

# Integration of STI and HIV Prevention, Care, and Treatment into Family Planning Services: A Review of the Literature

Kathryn Church and Susannah H. Mayhew

*The last comprehensive literature review to examine the effectiveness of family planning (FP) services in delivering STI and HIV prevention and care was published in 2000. This review updates that report by examining evidence of the impact of integrating any component of STI or HIV prevention, care, and treatment into a family planning setting in developing countries. Forty-four reports were identified from a comprehensive search of published databases and “grey literature.” The weight of evidence demonstrates that integrated services can have a positive impact on client satisfaction, improve access to component services, and reduce clinic-based HIV-related stigma, and that they are cost-effective. Evidence of FP services reaching men and adolescents and of their impact on health outcomes is inconclusive. Several studies found that providers frequently miss opportunities to integrate care and that the capacity to maintain the quality of care is also influenced by many programmatic challenges. The range of experiences indicates that managers need to determine appropriate health-care service-delivery models based on a consideration of epidemiological, structural, and health-systems factors. (STUDIES IN FAMILY PLANNING 2009; 40[3]: 171–186)*

After almost 20 years of attempting to integrate the various components of sexual and reproductive health (SRH) services, do we know anything more about the impact, efficiency, or cost-effectiveness of service integration? The rationale for integrating the prevention and care of sexually transmitted infections (STIs), including HIV, into family planning (FP) services has been articulated since the early 1990s, and countless reviews, commentaries, and policy documents have detailed both its presumed and proved benefits (Cates and Stone 1992; Pachauri 1994; Mayhew 1996; Shelton 1999; Askew and Berer 2003; Berer 2004; Mitchell et al. 2004; UNFPA 2004a; WHO 2004; WHO et al. 2005). Because unwanted pregnancy and STIs share the same root cause—namely, unprotected sexual intercourse—expecting FP services to be at the forefront of efforts to prevent the sexual transmission of infections, including HIV (Askew and Berer 2003), was seen as logical. Instituting comprehensive SRH services, as advocated at the International Conference on Population and Development held in Cairo in 1994, appeared to be a means of addressing wide-ranging health and social

needs and of overcoming the limitations of “vertical” or stand-alone FP programs.

Evidence began to emerge in the late 1990s, however, of some of the considerable challenges faced by FP services (now usually branded with maternal and child health [MCH] services as “reproductive health services”) in expanding beyond their service focus and their traditional client base of married women (Lush et al. 1999; Askew and Maggwa 2002; Caldwell and Caldwell 2002; Foreit et al. 2002). Difficulties encountered in developing feasible, acceptable, efficacious, and cost-effective strategies, particularly for delivering STI-management services, were seen as formidable obstacles to providing comprehensive care (Askew and Berer 2003). As one review demonstrated, although many FP services were managing to deliver STI/HIV-prevention services, they were not successful in scaling up access to STI diagnosis and treatment (Dehne et al. 2000).

Since that time, the field of sexual and reproductive health has evolved, particularly in response to the rapidly expanding HIV pandemic and the new drive to scale up access to HIV prevention, care, and treatment. In spite of the systemic health-systems challenges documented in the 1990s, a new drive to service integration has emerged in the past few years. This recent effort has been focused on the integration of HIV testing and treatment with reproductive health care and on promoting the integration of RH with the newly emerging HIV services in order to meet

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*Kathryn Church is Research Fellow and Susannah H. Mayhew is Senior Lecturer in Health Policy and Reproductive Health, Centre for Population Studies, London School of Hygiene & Tropical Medicine, 50 Bedford Square, London, WC1B 3DP. E-mail: kathryn.church@lshtm.ac.uk.*

the RH needs of people living with HIV / AIDS (PLWH). Policymakers and commentators have been advocating a series of overlapping strategies, including increasing linkages between the two fields (implying some form of joint programming, service integration, and/or cross-referral) (UNFPA 2004a; WHO et al. 2005 and 2008; Druce et al. 2006); HIV mainstreaming (Sinding 2004); avoiding missed opportunities (Myer et al. 2007); SRH/HIV “convergence” (PATH 2007a); and continuing emphasis on service integration (Fleischman 2006; WHO 2006a; Farrell 2007). Although STI control has been overshadowed by the large waves of funding and political commitment to HIV / AIDS, the publication of recent global strategies for STI control in general (WHO 2007b) and for the elimination of congenital syphilis in particular (WHO 2007a) has brought renewed emphasis to scaling up access to prevention, care, and treatment of STIs, notably by integrating them with RH services at the primary level of care.

In light of these developments, the time has come to examine new and emerging evidence of the success of RH programs, specifically of family planning services, in addressing the STI- and HIV-related health needs of their clientele. This review updates two previous literature reviews: the first published in 1996 by Mayhew and the second published in 2000 by Dehne and his colleagues. The latter is the most recently published comprehensive review employing a search strategy and date limits. In the present review, we evaluate the success of FP programs in achieving the anticipated public health benefits of integrated care. These benefits have been communicated in various policy documents and commentaries (see, for example, WHO et al. 2005; Fleischman 2006; WHO 2006a; and Farrell 2007). For this review we consider whether the evidence demonstrates that integrated services:

- increase client satisfaction;
- improve service uptake by expanding the range of services provided;
- expand the reach of services to nontraditional clients;
- reduce STI- and HIV-related stigma through the provision of services not associated with frontline STI/HIV care;
- improve the quality of care, including clinical care, interpersonal care, and the coordination of care;
- improve the organizational effectiveness of service provision, including cost-effectiveness; and
- influence behavioral, health, and social outcomes.

## Methodology

We undertook a comprehensive review of published literature to identify studies reporting any process or out-

come evaluations of interventions that integrate one or more components of STI- and/or HIV-transmission prevention, care, or treatment into family planning services (including those provided through reproductive health services and the primary-care structure). Interventions to integrate FP with newly emerging HIV services, or to integrate HIV with services exclusively directed to maternal and child health care (including prevention of mother-to-child transmission of HIV [PMTCT]) are not considered here. “Services” are defined as facility-based services or services provided through community health workers (CHWs). The review included only those studies conducted in developing countries published in English between January 1999 and August 2008 that reported original findings. Studies identified included randomized controlled trials (individual or cluster), before-and-after studies (with and without controls), cohort studies, case-control studies (facility- or individual-based), ecological studies, descriptive case studies, situation analyses, and programmatic evaluations, published either in peer-reviewed journals, as conference papers or presentations, or as programmatic reports published on the Internet. Commentaries—including editorial letters, descriptive discussions, or consensus statements—were excluded. Several reports on youth-friendly integrated SRH services were identified but excluded from the review because they reported on a wide range of intervention activities aimed at young people and did not evaluate separately the integration of health care. Studies reviewing “specialized” integrated services (for example, those designed exclusively for men, for adolescents, or for sex workers) were also excluded; only those reviewing interventions that sought to expand their traditional client base at the clinic were included.

