BRUSHWOOD CENTER AT RYERSON WOODS

Integrating Nature-Based Solutions and Value-Based Care for Health Equity

Exploratory Interviews with Sector Leaders to Accelerate Health and Nature Collaboration in the Chicago Region

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Executive Summary

Although research demonstrates the physical and mental health benefits of time spent in nature, historic and systemic injustices prevent equitable access to these benefits, particularly for individuals from low-income and BIPOC (Black, Indigenous and People of Color) communities. Like other social determinants of health, access to a clean and healthy environment is not incentivized through traditional fee-for-service models of healthcare. In contrast, value-based care, or VBC, (driven by quality of patient care, not quantity) presents opportunities for bridging healthcare and nature-based organizations to improve patient outcomes. This study explores the institutional and financial potential for this collaboration in the Chicagoland region, employing interviews with 27 leaders in healthcare and conservation, as well as breakout discussions with 60 community leaders in Lake County, IL.

The results identify six key categories of themes, including both near term and long term opportunities and strategies for driving equitable nature-based healthcare solutions. This data has informed the development of an emerging Health, Equity, and Nature Accelerator at Brushwood Center at Ryerson Woods in the northern Chicago region. Significant opportunity remains for additional investigation both in the Chicago area and in other regions of the United States given the varied implementation of VBC across the country.

Acknowledgements

Brushwood Center at Ryerson Woods honors the land we operate on as the traditional home of Algonquian speaking peoples. We celebrate their traditions and culture and their immemorial ties to this land. Today, Brushwood Center continues to be a place where many people from diverse backgrounds find healing, vitality, and relationship with nature. We honor the multi-cultural traditions of the land, the history of native peoples, and those who continue to maintain and shape these traditions today.

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Introduction

The connection between access to nature and improved human health has been acknowledged for decades. The American Public Health Association states that "Public health officials, physicians, nurse practitioners, and other health professionals should advise patients and the public at large about the benefits of green exercise, personal and community gardening, and nature-based play and recreation" (American Public Health Association, 2013). Research confirms that access to and utilization of green space improve both mental and physical health (Frumkin et al., 2017) and, in the face of a rapidly changing climate, ecosystems protect many communities from more severe impacts of natural disasters and extreme weather events (Patz et al., 2014).

In metropolitan areas like Chicago, low-income individuals and BIPOC (Black, Indigenous and People of Color) communities are disproportionately impacted by both environmental injustices (Geertsma, 2018) and adverse health outcomes (Novara et al, 2018). Yet, despite more than 90% of Americans understanding the connection between nature and wellness (Kellert et al., 2017) and the unprecedented use of natural areas during the COVID-19 pandemic (Grima et al., 2020), the conservation and healthcare sectors continue to lag in their ability to collaborate effectively.

This lag is driven by a lack of investment to support effective and equitable collaboration. The conservation and environmental sectors have attempted to strengthen ties with healthcare, but the focus on individual organizations and initiatives instead of cross-sector collaboration has hindered systemic change. Additionally, when investment in nature-based solutions occurs, it has historically been implemented without adequate community engagement or consideration of gentrification and cultural needs (Cole et al., 2017).

However, the economic case for collaboration is strong. A 2019 research project conducted by ecologists, psychologists, and economists valued the mental health benefits alone of protected natural areas across the globe at $6 trillion (Buckley et al., 2019). This is significant, particularly when juxtaposed with the comparatively small estimated financial flows into global biodiversity conservation of $124-$143 billion (Paulson Institute, n.d.). In contrast, healthcare costs in the United States alone comprise $3.8 trillion and 17.7% of our GDP (Centers for Medicare & Medicaid Services, 2020). Incentivizing collaboration between healthcare and conservation organizations has the potential to improve people's health, address systemic disparities, drive biodiversity support, decrease hospitalization costs, and unlock a critical potential investment source for conservation and green spaces.

Value-Based Care and Accountable Care Organizations

This project explored the financial opportunities for linking natural lands and healthcare systems through value-based care, or VBC. In the healthcare sector, value-based healthcare is a healthcare delivery model in which providers, including hospitals and physicians, are paid based on patient health outcomes, instead of the number of visits or procedures (NEJM Catalyst, 2017). By incentivizing quality of patient care over quantity, VBC creates a market-based system that drives improved patient outcomes and decreased healthcare costs. Given that a clean environment and access to nature is vital to human health, VBC offers a unique opportunity for incentivizing this connection through healthcare programs and policies.

