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Addressing the Social and Environmental Determinants of Urban Health Equity: Evidence for Action and a Research Agenda

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ABSTRACT *Urban living is the new reality for the majority of the world's population. Urban change is taking place in a context of other global challenges—economic globalization, climate change, financial crises, energy and food insecurity, old and emerging armed conflicts, as well as the changing patterns of communicable and noncommunicable diseases. These health and social problems, in countries with different levels of infrastructure and health system preparedness, pose significant development challenges in the 21st century. In all countries, rich and poor, the move to urban living has been both good and bad for population health, and has contributed to the unequal distribution of health both within countries (the urban–rural divide) and within cities (the rich–poor divide). In this series of papers, we demonstrate that urban planning and design and urban social conditions can be good or bad for human health and health equity depending on how they are set up. We argue that climate change mitigation and adaptation need to go hand-in-hand with efforts to achieve health equity through action in the social determinants. And we highlight how different forms of governance can shape agendas, policies, and programs in ways that are inclusive and health-promoting or perpetuate social exclusion, inequitable distribution of resources, and the inequities in health associated with that. While today we can describe many of the features of a healthy and sustainable city, and the governance and planning processes needed to achieve these ends, there is still much to learn, especially with respect to tailoring these concepts and applying them in the cities of lower- and middle-income countries. By outlining an integrated research agenda, we aim to assist researchers, policy makers, service providers, and funding bodies/donors to better support, coordinate, and undertake research that is organized around a conceptual framework that positions health, equity, and sustainability as central policy goals for urban management.*

KEYWORDS *Urban health, Health inequity, Climate change, Social inclusion, Urban planning and design, Governance*

INTRODUCTION

Urban living is the new reality for the majority of the world's population. In all countries, rich and poor, the move to urban living has been both good and bad for

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population health, and has contributed to the unequal distribution of health both within countries (the urban–rural divide) and within cities (the rich–poor divide). The social patterning in health outcomes within and between cities, suggest that there is something about urban living—urban physical and social environments and living conditions, and the ways of life they encourage—that is causing differences in health.

This paper is the first in a series of papers on the social and environmental determinants of urban health equity, based on the work of the Global Research Network on Urban Health Equity (GRNUHE), which was supported financially by the Rockefeller Foundation.

In this paper we set the scene, describing the extent to which urban development has contributed to urban health inequities, particularly in low-income and middle-income countries (LMICs). It provides an overview of how action focused on the four themes of the GRNUHE network—urban governance, planning and design, social environment, and climate change—may improve health equity. We conclude by proposing a way forward for urbanization that is based on principles of health, equity, and environmental sustainability and outline key components of a global research agenda to support such an approach to urban development. Papers by Smit et al.,[1] Salgado et al.,[2] Friel et al.,[3,4] and Barten et al.[5] describe in detail the relationship between urban health inequities in LMICs and each of the determinants, and review the evidence relating to action that has been used to address these causes of health inequities.

THE CONTEXT: URBANIZATION IN THE TWENTY-FIRST CENTURY

The scale and pace of urbanization over the past 50 years is unprecedented in history. By 2030, six out of every 10 people will be city dwellers, rising to seven out of every 10 people by 2050.[6] The nature of urban change differs within and among regions. Of the expected 5.3 billion urban population living in the developing world by 2050, Asia will host 63%. In India alone, the urban population is expected to rise from 28% to 40% of the total population by 2020, whereas in Latin America the rise is estimated to be from 57% in 1970 to 81% in 2020.[7] Africa will host nearly a quarter of the world's urban population, while the urban population of the developed world is expected to remain largely unchanged, rising only slightly from just over 900 million in 2005 to 1.1 billion in 2050.[8]

In the developing world, mainly, the process of urbanization is often accompanied by high levels of slum dwelling.[2] As defined by the United Nations Human Settlements Programme (UN-HABITAT), a slum is a densely populated area with substandard housing and a low standard of living as depicted by the absence of one or more of the following: improved water supply, improved sanitation, sufficient living area, durability of construction, and security of tenure. Although the proportion of slum dwellers in developing urban regions in the world declined from around 50% in 1990 to 36% in 2005; in absolute terms, between 2000 and 2010, the numbers of slum dwellers in the developing world grew from 776.7 to 827.6 million.[9]

THE SOCIAL DISTRIBUTION OF HEALTH IN AN URBANIZED WORLD

The global movement towards urban living has brought a number of social, economic, and health benefits.[10] Urbanization has benefited many local economies

and businesses, with urban areas being economically more prosperous than their rural counterparts due to economies of scale, pooling of talent, skills, and availability of multiple services and technologies.[11] Conditions of housing and sanitation have improved markedly as have average household income, levels of education, and broader opportunities for women to participate in the labor force.[12] Throughout the 20th and 21st centuries, there have been significant improvements in indicators of health and life expectancy among urban populations.