Database searches were conducted on PubMed (MEDLINE) and POPLINE. MEDLINE was searched using the following MeSH<sup>1</sup> terms: (“family planning services” OR “contraception” OR “reproductive health services” OR “maternal health services” OR “primary health care”) AND (“HIV” OR “acquired immunodeficiency syndrome” OR “sexually transmitted diseases”). POPLINE was searched using the following terms: (“family planning” OR “contraception” OR “maternal health” OR “reproductive health”) AND (“sexually transmitted diseases” OR “HIV” OR “HIV infections” OR “HIV prevention” OR “HIV testing” OR “AIDS”) AND (“health services”). Two widely known international journals specializing in FP/RH/HIV-related studies were also hand-searched: *Reproductive Health Matters* and *International Family Planning Perspectives*. The websites of the following key international organizations sponsoring or reporting FP/RH/HIV-related research in developing countries were also searched manually: the Population Council, the

World Health Organization (Department of Reproductive Health and Research and Department of HIV / AIDS), and [hivandsrh.org](http://hivandsrh.org) (Resources for HIV / AIDS and Sexual and Reproductive Health Integration).

## Findings

In total, 44 studies met the inclusion criteria (see Appendix). Of these, 2 were randomized controlled trials (one a cluster trial); 12 were pre- and post-test evaluations of interventions (four with controls); 2 used retrospective analysis of routine data (one as a case-control study); 14 used a cross-sectional evaluation design (mixed methods); 1 was purely qualitative; and 13 were descriptive case-study reports either using routine data or having no clear design. The studies covered work in 27 countries; the majority of reports were from sub-Saharan Africa.

### Client Satisfaction

Provision of a relatively broad range of services within one clinic or by means of a single visit to one provider has been assumed to increase clients' satisfaction. However, the integration of STI/HIV into FP consultations may also require that a risk assessment of sexual behavior be conducted, and in some instances a pelvic examination as well, both of which may be off-putting to some clients. Traditionally, the majority of FP clients have been married women, who might be expected to engage in fewer risky behaviors than other population groups (Askew and Berer 2003). These women may be more likely than others to be fearful of a risk assessment or pelvic examination.

The reviews by Mayhew (1996) and by Dehne and his colleagues (2000) showed some evidence of increased client satisfaction with integrated services. Of the 44 studies covered in this review, none found a negative impact of integration of services on client satisfaction. Clients' complaints were reported in one cross-sectional study, and the authors suggest that the constraints identified, such as long waiting times, inadequate privacy, and insufficient time for questions during consultations, were a barrier to, rather than a consequence of, integration (Maharaj and Cleland 2005). In general, clients reported appreciation for being able to gain access to a broader range of services. Examples are the integration of STI prevention and treatment services with FP provision in Ghana (Fullerton et al. 2003), in Zimbabwe (Maggwa et al. 1999), in Kenya (Solo et al. 1999), in South Africa (Zondo et al. 2000), and in Côte d'Ivoire (Lafort et al. 2003), as well as the integration of HIV (testing and counseling and/or antiretroviral therapy [ART]) with FP services in Cambodia (Best 2004; IPPF 2006), in Ethiopia (Kaba and Alem 2006), in Kenya

(Liambila et al. 2008), in South Africa (Mullick et al. 2006), and in the Dominican Republic (IPPF 2006). A number of studies conducted in diverse settings also found that the majority of clients reported feeling comfortable about being asked questions concerning sexual behavior for risk assessment in sub-Saharan Africa (Maggwa et al. 1999; Population Council 1999; Solo et al. 1999) and in Egypt and Sudan (Abdel-Tawab et al. 2000; IPPF 2003c).

Caution must be exercised in interpreting the findings, however, because data reflecting client satisfaction have limitations. Many are taken from exit interviews using crude quantitative variables that fail to incorporate nuances of tastes, beliefs, and opinions. They are also subject to courtesy bias: many clients are reluctant to give negative opinions, especially when questioned at the service site (Avis et al. 1997; Williams et al. 2000).

### Uptake of Services

Demand for and use of services may be better indicators of client satisfaction than exit interviews. Data for these variables, although more robust, are limited by the paucity of well-designed observational or experimental studies. The data that exist suggest that use of FP services does not decrease after integration (Mullick et al. 2006). Some programs reported increased service uptake after integration (Campbell and Lambey 2002; Shittu et al. 2002; Rob et al. 2005; Abera and Asnake 2006; Kaba and Alem 2006; Mphuru et al. 2006; WHO et al. 2008), and one found improved continuity of repeat clients after service integration (Fullerton et al. 2003).

Service integration also has the potential to lead to a greater breadth of care—that is, to an increase in the range of care through cross-utilization of services and reduced need for referrals. It may be particularly helpful for reaching clients who otherwise may not seek STI/HIV services. Although Dehne and his colleagues (2000) found insufficient evidence to state that service integration increased access to STI care for FP clients, recent studies have indicated that integration of new service components with FP or RH can increase access to these services, including services for STI/HIV-transmission prevention (Chege 2001), referrals for HIV testing and counseling (Odeh et al. 2005; Liambila et al. 2008), HIV testing within FP/RH clinics (IPPF 2003a and 2005; Mullick et al. 2006; Bradley et al. 2008; Liambila et al. 2008), STI care within RH (Arens et al. 2002; Fullerton et al. 2003; Lafort et al. 2003; Rob et al. 2005), and ART care within SRH clinics (IPPF 2006). In the majority of these cases, integration also implied increased use of multiple services.

Conversely, recent reports also describe the persistence of missed opportunities in service delivery, including failure to counsel FP clients on dual protection or con-

dom use (Population Council 1999; Mayhew et al. 2000; Adeokun et al. 2002; Lafort et al. 2003; Ndhlovu et al. 2003; Maharaj and Cleland 2005); providers' preference for promoting injectable contraceptives over condoms (Ndhlovu et al. 2003); their failure to conduct pelvic examinations (Chowdhury et al. 1999; Population Council 1999); and their failure to conduct behavioral risk assessments (Chowdhury et al. 1999; Mayhew et al. 2000; Lafort et al. 2003), even in cases of clients who judge themselves to be at high risk (Maharaj and Cleland 2005). Studies suggest that these omissions are due to a variety of systemic shortcomings (among them, poor referral systems, too few staff, not enough time to offer all services, and training deficiencies) and also to factors such as providers' discomfort with talking about sexual health and their being poorly prepared and supported (Population Council 1999; Mayhew et al. 2000).

The studies considered here shed little light on whether or how providers of integrated services manage to move beyond the condition presented by the client to explore other health topics, a process that some refer to as "active integration" (Maharaj and Cleland 2005). One report shows that breadth of service can be increased through the use of screening algorithms, although it also indicates that a high client load can be prohibitive to increasing the number of services clients can access per visit, even when providers are supported by training and job aids (Foreit 2006). One study on the delivery of services for reproductive tract infections (RTIs) in the FP context that compared observations with client interviews revealed that clients with RTI symptoms or problems rarely took the opportunity to report these spontaneously in consultations (Chowdhury et al. 1999), highlighting the importance of the provider's role in promoting holistic care. Other studies conducted in integrated health centers have shown that clients often are unaware of the range of services available to them (Vernon and Foreit 1999).

### **Expansion of Reach to Nontraditional Clients**

One of the key challenges presented in integrating FP care with STI/HIV services has been the difference in clientele served by the two distinct service components. Various reports in the late 1990s and early 2000s suggested that integrated services often failed because traditional FP clients (married women of reproductive age) often had no need for STI and HIV services (a false assumption), and that those who needed them—usually identified as men, young people, and sex workers—either had no inclination to seek these services or were prevented from doing so by the negative attitudes of clinic staff (Lush et al. 1999; Askew and Maggwa 2002; Caldwell and Caldwell 2002). A common fear among FP/RH providers, expressed in one

recent study, is that their clients would boycott services that attract PLWH, men, and sex workers (PATH 2007b). Although no evidence corroborates these fears, the findings for the success of integrated FP models in reaching nontraditional clients are mixed, showing variations according to country and across different program designs.

