THE CHALLENGE

In rapidly growing urban centers, most residents are near health services. Nonetheless, a range of social and financial constraints can deter individuals and families from seeking care, preventing timely diagnosis of chronic and infectious conditions. Creative and sensitive outreach strategies, new approaches to proactive case finding, and progressive payment models are needed to surmount social and economic cleavages that drive persistent inequities, and to improve the accessibility of timely diagnosis and high-quality care in urban and peri-urban communities.

CHRONIC AND INFECTIOUS DISEASES REMAIN UNDIAGNOSED—AND UNTREATED

Emerging urban communities experience a large and growing burden of disease from conditions with a slow, progressive presentation—including hypertension, HIV, tuberculosis, diabetes, respiratory illness, mental illness, and vision or hearing problems. Individuals can live with these conditions for years before feeling sufficiently ill to seek care; but delayed diagnosis and treatment can prevent effective management, leading to preventable morbidity and death—and, in the case of infectious disease, onward transmission to family members or others in their communities. World Health Organization surveys conducted from 2007 through 2010 identified high rates of undiagnosed chronic conditions in six middle-income countries, including 2%–17% prevalence of undiagnosed depression; 2%–14% prevalence of undiagnosed angina; and, in South Africa, 50% of the population living with undiagnosed hypertension. In most countries, the same study also found that less than 50% of individuals with specific chronic conditions were engaged in treatment, with particularly high rates of untreated depression, hypertension, chronic lung disease, and asthma. Estimates also suggest that low- and middle-income countries (LMICs) are home to 147 million undiagnosed cases of diabetes—accounting for 84% of the undiagnosed global burden. And for infectious diseases—particularly HIV and tuberculosis—undetected cases represent a stubborn global
Many countries have deployed lay community health workers (CHWs) into rural communities. Marginalization of groups and individuals leads people avoid health services. In many countries, HIV-positive members of key marginalized populations are much less likely to be enrolled in HIV treatment, despite far higher HIV prevalence.

Marginalized Populations Avoid Health Services
When an individual’s gender expression, sexual orientation, sexual behavior, or profession are criminalized or do not match mainstream social expectations—when the individual belongs to an underprivileged or otherwise marginalized ethnic, religious, socioeconomic, or gender group—or when the individual perceives that a particular disease is stigmatized by society, the person may avoid health services. This may be due to fear of discrimination in the health system and in their communities; disrespectful care from providers; or lack of confidentiality about sensitive health issues. Transgender women in Argentina, for example, were three times more likely to avoid contact with health services if they had previously experienced discrimination by health care workers; and in East and Southern Africa, sex workers cited pervasive hostility from health workers and confidentiality concerns as reasons for avoiding public-sector health facilities. In many countries, HIV-positive members of key populations—specifically injection drug users, men who have sex with men, and sex workers—are much less likely to be enrolled in HIV treatment than the general adult population, despite far higher HIV prevalence in these communities.

The Urban Poor Can Struggle to Afford Care
Financial constraints can keep poor urban families from seeking care or maintaining treatment regimens—particularly for long-term chronic disease management. In India, for example, one study found that diabetes patients among the urban poor spent 34% of their income on diabetes care. Another study from urban China, found that diabetes patients must pay between 4 to 16 days’ wages to purchase a month-long supply of insulin. (See Topic 8b for a discussion of financing and payment strategies to increase affordability.)

