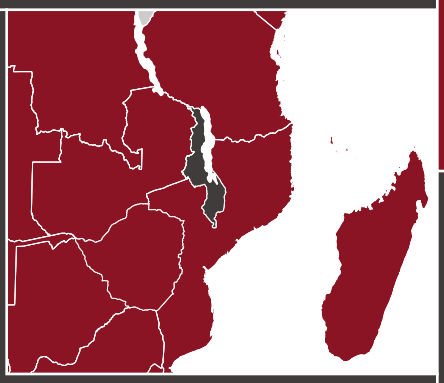
policy

September 2015

ESTIMATING THE COSTS OF NONINTEGRATED AND INTEGRATED FAMILY PLANNING AND HIV FACILITY SERVICES IN MALAWI



This publication was prepared by Adebiyi Adesina, Taryn Couture, and Erin McGinn of the Health Policy Project.

USAID FROM THE AMERICAN PEOPLE

PEPFAR

HEALTH POLICY PROJECT

Suggested citation: Adesina, A., T. Couture, and E. McGinn. 2015. *Estimating the Costs of Nonintegrated and Integrated Family Planning and HIV Facility Services in Malawi*. Washington, DC: Futures Group, Health Policy Project.

ISBN: 978-1-59560-125-4

The Health Policy Project is a five-year cooperative agreement funded by the U.S. Agency for International Development under Agreement No. AID-OAA-A-10-00067, beginning September 30, 2010. The project's HIV activities are supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). It is implemented by Futures Group, in collaboration with Plan International USA, Avenir Health (formerly Futures Institute), Partners in Population and Development, Africa Regional Office (PPD ARO), Population Reference Bureau (PRB), RTI International, and the White Ribbon Alliance for Safe Motherhood (WRA).

Estimating the Costs of Nonintegrated and Integrated Family Planning and HIV Facility Services in Malawi

SEPTEMBER 2015

This publication was prepared by Adebiyi Adesina, Taryn Couture, and Erin McGinn of the Health Policy Project.

CONTENTS

ABBREVIATIONS

ART	antiretroviral treatment
ARV	antiretroviral (drug)
BTL	bilateral tubal ligation
CMS	Central Medical Stores
DMO	district medical office
EC	emergency contraception
eMTCT	elimination of mother-to-child transmission
FP	family planning
HCT	HIV counseling and testing
HPP	Health Policy Project
HSA	health surveillance assistants
IUD	intrauterine device
MOH	Ministry of Health
NHMIS	National Health Management Information System
OCP	oral contraceptive pill
OI	opportunistic infection
PEPFAR	President's Emergency Plan for AIDS Relief
PMTCT	prevention of mother-to-child transmission
SRH	sexual and reproductive health
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Because women of childbearing age are overrepresented in sub-Saharan Africa's HIV epidemic and, at the same time, a large portion of pregnancies among HIV-positive women in Africa are unplanned, tremendous public health benefits can potentially be gained by integrating family planning (FP) and HIV services. The World Health Organization recommends that services be integrated in areas with high HIV prevalence and high unmet need for family planning. However, a recent systematic review on FP/HIV integration found that few studies have explored the benefits or costs of integration.

Study objectives and research questions

In 2015, the USAID Mission in Malawi asked the Health Policy Project (HPP) to undertake an assessment of FP/HIV integration in Malawi in an effort to (1) understand how integration has advanced in the country, (2) fill a significant gap in available information on the cost efficiency and cost-effectiveness of FP/HIV integration, and (3) highlight some of the key cost factors that will be relevant for both Malawi and other countries considering or implementing integration. The specific study objectives were to estimate:

1. The cost of delivering integrated FP services in conjunction with more complex services such as HIV counseling and testing (HCT), prevention of mother-to-child transmission, and antiretroviral treatment (ART) services
2. The difference in service delivery cost between health facilities that offer integrated FP services and those that do not
3. The specific cost component(s) (labor, drugs and medical supplies, equipment, etc.) that drive or carry the largest share of the total cost of service delivery

The following research questions outlined the specific information garnered from the study:

1. What is the cost of delivering integrated FP and HIV clinical services in Malawi?
2. What is the cost of delivering FP and HIV clinical services as separate services (nonintegrated)?
3. What is the difference in cost between integrated vs. nonintegrated FP services?
4. Which cost components drive the total cost of delivering integrated and nonintegrated FP and HIV services in Malawi?

Methodology

Based on these objectives and research questions, HPP in Malawi carried out a cost analysis of integrated and nonintegrated FP services in 22 health facilities across eight districts in three national regions. The 22 facilities (a subset of 41 selected facilities in nine districts where HPP conducted a policy review, stakeholder interviews, and a facility-based survey) were determined to have sufficient data for cost analysis and included both government and private facilities and both hospitals and health centers.

Data collection consisted of two rounds of document review and interviews at the facilities and district- and regional-level health administrative offices followed by a second round of validating the quality of the round 1 data and identifying and filling data gaps. Data were collected for three major indicator categories: service delivery (patient services); facility resources utilized for FP and HIV clinical services; and financial data (salaries, facility operating costs, costs of medical supplies and drugs, etc.) Indirect costs for support and management staff, facility operations, and furniture, equipment, and vehicles were often unavailable or not allocable to the facility level, and therefore the data analysis focused primarily on two areas of the overall cost of service delivery—medical staff and drugs and medical supplies.

Results

The results reported in this study relate to (1) nonintegrated vs. integrated FP/HIV services (disaggregated by type of FP method or HIV service); (2) patients receiving FP and HIV services by type of FP method/HIV service and type of facility; and (3) annual costs (staff, supplies, FP method/HIV service, nonintegrated vs. integrated FP/HIV services).

After data analysis, the study identified the cost of medical staff and commodities, drugs, and supplies in delivering FP and HIV services in the 22 facilities. The data show that the unit cost for the average patient seeking FP services across the 22 facilities is $19.57 per year. For HCT service delivery, the average unit cost is $9.10 for all facilities, and the average unit cost of ART services is $187 per patient per year for all facilities. When services are delivered separately, the costs are cumulative, so that the cost per patient per year for a patient who receives both FP and HCT services is $28.67 across all facilities. For a patient who receives FP and ART services separately, the average unit cost is $207 across all facilities.

When FP services are integrated with HIV services, the cost is considerably lower. The cost of integrated FP/HCT services is $20.23, which represents 30 percent in cost savings compared with nonintegrated service delivery across all facilities. For integrated FP/ART services, the average unit cost was calculated to be $162 across all facilities, which represents cost savings of 22 percent. In both integrated modalities (FP/HCT and FP/ART), the drugs and medical supplies represent the largest portion of the savings, with approximately 96 percent of the cost reduction ($8.08 for FP/HCT and $43.44 for FP/ART).

Discussion

The key message from this study is that delivery of integrated FP/HIV services, assuming that service outcomes are the same, is more cost-effective than delivering services separately. The results encourage a holistic perspective to health systems planning by adding more detail on costing to include HIV program planning in FP strategic plan development and implementation.

As USAID, through PEPFAR, continues to support countries developing, implementing, and evaluating plans for HIV services, the results of this study can improve the accuracy in costing scale-up of national programs during strategic planning. The data here can be used to generate cost estimates of FP and HIV facility-based services using targets outlined in Malawi's national HIV and FP strategic plans. Furthermore, the costing methodology, with adjustments for context, can be replicated to additional facilities across Malawi and in other low-resource countries as part of monitoring and improvement processes to generate more accurate unit costs for better-informed decision making.

INTRODUCTION

Prevention of mother to-child-transmission (PMTCT) of HIV is a primary development goal, particularly for achieving the Millennium Development Goals 4 (reducing child mortality), 5 (improving maternal health), and 6 (combating HIV/AIDS). Therefore, in an effort to better implement PMTCT programs, the United Nations developed a comprehensive approach that laid out four prongs:

1. Primary prevention of HIV/AIDS among women of childbearing age
2. Prevention of unintended pregnancies among women living with HIV
3. Prevention of vertical transmission
4. Provision of appropriate treatment, care, and support to mothers living with HIV, their children, and families

Countries are expected to work toward incorporating all four prongs into their national strategies. To date, most countries have focused on prongs 3 and 4, but prong 2—prevention of unintended pregnancies among HIV-positive women—is just as important. Women of childbearing age are overrepresented in the HIV epidemic. Furthermore, a large portion of pregnancies (51%–84%) among HIV-positive women in Africa are unplanned (Wilcher et al., 2013). As such, there are tremendous potential public health benefits of integrating sexual and reproductive health (SRH) and HIV services. An integrated model has the potential to offer improvements in health systems, and the World Health Organization (WHO) recommends that services be integrated in areas with high HIV prevalence and high unmet need for family planning (FP) (WHO, 2009). However, a recent systematic review on FP/HIV integration found that few studies have explored the benefits or costs of integration (Sweeney, 2012). One study, by Bollinger and Adesina, modeled cost-effectiveness of integrated sites paying particular attention to uptake of family planning and uptake of testing, treatment, and PMTCT for Malawi, Mozambique, and Uganda. As PEPFAR examines how best to scale up PMTCT services, it is important to evaluate different types of integrated models, and to assess both the effectiveness and efficiency of these models.

In 2015, the USAID Mission in Malawi asked the Health Policy Project (HPP) to undertake an assessment of FP/HIV integration in Malawi in an effort to understand how integration has advanced in the country. In Malawi, 26 percent of women have an unmet need for family planning, and HIV prevalence among women is 12 percent (NSO and ICF Macro, 2011). In response to advocacy calls for the integration of SRH and HIV by the International Conference on Population and Development (1994) and Maputo Plan of Action (2006), the need for FP/HIV integration has been recognized and initiated in the SRH and HIV communities in Malawi. For example, Malawi's national antiretroviral treatment (ART) clinical guidance mandates providers to counsel all ART clients 15 years and older on family planning and offer condoms and injectables (women) and refer for other methods. Several donor-funded projects are also assisting the Government of Malawi to better integrate its health services, through such projects as USAID's Support for Service Deliver Integration and the United Nations Population Fund's support of fully-integrated facilities.

HPP's methodology to assess the status of FP/HIV integration in Malawi included a review of current policies (Irani et al., 2015b), stakeholder interviews (Irani et al., 2015a), and a facility-based survey in 41 facilities across nine districts (41 facility audits, 41 structured interviews with facility in-charges, 122 structured interviews with service providers, 425 client exit interviews and client flow analyses, 58 mystery client interviews and three focus group discussions with HIV-positive men and women); the facility-based work also costed parallel and integrated FP and HIV services in a subset of 22 facilities.

