

Excess Capacity and the Cost of Adding Services At Family Planning Clinics in Zimbabwe

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CONTEXT: With the expense of providing reproductive health services increasing, information on how staff members spend their time can help program managers determine whether there is sufficient downtime to add new services at minimal additional cost.

METHODS: Providers in Zimbabwe were retrained in syndromic management of reproductive tract infections. Before and after retraining, mini-situation analyses were performed at several clinics to determine how staff spent their contact time with clients. The mean length of visits was calculated, as was the amount of time spent on risk assessments, pelvic exams and collection of lab specimens. Time-motion studies were conducted to determine how providers spent their time following retraining, including client services, administrative activities and unoccupied time.

RESULTS: The median length of visits for new acceptors was longer following retraining (27 minutes) than it was before (20 minutes), and the proportion of such clients who received various syndromic management services increased. Yet even after retraining, providers spent less than 40% of their time with clients. Observation revealed substantial unoccupied time in early morning and late afternoon. If more clients received services, time spent with clients would increase and unoccupied time would decrease; thus, the labor cost of a clinic visit could be cut—at one clinic, by almost one-half. Overall, the average provider cost of family planning visits could be reduced by more than one-third if providers increased the share of time spent with clients from 40% to 60%.

CONCLUSIONS: Reduction of provider downtime (time absent from the clinic, time spent unoccupied or time not otherwise used productively) at family planning clinics in the developing world could increase capacity to provide services with a minimal rise in costs. Poorly paid providers, however, may require financial incentives to increase their workload.

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The United Nations Population Fund (UNFPA) estimates that the costs of family planning and other reproductive health services are increasing and that donors and countries will find it difficult to meet them.¹ However, the UNFPA estimate is not based on detailed country studies; even if it were, simply extrapolating the findings of such studies may overstate future costs. For example, in recent research calculating the costs of adding various reproductive health services to family planning programs in Mexico and Zimbabwe, the authors argued that “many institutions delivering reproductive health services operate significantly below their physical capacity to see clients, and...much of the equipment required for expanding reproductive health services may already be available for use in family planning and other health services. Thus, the marginal capital costs of adding most types of...services should be small.”² The authors argued that “many institutions delivering reproductive health services operate significantly below their physical capacity to see clients, and that much of the equipment required for expanding reproductive health services may already be available for use....”³ The same argument may apply to staff time.

The costs of providing reproductive health care could be lower than those implied either by UNFPA estimates or by

estimates obtained from combining average costs from microlevel studies conducted at service-delivery points. For example, with studies such as that described above, aggregating data would create total cost estimates that are likely to be too high, as these assume that expanding service provision requires hiring additional staff. But just as there may be excess physical capacity, there may also be excess human capacity. Thus, if workers spend much of their time waiting for clients or performing unnecessary paperwork, this time can be reallocated to serving clients. As a result, the incremental labor costs of adding reproductive health services would be low, as additional staff would not be needed.

If new tasks turn out to take up a large amount of time, clinics may need to hire additional workers; if no new workers are hired, providers may need to reduce the time they spend on the provision of existing services, with a resulting decline in the number of visits and the quality of services provided in these visits. If clinics were to add many new reproductive health services, they would likely need new equipment and more space as well as additional staff, and costs would increase.

While providers are apt to say that they do not have enough time to take on new tasks, data on time use show that providers have substantial unoccupied time. For ex-

ample, in a survey of public-sector providers in Jamaica, about half reported that they did not have sufficient time to do counseling.⁴ Yet a study of three Ministry of Health clinics in Jamaica indicated that staff spent almost two hours not occupied, and just three and one-half hours with clients.⁵ Similarly, the proposal for an intervention to expand counseling for antenatal clients at clinics in Durban, South Africa, called for additional staff to meet the need for services,⁶ but results from a client-flow analysis showed that providers were busy in the morning but saw few clients in the afternoon.⁷ Other studies of time use also have indicated that providers have considerable amounts of free time.⁸

Information on providers' use of time can be obtained in a variety of ways. The authors of the study conducted in Zimbabwe (a different approach was used in Mexico) used standard times (in minutes) for every activity performed by each category of staff, and multiplied this number by dollars per minute, using information on compensation packages and work time.⁹ The investigators did not discuss how these standard times were determined, however.

In a study of clinics in Côte d'Ivoire, facility managers were asked how staff, space and equipment were allocated to family planning relative to the other activities at the clinic.¹⁰ Yet a recently conducted comparison at four clinics in Jamaica of results from a time-motion study (one that uses trained observers to record the activities of workers) with those from manager interviews revealed that the managers considerably overestimated the time providers spent in contact with clients and in administrative work and underestimated the time they spent unproductively.¹¹ The authors of a study of clinics in Paraguay in which information on time use was obtained from self-administered time sheets argued that these data did not differ substantially from those provided by a time-motion study.¹² On the other hand, research conducted in Ecuadorian clinics showed poor agreement between results from a self-administered time sheet and those from a time-motion study with respect to nonproductive time and the time used to support client contact activities.¹³ Research conducted in Jamaica found a similar lack of agreement.¹⁴

Although time-motion studies are generally the "gold standard," even these may produce flawed results if providers alter the way they spend their time while they are being observed. For example, to appear busy to the observer, staff may increase the time they spend on administrative tasks. Although the amount of administrative time should rise with client load, data from clinics in Bangladesh, Jamaica and Zimbabwe indicated that administrative time was highest at clinics where providers spent the least amount of time with clients.¹⁵

