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Draft Reports on the Costs of Promoting Exclusive Breast Feeding

Report 1: The Estimated Financial Costs of the Vertical Transmission Study as Implemented Under the Current Protocol

Report 2: The Estimated Costs and Implications of Large Scale Promotion of Exclusive Breast Feeding

Correspondence:

Chris Desmond
Child, Youth, Family and Social Development
Tel: +27 (0) 31 242 5624
Email: CDesmond@hsrc.ac.za



HSRC
Human Sciences
Research Council

Report 1

The Estimated Financial Costs of the Vertical Transmission Study as Implemented Under the Current Protocol

Introduction

In August 2006 the Africa Centre contracted the Human Sciences Research Council (HSRC) to cost the implementation of the Vertical Transmission Study (VTS) that it had rolled out to pregnant mothers between 2001 and 2005. Study participants were recruited from eight clinics in the Hlabisa district of northern KwaZulu-Natal and the KwaDabeka community health centre in eThekweni. The project itself was divided into two components: an intervention component and a research component that monitored the outcomes achieved under the intervention component.

According to the terms of reference, the HSRC was to conduct a financial costing of the intervention component of this project based on the financial records compiled by the Africa Centre's Finance Department. In this type of costing analysis, only costs that are included as budgetary expenses are taken into account. Costs were accounted for in nominal amounts and recorded as expenditure in the financial period in which they were incurred. The main implication of using this approach is that capital expenses will be written off in the period in which they were purchased rather than depreciated for their useful lives.

Upon discussion with key informants, however, it was felt that the research component of the study may also have contributed to the outcomes achieved under the actual intervention. If during research visits to households research assistants noted a problem this was reported to the intervention group who responded to it. Furthermore simply reporting behaviour may have kept attention on adhering to that behaviour. These and other examples may well have influenced effectiveness and as a result estimating intervention costs may not be as straightforward as at first appears. Even if the decision to

classify research costs as intervention costs is made, no information on the extent to which research costs might affect outcomes exists. As a result, it is very difficult to estimate the portion of research costs that are attributable to the intervention.

To account for this uncertainty a scenario exercise was used. Briefly, under this exercise, different assumptions regarding the influence of research visits on outcomes were made. At opposing ends are the scenarios that corresponded to the situation where research did not contribute to the outcomes at all and where the entire research component of the study was necessary to attain the outcomes observed. It was argued that this latter scenario was unrealistic as it was unlikely that the outcomes achieved were only made possible because all research visits had contributed to their achievement. After due consideration of the nature of research visits, three alternative scenarios were constructed: scenarios one, two and three which take into account 0%, 25% and 50% of research costs respectively.

In addition to these two cost components, an intermediate category of clinic-based costs was identified. These costs refer to costs incurred in the clinics from which mothers were recruited, e.g. staff members who were clinic based, such as clinic sisters and HIV counsellors. Strictly speaking, these resources were not used as part of the intervention. They were used to provide services that would ordinarily have been provided by the state. For the same reason they cannot be classified as being used solely for research purposes. This uncertainty makes it particularly difficult to classify these costs.

Certain arguments that support their classification as intervention costs exist. For example, the recruitment and placement of extra staff in clinics may have bestowed benefits on study mothers when accessing clinic services, e.g. shorter waiting times, ease of referral, etc. These benefits may have facilitated mothers' continued enrolment on the project. Were this the case, this benefit, through its direct benefit on enrolment, should be included as intervention costs. Even if such a view were adopted, the question arises as to how much of these costs represented intervention costs. Put differently, what level of this clinic expenditure was necessary to achieve the outcomes observed? Similar to the

handling of research costs, the uncertainty surrounding this issue was dealt with by means of scenario analysis. Clinic-based costs, however, were included at 50%, 75% and 100% under scenarios one, two and three respectively.

From a cost point of view, the classification of clinic based staff is particularly important as their salaries are generally much higher than those staff members engaged in the intervention component of the project. Therefore, even though their staff numbers are relatively small, their effect on costs is potentially large.

