Supplemental Digital Content to

"Health system integration of sexual and reproductive health and HIV services in sub-Saharan Africa: a scoping study"

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In this supplementary material we provide further information on the search methods for this scoping study, the modification of the conceptual framework for integration, and the data from the five country case studies in the main paper.

Search strategy

The search was conducted from the 1st of March 2014 to the 31st of May 2014. Key terms and existing conceptual frameworks related to the integration of sexual and reproductive health (SRH) and HIV services were identified, to inform the literature search and thematic analysis of data.[1,2] Medline, EMBASE and internet search engines were searched using the following MeSH terms and related terms: Reproductive Health Services OR Health Services OR Maternal Health Services OR Women's Health Services OR Adolescent Health Services AND HIV AND Integrat*. Systematic reviews were hand-searched for relevant studies. Peer-reviewed studies and gray literature describing service integration were included. Gray literature is defined as informally published material, "produced on all levels of government, academics, business and industry in print and electronic formats…not controlled by commercial publishers."[3] National policies of fifty-one countries in sub-Saharan Africa were reviewed for details of strategies relating to SRH/HIV services integration and operational plans for integration activities. This study focused on the integration of higher health system functions across national health systems, rather than evaluations of integrated service delivery in individual health programs or facilities.

Modification of conceptual framework during thematic analysis

The initial themes to guide the literature mapping and case study analysis – *stewardship and governance, financing, planning, service delivery, monitoring and evaluation* and *demand generation* were derived from the framework for integration of health interventions developed by Atun et al. and Shigayeva et al. [1,2] During the analysis of the research and gray literature, these themes were revised to inform a new conceptual framework for SRH and HIV service integration. One of the themes, *planning*, was modified to *policy and planning* as, during analysis, the importance of coherent and consistent national policies to guide integration planning emerged as a common challenge and the policy and planning processes are highly related. Furthermore, during our thematic analysis, issues relating to health worker recruitment, training, staffing and retention were prominent in the process of integrating SRH and HIV services; we thus added the category *health workforce organization*. Finally, we merged the categories *service delivery* and *demand generation* into the new category *service organization*, because issues of demand generation within the integration initiatives, i.e., interventions

to increase the 'first demand' (uptake) as well as 'repeat demand' (retention) for SRH and HIV services, were mostly linked directly to the organization of services (rather than separate from service organization, such as demand generation through social marketing campaigns). We also renamed the function *stewardship and governance* as simply *governance*. Stewardship[4] is commonly used interchangeably with governance in health systems frameworks as the function "overseeing and guiding the whole health system, private as well as public, in order to protect the public interest."[5,6]

Detailed description of the challenges and lessons identified from the country case studies

Governance

Drawing on the World Health Organization's definition,[6] we define governance here as overseeing and guiding the process of health service integration within the health system, private as well as public, in order to protect the public interest, including the provision of effective regulations, incentives and accountability structures. In several countries, different ministries or government departments had separate responsibilities for SRH and HIV, posing a challenge for coordination and consistent policymaking. In Tanzania and Kenya, two separate units managed SRH and HIV services at the national level.[7,8] Additionally, in Mozambique, Kenya and Tanzania, despite commitment from national governments to integration, there was a lack of coordination and leadership at regional or community levels, which hindered integration.[9-11] To better coordinate national implementation plans, Kenya, Nigeria and Tanzania formed Integration Technical Working Groups that included Ministry of Health (MOH) staff, development partners and academics.[12-14] Regular mentoring and supervision visits to facility staff was reported to have helped strengthen referral systems and improve monitoring and evaluation (M&E) reporting in Nigeria.[13,15]

