Integrating HIV services with other health services to improve linkage to care, retention, and adherence: a scoping report

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About the Thematic Window on Integration of HIV Services

3ie’s Thematic Window 7 is a grant-making component of the 3ie evidence programme, Integration of HIV Services. This 3ie programme aims to help bridge the knowledge gap of what works and why in HIV care and treatment, and specifically whether and how integration of services could be a major tool to address the HIV and AIDS treatment cascade. The thematic window will award grants to fund projects that include pilot interventions and impact evaluations of under-researched HIV service integration programmes that aim to improve linkage to care, adherence and/or retention, with the purpose of contributing to better understanding of what works, why, through what channels and at what cost to maximise policy relevance and impact.

About this report

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Abstract

Although testing, care and treatment coverage have been improving in Sub-Saharan Africa (SSA) (UNAIDS 2012), significant numbers of HIV-positive individuals still drop out of HIV care at various stages of the care continuum. One approach to improving services along the continuum is to integrate HIV services with other health services. Providers are beginning to use this approach, but often without testing whether their innovations are truly effective, particularly for increasing the HIV outcomes linkage to care, retention, and adherence. In anticipation of our grants window to fund impact evaluations of interventions integrating HIV services, we conducted a literature review, developed an evidence gap map, and performed a stakeholder survey. In this report we present the results from those three exercises along with the analysis of those results taken together.

When considering the literature review, evidence gap map, and survey together, several integration areas emerge as particularly promising or relevant, although for different reasons. Stakeholders perceive that there is strong evidence, relative to other services, supporting the integration of MNCH and sexual and reproductive health and family planning with HIV services. Only for MNCH is there rigorous evidence. Conversely, stakeholders perceive that the strength of evidence for opioid substitution therapy is relatively low, while there are indeed several impact evaluations, albeit from high-income countries. Several respondents would like to have more evidence on the impact of integrating primary health care and general health services with HIV services. Cost effectiveness analysis also suggests this is a promising area for innovation. Finally, the most notable gap in evidence is for the integration of other health services with pre-ART care. The treatment cascade estimates suggest, however, that this is a key drop-off point.
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<th>Description</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>acquired immune deficiency syndrome</td>
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<tr>
<td>ANC</td>
<td>antenatal care</td>
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<tr>
<td>ART</td>
<td>antiretroviral</td>
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<tr>
<td>CD4</td>
<td>cluster of differentiation 4</td>
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<tr>
<td>CT</td>
<td>counselling and testing</td>
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<tr>
<td>FP</td>
<td>family planning</td>
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<tr>
<td>HCT</td>
<td>HIV counselling and testing</td>
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<tr>
<td>HIV</td>
<td>human immunodeficiency virus</td>
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<tr>
<td>ICASA</td>
<td>International conference on AIDS and STIs in Africa</td>
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<tr>
<td>M&amp;E</td>
<td>monitoring and evaluation</td>
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<tr>
<td>MCH</td>
<td>maternal and child health</td>
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<td>MNCH</td>
<td>maternal, newborn and child health</td>
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<tr>
<td>OGAC</td>
<td>Office of the US Global AIDS Coordinator</td>
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<tr>
<td>PEPFAR</td>
<td>The United States President's Emergency Plan for AIDS Relief</td>
</tr>
<tr>
<td>PHC</td>
<td>primary health care</td>
</tr>
<tr>
<td>PMTCT</td>
<td>prevention of mother-to-child transmission</td>
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<tr>
<td>pre-ART</td>
<td>pre-Antiretroviral</td>
</tr>
<tr>
<td>RCT</td>
<td>randomised control trial</td>
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<tr>
<td>SRH</td>
<td>sexual and reproductive health</td>
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<tr>
<td>SSA</td>
<td>Sub-Saharan Africa</td>
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<tr>
<td>STI</td>
<td>sexually transmitted infections</td>
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<td>TB</td>
<td>Tuberculosis</td>
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<td>TW7</td>
<td>Thematic Window 7</td>
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<td>UNAIDS</td>
<td>United Nations Programme on HIV/AIDS</td>
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<td>VCT</td>
<td>voluntary counselling and testing</td>
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<td>WHO</td>
<td>World Health Organization</td>
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1. Introduction

Providers of HIV and AIDS services as well as those in the research community continue to look for ways to improve HIV and AIDS treatment delivery, and there is a growing evidence base for what works. However, there is also an increasing realisation of a “treatment cascade”—the loss of patients along each part of the HIV care continuum (Gardner, et al. 1011) from testing and diagnosis, through getting CD4 counts and enrolling in HIV care, to initiating antiretroviral treatment, staying on treatment regimens, and continuing in care to attain and maintain viral suppression. A systematic review on retention in HIV care prior to initiation in antiretroviral therapy (ART) finds significant patient loss at each stage of the care continuum (Rosen and Fox 2011). The fact of the treatment cascade in spite of all the investments and programmes in HIV and AIDS services suggests that there is a need not just for more innovation, but also for rigorous evaluations to identify which innovations truly improve service uptake and retention efficiently and effectively. The goal is to have more of the people who test positive for HIV make it into care, whether that be counselling or ART, and stay in care and adhere to treatment regimens.

As sustainability has become a more prominent priority in responding to HIV, international organisations have increasingly supported the elimination of parallel systems and the integration of HIV into health systems (UNAIDS 2010). Evidence on the integration of HIV services, although often lacking impact evaluation rigour, shows promising potential for increasing testing coverage, treatment take-up and retention, cost efficiency and effectiveness, as well as addressing HIV-related social stigma, a factor in individuals’ willingness to test and seek care and treatment. In addition, there is some evidence to suggest that integration of HIV services with other services can improve non-HIV outcomes/outcomes related to the other health service(s).

In late 2013, the International Initiative for Impact Evaluation (3ie) launched an evidence programme to benefit policy making and programme design related to the HIV treatment cascade. In early 2014, together with the Bill & Melinda Gates Foundation, which is funding the evidence programme, we refined the theme to concentrate on promoting innovation in the integration of HIV services with other health services with the objectives of improving linkage to care, adherence, and retention. The focal point of the programme is a grants window (3ie’s thematic window 7, or TW7) that will fund roughly six pilot interventions along with the impact evaluations that will test whether the innovations work and provide information on why or why not. This scoping report serves as a foundation for the grants programme and provides a description of the current state of impact evaluation evidence for the integration of HIV services along with the needs for evidence as reported by stakeholders.

The structure of the scoping report is as follows: the next section presents the overall methodology for the report as well as the methodology for each component—the literature review, the evidence gap map, and the stakeholder survey. Section 3 presents the results from each component. In section 4 we analyse the results across the three components. Section 5 discusses the limitations to the report, and Section 6 concludes.
2. Methodology

For this report, integration of HIV services is defined as integrating or combining HIV services with non-HIV-specific services such as ante-natal care, maternal, neonatal, and child health, sexual and reproductive health and family planning, primary health care, Tuberculosis treatment, or opioid substitution therapy. It can also include integration of public and private health services/information or structural integrations like integrated voluntary counselling and testing centres within health facilities. Impact evaluation is defined as an evaluation that measures the net change in one or more outcomes using a valid counterfactual, which may be constructed experimentally or quasi-experimentally.

The analysis in the scoping report is based on three main instruments: 1. A review of the literature; 2. A rapid evidence gap map, which identifies and displays existing impact evaluations according to what intervention is evaluated and what outcomes are measured; and 3. A survey of key stakeholders, including researchers and implementers in the field of health and HIV services, to get their views on promising practices and areas that need additional evidence. We introduce the methodology for each in turn.

2.1 Literature review

For the literature review, two of the authors conducted a basic search starting with a snowball search of articles and reports already known to us and then searching on the keyword phrases “integration of HIV service” and “HIV treatment cascade” on the same databases and websites searched for the rapid evidence gap map (see appendix 1). We selected articles based on relevance to the theme of the evidence programme but not dependent on study methodology. The search was not systematic or exhaustive. The review focuses on exploring the theories of change presented in the literature and assessing the state of evidence.