Lastly, an argument could be made that motivates for the inclusion of some government expenditure, especially a portion of the salaries of government HIV counsellors, as intervention expenses. Fieldwork suggests that the drain placed on site resources by the VTS project was minimal. In fact, interviews with government clinic-based staff support an opposing view: the responses given suggested that a valid case could be made for reducing the level of VTS clinic-based costs as not all costs were study related because staff frequently reported that VTS personnel played a role in the running of the clinics. Given these field observations, a decision was made not to include any state clinic costs as intervention costs.

Methodology

Two methods were used to calculate cost estimates in this project viz.

- Budgetary Analysis
- Key Informant Interviews

Data collection mainly took place during a week-long field visit to the Africa Centre in November 2006. During this period, the Research Team reviewed the financial records kept at the site and interviewed a number of key personnel who were involved in the VTS project. Africa Centre staff interviewed were drawn from all the staff categories identified (intervention, clinic-based and research staff). Government staff based at a sample of four of the clinics at which the VTS programme was rolled out were also interviewed. Where data collected did not provide sufficient detail to complete the

costing, the assistance of the coordinator of the VTS project was sought to either obtain more information or interpret the records kept. This took place by means of electronic correspondence.

Despite these efforts, for the purposes of the costing exercise certain gaps in the data remain. These relate mainly to the inadequate breakdown of certain cost items, into unit costs or separation into research and intervention costs. Where such gaps existed, efforts were made to estimate and/or classify costs wherever possible. If unable to do so, certain assumptions have been made to estimate costs.

As indicated, relevant staff were also interviewed in order to supplement the results of the review of financial data. The primary purpose of this exercise was to obtain information on how to classify costs into the research and intervention components of the intervention. This latter consultation provided the key input into the scenarios exercise. For ease of presentation, expenditure was classified into one of four (4) categories viz.

- Managerial
- Intervention
- Clinic-based
- Research

Note that managerial costs refer to the costs of the top level management structure of the intervention component of the VTS project. They have been separated from intervention costs in order to provide greater detail to cost estimates. Due to data limitations, it was only possible to estimate the salary costs of the managerial costs category.

Key Informants also furnished information on VTS staff numbers. This has been shown as an Annex. Staff numbers have been held constant across all three scenarios although the amount of time each staff category contributes to the intervention varies by scenario.

Description of Scenarios

Under the VTS intervention, mothers were approached to be recruited into the study during their first ANC visit. After being recruited, they were visited at home four times by a breastfeeding counsellor and counselled on feeding choices. Once a mother delivered, this counsellor visited her again for four times during the two weeks immediately after delivery. Thereafter, the counsellor visited her 11 times within 6 months post-delivery. Note that there were slight differences between the protocol adopted at the rural sites and the urban site in that the urban site was largely clinic based.

After delivery, mothers were also visited by a research assistant. These staff members were responsible for monitoring feeding choice outcomes and also followed a schedule of visits. Whilst organised along the same lines (attached to a clinic and responsible for the follow up of mothers in a specified catchment area), breastfeeding counsellors and research assistants had different lines of accountability with a virtual duplication of reporting lines, minus the Infant Feeding Specialist, up to the Project Manager. Discounting any other duties that the project manager may have been involved in at the Africa Centre, it was assumed that their time was equally divided between managing these components of the intervention.

As mentioned, clinic-based staff were also employed. Their role was to facilitate mothers' enrolment onto the study and to engage with mothers when accessing clinic services. Although not sampled, their role may have been expanded at the KwaDabeka site, which relied much more heavily on clinic visits in its site-specific VTS protocol.

It was felt that study outcomes achieved were a combination of the frequency of visits (intervention and possibly some research visits), possible discrimination in access to care and the close collaboration between intervention and research components, and that they may not have been achieved but for some of the extensive follow up developed around the intervention. In recognition of these spillover effects, it was decided to include some clinic-based and research costs as intervention costs. No guidelines, however, exist as to how much of each of these costs need to be re-classified. As mentioned at the outset,

scenarios' modelling was used to account for this uncertainty. A brief description of the scenarios that were developed follows.