In countries with high HIV prevalence that have integrated HIV testing or ART with FP services, some evidence shows increased access for men to SRH care, specifically to STI care in RH clinics (Best 2004), to HIV care and treatment (WHO et al. 2008), and to HIV testing for FP partners or male clients (Best 2004; IPPF and UNFPA 2004; Mphuru et al. 2006; Liambila et al. 2008). A recent study in a setting having a relatively lower prevalence of HIV (Ethiopia) suggested that integrated services offering an expanded range of services were associated with attracting atypical clients, especially men (Bradley et al. 2008). A service specifically aiming to reach men through integrated SRH services in Bangladesh also showed an increase in male clients, although most sought only general health services rather than FP or HIV testing. The numbers of female clients reported in this study also increased, indicating that integration of services had no detrimental effect on the traditional client base (Rob et al. 2005). Moreover, evidence makes clear that integrated services can encourage the attendance and involvement of male partners, both for HIV testing (Mphuru et al. 2006) and for STI treatment (Budiharsana 2002; Lafort et al. 2003). Other studies from a range of SRH settings, however, found no increase in, or continuing low numbers of, male clients (Fullerton et al. 2003; Ndhlovu et al. 2003; EngenderHealth and UNFPA 2006) and also found missed opportunities in cases where men attended in order to obtain STI care and were not offered FP services (Maharaj and Cleland 2005).

Evidence suggests that access to integrated services remains poor for young people, who fail to use services for a variety of reasons, including provider bias and parental restrictions (Chege 2001; Shittu et al. 2002; IPPF 2003b; Kaba and Alem 2006). One study of an NGO clinic network found, however, that integrated care (at the room level) was associated with use by people younger than 25 (Bradley et al. 2008), and another demonstrated success in reaching young people by using an integrated approach through an outreach program with FP providers (Sun et al. 2000).

In addition to reaching men and the young, an integrated approach to care has been reported as maximizing the chances of success in reaching sex workers (PATH 2005). Sex workers carry a heavy burden of reproductive and sexual morbidity and mortality, yet several reports have indicated that they rarely seek FP and RH services because they encounter negative attitudes from providers, discrimination, and high costs (Vuyksteke et al. 2001;

UNAIDS 2002; Delvaux et al. 2003). This review was able to find only one report on the impact of integrated models in reaching sex workers. In Ghana, an outreach project with sex workers was combined with a facility-based service in public health clinics offering STI and HIV services. Sex workers' use of facility services more than doubled during a three-year period, and condom sales rose from 300,000 to 2.5 million during a five-year period at no detriment to the existing client load (PATH 2005).

Although reports from specialized services were not reviewed here, evidence demonstrates that reaching these groups may be best achieved by such targeted facilities or programs rather than through traditional FP facilities. Such services include youth-friendly clinics (Dehne and Riedner 2001; Ross et al. 2006), male sexual health services (Dehne et al. 2000; Askew and Berer 2003), and outreach programs for sex workers (Vuylsteke et al. 2001; UNAIDS 2002; Delvaux et al. 2003).

### **Stigma, Privacy, and Confidentiality**

A concern emerged during the 1990s that addressing STIs within an FP context would be stigmatizing for clients attending for STI services, and that providers of family health care would have difficulty in adjusting to meet the needs of a high-risk clientele (Mayhew 1996). However, neither of the earlier reviews found evidence that integrated services increased stigma toward services or clients, and the weight of evidence from this review demonstrates that integrated services actually offer a less stigmatizing environment than do services that are not integrated with FP services. This finding substantiates the view that offering HIV services through organizations not identifiable with first-line HIV care may reduce the risk of social stigma for clients and reduce barriers to services such as HIV testing (Criel et al. 1997; Osborne et al. 1997; Askew 2007; Bradley et al. 2008). Many reports included here confirm that the initial unease among staff about providing care to HIV/STI-infected or potentially infected clients decline following implementation and that clients appreciate the anonymity of an integrated service (Best 2004; IPPF 2005; Maharaj and Cleland 2005; IPPF 2006; Kaba and Alem 2006; Liambila et al. 2008). An HIV-infected client in the Dominican Republic, for example, reported: "I feel like any other person in the waiting room" (IPPF 2006). No studies reported discomfort among traditional clients about the attendance of a more diverse clientele. Even programs that have aimed specifically at drawing in new population groups such as men or sex workers have not found increased apprehension among their traditional clients (Rob et al. 2005); in fact, one program in Ghana reported increased service use as a result of such an expansion (PATH 2005).

The value of integrated care in reducing service-related stigma, however, is dependent on the degree to which RH services are able to maintain confidentiality. Anonymity is jeopardized where STI/HIV clients are seen in consultation rooms clearly marked for their care. "Facility-level integrated care" may, in fact, be more stigmatizing than "provider-level integrated care." Several recent descriptive studies found that privacy cannot always be maintained, calling into question the presupposed confidentiality of the integrated approach (Chowdhury et al. 1999; Mayhew 2000; Ndhlovu et al. 2003; Maharaj and Cleland 2005). Moreover, some evidence suggests that PLWH may prefer specialized HIV care to integrated care because they have experienced poor treatment within SRH services, citing lack of confidentiality and privacy, discrimination and negative attitudes from providers, and otherwise substandard care (EngenderHealth and UNFPA 2006; PATH 2007b).

### **Quality of Care**

Integrating a new service component into an existing service has the potential to improve quality of care by increasing the breadth of care provided, or to diminish quality as breadth is achieved at the expense of depth (Kane and Wellings 1999).

#### *Clinical Care*

In the 1990s, the primary program focus was on integrating STI prevention and care with FP programs. Syndromic STI management was developed by the World Health Organization (WHO) as a way of diagnosing and treating STIs in low-resource settings where laboratory equipment was not available. This approach is now considered inefficient for the management of vaginal discharge in women, in terms of both clinical efficacy and cost-effectiveness (Maggwa et al. 1999; Solo et al. 1999; Askew and Berer 2003; Low et al. 2006). Despite advances in scientific diagnostics for STIs, the focus for integrated programs has shifted to HIV prevention and care. Virtually no new data have been published on other approaches to STI care in integrated services, and those that exist give inconclusive evidence about quality of care (Lazcano Ponce et al. 2000; Budiharsana 2002; Lafort et al. 2003; Oliff et al. 2003; Rob et al. 2005).

Despite significant attention to HIV-transmission prevention and care in recent years, evidence of quality of care following the integration of HIV services with SRH care remains weak. A study from the Dominican Republic suggests that improved counseling has positive effects on ART adherence (IPPF 2006), and two similar studies conducted in Kenya and South Africa found improvements in FP quality of care following service integration, although in both cases the intervention involved a spe-

cific training component aiming at improving quality (Mullick et al. 2006; Liambila et al. 2008). In light of the potential for a specialized approach to offer higher quality of care, the lack of comparisons between integrated and specialized services in terms of quality makes drawing conclusions difficult.

