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Aligning programmatic approaches for HIV

Tailored HIV programmes and universal health coverage

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Abstract

Improvements in geospatial health data and tailored human immunodeficiency virus (HIV) testing, prevention and treatment have led to greater microtargeting of the HIV response, based on location, risk, clinical status and disease burden. These approaches show promise for achieving control of the HIV epidemic. At the same time, United Nations Member States have committed to achieving broader health and development goals by 2030, including universal health coverage (UHC). HIV epidemic control will facilitate UHC by averting the need to commit ever-increasing resources to HIV services. Yet an overly vertical HIV response could also distort health systems, impede integration and potentially threaten broader health goals. We discuss current approaches to achieving both UHC and HIV epidemic control, noting potential areas of friction between disease-specific microtargeting and integrated health systems, and highlighting opportunities for convergence that could enhance both initiatives. Examples of these programmatic elements that could be better aligned include: improved information systems with unique identifiers to track and monitor individuals across health services and the life course; strengthened subnational data use; more accountable supply chains that supply a broad range of services; and strengthened community-based services and workforces. We argue that the response both to HIV and to broader health threats should use these areas of convergence to increase health systems efficiency and mitigate the harm of any potential decrease in health funding. Further investments in implementation and monitoring of these programme elements will be needed to make progress towards both UHC and HIV epidemic control.
Introduction

As the global human immunodeficiency virus (HIV) response enters its 16th year, national programmes in low- and middle-income countries are providing lifesaving treatment for more than 20 million people and reaching millions more each year with prevention interventions.\(^1\) This progress has been achieved with support from donors such as the United States President’s Emergency Plan for AIDS Relief and the Global Fund for AIDS, TB and Malaria. These investments have led to huge gains, with HIV-related mortality reduced by half compared with 2005 levels and a declining incidence of new infections in many countries and regions.\(^1\)

The next phase of the HIV response is being driven by programmatic and technological innovations. Through improvements in data systems, geospatial mapping technologies and the use of large-scale population-based surveys, epidemiologists are now able to identify mismatches among burden of disease, size of populations most at risk and the availability of HIV testing, treatment and prevention services. These insights have led to programmes focusing more on subnational geographical units and on the HIV-related needs of specific populations, often referred to as microtargeting.\(^2\) Prevention services are increasingly tailored (or microtargeted) to specific locations and subpopulations based on their risks and through the identification of so-called hotspots where there are higher than usual rates of HIV incidence.\(^3\) Similarly, HIV treatment models are being differentiated based on patient characteristics and context to optimize quality and efficiency, while the allocation of HIV-specific funding and the intensity of HIV services have become more deliberately targeted.\(^4\)

While HIV programmes have embraced this greater precision to maximize their impact, the national health systems of which they are a part have simultaneously committed to broader objectives. In ratifying the sustainable development goals (SDGs), United Nations Member States have pledged to achieve a series of ambitious health and development goals.\(^5\) In addition to ending the acquired immune deficiency syndrome (AIDS) as a public health threat, SDG3 includes a 90% reduction in tuberculosis and malaria deaths, a one-third reduction in premature deaths due to noncommunicable diseases and achieving universal health coverage (UHC). UHC is the broadest of these goals, encompassing the other health-related SDGs, and is defined by the World Health Organization (WHO) as a condition in which “all people and communities can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also
ensuring that the use of these services does not expose the user to financial hardship." UHC includes equitable access to quality essential health-care services and to safe, effective and affordable essential medicines and vaccines, and financial risk protection. 

In many low- and middle-income countries, efforts to control the HIV epidemic and to achieve UHC are aligned and complimentary; only by averting a growing population of citizens in need of HIV services can health systems hope to achieve universal coverage. The HIV response has also built capacity and programme infrastructure that can be used to address other health conditions. The advantages of integrating HIV, tuberculosis, primary care and other health services are becoming increasingly clear. Yet new trends in HIV programmes towards dynamic targeting of specific populations and regions, while facing decreases in vertical funding, may or may not complement broader health goals such as UHC. This potential tension has not been widely explored. Our objective is to discuss these trends, identify potential areas of friction between HIV microtargeting strategies and the advancement of the UHC agenda, and highlight and recommend programme and policy actions to achieve greater convergence and health impact.