Scenario 1 is the base case cost exercise. It is based on a very strict definition of the intervention and excludes those costs not directly classified as intervention costs, i.e. it only includes the visits by the counsellors and the structure that had been set up to support these staff members. In addition, 50% of clinic-based resources were included as cost estimates.

Scenario 2 allows some research costs to be counted as part of the intervention costs. This effectively amounts to assuming that results would not have been attained without the research support and so some of the costs, in this case 25%, are included. Another area in which costs differ from under Scenario 1 is that of accounting for clinic-based staff. In this case, 75% of these costs were considered to be intervention costs.

Scenario 3 is the most wide-ranging of the cost estimates and assumes that outcomes are very dependent on the research component of the intervention. In this scenario, half of all research costs and all clinic-based costs are classified as intervention costs.

Table 1 briefly summarises the percentage of clinic based and research costs estimated to contribute to the success of the intervention under each of the scenarios.

Table 1.1: Percentage inclusion of research and clinic costs per scenario

Cost Category	Scenario 1	Scenario 2	Scenario 3
Managerial	100%	100%	100%
Intervention	100%	100%	100%
Clinic-based	50%	75%	100%
Research	0%	25%	50%

Results

After collecting relevant financial information and information on staff numbers, and classifying each of these expenditure items, data were entered into a spreadsheet model that estimated the costs of service provision under the competing scenarios. These results are presented in the series of tables below, beneath which appear a brief discussion of some of each.

Table 1.2: Annual costs per category (Scenario 1)

ITEM	YEAR					TOTAL
	2001	2002	2003	2004	2005	
Staff Costs						
Managerial	R 317,097	R 339,424	R 369,903	R 382,444	R 406,408	R 1,815,276
Intervention	R 1,826,964	R 1,983,441	R 2,139,918	R 2,296,395	R 2,452,872	R 10,699,590
Clinic-based	R 732,780	R 781,377	R 829,974	R 878,571	R 927,168	R 4,149,870
Research	R -	R -	R -	R -	R -	R -
Total Salaries	R 2,876,841	R 3,104,242	R 3,339,795	R 3,557,410	R 3,786,448	R 16,664,736
Direct Costs						
Managerial	R -	R -	R -	R -	R -	R -
Intervention	R 1,634,846	R 321,214	R 328,440	R 335,665	R 379,187	R 2,999,352
Clinic-based	R 70,915	R 103,798	R 152,010	R 56,300	R 3,710	R 386,732
Research	R -	R -	R -	R -	R -	R -
Total Direct Costs	R 1,705,761	R 425,012	R 480,449	R 391,965	R 382,897	R 3,386,084
Total Costs	R 4,582,602	R 3,529,254	R 3,820,244	R 3,949,375	R 4,169,345	R 20,050,820

From the table above, it is apparent that salaries are the major cost drivers of this intervention. Salaries constitute approximately 83% of costs. Within salary expenditure, the greatest proportion of costs (64%) is associated with the employment of intervention staff i.e. clinic assistants, breastfeeding counsellors and their supervisors.

Looking at differences in total expenditure across years, there appears to be a bell shape to total costs. Total costs decrease at first then gradually increase, although never to as

high as level as incurred in the first year. The initial drop seems to be driven by the decrease in direct costs between years 1 and 2 whilst the gradual increases reflect increases in the remuneration given to staff. These increases tend to outweigh the general downward trend in direct costs. As a result, total costs increase. The range between the lowest and highest total annual expenditure is just over one million (nominal value). This represents roughly 30% of the lowest total annual expenditure i.e. the largest value is roughly 1.3 times the lowest value. Somewhat in line with expectations, the highest expenditure was incurred in year 1. This appears to be a result of the initial outlay on infrastructure (recorded as Direct Costs) incurred in setting up the project during this period.