Why then a concern about urban health inequities? In all countries, rich and poor, there is an unequal social distribution of health both within countries (the urban–rural divide) and within cities (the social gradient). Even though health is, on average, better in urban than in rural areas, this masks urban disadvantage where health can be as bad as or worse than in rural poverty. Van de Poel et al. compared child health outcomes between urban and rural areas in 47 developing countries and found a median rural–urban relative risk of 1.4 for stunting and mortality. While on average, health outcomes were better in urban than in rural areas of developing countries—in nine out of 47 countries, children from lower socioeconomic households in urban areas had higher rates of mortality than their rural counterparts.[13] Similarly, a study of socioeconomic inequality in chronic childhood malnutrition in Nigeria found a higher burden of malnutrition among urban poor children compared to those from rural areas.[14] In Sub-Saharan African cities, children living in informal settlements are more likely to die from entirely preventable respiratory and waterborne illnesses than children in rural areas.[15] In Kenya, not only are there marked inequities in under-5 mortality within the city of Nairobi, but the under-5 mortality rate is also actually far worse in Nairobi's slums and informal settlements than in Kenya as a whole and its rural areas (Figure 1).[16]

Urbanization itself is reshaping population health problems, particularly among the urban poor, towards noncommunicable diseases (NCDs) and injuries.[17] As the degree of urbanization and national income increase so too does the prevalence of diabetes, heart disease, obesity, mental health problems, alcohol and drug abuse, and violence.[18,19] In LMICs, the prevalence of hypertension is increasing with rates being higher in urban than in rural settings.[20] The prevalence of NCDs such as diabetes is socially graded among urban populations, increasing with decreasing

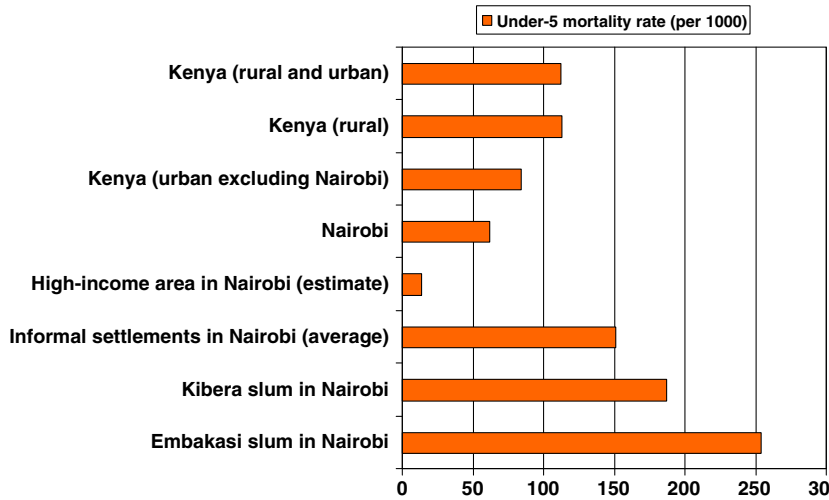

FIGURE 1. Urban–rural differences in under-5 mortality, Kenya. Source.[16]

social status (Figure 2). Obesity has become increasingly more prevalent among socially disadvantaged groups,[21] and often sits cheek-by-jowl with underweight among poor populations in many cities throughout the world.[22]

Within poor countries, poor people—represented by pedestrians, passengers in busses and trucks, and cyclists—suffer a higher burden of morbidity and mortality from traffic injuries. In rich countries, children from poor socioeconomic classes suffer more injuries and deaths from road crashes than their counterparts from high income groups.[23] Crime and violence are more pronounced in urban areas, and especially in slum areas, than in rural settings. A recent study showed that 60% of urban dwellers in developing and transitional countries had been victims of crime during a 5-year period. Homicide rates are high and still growing in some cities—especially in Africa and Latin America. Robbery poses a major problem in many urban centers—not least because it contributes to the general feeling of fear and insecurity.[12]

GLOBAL RESEARCH NETWORK ON URBAN HEALTH EQUITY

This unequal distribution of health "is not in any sense a 'natural' phenomenon."[24] "It is unable to be explained by biological variation, which means that they can be avoided by reasonable societal level action. That they are not [avoided] means they are unfair, unjust and, therefore, inequitable."[25] The systematic social patterning in health outcomes within and between cities suggests that there is something about urban living—urban physical and social environments and living conditions, and the ways of life they encourage—that cause these inequities in health.

The World Health Organization Commission on Social Determinants of Health (CSDH) stated in its 2008 final report that "communities and cities that ensure access to basic goods, that are socially cohesive, that are designed to promote good physical and psychological well-being and that are protective of the natural environment are essential for health equity."[24] Eager to build on the work of the CSDH and recognizing the need for urban health equity-related evidence and action in LMICs, the Rockefeller Foundation provided funding to initiate a global network of multidisciplinary researchers predominantly from LMICs but also including key urban health researchers from high-income countries, nongovernment organizations, and international development agencies. The membership of the GRNUHE reflects the recognition that in order to promote health equity, we need to connect

