Cost and Effective Analysis of the LINKAGES LAM Promotion Program in Jordan

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Abstract

This study analyzes cost effectiveness of the Lactational Amenorrhea Method (LAM) promotion activities implemented in Jordan from December 2001 – December 2002 by LINKAGES (a USAID-funded cooperative agreement managed by the Academy for Educational Development) and its partner – the Kingdom of Jordan Ministry of Health/Maternal Child Health Directorate.

This study used the LAM User Rate indicator to evaluate programmatic achievements of the subject activities. This indicator measures the increase in the acceptance of the LAM as a method of family planning during the study period.

Two measures of cost and effectiveness are used in this study: 1) cost per beneficiary; and, 2) cost per new LAM acceptor. Project beneficiaries are defined as antennal and postpartum women served by the MCH clinics during the study period. While the first indicator looks at unit cost, the second indicator compares costs with outcomes. Since the outcome data available are at the behavior change level (not actual health outcomes), it is necessary to use an indicator that compares costs with behavior change. To determine the cost per new LAM acceptor, the cost of activities to promote LAM is divided by the estimated number of new acceptors, providing a measure of the costs incurred per new acceptor to obtain the desired behavior change (the difference in LAM User Rate between December 2002 and the baseline data multiplied by the target population represents the number of new acceptors or women whose behavior has changed as a result of the LAM intervention).

The main findings are: 1) There appears to be no relationship between the activity costs and the behavior change outcomes; 2) Activity costs, baseline behavior rates, and the size of the target population are three factors that influence cost effectiveness; 3) The cost of a replicating package of LINKAGES LAM promotion interventions is $68,403. The total cost per beneficiary to replicate this set of activities is $1.56. The total cost per new LAM acceptor is $29.83; 4) LINKAGES may be able to improve its cost effectiveness by lowering the cost of LAM interventions through mainstreaming LAM into comprehensive MCH reproductive health programs. Targeting areas with lower baseline rates will increase cost effectiveness. Due to the short study period and because only one behavior change indicator - LAM User Rate, was included in this study, only limited recommendations can be made as to how size of target population may impact cost effectiveness. One suggestion from the analysis is that there appears to be an optimal size of population that the intervention activities should target. This optimal size is defined as that, which fully realize economies of scale and any further increase the size of the target population will result in decreased cost effectiveness. Any further increase in cost effectiveness, after this optimal threshold is reached, may only be obtained through direct interventions affecting the behavior change rates in the current size of the target population through different or additional activities. If, however, this threshold level is not reached, and economies of scale can be gained, then an increase in the target population will improve cost effectiveness. More data and further impact analysis of the mix of activities is needed to better inform a cost effective program design.

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Executive Summary

Introduction

The Lactational Amenorrhea Method (LAM), which is based on the natural infertility resulting from certain patterns of breastfeeding, is a culturally acceptable method of family planning in Jordan. LAM supports both optimal infant feeding and child spacing.

In February 1998 LINKAGES/Jordan began its LAM Project with the support of USAID funds to further integrate and expand the offer of LAM services into the Ministry of Health (MOH)/Maternal and Child Health (MCH) family planning service delivery system. The key objective of the program is to increase acceptance and quality offering of LAM as a transition to the use of other modern contraceptive methods.

The project has focused on building the capacity of the MCH to promote acceptance of exclusive breastfeeding and LAM through policy and advocacy, training of health providers at MCH clinics in the 12 governorates, supervision of counseling, development and dissemination of breastfeeding and LAM materials and media spots to counsel and inform clients, establishment of mother-to-mother support groups, and monitoring and evaluation of practices at the sentinel sites.

In an effort to better understand program effectiveness, LINKAGES has initiated a series of studies to estimate the costs and cost-effectiveness of program activities in multiple field offices. To date, a costing methodology applicable across countries and programs has been developed, and studies of costs in Ghana and Madagascar have been completed; an analysis is currently being completed of program costs in Zambia. This cost effectiveness study of LINKAGES/Jordan LAM Project was undertaken to provide comprehensive estimates of the costs of integrating LAM into the MOH/MCH family planning service delivery system.

The study focuses on LINKAGES' LAM activities in Jordan from December 2001 – December 2002. By this time the start-up phase of the project was completed and implementation activities were underway. The selection of this particular period allowed for a relatively clear-cut analysis of the replication costs associated with effective LAM counseling.

The specific objectives of this study are:

- to analyze the cost-effectiveness of LINKAGES' LAM activities in Jordan from December 2001 – December 2002; and
- to determine the cost implications of replicating these activities in the other countries in the region or similar programs in Jordan.

The specific questions addressed in this study are:

- How do costs and outcomes compare across the three regions of Jordan – North, Center, and South?
- What are the determinants of costs and cost effectiveness across the regions?
- What would it cost to replicate these activities and is it cost effective?
- How can LINKAGES improve its cost effectiveness?

Methodology and Data Collection

LAM User Rate was identified as an indicator to evaluate program's achievements for this study. It measures the increase in acceptance of the LAM as a method of family planning during the study period. The LAM User Rate is the proportion of women who consciously use LAM as a family planning method of all women of reproductive age who use MCH for family planning services.

Data to measure outcomes are derived from the MOH's Contraceptive Logistics System data for the study period. Data used in this study are based on MCH family clinic attendance covering the period of December 2001 through December 2002, with the first and last months' data serving as baseline and endline data for the study period. A comparison of baseline and endline data provides documentation of activity outcomes during the study period.