2.2 Evidence gap map

An evidence gap map is a matrix of intervention categories (rows) and outcome indicators or indicator categories (columns) that displays studies in the cells according to what is tested and measured in the study. The evidence gap map allows the reader to quickly see where there is and is not existing evidence. Studies may be screened for quality. The map itself does not present the results of the studies or synthesise those results, but it does include hyperlinks to either a summary of the study or the source of the study to allow the reader to quickly access the evidence. We present an overview of the gap map methodology here and provide more details, particularly related to the search strategies, in appendix 1. For this scoping report, we used a “rapid” gap map methodology, which means we searched a small number of databases and screened on study method but without conducting a full critical appraisal.

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The first task in developing an evidence gap map is building the framework—the matrix of rows and columns. The rows are interventions typically by type or category, not by individual programme. Interventions grouped in a category row should be based on the same, or very similar, theory of change. The columns are outcome indicators, also typically by type or category. These indicators may measure results at different stages along a causal chain (or logical framework). While inputs are not included, an evidence gap map may include columns for outputs, outcomes, and impacts.

We built the framework for this evidence gap map using a consultative process. We formed two task forces by identifying stakeholders for HIV testing, care, and treatment programmes and inviting them to attend one of two meetings. During each meeting we facilitated a brainstorming process to list all types of interventions currently used or planned to address linkage to care, adherence, and retention. The group then brainstormed the various indicators used to measure those three concepts. After the brainstorming each group discussed some of the possible priorities for new evidence production. We hosted the first meeting during the International Conference on AIDS and STIs in Africa (ICASA) 2013 conference in Capetown, South Africa on December 10, 2013. We hosted the second in Washington DC on January 23, 2014. Implementers, researchers, and policy makers from the World Bank, United States Agency for International Development, Office of the Global AIDS Coordinator, Management Systems for Health, John Snow International, FHI 360, Pangea and the Freemont Center, Population Council, and Measure Evaluation participated.

In the resulting framework, we categorise integrated services in three sections: HIV counselling and testing, pre-ART services, and ART services. For each of these three, we list the other health services that might be integrated. We categorise the outcomes by linkage to care, adherence, and retention.

An evidence gap map is then populated by conducting a rapid, but systematic, search of relevant databases and screening all hits according to whether the studies meet the requirements of at least one cell in the matrix and according to the methodology. This gap map includes only impact evaluations and systematic reviews that present effectiveness meta-analysis, although ultimately no systematic review met all inclusion criteria. Each study is coded and then listed in the matrix according to all interventions evaluated and all the outcomes measured. Therefore, a study may (and often does) appear in more than one cell in the matrix. Matrix cells may also be greyed out to represent cases where a particular intervention would never be expected to result in a particular outcome. We summarise the results of the evidence gap map in this report.

2.3 Stakeholder survey

Finally, we developed a survey using SurveyMonkey to learn about knowledge and perceptions of evidence for those interventions and outcomes in the evidence gap map framework. The survey appears in appendix 2. We sent the survey link to all the stakeholders for whom we had contact information, and we asked those stakeholders to forward the link to the survey on to any others who might be interested. The survey collects information about each respondent’s organisation and about his/her own personal work/research. The survey then asks questions about the respondent’s knowledge and
perceptions about the strength of evidence on various areas of service integration for five different outcomes: Identification of HIV-positive individuals, linkage to care, adherence to treatment, retention in pre-ART care, and retention in ART.

In particular, the survey collects views on the strength of evidence in six combinations of services pairings and intended outcomes: integration of HIV testing and counselling (HCT) with other health services to improve testing and identification of HIV+ individuals, integration of HCT with other health services to improve linkage to care; integration of pre-ART services with other health services to improve linkage to care; integration of pre-ART to improve retention in pre-ART care; integration of ART with other health services to improve adherence; and integration of ART to improve retention in ART. The survey also asks about indicators to measure linkage, adherence, and retention, and about time points at which retention in care should be measured. Finally, it asks about evidence that respondents feel is most needed, both for themselves, and for the field generally. Unfortunately, time constraints meant that the survey was only live for a short period of time. We analyse the data primarily using descriptive statistics.

3. Results

3.1 Literature review

Although testing, care and treatment coverage have been improving in Sub-Saharan Africa (SSA) (UNAIDS 2012), significant numbers of HIV-positive individuals still drop out of HIV care at various stages of the care continuum. A systematic review on retention in HIV care prior to initiation in antiretroviral therapy (ART) finds significant patient loss at each stage of the care continuum. Results for the 28 eligible studies indicated that the median proportion retained between testing and receiving CD4 count results or clinical staging is 59%. Between clinical staging and becoming ART-eligible a median of 46% is retained. Finally, after becoming ART-eligible, a median 68% of eligible individuals actually initiate ART (Rosen and Fox 2011). Multiplying out the medians, 18% of patients who are not yet eligible for ART when they are diagnosed remain continuously in care and initiate ART (Rosen and Fox 2011). These findings highlight the severity of the retention problem in pre-ART care.

Loss after initiation of ART is substantial but not quite as severe as prior to ART. In a study in Malawi and Zimbabwe, the percentage of patients retained in ART after initiation declines from 84% at 6 months to 80% at 12 months to 77% at 18 months, and from 88% to 84% to 82% respectively in Zimbabwe (Rasschaert et al. 2013). A larger study in Zimbabwe from 2007-2009 shows similar attrition with retention at 6 (90.7%), 12 (78.1%), 24 (68.8%), and 36 (64%) months, also showing the greatest loss during the first 12 months (Mutasa-Apollo Et al. 2014). Similarly, a systematic review of studies in South Africa finds retention at 12 months to be 80% and relatively stable over time, decreasing to about 68% by 4 years (Rosen and Fox 2014). This loss of patients, or “leaky cascade” (OGAC 2012) has been cited in the PEPFAR Blueprint as a priority area for implementation research (OGAC 2012).
Integration of HIV with other health services has been approached differently in a wide variety of settings, and there remain several different understandings of the definition of integration. This report addresses the most common understanding of integration, relating to horizontal integration at the point of service delivery, although this mechanism can range from structured referrals to physical incorporation of services within the same facility (Shigayeva et al. 2010). Healthcare integration can also be considered as part of a larger system of coordination at the policy and planning levels, including human resource management and financing, often referred to as linkages (Sweeney et al. 2012).

While there has been an expressed need for more cost-effectiveness studies (Lindegren et al. 2012), a systematic review of the costs and efficiencies of integration conducted in 2012 (Sweeney et al. 2012) identifies 46 relevant studies, including cost analyses, cost-effectiveness analyses and least-cost analyses. The review includes five studies of integrating HIV Counselling and Testing (CT) services into other health services, all of which find that unit costs are consistently lower for integrated compared to stand-alone facilities (savings range between 31% and 79%). Another 11 studies evaluate the cost-effectiveness of integrating HIV treatment into general health services—a one-stop-shopping model. The authors conclude that integrated HIV treatment and care services are feasible and cost effective, but highlight a lack of evidence for populations at higher risk of exposure to HIV, and the need for more empirical evidence on the most efficient processes of integration.

HIV services have been integrated with an array of other health services including antenatal care clinics, family planning and sexual and reproductive health services, as well primary health care, tuberculosis (TB) care (which is highly correlated with HIV), opioid substitution therapy, and adolescent health services. Evidence on the effect of integration, especially on key HIV outcomes is relatively limited. There is also evidence of the effect of integration on outcomes related to the other health services, such as uptake of contraception.

A study comparing seven vertical ART programmes and ten programmes integrating ART into general health care services found that although people initiate ART in integrated programmes at more advanced stages of infection compared to those who initiate in vertical programmes, they have similar rates of mortality and a lower rate of loss to follow-up (adjusted hazard ratio 0.71; 95% CI: 0.61 to 0.83). The authors conclude that integrating ART provision in general health programmes results in good outcomes (Greig et al. 2012).