In this article, we examine the cost implications of expanding the provision of syndromic management services for detecting and treating reproductive tract infections (RTIs), including sexually transmitted infections (STIs), in family planning clinics in Zimbabwe. Syndromic management of STIs allows health care workers to diagnose an infection without the need for sophisticated laboratory tests,

because it is based on clinical syndromes and, in some cases, on assessments of an individual patient's risk for STI infection.¹⁶ Thus, it can be used where sophisticated laboratory tests are not readily available. The national algorithms in Zimbabwe provide guidelines as to how to treat women with different signs and symptoms, including lower abdominal pain and vaginal discharge.*

Many family planning programs are trying to reach a larger proportion of the population at risk for RTIs—sexually active women of reproductive age.¹⁷ In particular, Zimbabwe's National AIDS Coordination Program has noted that "ways are being tested to reach this population through integrating RTI and HIV management services into existing [maternal and child health and family planning] programs."¹⁸ According to the Zimbabwe Demographic and Health Survey, 31% of sexually active women were using a modern method of contraception in 1994, and 82% had obtained their method from a clinic.¹⁹ Thus, family planning clinics would seem to provide an ideal setting for reaching women in the general population who might have an STI.

As part of a study to provide the Zimbabwe National Family Planning Council with information to improve its management of RTIs, we obtained information allowing us to determine the costs of adding RTI services to the organization's clinics.²⁰ Here, we show how the costs of family planning visits are affected by adding syndromic management services to existing family planning service provision. We pay particular attention to how visit costs are affected by the ways in which providers spend their time, and we model several scenarios in which we vary assumptions about how providers spend their time. We also consider both the timing of downtime during the day and overestimates of administrative time resulting from providers' desire to appear busy while being observed.

DATA AND METHODS

Background

As it is applied in Zimbabwe, syndromic management incorporates a risk assessment that includes questions on behavior, evaluation of symptoms and a pelvic exam to check for signs. All women who adopt a family planning method, all clients coming in for a one-year check-up and some clients coming in for "other" reasons are supposed to be targeted to receive the syndromic approach. Providers had been trained in syndromic management, but because of concerns that they had not implemented the approach, they were retrained.

The research described in this article was part of a larger examination of the implementation of syndromic management in Zimbabwe. As part of this effort, specimens were

*The value of syndromic management in treating women with vaginal discharge is now being questioned, although the approach is widely practiced throughout Sub-Saharan Africa. For example, both our results from Zimbabwe and findings from a Jamaican study (Behets FM et al., Sexually transmitted diseases are common in women attending Jamaican family planning clinics and appropriate detection tools are lacking, *Sexually Transmitted Infections*, 1998, 74(Suppl. 1):S123–S127) suggest that syndromic management has both low sensitivity and low specificity in such cases.

TABLE 1. Percentage of new contraceptive users who received specified services, before and after staff were retrained in syndromic management, by type of service, Spilhaus and Mpilo clinics, Zimbabwe, 1998

Service	Before (N=14)	After (N=20)
Risk assessment	14.3	40.0
Pelvic exam	50.0	70.0
Specimens for STI lab tests	0.0	30.0

collected from clients for laboratory testing to determine the accuracy of the syndromic approach (in terms of sensitivity, specificity and positive predictive value). These laboratory tests were not considered a routine service for clients, but were used only to validate the service that was being expanded—the syndromic approach.²¹

To determine if expansion of syndromic management would increase labor costs, we asked two questions: First, did the length of visits rise after clinicians were retrained in the syndromic approach? Second, could providers draw on unoccupied time to provide these services, or would they have to reduce the time they spent on provision of other services?

When providers are fully occupied, only the first question needs to be addressed, either by obtaining information on how visit lengths change as a result of adding syndromic management or by comparing services received by clients, some of whom receive syndromic management and some of whom do not. We follow both approaches.

The second question requires information on how the time that providers allocate to various services changes. If providers spend considerable amounts of time on administrative tasks or have substantial unoccupied time even after the new service has been added, it can be inferred that providers had time available in which to expand services. We examine the second question using cross-sectional data obtained after the retraining; unfortunately, we do not have valid pretest-posttest estimates of time use.

Finally, we obtained information on direct costs other than provider time. We then used scenarios that varied the percentage of contact time to determine how an increase in the number of visits affected average costs.

Data Collection

A mini-situation analysis conducted in January and February 1998 provided information on the percentage of family planning clients at two family planning clinics (Spilhaus and Mpilo) who received various services. A second mini-situation analysis (the posttest) was conducted in May and June 1998. In addition, during May and June 1998, a mini-situation analysis was conducted at a third clinic (Lister). Data from these analyses provided information

*The risk assessment included items asking if the client lived apart from her regular partner, had had more than one partner in the past 12 months, had any concerns about STIs or HIV/AIDS or had had previous symptoms, signs or treatments, or if the client's partner had had previous signs, symptoms or treatments.

on activities conducted and on the duration of contact time.

In each mini-situation analysis, investigators completed a precoded form for the client visits that they observed. The form contained information on whether a risk assessment was carried out, and if so, how many items of the risk assessment were completed,* whether a pelvic exam was done and whether specimens were collected for the lab tests to validate the syndromic approach. Data on family planning services provided, other clinical exams carried out and other discussions held were also gathered.