Integration to achieve UHC

Major gains over the last two decades against disease-specific health threats have encouraged the global community to revisit the goal of health for all in the form of UHC, a foundational goal of the SDGs. According to the World Bank and WHO, the focus on UHC within the SDGs “provides a platform for an integrated approach within the health sector.” Central principles of the implementation of UHC are strengthened primary care, equity and promotion of service integration, defined by WHO as “the organization and management of health services so that people get the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money.”

Integration of clinical services for diverse health conditions, commonly at the primary health-care level, has generally been associated with positive outcomes for health care and process (e.g. patient satisfaction), without incurring additional costs. For instance, as HIV treatment simplified over the last decade (e.g. one pill, once daily), care became increasingly decentralized and delivered by non-physician clinicians, enabling integration with primary-care health services in some settings. Successful outcomes have been achieved via integration of HIV testing, prevention and treatment services with services for antenatal care, maternal and child health, sexual and reproductive health, tuberculosis and primary care at the point of
Additionally, since HIV is the first chronic disease to be run as a successful national programme in many settings, there is growing interest in using the lessons and resources of its scale-up to strengthen noncommunicable disease programmes and to provide these services to patients enrolled in HIV programmes. The trend towards integration of HIV and other key services at the clinic level is well established, more responsive to an individual’s comprehensive needs (that is, more patient-centred) and strongly recommended by WHO. Yet more attention is required to determine the best approaches for managing the upstream systems on which provision of high-quality care relies.

The potential unintended risks of service-level integration include a loss of focus on individual disease responses (e.g. HIV, tuberculosis), which in theory could lead to underinvestment in disease-specific service delivery and programme monitoring. Nevertheless, service integration is likely a trend that will continue to accelerate to provide more sustainable people-centred services and the broader health benefits of UHC.

Microtargeting responses

Advances in our understanding of HIV have led to the realization that we are dealing with not one, but hundreds of different epidemics. Even in what had previously been considered generalized epidemics, HIV is often distributed in localized clusters. For example, the United Republic of Tanzania’s HIV epidemic is driven by urbanization, transport routes, employment prospects and occupational locations (e.g. fishing), and subgroups of key populations. Furthermore, advances in HIV treatment access and greater programme maturity have led to an emphasis on more people-centred approaches that better meet individuals’ needs for HIV services, with the goal of increasing patients’ retention in programmes and thereby gaining efficiency. These trends have led to increased targeting of prevention and treatment programmes to maximize the public health impact with existing resources in the shortest possible time.

Prevention interventions

Researchers and policy-makers are actively exploring the benefits and risks of targeting prevention interventions. A Kenyan study compared investment approaches based on uniform application of HIV prevention interventions versus a targeted approach. Projection models that integrate spatial analyses, transmission dynamic modelling of HIV and economic evaluation indicated that combination prevention strategies tailored to the risk behaviours of groups and their location could prevent substantially more infections for the same
This targeted approach, which was codified within the Kenya HIV Prevention Revolution Roadmap in 2014, was followed by a decline in HIV incidence.\textsuperscript{25,26}

**Treatment interventions**

Spatial and subnational data approaches are also being used to target HIV treatment towards areas of the highest disease burden.\textsuperscript{27} In Brazil, a unique identifier used across the public health system has enabled mapping of the spatial distribution of cumulative numbers of patients with AIDS, the incidence of AIDS, viral loads and key infected populations. These data showed that most of AIDS cases were in less than 10\% of the country’s 5570 municipalities, which allowed for better targeting of resources.\textsuperscript{28}

Beyond targeting based on geography, cost–effectiveness and risk groups, better data on patient needs and outcomes have led to differentiated service delivery strategies that further tailor (or micro-adapt) care to subgroups. Examples of such groups include patients considered clinically stable or unstable or those such as adolescents and key populations who benefit from customized service delivery approaches.\textsuperscript{29,30} Early results from programmes have indicated excellent retention results for clinically stable patients opting into less-intensive models of care delivery.\textsuperscript{31} These differentiated service delivery models may have a greater impact using existing resources if the projections of decreased costs (and greater effectiveness) are realized.\textsuperscript{32}

**External resources**

Major donors to the HIV response have adopted microtargeting approaches to their funding decisions. The United States President’s Emergency Plan for AIDS Relief’s strategy calls for United States Government resources to be applied to higher-burden geographical areas and health facilities (the right place), and also stresses the element of fast and efficient timing (the right time).\textsuperscript{33} Similarly, the Global Fund strategy emphasizes an operational focus on the highest burden countries and populations.\textsuperscript{34} These strategies focus on the best value for money for the HIV response from the donor perspective.