The overall result, however, masks fairly large relative differences in expenditure on Direct Costs between different years. Furthermore, the table shows that Direct Costs follow an inverse pattern to that followed by Staff Costs. These costs tend to decrease year-on-year rather than increase. This is argued to reflect the changing stages of the project life cycle. Initially, there is a large outlay on capital while as the project matures a greater share of costs is associated with operational activities or running costs. Under the VTS project, in year 1 the greatest cost is incurred in the purchase of vehicles (70%) whereas by year 5, the greatest proportion of costs (75%) is associated with running those vehicles. In fact, these costs together constitute 72%, 83% if one includes associated insurance and maintenance costs, of the total financial costs for this project for the entire period.

Table 1.3: Annual costs per category (Scenario 2)

CATEGORY	YEAR					
	2001	2002	2003	2004	2005	TOTAL
Staff Costs						
Managerial	R 317,097	R 339,424	R 369,903	R 382,444	R 406,408	R 1,815,276
Intervention	R 1,826,964	R 1,983,441	R 2,139,918	R 2,296,395	R 2,452,872	R 10,699,590
Clinic-based	R 1,099,170	R 1,172,066	R 1,244,961	R 1,317,857	R 1,390,752	R 6,224,805
Research	R 390,101	R 424,527	R 460,992	R 493,381	R 527,808	R 2,296,809
Total Salaries	R 3,633,331	R 3,919,458	R 4,215,774	R 4,490,077	R 4,777,840	R 21,036,480

Direct Costs						
Managerial	R -	R -	R -	R -	R -	R -
Intervention	R 1,634,846	R 321,214	R 328,440	R 335,665	R 379,187	R 2,999,352
Clinic-based	R 106,373	R 155,696	R 228,014	R 84,450	R 5,564	R 580,097
Research	R 473,039	R 66,281	R 90,026	R 135,886	R 75,722	R 840,954
Total Direct Costs	R 2,214,258	R 543,191	R 646,480	R 556,001	R 460,473	R 4,420,404
Total Costs	R 5,847,589	R 4,462,650	R 4,862,254	R 5,046,077	R 5,238,313	R 25,456,884

Once again, costs are dominated by the effect of salaries. Fully 83% of costs are associated with staff provision. Allowing for some Research Staff members' salaries to be calculated as Intervention Costs increases costs by roughly 2.3 million rand. This addition, however, still represents a very small percentage (11%) of total salary costs, which are still dominated by intervention costs.

Between scenarios, re-classifying some clinic-based and research costs as intervention costs increases Total Costs by approximately 5.4 million. This roughly represents a 27% increase in cost. This increase is driven largely by the increase in Staff Costs.

A similar pattern as per Scenario 1 also applies to annual expenditure where the greatest costs are associated at the upfront stages of the project. Direct Costs also appear to follow the same patterns as above. Once again, the greatest costs are associated with vehicles, either their purchase or their operation and maintenance. Due to this effect, re-classifying clinic-based costs does not increase this resource cost significantly. By far, the greatest clinic-based expenditure is staff costs. For example, in this scenario, clinic-based costs represent roughly 30% of staff costs yet only 13% of Direct Costs. As further evidence of this effect, it is noted that whereas Direct Costs represent 18% of overall Total Costs, they only represent 9% of total clinic-based costs.