We used two techniques to determine whether retraining had led to a change in how providers allocated their time. First, for a week in January 1998 and a week in June 1998, providers were questioned at the end of each day about how much time they had spent with clients, including the number and duration of different types of visits, and how they had spent their time when they were not with clients. In addition, to check the validity of the data collected in these interviews and to obtain objective data on how providers spent their time during a full day, we conducted a time-motion study after retraining was completed. At Mpilo and Lister, providers were observed for a week (a total of 30 person-days). In Spilhaus, observations were conducted for 12 person-days. (The clinic was closed one day.) Observers used a stopwatch that beeped every five minutes. At the beep, the activity being performed was noted.

Several months after these data collection efforts, we gathered additional data to estimate the average provider costs of different types of visits for reproductive health services, including family planning. We included the costs of provider and support labor, as well as the costs of contraceptives and supplies. The Zimbabwe National Family Planning Council provided information on the salaries and benefits of clinic providers and support staff and on the costs of gloves (the main materials cost for visits). We also obtained information on the use of other supplies, but did not use these data

TABLE 2. Mean and median duration (in minutes) of family planning visits for new contraceptive users and resupply or repeat family planning clients at posttest, by services provided, Spilhaus, Mpilo and Lister clinics

Provision of risk assessment	Service		
	Pelvic exam, lab test	Pelvic exam, no lab test	No pelvic exam, no lab test
Provided			
Mean	43	26*	10†
Median	43	25	10
N	23	7	9
Not provided			
Mean	58	26‡	10§
Median	38	22	8
N	3	18	127

*Difference between this value and value immediately to the left is statistically significant at p=.002. †Difference between this value and value immediately to the left is statistically significant at p=.004. ‡Difference between this value and value immediately to the left is statistically significant at p=.034. §Difference between this value and value immediately to the left is statistically significant at p=.000. Note: Mann-Whitney and Wilcoxon tests were used to determine the statistical significance of differences in means.

TABLE 3. Selected measures of client visits and time spent with clients, and of the potential impact of implementing syndromic management, Spilhaus, Mpilo and Lister clinics

Measure	Spilhaus	Mpilo	Lister
Mean no. of visits per provider per day	7.1	10.7	5.5
Adjusted mean no. of visits per provider per day*	9.5	11.8	8.5
Mean length of visits (in minutes)	22.7	17.0	19.1
Mean daily contact time per provider per day (in minutes)†	217.1	199.7	161.7
Average no. of visits per provider per day for new acceptors, repeat clients and "other" clients‡	6.3	10.5	6.8
% of such clients who should have received syndromic management§	47.1	42.8	57.9
% of such clients who received syndromic management**	40.8	32.4	17.5
Additional time needed to offer syndromic management to targeted clients (in minutes)	6.1	18.6	43.2
Time needed for lab tests (in minutes)††	22.1	30.6	8.5
Net change in daily contact time per provider (in minutes)	-16	-12	+34.7
Mean daily contact time per provider per day if syndromic management were implemented (in minutes)	201.1	187.7	196.4

*Adjusted number of visits was calculated by dividing mean total contact time from time-motion study by mean visit length observed in the mini-situation analysis. †Mean daily contact time equals adjusted mean no. of visits multiplied by mean length of visits. ‡New acceptors, repeat clients and "other" family planning visitors constituted 66% of all visits at Spilhaus, 89% of all visits at Mpilo and 80% of all visits at Lister; STI clients accounted for most of the remaining visits. §Based on the assumption that all new contraceptive users, one-third of repeat family planning clients, and half of "other" clients should receive syndromic management. **Based on the percentage of such clients who received pelvic examinations. ††For Spilhaus, 21% of targeted clients had specimens collected; 21% of 6.3 visits=1.3 visits. Seventeen minutes was needed for specimen collection; 1.3 visits x 17 minutes=22.1 minutes. For Mpilo, 17% of targeted clients had specimens collected; 17% of 10.5 visits=1.8 visits. Seventeen minutes was needed for specimen collection; 1.8 visits x 17 minutes=30.6 minutes. For Lister, 7% of targeted clients had specimens collected; 7% of 6.8 visits=0.5 visits. Seventeen minutes was needed for specimen collection; 0.5 visits x 17 minutes=8.5 minutes.

because they varied so much among clinics. Finally, we obtained information on the costs of contraceptives from a recent study on the costs of commodities and materials for providing reproductive health services.²²

Analysis

To determine the impact of the various services received on visit length, we compared the mean length of visits for combinations of services (risk assessment, pelvic exam and lab tests) for clients seen in June 1998. Because of the small number of cases in some subgroups, we measured the significance of the differences in means using Mann-Whitney and Wilcoxon tests.

In addition, we determined the impact on staff workload of expanding the syndromic approach to targeted women, under the assumption that clients who were targeted by the clinics to receive syndromic management would actually receive it. We then calculated the time necessary to carry out these additional activities and determined whether the staff had the time to do so.

For our calculation of the provider cost of a visit, we allocated labor costs according to the time spent in providing services to new acceptors or continuing users. We were

unable to determine what method a new user received, so we used the same time estimate for all acceptor visits. We divided other labor costs by the number of visits. Supply costs were charged to the visit in which particular supplies or contraceptives were used. All inputs were multiplied by their respective unit costs. We also calculated the labor cost per visit using actual data on how staff spent their time and under various scenarios in which we varied the percentage of time that staff spent with clients.

RESULTS

Visit Length and Services Received

Using data from the mini-situation analyses, we found that the median visit length for new acceptors was longer in the posttest period (27 minutes) than in the pretest period (20 minutes).^{*} Visit length may have increased at posttest because at that time a higher proportion of women received any of the three services that we examine here: a risk assessment, a pelvic exam, or collection of lab specimens. For example, the proportion of new users who received a risk assessment climbed from 14% at pretest to 40% at posttest (Table 1). However, while the retraining apparently resulted in wider use of syndromic management, it is clear that not all women received these services.