### *Interpersonal Care*

Little evidence has been found that sheds light on the influence of service integration on the quality of interpersonal care or on how interpersonal care can influence the success of integrating HIV/STI care with FP services. The review by Dehne and his colleagues (2000) identified studies reporting that FP providers tend to impart STI information to clients at the end of a counseling session rather than integrating the material within it. They found evidence to suggest, however, that integrating STI-prevention information with MCH-FP services improved providers' counseling skills and performance of FP services, despite initial concerns that an integrated approach might overload staff. Data continue to be weak, and no recent studies used in-depth interaction or conversation analysis to clarify the dynamics of client-provider interactions in an integrated model.

Although in theory RH providers already possess several of the technical and service skills they require to offer HIV-related information and services for transmission prevention (Askew and Berer 2003), evidence reveals the difficulties providers face in addressing STI/HIV prevention and conducting behavioral risk assessments for clients. A major barrier, documented in a variety of studies conducted in Africa, is providers' discomfort with discussing HIV-risk or sexual behavior with clients (Maggwa et al. 1999; Population Council 1999; Abdel-Tawab et al. 2000; Lafort et al. 2003; Creanga et al. 2007; Liambila et al. 2008). Nevertheless, a growing body of evidence suggests a positive benefit from including sexual health counseling within RH programs and the need for intensive training and reorientation of staff to improve their skills to undertake this counseling (Abdel-Tawab et al. 2000; Campbell and Lambey 2002; Helzner 2002; KIT n.d.).

### *Continuity and Coordination of Care*

Dehne and his colleagues (2000) found that services rarely offered clients STI treatment on site or provided them within the same visit or from the same provider who supplied FP services, even in settings where staff had been trained in syndromic management. Another South African study found that although providers reported greater continuity of care and reduced duplication of care following service integration, disjointed provision of services remained; clients in four out of eight facilities had to wait in separate lines for different services (Maharaj and Cleland 2005).

Particular difficulties were noted in providing integrated care to PLWH. Most initiatives to integrate HIV care seek to join it to primary-health-care services rather than to FP services (Criel et al. 1997; Gilks et al. 2006), and few good examples of integration of HIV care into FP/SRH services exist. HIV-infected clients of integrated SRH services in Brazil and Ethiopia reported their frustration at the poor coordination of care and the limitations of providers in addressing their holistic health needs (EngenderHealth and UNFPA 2006). Participants in this qualitative study reported that they often rely on (or would prefer) specialized HIV centers, but they also reported gaps in the provision of comprehensive SRH services in the specialized centers, which necessitate referrals to a reproductive health center.

Referrals from SRH to HIV services can also be problematic. In the Dominican Republic, an SRH service providing ART care found that referrals to hospitals for care for chronic conditions led to poor treatment in these facilities (IPPF 2006). HIV/AIDS organizations may also give a lukewarm reception to the provision of HIV care by the SRH service, with some staff questioning their own roles (IPPF 2005).

Service integration can, however, reduce the call for unnecessary referrals. A case-control study in Ghana reported a reduced need for referrals for STI treatment in integrated-case clinics (Fullerton et al. 2003), and the increased access to and uptake of component services noted above also indicates this benefit. A study that compared a referral model of HIV testing within the FP setting with an on-site model, however, found mixed results: although the on-site model was more effective at offering HIV testing, those attending the referral model were more likely to accept a test (Liambila et al. 2008). The authors suggested that this difference reflected a preference to be tested anonymously at a separate site, although qualitative data indicated that most clients preferred to be tested on site.

### **Organizational Effectiveness**

In general, integration of STI/HIV-transmission-prevention services has been more successful than has integration of care activities. Many studies demonstrate that difficulties with integrating care arise because of problems procuring and ensuring continuity of the equipment and supplies necessary for incorporating STI/HIV care into FP programs, which includes complex and expensive laboratory tests, and training or recruiting staff to use them (Askew and Maggwa 2002; Askew and Berer 2003; Fullerton et al. 2003; Lafort et al. 2003; Ndhlovu et al. 2003). Performing complex laboratory tests is generally not considered feasible in resource-constrained settings (UNFPA 2004b); yet, as discussed above, syndromic management

is also inadequate. The recent development of point-of-care diagnostic tests for syphilis is, therefore, an important advance that could lead to roll-out of these tests, especially in MCH facilities (WHO/TDR 2006).

Studies also point to a range of other barriers to program effectiveness. These include a lack of clear guidelines on what is to be integrated and how, as well as the failure to disseminate guidelines that have been developed (Population Council 1999; Mayhew et al. 2000; Oliff et al. 2003; Maharaj and Cleland 2005); the failure to revise client-monitoring forms following the addition of new services (Population Council 1999); stock-outs of contraceptive supplies (including condoms) (Ndhlovu et al. 2003); inadequate supervision, including a lack of integrated training for supervisors (Ndhlovu et al. 2003; Oliff et al. 2003); long waiting times for services (Ndhlovu et al. 2003) and increased waiting times following the addition of new services (Liambila et al. 2008); lack of privacy for counseling (Ndhlovu et al. 2003; Maharaj and Cleland 2005); reliance on in-service training (as opposed to preservice education) for development of STI-management skills (Mayhew et al. 2000); inconsistent availability of client-education materials that often are not produced in local languages (Population Council 1999; Mayhew et al. 2000); and shortage of equipment (Population Council 1999; Maharaj and Cleland 2005). Finally, several studies showed STI/HIV drug-procurement problems were exacerbated by vertical program structures for FP, STI, and HIV programs and by separate budgetary flows, which led to parallel procurement mechanisms and uncoordinated programming (Mayhew 2000; Mayhew et al. 2000; Oliff et al. 2003).

The recent reports on the integration of HIV treatment with RH programs also suggest additional programmatic challenges. Although this review identified no strong study designs on this component of service integration, case-study reports suggest that sufficient preparation and time and significant resource investments are required to adapt facilities to HIV care (IPPF 2005; WHO et al. 2008). Critical challenges include procurement of laboratory equipment and services, such as CD4<sup>2</sup> counting machines and hematology analyzers, and reliance on external laboratory services and suppliers, particularly at smaller nongovernmental reproductive health facilities.

### *Provider-related Issues*

A range of provider-related problems were identified in the 1996 and 2000 reviews that are borne out by later evidence. Studies from around the world identify poor or insufficient training and motivation (linked to poor supervision and management), heavy workloads, staff burnout, lack of incentives, and medical hierarchies as important constraints to the provision of integrated services (Mayhew 2000; Mayhew et al. 2000; Gichuhi et al. 2004; Maha-

raj 2004; Marchal et al. 2005; Abera and Asnake 2006; Kaba and Alem 2006; PATH 2007b; Liambila et al. 2008). These problems may be a result of increased client demand after service integration (although evidence of increasing demand following integration is mixed) or the provision of a more complex package of services, for which providers may be poorly trained and equipped.

In settings with high HIV prevalence, the impact of the HIV pandemic has been shown to have a considerable impact on staff capacity and motivation. HIV-related illness among staff is an additional barrier to service provision (Gichuhi et al. 2004; Ncayiyana 2004), and in some countries attrition of staff due to HIV/AIDS is deemed a serious system-wide constraint (Kober and Van Damme 2006; WHO 2006b; MSF 2007). Furthermore, within SRH facilities with newly integrated HIV services, the fear of occupational exposure and negative attitudes toward HIV-infected clients make some providers unenthusiastic about providing these services (Gichuhi et al. 2004; IPPF and UNFPA 2004; PATH 2007b).