A systematic review of the literature on integration of ART services with maternal, neonatal, and child health services (MNCH), or TB treatment, or opioid substitution therapy programmes (and also decentralisation of ART to primary health care and community-based ART compared with hospital provision), finds that generally, integration of ART into other health services improves ART coverage and that it is not associated with adverse outcomes (Suthar et al. 2014). Specifically, integration with MNCH services results in no difference in retention (one study) or ART coverage (one study), or it results in improved ART coverage (three studies). Similarly, for integration with TB treatment programs, nine studies report improved ART coverage and three report similar coverage. In addition, two of the studies report reduced mortality with integration, and two others report similar mortality. The systematic review authors only find two studies on integration of ART with opioid substitution therapy that met their inclusion criteria (of having a comparison)—one study
reports similar ART coverage for integrated compared with separate care settings, and the other shows similar retention and mortality between the two groups.

Killam et al. (2010) find that integrating HIV services into antenatal care (ANC) clinics in Lusaka, Zambia increased the proportion of women who enrolled into ART care within 60 days of HIV diagnosis compared to the control group of women at ANC facilities who were only referred to ART clinics (44.4% compared to 25.3%, adjusted OR 2.06, CI 1.27-3.34) and doubled the proportion of women initiating ART during pregnancy, (32.9% compared to 14.4%, adjusted OR 2.01 CI 1.27-3.34).

Another study of weekly visits by health workers from an ART clinic made to a local ANC clinic to conduct treatment preparation finds that integrating ART clinic aspects within ANC care with referral to linked ART facilities led to reduced delays between HIV diagnosis (at the ANC clinic), referral to ART clinics, and treatment initiation from 56 to 37 days (p=0.041) (van der Merwe et al. 2006).

Implementation of prevention of mother to child transmission (PMTCT) services in antenatal care clinics has generally been shown to, at least, not have a negative impact on antenatal care (e.g. Lindegren et al. 2012, Delvaux et al. 2008, Price et al. 2009). In one case, adding PMTCT services improved both quality of antenatal services as well as increased uptake of HIV testing (Delvaux et al. 2008). However, there does seem to be some dependence on how the programmes are implemented. A PMTCT programme that was implemented without added involvement with research studies (compared to a study arm that incorporated research activities) showed a slight decline in routine syphilis screening. But, it was unclear whether the decline was due to increased staff responsibilities due to the new HIV activities, or hesitation to agree to blood draws due to the associated HIV services, or other reasons (Potter et al. 2008).

Integration with family planning services has also been shown to be effective in increasing both HIV outcomes and family planning use. In an evaluation of integrating family planning services into voluntary counselling and testing (VCT) services in Rwanda, the authors find that the percentage of women using hormonal contraception increased from 16% to 24% after the intervention (p=0.02). The rate of incident pregnancies also decreased after the intervention for both HIV positive and negative women (King et al. 1995). In the United States, integration of a maternal and child health programme into an HIV programme resulted in a statistically significant difference in attending 75% of their appointments at 6 and 12 month follow-up periods between women and men, where prior to the integration there was no difference (Kissinger et al. 1995).

A systematic review on the linkages between sexual and reproductive health and HIV interventions includes 35 studies, 18 of which are from Africa. The authors conclude that the majority of studies show improvements in all measured outcomes and find sufficient evidence to recommend linking sexual and reproductive health services with HIV services “at the policy, systems and service levels” and “in both directions where feasible and appropriate” since it is “demonstrated to improve outcomes” (Kennedy et al. 2010, p. 9).

While there appears to be an even more limited number of studies on children, a study of the effect of integrating HIV testing into community-based child malnutrition services finds
high uptake (97%) of testing, compared to 64% in a retrospective cohort (Bahwere et al. 2008), but the lack of a control group make nutritional and other outcomes difficult to interpret.

There is relatively stronger support for integrating TB and HIV services, including from the WHO (2012). A before-and-after study done in Capetown, South Africa finds that adding ART initiation to a TB clinic that already offered HIV testing, CD4 counts, co-trimoxizole prophylaxis, and family planning, but previously referred treatment-eligible patients to a separate ART clinic for treatment, improved the probability of initiation (1.6 aHR 95% CI 1.11 to 2.29) and may have also decreased the time to initiation, which decreased from 147 (95% CI 85-188) to 75 (95% CI 52-119) days (Kerschberger et al. 2012). Another before and after study done in Kenya also finds encouraging results, although the baseline is difficult to determine. There appears to have been an increase in testing, at least between shortly after integration (6-12 months) and later (18-24 months), and the number of HIV+ patients receiving co-trimoxizole prophylaxis increased from 47% for the six months prior to integration, to 93% for the period 6-12 months after, and 86% for the period 18-24 months after, and that of those needing ART, 9% prior, 46% shortly after, and 41% at the later follow-up were receiving ART. In addition, TB outcomes improved. However, the HIV prevalence rate was estimated, and 65% of HIV-positive TB patients were assumed to be “in need” of ART (Huerga et al. 2010).

While the evidence on the effect of integrating HIV services into other services is limited, studies measuring the effect of other interventions on linkage to care, adherence, and retention can lend some insight into anticipated or recommended measures or indicators to evaluate the effect of service integration on the same outcomes. A systematic review by Kranzer et al. (2012) uses a definition of being assessed for ART eligibility as the first step after diagnoses, and likened it to linkage to care, although they also refer to the number of studies that report on the number of patients who returned for their CD4 count results. In the Rosen and Fox (2011) systematic review of pre-ART retention, they define three stages of HIV care prior to ART. Stage 1 is from HIV testing to receipt of CD4 count results or clinically staging an individual. Retention in Pre-ART care is further defined in two additional stages. Stage 2 is from staging to ART eligibility, and Stage 3 is from ART eligibility to ART initiation. During ART, attrition/retention have been measured at various timepoints. In a systematic review of sub-Saharan African studies, Rosen and Fox (2010) find that most attrition occurs within 2 years of ART initiation. They assess retention at 6, 12, 24, and 36 months. In a second systematic review of South African studies (Rosen and Fox 2014), they find that attrition is relatively stable after 12 months, and assess measures up to five years.

Adherence measures vary widely (Reda and Biagdilign 2012). Due to its relatively low cost and feasibility, self-reported adherence has been used widely (Vreeman et al. 2008, Berg and Arnsten 2006), and is correlated with viral load and clinical outcomes (Liu et al. 2001, Nieuwkerk and Oort 2005). However, there is some variation, and confirmation with viral load testing (Nieuwkerk and Oort 2005) and use of electronic bottles or multiple measures (Liu et al. 2001) tends to be more reliable. Measures such as pill count, use of mechanical
pill bottles, directly observed therapy, and measurement of surrogate biomarkers may be less prone to bias, but the high cost and other logistical reasons have prevented wider application in sub-Saharan Africa (Reda and Biagdilign 20012). Pharmacy refill data has also been used, but is limited if patients use more than one pharmacy (e.g. Turner 2002). On the other hand, studies have shown good correlation between adherence and viral suppression when pharmacy data has been used.

3.2 Evidence gap map

Figure 1 depicts the results of the systematic search and screening for the rapid evidence gap map. See appendix 1 for the detailed search and screening strategy. The search yielded a total of 4,482 studies. 3,269 studies remained after duplicate removal. We screened the titles and abstracts of these records according to the screening criteria. At the title/abstract stage, we rejected studies that clearly do not meet the screening criteria. We thus excluded 3,061 and passed 208 studies to full text screening. Approximately 80% of the studies were rejected because the evaluation was not an impact evaluation (all of these studies had some type of evaluation). At the full text stage, we included studies that meet all of the screening criteria. The screening process yielded 20 included studies.