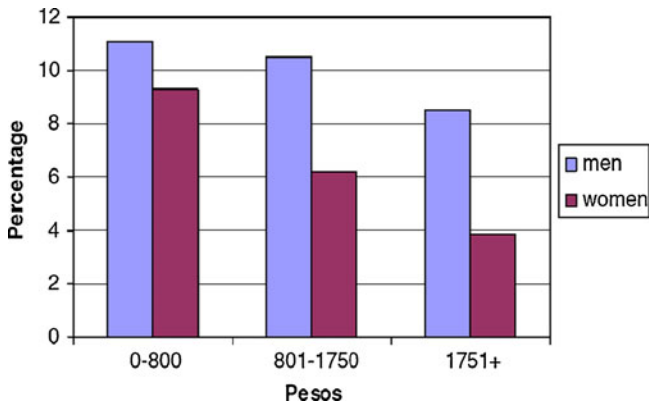

FIGURE 2. Prevalence of diabetes by monthly income, Buenos Aires, Argentina 2005.[40]

evidence and knowledge to action and policy through political dialog, social activism, and social marketing. GRNUHE met three times during the course of 2009/2010 (www.ucl.ac.uk/gheg/GRNUHE). The network reviewed current knowledge in the social and environmental determinants of urban health inequities, documented what is and is not working to improve urban health equity, and identified gaps in the evidence base thereby setting direction for a global research agenda.

THE GRNUHE CONCEPTUAL FRAMEWORK

Urban health inequities flow from the systematically unequal distribution in power, prestige, and resources associated with relative position in the social hierarchy, whether at the individual, group, or city level, manifesting in inequities in both material and psychosocial conditions. The unequal distribution of power, status, and resources impacts people's freedom to lead lives they have reason to value,[26] to take control of their lives, and to participate in the decisions that affect their lives, including their health.[27] Empowerment, which can mean both the process and the outcome whereby people or communities gain control over the decisions that affect their lives, is therefore fundamental to building health equity.

Empowerment operates along three interconnected dimensions: material, psychosocial, and political. People need the basic material resources for a decent life, they need to have control over their lives, and they need political voice and participation in decision-making processes.[24] Contributing to empowerment and its social distribution are the social determinants of health—the structural (political, economic, and social) drivers and norms that distribute power, income, goods, and services, and the consequent immediate conditions of daily living—access to health care, schools, and education, conditions of work and leisure, the nature of homes, and the design of communities, towns, or cities.[25]

Structural Drivers of Urban Health Equity

Addressing distributions of power, money, and resources involves fostering a process of "political empowerment," broadly defined as the process whereby people, or groups, gain control over the decisions that affect them and increase and release their "capacity to act" (agency) in order to effect change in the areas that they define as important. Political empowerment therefore is a fundamental medium of social interaction, constituted both at the level of individuals (i.e., how much people can exercise control and decision making over the course and content of their own lives) and of communities (i.e, how people can effectively apply their collective values and interests to the way societal resources are distributed).[28]

Urban health equity depends vitally on the political empowerment of individuals and groups to represent their needs and interests strongly and effectively and, in so doing, to challenge and change the unfair distribution of material and psychosocial resources. Arguably, political empowerment has become more complex in the 21st century. Our world is one characterized by global economic integration, liberalization of markets, and easy transfer of people, resources, capital, and knowledge.[29,30] Indeed, analysis of the fastest growing 245 cities in the developing world found that the main drivers of city growth were macroeconomic and industrial policies and related investments.[8] However, the economic, social, and health gains arising from the processes of globalization and urbanization have been unevenly spread between and within countries.[31–33] This is underpinned by the unequal distribution within

and across national borders of gains, losses, and ability to influence outcomes. Increasingly, local decisions on issues such as economics, employment, health care, and food supply have been influenced by global conditions and factors.[34]

Urban Daily Living Conditions—Intermediate Determinants of Health Inequities

Most of the world's population now lives its life within the built environment. The social, economic, and physical make-up of the built environment, therefore, poses a major opportunity by which to improve urban health and health equity. If done well, the built environment can provide financial security and adequate material resources. Good physical structures and social conditions of "place" also contribute to individual and community empowerment that is fundamental to health equity and an enjoyable life.[35] A social determinants approach suggests that improving living conditions in such areas as income, housing, transport, employment, education, social support, and health services is central to improving the health of urban populations.

In reality, the restructuring of cities by the global marketplace, while conferring benefit for some, has led to rapid, often unplanned, urbanization, and outpaced the ability of governments to build essential infrastructure and services and provide basic needs for living. This has contributed to a growing gap between rich and poor in terms adequate urban housing, employment opportunities, transportation, levels of pollution, and sanitary conditions. In some countries, urbanization is associated with improved health service coverage and service delivery. However, the uneven distribution of these urban benefits has left certain sectors of the urban population—particularly slum dwellers—vulnerable to worse health outcomes than their rural counterparts.[36]

And while city populations have tended to become wealthier than their rural counterparts, they have become increasingly unequal. The Gini coefficient is widely used to determine the extent to which the distribution of income or consumption among individuals or households deviates from a perfectly equal distribution.* Differences in income inequalities between urban and rural areas in the developing world are shown in Figure 3. As can be seen for the majority of developing countries in Africa, Asia, and Latin America, inequalities in urban areas generally exceed the inequalities in rural areas.

