Neighborhood-Level Interventions to Improve Childhood Opportunity and Lift Children Out of Poverty

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Abstract

Population health is associated with the socioeconomic characteristics of neighborhoods. There is considerable scientific and policy interest in community-level interventions to alleviate child poverty. Intergenerational poverty is associated with inequitable access to opportunities. Improving opportunity structures within neighborhoods may contribute to improved child health and development. Neighborhood-level efforts to alleviate poverty for all children require alignment of cross-sector efforts, community engagement, and multifactorial approaches that consider the role of people as well as place. We highlight several accessible tools and strategies that health practitioners can engage to improve regional and local systems that influence child opportunity. The Child Opportunity Index is a population-level surveillance tool to describe community-level resources and inequities in US metropolitan areas. The case studies reviewed outline strategies for creating higher opportunity neighborhoods for pediatricians interested in working across sectors to address the impact of neighborhood opportunity on child health and well-being.

Keywords: child poverty; collective efficacy; community engagement; equity; neighborhood; opportunity

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Childhood poverty is an enduring social determinant of health over the life course.[1] Research has shown that childhood poverty is associated with poverty in adulthood,[2] and socioeconomic status is a strong and durable predictor of health and well-being.[3]

While poverty's influence on health is well understood on the individual level, the mechanisms by which neighborhoods perpetuate child poverty are less clear. Area deprivation is associated with fewer opportunity structures and adverse health and developmental outcomes for children.[4] A well-established research literature[5] has found that neighborhoods are inequitable in multiple socioeconomic dimensions and health problems therefore cluster geographically. New research links these deprivations and inequities to early life adversities and the biological consequences of toxic stress.[6] Adverse childhood experiences have been correlated with health behaviors in adulthood as well as poor physical and mental health outcomes[7–10] in a dose–response relationship. The cumulative adverse experiences encountered change the allostatic load of physiologic systems and may be a critical pathway to explain the higher morbidity and mortality rates seen in populations of lower socioeconomic status.[11–14]

From Bronfenbrenner's[15] ecological framework, one can see how multiple environmental systems are nested together and work to influence individual human development and allostatic load. The interplay between the micro and meso systems of families and neighbors and the macro systems of concentrated poverty and racism belie the complexity of changing neighborhoods as a way to improve health. While neighborhoods may contain adversities that can perpetuate poverty, they may also have consistent and supportive relationships to help the child cope and mitigate toxic stress.[16] Conversely, children moving to lower concentration of poverty may have higher economic mobility, despite often staying in the same dysfunctional family systems.[17]

Here we aim to describe briefly the role place, defined by both people and geography, can play in health as well as a

tool that can be used to define neighborhood opportunities. We describe the essential components of community engagement in building collective efficacy and provide 3 case studies of multisector, multifaceted interventions.

DEFINING PLACE FOR INTERVENTION

While maximizing opportunities is important in shaping the well-being of families and children,[4] the primary strategies to address this issue emerge from what can feel like dueling ideologies. As Turner has noted, there is a false dichotomy between mobility assistance to move low-income children to higher opportunity neighborhoods and "place-based" neighborhood revitalization to improve opportunity structures within impoverished neighborhoods.[18] Turner argues that to address neighborhood-level poverty and lack of opportunity, both approaches must be used as complementary strategies for "place-conscious" interventions. Here we review evidence for both but will focus on case examples of pediatric involvement in place-based neighborhood level interventions specifically.

