to transform healthcare and public health practice, from a systems perspective, as a result of the Affordable Care Act (ACA)?*

Lawrence Green: The greatest opportunity I see for integrating changes in healthcare systems and public health practice/systems is in the postclinical encounter in which the patient has been given the behavioral equivalent of a prescription on what he or she needs to do or accomplish, and then is cast upon the community to figure out how, where, and with what community supports to proceed, and what community bullets to dodge. A CDC Expert Panel addressed this issue and produced a report that outlines strategies for tightening these loops in a community or national system of healthcare and public health subsystems.⁴ Other articles in the same journal issue as the CDC report address the question from the perspective of other countries.⁵

Charles Homer: Transforming public health practice is a core element of the ACA, although it will need to be protected. As you know, through the ACA and the Prevention and Public Health Fund that it created, the US Department of Health and Human Services Health Resources and Services Administration (HRSA) was able to fund—and the NICHQ is developing and implementing—the Collaborate for Healthy Weight program, which explicitly seeks to use improvement science methods as a strategy to integrate public health and healthcare practices (along with other community sector efforts). Nearly 50 communities across the nation have active programs that this activity has helped to stimulate or accelerate. Many other activities that the Fund is supporting similarly enable such work. The ACA has also called for the creation of a national quality strategy, which has articulated a three-part aim—better care, more affordable care, and better health. I believe the only viable strategy to achieve better health is through integrating public health and healthcare more closely. We need to be alert, however, because public health strategies and integration have few powerful advocates and the measurable results take time, which is difficult to defend in the face of urgent pressures to cut costs or achieve short-term gains.

Ross Brownson: Systems modeling could be better covered under the community interventions being funded by the ACA Prevention and Public Health Fund. Here, the linkages with the CDC seem to be essential so that funders like CDC are onboard, supportive, and involved in the systems approach. I believe that some of these efforts are underway.

Terry Huang: *How do we make the ideas that we are discussing happen in the United States? What will be needed to implement and disseminate a truly systems-based approach to obesity prevention in the next 5–10 years?*

Lawrence Green: We must effectively promote the prevention and community/public health components of the ACA as it is rolled out, putting pressure on those who are implementing it not to lose sight of these components of the law, offering our expertise and insights from systems thinking when they encounter complications, taking a long view, and evaluating short-term successes and failures, barriers and facilitators, as we go. If we can do this, we stand a chance of pointing and even turning the great medical ship at least slightly in a more prevention and public health systems direction.

Ross Brownson: A key issue is to engage practitioners and policy makers better in the systems modeling processes (designing for dissemination) so that results are better understood and their practical applications identified and applied. A gap that I have noted in the systems modeling world is that findings can be highly relevant for those in the academic world or individuals with strong technical skills, but sometimes are less relevant/feasible for “real-world” practitioners. Also, practitioners often relate and respond well to case studies (well-done stories) that will illustrate how using a systems approach can make a difference.

Layla Esposito: We need buy-in from a diverse set of stakeholders (e.g., policy makers, the medical community, schools, community leaders, and parents), not just academics. To get this, we need to increase the public’s awareness of what a systems approach really is and why it is necessary for a problem such as obesity. I believe we need to focus more resources on prevention efforts; and, we need to identify cost-effective, sustainable, systems-based demonstration projects with proven effectiveness that have the potential for scale-up.

Terry Huang: *I thank all of the panelists for sharing some critical insights on how we can move forward with a systems agenda for childhood obesity prevention and how we can take advantage of the changing climate in healthcare to advance and translate these ideas in practice. I hope that this is just the beginning of the conversation, and that our roundtable discussion will spur further dialogue within the public health field and, indeed, across all sectors of society that have a role to play in childhood obesity prevention.*

Author Disclosure Statement

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