Figure 1: Search and screening results

Our systematic search reveals that there are only a few rigorous evaluations of the effect of integrating HIV services with other health services. In many cases, evaluations do not
use any kind of a control or comparison group, but instead report only coverage statistics (of testing, treatment, or retention) at a certain time point after integration. In other cases there is a comparison group, but it is not a robust counterfactual—the assignment to treatment and control is not randomised, or the analysis does not adjust for selection bias from non-randomised assignment.

Closer inspection of the 20 included impact evaluation studies of integrated services reveals that in many cases, the intervention tested by the evaluation is not the actual service integration. In other words, service integration is not the focus of the evaluation, rather the intervention tested happens to occur in an integrated service environment. For example, one study assesses the effect of home visits for adherence counselling versus telephone calls within substance abuse populations (integration of HIV services with substance abuse services). The impact evaluation compares home visits versus phone calls, not the integration of HIV services with substance abuse services vs. not integrating those services. In fact, many of the studies involving substance abuse populations are similar—the impact evaluation compares two different mechanisms or approaches to see if one improves adherence to ART, but both are in an integrated environment. In several cases the intervention is directly observed therapy/directly administered antiretrovirals compared to self-administration.

Further screening to include only studies that evaluate the service integration yields only eight studies. However, we present all 20 studies in the evidence gap map as they all present impact evaluation evidence related to HIV service integration. (We highlight the studies that evaluate interventions in integrated service settings without evaluating the integration in beige in the evidence gap map.)

The results in the evidence gap map indicate that there is only a limited amount of high-quality evidence on the effect of integrating HIV services with other health services, although the literature review clearly reflects that integration of services is increasing. There is even more limited evidence on cost-effectiveness. One study assesses the cost-effectiveness of integrated versus “coordinated” services.

The full evidence gap map is available online here. In the full evidence gap map, there are 19 rows representing intervention categories and 21 columns representing outcome categories. Given the variety of HIV services and the variety of other health services that we explore, there is a large number of possible combinations for the interventions. To present the findings in the gap map, we group the HIV services according to three sections of the care continuum: HIV counselling and testing (HCT), pre-antiretroviral therapy care (pre-ART care) and other HIV medical care or management of co-morbidities, and provision of antiretroviral therapy (ART).

The columns include some very specific indicators (e.g. pill counts) as they are frequently used in studies, as well as some outcomes categories (e.g. patient satisfaction) that may cover several different indicators. We group the columns according to linkage to care, retention in pre-ART care, retention in ART, adherence to ART, and secondary outcomes. The secondary outcomes are outcomes measured by several studies that do not capture
linkage, retention, or adherence directly but may still be useful for understanding the effects of the service integration.

The hatched cells represent cases where the outcomes are outside of the objectives in combining the particular services. So, for example, the integration of HCT with MCH is not intended to improve adherence. We hatch the cell so that it does not appear that evidence is “missing” for the impact of this intervention on adherence.

The 20 included studies appear in the evidence gap map as 46 occurrences meaning that on average each study presents evidence for just over two combinations of intervention and outcome. While there are studies that evaluate more than one intervention, the majority of multiple occurrences arise from multiple outcomes.

Table 1 presents a summary of the evidence gap map. The table collapses the columns into the five groups. The numbers in each cell report the number of studies that occur in the evidence gap map for each integrated service across the five outcome groups. The first number counts the studies that evaluate the integration of the services, and the second number adds in those studies that evaluate another intervention but within the context of the integrated service.

Table 1: Number of impact evaluations that evaluated integration of HIV service integration with other health services/Total number of impact evaluations interventions in HIV service integration settings, by outcome of interest
<table>
<thead>
<tr>
<th></th>
<th>Linkage to care</th>
<th>Retention in pre-ART</th>
<th>Retention in ART</th>
<th>Adherence to ART</th>
<th>Secondary outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HCT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCNH</td>
<td>3/5</td>
<td>0/1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRH/FP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>TB</td>
<td>2/2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance use</td>
<td>2/2</td>
<td>1/1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHC</td>
<td>0/1</td>
<td>0/2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public-Private</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Integrated VCT</td>
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<tr>
<td><strong>Pre-ART</strong></td>
<td></td>
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</tr>
<tr>
<td>MCNH</td>
<td></td>
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<tr>
<td>SRH/FP</td>
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<td>TB</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Substance use</td>
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<td></td>
<td></td>
<td>3/3</td>
<td></td>
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<tr>
<td>PHC</td>
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<tr>
<td>Public-Private</td>
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<tr>
<td><strong>ART</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MCNH</td>
<td>3/3</td>
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<tr>
<td>SRH/FP</td>
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<tr>
<td>TB</td>
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<td>0/1</td>
<td>0/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance use</td>
<td></td>
<td>1/5</td>
<td>3/13</td>
<td>3/3</td>
<td></td>
</tr>
<tr>
<td>PHC</td>
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<td>0/2</td>
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<tr>
<td>Public-Private</td>
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</tbody>
</table>

The table shows that there is a concentration of evidence on the effect of integrating HCT services with other services on linkage to care and on the effect of integrating ART services with other services, particularly substance use, on retention and adherence. There is also one study that produces three occurrences for the effect of integrating substance use services with pre-ART on secondary outcomes and one study that produces three
occurrences for the effect of integrating substance use services with HCT on linkage and pre-ART retention, making the integration of substance use services clearly the most rigourously evaluated.

The only evidence for integrating pre-ART services with other services is the one study looking at secondary outcomes from integrating pre-ART with substance use. In addition, there are no impact evaluations of integrating HIV services with sexual and reproductive health and family planning, public-private integration, or structural integration.

3.3 Stakeholder survey

We conducted the stakeholder survey to gauge stakeholders’ perceptions of the state of the evidence on the effectiveness of integrating HIV services with other health services, particularly evidence related to improving testing rates, linkage to care, adherence to treatment, and retention in pre-ART and ART care. We also used the survey to ask respondents about potential indicators to measure linkage, adherence and retention and polled respondents on their needs for evidence and the ‘field’s’ need for evidence.

We sent survey invitations to 117 people, with a request to forward the invitation to any and all other stakeholders. At the time of analysis, 23 respondents returned completed surveys. The majority of respondents are from academic institutions (65%), with another 13% from implementing agencies (NGO/international development organisation). Developing country governments, health and other research organisations made up the rest of the respondents. Over half (68%) work in prevention, and roughly 41% work in pre-ART and ART care (they categories are not mutually exclusive). Also, 41% reported working monitoring and evaluation and 45% in programmatic research. Most (70%) reported having 5-19 years of experience in health/HIV related areas. All but one respondent work in or their work focuses on (at least in part) sub-Saharan Africa. There is a concentration of four returned surveys from Kigali Health Institute, University of Rwanda.

To help assess the strength and type of evidence the survey asked respondents to rank the strength of evidence for the integration of each of the six combinations of HIV services/outcomes with each of the possible other health services. The six combinations are: HCT for testing, HCT for linkage, pre-ART for linkage, pre-ART for retention, ART for retention, and ART for adherence. Figure 2 displays the average ranking of the other health services across respondents. Points nearer to the centre of the figure represent a higher ranking, i.e. perception of stronger evidence, and points near the outer edge represent a lower ranking, i.e. perception of weaker evidence relative to other health services that might be integrated with HIV services. Note that the survey asked respondents to rank only the non-HIV services for which they do think there is evidence supporting integration with HIV services.
Figure 2: Average rank for strength of evidence for the integration of nine different categories of health services with different types of HIV services for outcomes along the cascade

The figure shows that respondents perceive that the strongest evidence for integration relates to integrating HIV services with maternal, neonatal, and child health (MNCH) services and with other sexual and reproductive health services and family planning. Those health services for which respondents ranked the strength of evidence as low are opioid substitution therapy\(^2\) and ‘other’. The figure also shows that, on average, respondents ranked the health services similarly across the various HIV services/outcomes combinations. That is, the hexagrams in the figure are roughly concentric. For example, the strength of evidence for integrating NMCH services with HIV services is ranked highest for HCT for linkage and for ART for adherence, and so on.

