Protecting future generations: An urban future that cares for health

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Urbanization trends

- Globally 55% or the world's population resides in urban areas compared to 30% in 1950. By 2050 the world will be 68% urban.

- Today the most urbanized regions include North America (82%) LAC (82%) Europe (74%).

- The least urbanized regions are Africa and Asia with 50% and 43% respectively and by 2050 this will change to 56% and 64%. 
Urbanization trends

• Most megacities are in the global south (China, India, Brazil)

• One in five urban dwellers live in medium sized cities or 1-5 million

• In 2014 close to half urban residents lived in settlements smaller than 500,000

• The fastest growing agglomerations are medium sized cities and cities with less than 1 million in Africa and Asia

• Some larger cities have experienced a population decline since 2000
Urban Slum populations 2000-2012

Figure 1. African Countries with the Largest Percentage of Urban Population Living in Slums

- South Sudan
- Central African Republic
- Sudan
- Chad
- São Tomé and Príncipe
- Guinea-Bissau
- Mozambique
- Mauritania
- Madagascar
- Sierra Leone

Note: Countries emerging from conflicts included in the aggregate figures are: Angola, Cambodia, Central African Republic, Chad, Democratic Republic of the Congo, Guinea-Bissau, Iraq, Lesotho, People's Democratic Republic of Laos, Mozambique, Sierra Leone, Somalia and Sudan.

Urban is a broad definition

- **Large urban centres** include megacities, urban areas with a clear central business district (CBD) and suburbs with varying levels of progressively decreasing population density (Lagos, Nigeria).
- **Large urban centres resulting from conurbations**, where two or more distinct urban centres progressively grow and see their population density increase, until they more or less merge into one metropolitan area. (Accra-Tema, Metro Manila)
- **Smaller urban centres** typically are towns that have a small CBD, possibly some small satellites and radial linear expansion along the major routes. (Lake Victoria region East Africa)
- **Large villages and small towns** are typically quite compact but differ from urban centres as they have little fringe expansion including areas around industrial or commercial activities. college campuses, airports, mining communities, refugee camps.
- **Rural areas** low density disbursed settlements
Access to improved drinking water decreases dramatically when quantity (20L), cost (10% income), and the time (≥ 1hr) it takes to fetch water are considered: The case of Mutukula Town, Tanzania 2007 and 2010
Current survey instruments do not include the poor and are unsuitable to support decision making!

- Current approaches to monitoring the SDGs have focused on the adaptation of existing instruments such as DHS surveys.

- Only census data capture all but is only undertaken every 10 years.

- The main driver for SDG monitoring is decision making. In its current form, monitoring frameworks have limited use for local-level decision making.

- Inequalities are masked by inadequately disaggregated data.

- Leaving no one behind??
The implications for infrastructure provision and access to services

- Urban “technical” definitions are meaningless and many smaller urban areas are not captured in conventional “urban” statistics.

- Urban Inequalities are masked by inadequately disaggregated data and will increase (true globally).

- The smaller urban areas who have less resources and will be most at risk from the inability to deliver services small towns = less resources.

- Poor quality urbanization means inefficient density which greatly increases per capita costs. (basket of services, cost ratio urban:rural 1:200).

- Poor quality urbanization and urban sprawl is inefficient for service delivery BUT balancing the availability of open space is important.
Urban Planning infrastructure and health: can we learn from the past?

Are many of the problems that were faced in 19th & 20th Centuries really so different from today?
The Planning of Manhattan

The Plan of Manhattan was originally formulated when the City Council in February 1807, with State help in planning future Streets. The Council said its Goal was «laying out Streets..... In such a manner as to unite regularity and order with public convienience and benefit and in particular to promote the health of the city»

In March 1807 the council appointed a 3 member commission to establish the comprehensive street plan (Morris Rutherfurd and De Witt). A month later state legislature gave the commissioners exclusive power to lay put streets, roads and public squares

There was much hostility but the plan was published in March 1811. It was based on goals of «free and abundant circulation of air to stave off disease». Right angles were also favoured as straight-sided and right-angled houses were the most cheap to build. Each Avenue was to be 30m wide
Community-led slum upgrading: driven by women & the needs of their families

Kibera, Nairobi Kenya
Kibera slum upgrading Project

• 7 sanitation facilities now accessible to 21,000 residents of Soweto East (showers and toilets) cost US $ 8 per capita) Each Facility Management Group collects on average – Kshs 46,800 (US $ 600) per month

• Construction of the 1.5 km tarmac ring road across Soweto East completed, 600m of improved drains constructed

• The youth-organized door to door garbage collection for 400 homesteads

• Waste recycling has become a source of income with the youth recycling waste paper for resale

• Housing designs & open space made child friendly
Lessons from Kibera

• Improving the conditions of the poor and their access to services will greatly improve health and well-being and security

• Improved physical AND mental health particularly for women and children was considered an extremely important positive outcome

• Concept has now been expanded throughout the whole of Kibera by Government
Global Health Threats 2019 (1): Links to urban design & child health

• 1. Air pollution and climate change Nine out of ten people breathe polluted air every day. In 2019, air pollution is considered by WHO as the greatest environmental risk to health. Around 90% of these deaths are in low- and middle-income countries, with high volumes of emissions from industry, transport and agriculture, as well as dirty cookstoves and fuels in homes.

• 2. Noncommunicable diseases Noncommunicable diseases, such as diabetes, cancer and heart disease, are collectively responsible for over 70% of all deaths worldwide, or 41 million people. This includes 15 million people dying prematurely, aged between 30 and 69.

• 3. Global influenza pandemic The world will face another influenza pandemic – the only thing we don’t know is when it will hit and how severe it will be.