Inequalities within cities of developing countries are generally high, with some regions, notably Southern Africa and Latin America, exhibiting exceptionally high levels of urban inequality.[8] These relative inequalities in social matters affect the social distribution of health outcomes. The work by Wilkinson and Pickett, although based on data from high-income countries and not at the city level, demonstrates a marked correlation between income inequality within nations and health inequities.[37] The negative correlation between increasing income inequality and decreasing

*A Gini coefficient of 0 indicates perfect equality, whereas a Gini coefficient of 1 indicates perfect inequality. Generally, a Gini coefficient of between 0.2 and 0.39 indicates a relatively equitable distribution of resource. A Gini coefficient of 0.4 denotes moderately unequal distributions of income or consumption; it is the threshold at which cities and countries should address inequality as a matter of urgency—referred to in the graphs as the International Alert Line. Cities and countries with a Gini coefficient of 0.6 or higher suffer from extremely high levels of inequality which puts them at risk of instability.

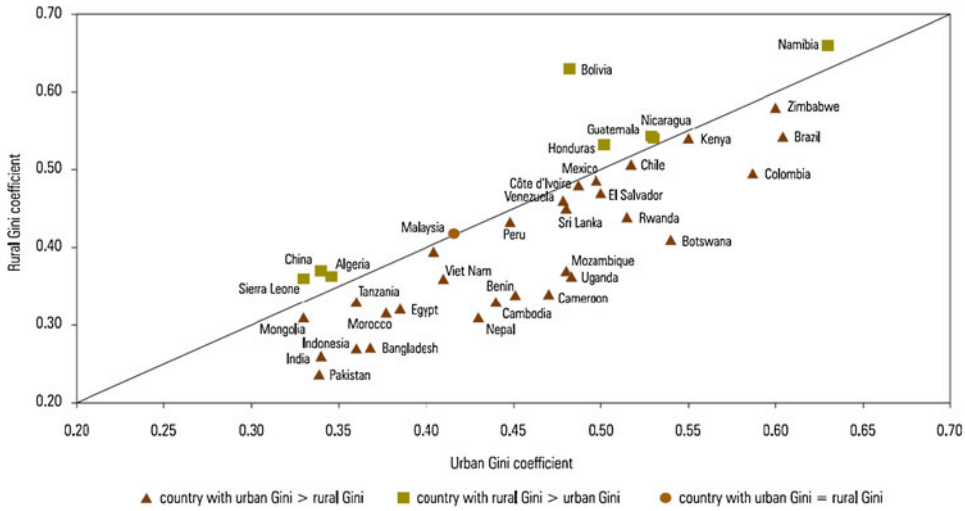

FIGURE 3. Urban and rural Gini coefficients for selected developing countries.

child well-being would almost certainly hold out in cities in LMICs given the degree of income inequality observed there.

The Added Pressure of Environmental Change on Urban Health Inequities

In addition to the social causes of urban health inequities is global environmental change. There is widespread recognition that disruption and depletion of natural environmental systems, including climate change, has profound implications for the health and indeed for the survival of people globally.[38] These environmental disruptions encompass climate and atmospheric change; pollution and ecotoxicity; depletion of resources, especially freshwater, foodlands, forests, fisheries, and fossil fuels; and loss of habitats, species and bidoversity that threatens many elements of the web of life in our ecosystems.[39] The combination of these changes is already affecting the health of the population in some parts of the world, and as these trends continue, the number of people affected will grow.

GRNUHE'S FOCUS ON THE SOCIAL AND ENVIRONMENTAL DETERMINANTS OF URBAN HEALTH EQUITY

The CSDH emphasized the critical role that cities can play in determining health and health equity through the provision of basic goods such as health and social services by being designed in ways that build social cohesion and promote good physical and psychological well-being and by being protective of the natural environment. Building on the work of the CSDH, GRNUHE reviewed the evidence on what could be done to address the social determinants of material, psychosocial and political empowerment of urban populations, especially in LMICs, thereby improving the health of the urban poor and the socioeconomic gradient in urban health. GRNUHE paid particular attention to the urban physical form, its social infrastructure, the added pressure of climate change, and the role of governance to determine maximum and equitable health benefits from urbanization (Figure 4). GRNUHE's overarching research question asked: "What are the attributes of urban governance, urban daily living conditions (social and physical environments), and climate change

that contribute to urban health inequities, particularly in cities of LMICs?" Papers by Smit et al.,[1] Barten et al.,[5] Friel et al.[3,4] and Salgado et al.[2] explore each of these issues in more detail.

First, this model shows that the physical environment, social conditions, and changing environmental conditions (exemplified by, but not limited to, climate change), all interact to improve or worsen health inequities.