Policy and planning

Policy and planning includes the development and dissemination of national policies, guidelines and operational strategies to guide integration activities. Although SRH/HIV services integration began comparatively early in Kenya and Tanzania, multiple and often inconsistent national policies delayed implementation.[7,8,16,17] Kenya had twelve different policies recommending aspects of SRH/HIV services integration, but no single national policy or operational strategy.[7] When guidelines existed, there was inadequate dissemination to implementing staff, which negatively affected service delivery.[7,9,16] In four of the five countries we analyzed here, multiple policies have been streamlined into a single national plan and operational strategy; Tanzania is currently developing an operational plan for integration (**Table 2** in the main paper).[18-24] PEPFAR guidance now recommends developing

partnership frameworks, which specify the roles and responsibilities of all development partners, to align external financial and technical assistance to planned national integration activities.[25] In Rwanda, where aid has been channeled through a sector-wide approach, a national Partnership Framework was developed in 2009 with US government support.[19] This five year strategic plan aimed to better coordinate SRH/HIV services integration activities, in alignment with national MOH objectives.[19] A partnership framework was also developed with the MOH in Tanzania (2013-4)[26] The impact of these new governance structures on the integration process has not yet been evaluated.

Financing

Financing refers to how funding streams are determined, coordinated and allocated to integrated service delivery. Separate, earmarked funding for HIV services and restrictions imposed by donors on how these funds could be used were reported to have hindered integration with SRH services.[12,27] Formerly, due to US government policy, PEPFAR funds could not be used for contraception or abortion-related services. This policy was partly reversed by President Barack Obama in 2009, although contraceptive commodities continue to be excluded from PEPFAR program financing.[12] Whereas donor funding for HIV programs increased, cuts to donor funding for family planning services led to discrepancies between SRH and HIV budgetary allocations; for example in Kenya in 2004, USAID provided $35 million for HIV services and $6 million for family planning.[7] In Tanzania, the MOH's allocations for family planning remained static despite shortages of funds for contraceptive commodities;[28] Overseas donor support for HIV programs was almost half a billion US dollars in 2011; assistance for family planning commodities totaled a mere $2.5million.[12] Inconsistent and separate funding streams and lack of coordination between donors and the MOH's priorities was reported to have limited the national scale-up of integration in Tanzania.[8,12,21] In Rwanda and Kenya there was initially no budget line or earmarked funds for SRH/HIV services integration and program managers in Kenya reported fear of losing donor funds as a key barrier to integration.[7] In Nigeria, there was previously no budget for family planning, leading to chronic contraceptive commodity shortages.[24] In 2011, the MOH committed US$4 million to improve access to services and contraception, matched by UNFPA and DFID funding.[24]

Kenya, Nigeria and Rwanda have since integrated their SRH and HIV financing streams (**Table 2** in the main paper).[29] Financing strategies for integration included combining vertical program budgets (Nigeria and Kenya), setting a national integration budget (Rwanda) or interim or permanent 'trust funds' combining MOH and donor funds (Mozambique and Tanzania).[13,17,26,30,31] For example in

Mozambique, an international non-governmental organization temporarily funded salaries of new health workers for a year, to relieve workforce shortages while integration was being rolled out.[30] In Tanzania, an AIDS Trust Fund has been developed, to coordinate funds from private donor and development partners.[26] It is not clear whether these funds will be earmarked for HIV services or used to support integrated SRH/HIV services. In Rwanda, where funding streams are more completely integrated and aligned with national strategies, the Global Fund partly financed integration of SRH/HIV services.[19] The impact of these combined financing mechanisms on allocation to SRH and HIV services is not well-documented. Despite HIV and reproductive health funding streams being combined in Nigeria and Kenya, it is reported that HIV funds are still primarily used for HIV services and the much smaller budgets for family planning are used to support integration of SRH services with HIV programs. [17,31]

Health workforce organization

The term health workforce describes the actors involved in delivering integrated services including health care providers, managers and ancillary support staff (e.g. logistics, laboratory). Several studies reported that integration created additional workload for health workers and health care professionals reported insufficient training, supervision and job aides to provide integrated services.[7-10,12,16,32] Slow rollout and gaps in family planning training in Kenya, Rwanda and Tanzania were a barrier to successful SRH/HIV services integration.[7,9,16] Although only 15%-30% of health workers in these countries had received family planning training, more than twice as many were trained in HIV-related care.[9] A Kenyan study found that fewer than 10% of service providers had received formal integrated training, despite being expected to provide integrated care.[7]