Table 1.4: Annual costs per category (Scenario 3)

CATEGORY	YEAR					TOTAL
	2001	2002	2003	2004	2005	
Staff Costs						
Managerial	R 317,097	R 339,424	R 369,903	R 382,444	R 406,408	R 1,815,276
Intervention	R 1,826,964	R 1,983,441	R 2,139,918	R 2,296,395	R 2,452,872	R 10,699,590
Clinic-based	R 1,465,560	R 1,562,754	R 1,659,948	R 1,757,142	R 1,854,336	R 8,299,740
Research	R 780,201	R 849,055	R 921,984	R 986,762	R 1,055,616	R 4,593,618
Total Salaries	R 4,389,822	R 4,734,674	R 5,091,753	R 5,422,743	R 5,769,232	R 25,408,224
Direct Costs						
Managerial	R -	R -	R -	R -	R -	R -
Intervention	R 1,634,846	R 321,214	R 328,440	R 335,665	R 379,187	R 2,999,352
Clinic-based	R 141,830	R 207,595	R 304,019	R 112,600	R 7,419	R 773,463
Research	R 946,079	R 132,337	R 179,828	R 271,546	R 151,444	R 1,681,233
Total Direct Costs	R 2,722,755	R 661,146	R 812,286	R 719,811	R 538,050	R 5,454,048
Total Costs	R 7,112,577	R 5,395,820	R 5,904,040	R 6,142,555	R 6,307,282	R 30,862,273

Scenario 3 offers the widest interpretation of what is considered to be an intervention cost. This is reflected in the large costs under this scenario relative to the other scenarios (5.4 million greater than under scenario 2). This represents a smaller proportionate increase than between scenarios 1 and 2. This follows directly from the formulaic manner in which the scenarios were constructed.

Similarly to scenarios 1 and 2, the greatest costs are associated with the payment of salaries (83%). In addition, total costs and Direct Costs follow the same patterns as above.

There are slight differences in the composition of costs between this scenario and the previous 2 scenarios. Most importantly, even though still constituting the largest single salary cost item, intervention costs now make up less than 50% of total salary costs. In

fact, intervention costs and management costs combined now only represent 49% of costs. There has been a shift in the make-up of salary costs with greater weight now attached to payments to clinic-based and research staff members.

Summary

In summary, there are certain distinct patterns to costs that emerge across all three scenarios. The most important of these is the size of Staff Costs relative to Direct Costs. In all scenarios, staff costs constitute over 80% of Total Costs.

Within staff costs, the greatest single cost item is that of the salaries of counsellors and their supervisors, although their share of costs decreases with successive scenarios. Secondly, salary costs are monotonically increasing over the project life cycle. As staff numbers were held constant throughout, these increases reflect increases in remuneration paid to staff.

Across all scenarios, direct costs tend to be greatest in the first year of operation. They then decrease quite considerably, in absolute and relative terms between year 1 and 2 and follow a generally downward trend to year 5, where they reach their minimum value. In all scenarios, roughly half of all expenditure on direct costs is incurred in the first year of operations. This is argued to reflect the nature of the project life cycle, with high initial investment driving expenditure in the first year and operational costs driving expenses in subsequent years. It is drawn to the attention of the reader that this effect has been magnified by the cash basis of accounting used in this costing exercise. The largest portion (1/- 82%) of Direct Costs was spent on either the purchase of vehicles or their maintenance.

Total Costs reflect a combination of the observed trends in Staff and Direct Costs. Similarly to Direct Costs, they are greatest in the first year of operations. They then drop to their lowest levels in year 2. Although larger in absolute terms, this drop is much smaller than the drop in Direct Costs in relative terms. After bottoming out, total costs gradually increase up to year 5 by which time they have almost reached their year 1 level.

This pattern reflects the large role that the drop in direct costs plays initially, between years 1 and 2. While being the main influence on costs at first, the effect of the downward trend in Direct Costs is gradually diminished by increases in the Staff costs under the intervention.

Annex A

Table A1: Staff members per category

Staff	Number
1) Managerial Staff	
Paediatrician	1
Clinic Manager	1
Infant Feeding Specialist	1
2) Intervention Staff	
Breastfeeding Counsellors	6
Breastfeeding Counsellor Supervisors	38
3) Clinic Based Staff	
Clinic Assistants	11
Clinic Nurses	9
HIV Counsellors	10
4) Research Staff	
Research Manager	1
Research Supervisors	6
Research Assistants	38