Despite these constraints, a few studies have documented program improvements and successes where service integration is properly supported and supervised and sufficient time is allotted to deal with procurement, reporting, and training requirements (Fullerton et al. 2003; IPPF 2006; Creanga et al. 2007). Providers' and managers' involvement in planning for integrated care also has been shown to improve providers' satisfaction with and motivation for offering these services (Zondo et al. 2000; IPPF and UNFPA 2004). Some studies have shown that providers prefer integrated STI/HIV care, which enhances their own skills (Fullerton et al. 2003; WHO 2003; Stein et al. 2007; Liambila et al. 2008).

### *Cost-effectiveness*

It is often assumed that integration of STI/HIV services with FP/MCH services could offer cost savings by sharing staff, facilities, equipment, and other administrative and overhead costs (Askew and Berer 2003). Indeed, the Mayhew (1996) review found several reports suggesting that integration yielded savings. Reliable cost-effectiveness data remain sparse, however. Three cost-effectiveness studies were identified for this review. The first, conducted in India, demonstrated significant savings because a relatively high proportion of clients (37 percent) accessed more than one service (Das et al. 2007). A South African study indicated that cost-effectiveness was achieved when clinic staff had sufficient time to provide HIV testing to all clients (Homan et al. 2006). A Kenyan study showed that adding HIV testing to FP services increased costs only marginally; the combined costs amounted to less than half the estimated costs of a stand-alone VCT site (Liambila et al. 2008). Two studies

pointed to the importance of staff having excess time before service integration begins if cost-effectiveness or improved productivity is to be achieved after new services are added (Janowitz et al. 2002; Foreit 2006).

### **Impact on Health and Social Outcomes**

Few reliable data are available on the impact of integrated services on health or social and behavioral outcomes, partly because designing and implementing good controlled experimental studies is difficult and expensive. Although the review by Dehne and his colleagues (2000) found evidence that integrated services increased condom distribution, no evidence was found that this increase leads to improved protection from infection. Two recent pre- and post-test studies on integration of HIV testing into FP services in South Africa and Kenya reported significant increases in discussions of condom use and dual-protection counseling (Mullick et al. 2006; Liambila et al. 2008). The South African study also measured reported behaviors, and although the authors found increases in condom use at last sex in the group exposed to the “high-level” (full) service integration, those in the group that was referred elsewhere for HIV testing were significantly more likely than those in the group exposed to full service integration to report always using a condom, ever having had an HIV test, and testing of a partner (Mullick et al. 2006).

HIV testing and counseling also have been hypothesized to lead to a reduction in risk-taking behavior, but no studies that we identified presented a robust evaluation of this association, and some commentators have argued that the assumption that counseling alone can lead to behavior change is unrealistic and that multiple strategies are needed to produce any impact on HIV or STI incidence (Askew and Berer 2003). One multilevel regression analysis of clients’ records in Ethiopia found that being attended by the same provider in the same room was positively associated with client-initiated HIV testing and negatively associated with clients’ HIV infection, compared with being seen elsewhere in the facility (Bradley et al. 2008). Although the cross-sectional design and difficulty of controlling for potential confounders imply that the association may not be causal, this finding indicates that integrated services may be effective at increasing HIV-testing rates among those who otherwise have not sought to be tested on their own. Important, if limited, evidence is also emerging that promotion of FP for HIV-infected women (usually as part of FP/MCH services) can reduce pediatric HIV by preventing unwanted pregnancies, a strategy likely to be significantly more cost-effective than the provision of PMTCT (Sweat et al. 2004).

Apart from the exception noted above, no known data have been reported linking changes in STI/HIV incidence

to the provision of integrated versus stand-alone services. This association may be impossible to document because of multiple confounders in field situations. Cohort surveys of clients using integrated and stand-alone services over time might be one means of obtaining such data, but no studies of this kind were found for this review.

### **Discussion**

The studies included in this review show that a range of different models of integrated service delivery is possible. They describe settings where care is integrated at the provider level (that is, one nurse, doctor, or community health worker offering a complete package), at the facility level (implying an internal referral, which may or may not occur at the time of the visit), and referral models where care is not integrated per se, but where effective linkages are maintained between services to ensure adequate coverage and continuity of care.

Overall, the evidence of the benefits of service integration is mixed for most outcomes. Although some reports have documented only positive outcomes, others, in particular the more detailed programmatic assessments, have described some of the challenges of providing high-quality integrated care. Many of these structural challenges relate to weaknesses of health systems in general and are certainly not specific to RH care. Problems related to human resources, medical education and training, facility infrastructure, logistics, and service management have been demonstrated in a wide range of settings across the public health sector in developing countries (Hanson et al. 2003; WHO 2005b; Boulle and Ford 2007; Colombini et al. 2008). Addressing these systemic constraints simultaneously is necessary in order to support progress on improved SRH outcomes. Where successful program improvements have been made, they seem to have worked because sufficient time was taken to establish and support integrated service delivery and modify procurement, reporting, and other necessary systems.

Unfortunately, we found few studies that demonstrate how providers go about increasing the breadth of care and moving beyond the client’s presenting condition. Some have observed that the full potential of integrated services cannot be realized given the pressures of long lines of clients and long waiting times for services (Maharaj and Cleland 2005). Such structural problems, therefore, undermine any attempt to shift from a task-oriented model to a more holistic model of health care. Management strategies, such as providing group counseling, must be fully explored as ways to ease pressure in busy clinics to allow flexibility in time given to individual clients. Moreover, the paucity of well-designed studies provides only weak evidence con-



cerning whether the integration of additional components reduces the quality of clinical care. Those studies that measured quality were combined with other interventions specifically designed to improve quality, so that the question of whether integrated services can provide clinical care as well as specialized facilities do remains unanswered.

The majority of studies and reports identified, including nearly all that were published in the past three or four years, were focused on the integration of HIV care and treatment with FP services. This focus stands in stark contrast to the research accumulated during the 1990s, which found a great deal of evidence on the integration of STI prevention, screening, and treatment with FP/RH services, but little on the integration of HIV into FP/RH services. This shift likely reflects international priorities and funding flows, but may also be a result of the demonstrated challenges involved in integrating STI care with FP/RH services in the 1990s and a subsequent shift away from this policy. Because new evidence on STI integration is limited, drawing conclusions on how the field has changed or on the effectiveness of new management algorithms in the FP/RH context is difficult.

This review also demonstrates that the dearth of strong study designs related to service integration continues despite calls to increase the strength of evidence on this topic. Although several studies have provided a detailed look at the process of integrated care, the lack of experimental designs and adequately controlled studies has made it difficult to evaluate the particular effect of an integrated-care model beyond that of specific or individual programmatic interventions and activities. As a consequence, measuring the impact of service integration on health and behavioral outcomes is especially problematic. Judging, for example, whether some of the positive outcomes reported are due to specific interventions such as provider training or to the integrated nature of care is impossible.