While this project explored VBC broadly, the authors were particularly interested in the opportunity for connection via a specific VBC model called Accountable Care Organizations (ACOs). "Accountable care organizations (ACOs) were originally designed by the Centers for Medicare & Medicaid Services (CMS) to provide high-quality medical care to

Medicare patients. In an ACO, doctors, hospitals, and other healthcare providers work as a networked team to deliver the best possible coordinated care at the lowest possible cost. Each member of the team shares both risk and reward, with incentives to improve access to care, quality of care, and patient health outcomes while reducing costs" (NEJM Catalyst, 2017).

Some ACOs use population health management systems to address other social determinants of health, such as affordable housing or access to food (Fraze et al., 2016) but do not currently include nature-based solutions or those focused on environmental outcomes. This project explored the potential for further integration.

About Brushwood Center at Ryerson Woods

The initiative for this project emerged as a result of the existing nature and health equity work currently undertaken by Brushwood Center at Ryerson Woods, coupled with growing community demand and momentum for systemic changes to address racial and ethnic inequities at the intersection of health, climate, and nature. Brushwood Center is an environmental art, health, and education center based in a 565-acre woodland nature preserve just north of Chicago. They cultivate inclusive engagement with audiences who face barriers to nature access, including youth and families from under-resourced communities, military veterans, neurodiverse audiences, and seniors.

Methods

The project began with semi-structured interviews of leaders in healthcare and environmental organizations. Most leaders worked in the Chicago metropolitan area, although several were involved in healthcare nationally. Interviews were conducted over Zoom, and recorded with consent of the interviewee or transcribed during the interview. After each interview was conducted, notes were compiled from the two interviewers and any

other participants from the call. After each interview, a brief mapping was done of current information and areas with a lack of information. Each interviewee was asked for their recommendations of additional potential interviewees, and these contacts were included in the data mapping. In total, 27 individuals were interviewed through 20 separate interviews (Table 1).

The authors reviewed interview transcripts and notes with an open-coding process of marking key themes and information relevant to the project goals. Priority populations, technology solutions/themes, main themes, barriers or challenges, solutions and opportunities, and interventions with greatest feasibility for immediate implementation emerged as key categories of themes in this informal analysis. Each interview transcript was coded within these areas.

Informed by these interviews, Brushwood Center hosted a virtual Leadership Roundtable on *Health Equity, Nature, and the Environment in Lake County* with 60 community members and leaders on June 24, 2021. The goals of the Roundtable were to, at a local level, better understand the impact of access to green space and environmental justice as social determinants of health, particularly in light of COVID-19, identify community assets and opportunities for breaking down barriers, and uplift efforts already underway to improve health of people and the environment. The Roundtable opened with a panel featuring five community leaders from the public health department, county forest preserve, and community organizations representing environmental justice, nature, and health equity interests. Participant discussions were facilitated in breakout groups by volunteers using a discussion guide, with responses documented by volunteer note-takers. These notes were then reviewed for key themes.

Results

Analysis of participant interviews resulted in the identification of six primary data categories with resulting themes (Table 2). Note that themes are listed in alphabetical order, not in order of frequency mentioned.

Priority Populations

Interviewees identified priority populations who could benefit the most from nature-based care. While some defined this by potential from existing research, others defined this by personal experience or using medical hypotheses. Underserved communities as well as elderly populations most impacted by poor health outcomes were identified among nearly all interviewees as priority populations, recognizing that marginalized communities are disproportionately affected by lack of access to nature, increased exposure to pollution, as well as poor health outcomes. Early childhood was also identified by several interviewees as a key potential population.

Barriers to Implementation

In discussing opportunities and feasibility for nature-based programs in healthcare, interviewees shared examples of barriers that they have experienced in the past. These included challenges faced on an institutional level, such as those inherent to the United States healthcare system (i.e. separation of social services and healthcare; fee-for-service systems; bureaucracy of Medicare and Medicaid). The racial and socioeconomic inequities that exist in both healthcare and access to nature were also identified, along with the need to address social determinants of health, particularly education. Accessibility concerns (such as providing resources in non-English languages or incorporating universal design), safety concerns, and the need for community input in nature spaces and health programs were also common concerns. The time horizon of nature-based care as affecting long-term outcomes

was a shared concern given that most current healthcare systems are financially driven by immediate outcomes and solutions. Additionally, lack of awareness of existing research and data (on the health benefits of nature) and lack of cohesion (connecting healthcare organizations and environmental/conservation groups) were barriers identified by every interviewee as top priorities to address.