This reports details the approach and results of the costing component. It is based on recent service delivery data in order to test the assumption of cost savings from integrating FP and HIV services. The goal of this study is to fill a significant gap in available information on the cost efficiency and cost-

effectiveness of integration for SRH and HIV, and highlight some of the key cost factors that will be relevant for both Malawi and other countries considering or implementing integration.

STUDY BACKGROUND

Study Aim

The aim of this study is to derive the cost of serving the average individual for a range FP and HIV clinical services in Malawi.

The specific study objectives are to estimate:

1. The cost of delivering integrated FP services in conjunction with more complex services such as HIV counseling and testing (HCT), PMTCT, and ART services
2. The difference in service delivery cost between health facilities that offer integrated FP services and those that do not
3. The specific cost component(s) (labor, drugs and medical supplies, equipment, etc.) that drive or carry the largest share of the total cost of service delivery

Understanding the costs of integration will provide critical evidence for countries considering the adoption of integrated FP and HIV services. Evidence from this study will allow countries to assess cost drivers as well as the necessary resources needed to meet policy targets.

Research Questions

The following study questions outline the specific information that will be garnered from this activity:

1. What is the cost of delivering integrated FP and HIV clinical services in Malawi?
2. What is the cost of delivering FP and HIV clinical services, as separate services (nonintegrated)?
3. What is the difference in cost between integrated vs. nonintegrated FP services?
4. Which cost components drive the total cost of delivering integrated and nonintegrated FP and HIV services in Malawi?

METHODOLOGY

Study Design

Based on the overall aims, objectives, and research questions outlined above, this study carried out a cost analysis of integrated and nonintegrated FP services across 22 health facilities in Malawi. Given the different combinations of integrated FP services across Malawi, this study defines integrated FP services based on the "full integration" model, where the patient receives the FP and HIV services in one room at the same time. All other modes of integration—referral to another department in the same health facility or in another health facility for the same day or another day—are defined as nonintegrated in this study.

Additionally, the HIV services are categorized as HCT, PMTCT, and ART services. Since PMTCT services start pregnant or breastfeeding women on treatment from pregnancy or delivery and continue for life, PMTCT services are also referred to as ART.

Site Selection and Data Collection Locations

An initial set of 41 facilities was purposively selected from eight districts across three regions. The eight districts were Nkhata Bay and Mzimba North and South in the Northern Region; Lilongwe, Mchinji, and Dedza in the Central Region; and Mangochi and Blantyre in the Southern Region. A range of different health facilities (posts, centers, hospitals) that provide FP and HIV services were included. However, after review of the collected data, 22 of the initial 41 facilities—16 health centers and 6 hospitals—were determined to have sufficient data for the cost analysis. The 22 selected included both government and private facilities (Christian Health Association of Malawi and nongovernmental organizations). The list of 22 facilities is shown in Table 1.

Table 1: List of Facilities Selected for Cost Study

District	Name of Health Facility	Type of Facility
Northern Region		
Nkhata Bay	Nkhata Bay District Hospital	District Hospital
	Chintheche Rural Hospital	Rural Hospital
	Mpamba Health Centre	Health Centre
	Mzenga Health Centre	Health Centre
	Kande Health Centre	CHAM Health Centre
Mzimba North	Thunduwike Health Centre	Health Centre
	Mzuzu BLM Centre	Private (BLM)
	Engucwini Health Post	Health Post with BLM Outreach
Mzimba South	Manyamula Health Centre	Health Centre
Central Region		
Lilongwe	Lumbadzi Health Centre	Health Centre
Mchinji	Mchinji District Hospital (Mwai Clinic)	District Hospital
	Kochilira Health Centre	Health Centre

District	Name of Health Facility	Type of Facility
	Nkhwazi Health Centre	Health Centre
	Nkanda Health Centre	Health Centre
Dedza	Dedza District Hospital	District Hospital
	Lobi Rural Hospital	Rural Hospital
	Golomoti Health Centre	Health Centre
	Ntakataka Health Centre	Health Centre
Southern Region		
Mangochi	Monkeybay Community Hospital	CHAM Facility
	Namwera Health Centre :	Health Centre
	Phirilongwe Health Centre	Health Centre
Blantyre	Madziabango Health Centre	Health Centre

Data Indicators

Data were collected for three major indicator categories: service delivery, facility resources, and financial data. These are described as follows:

1. **Service delivery indicators.** These are patient service data and include
    a. Facility-offered integrated services (offered to the same person in the same room) in 2014 for
        i. Reproductive decision counseling and FP methods including male condoms, injections, oral contraceptive pills (OCPs), intrauterine devices (IUDs), implants, bilateral tubal ligation (BTL), vasectomy, and other methods (like emergency contraception) offered during an ART clinic visit
        ii. FP methods offered during HCT clinic visit
        iii. HIV services (HCT, PMTCT, HIV monitoring, ART, management of opportunistic infections, HIV-related nutritional support, etc.) offered during an FP clinic visit
    b. Total number of patients who received service at the facility in 2014
    c. Total number of patients who received FP services in 2014 disaggregated into type of FP service (reproductive decision counseling, male condoms, injections, OCP, IUDs, implants, BTL, vasectomy, and other methods, like emergency contraception)
    d. Total number of patients who received HIV services in 2014 disaggregated into patients who received HCT, PMTCT, and ART

    Data for these indicators were collected at the facility level through patient registers and validated using data from the National Health Management Information System (NHMIS), which is housed at the Ministry of Health (MOH) in Lilongwe.
2. **Facility resources indicators.** These are indicators for which data were collected at the facility level related to resources utilized for FP and HIV clinical services. This includes

   a. The number and cadre of medical staff who provide FP and HIV clinical services (physicians, nurses, clinical officers, social welfare officer, etc.)
   b. The amount of time these staff spend in delivering FP services alone, HIV services (HCT, PMTCT, and ART) alone, and FP services integrated with HIV services
   c. The quantity and dosage of each type of drug and medical supplies used for FP, HIV, and integrated FP/HIV services as well as the type and number of equipment and furniture used for FP, HIV, and integrated FP/HIV services

3. **Financial indicators.** The data collected for this category include
   a. Salaries of medical/provider staff who provide FP and HIV services
   b. Salaries of staff who provide program support (physicians, nurses, laboratory technicians, etc.); staff who support and/or manage FP and HIV programs such as clinic managers, accountants, clerks, etc.
   c. The annual cost of facility operations (utilities, fuel, maintenance of building and vehicles, cost of renting clinical space)
   d. The value of equipment, building, and vehicles used for FP and HIVclinical services
   e. The cost of drugs and medical supplies used for FP and HIV service delivery

All financial data were collected in Malawian kwacha (KWH) and converted to U.S. dollars using the average annual exchange rate of KWH 458 to $1. Cost data in this report are presented in U.S. dollars. As with the service delivery statistics, all cost data collected referenced the one-year period of January–December 2014.

Service delivery costs were disaggregated into five cost components commonly used in health services costing studies: (1) staff/labor (subdivided into medical staff and program/support staff), (2) medical supplies and drugs, (3) facility operations, (4) furniture and equipment, and (5) vehicles.

Data Collection Procedures

The data collection process involved two rounds of collection. In the first round, data were collected by a team of researchers who collected data in conjunction with data assessing integration of FP and HIV (HCT, PMTCT, and ART) services in Malawi. The second round of data collection was conducted to validate the quality of data collected in round 1 and then to identify and fill data gaps.

Data were collected through review of administrative documents obtained at the facilities and district- and regional-level health administrative offices as well as interviews with personnel at these locations. Two questionnaires were used to capture these data. All persons interviewed were informed about the study and their rights as participants. Initial interviews obtained written informed consent. A second round of data collection to address information gaps obtained verbal consent.

Data collection processes, sources, and aggregation of the data into the cost components associated with FP, HIV, and integrated FP/HIV service delivery modes are further described below.

Service delivery indicators

Monthly, quarterly, and/or annual service delivery data as specified above were collected from each health facility. These data were then subsequently validated using quarterly or annual program reports collated in the NHMIS in Lilongwe.

Staff/labor costs

Structured interviews were conducted with facility managers and FP and HIV clinical service providers regarding the time they spend per client in delivering FP, HIV, and integrated FP/HIV services. Those interviewed were selected on the basis of convenience sampling. Specifically, at each facility, the facility in-charge (the individual designated at the facility to coordinate clinical services) was asked to identify all staff who provide FP and HIV services. At least one person from each of the clinical cadres involved in delivering FP and HIV services were then selected and interviewed from among those who were on duty at the time of the data collection team's visit. Clinical service providers were asked to estimate the amount of time (in minutes) they spend per average on an FP, HIV, and integrated FP/HIV clinical visit. A total of 47 clinical service providers were interviewed. It is important to note that for the practicality of analysis, this study assumed that the amount of time spent with FP clients is approximately the same across all FP methods. For example, the average time spent with a patient seeking OCP is the same amount of time spent with a patient seeking an implant. In reality, provision of FP methods differs, particularly for clinical methods such as IUDs and sterilization. Similarly, the average time a provider spends delivering any type of HIV service—HCT or ART—was assumed to be the same.

The number of staff interviewed by cadre is shown in Annex A. Support and management staff cadres were identified either at the facility or the district office; however, the proportion of their work and salary supporting each facility's service delivery could not be allocated to each individual facility. The lack of sufficient data to allocate support and management staff meant exclusion of the data from the analysis.

Salary data for providers, managers, and support staff were obtained from document review of human resource and financial data obtained from the administrative offices of the MOH regional medical management office or MOH headquarters in Lilongwe.

Drug and supply costs

The list of commodities and supplies recommended and approved in Malawi for FP and HIV services in health facilities was used to define required resources for this cost component. This list includes recommended drugs, test kits, and supplies used in laboratory tests. The list of recommended items and their costs are shown in Annex B. The costs of the items in the list were obtained from the Central Medical Stores (CMS) price catalog 2010/2011 (however, the cost of TDF/3TC/EFV was obtained from the Clinton Health Access Initiative price ceiling list). Of note, unit costs were only collected for 18 items on the recommended list of drugs and supplies because these items were the only commodities that facilities and medical staff interviewed indicated were being used. More importantly, data on the drug cost of long-acting and permanent contraception—IUDs, BTL, and vasectomy—were not available and, as such, excluded from the analysis. Providers were read the recommended list of drugs and supplies and asked the quantity they used for an "average FP, HIV, and integrated FP and HIV client visit."