The Moving to Opportunity (MTO) study, in which children were moved out of concentrated-poverty, low-opportunity neighborhoods into less-concentrated-poverty, higher-opportunity neighborhoods, was among the largest experimental demonstration studies aimed at alleviating poverty by changing neighborhood environment.[19] Recent analyses of the MTO study[17] revealed that children whose families moved to a higher-opportunity neighborhood when they were age 13 years or younger (about 8 years old on average) had a significant increase in total lifetime earnings and were significantly more likely to attend college; further, female participants were less likely to be single parents. Every year of childhood spent in a higher-opportunity neighborhood was associated with an increased benefit, suggesting both a dose–response and critical-period effect for young children. However, there was no effect seen for adults, and a negative effect was seen for youth older than 13 years of age. Additional research on MTO has also found mixed results, with studies showing that women in households with mobile vouchers to less-concentrated-poverty neighborhoods had lower hemoglobin A1C values and lower rates of morbid obesity,[20] while teenage boys in comparative households had higher rates of mental illness.[21] Despite evidence of mixed effects, most research supports mobility interventions as one important approach to improving place for children in poverty by moving to less-concentrated-poverty neighborhoods with higher opportunities.

DEFINING PLACE BY BOTH PEOPLE AND GEOGRAPHY

When considering how to intervene within a neighborhood, it is essential to define where to do the intervention by people as much as geography. While concentrated poverty influences health through a neighborhood-level effect, the influence of neighborhoods can also be felt through networks of social support or social cohesion. One example of this is neighborhood collective efficacy, which is defined as the linkage of mutual trust and the willingness to intervene for the common good.[22] Examples of collective efficacy include whether neighbors feel like they have someone to borrow $20 from, someone to watch their child in an emergency, or, if they witness a crime, they are willing to call the police. A higher rate of collective efficacy is associated with lower rates of violent crime and appears to mediate the association between neighborhood characteristics, such as concentrated disadvantage, residential instability, and violence. Collective efficacy has also been associated with measurable health outcomes. The MTO study demonstrated that adults who moved to lower-poverty neighborhoods reported higher levels of collective efficacy despite having fewer social connections,[23] and they experienced decreased levels of depression as a result.[24]

Acknowledging the contribution of Bronfenbrenner's social ecology to child well-being, collective efficacy may be a critical determinant of improving neighborhoods to achieve greater levels of supportive relationships and enriched environments for children. Effective neighborhood-level interventions to address concentrated poverty therefore need to tie to increasing the numbers and types of opportunity with improving neighborhood collective efficacy. The evidence for using collective efficacy to improve health outcomes has focused predominantly in single-faceted interventions, such as community gardens,[25] or in targeted populations, such as youth empowerment.[26] Large-scale evaluations of collective efficacy as part of multifaceted, place-based initiatives are underway, as the case studies that follow demonstrate.

OPPORTUNITY MAPPING

In addition to defining place by the people who live there, it is also essential to target interventions geographically. One tool for this is the Child Opportunity Index (COI).[27] Developed by Diversity Data Kids (http://www.diversitydatakids.org/) at Brandeis University and the Kirwan Institute on Race and Ethnicity at Ohio State University, this tool integrates multiple indicators of child-relevant neighborhood opportunity in a composite index by neighborhood in each of the 100 largest metropolitan areas in the United States. Opportunity mapping can be used as a visual depiction of the location of neighborhood opportunity and of inequities in opportunity across neighborhoods. The COI incorporates 19 indicators into the 3 domains of educational, health and environmental, and social and economic in order to map opportunity at the neighborhood level (Fig. 1). Consistent with Bronfenbrenner's framework for understanding the interplay of systems, this index can then be used to consider ways to enhance existing opportunities, create new ones, and explore the ways in which policy in the geographic area can be leveraged to support this endeavor. Successful and sustainable interventions are those that address the multidimensional aspects of communities that influence both absolute and relative measures of poverty. The COI is one tool that can also be useful for tracking change over time and for understanding the impact of social policies