We used data from the mini-situation analyses to explore how risk assessment, the pelvic exam and the collection of lab specimens contributed to the length of a visit. (Because some of the cell sizes are small, we also show the median visit length.) As can be seen in Table 2 women who had a risk assessment but who did not receive either of the two other services spent about the same amount of time with a provider as did women who received none of these services (10 minutes, on average). Thus, it would appear that conducting a risk assessment added little or no time to a visit.

A pelvic exam added about 16 minutes to the average length of a visit, an increase that was not dependent on whether a woman had a risk assessment. The collection of lab specimens added another 17 minutes to the average visit for women who had both a pelvic exam and a risk assessment. (The lab specimens were collected for validation purposes only; they would not be performed as part of normal service provision once the study ended.)

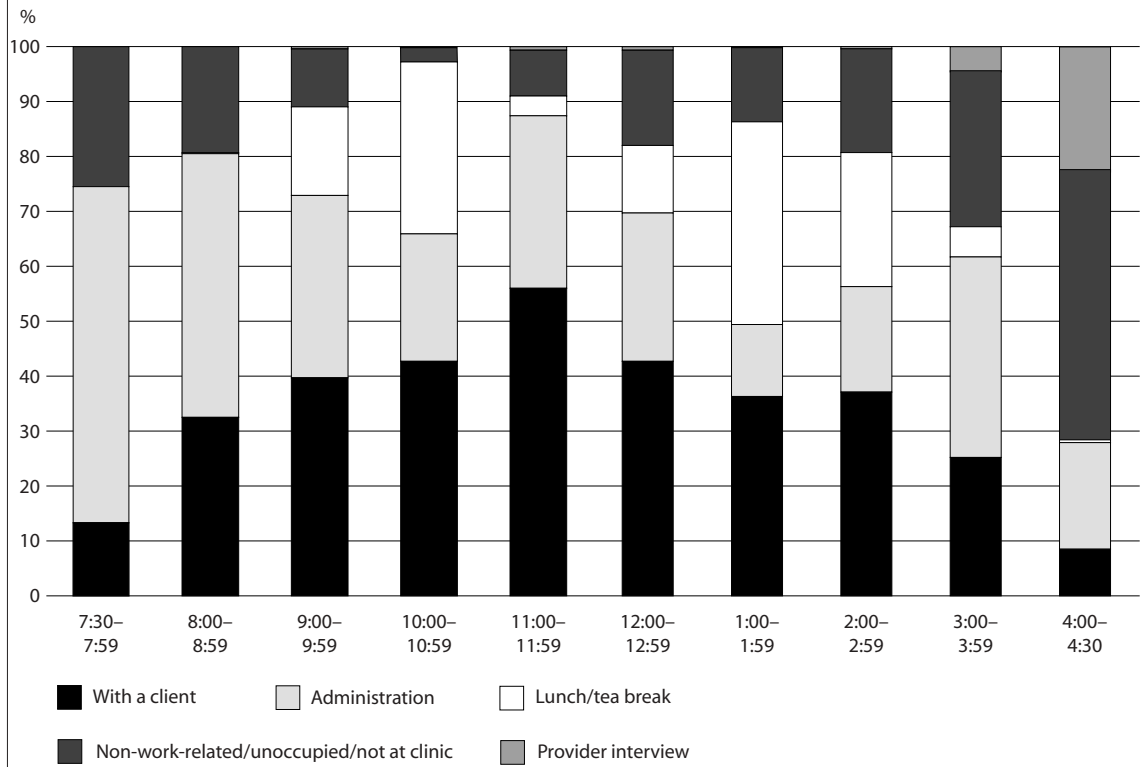
Thus, we can conclude that if syndromic management (or a pelvic examination) were to become a routine part of family planning visits for selected groups of women, it would add only about 16 minutes to their visits.

Contact Time for Syndromic Approach

We calculated how much the total time spent on visits would increase if syndromic management were provided to all targeted clients. To do so, we estimated the proportion of re-

^{*}Other comparisons are not easily made because of the different sampling strategies used for the pretest and the posttest. The pretest group likely included a high percentage of women who were coming for a one-year check-up, while the posttest group simply reflected the general population of women coming for resupply. This latter group probably included a high percentage of women not scheduled to receive a one-year check-up and thus not targeted for syndromic management.

FIGURE 1. Percentage distribution of provider time by selected activities, according to hour of the day



Notes: Administrative tasks included completing and reviewing forms, filing forms, preparing work space, preparing for the next client, engaging in work-related discussions with staff, participating in official meetings, reading and making phone calls. The time-motion study was based on observations made over a five-day period of three providers at each clinic. Spilhaus and Lister opened at 8:00 A.M. and closed at 4:30 P.M.; Mpilo opened at 7:30 A.M. and closed at 4:00 P.M. Thus, the first bar refers only to Mpilo, while the last bar refers only to Spilhaus and Lister.

visits that were for one-year check-ups (one-third) and the proportion of women in the “other” group who should be targeted for the syndromic approach (one-half). No changes were expected for other visits, such as those by STI clients or by women coming to the clinic because of problems with their contraceptive method. All new clients were supposed to be targeted, and additional time expenditures were calculated based on the difference between 100% and the percentage actually receiving services in that group.