Of the potential pathways by which an integrated model of care may influence health outcomes, the best evidence has come from the addition of HIV testing to FP/RH care. Several studies demonstrate that this is a feasible and cost-effective model for scaling up access to testing. Conflicting evidence is found, however, regarding whether integration of HIV testing into FP/RH care is most effective when offered by the same provider, in the same room, through group pretest counseling, or by referral to a test site after initial counseling in the FP setting. Given the context-specific nature of service integration, further research is required to specify the circumstances under which different models may be most efficacious and cost-effective. The success in incorporating HIV testing into FP/RH suggests that this procedure may not be as complex as the integration of STI screening and treatment has proved to be. These documented successes may

also be a result of significant funding investments that were not available for the STI-service-integration effort.

Integration of HIV care was found to be more problematic than was integration of HIV testing. The studies identified here highlight the complexity of caring for PLWH and show less obvious benefits for them, although they appreciated being able to access a diverse range of services. Stigma toward PLWH represents a considerable challenge, although the weight of evidence demonstrates that integrated services (that is, those not associated only with first-line HIV care) offer a less stigmatizing environment and make services more acceptable.

One other potential pathway to influencing STI or HIV incidence is through the promotion of condoms and other prevention modalities in the FP setting. The documented persistence of widespread missed opportunities in counseling, especially in the promotion of dual protection and discussion of sexual behavior and HIV risk, is of great concern in achieving this objective in high-prevalence settings. Success in this effort involves overcoming three key obstacles. First, services must shift away from a focus on married women and reach out to groups at higher risk. The evidence for this endeavor is mixed. Some positive findings related to increased male access have been documented in settings with high HIV prevalence, but the literature seems to indicate that programs that are successful in reaching these nontraditional clients are generally those that have “rebranded” as SRH programs. The effectiveness of this strategy is substantiated by studies conducted in developed countries where the success of sexual health services in reaching men and young people has been demonstrated (Greenhouse 1994; Hancock 2004; Kingston 2007).

Second, providers must be helped to overcome their inhibitions to sexuality counseling and engage in a more client-centered and holistic model of FP counseling. This review identified studies showing that FP providers in many different settings face difficulties in discussing sexual health with their clients, a finding that refutes the results of the review that documented successes in this area (Dehne et al. 2000). As one observer has noted, providers require intensive training, follow-up, and supervision in order to provide client-centered care and address sensitive sexual health issues (Helzner 2002). Some programs are starting to overcome these barriers, even in relatively conservative contexts, but further efforts are needed to scale up innovative strategies across the public sector in many countries. New training packages on sexuality counseling have been developed, but many are donor-dependent and restricted to small-scale in-service programs (WHO 2005a).

Third, in order to succeed with efforts to prevent infection transmission, FP providers must be able to promote condoms as an effective means of STI/HIV prevention and contraception (dual protection). The few studies

that reported increases in condom use as an outcome also documented the use of innovative counseling methods and training courses for providers to promote barrier methods. Population-level studies have shown that condom use remains remarkably low across a range of countries where STI/HIV prevalence is moderate to high with few married women using condoms (Ali et al. 2004). Because more than half of HIV infections occur within marriage in most high-prevalence countries, the exclusive promotion of condoms to young people as a method of disease prevention, to the neglect of their contraceptive potential, remains problematic (Ali et al. 2004). Evidence shows that where condoms are being used by young married women (for example, in Uganda), they are used successfully as a contraceptive method rather than for disease prevention (Cleland and Ali 2006). Further service-based research is needed to explore how FP providers can promote condom use for both purposes and whether and how women are using them for both purposes.

The point should also be made that many of the programmatic success stories identified for this review come from clinics affiliated with the International Planned Parenthood Federation (IPPF). Given the Federation's focus on integrated SRH care, these successes are a testament to the significant efforts that it has made to offer a holistic range of SRH services. IPPF clinics, however, are generally run as private, nonprofit institutions, and in many instances charge fees to clients, who receive high-quality SRH care in return. As several of the reports have shown, the investments required to provide this broad range of care are substantial, in particular the costs of HIV-treatment facilities. In addition to the concern about the fairness of charging higher fees to clients in some settings than in others, such services may depend on donor funding, and the scale-up of such high-quality models to serve the public sector must be evaluated more extensively than it has been to date. Nonetheless, the few cost-effectiveness studies identified suggest that cost savings following service integration in the public sector are possible if large numbers of clients are accessing services or if providers have time to offer additional services.

Finally, some limitations of this review must be noted. Overall, little information on the coverage of integrated services is available by region or country. Although some countries have a national policy for rolling out integrated service delivery (for example, Kenya and South Africa), the extent to which integrated services are available remains largely unmeasured. Moreover, the majority of reports identified examine programs in sub-Saharan Africa; few studies of programs in Latin America and the Caribbean or Asia were identified. This limitation may reflect the funding focus of international research institutions or the confinement of our literature search to publications in English. In light of the context-specific nature

of service integration, in particular the importance of STI and HIV epidemiology in determining programmatic policies, most studies, unfortunately, are focused on one geographic region, albeit with some variance in STI and HIV prevalence. Given the global health-policy drive for service integration, it is still very important that further research be conducted in differing epidemiological and health-systems contexts. Lastly, the review did not cover new models of integration of FP services with emergent HIV services. In certain settings, introducing additional RH services into HIV/STI settings may be a more appropriate service model than the reverse, particularly in areas where epidemics are concentrated and where women in MCH/FP settings may not have a need for comprehensive STI/HIV care. In such settings, resources may be better placed in developing specialized services together with effective referral mechanisms.

## Conclusion

Overall, presenting solid conclusions about the most effective models of service integration or the best modalities for delivering a comprehensive range of SRH services is difficult, partly because of the context-specific nature of the effectiveness of health-care-delivery systems, but also because of limitations within and across the studies providing the evidence. Most studies in this review focus on the small-scale picture by evaluating specific interventions, rather than on models of care. They do not clarify, for example, whether (or under what circumstances) it is more efficacious and cost-effective for one provider to offer a full range of services (often termed "room-level" or "provider-level" integration), for clients to be referred to a more specialized provider within the same facility (termed "facility-level" integration), or for clients to be referred to specialized facilities for certain tasks. The impact of managing clients' SRH needs in different ways deserves a more careful evaluation, taking into account the context of the local health system and epidemiological profile. Moreover, in light of the drive to scale up access to HIV testing and treatment rapidly in countries with high HIV prevalence, more data are needed from carefully controlled studies to evaluate the process and impact of this newer form of service integration, in particular the delivery of antiretroviral therapy.

It seems likely that the existing health-service structure and capacity will determine the true effectiveness and cost-effectiveness of integrating care. Well-organized cross-referral mechanisms may, in fact, be more beneficial and cost-effective than offering multiple services through the same provider or the same facility, but this outcome must be determined by well-designed operational research evaluating and comparing different approaches to and models of care within specific contexts.