Opportunity Indicators In The Child Opportunity Index
Educational Opportunities
School poverty rate (eligibility for free or reduced-price lunch)
Student math proficiency level
Student reading proficiency level
Proximity to licensed early childhood education centers
Proximity to high-quality early childhood education centers
Early childhood education participation
High school graduation rate
Adult educational attainment
Health and Environmental Opportunities
Proximity to health care facilities
Retail healthy food environment index
Proximity to toxic waste release sites
Volume of nearby toxic waste release
Proximity to parks and open spaces
Housing vacancy rate
Social and Economic Opportunities
Foreclosure rate
Poverty rate
Unemployment rate
Public assistance rate
Proximity to employment

Figure 1. *Opportunity indicators in the child opportunity index. Adapted from: Acevedo-Garcia D, McArdle N, et al. Acevedo-Garcia D, McArdle N, Hardy E, et al. The Child Opportunity Index: improving collaboration between community development and public health.* Health Aff. *2015;33:1948–1957.*

and interventions on health. Further evaluation will be crucial in demonstrating its utility.

Importance of Community Engagement and Leadership Development

Community engagement is a central component of community-level interventions. Thoughtful engagement of community members at every stage of planning, implementation, and evaluation can create greater equity and potential for success. While an anchor institution such as a hospital, university, or local nonprofit may be the driving agent of change for the neighborhood-level intervention, the process must not be a solely top-down approach but rather must engage in bottom-up methods. Neighborhood-level interventions must focus on a community-identified problem with a community-driven solution. The COI may guide identification of areas for intervention within a previously defined neighborhood, but it is essential that efforts are made to engage with key community stakeholders to complete a needs assessment with the community, with prioritization of community needs. An effective change agent will assess a community from the perspective of its strengths rather than a deficit-only perspective in order to empower and mobilize communities' assets toward a common and sustainable goal.[28]

Several guiding principles are relevant to consider. 1) Throughout the intervention process, stakeholders within the community should be represented on all committees, with special attention taken to include those who are commonly underrepresented or marginalized. 2) Communities will vary widely in their assets and ability to mobilize collectively around them for a common goal. A community's baseline collective efficacy should be assessed, and enhancement of this should be a primary goal through leadership development and other interventions. 3) Clinicians and institutions should be mindful of the investment of time such interventions require and plan accordingly for engagement. 4) Power dynamics exist between anchor institutions, government and community members, particularly around who is funding these initiatives and to what purpose. Transparency and diversified funding streams for community development are essential to ensuring all stakeholders remain a true part of the process.

Case Studies in Neighborhood-Level Interventions

The following case studies illustrate different community-engaged, multisector, multifactorial partnerships to improve opportunity and collective efficacy in neighborhoods. These are not meant to replace the pioneering work of Geoffrey Canada and the Harlem Children's Zone or to be an exhaustive list. Other excellent examples exist from across the country, such as University California at San Francisco, led by Anda Kuo. The Build Healthy Places Network, led by Doug Jutte, provides many additional examples. Rather, these case studies are meant to illustrate key take-home lessons for future collaborations.

The Dudley Street Neighborhood Initiative's strength is as an example of community members' coming together to define their place and problem and to own their own neighborhood revitalization. Strong governance and community engagement for ongoing community-driven voice has led to their decades of success. Healthy Neighborhoods Healthy Families' strength is in focusing first on housing revitalization, then expanding to other facets of intervention, such as workforce development, educational interventions, public safety, and community wellness. It has brought cross-sector investment from city and state agencies, and it has invested in community-based organization and leaders to ensure equity and transparency among stakeholders. The Vital Village Network's strength is in multifaceted interventions designed and tested by community-driven innovation, using shared data, leadership development, and microfinancing of pilot projects as driving forces for cross-sector collaboration. It adopts a trauma informed approach and defines the focus of their work through corridors of people and geography.