At the Spilhaus clinic, the providers spent an average of 22.7 minutes with clients during each visit, and handled an average of 9.5 visits per day (Table 3 page 61).^{*} Thus, following retraining in syndromic management, providers spent an average of 217 minutes per day with clients. About half (47%) of clinic clients who either accepted a method at their visit, made a return visit or made a visit for some “other” purpose would receive syndromic management if it were extended to all targeted women, but the approach was actually used with only 41% of such women.

Thus, at Spilhaus, the number of additional clients receiving syndromic management would increase by 0.4 per

provider per day ($[47\% - 41\%] \times 6.3$ provider visits per day). These visits would require an additional 6.1 minutes per provider per day (0.4 visits multiplied by 16 minutes, the net change in contact time per provider per day). However, the use of lab tests to verify infection status would end, as this is not part of the syndromic approach. Thus, visit time would be reduced by 17 minutes for the 21% of targeted clients for whom specimens were collected, or by a total of 22 minutes per provider per day ($21\% \times 6.3 \times 17$). Overall, the total average time each provider spent with clients at Spilhaus would decrease from 217 minutes to 201 minutes per day if all targeted clients received syndromic management on a routine basis.

Results for Mpilo were similar. The mean length of a patient contact was 17 minutes, and there were nearly 12 visits per provider per day, on average. Thus, each provider spent about 200 minutes with clients each day. Expansion of syndromic management would increase the proportion of clients receiving this approach by 11 percentage points in the group consisting of new acceptors, return clients and women attending the clinic for “other” reasons. Although this expansion would require almost 19 additional minutes per provider per day, it would save more than 30 minutes per provider per day by avoidance of lab tests. Altogether, providers at Mpilo would spend, on average, an estimated 188 minutes per day with clients if syndromic

^{*}The number of visits per day was adjusted upward to account for the possible underreporting of observed visits. The correction took into consideration estimated contact time from the time-motion study. The average total contact time derived from the time-motion study was divided by the average visit length observed in the mini-situation analysis.

TABLE 4. Mean daily staff time (in minutes) and percentage distribution of time spent on selected activities, Spilhaus, Mpilo and Lister clinics

Activity	All clinics		Spilhaus		Mpilo		Lister	
	Mean	%	Mean	%	Mean	%	Mean	%
With a client	192	37.6	217	42.5	200	39.2	162	31.8
Visit-related tasks*	80	15.7	63	12.4	123	24.1	51	10.0
Other work activities†	70	13.7	43	8.4	49	9.6	113	22.2
Lunch/tea break	79	15.5	81	15.9	83	16.3	75	14.7
Non-work-related/ unoccupied/not at clinic	80	15.7	94	18.4	46	9.0	102	20.0
Provider interview	9	1.8	12	2.4	9	1.8	7	1.4
Total	510	100.0	510	100.0	510	100.0	510	100.0

*Completing or reviewing forms, filing forms, preparing work space and preparing for next client. †Work-related discussions with staff, official meetings, reading and phone calls.

management were fully implemented, slightly less than the 200 minutes spent on clients after retraining.

At Lister, providers would need to add the most time for syndromic management (43 minutes), because they were seeing the smallest proportion of targeted clients. However, the total time spent with clients would increase by only 35 minutes—because eight minutes would be saved by eliminating the lab tests—to 196 minutes per provider per day, if all targeted clients received syndromic management.

Impact on Provision of Other Services

Information for the three clinics on how time spent in different activities varied over the course of the day (taken from the time-motion study) was available only for the posttest period; the provider interviews, which were conducted pretest and posttest, did not prove to be valid, and could not be used.* The percentage of time spent in direct care increased throughout the morning, with the maximum proportion (56%) reached between 11 A.M. and noon (Figure 1). The proportion of time spent on lunch and tea breaks was highest from 10 A.M. to 11 A.M. and from 1 P.M. to 2 P.M. Time spent unoccupied was highest in the early morning (when staff sometimes had not yet arrived) and in the late afternoon.

For all clinics, about 38% (mean, 192 minutes) of time during the full day was spent with clients, while an additional 29% (150 minutes) was spent in various administrative tasks or on other work activities (Table 4). The percentage of time spent with clients was higher at Spilhaus and Mpilo than at Lister.

Cost of Visits

The overall estimated cost of visits for different family planning services ranged from \$2.49 per pill visit to \$3.77 per IUD visit (Table 5). These estimates are in close agreement

TABLE 5. Visit cost (in US\$) for provision of selected methods in Spilhaus, Mpilo and Lister clinics, and in 1995 Zimbabwe study

Method provided	All	Spilhaus	Mpilo	Lister	1995 study
Pill	2.49	2.53	2.19	2.73	2.54
IUD	3.77	3.82	3.47	4.01	2.94–8.70
Injectable	2.86	2.90	2.56	3.10	2.77

Source: 1995 study—see reference 2.

with those found in a previous study in Zimbabwe,²³ although our estimate of the cost of an IUD visit is toward the lower end of the range given in that study (\$2.94–8.70).† Our estimates include the costs of provider labor (the nurse's time), gloves and contraceptives.

The differences in costs at the various clinics are partially explained by how providers spend their time. As the number of clients increases, the proportion of time spent with clients increases, and the labor cost per visit decreases. That proportion ranged from 32% at Lister to 43% at Spilhaus.