Facility operation costs

Facility operation costs include cost of utilities (such as telephone, water, and electricity), maintenance of vehicles, and other transport costs, as well as the value of the land occupied by the facility and the value and cost of maintaining the physical infrastructure. Cost data for this cost component were limited and, where available, were captured as district-wide costs and could not be allocated to the individual facility. As such, this cost component was excluded in the study analysis.

Furniture, equipment, and vehicle costs

Furniture, equipment, vehicles, and other asset data were obtained from the facility and district, regional, and national health management offices. The quantity and date of purchase for these items were asked through interviews of individuals including the facility-in-charge and district, regional, and national account management offices. As with the facility operation costs, these data were limited and in the few

cases in which they were available could not be allocated to the individual facility. The limited and specificity of the data also necessitated excluding this cost component from the study analysis.

With regard to the exclusion of support and management staff, facility operation, and furniture, equipment, and vehicle costs (otherwise known as indirect costs), it is important to note that if the data were available to be allocated to the facility level, further allocation to the cost per patient per year would have been calculated using patient service proportion. Patient service proportion is the number of patients who receive a service in a year divided by the total number of patients who received clinical services at the facility in that same year. As the Results section highlights, the patient service proportion for FP and HIV services are approximately the same. Additionally, other studies suggest that these indirect costs are not the main cost drivers for FP and HIV services and as such do not differ significantly when comparing their share of nonintegrated and integrated costs (Adesina and Waldron, 2013; Adesina and Bollinger, 2013; Bollinger and Adesina, 2013).

Data Analysis

Given the limited availability of indirect cost components, this analysis focuses primarily on two areas that contribute to overall cost of service delivery—medical staff and drug and medical supplies. However, if facility data were included, there would be little to no change in integrated vs. nonintegrated services due to relatively no differences in FP and HIV patient proportions (17% vs. 15%). Further, research showed that if patient services are counted by person, then there is a negligible difference between integrated and nonintegrated service costs (Bollinger and Adesina, 2013).

Medical staff costs per patient per year

The costs associated with medical staff time providing FP, HIV, and integrated FP/HIV services were calculated using data from interviews to calculate the average amount of staff time per visit spent with the patients seeking FP or HIV services, as well as patients receiving both services in the same room, and the average staff salary. The average staff time (in minutes) for each cadre delivering each of the three types of services at a facility was multiplied by the average cadre salary (disaggregated as salary cost per minute) at that facility. Then the cost per visit was multiplied by an average of four visits to arrive at the medical staff cost per patient per year for that facility. To adjust for the large number of health centers in the sample of facilities included in the analysis, the average weighted cost was applied across all 22 facilities using the costs for each of the facility multiplied by the number of patients who received FP, HIV, and integrated FP/HIV services, respectively; after which the weighted cost was aggregated across all facilities and then divided by the total number of patients who received each of the three services. The result is the average weighted cost for FP, HIV, and integrated FP/HIV services. The equations for each are shown below:

Equation 1: Medical staff cost per service at facility

1a. Medical staff cost per FP client at facility = [Average staff annual salary for FP physician * Average time spent by FP clinical physician] + [Average staff annual salary for FP nurse * Average time spent by FP nurse] + [Average staff annual salary for FP HSA * Average time spent by FP HSA], etc.

1b. Medical staff cost per HCT patient at facility = [Average staff annual salary for HCT physician * Average time spent by HCT clinical physician] + [Average staff annual salary for HCT nurse * Average time spent by HCT nurse] + [Average staff annual salary for HCT HSA * Average time spent by HCT HSA], etc.

1c. Medical staff cost per HIV patient at facility = [Average staff annual salary for HIV physician * Average time spent by HIV clinical physician] + [Average staff annual salary for

HIV nurse * Average time spent by HIV nurse] + [Average staff annual salary for HIV HSA * Average time spent by HIV HSA], etc.

1d. Medical staff cost per FP/HIV patient at facility = [Average staff annual salary for FP/HIV physician * Average time spent by FP/HIV clinical physician] + [Average staff annual salary for FP/HIV nurse * Average time spent by FP/HIV nurse] + [Average staff annual salary for F\P/HIV HSA * Average time spent by FP/HIV HSA], etc.

Equation 2: Average weighted medical staff cost per patient per year

2a. Average weighted medical staff cost per FP client per year across 22 facilities = 4 * ([Medical staff cost per FP client for Facility 1 * Number of FP clients for Facility 1] + ([Medical staff cost per FP client for Facility 2 * Number of FP clients for Facility 2] + ([Medical staff cost per FP client for Facility 3 * Number of FP clients for Facility 3] + ([Medical staff cost per FP client for Facility 4 * Number of FP clients for Facility 4]…. + ([Medical staff cost per FP client for Facility 22 * Number of FP clients for Facility 22]) / [Number of FP clients Facility 1+ Number of FP clients Facility 2 + Number of FP clients Facility 3 + Number of FP clients Facility 4 +….+ Number of FP clients Facility 22].

2b. Average weighted medical staff cost per HCT patient per year across 22 facilities (estimated 4 visits per patient per year) = ([Medical staff cost per HCT patient for Facility 1 * Number of HCT patients for Facility 1] + ([Medical staff cost per HCT patient for Facility 2 * Number of HCT patients for Facility 2] + ([Medical staff cost per HCT patient for Facility 3 * Number of HCT patients for Facility 3] + ([Medical staff cost per HCT patient for Facility 4 * Number of HCT patients for Facility 4]…. + ([Medical staff cost per HCT patient for Facility 22 * Number of HCT patients for Facility 22]) / [Number of HCT patients Facility 1+ Number of HCT patients Facility 2 + Number of HCT patients Facility 3 + Number of HCT patients Facility 4 +….+ Number of HCT patients Facility 22].

2c. Average weighted medical staff cost per HIV patient per year across 22 facilities (estimated 1 visit per patient per year) = [Medical staff cost per HIV patient for Facility 1 * Number of HIV patients for Facility 1] + [Medical staff cost per HIV patient for Facility 2 * Number of HIV patients for Facility 2] + [Medical staff cost per HIV patient for Facility 3 * Number of HIV patients for Facility 3] + [Medical staff cost per HIV patient for Facility 4 * Number of HIV patients for Facility 4]…. + [Medical staff cost per HIV patient for Facility 22 * Number of HIV patients for Facility 22]) / [Number of HIV patients Facility 1+ Number of HIV patients Facility 2 + Number of HIV patients Facility 3 + Number of HIV patients Facility 4 +….+ Number of HIV patients Facility 22].

2d. Average weighted medical staff cost per FP/HIV patient per year across 22 facilities (estimated 4 visits per patient per year) = 4 * ([Medical staff cost per FP/HIV patient for Facility 1 * Number of FP clients for Facility 1] + ([Medical staff cost per FP/HIV patient for Facility 2 * Number of FP clients for Facility 2] + ([Medical staff cost per FP/HIV patient for Facility 3 * Number of FP clients for Facility 3] + ([Medical staff cost per FP/HIV patient for Facility 4 * Number of FP clients for Facility 4]…. + ([Medical staff cost per FP/HIV patient for Facility 22 * Number of FP clients for Facility 22]) / [Number of FP clients Facility 1+ Number of FP clients Facility 2 + Number of FP clients Facility 3 + Number of FP clients Facility 4 +….+ Number of FP clients Facility 22].[1]

[1] Medical staff costs for FP/HIV services were weighted by number of FP clients instead of all HIV patients because almost all FP clients are sexually active and at risk of HIV infection while not all HIV patients are sexually active (child infections, etc.).

Drug and supply costs

The cost for commodities for a facility was calculated by multiplying the cost of each unit of the commodity (from the CMS price list) by the estimated quantity of each commodity identified by medical staff (from interviews) as being used for the "average patient seeking FP services (disaggregated by FP method), HIV services, and integrated FP/HIV services" at that facility. The total drug and supply cost for each facility was calculated by aggregating the cost per patient for each of the three types of services for all drug and medical supply commodities used for that service. The average weighted cost of drugs and medical supplies for each of the three types of services across all 22 facilities was calculated by multiplying the total drug and supply cost for each facility for each service by the respective number of patients for that service for that facility and then divided by the aggregated total number of patients receiving each service across all facilities. The equations for these calculations are as follows:

Equation 3: Drugs and medical supplies cost per service at facility

3a. Drugs and medical supplies cost per FP client at facility = [Average staff annual salary for FP physician * Average time spent by FP clinical physician] + [Average staff annual salary for FP nurse * Average time spent by FP nurse] + [Average staff annual salary for FP HSA * Average time spent by FP HSA], etc.

3b. Drugs and medical supplies cost per HIV patient at facility = [Average staff annual salary for HIV physician * Average time spent by HIV clinical physician] + [Average staff annual salary for HIV nurse * Average time spent by HIV nurse] + [Average staff annual salary for HIV HSA * Average time spent by HIV HSA, etc.

3c. Drugs and medical supplies cost per FP/HIV patient at facility = [Average staff annual salary for FP/HIV physician * Average time spent by FP/HIV clinical physician] + [Average staff annual salary for FP/HIV nurse * Average time spent by FP/HIV nurse] + [Average staff annual salary for F\P/HIV HSA * Average time spent by FP/HIV HSA], etc.

Equation 4: Average weighted drug and medical supplies cost per patient per year

4a. Average weighted drugs and medical supplies cost per FP client per year across 22 facilities (estimated 4 visits per patient per year) = 4 * ([Drugs and medical supplies cost per FP client for Facility 1 * Number of FP clients for Facility 1] + ([Drugs and medical supplies cost per FP client for Facility 2 * Number of FP clients for Facility 2] + ([Drugs and medical supplies cost per FP client for Facility 3 * Number of FP clients for Facility 3] + ([Drugs and medical supplies cost per FP client for Facility 4 * Number of FP clients for Facility 4]…. + ([Drugs and medical supplies cost per FP client for Facility 22 * Number of FP clients for Facility 22]) / [Number of FP clients Facility 1+ Number of FP clients Facility 2 + Number of FP clients Facility 3 + Number of FP clients Facility 4 +….+ Number of FP clients Facility 22].