Dudley Street Neighborhood Initiative

One example of a grassroots, community organization–led initiative is the Dudley Street Neighborhood Initiative (DSNI; http://www.dudleyneighbors.org). DSNI began in 1984 with support from the Riley Foundation in response to the issues of concentrated poverty, disinvestment from the city, and environmental injustices that were occurring in this Boston, Massachusetts, neighborhood. DSNI

organizes residents and other stakeholders for their collective power to realize a shared vision; implementation is achieved through partnership and collaborations. Governance is exercised through DSNI's community-elected representative and resident-led collaborative board of directors. Initiatives are supported through active committees consisting of community members and other stakeholders, such as parents, affordable housing developers, hospitals, schools, and city agencies.

One of DSNI's first projects was Don't Dump on Us, a campaign to address the illegal dumping on vacant lots, trash transfer stations, and the city's lax garbage collection. Door knocking and petitions allowed DSNI to hear residents' concerns and publicize the campaign. Several community meetings were held, to which city officials were invited; the overwhelming turnout by the neighborhood residents garnered an immediate press release by the mayor promising his commitment to the cause. The mayor eventually followed through by shutting down the trash transfer stations after declaring them a public health hazard.[29] The Don't Dump on Us campaign allowed the community to come together over an immediate concern and brought positive media attention to a community that had previously been only either ignored or negatively portrayed. By harnessing their collective efficacy, the community capitalized on political power and used it to change a system.

With a newfound collective vision, DSNI worked with consultants to create a neighborhood revitalization plan that was then adopted by the City of Boston. In keeping with the value of "development without displacement," DSNI made history by gaining eminent domain authority from the city of Boston and established a community land trust, which allowed them to fill the previously vacant lots with affordable housing, community gardens, playgrounds, and new businesses, as well as fight against displacement due to recent gentrification efforts.

The communities in Roxbury and North Dorchester that DSNI serve became a Promise Neighborhood when DSNI, as the lead agency, was awarded a US Department of Education Promise Neighborhood planning grant in 2010 and implementation grant in 2013. As a Promise Neighborhood, under the name Boston Promise Initiative (BPI), DSNI is taking a cradle-to-career approach to supporting healthy families, school success, and career advancement toward the ultimate goal of breaking the cycle of intergenerational poverty. The programs and policy efforts that are being implemented through BPI are created in collaboration with residents, schools, and partner agencies. Their efforts include addressing how housing instability affects school attendance through No Child Goes Homeless; partnering around policy advocacy and providing expanded learning support to the neighborhood's 10 Boston public schools; and through the DSNI Education Committee, hosting community education or Learning Our Value in Education (LOVE) events. DSNI's BPI has a specific focus on early childhood (0–5 years) through the Dudley Children Thrive (DCT). DCT partners with multiple agencies to create a network of early education providers and parents working together as their child's first teacher. The areas of early literacy and parents reading to their children are emphasized to achieve the goal of school readiness by age 5 years. Similar to the founding Don't Dump on Us campaign, DSNI is working to create a Dudley Village Campus that collectively supports resident and parent leadership, provides quality early learning experiences, and addresses barriers to learning though involvement of all community members.

HEALTHY NEIGHBORHOODS HEALTHY FAMILIES

Through a place-based initiative called Healthy Neighborhoods Healthy Families (HNHF), Nationwide Children's Hospital leads a multisector partnership to support community wellness and create neighborhoods of opportunity by focusing on the revitalization of 3 zip codes surrounding the hospital. It has taken a multifaceted approach coordinating across sectors with strong community engagement and leveraged millions of dollars of city and state funding.

Recognizing the community's desire for safe and affordable housing in its surrounding neighborhood, the HNHF initiative was initially launched as a comprehensive housing initiative in partnership with Community Development for All People (CD4AP), a faith-based organization whose mission is to improve quality of life for low- and middle-income individuals on the South Side. CD4AP brought important assets, as they had experience redeveloping blighted houses in the neighborhood and strong relationships with neighborhood residents. By combining their strengths and shared vision, Nationwide Children's and CD4AP formed the Healthy Neighborhoods Healthy Families Realty Collaborative and together worked to transform the neighborhood, one home at a time.