- There is a reciprocal relationship between urban social conditions and the built environment. For example, poorly planned cities and their suburbs and inefficient public transit and road systems can result in long and expensive commutes for low-income workers that fray family and community ties, reduce the opportunity for social gatherings and for leisure and recreation, create conditions that make crime and violence—and the accompanying fear—more likely, or reduce access to basic amenities and services. Conversely, socioeconomic disadvantage and powerlessness means a lack of resources or capacity to create or influence health-enhancing homes or neighborhoods.
- Urban planning can either contribute to or help mitigate climate change, depending upon how energy-efficient and carbon-intensive the city's buildings, urban built form, and transport systems are. The nature of the physical environment can also make it easier or more difficult for people and communities to adapt to climate change.
- Similarly, the effects of climate change and other forms of environmental degradation can exacerbate health inequities that are rooted in social and economic conditions because people who are more socially disadvantaged are more likely to live in hazardous areas and have less access to adaptive technologies (such as air conditioning or services such as vector control, to give but two among many examples).

When these aspects of urban life—the natural and built environments and social and economic conditions—are well integrated, the product is both improved health and greater health equity and—even more broadly—higher and more equitable levels of human development. This is to the benefit of the citizens, their

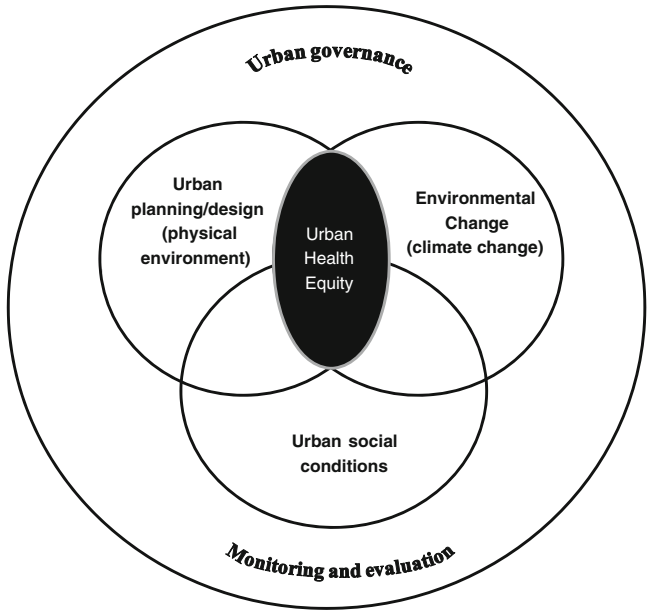

FIGURE 4. Diagrammatic representation of GRNUHE dimensions of urban health equity.

communities, local businesses and large employers, the city, and indeed the nation as a whole.

Second, all three of the interacting aspects of urban life in the center of our model are in turn nested within the broader concept of urban governance, which has the task of understanding the interactions and striking the right balance among these different aspects so that all three can be improved together. Governance is defined for our purposes as "the process of collective decision making and processes by which decisions are implemented or not implemented": the exercise of power and the power to/capacity to act. "Good"—or in our case, "healthy"—urban governance is concerned with the equitable distribution of power and resources, and with ensuring an appropriate balance among the competing demands of the various stakeholders in the city for the health of all. This requires a form of governance that engages and empowers the citizenry, especially the most disadvantaged and least powerful people and communities.

Finally, the model indicates that all of these processes of governance, the various aspects of urban life, and their outcomes in terms of health equity and human development need to be measured and monitored so that evaluation and accountability are possible.

ADDRESSING THE EVIDENCE GAPS—RECOMMENDATIONS FOR RESEARCH AND CAPACITY DEVELOPMENT IN RELATION TO URBAN HEALTH INEQUITY

Today, we can describe many of the features of a healthy and sustainable city, and the governance and planning processes needed to achieve these ends (for details, see Smit et al.,[1] Barten et al.,[5] Friel et al.,[3,4] Salgado et al.,[2] and the GRNUHE final report). But at the same time, there is still much to learn, especially with respect to tailoring these concepts and applying them in the cities of LMICs.

No Data, No Problem, No Action

Well-presented data can provide a stimulus for political action. However, in reviewing the peer review and gray literature, it became clear that there are indeed significant gaps in the global evidence base concerning urban health inequities. First, it proved difficult to demonstrate systematically the socioeconomic and sociocultural distributions of a range of health outcomes in cities around the world, especially in LMICs. In general, the dominant health outcomes reported in the literature from LMICs are life expectancy and under-5 mortality, and these are usually stratified as slum versus non-slum dwellers, or urban versus rural. These data do not reflect the social heterogeneity of urban dwellers nor do they properly characterize the current and projected health burden in cities all over the world, where the triple threat of communicable, noncommunicable diseases, and accidents/injuries is growing.

Second, a significant proportion of existing research on urban health determinants focuses on average population health outcomes rather than the distribution of urban health (urban health inequities). The range of determinants studied is limited. Much of the health literature from cities in LMICs reports on the health risks associated with local hazards such as shelter, water, and sanitation. This is understandable given the size of the contribution that these resources (or lack thereof) make, particularly, to slum dwellers' health. However, the many other social and environmental health risks that exist in urban settlements have been under-

investigated in LMICs; and in countries at all stages of economic development, there is a paucity of information on the pathways from and the size of impact of issues such as urban planning and design and social conditions on inequities in urban health. There is even less quantifiable evidence about the relationship between global environmental change, especially climate change, and urban health inequities. Urban governance is, as we highlight in a separate paper, both a key structural determinant of urban health equity and a mechanism by which to improve the social and environmental determinants of health. However, little research focuses on the relationship between governance and urban health inequities.