4b. Average weighted drugs and medical supplies cost per HIV patient per year across 22 facilities (estimated 1 visit per patient per year) =[Drugs and medical supplies cost per HIV patient for Facility 1 * Number of HIV patients for Facility 1] + ([Drugs and medical supplies cost per HIV patient for Facility 2 * Number of HIV patients for Facility 2] + ([Drugs and medical supplies cost per HIV patient for Facility 3 * Number of HIV patients for Facility 3] + ([Drugs and medical supplies cost per HIV patient for Facility 4 * Number of HIV patients for Facility 4]…. + ([Drugs and medical supplies cost per HIV patient for Facility 22 * Number of HIV patients for Facility 22] / [Number of HIV patients Facility 1+ Number of HIV patients Facility 2 + Number of HIV patients Facility 3 + Number of HIV patients Facility 4 +….+ Number of HIV patients Facility 22].

4c. Average weighted drugs and medical supplies cost per FP/HIV patient per year across 22 facilities (estimated 4 visits per patient per year) = 4 * ([Drugs and medical

supplies cost per FP/HIV patient for Facility 1 * Number of FP clients for Facility 1] + ([Drugs and medical supplies cost per FP/HIV patient for Facility 2 * Number of FP clients for Facility 2] + ([Drugs and medical supplies cost per FP/HIV patient for Facility 3 * Number of FP clients for Facility 3] + ([Drugs and medical supplies cost per FP/HIV patient for Facility 4 * Number of FP clients for Facility 4]…. + ([Drugs and medical supplies cost per FP/HIV patient for Facility 22 * Number of FP clients for Facility 22]) / [Number of FP clients Facility 1+ Number of FP clients Facility 2 + Number of FP clients Facility 3 + Number of FP clients Facility 4 +….+ Number of FP clients Facility 22].[2]

To estimate the cost of providing FP services for one patient in one year, this analysis assumes that the average patient has four visits in a year (except for the case of implants and emergency contraceptives which were estimated as one visit per year). Hence, the costs per patient per year for OCP, condoms, and injections were calculated to be four times the medical staff and drug and medical supplies cost of one visit. This assumption holds the same for ART visits, in that the cost for one patient in one year is the cost of four visits for that service. However, for HCT services, this analysis assumed only one visit per year per person.

For the cost of nonintegrated FP/ART services, the average patient is estimated to visit the health facility eight times in a year: four visits for FP services and four visits for ART visits. In the case of nonintegrated FP/HCT services, a patient is estimated to need four visits for FP services and one HCT service visit in a year.

In terms of time spent by staff delivering integrated FP/HIV services, the analysis assumes the same amount of time is spent with a patient receiving both services regardless of type of FP method used or HIV service received. In other words, this analysis assumes that, on average, a medical provider spends the same amount of time with a patient who receives OCP and ART as she/he would with a patient who receives injections and ART during a clinic visit.

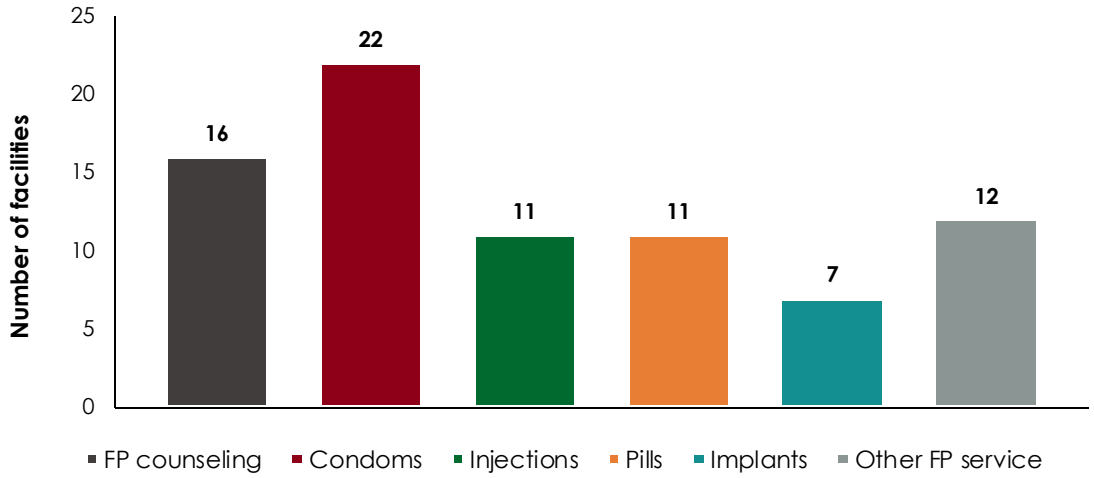
For integrated FP/ART services, the average patient is expected to visit the clinic four times in a year, assuming both services are delivered concurrently at each visit. The staff cost for integrated FP/HCT services is estimated to be the cost of one integrated FP/HCT visit added to the cost of three FP service visits in one year.

[2] As with medical staff costs for integrated FP/HIV services, drug and medical supply costs for integrated FP/HIV were weighted by number of FP clients instead of all HIV patients because almost all FP clients are sexually active and at risk of HIV infection while not all HIV patients are sexually active (pediatric ART, etc.).

RESULTS

Nonintegrated and Integrated Services

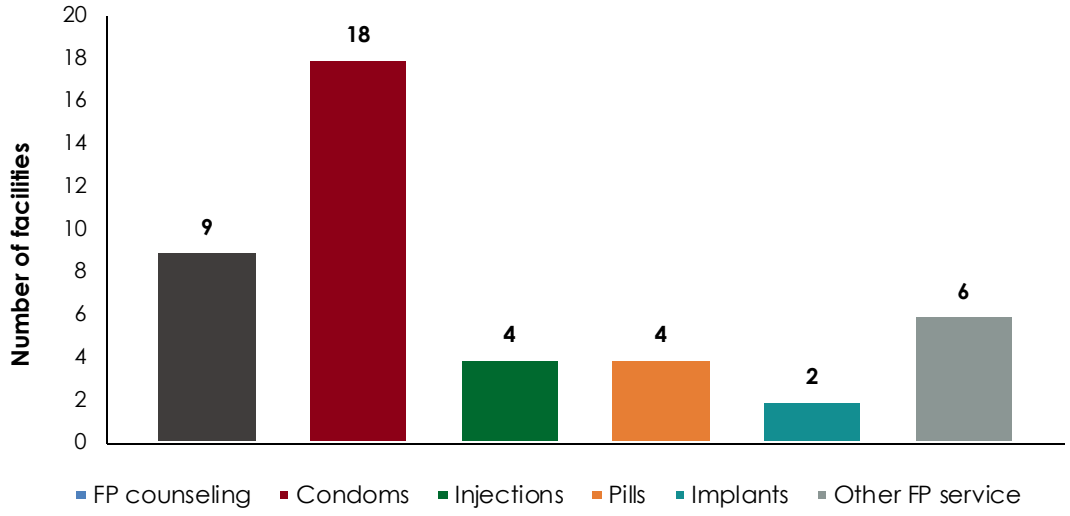
Figure 1: Number of Facilities that Offer FP Services to Patients Seeking ART—Disaggregated by FP Method Offered



With regard to integration of FP services in ART service delivery, as Figure 1 above shows, 16 facilities indicated that they offered reproductive family counseling, all 22 indicated that they offered condoms, 11 indicated that they offered OCP and injections, seven indicated offering implants, and 12 indicated offering other FP methods to patients seeking ART. No public facilities indicated providing female sterilization; however, reproductive health referral partners, particularly Banja la Mtsogolo, a Marie Stopes' local program, provide sterilization outreach/mobile services at the facility using their staff, equipment, and commodities. For the purposes of this study, services provided outside of the facility were not included because they do not accurately reflect the costs that facilities incur. Therefore, the method mix seen at facilities does not reflect Malawi's national method mix.

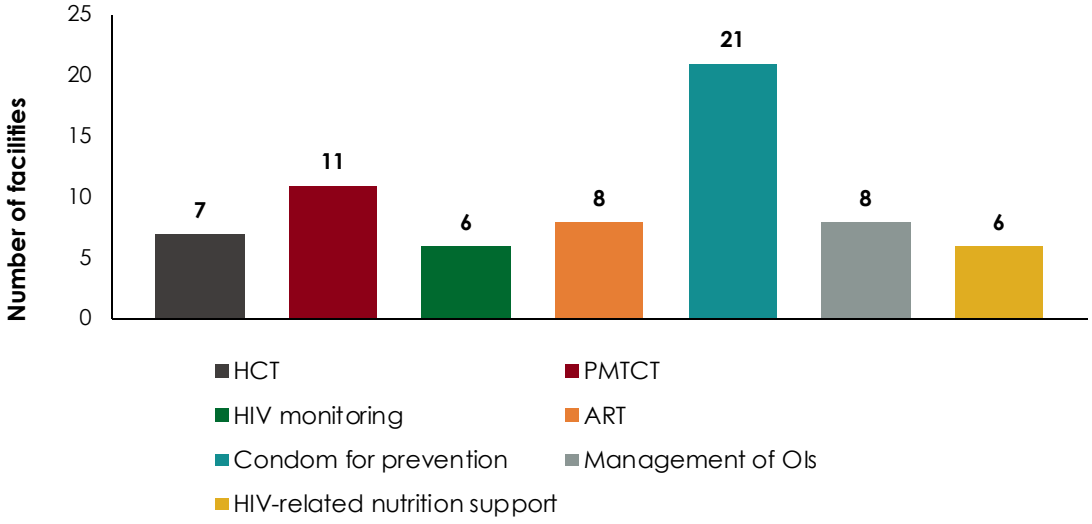
In terms of the integration of FP services in HCT service delivery, nine facilities indicated offering reproductive family counseling, 18 facilities indicated that they offered condoms, four facilities indicated that they offered OCP and injections, two offered implants, and six indicated offering other FP methods to patients seeking HCT services. The number of facilities offering FP services to patients seeking HCT services is shown in Figure 2.

Figure 2: Number of Facilities that Offer FP Services to Patients Seeking HCT—Disaggregated by FP Method Offered



Lastly, of facilities that indicated offering HIV services to patients seeking FP services, seven indicated offering HCT services, 11 indicated offering PMTCT services, six indicate offering HIV monitoring, eight indicated offering ART, 21 indicated offering condom for HIV prevention, eight indicated offering management of opportunistic infections, and six indicated offering HIV-related nutrition support. The number of facilities that offer HIV services with FP services are shown in Figure 3.