As Nationwide Children's and CD4AP increased their investments, additional partners stepped forward, including United Way of Central Ohio, Franklin County Land Bank, the Affordable Housing Trust, and the city of Columbus. Currently more than $16 million has been invested to eliminate substandard housing and improve existing housing stock in the South Side community, and improvements have been made to more than 100 homes in the target area, rebranded as Healthy Homes (Fig. 2).

As the Healthy Homes housing efforts continues to progress, the HNHF initiative has evolved to incorporate complementing work already taking place in other areas. To truly improve and integrate systems that support people where they live, Nationwide Children's began to expand partnerships in the areas of education, workforce development, health and wellness, and safety.

One example occurred in 2015, when CD4AP and Healthy Homes, working in collaboration with the NRP Group, the Ohio Capital Corporation for Housing, and Chase Bank, were awarded $11.7 million in tax credits to build new affordable housing units with job training space for the residents and community. Another example of this focus in other areas is the hospital's goal to increase the number of employees hired from the South Side

Figure 2. *Example of Healthy Home renovations from Healthy Neighborhoods Healthy Families.*

neighborhood. Nationwide Children's has hired more than 400 South Side residents since 2013, and more than 540 are employed throughout the hospital. In support of these efforts, the HNHF workforce development programming includes job preparation training and access to opportunities through workshops and job fairs. Nationwide Children's has also partnered with Columbus State Community College on FastPath, a program designed to identify, recruit, and connect unemployed and underemployed adults with technical and employability training that prepares them for in-demand jobs that can create pathways to long-term careers.

Other transformative work to ensure children and families have well-rounded support includes a focus on education and health and wellness through the implementation of school-based and community programs in the HNHF zip codes. The initiative delivers and supports programs that promote social and emotional well-being through prevention programming that teaches children self-regulation and coping skills as well as programming that teaches children and adults about the signs of suicide. School-based programming with Columbus city schools also includes services to address the comprehensive physical health of children and adolescents via nurse practitioners. Last, as part of neighborhood engagement in wellness, the hospital partnered with the United Way of Central Ohio and CD4AP to create the South Side Neighborhood Leadership Academy (SS NLA). The program includes 8 leadership sessions and additional work pursuing a community-based team project designed to propel transformative change in the neighborhood.

VITAL VILLAGE NETWORK

The Vital Village Network is a place-based, community engagement network that mobilizes collective investment from residents, community organizations, and institutions to seed scalable and sustainable community change around child protection and promoting healthy social and emotional development in early childhood. Vital Village was established in 2010 when an interdisciplinary group of practitioners at Boston Medical Center, New England's largest safety-net hospital, sought new approaches to improving health equity by partnering both with residents with lived experience and community-based agencies. Over a 2-year period, the team engaged in conversations to learn more about the solutions to complex social threats to child well-being that community stakeholders were leading.

Given the emerging understanding of the far-reaching consequences of early-life adversities and toxic stressors on child development, health, and educational outcomes, a paradigm shift toward the use of innovative approaches that harness collective capacities and build collective efficacy is needed. Through a rigorous community engagement approach, the Vital Village Network seeks to use a collective impact approach to support deeper collaboration among educators, clinicians, social service providers, legal advocates, and residents. The focus of this cross-sector collaboration has evolved to include not only the footprint of each neighborhood, but the corridors—routes of social networks, commerce, and information—between these places. The Vital Village Network has then developed hubs of innovation within and a formal collaborative network across 3 community-identified Boston neighborhoods: Dudley (Roxbury/North Dorchester), Mattapan, and Codman Square (Dorchester).