\(^2\) The survey asked specifically about opioid substitution therapy while the evidence gap map searched for all substance use service integrations. The gap map shows that there are studies of several types of substance use programs with HIV services.
Figure 3 presents the data from the follow-up questions in the survey that asked the respondents to report what kind of evidence they considered when ranking the strength of evidence. Respondents could select any or all of the four types of evidence. Each set of bars in the figure shows the prevalence of the four evidence types for assessing the relative strength of evidence for integrating that health service with all six combinations of HIV services/outcomes on average. For example, the bars for MNCH show the prevalence of type of evidence that determines the six rankings forming the inner hexagon (rank of strength of evidence) in figure 2.

Looking at the data for MNCH in figure 3, we see that monitoring and evaluation (M&E) evidence strongly influences perceptions. In fact, M&E evidence is the highest reported source of evidence for four of the nine types of health services, and the second reported source for three of the other five. Research (impact evaluation) only receives the most ticks for structural integration, although the difference with M&E is very small and this integration was only queried for HCT. Perhaps more striking, respondents report that they are considering anecdotal evidence much more than other types when ranking youth health services and opioid substitution therapy. Youth health services ranks roughly in the middle in terms of strength of evidence (see figure 2). Opioid substitution therapy ranks second to last, though, which we hope reflects that the evidence they are considering is primarily anecdotal. As we discuss in the next section, the results of the survey are highly inconsistent with the results from the evidence gap map.

**Figure 3: Average number of people (over all 6 service integration combinations) who cited each type of evidence for determining the strength of evidence regarding integration of HIV services with other health services**
Note: Integrated VCT was only rated for two integration combinations, the combination of HCT with other health services for improving Identification of HIV+ Individuals, and of HCT with other health services for improving linkage to care.

The survey also asked open-ended questions for which areas of service integration the respondent would personally like to see more evidence and for which areas of service integration the respondent thinks evidence is most needed in the general field of HIV services. Perhaps not surprisingly, most people answered the same for both questions, but there appears to be no general consensus across respondents. A few people listed more than one area. For personal interest, four people mentioned that evidence on integration with primary health services or more general health services would be helpful. One person noted that while “current practice provides comprehensive care centres (CCCs)...these focus on specific populations (women, people with HIV and TB). Integration should be expanded throughout the hospital system. Services such as testing could be provided in all service points.”

Two people mentioned integration into youth services, and one person answered adolescent and child adherence and retention. Three people answered with outcomes or processes—linkage to care, adolescent and child adherence and retention, viral load testing centres—rather than service integrations. One person commented, “I would be interested to find ways to improve testing and linkage to care. So many HIV positive individuals never initiate care. We need to find better ways to make sure that happens.” Even though evidence on integrating SRH and MCH were generally viewed as having stronger evidence in the earlier survey questions, three people are still interested in more evidence.

For the general field of HIV services, one person wanted to know “which areas of integration are most effective (including cost effective) for increasing access to services.” The person who mentioned comprehensive care centres and hospitals suggested that CCCs need “better” impact evaluation, and that there was not a lot of it. The respondent also wanted to know about “pathways downstream and upstream of the hospital infrastructure.” Another person suggested that evidence on integration with primary health care was most needed, but noted that although this could produce the most impact, it could be “costly or difficult to do well.” Four people mentioned that the field could benefit from more evidence in HIV service integration into general health services.

Another set of questions asked, for each of the combinations of HIV service category with outcome group, whether there are any areas of integration for this combination that might not be beneficial. For HCT services, a few respondents answered instead that there are populations that might not be reached through integrated services. One person said that some men would not go to clinics with their wives, or get tested at all, and that youth are not inclined to visit VCTs. Another respondent mentioned that remote or marginalised populations might be better served with mobile VCTs. Some respondents mentioned cost of services, either direct or indirect, as a potential problem.

For the pre-ART and ART services, no one responded that integrating pre-ART or ART care and treatment into other health services would not improve linkage to care, retention, and adherence (three respondents specifically said ‘no’ to all, i.e. no, there are no areas where integration would not improve the outcome).
The survey asked respondents to select from a list what they would use as one standard measure for the different outcome groups, if they could only use just one. For linkage to care, respondents were more likely to select ‘enrolled in care within a specified number of days of receiving HIV test result’ than ‘CD4 count’. A few noted that receiving a CD4 count result within a specified period of time could be significantly supply-dependent. For those who selected ‘enrolled in care’ the survey asked what number of days should be specified. The responses varied from 2 days to 90 days.

When asked to select a standard definition of ‘loss to follow-up’ in both pre-ART care and ART the responses were split between basing it on a set number of missed clinic visits and basing it on a set number of months since the last clinic visit. Most of the respondents favor the same measure for both pre-ART as they do for ART services. The survey also asked how many visits or how many months. Overall, the number of months was split between 3 and 6 for pre-ART, and leaned toward 3 for ART. Those who chose missed visits showed no agreement, with 1, 2, 3, (for both pre-ART and ART) or even 6 (for ART).

Half of those who selected a standard measure to assess adherence favor using viral load. Most of the other respondents selected the ‘other’ option and wrote in self-report or clinic attendance or multiple measures. One respondent selected CD4 counts. Interestingly, no one selected pill counts as a standard measure to assess adherence.

The survey also asked at which time-points the respondents would want to measure retention in ART. In theory, these time-points would be selected to capture when attrition is most likely. Respondents could enter up to six time-points. Responses include 1, 3, 6, 12, 24, and 36 months, and one person responded 48 months. Two people mentioned only one month, but in their answer for why they picked their time-points, they focused on assessing whether someone is lost to follow-up rather than “still retained.” The reasons given by others for the time-points they picked centered on their understanding that many patients are lost early on and therefore assessments should focus on early months. It was also mentioned, however, that collecting data prior to six months might be too expensive.

Finally, the survey allowed for an open-ended comment on anything else. One person commented that some available studies look at integration for HCT, but neglect ART. Another person pointed to a study that supports integration of services at lower level, or community, facilities and suggested that studies such as that one should result in policy changes. One person was interested in HIV vaccine research, and another person suggested that there is a need to address access to antiretrovirals for HIV-positive children of couples in which one is not aware of the other’s HIV-positive status. In addition, in rating evidence, two people mentioned that there is a need to consider integrating HIV services with non-health services, since some people do not access clinical services, and one suggested job training programmes as an example of a non-health service that could add HIV services.

4. Discussion

Overall, the dearth of impact evaluation evidence, as shown in the evidence gap map, helps to explain why survey respondents are often more likely to use M&E and anecdotal evidence. In fact, there are cases where the respondents reported using impact evaluation
evidence when there is no impact evaluation evidence available. A notable example is structural integration, where more people reported using impact evaluation evidence than the other types of evidence, and yet there is no study. This anomaly suggests that many stakeholders are still rather naïve about the types of evidence and which type should be used for which kind of decision.

Survey respondents feel there is strong evidence supporting the integration of MNCH with HIV services, and although they admit they are considering M&E evidence more than research, or impact evaluation, evidence, several do report that they are considering impact evaluation evidence. Yet, the gap map reveals that there are only three impact evaluations that measure the impact of the integrating MNCH services with HCT and one that measures the impact of integrating MNCH with ART. The perceptions that the evidence base is strong are supported by some of the non-impact evaluation studies presented in the literature review, which generally show positive or neutral outcomes. However, some of these studies report outcomes related to PMTCT, not linkage to care, retention, or adherence. The one impact evaluation of providing ART in antenatal clinics finds that the integration ‘doubled the proportion of treatment-eligible women initiating ART while pregnant.’ (Killem et al. 2011 p.1) Taken together, the results from literature review, gap map, and stakeholder survey suggest that MNCH services is a promising area for integrating HIV services, but that much more rigorous evidence is needed.

