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## Assessing health risks in informal settlements in sub-Saharan African cities

Around half of the urban population in sub-Saharan Africa live in informal settlements, lacking the basic infrastructure and services on which good health depends. These include safe, regular water piped to homes, good quality sanitation, drains and solid waste collection, electricity, healthcare and emergency services. However, there is very little data available on health problems at the neighbourhood and city scale that are needed to guide action in African cities. Improving official data collection (such as censuses, vital registration systems and healthcare records) will be necessary to address the health risks in informal settlements. In addition, city-based studies of risks and their implications for health can generate relevant data on the most serious health risks facing residents of informal settlements.

### Background: Multiple Health Risks in African Informal Settlements

The rapid expansion and unresponsive local governance of African cities are generating complex risk profiles, and the impacts upon health in informal settlements remain poorly understood. Globally, Africa has the highest proportion of its urban population living in informal settlements, or slums.<sup>1</sup> In 2014, nearly 56 per cent of Africa's urban population lived in slums, compared to just 30 per cent for the global South overall.<sup>2</sup> In 2015, only 11 per cent of Africa's urban population had toilets with sewer connections, and less than half had good quality water provision.<sup>3</sup> Many African informal settlements are also highly vulnerable to the impacts of climate change, which may exacerbate ill health and poverty in these areas.<sup>4</sup>

Local governments need detailed data on the health risks, health determinants, and causes of death within their jurisdictions. But existing data rarely capture the health risks in informal

settlements, and instead often have the following limitations:

1. **Censuses** collect data on housing conditions and service provision for all households (typically every decade). But most census authorities do not provide local governments with that data for each ward or neighbourhood.
2. **Household surveys** (eg Demographic and Health Surveys) include detailed data on health outcomes and determinants, but they cannot provide data for informal settlements (as their sampling frame is too small).
3. **Vital registration systems** record deaths and can give detailed data on the causes of premature deaths, as well as where deceased residents lived. However, these systems do not function in most African cities.
4. **Hospital and healthcare records** can provide data on health outcomes for each locality or informal settlement. But these

### Policy Pointers

- The scale of premature death, serious illness and injury in cities in sub-Saharan Africa goes largely unnoticed because of the lack of data on health and on disaster risks.
- Data shortfalls are particularly acute for those living in informal settlements, but detailed data systems – such as censuses, vital registration systems, and disaster records – can inform future interventions.
- Additional research is needed to address the limited data on health and other risks, including community-led data collection in informal settlements.
- Multi-sectoral interventions by local governments and communities are needed to address the overlapping health risks in informal settlements.

records are not usually analysed, and they may not serve residents of informal settlements.

5. **Traffic accidents** are a major cause of death and injury, but records are not available for districts or cities.
6. **Records of disaster impacts** should be available to show deaths, serious injuries and loss of properties. But most small-scale disasters are not included in international or national disaster records.

### Where health records are incomplete or do not exist, what can be done? How can African cities generate the data needed to support risk-reduction strategies, especially in informal settlements?

Urban Africa: Risk Knowledge (Urban-ARK) is a three-year comparative research programme seeking to identify the range of risks in African cities and to inform holistic responses. Urban-ARK's case studies include research and policy engagement in Dakar (Senegal), Niamey (Niger), Ibadan (Nigeria), Nairobi and Mombasa (Kenya), Karonga (Malawi), Freetown (Sierra Leone), Dar es Salaam (Tanzania), and Addis Ababa (Ethiopia). In all cities, researchers gathered data on health determinants, mostly at the scale of informal settlements or, in the case of Karonga, for the whole city. Urban-ARK's research uncovered extremely poor provision for water, sanitation, healthcare, emergency services, and other key health determinants in African informal settlements. Some researchers compiled highly detailed disaster records. In addition, interviews and focus groups in informal settlements analysed residents' most serious health problems.

Findings consistently showed the high risks that residents face across a wide spectrum of hazards – including everyday risks as well as those from small and large disasters. In past studies, the impacts of many 'disasters' often come from events that were too small to be classified as disasters in disaster databases.<sup>4</sup> Urban-ARK's case studies confirmed this. They also showed how interventions must address 'everyday risks' that are distinct from disaster risk, as they are present in homes, neighbourhoods and the wider city. Everyday risks pose a constant threat to residents. As described below, the full spectrum of risk in urban areas must encompass the risks of the largest disasters to small disaster risks and everyday risks.<sup>5</sup>

### Urban-ARK's findings on health in African cities

Taken together, the case studies underscore the prevalence of everyday risks and small disasters, as well as their erosive impacts upon household wellbeing. Residents of informal settlements face a wide array of risks to their health; livelihoods and

incomes; and homes or other assets. Analysing the full spectrum of urban risk required the development of innovative methodologies. Urban-ARK researchers used a diverse set of methods (quantitative and qualitative, deductive and inductive) and methodological pluralism capable of supporting holistic actions on urban risks.

In Karonga, a survey focusing on households' perceptions of risks showed that the most commonly identified risks were related to flooding; droughts/food insecurity; and earthquakes.<sup>6</sup> However, many of the most life-threatening risks in Karonga were not perceived as risks – such as cholera, malaria, TB, and acute respiratory infections – yet these are leading causes of premature death.

Research in Niamey's informal settlements highlighted the erosive impacts of floods on housing and health outcomes, as well as exploring the range of coping capacities.<sup>7</sup> Although all respondents experienced 6 to 8 days of household flooding, no relocation was reported in the most-resilient group. By contrast, the very low and low-resilience households averaged 15 and 19 days in another lodging, respectively. High-resilience households often coped with floods by taking on debt and expending their savings. Yet these strategies can have erosive impacts because assets may be unavailable for the next shock, underscoring the long-term consequences of disasters, even for better-off households.