Figure 3: Number of Facilities that Offer HIV Services to Patients Seeking FP Services—Disaggregated by Type of HIV Service



The data on integration of FP and HIV services show that almost all facilities indicated offering condoms with FP services. This information should be interpreted with caution as no disaggregated data were available to separate condoms offered for HIV prevention from condoms offered as an FP method. The indicators that are more likely to reflect the level of FP and HIV service integration are the number of facilities that offer two of the widely used FP methods in Malawi, injections and OCP, as indicated by the

number of FP clients described in the following section and the most recent national Multiple Indicator Cluster Survey (MICS, 2014).

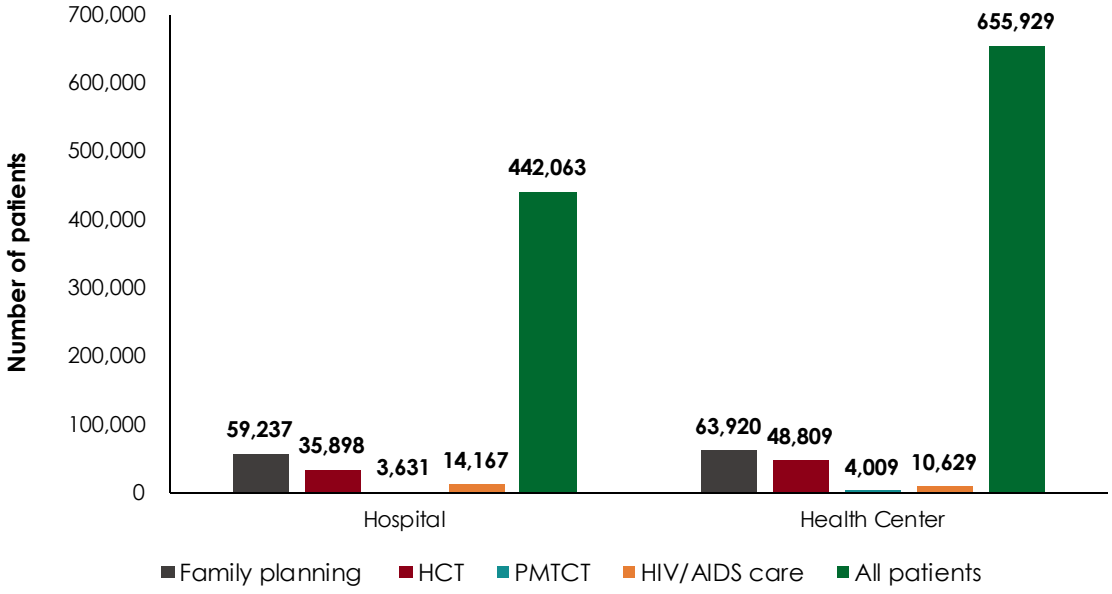
Patients Receiving FP and HIV Services

In 2014, approximately 1.1 million patients were seen across all 22 facilities, with approximately 442,000 (40%) patients receiving services across the six hospitals and 656,000 (60%) receiving services across the 16 health centers. Of the total number of patients, 123,157 received FP services and 117,143 received HIV services, each representing 11 percent of the total number of patients who received services.

Patients receiving HIV services

Of the patients seeking HIV services, 84,707 (72%) received HCT; 7,640 (6.5%) received PMTCT services; and 24,796 (21.5%) received ART. The disaggregation of patients receiving services by type of facility and type of service are shown in Figure 4.

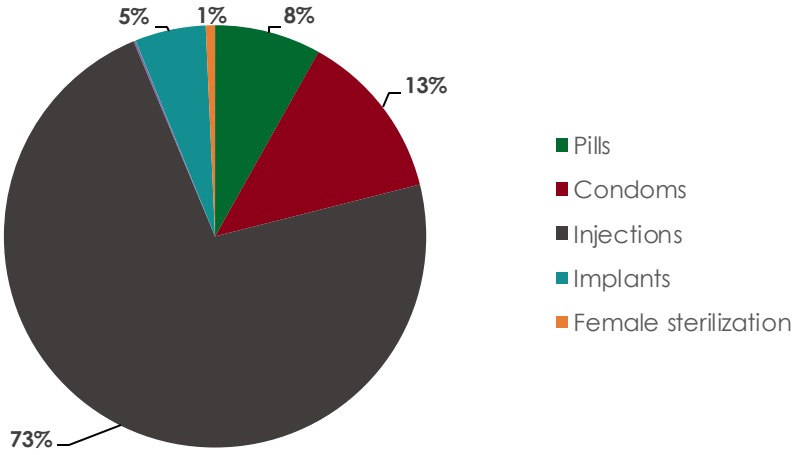
Figure 4: Number of Patients Receiving FP and HIV Services by Type of Facility



Patients receiving FP services

Of the patients who received FP services, approximately 73 percent received injections, 13 percent received condoms, 8 percent received OCP, 5 percent received implants, 1 percent opted for female sterilization, and less than 0.3 percent received emergency contraception and other contraceptive methods. The distribution of FP clients by type of FP method received is shown in Figure 5.

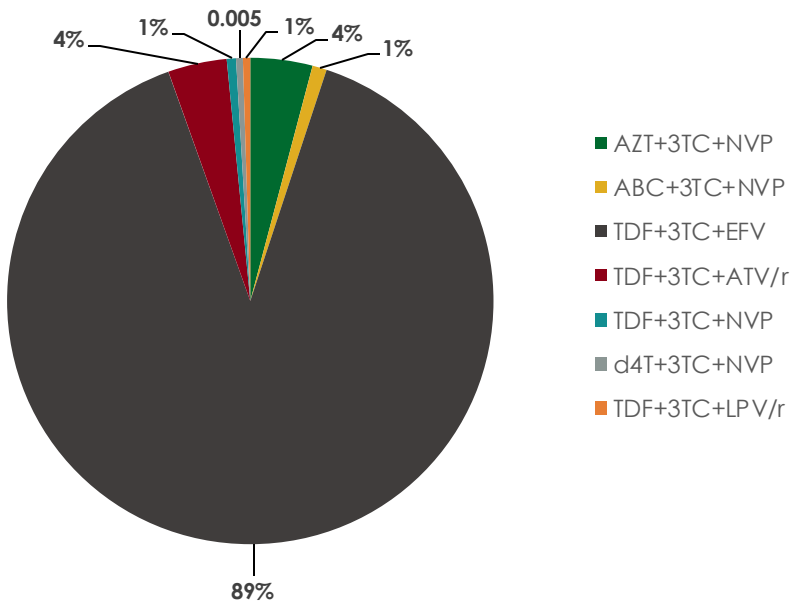
Figure 5: Distribution of FP Clients by Type of FP Method Received



Patients on ART

Data from NHMIS on the number of patients on ART across the 22 facilities by type of ART indicated that approximately 17,141 were on seven of the 10 available ART regimens prescribed in Malawi. The majority of ART patients (89.4%) are on TDF/3TC/EFV combination; 4.1 percent are on AZT/3TC/NVP combination; 3.9 percent are on TDF/3TC/ATVr combination; 1 percent are on ABC+3TC+NVP combination; 0.6% are on TDF/3TC/NVP combination; and 0.5 percent ART patients are on d4T/3TC/NVP combination and TDF/3TC/LPVr combination. The distribution of ART patients by regimen is shown in Figure 6.

Figure 6: Distribution of ART Patients by Regimen



When separated by type of facility, 10,386 (61%) patients receive ART across the six hospitals, and 5,755 patients (39%) receive ART across the 16 health centers.

Cost

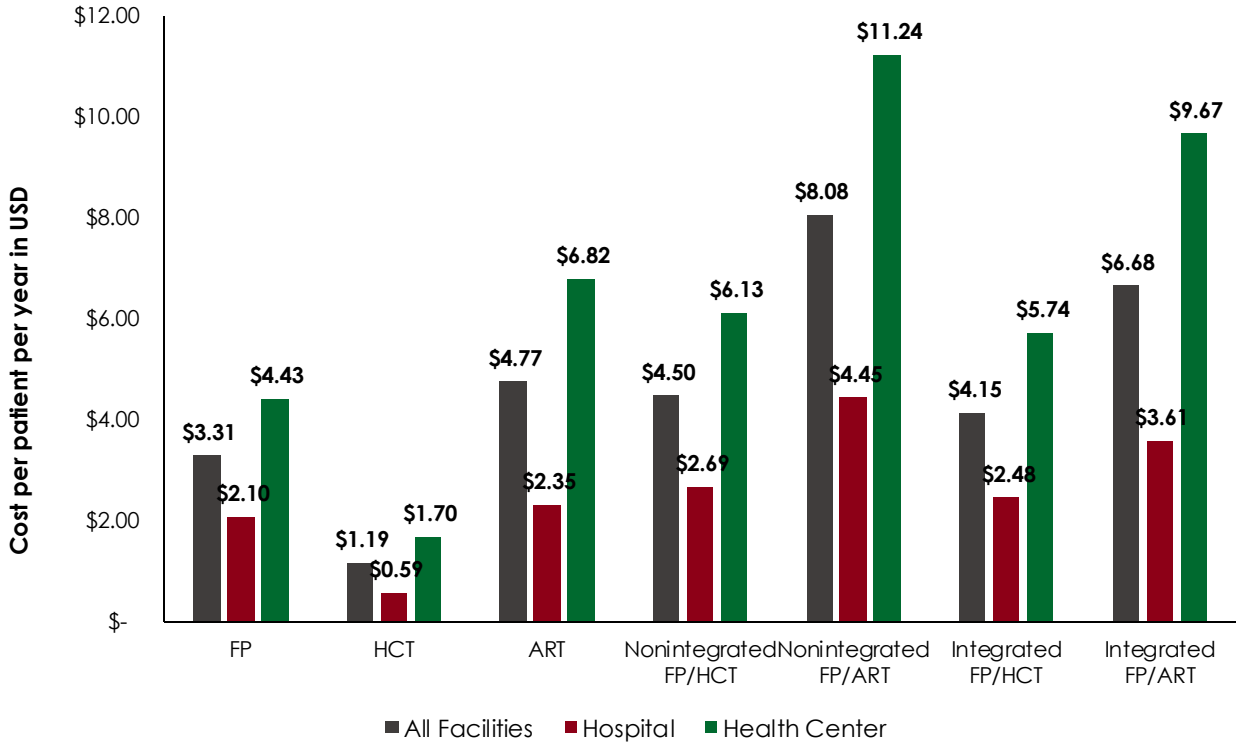
Medical staff time and cost

Based on the data reported by medical staff, the average time spent by medical staff across the 22 facilities with the average FP client is 53 minutes per year (with a minimum of 15 and maximum of 100 minutes). The average time spent by medical staff with the average HIV patient across all facilities is 78 minutes per visit (with range of 30 to 155 minutes). For patients receiving integrated services, the average time spent by medical staff across all facilities was estimated to be 106 minutes per visit (with a range of 40 to 240 minutes).