• 4. Fragile and vulnerable settings More than 1.6 billion people (22% of the global population) live in places where protracted crises (through a combination of challenges such as drought, famine, conflict, and population displacement) and weak health services leave them without access to basic care.

• 5. Antimicrobial resistance The development of antibiotics, antivirals and antimalarials are some of modern medicine’s greatest successes. – threatens to send the world back to a time when we were unable to easily treat infections such as pneumonia, tuberculosis, gonorrhoea, and salmonellosis.

• 6. Ebola and other high-threat pathogens In 2018, the Democratic Republic of the Congo saw two separate Ebola outbreaks, both of which spread to cities of more than 1 million people. One of the affected provinces is also in an active conflict zone. Mainly rural to now but what about urban
Global Health Threats 2019 (2) Links to Urban design & child health

• **7. Weak primary health care** Primary health care is usually the first point of contact people have with their health care system, and ideally should provide comprehensive, affordable, community-based care throughout life. Yet many low- or middle- countries do not have adequate primary health care facilities.

• **8. Vaccine hesitancy** Vaccine hesitancy – the reluctance or refusal to vaccinate despite the availability of vaccines – threatens to reverse progress made in tackling vaccine-preventable diseases. Vaccination is one of the most cost-effective ways of avoiding disease – it currently prevents 2-3 million deaths a year, and a further 1.5 million could be avoided if global coverage of vaccinations improved. Measles, for example, has seen a 30% increase in cases globally

• **9. Dengue** Dengue, a mosquito-borne disease that causes flu-like symptoms and can be lethal and kill up to 20% of those with severe dengue, has been a growing threat for decades. A high number of cases occur in the rainy seasons of countries such as Bangladesh and India. Now, its season in these countries is lengthening significantly (in 2018, Bangladesh saw the highest number of deaths in almost two decades), and the disease is spreading to less tropical and more temperate countries such as Nepal, that have not traditionally seen the disease. An estimated 40% of the world is at risk of dengue fever, and there are around 390 million infections a year.

• **10. HIV** The progress made against HIV has been enormous in terms of getting people tested, providing them with antiretrovirals (22 million are on treatment), and providing access to preventive measures such as a pre-exposure prophylaxis (PrEP, which is when people at risk of HIV take antiretrovirals to prevent infection).
Link between insect-borne diseases & the built environment: How can spatial data help?

- Poorly screened houses
- Open water containers
- Polluted still water
- Solid waste accumulation

MALARIA

DENGUE

NUISANCE BITING

DENGUE
the Portable Microbiology Laboratory Low cost water testing (E.coli) in Emergencies
| # | Name of Moh | # of | Sample collection point details | GPS | Results |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Jiboyer Mah | G-4 | X Child friendly Space | 21.20649 | 92.152568 | * | * | * | Low |
| 2 | | | X House # 01, Arma Khan, AWD affected HH | 21.206451 | 92.152616 | * | * | - | Low |
| 3 | | | X House # 02, Manjir Rahman | 21.206442 | 92.152618 | * | * | 13 | Very High |
| 4 | | | X Shallow Tube Well # 01 | 21.206488 | 92.152693 | * | - | - | Low |
| 5 | | | Deep Tube Well new site location # 1 | 21.206456 | 92.152744 | NT | NT | NT | NT |
| 6 | | | X Shallow Tube Well # 02 | 21.20645 | 92.152772 | - | - | * | Low |
| 7 | | | X House # 03, Mukul Rahmat Ullah | 21.206405 | 92.152774 | * | * | 80 | Very High |
| 8 | | | X House # 04, Mansur Ahmed | 21.206432 | 92.152753 | * | - | - | Low |
| 9 | | | Latrine # 01 | 21.20667 | 92.152682 | NT | NT | NT | NT |
| 10 | | | X Shallow Tube Well # 03 | 21.206511 | 92.152846 | - | - | - | Low |
| 11 | | | X House # 05 Rahmat Ullah | 21.206574 | 92.152883 | * | * | 14 | Very High |
| 12 | | | Water Collected from Drinking camp | 21.206332 | 92.153392 | * | - | - | Low |

**Results & Conclusions**

A total of 12 samples were taken, 2 were rejected due to contamination in transit. Of the 9 samples analysed, 4 were from handpumps/boreholes used by the residents, and 5 were from households (including the location of the reported outbreak). Householders were asked to provide a sample of the water they use for drinking from the container such as a jug or pot.

- All samples taken directly from the handpumps/boreholes tested negative for E. coli.
- 3 out of 5 household supplies tested positive for E.Coli.
- All the positive household samples showed E.Coli concentration in excess of 10 colonies/ml, indicating very high levels of contamination.

It is highly likely that the stored household water supplies are contaminated by continually “dipping” jugs, cups and other containers into bulk containers, after laying the covers/jugs on the floor. Soiling as though water is used for anal cleansing, it is possible containers get contaminated if used for both household consumption and are carried to latrines. Further investigations are needed.
Concluding Comments

- Increasingly urbanization pressures come from climate change and conflict aside from just population increases.

- We need to better understand urbanization and its implications for preventing disease and for the improved delivery of services. Inequity and service provision is common in urban areas of all sizes. We need disaggregated data.

- The design of urban space is critical in light or rapid unplanned urbanization. Efficient urban planning needs “density” to reduce infrastructure costs BUT must make provision for open space.

- Children and Youth are some of the most vulnerable in society to the current and emerging health threats for: Communicable disease, Non-Communicable disease, mental health.

- Out of the 10 biggest health threats in 2019:
  - the vast majority will disproportionately affect children
  - Improved urban design and access to services can help prevent disease and also strengthen the resilience to disease outbreaks epidemics

- Multi-sectoral approaches to the prevention and management of diseases will mean that increasingly those outside the “formal” health sector will play an important role.
Thank you for your attention!

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