In contrast, survey respondents ranked OST quite low relative to other health services in terms of the strength of evidence supporting integration with HIV services, while the evidence gap map shows that this area has the largest evidence base with 12 impact evaluations. Even more striking, survey respondents based their answers regarding strength of evidence mostly on anecdotal evidence. It is outside the scope of this report to synthesize the results of those 12 studies, however, the survey results suggest that the evidence is not widely known or used. It comes entirely from high-income countries, which may help explain the disconnect. Innovators exploring OST – HIV integration should draw on the existing evidence base to ensure new interventions benefit from those lessons.

Sexual and reproductive health and family planning is the second highest ranked in terms of perceived strength of evidence and yet there are no impact evaluations. This finding is consistent with the high number of respondents who said they are using anecdotal evidence or M&E evidence as opposed to the low number who ticked research/impact evaluation. The literature review reports some evidence that this combination benefits family planning outcomes. The perceived strength of evidence supporting the integration of these services in light of the lack of impact evaluations, suggests that much can be gained from conducting impact evaluations of existing interventions in addition to innovating and conducting impact evaluations of innovations.

In their written responses, several survey respondents mentioned the integration of HIV services with primary health care and general health services as an area where there is need for more evidence. There are only two impact evaluations of this combination, and both of these measure impacts of interventions within these settings rather than measuring the impact of the integration. At the same time, the literature review reviews non-impact evaluation evidence that shows integration with general health services is cost effective.
Taken together, these results suggest that primary health care/general health services is a promising area for innovation and impact evaluation.

The most notable absence from the gap map is evidence related to integration of other health services with pre-ART care. The search and screening uncovered only one study, which also looks at ART services, integrated with substance use services. That study measures only secondary outcomes to those we are considering here. At the same time, we saw in the literature review that the estimates in one attrition study suggest that retention from testing to initiation of ART can be as low as 18% (Rosen and Fox 2011). There is clearly need for testing of innovations for pre-ART care services.

Integration of HIV services with other health services can serve many functions, including many that were not the focus of this scoping report. The evidence on integration of HIV services is relatively limited, and the evidence on the impact of such integration on linkage to care, adherence and retention is even smaller. Other outcomes that are commonly assessed include improving outcomes related to the other health services and reducing transmission of HIV. In addition, it is possible to integrate HIV services with non-health services. Many HIV-positive people, especially men, do not utilise the health system frequently, and it may be more successful to bundle HIV services with services that they use more frequently, such as job training programmes, microfinance, or work programmes.

Because the main objective of this scoping report is to inform the development of a grant programme to fund interventions that integrate HIV services with other health services with the goal of improving linkage to care, adherence or retention, evidence on these other types of outcomes and integrations was not evaluated.

5. Limitations

This scoping report was prepared during a fixed window of time to make the information available upon the release of the TW7 request for proposals. The time constraint led to some limitations.

The evidence gap map is a rapid evidence gap map, meaning that fewer databases were searched than typical, and thus we may have missed some studies. Our top level search returned 4482 records from a relatively detailed search string, however, demonstrating that the databases we selected were highly relevant.

We purposefully did not restrict the search to evaluations of programmes conducted in low- and middle-income countries in order to capture all evidence that can useful. As it turns out, the majority of included studies are of interventions in high-income countries, which suggests an even smaller evidence base given that external validity is likely to be limited for many of these studies.

It is important to remember when analysing the evidence gap map that it presents the quantity of evidence and the quality of evidence (since it is restricted to impact evaluations) but it does not present the findings from the evidence. Cells that include occurrences from multiple studies reveal possible intervention and outcome combinations for evidence synthesis.
The sampling for the stakeholder survey was solely convenience sampling, and the response window was short. There is no way of knowing whether our respondents are representative of the larger stakeholder community. Our analysis is based on a relatively small n.

6. Conclusions

Impact evaluation evidence on the impact of integrating HIV services with other health services is still very limited. While it appears that there are growing number of service integration efforts, as well as strong international support, more evidence is needed to inform decision and policy-making. To ensure that we are getting the most value, we need more evidence on what works, why, how, and at what cost.

When considering the literature review, evidence gap map, and survey together, several integration areas emerge as particularly promising or relevant, although for different reasons. Stakeholders perceive that there is strong evidence, relative to other services, supporting the integration of MNCH and sexual and reproductive health and family planning with HIV services. Only for MNCH is there rigorous evidence. Conversely, stakeholders perceive that the strength of evidence for opioid substitution therapy is relatively low, while there are indeed several impact evaluations, albeit from high-income countries. It is important now to test these innovations in low- and middle-income countries.

Several respondents would like to have more evidence on the impact of integrating primary health care and general health services with HIV services. Cost effectiveness analysis also suggests this is a promising area for innovation. Finally, the most notable gap in evidence is for the integration of other health services with pre-ART care. The treatment cascade estimates suggest, however, that this is a key drop-off point.
Appendix 1: Detailed gap map search and screening strategy

Search protocol

To find impact evaluations of interventions using integration of HIV services with other health services to address linkage to care, adherence, and retention, we conducted a systematic search based on three elements:

- Integration of HIV services with other health services to achieve outcomes related to linkage to care, adherence, and retention:
- Impact evaluation methodologies.

We used AND operators to find records at the intersection of the three elements.

The first element itself is the intersection of three sub-elements: HIV services, other health services, and the relevant outcomes. The other health services included in the search are:

- Maternal and child health;
- Tuberculosis;
- Sexual and reproductive health and family planning;
- Substance use and substitution therapy;
- Primary care;
- Integrated public and private service provision and information.

For both sets of services, we did not include key words to indicate particular service activities (e.g. testing, treatment) as we did not want to unnecessarily limit the search and had no ex-ante restrictions on types of activities. The relevant outcome are linkage, retention, and adherence. We used AND operators to capture the intersection of these three sub-elements.

For the second element, we used a set of search terms that 3ie has used successfully for other systematic searches to capture impact evaluations. The terms are very broad and return all types of evaluations, from which we screened for impact evaluations. The advantage of using evaluation terms in the search is that they also help to limit the hits to documents about programmes.

The HIV related search string was searched in the title and abstract fields, whereas the other search strings were searched in all fields. Additionally, MeSH and Emtree terms for HIV were searched and combined with the HIV search string above through use of an OR operator. We did not restrict the search based on region or national income.

The following are the core search strings. We adapted them slightly for each platform or database depending on the available Boolean operators:

**HIV service integration interventions to address linkage to care, adherence, and retention**

HIV* OR “human immunodeficiency virus” OR “human immune-deficiency virus” OR “human immune deficiency virus” OR “People living with HIV” OR PLHIV OR PLWHIV OR PLWHA OR “HIV-positive” OR (HIV AND (positive OR “sero-positive” OR seropositive)) OR “treatment cascade”
AND

((maternal OR "maternal health") AND (child OR "child health")) OR MCH OR MNCH OR antenatal OR tuberculosis OR TB OR MDRTB OR XDRTB OR "sexual health" OR "reproductive health" OR "family planning" OR ((opiate OR opioid*) AND (substitute* OR replace*)) OR methadone OR buprenorphine OR (primary AND (health OR care)) OR (general AND (care OR pract*)) OR (public AND private) OR integrat*

AND

linkage OR referral OR refer* OR retention OR retain* OR adherence OR adhere*

AND

**Impact evaluation**

(impact AND (evaluat* OR assess* OR analy* OR estimat*)) OR (summative AND (evaluat* OR assess* OR analy* OR estimat*)) OR (effect* AND (evaluat* OR assess* OR analy* OR estimat*)) OR (random* AND (control* OR trial OR allocat* OR intervention* OR assign*)) OR counterfactual OR counter-factual OR ((program OR programme OR organization*) AND effectiveness) OR (feasibility AND (study OR analysis))

With the objective of finalizing the scoping report in time for the release of the thematic window request for proposals, we conducted a rapid search. A rapid search uses the same kind of search protocol as a full search but limits the databases searched to those deemed most likely to have the relevant studies indexed. For this rapid search, we focused on the health and medical databases. We were also limited to those databases available to 3ie. The databases are:

**EBSCO Host platform**
- CAB Abstracts

**Ovid SP platform**
- Embase
- Medline
- PsycINFO
- ERIC

**Websites**
- World Bank
- United Kingdom Department for International Development
- United States Agency for International Development (Development Experience Clearinghouse)
- 3ie Impact Evaluation Repository

We also screened all the studies cited in the systematic reviews used for the literature review.
After completing the screening protocol and arriving at the included studies, we conducted a snowball search by looking at all the citations in the included articles. None of these 689 studies met the inclusion criteria. The snowball search in the counts reported in figure 1, although it is likely that many of them would be duplicates to those included in the counts.