THE PATH FORWARD: TOWARD ACCESSIBLE CARE FOR ALL
Finding and Treating Undiagnosed Disease in the Community
Addressing the burden of undiagnosed disease requires early, proactive detection. Active case finding, potentially assisted by cadres of community health workers (CHWs) and combined with case management, has traditionally been used for infectious diseases control. In an uncontrolled study in peri-urban Mali, daily door-to-door case detection by CHWs appeared to help double early treatment of malaria, nearly halve the rate of febrile illnesses, and reduce under-5 mortality. Increasingly, pilot studies also support the feasibility (though not necessarily cost-effectiveness) of proactive screening strategies for chronic and more complex diseases, such as stroke detection in Karachi, cancer in New Delhi, and cardiovascular disease risk across four LMICs, often led by CHWs. However, the cost-effectiveness of active case finding is not necessarily supported by existing literature. Evidence from urban Uganda suggests that active case finding for tuberculosis is not cost-effective unless targeted as part of a contact investigation; and a recent systematic review from sub-Saharan Africa notes that active case finding strategies are associated with extremely poor rates of linkage to onward care, thus limiting their cost-effectiveness despite their theoretical benefits.
Increasingly, active outreach strategies can be supported by mHealth applications: helping identify chronic conditions even when qualified personnel are unavailable—and potentially improving cost-effectiveness of active case finding strategies. In South Africa, for example, CHWs deployed a smartphone-based application (hearScreen™) to identify adults and children with hearing deficits, subsequently referring them for specialist attention.\(^\text{xxi}\) In Madagascar, a cervical cancer screening program used smartphones to take snapshots of the cervix and email the images to remotely located specialists.\(^\text{xvii}\) Such strategies have high upside potential in urbanizing centers, where mobile phones are common and network coverage is strong, but current evidence is largely limited to small-scale pilot and efficacy studies.\(^\text{xviii}\)

Given the dearth of evidence, mHealth or community-based screening strategies will require careful attention to cost-effectiveness, acceptability, data protection, and rigorous evaluation of at-scale effectiveness. The 5-year HealthRise program—offering community-based grants in Brazil, India, South Africa, and United States to trial and evaluate innovative cardiovascular disease and diabetes management strategies, with results expected in 2019—creates an opportunity to generate additional research evidence on case detection strategies, and an important model for embedding rigorous evaluation within experimental approaches for detecting noncommunicable diseases (NCDs).

### When Opportunity Strikes: Opportunistic Case Finding at Health Facilities

In contrast to outreach-based active case finding strategies, opportunistic case finding works to identify subclinical disease during fortuitous contacts with other health services. Proof-of-concept studies from LMICs suggest that opportunistic case finding and routine testing can support diagnosis for several conditions, including mental health disorders, HIV, and cervical cancer.\(^\text{xix}\) However rigorous evidence on the effectiveness and cost-effectiveness of such strategies is limited. In addition, opportunistic case finding approaches by their very nature can only screen for a handful of conditions, requiring careful prioritization.

### Surmounting Stigma: Direct-to-Community Services

Marginalized communities, or individuals facing potential diagnosis of a stigmatized disease, may be more likely to receive needed care when they can access health services directly in their communities, or even in their own homes. In Nigeria, for example, men who have sex with men (MSM) were 9 times more likely to accept HIV testing and counselling services offered directly by a member of the same community.\(^\text{xxii}\) Even for the general

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**Top Interventions**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Evidence Strength</th>
<th>Research Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active case finding</td>
<td>Moderate</td>
<td>Mixed</td>
</tr>
<tr>
<td>mHealth for case finding</td>
<td>Feasibility</td>
<td>Positive</td>
</tr>
<tr>
<td>Opportunistic case finding</td>
<td>Feasibility</td>
<td>Positive</td>
</tr>
<tr>
<td>Community-based HIV services</td>
<td>High</td>
<td>Positive</td>
</tr>
<tr>
<td>Internet-based HIV outreach</td>
<td>Feasibility</td>
<td>Positive</td>
</tr>
<tr>
<td>HIV self-testing</td>
<td>High</td>
<td>Positive</td>
</tr>
<tr>
<td>Vending machines</td>
<td>Feasibility</td>
<td>Mixed</td>
</tr>
</tbody>
</table>