Value-Based Care Technology Solutions

Technology solutions are growing in VBC and were discussed by several interviewees. Many healthcare organizations (in the private and non-profit sector) have begun using Social Determinants of Health (SDOH) Screeners. These screeners are given to patients upon admission and ask questions about different social determinants of health. To interviewee knowledge, no working SDOH screener includes questions about nature. Further, during the Covid-19 pandemic, popularity and use of telehealth grew. Acknowledging and using telehealth broadens accessibility for nature-based care, and this was identified in several interviews. Finally, there are several platforms gaining national recognition for combining community resources (e.g., food pantries, affordable housing programs, etc.) for patient referral. These platforms could offer a unique opportunity for providers to share nature-based resources with patients, and to address critical barriers identified in cohesion and awareness.

Centering Community Voices

As health equity moves to a more central focus in American healthcare, centering community voices was identified as essential to effective implementation. Community input and asset-based community development was identified by interviewees as a top priority in the planning and execution of health and nature programming. Several examples of green gentrification, where providing green amenities leads to the displacement and

disenfranchisement of local communities, were discussed as precautionary anecdotes. Additionally, use of demographic data to ensure the equitable distribution and access to programming was identified as important.

Long-Term Solutions and Opportunities

Across the interviews, several solutions were shared as opportunities with long-term potential. With respect to partnership, several interviewees stressed the importance of partnering with research institutions (i.e., universities) during pilot efforts as well as the potential for additional collaboration with health insurance providers. Related, an emphasis on data creation was shared amongst interviewees. Specifically, interviewees identified the need for more data documenting the return on investment for nature-based programs in order to drive investment through VBC. Additionally, opportunities in the healthcare education system were discussed, including the importance of bringing nature-based programming to the awareness of physicians and healthcare providers. Finally, though not yet available in Illinois, other states (including Washington, Oregon and California, according to interviewees) offer primary care capitation to community health centers treating Medicaid patients, creating incentives for more holistic care which could, theoretically, include nature-based components.

Interventions with Greatest Feasibility for Immediate Implementation

Interviewees also explored the easiest, most efficient, and most feasible opportunities for immediate implementation. Most of these responses reflected areas where interviewees felt existing data demonstrates the most evidence for impact, including research to support nature-based programs for veterans as well as those that support patients with diabetes, behavioral health, and/or comorbidity. Additionally, interviewees confirmed that organizations serving populations who received Medicare or Medicaid, such as Federally

Qualified Health Centers, pose significant opportunity for collaboration as well. These areas were also identified as partners with existing interests in holistic health approaches. Professional development (for healthcare professionals) and pilot programs with individual institutions were also identified as feasible opportunities for implementation.

Innovative Ideas

Moreover, several interviewees offered ideas for innovative opportunities that, while not repeated across all interviews, merit consideration for future implementation. These solutions and opportunities have yet to gain awareness and support in terms of collaboration with nature-based solutions but hold promise for upcoming development and growth (Table 3). These include opportunities for collaboration with ACOs through their shared saving agreements, with Managed Care Organization through their quality inventive programs, and additional technology opportunities. Additionally, potential for partnership with food access and food system organizations were also mentioned.

Community Leadership Roundtable

Results from breakout groups of the *Leadership Roundtable on Health Equity, Nature, and the Environment* summarized major themes in terms of current barriers and community assets (Table 4) in Lake County, Illinois. These themes emphasized the need for community-driven strategies that prioritize the voices of those most impacted by healthcare inequities.

Discussion

The interviews and roundtable verified that there is significant enthusiasm for nature-based health solutions. This sentiment was expressed repeatedly in conversations with leaders working at both local and national levels. However, the overstretched resources of health and nature sectors (especially amidst the pandemic and a rapidly changing climate)

means that any meaningful application and scaling of solutions requires dedicated investment and effort.

Given the limitations of time as well as interview pool size, geography, and demographics, this project suggests that there is still much to uncover in terms of opportunities for nature-based solutions and VBC. Because VBC is implemented in very different ways across the United States, opportunities could vary significantly from one region or community to the next.

While national variability will undoubtedly exist, this project offers an initial roadmap for prioritizing opportunities, with the hope of cultivating cross-sector collaboration with potential for long-term impact.

Next Steps: Health, Equity, and Nature Accelerator

Based on this analysis, the authors identified three critical areas for future work and growth: data, investment and capacity/awareness. While the goals identified in each of these areas address local concerns, many of the proposed solutions offer potential for broader application.

The need for a "Health, Equity, and Nature Accelerator," that would drive investment in these community-driven solutions was identified. Brushwood Center is launching the Health, Equity, and Nature Accelerator to further expand this work through cross-project alignment, prioritization of community-driven practices, and communication of key results for scalability and collaboration. The initial areas of focus include the following:

DATA: Development of a Nature and Health Equity Report for Lake County. Brushwood Center will partner with health departments, community organizations, land agencies, and environmental justice groups to collect community-driven data on the status of people and nature in Lake County, prioritize geographies for investment, and identify key

policy opportunities to advance equitable access to nature and enhance support for nature-based solutions. The project will employ an asset-based community development approach, informed by national and regional data sets. The project will work with artists and humanists to elevate the voices of community members.