The Vital Village Network uses shared data as a tool to further deepen alignment and collaboration across diverse sectors. In this effort, Vital Village has used the COI to document the association between inequities in child

opportunity, neighborhood crime, and child health outcomes. Acevedo-Garcia et al[27] showed that Boston ranked among the top 6 worst US metropolitan areas with the highest concentration of black (57.8%) and Hispanic (57.6%) children living in very low-opportunity neighborhoods. By utilizing the COI and pairing it with deidentified patient data from Boston Medical Center and aligned community health centers, the Vital Village Network was able to identify these neighborhoods of low opportunity and examine the health effects of children living in those neighborhoods, such as elevated blood pressure rates (Fig. 3).

In 2013, with the support of the Doris Duke Charitable Foundation, Vital Village launched a formal strategic planning year and supported 10 pilot innovative collaboration projects with microgrants, each focusing on 1 of 3 priority areas: 1) promoting family strengths during the prenatal through early childhood period; 2) providing peer-to-peer legal advocacy aimed at addressing material hardships; and 3) innovating in early childhood education. By coupling improvement science methods and community-based participatory research, they began to support an iterative learning process for improving settings to promote child well-being. This active planning process led to the

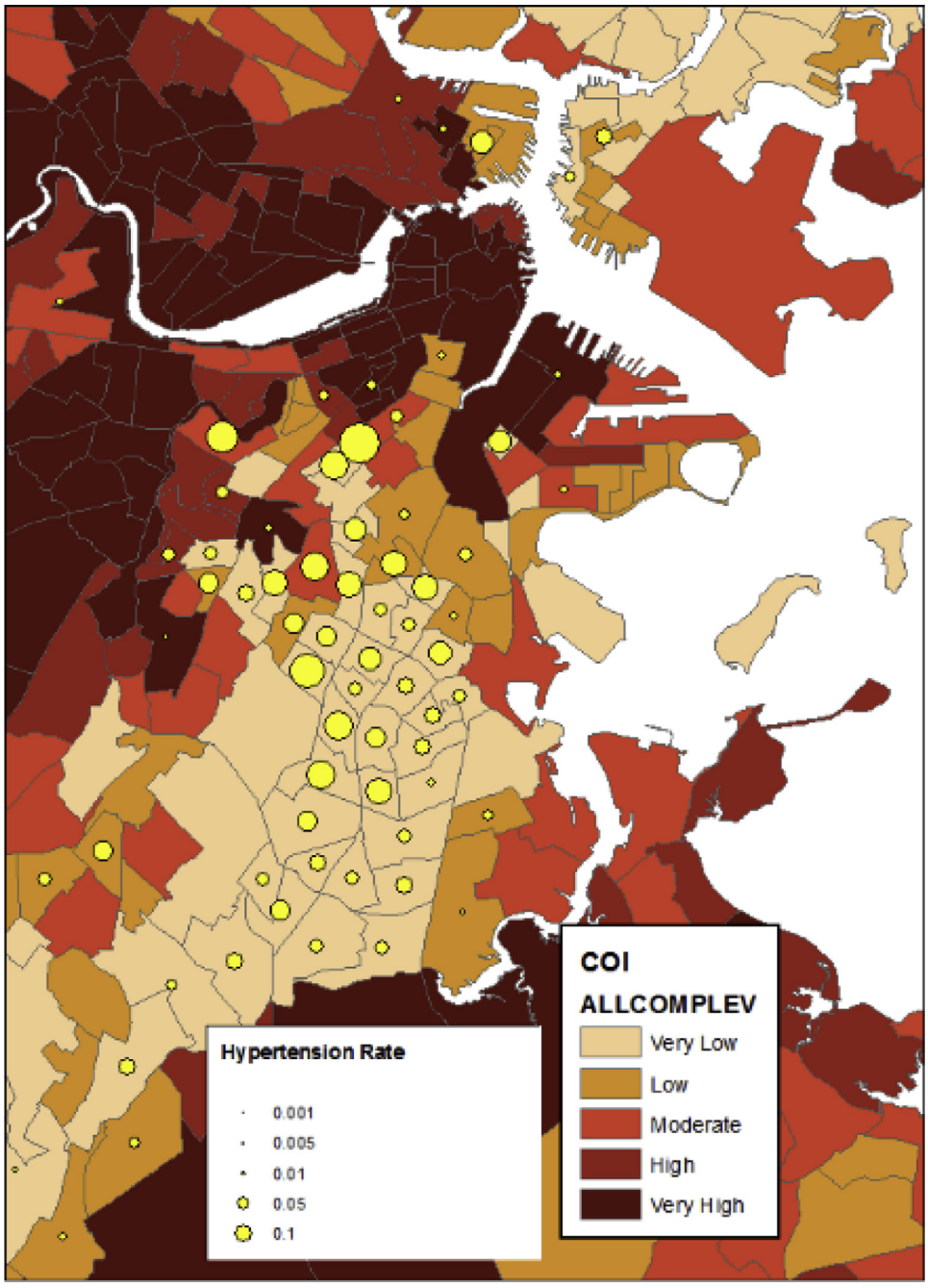

Figure 3. *Child opportunity maps using hypertension rates from Vital Village Network. COI indicates Childhood Opportunity Index; ALLCOMPLEV, all comprehensive levels in child opportunity index (range, very low to very high). Hypertension rates are defined as above 95th percentile for age and adjusted rates per 1000 children.*

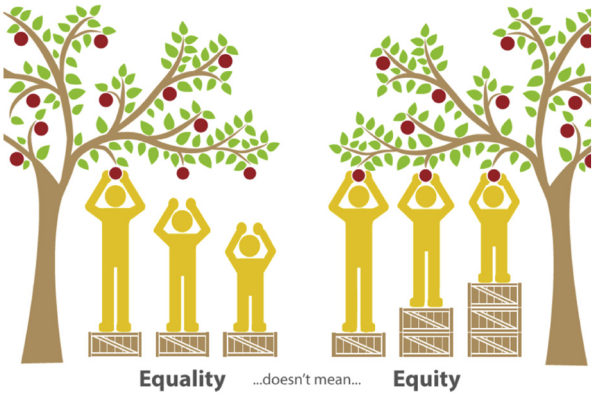

Figure 4. *Visual representation of the concept of equality versus equity. Adapted from: Neudorf C, Kryzanowski J, Turner H, et al.* Better Health for All, Series 3: Advancing Health Equity in Health Care. *Saskatoon: Saskatoon Health Region; 2014. Available at: https://www.saskatoonhealthregion.ca/locations_services/Services/Health-Observatory/Pages/ReportsPublicatlions.aspx.*