The weighted medical staff cost per FP client per year across the 22 facilities is $3.31, while the average weighted medical staff cost for HCT patient per year is $1.19 and for HIV (PMTCT and ART) services is $4.77. The average weighted medical staff cost for a person in one year for nonintegrated FP/HCT services was calculated as the combination of one HCT visit and the average cost of four FP visits, $4.50. Similarly, the average cost per person per year of delivering nonintegrated FP and ART was calculated as the combination of the average FP service cost and the average ART cost, which sums up to $8.08.

In terms of integration, the average weighted medical staff cost per patient per year for integrated FP/HCT services is $4.15, while the same for FP/ART services is $6.68. These represent a cost reduction of 8 percent for FP/HCT and 17 percent for FP/ART services. The average weighed medical staff cost for FP, HCT, and nonintegrated and integrated FP/HCT and FP/ART services for all facilities as well as for both types of facilities are shown in Figure 7.

Figure 7: Average Weighted Medical Staff Cost for FP, HIV, and Nonintegrated and Integrated FP/HIV Services per Patient per Year—All Facilities, Hospitals, and Health Centers



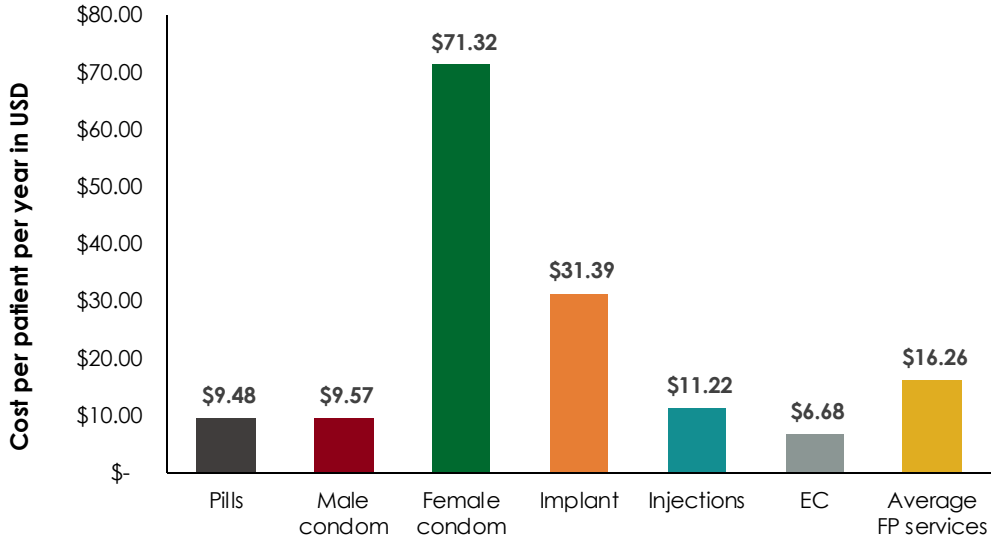
It is important to note that in all cases, the medical staff cost for hospitals is lower than health centers. This result is perhaps counterintuitive to assumptions about task sharing and presumably lower-level providers staffing health centers vs. higher-level providers staffing hospitals. This higher medical staff cost for health centers is a result of a larger portion of health centers in the sample of facilities with available data as well as the higher rate of responses from health center medical staff.

As discussed earlier, the average weighted medical staff cost for FP services assumes that the amount of time spent with FP clients is approximately the same across all FP methods. Similarly, the average weighted medical staff cost for HIV services assumes that the amount of time spent with the average patient receiving HCT or ART services is the same. The average weighted medical staff cost for integrated FP/HIV services assumes the same amount of time is spent with a patient receiving both services regardless of type of FP method used or HIV service received. In other words, this analysis assumes that, on average, medical providers spend the same amount of time with a patient who receives OCP and ART as with a patient who receives injections and PMTCT during a clinic visit.

Drug and medical supply costs

The costs of drugs and medical supplies for each of the six major FP services are $9.48 for OCP, $9.57 for male condoms, $71.32 for female condoms, $31.39 for implants, $11.22 for injections, and $6.68 for emergency contraception per patient per year (MICS, 2014).[3] Using the FP method mix data, this analysis estimated that the drug and medical supplies cost for the average FP client per year is $16.26. Figure 8 shows the cost of drugs and medical supplies for each FP method as well as the average FP service.

Figure 8: Drug and Medical Supply Cost per FP Method and Average FP Client per Year



When disaggregated into specific commodities, the largest share of the cost of drugs and medical supplies are contraceptives (50%), followed by medical consumables—gauze, gloves, needles, and syringes, etc.—(40%) and pregnancy test kits (8%).

[3] Based on estimated quantity per calendar year of protection—120 units for both male and female condoms, one unit of implant (Jadelle), 13 units of pills, and four units of injectables (Depo Provera). As data on emergency contraception for Malawi are limited, this study assumes an estimate of five pills of ethinylestradiol 0.03mg plus levonorgestrel 0.15mg.

Figure 9: Distribution of FP Drug and Medical Supplies Cost

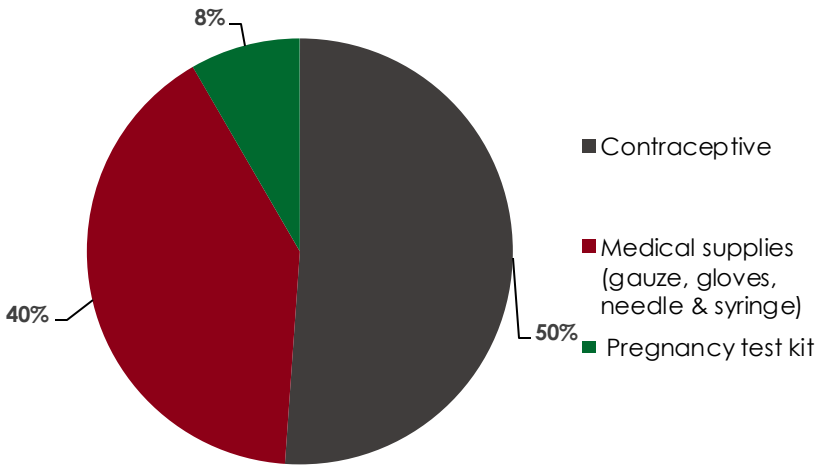
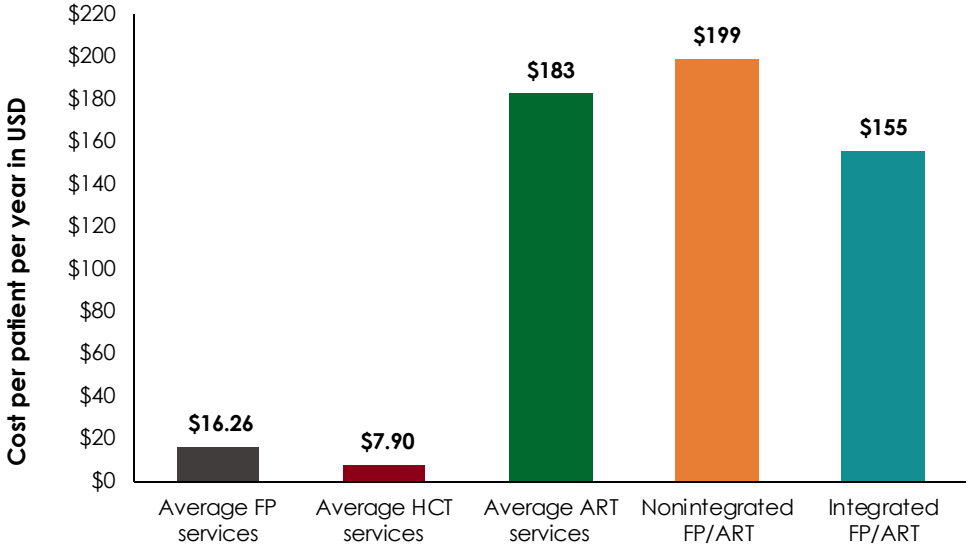
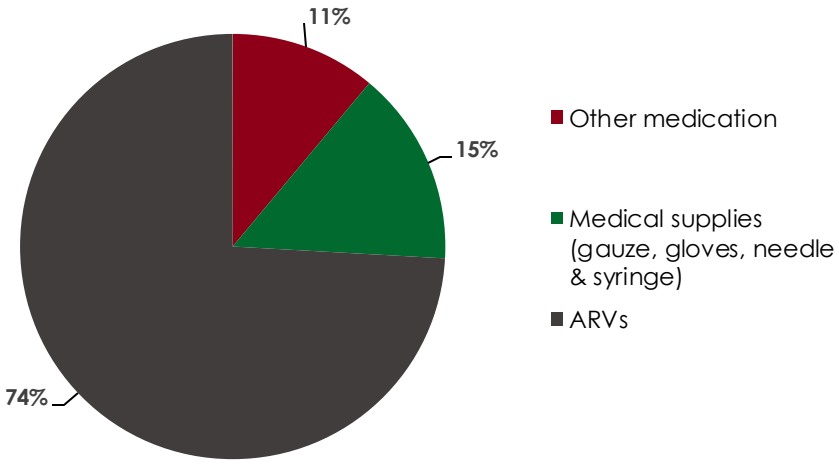


Figure 10: Cost of Drugs and Medical Supplies for HCT and ART



The cost of drugs and medical supplies for HIV services was disaggregated into two—HCT and ART services—and the costs were $7.90 and $183, respectively (see Figure 10). The largest share of the cost of drugs and medical supplies for ART patients is antiretrovirals (ARVs), which represent 74 percent of costs. The cost of ARVs used in this analysis was calculated using the cost of ARVs for the average ARV patient in Malawi, which was based on the average weighted cost of each of the seven ARV regimens being used by patients across the 22 facilities (see section on patients on ART above). The second largest cost share is the cost of medical consumables (gauze, gloves, needles. and syringes etc.), 15 percent, which is followed by other medications (fluconazole and ceftriaxone injections, ampicillin, etc.) representing 11 percent of all drug and medical supply costs.