mHealth applications offer promise—for example, to identify chronic conditions even when qualified personnel are unavailable—but need careful attention to a range of issues. Community-based services offer a promising strategy to overcome stigma, reach the marginalized, and address the enormous burden of undiagnosed chronic disease. In Nigeria, for example, men who have sex with men were 9 times more likely to accept HIV testing and counselling services offered directly by a member of the same community.
population, systematic review evidence suggests that uptake of HIV testing and counselling services is far higher in community-based settings than within health facilities. Increasingly, health services can also target the virtual (versus physical) communities where marginalized populations congregate. In urban China, for example, MSM volunteers identified members of the MSM community through their profiles on gay social networking sites and recruited them to testing and counselling services via chat rooms, instant messages, and emails. Internet-based outreach is still in its infancy in LMICS; scale-up will require careful consideration of the privacy, rights, and safety of marginalized populations.

Technological advancements and creative marketing also offer opportunities to access frontline services while bypassing direct contact with health providers. HIV self-testing, for example, provides key populations with a convenient and confidential path to learn their status and engage in care; it is also strongly associated with increased coverage of HIV testing. Research evidence suggests a strong preference for self-testing over facility-based services despite persistent concerns about coercive testing, accuracy, and linkage to follow-up care. Automated distribution systems (vending machines) have also been used across a wide range of LMICs in an effort to increase to decrease sexually transmitted infections and unwanted pregnancies; however little evidence exists to support their effectiveness, and maintenance and supply chain issues represent common concerns.

**SPOTLIGHT**

**HealthRise: A Learning Agenda for Community-Based NCD Control**

Community-based case finding initiatives offer a promising strategy to address the enormous burden of undiagnosed chronic disease. But beyond a handful of feasibility studies, limited evidence is available support their effectiveness and cost-effectiveness, or to guide policymakers on their design and use. To help address this experience and evidence deficit for community-based NCD control (specifically cardiovascular disease and diabetes), in 2014 the Medtronic Foundation began its sponsorship of HealthRise—a $17 million, 5-year initiative targeting communities in Brazil, India, South Africa, and the United States. Following a baseline needs assessment, HealthRise offers small-scale community grants to local partners to run “demonstration projects”; these projects are intended to test and evaluate the effectiveness of community-based approaches to chronic disease detection and management. Interventions underway under the HealthRise umbrella include CHW training and support for home-based screening and care in South Africa; introduction of NCD screening sites in well-travelled public sites (e.g. grocery stores) in urban Minnesota in the U.S.; and NCD screening and referral within Indian schools and workplaces.

The jury remains out on the effectiveness of the HealthRise interventions, but its approach to evaluation and learning deserves wider adoption. From the beginning, HealthRise engaged the Institute for Health Metrics and Evaluation (IHME) as its evaluation partner, and embedded rigorous evaluation of the community grants as a core program feature. IHME will release evaluation findings in the program’s final year—an
important global public good for all countries facing an increased burden of chronic NCDs.xxxiv

Vietnam Healthy Hearts

To address and alleviate Vietnam’s high burden of undiagnosed hypertension, in 2016 the Novartis Foundation launched “Communities for Healthy Hearts”—a pilot project in Ho Chi Minh City, implemented by the nongovernmental organization PATH, to expand awareness, diagnosis, and effective management. Healthy Hearts provides end-to-end support across the cascade of care, from awareness to diagnosis, referral, treatment initiation, and adherence support. The program has adopted a forward-looking approach to accessible NCD screening, setting up over 490 free checkpoints in non-traditional yet convenient locations, such as tea shops, markets, and community leaders’ homes.

Healthy Hearts is expected to undergo a full evaluation in 2018. Preliminary results, though not rigorously evaluated against a counterfactual, are promising; 124,358 individuals aged 40+ had received hypertension screening through the program by January 2018, and 54.5% of those with elevated blood pressure had been enrolled on treatment—compared to just 13% treatment of hypertension at the national level.xxxv

ENDNOTES


xi Maria Khan et al., “Can Trained Field Community Workers Identify Stroke Using a Stroke Symptom Questionnaire as Well as Neurologists? Adaptation and Validation of a Community Worker


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