**Risks of microtargeting**

There are potential unintended risks of microtargeting the HIV response. Heat maps that show concentrations of people on treatment or new HIV diagnoses may accurately highlight the need for additional HIV prevention and treatment services in high-burden areas. However, insufficient funding may mean that programmes are simply transferred away from areas of lower burden that still account for a substantial proportion of HIV infections. This
issue was highlighted in the results of a mathematical model that supported targeting of prevention interventions overall, but noted that “75% of HIV seroconversions still occur outside the identified incidence clusters.” Focusing programmes based on the geographical concentration of disease may also mask the importance of epidemics within specific subgroups, and over-differentiating care models based on a large number of clinical characteristics could complicate delivery at scale. Furthermore, incomplete surveillance could lead to misleading assessments of the disease burden, which could threaten the degree to which greater equity of services can be achieved. The prerequisites of effective microtargeting therefore include the availability of accurate and complete data on HIV risks and programme outcomes at the subnational regions being considered, and the choice of relevant and unambiguous epidemiological and programme-based metrics or indicators to guide targeting.

There are clear benefits to targeted programmes, but policy-makers and programme managers need to ensure that these efforts are focused on greater equity and effectiveness and do not undermine the strength of the public health approach, which is characterized by simple, streamlined, evidence-based strategies. Microtargeting strategies that include differentiated service delivery may therefore move away from this one-size-fits-all approach, for good reasons. However, unless scalable models can be developed, microtargeting may be difficult to implement widely in lower-resourced health systems, challenging to integrate with simpler primary health-care services, and less sustainable from the perspective of domestic financing.

**Investing in convergence**

Microtargeting for HIV care (whether by geography, population type or service delivery model) and the broader goals inherent in the UHC movement may appear to be in conflict. Yet it seems likely that both are necessary to achieve broader health goals. An improved understanding of potential differences and shared aims between these models can inform our strategies for achieving control of the HIV epidemic and the broader goal of UHC.

**Areas of potential divergence**

Microtargeting of HIV services and the broader vision of health services that characterizes UHC could appear to diverge in their aims or implementation approaches. For instance, as shown in Table 1, coverage for integrated services is more likely to be driven by concerns for broad equitable access and parity of resources between regions and populations. HIV
microtargeting on the other hand encourages differential coverage based on geography, HIV transmission and mortality risk, or severity of illness. Conversely, it could be argued that in some cases targeting may help to enhance the equity of the HIV response, particularly for individuals such as sexual minorities and others marginalized by existing health systems. However, greater equity through microtargeting would depend on local access to data on risks or needs among these subpopulations, and prioritization of its use.

Successful microtargeting will require a dynamic environment with rapid shifts in strategies and resource allocation, analogous to an outbreak response. For example, scaling-up the use of assays that enable identification of recent HIV infections will make it possible to identify and shift HIV programme support to communities or groups experiencing outbreaks of new infections. In contrast, systems that deliver primary care for routine acute and chronic diseases (the core of UHC) require consistent support, but generally have far fewer resources for implementation. Provision of basic services may depend on the additional staff, newer data systems or increased attention to supply chains provided by a vertical programme. This reliance leaves those core services vulnerable if a disease-specific programme responds to new data by swiftly pivoting away from a geographical area. Funding for UHC is typically more reliant on domestic government expenditure, national health insurance schemes or out-of-pocket costs, whereas a larger proportion of the HIV response remains externally financed. This arrangement leads to greater external accountability of the HIV programme response, but can also threaten the ability to shift the programmes to local ownership if programmes are not built in a way that can be sustained within the local health system.