**Screening Protocol**

The screening strategy included the following steps

1. Search results were imported into Endnote
2. Duplicates were removed
3. Titles/abstracts were screened for exclusion, which was based on clear absence of one of the inclusion criteria
4. The full text of non-excluded studies was screened for inclusion
5. Included articles were coded for interventions and outcomes
6. Article citations were added to the gap map in all applicable cells

In addition, we conducted a second screening of all records (after duplicate removal) for systematic reviews. The search and screening results numbers presented in figure 1 in the main text do not include the screening for systematic reviews. However, no systematic review met all inclusion criteria, and therefore none is included in the gap map.

**Inclusion Criteria**

To be included in the gap map, studies must have the following components

- Study is published in a journal, as a report from an organisation, or as a part of a working paper series
- Study concerns a programme, policy, or intervention focused on service integration of HIV with another health area or primary care
- Study uses one of the following impact evaluation methodologies or, for systematic reviews, conducts meta-analysis on effect sizes produced using one of the following methodologies
  - Randomised control trials (RCTs)
  - Regression discontinuity designs (RDDs)
  - Non-randomised studies based on participant self-selection using a matching method to establish a counter-factual (propensity score matching, covariate matching, or other matching method)
  - Difference-in-differences (DD) (or a fixed or random effects model with an interaction term between time and intervention for baseline and follow-up observations)
  - Instrumental Variable (IV) estimation (or Heckman Two Step approach that uses a valid instrumental variable to help control for selection bias)
- Study is not solely a biomedical efficacy trial. To test for this inclusion criterion, screeners checked for at least one of the following
  - The intervention under study promotes a social, economic, or behavioral change either as one of the final measured outcomes or as a mechanism within the theory of change (beyond the self-administration of a drug).
  - The study measures any other outcomes in addition to or beyond purely
biomedical indicators

- The study measures the cost-effectiveness or cost-benefit of the treatment(s).
- The study records any additional formative information that could guide the design or execution of future studies. For example, an RCT that also measures acceptability of a particular treatment (measuring respondent satisfaction with treatment not merely a rate of compliance or uptake) would be included.
- The treatment is both prepared and delivered by a community health worker, or trained layperson (such as a parent, teacher, or community member and not merely one of the programme or study enumeration team).
- The programme or outcomes measured answer, or attempt to answer, a question relevant to the roll-out of international development policies or interventions.

- Study measures at least one HIV/AIDS treatment cascade outcome, including linkage, retention, and adherence, using the impact evaluation (counterfactual based) methodology

**Coding**

We indicate with a double asterisk in the evidence gap map studies that report on programmes in low or middle income countries. We define low and middle income nations using the World Bank’s index. The index of low- and middle- income countries was created in 1989 by the Bank, encompassing data from 1987 to present and categorizing countries as high-, medium-, or low-income based upon analysis of their per capita GNI in US dollars.
Appendix 2: Stakeholder survey instrument

Stakeholder Survey on HIV service integration

Purpose of the Survey

You are being contacted due to your knowledge and experience in the health and/or HIV field. It should take you around 10 minutes to complete the survey. We would appreciate if you respond to the questions by next Wednesday, June 25.

3ie is funding six studies (impact evaluations) to assess the effect of integrating HIV services with other health services on the HIV care continuum—specifically, linkage to care, retention, and adherence. As we develop the scope of the grant program, we want to ensure that we are able to guide our applicants to the most relevant interventions and evaluation questions. For this reason we are asking for your input.

We hope that your answers on this survey will help us identify the areas of service integration for which there is most interest in obtaining more evidence. We also hope to understand which areas of service integration appear to be most able to improve linkage to care, adherence and retention, to help achieve international goals of zero new infections, zero discrimination, and zero AIDS-related deaths.

Thank you very much for your response.
Personal Information & experience in sector

1. Name and email address (Optional)
   First Name _______________________________
   Last Name _______________________________
   Email _________________________________

2. Type of organization
   o Developing country government ministry or agency
   o University/Academy institution
   o Health research organization
   o Other research organization
   o NGO
   o Developed country donor agency
   o Private consultancy
   o Other
     Other (please specify) _______________________

3. Current position _______________________________

4. What are your areas of expertise (Select all that apply)?
   □ HIV Prevention
   □ HIV Testing and Counseling
   □ HIV pre-antiretroviral therapy (pre-ART) care
   □ Provision of ART
   □ Health communication/education
   □ Provision of medical care (non HIV/AIDS)
   □ Monitoring and Evaluation
   □ Research-Biomedical/Device
   □ Research-Programmatic
   □ HIV/Health policy and/or advocacy
   □ Other
     Other (please specify) _______________________

5. How long have you worked in Health/HIV or related areas?
   o < 2 years
   o 2 – 4 years
   o 5 – 9 years
   o 10 – 19 years
   o 20+ years
   o Not applicable

6. In which country are you currently based?
   __________________________________________

7. In which region do you usually work or is your research primarily based?
   □ Sub-Saharan Africa
   □ Middle East and North Africa
8. Which of the following areas are you or your organization work on/supporting? (Select all that apply)
   - Policy/Advocacy
   - Research
   - Finance
   - Implementation

9. What types of Health/HIV/AIDS interventions are you or your organization work on/supporting?
   - Biomedical (if Yes, skip to Question 13)
   - Prevention (if Yes, answer Question 10, then skip to Question 13)
   - Care and Treatment (if Yes, answer Question 11, then skip to Question 13)
   - Laboratory services (if Yes, answer Question 12, then skip to Question 13)
   - None (if Yes, skip to Question 13)

Specific areas of HIV/AIDS works

For the type of HIV/AIDS interventions you or your organization is working on, please specify:

10. If prevention
   - Health Education/ Behavioral change communication
   - HIV testing and counseling, or counseling
   - Voluntary medical male circumcision
   - Other
     - Other (please specify) __________________________

11. If Care and Treatment
   - Preantreretroviral therapy (preART) care Antiretroviral therapy (ART)
   - Tuberculosis (TB) testing and/or treatment Medical care (non HIV, non TB)
   - Services for injecting drug users/former users
   - Services for female sex workers/commercial sex workers or who have sex with men Services for migrant/mobile workers
   - Community-based services, such as community adherence groups, health communication, community health workers Pharmacy/drug supply
   - Other
     - Other (please specify) __________________________

12. If laboratory services – which services?

________________________________________________________________________
HIV service integration

Integration of HIV services with other services has been proposed as a way to improve outcomes for people living with HIV. Many people living with HIV do not know their HIV status, or once they know, do not link to care by enrolling in services and receiving a CD4 count, or if their CD4 count makes them ineligible to start treatment they don’t come back for retesting, or if they are eligible they do not initiate treatment, or once they start they fail to take all their medication or stop picking up medication.

There are three main HIV service areas, HIV testing and counseling, preantiretroviral therapy care (preART care), and antiretroviral therapy (ART). Integration of each of these services with other health services potentially affects two care measures. Integrating HIV testing and counseling to other services could improve testing and linkage to care, integrating PreART services could improve linkage to care and retention in preART, integrating ART could improve adherence to ART and retention in ART.