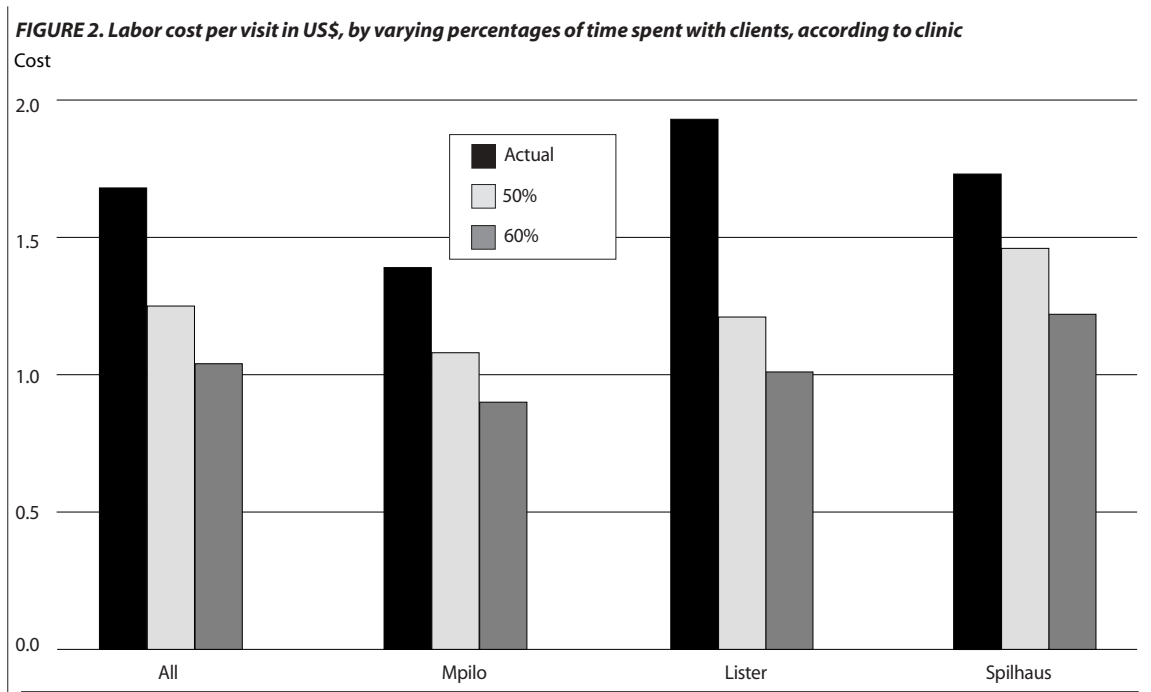
Labor costs will vary depending on the share of provider time that is spent with clients. Visit costs are lower when providers spend a higher percentage of their time with clients, since the same amount of labor is used to provide more visits. For example, at Spilhaus, if the proportion of time spent with clients were to increase to 50%, the total time spent with clients would rise from 201 minutes (Table 3) to 255 minutes (not shown), or by 54 minutes per day. This would reduce labor costs from \$1.73 per visit to \$1.46 per visit (Figure 2, page 64). Increasing the share of time with clients to 60% by adding more visits would lower the cost of labor per visit still further, to \$1.22.

This time could be drawn from that spent on nonwork activities or could be made up by reducing work activities not involving clients. On average, each provider would then be able to see an additional 2.5 clients, or 26% more clients per day. This change would be even greater at Lister, since providers there now see the fewest clients and spend the smallest amount of their work time with clients. Overall, the labor cost of a client visit at Lister would be reduced from just under \$2 to about \$1 if the time spent with clients were increased to 60% (Figure 2).

The decrease in cost would be least pronounced in Spilhaus (a drop of 29%), where the proportion of time spent with clients is highest, and most pronounced in Lis-

*In all three clinics, providers overestimated the proportion of time that they spent with clients. The actual percentage was 38%, but providers estimated that they spent almost 60% of their time with clients (not shown). Therefore, in the results, we discuss only the findings from the time-motion study.

†Since acceptor visits for IUDs are almost certainly longer than acceptor visits for other methods, our estimate for the cost of an IUD acceptor visit may be too low. On the other hand, our estimate may be inflated because it includes the time spent collecting lab samples.



ter (48%), where the share of time spent with clients is lowest.* Overall, the average provider cost of a family planning visit would be reduced by more than one-third if providers saw more clients and therefore increased the share of their time spent with clients to 60%.

Our analysis assumes that over time, additional clients will seek services at these clinics. If they do not, average costs will not decrease. Moreover, at some point, providers will be fully occupied and additional staff will have to be hired to serve more clients. Thus, labor costs do not increase continuously, but follow a step function: The marginal costs of labor are zero until administrative time and unproductive time are minimized, but increase substantially when additional staff are hired; however, they once again are zero as the new staff use their unproductive time to see more clients.

DISCUSSION

Limitations

An important limitation of this analysis is that we are unable to say definitively whether retraining and reinforcement in the syndromic approach, combined with the collection of lab specimens, affected the quantity and quality of other services provided during client visits. However, we believe it very unlikely that other services suffered from the expansion of syndromic management. While visits were substantially longer for women who had pelvic exams or had lab specimens collected, and the total time spent with

clients undoubtedly increased as a result of retraining, our calculations indicate that providers still had sizable amounts of time that could be used to expand service provision.

Even with substantial numbers of clients receiving syndromic management, the providers in this study had some unoccupied time at work, and some time when they were simply not at the clinic. They also devoted quite a lot of time to administrative activities. In all three clinics, about as much time was spent with clients as on these other tasks. Although additional time was required to clean and prepare instruments for pelvic exams and to obtain lab specimens, it appears that there was more than enough time to accomplish these tasks. Therefore, the time required to perform syndromic management could have been drawn from unused time or from work time used for administrative activities. Moreover, we may have overestimated administrative time and underestimated downtime if providers made an effort to appear busy.²⁴

On the other hand, downtime was not evenly distributed throughout the day, and there may have been periods during which it was not possible for providers to see additional clients. If scheduling were improved, providers could take advantage of downtime by making appointments during times when fewer clients were obtaining services.