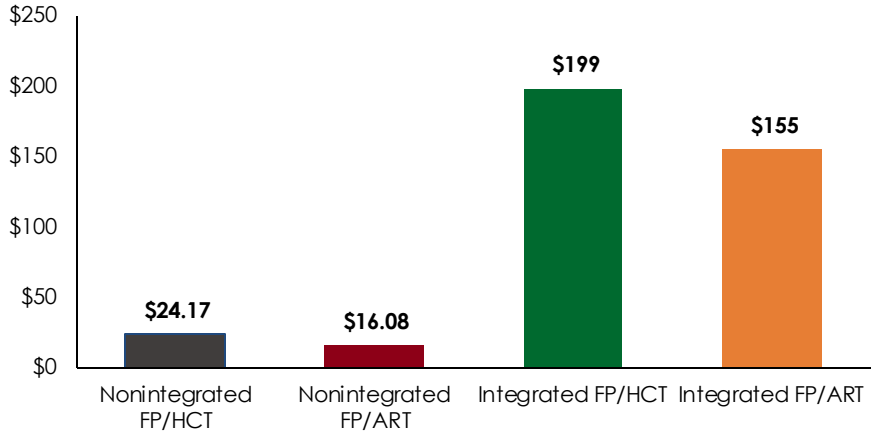
Figure 11: Distribution of ART Drug and Medical Supplies Cost



When the list of drugs and medical supplies commodities used in both FP and HIV services was reviewed to identify common use items across both services, the only overlapping commodities were consumables. As such, this study assumed that the same quantity of consumables that would otherwise be used for one visit of a nonintegrated service would be used for both services. For example, the average FP visit utilizes a pair of gloves while the average HCT or ART service also utilizes a pair of gloves. However, for the average integrated FP/HCT service delivery, we assumed that only one pair of gloves would be required in delivering both services. Based on this assumption, the drug and medical supplies cost related to delivering nonintegrated FP and HCT services at different points in time is estimated to be $24.17. On the other hand, integrated FP/HCT services with savings from consumables were estimated to be $16.08, representing a cost saving of 34 percent.

The cost of drug and medical supplies for nonintegrated FP and ART was calculated by combining the cost of FP and ART for a patient in one year, which comes to $199. However, if the same patient were to receive integrated FP and ART services in four visits, the cost of drug and medical supplies would be $155, representing 22 percent in cost savings. Figure 12 below shows the costs of nonintegrated and integrated FP/HCT and FP/ART services.

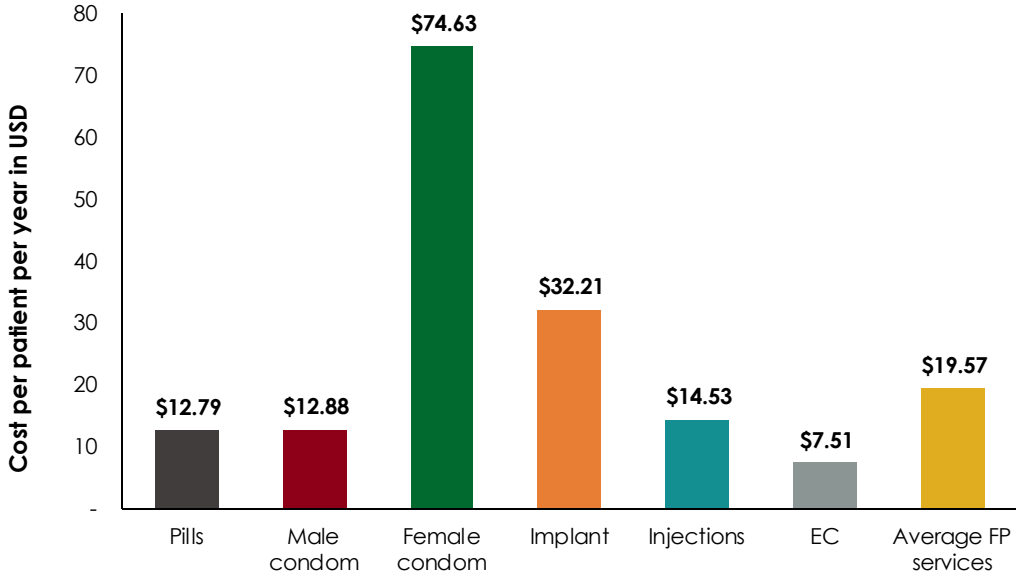
Figure 12: Cost of Drugs and Medical Supplies of Nonintegrated FP/HCT and FP/ART Services, and Integrated FP/HCT and FP/ART Services



Cost per patient per year

When the costs of medical staff time and drugs and medical supplies are combined, the cost for the average FP client per year comes to $19.57, while the cost for each type of FP service comes to $12.79 for OCP, $12.88 for male condoms, $74.63 for female condoms, $32.21 for implants, $14.53 for injections, and $7.51 for emergency contraception.

Figure 13: Cost of FP Services per Patient per Year by FP Method



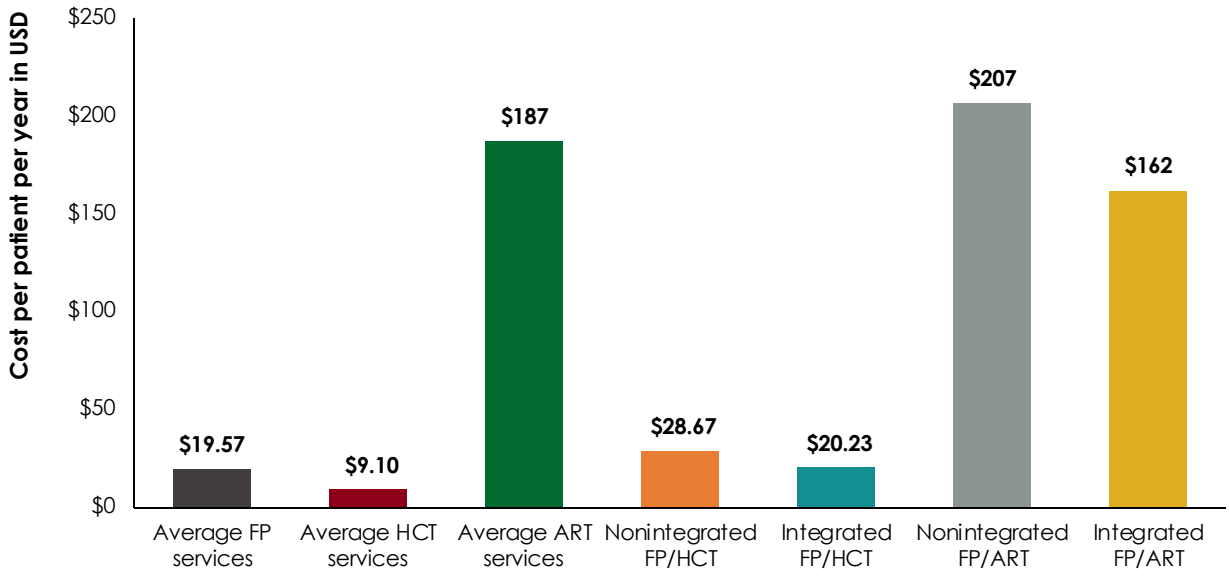
When the costs are disaggregated into the two types of facilities, the FP service cost per patient per year for hospitals comes to $18.36 for the average FP client and $20.69 in health centers. The costs per person per year by FP method are shown in Annex C.

For HIV services, the annual costs for the average patient seeking HCT services and ART services are $9.10 and $187, respectively. For hospitals, the average unit cost for HCT service is $8.49, while ART services' average unit cost is $185. For health centers, the average unit costs for HCT and ART services are $9.61 and $189, respectively.

Integrated FP/HCT services cost 30 percent less than nonintegrated FP and HCT services, while FP/ART services result in 22 percent cost savings in comparison with nonintegrated FP and ART services.

When FP and HCT services are delivered separately to the same patient at different times, the annual cost comes to $28.67. When FP and ART services are delivered independently, the cost comes to $207 per patient per year. However, when these services are integrated in their delivery, the cost for integrated FP/HCT services comes down to $20.23 per patient per year, while the cost of integrated FP/ART services comes to $162 per patient per year. This is a 30 percent reduction in costs in the case of FP/HCT integration and a 22 percent reduction in cost for integrated FP/ART services. The cost per patient per year for FP, HCT, and ART services and nonintegrated and integrated FP/HCT and FP/ART services are shown in Figure 14 (the cost of nonintegrated vs. integrated FP/HCT and FP/ART services for hospitals and health centers are shown in Annex C).

Figure 14: Cost per Patient per Year for FP, HCT, ART, Nonintegrated FP/HCT and FP/ART Services, and Integrated FP/HCT and FP/ART Services



DISCUSSION

FP service delivery holds a pivotal position in health service delivery because it has significant benefits in the area of reproductive health as well as in curbing the HIV epidemic. As a country with a generalized epidemic and relatively high unmet need (especially among women living with HIV), there is strong evidence that Malawi will not only reap significant benefits from expanding access to FP services, it can deliver these services more cost-effectively through integration of FP services with HIV services (Center for Reproductive Health, 2010; IPPF, 2011; Bollinger and Adesina, 2013). The data from this study adds to the growing body of work on the cost efficiency of integrating FP services with HIV services. It estimates two key cost components of service delivery—medical staff and drugs and medical supplies—related to delivering FP services to one woman in one year and it provides an important comparison for advocating the delivery of integrated FP and HIV services.