# Appendix

**Table A1** Summary of service-integration studies reviewed

Author (year)	Country	Service-integration type	Evaluation type	Service-integration results reported <sup>a</sup>
Abdel-Tawab et al. (2000)	Egypt	Sexuality counseling with FP	Controlled pre- and post-test intervention evaluation in six clinics: contraceptive-update training for intervention and control (six clinics); intervention providers (three clinics) received additional training on gender and sexuality. Mixed methods: focus-group discussions (FGDs); questionnaire; observations during training; course evaluation forms; exit surveys with clients (N = 503); mystery clients.	Client satisfaction, provider attitudes, continuity of care
Abera and Asnake (2006)	Ethiopia	HIV-transmission prevention/control with FP	Complete methodology unclear, but using routine data from 32 hospitals and health centers for six months after intervention training of providers and improving referral mechanisms.	Provider attitudes, continuity of care, access for PLWH, organizational effectiveness
Adeokun et al. (2002)	Nigeria	STI/HIV-transmission prevention with RH	Pre- and post-test of intervention promoting dual-protection counseling and female and male condoms (provider training, dual-protection-counseling protocol, female condom provision, supervision). Mixed methods: structured clinical observations; interviews and focus-groups discussions with providers and clients.	Provider attitudes, uptake of services, quality of care, health outcomes
Arens et al. (2002)	Nepal	FP expanding to RH approach	Case-study report using routine data (no clear evaluation) for program to reorient the provision of care within a rural family-welfare project.	Provider attitudes, uptake of services, organizational effectiveness
Best (2004)	Cambodia	VCT with RH	Case-study report using some routine data (no clear evaluation) after intervention (including staff training, clinic reorganization, referral mechanisms).	Client satisfaction, stigma, uptake of services, continuity of care, population coverage
Bradley et al. (2008)	Ethiopia	VCT with RH	Cross-sectional multivariate analysis of VCT/RH service-use data (retrospective case review) (N = 30,257: 16,043 men, 14,214 women) for a 21-month period, taken from VCT clinic log books. Explored associations between service-delivery model and outcomes (including HIV testing rates).	Uptake of services, continuity of care, population coverage, health outcomes
Budiharsana (2002)	Indonesia	RTIs with FP	Pre- and post-test in two health centers (hospital outpatient unit and community FP unit). Mixed methods: interviews with providers; retrospective medical review; clinical observations; facility observations.	Quality of care, uptake of services, continuity of care, health outcomes
Campbell and Lambey (2002)	Belize	Sexual health outreach from an FP clinic	Case-study report using some routine data (no clear evaluation), after program intervention to reorient FP services.	Provider motivation, uptake of services, social outcomes
Chege (2001)	Ghana	STI/HIV-transmission prevention using FP CHWs	Cross-sectional evaluation of community-based FP program. Mixed methods (survey with CBD agents (N = 301), supervisors (N = 27), clinicians (N = 20); clinical observations (N = 51); focus-group discussions with community members, former agents, and clients.	Uptake of services, continuity of care, population coverage
Chowdhury et al. (1999)	Bangladesh	RTI treatment within FP settings	Cross-sectional situation analysis in 46 purposively selected FP clinics. Mixed methods: 172 clinical observations during two-month period; interviews with 112 doctors and family welfare visitors.	Quality of care, uptake of services, organizational effectiveness
Creanga et al. (2007)	Ethiopia	Integrated services provided by CHWs	Cross-sectional survey with community-based FP agents (N = 340) to analyze the determinants of integrated care provision.	Provider motivation, uptake of services
Das et al. (2007)	India	VCT with RH	Pre- and post-test following integration of previously separate VCT and RH services (two-year analysis) using economic methods (contribution margin analysis of costs and revenues, including labor, supplies, materials, equipment, infrastructure).	Uptake of services, continuity of care, organizational effectiveness
EngenderHealth and UNFPA (2006)	Brazil Ethiopia Ukraine	Services for PLWH	Multicountry qualitative study (cross-sectional). Mixed methods (in-depth interviews, FGDs) to study challenges HIV-infected women (including adolescents) face in accessing SRH care. Included male partners, providers, and people with influence on policy.	Client satisfaction, stigma, continuity of care, access for PLWH
Foreit (2006)	Bolivia Honduras India Senegal	Systematic screening in RH	Evaluation of intervention using screening checklist in clinics. India: controlled pre- and post-test; Bolivia, Honduras, Senegal: pre- and post-test, no controls.	Provider motivation, uptake of services
Fullerton et al. (2003)	Ghana	STI and PAC with FP	Mixed methods: Post-hoc case-control study using clinic service statistics. Cases (N = 24): facilities where providers trained in STI and PAC; Control (N = 19): sites similar in size, locality, and ownership. Structured interviews with providers and managers (N = 48) and clients (N = 37).	Client satisfaction, provider motivation, uptake of services, continuity of care, population coverage

ART = Antiretroviral therapy. CBD = Community-based distribution. CHW = Community health worker. FGD = Focus-group discussion. FP/MCH = Family planning/maternal and child health. HTC = HIV testing and counseling. IDI = In-depth interview. PAC = Postabortion care. PHC = Public health clinic. PLWH = People living with HIV/AIDS. RCT = Randomized controlled trial. RTI = Reproductive tract infection. SRH = Sexual and reproductive health. STI = Sexually transmitted infection. VCT = Voluntary counseling and testing.

<sup>a</sup> Results reported according to review framework: (1) client satisfaction; (2) uptake of services; (3) reach to nontraditional population groups (men, adolescents, sex workers); (4) STI/HIV-related stigma; (5) quality of care (clinical, interpersonal, and continuity of care); (6) organizational effectiveness (including views of providers about cost-effectiveness); and (7) behavioral, health, and social outcomes.

(continued)