Implications

We did not investigate the costs of adding other reproductive health services, but because concerns regarding excess capacity are similar, regardless of the service added, the methodology described here could be used to examine the costs of adding any other reproductive health service. This article is not about syndromic management per se, and the conclusions are likely to be unaffected by the particular service examined.

*It is also interesting to note that including other costs will raise the estimates. Our estimates do not include either the cost of the services of the "sister-in-charge" of the clinic nor of support labor (such as maids or receptionists). When these costs are included, the cost per visit for administration of the injectable increases to \$3.39, or by about one-third, and now is above the range reported in the other Zimbabwe study (reference 2). In calculating costs, it is important to be very clear about which costs are included and which are excluded.

Because providers have some downtime (likely more than we have estimated), we argue that such time needs to be considered when program managers estimate the labor costs of providing a new service. Many family planning clinics in the developing world operate under conditions similar to the three in Zimbabwe, in which providers are not directly engaged in client-related activities for a fairly high percentage of the day. Cost estimates such as those provided in earlier analyses²⁵ may be adequate for determining the current average cost of a visit of a particular type, but they do not provide the information on time usage that is needed to determine the incremental cost of adding additional visits or of offering new services during visits.

Our findings have implications beyond the cost of syndromic management provision. Many estimates of the cost of adding new services to existing programs assume a multiplicative relationship between the number of visits and costs and do not take into consideration the way that staff spend their time. Consequently, these estimates are likely to be too high. Instead, cost studies of service integration should determine whether staff members can add new services or visits without having a negative impact on the quality of existing services.

Realizing these results will require an increase in the efficiency of health service provision and a corresponding improvement in clinic management. Such changes will not be easy to achieve. Incentives to increase performance are lacking in the public sector of many developing countries. Without such incentives, providers may choose to spend fewer hours providing services in the public sector so they can augment their incomes in the private sector, or they may expect to be compensated for their very low salaries through nonmonetary benefits, such as a light client load.

Given the resource constraints facing most reproductive health programs, changes are necessary if programs are to expand the quality and variety of services that they provide. Health-sector reform needs to be concerned with incentives for providers. Of course, increasing providers' salaries will raise labor costs, but improving productivity will still reduce the costs per unit of service, especially if productivity gains are large. The challenge, therefore, is to find ways to improve the use of resources rather than to argue that they are inadequate.

REFERENCES

1. United Nations Population Fund (UNFPA), *Global Population Assistance Report, 1995*, New York: UNFPA, 1997.
2. Mitchell MD, Littlefield J and Gütter S, Costing of reproductive health services, *International Family Planning Perspectives*, 1999, 25(Suppl.): S17-S21.
3. Ibid.
4. McFarlane C et al., *The Quality of Jamaica Public Sector and NGO Family Planning Services: Perspectives of Providers and Clients*, final report, Research Triangle Park, NC, USA: Family Health International (FHI), 1996.
5. West C et al., *Measuring Staff Time Use in Public Family Planning Clinics in Kingston, Jamaica: A Comparison of Four Methods*, final report,

Research Triangle Park, NC, USA: FHI, 2001.

6. Mullick S, Involving men in their partners' antenatal and postpartum care, proposal to FRONTIERS, Johannesburg, South Africa: Reproductive Health Research Unit, Apr. 26, 2000.
7. Mullick S et al., Antenatal care: service delivery issues, paper presented at the Seventh Reproductive Health Priorities Conference, Johannesburg, South Africa, Aug. 28-31, 2001.
8. Janowitz B et al., Can the Bangladeshi family planning program meet rising needs without raising costs? *International Family Planning Perspectives*, 1997, 23(3):116-121; and Hubacher D et al., Increasing efficiency to accommodate future demand: family planning services at the Mexican Ministry of Health, *International Family Planning Perspectives*, 1999, 25(3):119-124 & 138.
9. Mitchell MD, Littlefield J and Gütter S, 1999, op. cit. (see reference 2).
10. Stewart JF et al., Family planning program structure and performance in West Africa, *International Family Planning Perspectives*, 1999, 25(Suppl.):S22-S29.
11. West C et al., 2001, op. cit. (see reference 5).
12. Angeles G et al., *Health Care Decentralization in Paraguay: Evaluation of Impact on Cost, Efficiency, Basic Quality, and Equity—Baseline Report*, MEASURE Evaluation Technical Report, Chapel Hill, NC, USA: Carolina Population Center, University of North Carolina at Chapel Hill, 1999, No. 4.
13. Bratt JH et al., A comparison of four approaches for measuring clinician time use, *Health Policy and Planning*, 1999, 14(4):374-381.
14. West C et al., 2001, op. cit. (see reference 5).
15. Janowitz B et al., How do providers spend their time: implications for the costs and quality of reproductive health services, paper presented at the annual meeting of the Population Association of America, Washington, DC, Mar. 29-31, 2001.
16. Hoffman I and Vuylsteke B, *STD Syndromic Management*, Arlington, VA, USA: AIDSCAP, 1997.
17. Maggwa N et al., Demand for and cost-effectiveness of integrating RTI/HIV services with clinic-based family planning services in Zimbabwe, New York: Population Council, 1999.
18. National AIDS Coordination Program, Ministry of Health and Child Welfare, *HIV/AIDS in Zimbabwe: Background, Projections, Impact and Interventions*, Harare, Zimbabwe: National AIDS Coordination Program, 1997.
19. Central Statistical Office and Macro International, *Zimbabwe Demographic and Health Survey 1994*, Harare, Zimbabwe: Central Statistical Office, and Calverton, MD, USA: Macro International, 1995.
20. Maggwa N et al., 1999, op. cit. (see reference 17).
21. Ibid.
22. Mauldin WP and Miller VC, *Contraceptive Use and Commodity Costs in Developing Countries, 1994-2005*, Technical Report, New York, NY: United Nations Population Fund, 1994.
23. Mitchell MD, Littlefield J and Gütter S, 1999, op. cit. (see reference 2).
24. Janowitz B et al., 2001, op. cit. (see reference 15).
25. Mitchell MD, Littlefield J and Gütter S, 1999, op. cit. (see reference 2).