The third broad area in which evidence gaps were identified relates to action in the determinants of urban health inequities. A reasonable amount of research is available that describes local policies or programs which in essence address some of the social and environmental determinants of health. The Healthy Cities movement has been an important movement, representing a broad approach to improving health. What is consistently missing, however, is evaluation of the policies, programs, and modes of governance with regards to health risks and health outcomes, let alone evaluation of the impact on health inequities.

An Integrated Research Agenda

As indicated in the other papers in this series, there is a plethora of issue-specific research activities that is needed in cities throughout the world. There is however an overarching research agenda, which if performed in an integrated, comparative, and coordinated manner, will provide essential insights into the causes and solutions to current and future urban health inequities in cities in low-income, middle-income, and high-income countries.

By outlining an integrated research agenda, we aim to assist researchers, policy makers, service providers and funding bodies/donors to better support, coordinate, and undertake research that is organized around a conceptual framework that positions health, equity, and sustainability as central policy goal for urban management. Within this conceptual framework, we make explicit the role of urban planning and design, social conditions, climate change, and governance as key determinants of urban health equity and as areas in which policy and practice should be focused. Understanding how context impacts on health inequities and the effectiveness of interventions requires a rich evidence base that includes both qualitative and quantitative data. In order to learn from these contextual insights and to understand which aspects of action in the urban setting can be transferred internationally, we propose that the integrated research agenda should be done through the establishment of multicity studies that pursue operational and applied research as outlined below. GRNUHE identified five overarching research areas:

1. The social epidemiology of urban health inequities
2. Retrospective health equity evaluation
3. Prospective action-oriented applied research—designing cities for health equity
4. Understanding the role of external pressures on urban health inequity
5. Knowledge translation: knowledge to action

Area 1: The Social Epidemiology of Urban Health Inequities

The first research area focuses on quantifying the relationship between social and environmental determinants and urban health inequities, particularly in LMICs. The

point of this research is to (a) test hypotheses and (b) generate/provide baseline data from which changes can be measured in health inequities following societal level change (policy, programmatic intervention, and social action). A comprehensive range of indicators is needed relating to the four GRNUHE thematic areas, as are indicators of health status disaggregated across different social groups, and general characteristics of cities and their positioning in the global arena. This type of research is partly dependent on the quality of existing information systems and should interact with ongoing initiatives in this area, such as Urban Health Equity Assessment and Response Tool (Urban HEART), Roundtable for Urban Living Environment Research (RULER), and UN-HABITAT's monitoring program, otherwise population surveys will be needed.

Area 2: Retrospective Health Equity Evaluation

The second area of research is concerned with understanding the impact of action that has taken place on the different determinants of urban health inequity and understanding why certain actions worked in different sociopolitical and development contexts. The research would draw on a selection of cities in high-, middle-, and low-income countries, and aim to demonstrate changes in urban health inequities, using existing data sources, after the introduction of a change; e.g., transport/urban design in Bogotá. Specific foci that could be addressed in this type of research include:

1. Identifying a particular action/intervention/sectoral policy which took place, and retrospectively evaluating its impact on urban health inequity
2. Identifying a particular intervention which took place that was explicitly focused on a reduction in inequity—did it succeed in relation to urban health equity?
3. Identifying a city (cities) where health inequities have been reduced and investigating what policy/programs/changes took place that caused this reduction

Area 3: Prospective Action-Oriented Applied Research—Designing Cities for Health Equity

The third research area focuses on working with cities that are in the early stages of making changes in the way the cities function—the aim being to introduce the ideas of equity, health, and sustainability into the planning and design of the action/change. This action-oriented research approach would also involve sensitizing cities to these issues through advocacy and partnership building, and connecting with bodies such as the International Society for Urban Health, UN-HABITAT, and Urban HEART to help push the agenda forward and identifying local urban health champions. The focus of this research is on collaborative knowledge production and intersectoral negotiation (researchers, city leaders, civil society working together) and would be built around different models of governance in different sociopolitical and economic contexts, aimed at inclusionary urban design. The health equity impact of the change/action would be evaluated prospectively. Health equity impact assessment can play a critical role in these evaluations, such as influencing design, and would help researchers to understand how healthy city planning can be done in such a way as to include considerations of health equity, a relational perspective of place, an understanding of planning as governance, and relations of power. Possible research design models include:

1. Longitudinal prospective study of an intervention specifically designed to address health inequities
2. Observed impact on health inequity in situations where it is not a core objective of the intervention
3. Prospective evaluation of the impact of cross-sectoral policies on health equity either at national or city level, and
4. Adapting cities for health and climate change—working with cities to retrofit for climate change adaptation and ensuring the actions are also health equity promoting