Achieving greater health impact
Closer examination of HIV microtargeting and the movement towards greater integration of services for UHC suggests areas of convergence that could help to mitigate the effects of differing approaches. At the core of this convergence is the basic idea that HIV programmes occur within health systems and must align with national health goals; HIV epidemic control cannot come at the expense of broader health outcomes. The converse is also true; in many countries, desired reductions in population morbidity and mortality cannot be achieved in the absence of HIV epidemic control. Effective HIV microtargeting should lead to faster attainment of HIV-specific goals and less medium- or long-term need for HIV testing, prevention and treatment services. In the long term, at least, these impacts will free-up health systems to support broader UHC goals.
More immediately, the health-system building blocks needed to deliver both HIV microtargeting strategies and broader UHC services have features in common, including quantity, quality and distribution of health-care workers as well as laboratory, supply chain and information systems (Box 1). While the systems built for one response will not automatically provide benefits more broadly, strategic and intentional investments that promote shared benefits may make this possible. For example, investments in upgraded national information systems to include unique patient identifiers and the ability to track individuals longitudinally are essential for both targeted HIV strategies and for UHC. Systems built initially for a data-driven, targeted HIV response can be used to support services for other diseases and conditions of public health concern. These systems could include tracking changes in demand for sexual and reproductive health services and family planning coverage for high-risk subgroups or responding to an acute disease outbreak like Ebola virus disease.

Major donors have recognized the importance of this strategy and have increased investments in many of the areas that can be considered convergent. For instance, the Global Fund has sponsored several rounds of funding specifically aimed at improving health systems’ resilience, and its 2017–2022 strategy calls for further such investments.\(^34\) Similarly, nearly all the grants of the United States President’s Emergency Plan for AIDS Relief include cross-cutting health systems investments, which are targeted increasingly towards areas of weakness in the Plan’s sustainability index and dashboard.\(^39\) This tool includes 90 domains and ranks areas, including commodity security, supply chains and laboratory services. Donors for broader UHC goals, such as Gavi, the Vaccine Alliance and the Global Financing Facility, also make investments in strengthening health systems. However, the currently limited coordination and use of health-systems investments across disease-specific responses could be improved.

In addition to broader financing initiatives and governance strategies, as explored by others,\(^7\) we believe that more systematic measurement of the functional performance of health system elements is essential for greater impact. The recently launched global Primary Health Care Performance Initiative,\(^40\) and the related development of primary care vital-signs indicators that are oriented towards systems and outcomes (e.g. a service quality index), may be a step in the right direction, especially if they are collected subnationally and disaggregated by population types. While HIV programme managers may not see the connection between their work and a primary health-care indicator like vaccination coverage,
they may see the benefit of leveraging one another’s programming to strengthen the overall supply chain. Similarly, global actors such as the World Bank and national governments are using the Vital Statistics Performance Index to monitor national progress in developing the civil registration and vital statistics systems that are fundamental to both disease-specific and broader UHC goals.\textsuperscript{41,42} Such systems monitoring should, in theory, sharpen the tracking and accountability for the effectiveness of investments in these areas, and encourage further investment and policy change.

Similar approaches to measuring performance could be more systematically applied to other areas of convergency shown in Box 1. For example, community-based service delivery systems are important for microtargeting strategies for HIV prevention and treatment as well as UHC and integration goals.\textsuperscript{21,43} Nevertheless, recent studies have found workforces to be poorly coordinated and integrated across disease-specific responses, and inadequately harmonized with national goals.\textsuperscript{44,45} Recognizing this challenge, WHO intends to develop guidelines on health policy and systems support for community health worker programmes. However, there is no recognized approach to monitoring the performance of community-based care delivery systems across the full range of health responses for which they are deployed. Similarly, there are no routinely used tools for system-wide performance monitoring of national information systems or supply chains for multiple diseases or conditions and similar systems, within or among countries. These are high priority areas for future research. The value of developing and validating high-quality performance measures would be greater accountability for the effectiveness of health systems investments, which could ultimately reduce the need for parallel disease-specific systems and result in greater impact. A series of commonly accepted indices could also provide a greater incentive for greater cross-donor and disease co-investment in these basic elements of sustainable health responses, even if resources decrease.