RESUMEN

Contexto: Con el aumento creciente de los costos de los servicios de salud reproductiva, puede resultar beneficioso obtener información acerca de la forma que el personal de los programas utiliza su tiempo y sobre los períodos de inactividad que se podrían utilizar para absorber nuevos servicios a un costo mínimo.

Métodos: Los proveedores en Zimbabwe tomaron cursos de

readiestramiento de tratamiento sindrómico de las infecciones del tracto reproductivo. Antes y después de los cursos, se llevaron a cabo análisis situacionales “mini” en varias clínicas para determinar cómo pasaron los proveedores su tiempo con las clientas. Se calculó la duración promedio de cada visita, así como el tiempo utilizado para analizar los riesgos, los exámenes pélvicos y la obtención de muestras para análisis en el laboratorio. Se realizaron estudios sobre el uso del tiempo para determinar la forma en que usaban su tiempo después de los cursos de readiestramiento, incluidos los servicios a las clientas, las actividades administrativas y el tiempo de inactividad.

Resultados: El tiempo promedio utilizado durante las visitas de las nuevas clientas fue más largo después del readiestramiento (27 minutos) que antes (20 minutos), y aumentó el porcentaje de las clientas que recibieron los diversos servicios de tratamiento sindrómico. No obstante, aun después del readiestramiento, los proveedores utilizaron menos del 40% de su tiempo con las clientas. Se observó que se disponía de una cantidad sustancial de tiempo inactivo a las primeras horas de la mañana y al finalizar la tarde. Si aumentara el número de clientas, aumentaría el tiempo utilizado con ellas y disminuirían los periodos de inactividad; en consecuencia, se reduciría el costo por concepto de trabajo de una visita a la clínica—en una clínica específica, esta reducción sería a casi la mitad. En general, el costo promedio de las visitas de planificación familiar por concepto del proveedor se podría reducir en más de un tercio si los proveedores aumentaran el tiempo que utilizan con las clientas del 40% al 60%.

Conclusiones: La reducción del tiempo inactivo de un proveedor (período de ausencia de la clínica, tiempo inactivo o de otra forma no productivo) en las clínicas de planificación familiar en el mundo en desarrollo podría aumentar la capacidad de los servicios con un mínimo aumento de su costo. No obstante, los proveedores que perciben bajos salarios podrían requerir incentivos financieros para aumentar su volumen de trabajo.

RÉSUMÉ

Contexte: Face à l'accroissement des coûts des services de santé génésique, l'analyse de l'emploi du temps du personnel prestataire peut aider les gestionnaires des programmes à déterminer si les périodes d'inactivité permettraient l'ajout de nouveaux services à coûts additionnels minimaux.

Méthodes: Les prestataires du Zimbabwe ont reçu une formation de recyclage à la gestion syndromique des infections de l'appareil génital. Avant et après ce recyclage, de mini-analyses de situation ont été effectuées dans plusieurs cliniques, afin de déterminer comment les prestataires passaient leur temps de contact avec les clientes. La durée moyenne des consultations a été calculée, de même que le temps consacré à l'évaluation des risques, aux examens pelviens et aux prélèvements. Des études de temps et mouvements ont permis de déterminer l'occupation du temps des prestataires après le recyclage: services aux clientes, activités administratives et temps d'inactivité.

Résultats: La durée médiane des consultations de nouvelles utilisatrices s'est révélée plus longue après le recyclage (27 minutes, par rapport à 20 minutes avant la formation), et la proportion de celles ayant reçu plusieurs prestations de gestion syndromique avait également augmenté. Après le recyclage pourtant, les prestataires passaient moins de 40% de leur temps avec les clientes. L'observation a révélé une période d'inoccupation considérable en début de matinée et en fin d'après-midi. Si plus de clientes recevaient les services, le temps passé avec les clientes augmenterait et le temps d'inactivité diminuerait, de sorte que le salaire coût d'une consultation pourrait être réduit, dans une clinique, de près 50%. Au total, le coût prestataire moyen des consultations de planning familial pourrait être réduit de plus de 33% si les prestataires accroissaient la part de temps passée avec les clientes de 40% à 60%.

Conclusions: La réduction du temps d'inactivité des prestataires (temps d'absence de la clinique, temps d'inoccupation ou autre temps non productif) dans les cliniques de planning familial du monde en voie de développement pourrait accroître les capacités d'offre de services à coûts minimalement accrus. L'accroissement de la charge des prestataires mal payés pourrait toutefois exiger l'apport d'encouragements financiers.

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