INVESTMENT: Identify and implement a pilot financial model for nature-based healthcare solutions with Medicaid or Medicare-affiliated partners. Interview conversations identified key potential organization types with the highest potential for alignment, including Managed Care Organizations and Accountable Care Organizations.

CAPACITY AND AWARENESS: While interviewees agreed that nature (broadly defined as parks, preserves, community gardens, street trees) is a vital social determinant of health, many in the healthcare community were unaware of opportunities for collaboration or programs where they might direct clients. By increasing awareness and building capacity for nature-based interventions within the healthcare community, the Accelerator can enhance support for biodiversity in the Chicago region more broadly. This will be achieved through the development of professional development opportunities for healthcare providers (especially social workers and mental health providers) and the exploration of collaboration with technology platforms and health screeners.

Brushwood Center's Health, Equity, and Nature Accelerator launches in early 2022. The Accelerator aims to refine potential models for collaboration identified through this project, focusing on those with significant opportunity for scalability.

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Table 1

Number of Interviewees by Institution Category

Category of Institution	Number of Interviewees
Hospitals / Hospital Systems	8
Nature-based Organizations / Agencies	8
Federally Qualified Health Centers	3
University	3
National VBC Organizations / Consultants	2
Government Healthcare Agencies	2
Provider Collaborative	1

Table 2

Interview Data Categories and Themes

Categories	Themes
1. Priority Populations	A. Early Childhood Development B. Elderly population C. Underserved communities
2. Barriers to Implementation	A. Accessibility and safety concerns B. Institutional issues (e.g., separation of healthcare and social services in the U.S., fee-for-service systems, Medicare/Medicaid bureaucracy) C. Intersectional nature of social determinants of health (education, food, housing, etc.) D. Lack of awareness of data on the health benefits of nature E. Lack of cohesion and resource connection F. Lack of financial capacity G. Racial/socioeconomic inequities H. Time horizon
3. VBC Technology Solutions	A. Community referral networks (e.g., NowPow, Unite Us) B. Social determinants of health screener C. Telehealth / virtual programs
4. Centering Community Voices	A. Disproportionate impact of Covid-19 pandemic B. Preventing green gentrification

	C. Use of demographic data
5. Long-Term Solutions and Opportunities	A. Creation of ROI data to drive VBC incentives B. Creating more data with hospital pilot programs C. Inclusion of nature-based care in healthcare teaching institutions D. Partner with large insurance providers E. Partner with research organizations/institutions F. Utilized capitation model for Medicaid patients
6. Interventions with Greatest Feasibility for Immediate Implementation	A. Behavioral health / Mental health B. Comorbid illness populations C. Diabetes D. Education (Professional development) E. Medicaid / Medicare populations F. Pilot projects/programs with individual institutions G. Veterans programs

Table 3

Individually-sourced Innovative Solutions

Solution identified by interviewee with potential for alignment with nature-based solutions	Description
Shared savings agreements	An ACO option for collective savings if providers/healthcare organizations spend less than they are given by the state; it incentivizes primary care providers to prevent unnecessary hospitalizations.
Quality care dollars	Funding opportunities through managed care organizations to incentivize preventative care.
Technology applications	Existing technology applications that are either working at the intersection of health and nature or provide personalized care to patients.
Working with food access organizations	The growing intersection of food security, health and nature was noted. There are opportunities for partnership and collaboration with community-based organizations in this field.

Table 4

Summary of Breakout Discussions from the "Leadership Roundtable: Health Equity, Nature, and the Environment in Lake County"

Discussion Question	Breakout Group Responses
1. What are the barriers that exist to improve the health of people and the environment?	Mental health challenges within the community Lack of cohesion/coordination of efforts Lack of community representation in policy/infrastructure decisions Air and water pollution in over-burdened communities Consistency of programs and resources Provision of English/Spanish bilingual resources and signage in natural areas Transportation options for those without cars Financial and occupational (lack of childcare, ability to pay user fees, etc.)
2. What community assets exist in Lake County?	Existing coalitions and efforts to share resources Presence of natural areas, beaches, and parks Robust network of community organizers Interest and passion of young leaders/activists Skills and expertise of individual participants
3. What do we need within our own organizations/institutions to implement systemic changes to address these issues?	Prioritizing community-engaged work to ensure policy decisions reflect community members' needs Partnerships and cohesion in efforts to increase power and efficiency

	Compilation of resources (data, existing efforts, etc.) to better understand current resources and identify opportunities for improving community health through nature and environmental justice work