We are now going to ask you about the evidence available for each of these six combinations of HIV services and care measures. We will also ask about evidence that does not support integrating services.
Integration of HIV testing and counseling with other services has been proposed as a way to identify more HIV+ individuals and improve linkage to care.

13. Please rank the following health service areas according to the strength of evidence to support a decision to integrate HIV testing and counseling with those services to increase testing and identification of more HIV+ individuals. Rank as many as you feel have at least some evidence, with 1 being the one with the strongest evidence, 2 the next strongest, etc. until the evidence is so weak that it is not important. Leave those with very weak or no evidence blank.

Maternal, neonatal, and child health services
Sexual and reproductive health and/or family planning services
Youth services
Primary health care
Tuberculosis services
Opioid substitution therapy
Integration of public and private service information
Structural integration (e.g. Voluntary and Testing (VCT) centers within a health facility)
Other

14. If other, what other health services?
_____________________________________________________

15. For each type of HIV testing and counseling service integration to improve identification of HIV+ individuals, what kind of evidence did you consider in ranking its strength?

<table>
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16. Please rank the following health service areas according to the strength of evidence to support a decision to integrate HIV testing and counseling with those services to improve linkage to care. Rank as many as you feel have at least some evidence, with 1 being the one with the strongest evidence, 2 the next strongest, etc. until the evidence is so weak that it is not important. Leave those with very weak or no evidence blank.

Maternal, neonatal, and child health services
Sexual and reproductive health and/or family planning services
Youth services
Primary health care
Tuberculosis services
Opioid substitution therapy
Integration of public and private service information
Structural integration (e.g. Voluntary and Testing (VCT) centers within a health facility)
Other

17. If other, what other health services?

18. For each type of HIV testing and counseling service integration to improve linkage to care, what kind of evidence did you consider in ranking its strength?

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19. Are there any areas where you feel integration HIV Testing and Counseling services would not improve identification of HIV+ individuals? Please describe strength and type of evidence you used.

20. Are there any areas where you feel integration HIV Testing and Counseling services would not improve linkage to care? Please describe strength and type of evidence you used.
Integration of preART services with other health services has also been seen as a way to improve linkage to and retention in preART care, due to a perception of improved privacy, convenience of multiple services, and/or improved ability to find/track patients.

21. Please rank the following health service areas according to the strength of evidence to support a decision to integrate preART services with those services to improve linkage to care. Rank as many as you feel have at least some evidence, with 1 being the one with the strongest evidence, 2 the next strongest, etc. until the evidence is so weak that it is not important. Leave those with very weak or no evidence blank.

- Maternal, neonatal, and child health services
- Sexual and reproductive health and/or family planning services
- Youth services
- Primary health care
- Tuberculosis services
- Opioid substitution therapy
- Integration of public and private service information
- Structural integration (e.g. Voluntary and Testing (VCT) centers within a health facility)
- Other

22. If other, what other health services?

23. For each type of preART service integration, what kind of evidence did you consider in ranking its strength?

<table>
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<th>Service Area</th>
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</table>
24. Please rank the following health services areas according to the strength of evidence to support a decision to integrate preART services with those to improve retention in pre ART care. Rank as many as you feel have at least some evidence, with 1 being the one with the strongest evidence, 2 the next strongest, etc. until the evidence is so weak that it is not important. Leave those with very weak or no evidence blank.

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25. If other, what other health services?

_______________________________________________________________________

26. For each type of preART service integration, what kind of evidence did you consider in ranking its strength?

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27. Are there any areas where you feel integrating preART services would not improve linkage to care? Please describe strength and type of evidence you used.
28. Are there any areas where you feel integrating preART would not improve retention in preART care? Please describe strength and type of evidence you used.
Integration of the initiation and provision of ART with other health services been seen as a way to improve adherence to treatment regimens and retention in ART, due to perception of improved privacy, convenience of multiple services or locations, and/or an improved ability to find/track patients.

29. Please rank the following health service areas according to the strength of evidence to support a decision to integrate ART services with those services to improve adherence to antiretroviral treatment regimens. Rank as many as you feel have at least some evidence, with 1 being the one with the strongest evidence, 2 the next strongest, etc. until the evidence is so weak that it is not important. Leave those with very weak or no evidence blank.

Maternal, neonatal, and child health services
Sexual and reproductive health and/or family planning services
Youth services
Primary health care
Tuberculosis services
Opioid substitution therapy
Integration of public and private service information
Structural integration (e.g. Voluntary and Testing (VCT) centers within a health facility)
Other

29. If other, what other health services?

_____________________________________________________

30. For each type of ART service integration, what kind of evidence did you consider in ranking its strength?

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32. Please rank the following health service areas according to the strength of evidence to support a decision to integrate ART services with those services to improve retention in antiretroviral therapy (ART). Rank as many as you feel have at least some evidence, with 1 being the one with the strongest evidence, 2 the next strongest, etc. until the evidence is so weak that it is not important. Leave those with very weak or no evidence blank.

Maternal, neonatal, and child health services
Sexual and reproductive health and/or family planning services
Youth services
Primary health care
Tuberculosis services
Opioid substitution therapy
Integration of public and private service information
Structural integration (e.g. Voluntary and Testing (VCT) centers within a health facility)

Other

31. If other, what other health services?

__________________________

32. For each type of ART service integration, what kind of evidence did you consider in ranking its strength?

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35. Are there any areas where you feel integrating ART services would not improve adherence to treatment regimens? Please describe strength and type of evidence you used.
36. Are there any areas where you feel integrating ART services would not improve retention in ART? Please describe strength and type of evidence you used.
Outcome measures and indicators

One complaint we have heard is that there are no standard measures used to assess linkage to care, adherence, or retention.

37. If you had to use one standard measure to assess linkage to care, what would it be?
   □ Enrolled in care within a specified number of days of receiving HIV test result
   □ Received CD4 count within a specified number of days of receiving HIV test result
   □ Other

What other measure?

__________________________________________________________________

38. How many days? ________

39. Why would you use your selected measure (enrolled, CD4 results, other)?

__________________________________________________________________
Measures for Adherence and Retention/Loss to Follow-Up

This section asks about measures in preART care and ART services.

40. If you had to use one standard definition of loss to followup in preantiretroviral therapy (preART) care, what would it be?

□ More than a specified number of missed clinic visits
□ More than a specified number of months since last clinic visit
□ Other

What other measure?
__________________________________________________________________

41. How many visits or months? _______
42. Why would you use this measure?
__________________________________________________________________

43. If you have to use one standard measure to assess adherence to treatment regimens, what would it be?

□ Pill count
□ Viral load (skip to Question 45)
□ CD4 count (skip to Question 45)
□ Other

Other (please specify) ________________________________________________
(skip to Question 45)

44. How should pills be counted?

□ Selfreported pill counts/missed pills
□ Directly observed pill count
□ Mechanical pill count (e.g. special container)

45. Why would you use this measure?
__________________________________________________________________

46. If you had to use one standard definition to assess loss to followup in antiretroviral therapy, what would it be?

□ Less than a specified number of missed clinic visits
□ Less than a specified number of months since last clinic visit
□ Other

What other measure? __________________________

47. How many visits or months? _____
48. Why would you choose your selected measure (visits, months, other)?
__________________________________________________________________

14
43. At which months (time points) would you assess retention which time points would you consider to be critical months for patient dropoff within antiretroviral therapy? Enter only as many as you feel are relevant.

1  ____
2  ____
3  ____
4  ____
5  ____
6  ____

49. Why? _________________________________________________________
**Outcomes measures and indicators that shouldn't be used**

51. Are there any outcome measures that you feel are commonly used but don't provide reliable or useful information, or the information they provide is misleading, and therefore recommend not using?

**More Evidence**

52. For which areas of service integration would you personally like more

53. For which areas of service integration do you think evidence is most needed for those in the general field of HIV services?

54. Do you have any other comments?
References

Scoping report


directly observed therapy as an adherence intervention for HAART among substance users. *Aids*, 21(11), pp. 1473-77.


Evidence gap map included studies