Before discussing the specific implications of the results of this study, it is important to highlight the limitations of the design and analysis:

1. The data presented here are not meant to represent national services because the analysis was based on available data from 22 facilities, which were not randomly selected to be representative of national facilities delivering both FP and HIV services.
2. The data only focus on two key cost components—medical staff and drugs and medical supplies. While these two represent a significant share of the total unit cost of service delivery, they do not include facility operations, equipment, furniture, or vehicle costs (cost components for which data were insufficient).
3. The sample of facilities has a higher portion of health centers than hospitals, and these health centers have a higher number of medical staff responses (and thus costs) included in the analysis. Despite the use of weighted averages to adjust for these costs, the analysis shows that the medical staff cost for health centers is higher than hospitals, which may not be the reality given that medical providers working in hospitals are likely to be higher cadre levels and thus receive higher compensation than providers working in health centers.
4. The medical staff costs are based on medical staff responses, which are likely limited by reporting bias. These issues can be addressed using more resource-intensive data collection methodologies, such as observation or time flow, that track patient interaction and outcomes to accurately identify total time spent providing each type of service. This can be a consideration for future research design.
5. The commodity costs used rely on the CMS pricing list dated 2010/11. This price list may be out of date and certainly does not reflect price reductions on Jadelle and Implanon that the global reproductive health supplies community was able to negotiate with Bayer and Merck in 2012/13 (Malawi, 2011).
6. The results presented here focus on supply-side costs of service delivery and not client-side costs (cost of transportation, loss of work time, etc.) to access service delivery. Lastly, the analysis does not include costs associated with program scale-up (training medical and program staff, infrastructure renovation and construction, improving monitoring systems, etc.), which are separate investment costs that cannot easily be allocated to service delivery at the facility level.

With these caveats in mind, this study identifies the cost of medical staff and commodities, drugs, and supplies in delivering FP and HIV services using data gathered from 22 facilities located across eight districts of the three national regions. The data show that the unit cost for the average patient seeking FP services across the 22 facilities is $19.57, and, when disaggregated by type of facility, the cost comes to

$18.36 for hospitals and $20.69 for health centers. For HCT service delivery, the average unit cost is $9.10 for all facilities, $8.49 for hospitals, and $9.61 for health centers. The average unit cost of ART services is $187 per patient per year for all facilities, $185 in hospitals, and $189 in health centers.

When services are delivered separately, the costs are cumulative, so that the cost per patient per year for a patient who receives both FP and HCT services is $28.67 across all facilities ($26.86 in a hospital and $30.30 in a health center). For a patient who receives FP and ART services separately, the average unit cost is $207 across all facilities ($203 in a hospital and $210 in a health center).

When FP services are integrated with HIV services, the cost is considerably lower. The cost of integrated FP/HCT services is $20.23 ($18.56 if delivered in a hospital and $21.82 if delivered in a health center), which represents 30 percent in cost savings when compared with nonintegrated service delivery across all facilities. For integrated FP/ART services, the average unit cost was calculated to be $162 across all facilities ($159 for hospitals and $165 for health centers), which represents cost savings of 22 percent. In both integrated modalities (FP/HCT and FP/ART), the drugs and medical supplies represent the largest portion of the savings, with approximately 96 percent of the cost reduction ($8.08 for FP/HCT and $43.44 for FP/ART).

However, this is not to say that the provision of FP and HIV services (parallel or integrated) in Malawi is not without further need for analysis of cost savings. For instance, 8 percent of the medical supplies consumed at health facilities were pregnancy test kits. The significant proportion of pregnancy tests being consumed requires additional analysis to better understand if these pregnancy test kits are an unnecessary medical barrier and thus an unnecessary medical expense. For over a decade, WHO has endorsed a standard checklist of questions to determine a client's pregnancy status and to address the lack of pregnancy tests (when a client is not menstruating) as a barrier to FP provision (WHO, 2002). Likewise, data should be further analyzed to assess the consumable cost savings that could possibly be associated with the latest prices on implants (Jadelle, Implanon, and Sino-Implant),[4] as well as the new prepackaged/prefilled subcutaneous injectable Sayana Press (subQ Depo-Provera), which may eventually be available in Malawi for as low as $1 per unit.[5]

The key message from this study is that delivery of integrated FP services, assuming that service outcomes are the same, is more cost-effective than delivering services separately. Other studies have shown improved health outcomes from service integration, especially with regard to improving outcomes for seropositive patients; the results from this study offer additional economic rationale for expanding access to integrated FP/HIV services (Sweeney et al., 2012; Bollinger and Adesina, 2013; Sweeney et al., 2014).

More importantly, the results of this study encourage a holistic perspective to health systems planning by adding more detail on costing to include PMTCT and/or HIV program planning in FP strategic plan development and implementation. As USAID, through PEPFAR, continues to support countries developing, implementing, and evaluating plans for virtual elimination of mother-to-child transmission (eMTCT), the results of this study can improve the accuracy in costing scale-up of eMTCT national programs during the next round of strategic plan development.

The data from this study can be used to generate cost estimates of FP and HIV facility-based services using targets outlined in Malawi's national HIV and FP strategic plans. With these cost estimates, the

[4] For more clinical and cost information on these methods, visit https://www.k4health.org/tags/contraceptive-implants.

[5] For more information on Sayana Press, visit http://www.pfizer.com/news/press-release/press-release-detail/pfizer_s_sayana_press_becomes_first_injectable_contraceptive_in_the_united_kingdom_available_for_administration_by_self_injection.

national government, donors, and implementing partners can identify how best to support service delivery. Furthermore, the costing methodology, with adjustments for context, can be replicated to additional facilities across Malawi and in other low-resource countries as part of monitoring and improvement processes to generate more accurate unit costs that can then be used to inform regional and/or national decision making to meet the needs of patients for a crucial and growing health service.

REFERENCES

Adesina, A. and L.A. Bollinger. 2013. "Estimating the Cost-Savings Associated With Bundling Maternal and Child Health Interventions: A Proposed Methodology." *BMC Public Health* 13 Suppl 3:S27. doi: 10.1186/1471-2458-13-S3-S27. Epub 2013 Sep 17.

Bollinger, L.A. and A. Adesina. 2013. *Cost-Effectiveness of Integrating PMTCT and MNCH Services: An Application of the LiST Model for Malawi, Mozambique, and Uganda.* DHS Occasional Paper No. 7. Calverton, MD: ICF International.

Center for Reproductive Health. 2010. *Rapid Assessment for the Integration and Linkages of Sexual and Reproductive Health and HIV*. Malawi.

Irani, L., M. Mellish, E. McGinn, and P. Dindi. 2015a. *Family Planning and HIV Integration in Malawi: Key Stakeholder Interviews.* Washington, DC: Futures Group, Health Policy Project.

Irani, L., S. Pappa, and P. Dindi. 2015b. *Family Planning and HIV Integration in Malawi: A Policy Analysis*. Washington, DC: Futures Group, Health Policy Project.

Malawi. Central Medical Store Trust. *CMS Catalouge for 2010-2011*. 2011.Print.

International Planned Parenthood Federation (IPPF), et al. 2011. Rapid Assessment of Sexual and Reproductive Health and HIV Linkages.

Management Sciences for Health (MSH). 2010. *Community-Based Family Planning and HIV & AIDS Services in Malawi.* MSH.

National Statistical Office (NSO) and ICF Macro DHS. 2011. *Malawi Demographic and Health Survey 2010*. Zomba, Malawi and Calverton, MD: NSO and ICF Macro.

Sweeny, S., et al. 2012. "Costs and Efficiency of Integrating HIV/AIDS Services With Other Health Services." *Sex Transm Infect.* 88(2):85–99.

Sweeny, S., et al. 2014. "The Impact of HIV/SRH Service Integration on Workload: Analysis From the Integra Initiative in Two African Settings." *Human Resources for Health* 12:42.

WHO. 2002. *Selected Practice Recommendations for Contraceptive Use*. Geneva: WHO.

Wilcher, R., W. Cates, and J. Baeten. 2013. "Family Planning and HIV: Two Steps Forward." *AIDS* S1-S4.

ANNEX A: NUMBER OF RESPONSES BY MEDICAL STAFF CADRE

Annex A1: Response for FP Service Delivery

Average	Responses from Medical Staff Across All Facilities	Responses from Hospital Medical Staff	Responses from Health Center Medical Staff
Clinical Officer	2	2	0
Medical Assistant	7	0	7
State-Registered Nurse Midwife	1	1	0
Nurse Midwife Technician	18	6	12
Community Midwives	4	1	3
Health Surveillance Assistant	16	2	14

Annex A2: Response for HIV Service Delivery

Average	Responses from Medical Staff Across All Facilities	Responses from Hospital Medical Staff	Responses from Health Center Medical Staff
Clinical Officer	2	2	0
Medical Assistant	7	0	7
State Registered Nurse Midwife	1	1	0
Nurse Midwife Technician	18	6	12
Community Midwives	4	1	3
Health Surveillance Assistant	17	2	15
HIV Counselor	1	0	1

ANNEX B: COST PER PERSON PER YEAR FOR DRUGS AND MEDICAL SUPPLIES

Commodity	Cost per Patient per Year
Pills COC	$2.84
Pills POP	$2.84
Condoms (male)	$2.92
Condoms (female)	$64.68
Implant Jadelle	$24.75
Injectables	$4.57
Emergency Contraception	$0.50
Fluconazole Injection	$15.96
Ceftriaxone Injection	$2.90
Ampicillin	$1.06
Gauze Bandage	$0.18
Blade, Surgical	$0.22
Gloves, Exam	$0.37
Gloves, Sterile	$1.04
IV Solution	$2.34
Lidocaine Hydrochloride	$2.24
HIV Rapid Test	$0.10
AZT + 3TC + NVP	$150.12
TDF + 3TC + EFV	$129.60
TDF + 3TC + ATV/r	$279.00

ANNEX C: COST OF NONINTEGRATED VS. INTEGRATED FP/HCT AND FP/ART SERVICES FOR HOSPITALS AND HEALTH CENTERS

Service	All Facilities	Hospitals	Health Centers
OCP	$12.79	$11.58	$17.22
Male Condoms	$12.88	$11.67	$17.30
Female Condoms	$74.63	$73.42	$79.06
Implants	$34.70	$33.49	$39.13
Injections	$14.53	$13.32	$18.95
EC	$7.51	$7.67	$9.08
Average FP	$19.57	$18.36	$20.69
Average HCT	$8.41	$7.81	$8.92
Average ART	$186.74	184.32	$188.79
Nonintegrated FP/HCT	$27.98	$26.17	$29.61
Integrated FP/HCT	$19.55	$17.87	$21.14
Nonintegrated FP/ART	$206.31	$202.68	$209.48
Integrated FP/ART	$161.47	$158.41	$164.47

For more information, contact:

Health Policy Project
Futures Group
1331 Pennsylvania Ave NW, Suite 600
Washington, DC 20004
Tel: (202) 775-9680
Fax: (202) 775-9694
Email: policyinfo@futuresgroup.com
www.healthpolicyproject.com