Conclusions

Improvements in geospatial data and HIV testing, prevention and treatment services have led to microtargeting within the HIV response, based on location, population risk and illness severity. Although these approaches show great promise for achieving control of the HIV epidemic, which is fundamental to achievement of the SDGs, there are potential risks to broader health systems goals unless specific actions are taken. To maximize synergies among programmes, leaders of the HIV and UHC responses should recognize opportunities for programming in areas of convergence. Committing to using each other’s programmes and
resources would have a greater collective impact on health. Further investment and enhanced approaches to performance measurement of these convergent elements will be critical to achieve both sustainable control of the HIV epidemic and the broader goals of UHC.

**Competing interests:**
None declared.

**References**


Box 1. **Areas of potential convergence between human immunodeficiency virus programme microtargeting and broader goals of universal health coverage**

**Broader beneficial effects of HIV control**

Efficient reductions in new HIV infections will result in less need for lifelong HIV treatment services, thereby reducing the burden on health systems and freeing up resources for other health priorities.

**Use of common clinical platforms**

Stronger primary health-care systems, if prioritized through national UHC financing strategies, provide additional routes to deliver targeted HIV services to those patients with less intense clinical needs.

**Health-care worker performance**

Improvements in national systems would support pre-service education and performance management (e.g. systems of incentivizing, mentoring, supervising) for health-care workers.

**Information systems and data use**

Responsive electronic information systems (e.g. systems that are networked, include unique patient identifiers and promote subnational data use) are fundamental to both targeted HIV interventions and outcome-based programming for noncommunicable diseases, civil registration and vital statistics programmes and other elements of UHC.

**Laboratory systems**

Improvements in laboratory systems (e.g. equipment, sample transportation systems, staff and information systems) through microtargeting of high-volume sites for HIV service delivery could benefit UHC delivery and management of other noncommunicable diseases throughout a region.

**Community delivery systems and civil society**

Microtargeting of HIV services as well as integrated disease management and prevention services are highly reliant on well managed community systems to deliver focused messages and interventions into communities, with support from civil society.

**Supply-chain management**

HIV microtargeting and many UHC goals require strong, yet responsive, supply chains that are held accountable by providers and society. Greater integration of health services and joint performance management could yield substantial health benefits.

Human immunodeficiency virus (HIV); universal health coverage (UHC).
Table 1. **Areas of potential divergence between human immunodeficiency virus programme microtargeting and broader goals of universal health coverage**

<table>
<thead>
<tr>
<th>HIV programme microtargeting</th>
<th>Domain</th>
<th>Integrative strategies for SDGs and UHC</th>
</tr>
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<tbody>
<tr>
<td>Geographically and risk-focused coverage of specific interventions (e.g. pre-exposure prophylaxis programmes for urban sex workers)</td>
<td>Programme coverage</td>
<td>Broad-based equal access to integrated prevention and treatment services for common illnesses and conditions</td>
</tr>
<tr>
<td>Dynamic and potentially frequent shifts in interventions and funding driven by data suggesting changes in geographic and population concentrations of the epidemic and response</td>
<td>Consistency of programming</td>
<td>Regular access to services for all populations and conditions (e.g. for antenatal care, diagnosis and treatment of hypertension, treatment for childhood diarrhoeal disease)</td>
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<tr>
<td>Stigma and discrimination around acknowledging and engaging key populations (e.g. sex workers, individuals who inject drugs)</td>
<td>Level of stigma and discrimination</td>
<td>Services are less targeted and less affected by stigma and discrimination</td>
</tr>
<tr>
<td>Strong donor imperative to reach targets and show success</td>
<td>Degree of investment and influence</td>
<td>Generally financed by domestic or out-of-pocket funding with less external accountability</td>
</tr>
<tr>
<td>Time pressure to meet coverage targets to achieve well defined goals for controlling the HIV epidemic</td>
<td>Definition and urgency of meeting goals</td>
<td>The urgency around achieving of UHC generally remains less well defined and understood than disease-specific programmes</td>
</tr>
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HIV: human immunodeficiency virus; SDG: sustainable development goals; UHC: universal health coverage.