growth of the network partners to over 75 agency partners and 200 active participants and catalyzed the evolution of the Network from a collaborative group into a community of practice. Using a 90-day challenge model, the network encourages broad participation in ongoing improvement of programs that build community capacity to support child well-being. This community of practice supported the cocreation and design of innovations between resident partners and community-based agency partners with shared accountability. More important than any individual project is the potential to support shared learning and collaboration across sectors, within and across neighborhoods, and between community agencies and residents.

DISCUSSION

Addressing neighborhood inequities through mobility to higher opportunity and neighborhood revitalization both remain important strategies to improve child health. Place-based neighborhood level interventions that focus on building equity of opportunity and collective efficacy are crucial to lifting children out of poverty. This approach acknowledges regional differences in housing and labor markets, driven by racial/ethnic and socioeconomic inequities, lead to disparate amounts of opportunities in neighborhood resources to support children. Beyond poverty rates, this includes the availability of high-quality early education centers, safe and affordable housing, and access to health care. Therefore, policies and programs that offer equal distribution of resources fail to alleviate systemic inequities. To ensure an equitable likelihood of success, a different approach is needed. Neighborhood revitalization efforts are examples of disproportionate investment to address inequities; in order to break the cycle of generational poverty, high-poverty neighborhoods will require additional support and funding. As demonstrated in Figure 4, treating neighborhoods equally may not address the underlying differences between neighborhoods. Some neighborhoods begin at a disadvantage and therefore may need more to reach the same potential.