Area 4: Understanding the Role of External Pressures on Urban Health Inequity

Most of the research proposed thus far has focused on within-city issues. The aim of the fourth area of research is to understand the influence of global and national factors on urban settings and how that affects urban health inequity. There are three broad research questions that need investigation. Methodologically this would involve a mixture of a) qualitative key informant interviews, plus analysis of institutional mission statements, policies, and strategic plans; b) network analysis, and c) all overlaid with city level socially stratified health data. The three broad research areas and their underlying questions are:

1. The influence of international agencies and donors on urban health inequity:

   (a) What are the international institutions' positions on urban health equity—is it on their agenda and what processes do they follow to achieve health equity?
   (b) To what extent do international agencies/donors impose their agenda on cities—interaction with national and local policies, processes, and programs?
   (c) Progressive approaches—have they been good for urban health equity?

   - Impact of intersectoral action
   - Priority setting; decision making processes and policies; resource allocation; ownership, information systems (type, ownership); sustainability

2. The health equity impact of globalization on urban settings, exploring matters such as the role of new corporate actors, the implications for control of urban space and land use, and implications for urban working conditions.
3. The pressures exerted on cities—especially on capital cities—by higher levels of government (provincial/state and/or national), their policies and programs and what these pressure do to cities and their ability to address urban health equity.

Area 5: Knowledge Translation: Knowledge to Action

The fifth area identified as being a vital component of a global urban health equity research agenda relates to the translation of knowledge into action. Four key activities were identified as being strategically important for moving this agenda forward.

1. Bringing together planning and public health professionals in a single forum to address urban health equity (to support research, education and training, policy, and practice)

2. Developing guidelines and tools for urban health equity assessment and intervention
3. Developing a mechanism to make information for decision making purposes (including data, case studies, images etc.) publicly available and in a systematic manner, and
4. Evaluating the impact of the above on influencing policy annd practice.

CONCLUSION

Within the work of GRNUHE and in this series of papers, we demonstrate that urban planning and design and urban social conditions can be good or bad for human health and health equity depending on how they are set up. We have argued that climate change mitigation and adaptation need to go hand-in-hand with efforts to improve urban health equity through action in the social determinants. And we have highlighted how different forms of governance can shape agendas, policies, and programs in ways that are inclusive and health-promoting or perpetuate social exclusion, inequitable distribution of resources, and the inequities in health associated with that. That urban health inequities, and inequities in social and environmental determinants, exist and appear to be widening particularly in cities in LMICs, suggests that the current model of urbanization being adopted in many cities throughout the world needs to be reconsidered. Commitment is needed to an approach that ensures urban growth is not detrimental to health and health equity and that avoids urban growth centers which are major drivers of climate change. This will involve paying attention to the social and environmental determinants of urban health inequity.

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REFERENCES

1. Smit W, Hancock T, Kumaresen J, Santos-Burgoa C, Sánchez-Kobashi Meneses R, Friel S. Towards a research and action agenda on urban planning/ design and health equity in cities in low and middle-income countries. doi:10.1007/s11524-011-9605-2.
2. Salgado de Snyder VN, Friel S, Fotso JC, Khadr Z, Meresman S, Monge P, Patil-Deshmukh A. Social conditions and urban health inequities: Realities, challenges and opportunities to transform the urban landscape through research and action. doi:10.1007/s11524-011-9609-y.
3. Friel S, Akerman M, Hancock T, Kumaresan J, Marmot M, Melin T, Vlahov D; GRNUHE members. Addressing the social and environmental determinants of urban health equity: evidence for action and a research agenda. doi:10.1007/s11524-011-9606-1.
4. Friel S, Hancock T, Kjellstrom T, McGranahan G, Monge P, Roy J. Urban Health Inequities and the Added Pressure of Climate Change: An Action-Oriented Research Agenda. doi:10.1007/s11524-011-9607-0.
5. Barten F, Akerman M, Becker D, Friel S, Hancock T, Mwatsama M, Rice M, Sheuya S, Stern R. Rights, knowledge and governance for improved health equity in urban settings. doi:10.1007/s11524-011-9608-z.
6. World Health Organization. http://1000cities.who.int/. Accessed May 15, 2011.