**Table A1** (continued)

Author (year)	Country	Service-integration type	Evaluation type	Service-integration results reported <sup>a</sup>
Homan et al. (2006)	South Africa	VCT with FP	Controlled pre- and post-test using cost-effectiveness analysis of representative sample of 18 clinics: six for full-service integration, six for partial, and six for control.	Organizational effectiveness
IPPF (2003a)	Ethiopia	Integrated SRH services (clinics, outreach, youth centers)	Descriptive case study using routine monitoring and evaluation (unclear design).	Quality of care, continuity of care, population coverage, access for PLWH
IPPF (2003b)	Ghana	Integrated youth SRH service	Descriptive case study using routine monitoring and evaluation (unclear design) of integrated approach (recreation, FP, PAC, pregnancy testing, STI management, HIV prevention).	Population coverage, health outcomes
IPPF (2003c)	Sudan	Integrated SRH services	Descriptive case study using routine monitoring and evaluation (unclear design).	Quality of care, population coverage
IPPF (2005)	Kenya Rwanda	HIV care with SRH	Descriptive case study of new model using routine monitoring and evaluation data (unclear methodology). Includes on-site model (Kenya) and referral model (Rwanda).	Stigma, uptake of services, access for PLWH, continuity of care, organizational effectiveness
IPPF (2005 and 2006)	Dominican Republic	HIV care with SRH	Pre- and post-test after integration of HIV care/ART into clinics. Mixed methods: survey with providers, FGDs with clients, cost-effectiveness analysis, service-use statistics.	Quality of care, client satisfaction, stigma, access for PLWH, health outcomes, organizational effectiveness
IPPF and UNFPA (2004)	Ethiopia India Rwanda	VCT with FP/RH	Case studies with no clear evaluation.	Provider motivation, population coverage, organizational effectiveness
Janowitz et al. (2002)	Zimbabwe	RTI with RH	Pre- and post-test after training intervention (RTI syndromic management). Mixed methods: clinical observations, provider interviews, time-motion study after retraining (one-week observation).	Organizational effectiveness
Kaba and Alem (2006)	Ethiopia	VCT with young people's RH	Cross-sectional rapid assessment in five youth centers using document review, FGDs with clients, IDIs with young people and providers, clinical observations.	Client satisfaction, provider motivation, stigma, uptake of services, population coverage
Lafort et al. (2003b)	Côte d'Ivoire	STI with FP	Cross-sectional mixed-methods study: serological survey to measure STI prevalence and validity of treatment algorithms (N = 358); clinic evaluation (in 13 facilities) using client exit interviews (N = 200); direct observations (N = 215); monitoring of workload, equipment, and supplies; interviews with program managers and providers.	Quality of care, client satisfaction, provider motivation, uptake of services, continuity of care, organizational effectiveness
Lazcano Ponce et al. (2000)	Mexico	STI risk assessment for FP clients (IUD users)	RCT, with clients randomized to standard practice (control) (N = 1,033) and integrated counseling (intervention group) (N = 1,074). Twenty-minute individual counseling session, physical exam, and STI screening for women in intervention group. Two-day training for nurses.	Health outcomes
Liambila et al. (2008)	Kenya	HTC with FP	Pre- and post-test. Mixed methods: clinical observations (N = 554 baseline, 530 endline), client exit survey (N = 552 baseline, 530 endline), FGDs with providers, costing analysis, health-facility assessment.	Quality of care, client satisfaction, provider motivation, health outcomes, organizational effectiveness
Maggwa et al. (1999)	Zimbabwe	STI with FP	Cross-sectional (baseline) study to evaluate RTI management. Mixed methods: checklist and observations, routine monitoring, collection of RTI specimens, behavioral risk-assessment checklist, cost-effectiveness analysis of RTI service provision, questionnaire to providers (N = 14) and clients (N = 154).	Client satisfaction, provider motivation, uptake of services, organizational effectiveness
Maharaj and Cleland (2005)	South Africa	STI/HIV with FP/MCH	Cross-sectional mixed-methods study in eight government facilities: four rural, four urban. Mixed methods: inventory, key-informant interviews with senior staff, FGDs with providers, semistructured interviews with staff (N = 40), exit interviews with clients (N = 300: 100 with FP clients, 100 with MCH clients, 100 with STI clients).	Quality of care, client satisfaction, provider motivation, stigma, uptake of services, continuity of care, health outcomes, organizational effectiveness
Mayhew (2000)	Ghana	STI with FP/MCH	Cross-sectional policy analysis. Mixed methods: documentary analysis, key-informant and semi-structured interviews with staff in 27 facilities in six districts (N = 94), interviews and informal conversations with 37 community members, five FGDs in two villages (two male, three female groups).	Quality of care, provider motivation, stigma, continuity of care, organizational effectiveness
Mayhew et al. (2000)	Ghana Kenya South Africa Zambia	STI/HIV with FP/MCH	Cross-sectional comparative multicountry policy analysis. Mixed methods: document review, semistructured interviews with officials, structured survey of 20 health facilities from one region or province in each country, data from situation-analysis surveys (nationally representative sample of health facilities).	Quality of care, organizational effectiveness
Mphuru et al. (2006)	Tanzania	VCT with RH	Unclear design, only routine data collected.	Stigma, population coverage, access for PLWH

(continued)

**Table A1** (continued)

Author (year)	Country	Service-integration type	Evaluation type	Service-integration results reported <sup>a</sup>
Mullick et al. (2006)	South Africa	VCT and STI/HIV-transmission prevention with FP	Controlled pre- and post-test. Phase I: six "high-level" integrated (full service integration), six "low-level" (referral model), and six control clinics. Phase II: six best-model and six control clinics. Mixed-methods: questionnaire with clients (N = 369), clinical observations (pre: N = 374, post: N = 366). Both intervention groups standardized and strengthened using a counseling algorithm and job aid.	Quality of care, uptake of services, continuity of care, health outcomes
Ndhlovu et al. (2003)	South Africa	STI/HIV with FP/MCH	Cross-sectional study. Mixed-methods: clinic observations, interviews with providers, exit interviews with clients, clinical observations (client-provider interactions).	Quality of care, client satisfaction, uptake of services, organizational effectiveness
Odeh et al. (2005)	Zimbabwe	HIV-transmission prevention with FP/CBD services	Controlled pre- and post-test of intervention with CBD workers. Unclear methodology (routine data used).	Uptake of services, continuity of care, health outcomes
Oliff et al. (2003)	Tanzania	Integration of RH services	Cross-sectional policy analysis to evaluate implementation of integrated RH services. Mixed methods: document review, interviews with stakeholders (N = 52), FGDs with regional and district stakeholders.	Quality of care, provider motivation, organizational effectiveness
PATH (2007b)	India	SRH with HIV prevention and care	Cross-sectional situational assessment in four states (Andhra Pradesh, Bihar, Maharashtra, Uttar Pradesh). Mixed methods: participatory mapping with sex workers (N = 552), young people (N = 717), and PLWH (N = 276); semistructured interviews with service providers (N = 159) and policymakers (N = 60).	Client satisfaction, provider motivation, stigma, population coverage, access for PLWH
Population Council (1999)	Botswana Ghana Kenya Tanzania Zambia Zimbabwe	STI/HIV with FP/MCH	Cross-sectional operations research (compilation). Mixed methods: inventory, provider and client interviews and surveys, clinical observations.	Quality of care, client satisfaction, provider motivation, uptake of services
Rob et al. (2005)	Bangladesh	Integrated RH services with focus on men	Controlled pre- and post-test, with eight intervention clinics and four control sites. Mixed methods: inventory, routine data, client exit interviews (N = 286 men, 300 women), FGDs (N = 23) with community leaders and male community members, interviews with providers (service providers and field-workers) (N = 127 preintervention, 163 post-intervention).	Quality of care, client satisfaction, stigma, uptake of services, population coverage
Shittu et al. (2002)	Nigeria	FP with RH	Unclear design: case study with routine data from one hospital where innovative holistic service-delivery model was used.	Uptake of services, population coverage
Solo et al. (1999)	Kenya	STI with FP/MCH	Cross-sectional study. Mixed methods to evaluate syndromic management: routine data analysis, document review, IDIs with management team, situation analysis, FGDs.	Client satisfaction, provider motivation, health outcomes
Sun et al. (2000)	China	STI/HIV-transmission prevention with FP	Cluster RCT with two intervention and two control villages and townships (two in each) to evaluate intervention for youth using FP workers (clinic and outreach). Townships matched; all young residents in the selected villages recruited (N = 710); baseline and follow-up evaluations (after 12 months). Mixed methods: self-administered questionnaire (at school), FGDs with young people and providers (38 participants lost to follow-up).	Provider motivation, health outcomes
WHO et al. (2008)	Kenya	VCT and ART with SRH services	Unclear design: case-study report of experience with new model.	Stigma, uptake of services, population coverage, organizational effectiveness
Zondo et al. (2000)	South Africa	FP with PHC and hospital-based care (local authorities)	Unclear design: case-study report on work of three local authorities to integrate care at primary level.	Client satisfaction, continuity of care, organization effectiveness

## Notes

- 1 "MeSH" (Medical Subject Headings) is the US Library of Medicine's list of terms used for indexing articles for MEDLINE/PubMed.
- 2 Because HIV infection reduces the number of CD4 cells (or T cells containing CD4 receptors), which help the body fight infection, a CD4 count provides a measure of progression of HIV infection.

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## Acknowledgments

Funding for this research was provided by the Economic and Social Research Council (KC), the Medical Research Council (KC), and the Research Programme Consortia on Reproductive Health and HIV, funded by the Department for International Development (SM). We would also like to thank John Cleland for his review of the study.