In addition to training limitations, shortages of health workers, high staff turnover and attrition were common problems impeding successful integration:[7,16,32] in Tanzania, the MOH estimates that 40% of health facility posts are unfilled and ART-trained staff are concentrated in urban settings.[33] Task shifting from highly qualified health workers to health workers with fewer formal qualifications has been proposed as a way to increase the provision of integrated services, such as the provision of testing and treatment for sexually transmitted infections (STIs) or contraception by HIV program staff.[34] Despite early opposition to nurses prescribing antiretroviral drugs in Kenya,[10] a 2011 case study in Kenya reports “tremendous advances with task-shifting” to permit antiretroviral treatment (ART), STI treatment and contraception provision by nurses, although there is no empirical data supporting this claim.[35] Rwanda is also currently implementing nurse-led ART and prevention of mother to child

transmission (PMTCT) as national policy with PEPFAR support.[19] Such innovations will be increasingly needed in the context of expanding HIV treatment programs and ongoing workforce shortages. For example, in 2013, the Tanzanian government reported it is unlikely to meet its new HIV workforce targets needed to address health worker shortfalls by 2017.[26]

Service organization

Service organization for integrated care includes commodity procurement and supply, health facility infrastructure, the organization of the model of service delivery (facility level, components to be integrated and model of service delivery including referral mechanisms) and demand generation. In Rwanda and Nigeria, integration is planned within all levels of facilities, from tertiary hospitals to the community health worker level. As shown in **Table 2** in the main paper, both one-stop shop and referral-based models have been implemented in most countries, although inadequate referral and counter-referral systems were reported to contribute to loss to follow-up of clients in Kenya, Nigeria and Tanzania.[7,13,15,24,26] Stock-outs of SRH commodities and HIV testing kits challenged integrated service delivery in all countries.[7,10,13,16,24,32] In Kenya, policymakers reported how supply chains designed for vertical programs resulted in completely separate procurement and distribution pathways for contraception and HIV commodities.[7] In Rwanda, the MOH centralized procurement and developed an integrated logistics management information system to strengthen the supply of reproductive health and HIV commodities for integrated services, funded by USAID, UNICEF and UNFPA.[19,36] Physical space for integrated services was an issue in several countries. In Nigeria, Mozambique, Kenya and Rwanda, a central fund for HIV services financed renovations of health facilities prior to integration.[13,19,26,30] Despite relatively low uptake of SRH and HIV services, challenges related to generating demand for services were not widely discussed in the literature. In Rwanda and Nigeria, sensitization and engagement efforts targeted people living with HIV (via community health workers, managers and other health workers).[13,36] In addition, mass media campaigns aimed to increase awareness of dual protection in the general population. Integrated services became part of national integration strategies in Rwanda and Kenya.[22,37]

Monitoring and evaluation

Monitoring and evaluation refers to the integration of SRH and HIV indicators and the associated reporting systems, tools and staff training. Challenges to the M&E of integrated services included a lack of nationally agreed SRH/HIV services indicators (Kenya, Rwanda, Tanzania) [12,16,38] under-resourced and weak systems (Tanzania, Rwanda and Nigeria),[39-41] multiple reporting tools creating

additional workload for staff (Kenya)[9] and different reporting pathways (Mozambique).[42] For example, in Mozambique HIV indicators are compiled for three separate Ministries.[42] Integrated indices of SRH and HIV indicators have now been developed in all five countries,[13,18,22,23,39,41] including Tanzania, where technical and funding constraints initially limited data collection.[26] In Kenya, the Integra Initiative is piloting an 'index of integration,' the Continuum of Integrated Care Index, designed to evaluate the impact of integration on health and services outcomes and cost-effectiveness and also to score facilities on the degree of service integration.[20] This index includes measures of the range of services provided, workforce integration and functionality of the referral system.[20,43,44] In Nigeria, existing family planning registers were adapted to gather information on referrals between family planning and HIV testing and treatment services.[39] The Rwandan and Nigerian governments designated, trained and supervised local staff at each health facility in new M&E tools and the new guidelines.[36,39] In Nigeria, Tanzania and Rwanda, quality improvement teaching was also incorporated into M&E training.[12,36,39]

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