7. CELADE. Latin America demographics: Latin American and Caribbean Center for Demography. Population División; 2009.
8. UN-HABITAT. *State of the World Cities. Harmonious Cities 2008/2009*. Nairobi, Kenya: United Nations Human Settlements Programme; 2008.
9. United Nations. *The Millennium Development Goals Report*. New York, NY: United Nations; 2009.
10. Leon D. Cities, urbanization and health. *Int J Epidemiol*. 2008; 37: 4–8.
11. Bloom D, Canning D. The health and wealth of nations. *Science*. 2000; 287(5456): 1207–1209.
12. World Health Organization. *Cities and Public Health Crises: Report of the International Consultation 29–30 October 2008 Lyon, France*. Geneva, Switzerland: World Health Organization; 2009.
13. Van de Poel E, O'Donnell O, Doorslaer EV. Are urban children really healthier? Evidence from 47 developing countries. *Soc Sci Med*. 2007; 65(10): 1986–2003.
14. Uthman OA. Decomposing socio-economic inequality in childhood malnutrition in Nigeria. *Matern Child Nutr*. 2009; 5: 358–367.
15. UN-HABITAT. *State of the Worlds' Cities 2006/7. The Millennium Development Goals and Urban Sustainability*. Nairobi, Kenya: United Nations Human Settlements Programme; 2006.
16. African Population and Health Research Center. *Population and Health Dynamics in Nairobi's Informal Settlements*. Nairobi, Kenya: African Population and Health Research Center; 2002.
17. Campbell T, Campbell A. Emerging disease burdens and the poor in cities of the developing world. *J Urban Health*. 2007; 84(1): i54–i64.
18. Ezzati M, Hoorn SV, Lawes C, et al. Rethinking the "Diseases of Affluence" paradigm: global patterns of nutritional risks in relation to economic development. *PLoSMed*. 2005; 2(5): e148.
19. Mendis S, Banerjee A. *Social Inequities in Cardiovascular Health and Cardiovascular Disease Outcomes. Background Paper of the Priority Public Health Conditions Knowledge Network of the WHO Commission on Social Determinants of Health*. World Health Organization: Geneva, Sweitzerland; 2007.
20. Addo J, Smeeth L, Leon D. Hypertension in sub-saharan Africa: a systematic review. *Hypertension*. 2007; 50(6): 1012–1018.
21. Friel S, Chopra M, Satcher D. Unequal weight: equity oriented policy responses to the global obesity epidemic. *BMJ*. 2007; 335(7632): 1241–1243.
22. Mendez M, Monteiro C, Popkin B. Overweight exceeds underweight among women in most developing countries. *Am J Clin Nutr*. 2005; 81: 714–721.
23. Nantulya V, Reich M. Equity dimensions of road traffic injuries in low- and middle-income countries. *Int J Inj Contr Saf Promot*. 2003; 10(1): 13–20.
24. Commission on Social Determinants of Health. *Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health. Final Report of the Commission on Social Determinants of Health*. Geneva, Switzerland: World Health Organization; 2008.
25. Marmot M, Friel S, Bell R, Houweling A, Taylor S. Closing the gap in a generation: health equity through action on the social determinants of health. *Lancet*. 2008; 372 (9650): 1661–1669.
26. Sen A. *Development as Freedom*. New York, NY: Alfred A. Knopf, Inc; 1999.
27. Marmot M. *Status Syndrome*. London, UK: Bloomsbury; 2004.
28. Social Exclusion Knowledge Network. *Understanding and Tackling Social Exclusion. Final Report of the Social Exclusion Knowledge Network of the Commission on Social Determinants of Health*. Geneva, Switzerland: World Health Organization; 2007.
29. Stiglitz J. *Making Globalization Work*. New York, NY: WW Norton and Company; 2006.
30. Globalisation Knowledge Network. *Towards Health-Equitable Globalisation: Rights, Regulation and Redistribution. Final Report of the Globalisation Knowledge Network of*

the Commission on Social Determinants of Health. Geneva, Switzerland: World Health Organization; 2007.
31. Friedmann H. The international political economy of food: a global crisis. *Int J Health Serv*. 1995; 25(3): 511–538.
32. Baum F. Health, equity, justice and globalisation: some lessons from the people's health assembly. *J Epidemiol Community Health*. 2001; 55: 613–616.
33. Labonte R, Schrecker T. *Introduction: Globalization's Challenges to People's Health. Globalization and Health: Pathways, Evidence and Policy*. New York, NY: Routledge; 2009.
34. Labonte R, Schrecker T, Packer C, Runnels V. *Globalization and Health: Pathways, Evidence and Policy*. New York, NY: Routledge; 2009.
35. Tannerfeldt G, Ljung P. *More Urban Less Poor: An Introduction to Urban Development and Management*. London, UK: Sida/Earthscan Publications; 2006.
36. UN-HABITAT. *The State of the World's Cities 2006/7. The Millennium Development Goals and Urban Sustainability*. Nairobi, Kenya: UN-HABITAT; 2007.
37. Wilkinson R, Pickett K. *The Spirit Level: Why Wquality is Better for Everyone*. London, UK: Penguin; 2010.
38. Friel S, Marmot M, McMichael A, Kjellstrom T, Vågerö D. Global health equity and climate stabilisation—need for a common agenda. *Lancet*. 2008; 372(9650): 1677–1683.
39. Davies K, Hancock T. *The Health Implications of Global Change: a Canadian Perspective. A Paper for the "Rio +5" Forum Prepared for Environment Canada under the Auspices of The Royal Society of Canada's Canadian Global Change Program*. Ottawa, Canada: The Royal Society of Canada; 1997.
40. Fleischer N, Diez Roux A, Alazraqui M, Spinelli H. Social patterning of chronic disease risk factors in a Latin American city. *J Urban Health*. 2008; 85(6): 923–937.