In Ibadan, researchers analysed newspaper reports of 'small disasters' from 2000-2015 (using the DesInventar methodology).<sup>8</sup> Leading causes of mortality were vehicle accidents (34 per cent), crime (22 per cent), violence (13 per cent), fire (12 per cent), and flood (8 per cent). This study also revealed the large health impacts from a range of risks and the interlinkages between different risks, such as floods, inadequate or poorly-maintained infrastructure, settlement in areas at high risk of flooding, and inadequate emergency responses.<sup>9</sup>

Research in Freetown highlighted the health impacts of major floods and the 2014 Ebola epidemic – but also showed how residents of informal settlements face everyday risks (eg from inadequate water and sanitation) and small disaster risks including accidental fires, landslides, and flash floods.<sup>10</sup> Many informal settlements are located on lands at risk from flooding, rock falls, building collapse, and landslides. Data are rarely available on Freetown's 'everyday' risks from infectious and parasitic diseases or malnutrition. Meanwhile, Freetown's large disasters receive media coverage, such as the devastating mudslide in August 2017 that underscored the interrelated risks stemming from intense rainfall, land degradation, and urbanisation in hilly areas.<sup>11</sup> Informal settlements in Freetown (and other

African cities) often experience elevated threats of eviction that may undermine households' investments or community collective action, increasing risks still further.

The above and other Urban-ARK research<sup>12</sup> help demonstrate the large spectrum of health risks in informal settlements, ranging from 'everyday' risks to small- and larger-scale disasters. Such findings help to fill existing data gaps on health and health determinants, while also creating new methods that can create a stronger evidence base in African cities.

### Future research agenda

There is an urgent need for detailed and disaggregated data on African cities' health and disaster risks, particularly for their informal settlements. Meanwhile, detailed case studies cannot provide the aggregated data needed to inform city-level or national interventions to improve urban health outcomes.

Such data shortfalls likely hide the scale of premature death, serious illness, and injury in informal settlements. Limited data can also curtail the identification of particularly vulnerable city dwellers. Data gaps on illnesses, injuries and premature death make it difficult to assess the scale and nature of many vulnerabilities, such as groups with high mortality rates (eg infants, children and mothers), or larger disease burdens (eg from malaria or respiratory infections).

Social science research methods (eg household surveys, focus groups, spatial analyses) can help to document key health determinants and the full spectrum of risks.<sup>13</sup> However, there may be definitional or methodological challenges in gathering such data. Local rankings of risks can be strongly influenced by understandings of what constitutes 'risk' (eg whether to include infectious or parasitic diseases).<sup>14</sup> It can also be difficult to capture invisible urban risks: floods are much more visible and readily documented than health burdens from malaria or diarrhoea. This is especially the case if data are rarely available from vital registration systems or hospital records. Finally, residents' recall of their health risks or health outcomes may not always yield reliable or detailed results.<sup>15</sup>

More positively, during data collection by slum/shackdweller federations, residents have gathered detailed findings on multiple risks to health and well-being in informal settlements. Affiliates of Slum/Shack-Dwellers International (SDI) are active in 33 nations throughout Africa and Asia, where they have profiled over 7,712 settlements.<sup>16</sup> These profiles contain standardised questions on health, disaster, service provision, and other health determinants, thereby generating policy-relevant

*“Whether due to limited resources, lack of political will, or capacity constraints, failures in local governance are often the most influential determinants of ill health and premature death in informal settlements, particularly due to deficits in risk-reducing infrastructure and services.”*

data. For instance, profiles of Kisumu's 28 informal settlements (home to nearly 221,000 people) found that 75 per cent of residents lived on dangerous sites, including flood-prone areas or near garbage dumps.<sup>17</sup> Most residents were tenants and 83 per cent lived in temporary structures. Almost 70 per cent of residents lacked regular water supplies; in 20 settlements, there were over 100 residents per working toilet. Regular garbage collection was almost non-existent, and only four settlements had access to fire stations.

### What can be done: improving data collection and local government action on risks in African informal settlements

Urban policymakers should engage with both the proximate and the ultimate drivers of risk. Yet Urban-ARK studies consistently highlight the failings of local governments to do so. Whether due to limited resources, lack of political will, or capacity constraints, failures in local governance are often the most influential determinants of ill health and premature death in informal settlements, particularly due to deficits in risk-reducing infrastructure and services.

This failure is also underpinned by national governments not supporting local governments to meet their responsibilities and failing to maintain adequate health information systems.<sup>18</sup> In a further underlying cause, development assistance agencies have usually shown very little interest in supporting urban governments to provide essential infrastructure or services.

With additional data on urban risks and health outcomes, health officials and city planners can create multi-sectoral interventions that may reduce several risks and improve health. Moving forward, health officials and researchers can work closely with residents, local governments, and disaster response officials to address the overlapping risks in African informal settlements. Multi-pronged strategies may generate several co-benefits for health, disaster risk reduction, and climate resilience in informal settlements, while also fostering more responsive governance and social inclusion.<sup>19</sup>

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**Urban Africa: Risk Knowledge (Urban ARK)**  
breaking cycles of risk accumulation in sub-Saharan Africa

A three-year programme of research and capacity building that seeks to open up an applied research and policy agenda for risk management in urban sub-Saharan Africa. Urban ARK is led by 12 policy and academic organisations\* from across sub-Saharan Africa with international partnerships in the United Kingdom.

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