Equity-focused investments in neighborhoods have created important lessons learned thus far (Fig. 5). First, these interventions must be defined both by geography of people as well as place. Defining the area of interest ensures a focus on both and increases the likelihood that a sufficient dose will be applied to the intervention. Tools like COI mapping can further define areas of intervention and document inequities that must be addressed. Second, community-level interventions must be community driven and have continuous community engagement throughout the process, as described through work pioneered by John McKnight (http://www.abcdinstitute.org/publications/index.html). Third, the marrying of different funding streams, such as city, philanthropy, and anchor institutions, is essential to long-term success and sustainability. Acknowledging that funding often drives the agenda and creates a power dynamic is important, and diversification ensures that no one partner is driving too much of the process. Fourth, single faceted approaches do not provide the comprehensive solutions needed to address complex problems and make communities better. Making healthier food options available while not addressing violent crime rates will not result in lower obesity rates in a given neighborhood. Multifaceted approaches to increasing opportunity are essential and must be informed by an equity lens,

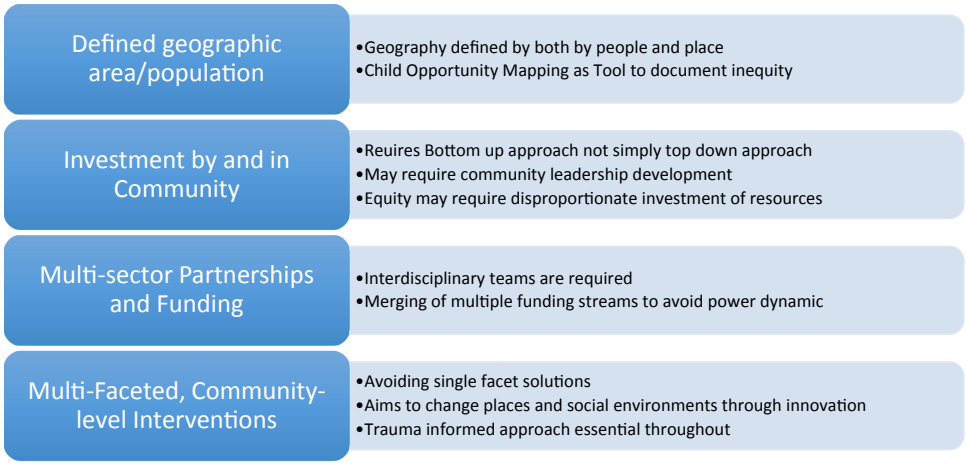

Figure 5. *Take-home messages of successful community-level interventions.*

Bronfenbrenner's ecological framework, an understanding of intergenerational processes, and the risk attributable to adverse early childhood experiences. Local community environments have a broad influence on health outcomes and enduring and durable effects over the life course; therefore, complex solutions are required that involve the alignment of multiple sectors and systems of care.

CONCLUSION

Socioeconomic characteristics of neighborhoods are a well-established pathway through which poverty contributes to child health outcomes. Understanding the contribution of collective attributes of neighborhood environments to child health offers a deeper opportunity to influence population health and well-being by transforming environments where children live, learn, and play. As opposed to disease-specific interventions that target individual health behaviors, community-level prevention aims to change places and social environments. Focusing on addressing structural inequities in opportunity has a critical and potentially higher payoff for improving child health, development, and well-being. By following these lessons, neighborhood-level interventions can become the ultimate opportunity for pediatricians working in interdisciplinary teams to address these inequities. These multifaceted partnerships are critical opportunities for policy makers and health institutions to meaningfully contribute to cross-sector efforts to promote equity of opportunities for children in an effort to improve population health. Only then will we reach the goal to lift children out of poverty and reap the societal benefit and savings from having a healthier generation of adults.

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