LINKAGES and MOH/MCH interventions expanded their work to all 347 MCH clinics from all 12 governorates in Jordan during the study period. Data from all MCH sites are available. This study includes all MCH clinics in all 12 governorates of Jordan grouped by region – Central, North, and South.

While increasing the exclusive breastfeeding (EBF) rate of infants 0-5 months of age was also one of the LINKAGES' goals, baseline and outcome data are not available for the study timeline, and so cost effectiveness with respect to EBF can not be evaluated at this stage.

The methodology used in this study has been developed for the LINKAGES Project by Abt Associates Inc. It uses retrospective financial data to analyze cost effectiveness.

The full cost of LINKAGES/Jordan activities that support LAM promotion activities, including allocation of all overhead/fixed costs associated with the Jordan office, is included in the analysis. Direct costs of the LINKAGES/DC office associated with LAM promotion activities in Jordan are also included. Indirect costs of the LINKAGES/DC office (including DC office rent, accounting, financial management and billing, contracts management, etc.) are excluded. Partner costs related to LAM promotion activities are also included, but their overhead costs are excluded.

Once all the costs are compiled, the allocation of costs to achieving behavior change in each of the study regions is calculated in the following way:

1. The direct costs for the full set of LINKAGES/Jordan activities are compiled, with all overhead and administrative costs associated with the Jordan program incurred during the study period allocated to the full set of LINKAGES' activities.
2. Based on discussions with LINKAGES staff, a subset of activities is identified as those that contribute to the LAM behavior change, and are included in this study.
3. Costs for partner activities are compiled for each of the study regions.
4. LINKAGES and partner costs for each activity are allocated to each of the intervention regions.
5. Based on discussions with LINKAGES and document review, the content of each activity is reviewed and apportioned based on its specific LAM content.

Data on total LINKAGES' costs related to Jordan activities were collected through accounting records kept in the LINKAGES/DC and Amman offices. Detailed information needed to identify

activities conducted in support of LAM promotion was collected through written communication with LINKAGES staff. Data on costs incurred by MOH/MCH were gathered through financial data provided by the MOH/MCH, as well as through interviews and written communication with MOH/MCH officials, MOH/MCH counterparts and trainers. Whenever possible, data were reconciled across several sources.

Two measures of cost and effectiveness are used in this study: 1) cost per beneficiary; and, 2) cost per new LAM acceptor. While the first indicator looks at unit cost, the second indicator compares costs with outcomes. Since the outcome data available are at the behavior change level (not actual health outcomes), it is necessary to use an indicator that compares costs with behavior change. The indicator used throughout this study to measure cost effectiveness is the total cost per new LAM acceptor, which is expressed in the following formula:

$$\frac{\text{[cost of activities to promote LAM]}}{\text{[target population] * ([LAM User Rate – Dec'02] – [LAM User Rate rate-Dec'01])}}$$

Target population or project beneficiaries include the total number of antenatal and postpartum women with children less than 6 months old served by all MCH clinics during the study period. Total number of women served by MCH clinics is based on new registered women.

Findings

1. How do costs and outcomes compare across the three regions of Jordan – North, Center and South?

Comparing costs on a per beneficiary basis, there appears to be no relationship between costs and LAM behavior change outcomes. While the cost per beneficiary is the lowest in the North ($1.91), the percentage change in the LAM User Rate was the highest (6.78%). The reverse pattern is observed in the South, where the cost per beneficiary is the highest ($3.2) and percent change in the LAM User Rate the lowest (3.28%).

The total cost of LAM activities (LINKAGES and MOH/MCH costs) across all three regions is $96,988 and cost per beneficiary is $2.21. On a regional basis, the total cost is $33,755 in the North, $43,909 in the Center, and $19,323 in the South. Costs on a per beneficiary basis are $1.91 in the North, $2.19 in the Center, and $3.20 in the South.

2. What are the determinants of costs and cost effectiveness across the regions?

The cost patterns in the three regions are similar – costs were concentrated in BF/LAM training activities (60% of costs in the Center, 58% in the North, and 54% of costs in the South region), with IEC, mother-to-mother support group activities, and monitoring and evaluation being the next largest cost components.

Although BF/LAM training is clearly the highest cost activity in all regions, there are regional differences in the cost per beneficiary. Total BF/LAM training cost per beneficiary in the North is $1.06, in the Center $1.32, and in the South $1.73.

The key factors affecting cost effectiveness include baseline and outcome behavior change rates and the size of target population.

Across all three regions, lower baseline rates are associated with a lower cost per new acceptor – for example the North region has the lowest baseline rate and the lowest cost per new acceptor for LAM User Rate. The data for LAM User Rate costs and outcome suggests there is a direct relationship between higher baseline rates of LAM User Rate and lower cost effectiveness, which can be explained by increasing marginal costs for behavior change at higher LAM User Rate levels.

One of the interpretations of this analysis is that LINKAGES may be able to improve the cost effectiveness of its LAM interventions by targeting areas with low behavior change rates. It should be noted that these results relate to LAM interventions only and these data alone do not allow us to draw conclusions about the cost effectiveness of other behavior change indicators.

Determining an optimal population size that the intervention activities should target appears to be another factor in achieving cost effectiveness. While the study data alone do not allow for definite conclusions, one suggestion from the analysis is that there may be economies of scale to be realized up to a certain threshold population level, after which, further increase in the size of the target population will result in decreased cost effectiveness, since the program costs grow at a higher pace than the target population. At that stage, additional and/or different activities targeted at increasing behavior change outcomes within the current size of population may result in higher cost effectiveness. If, however, this threshold level is not reached, and economies of scale can be gained, then an increase in the target population may improve cost effectiveness.

As there were only small differences in the level of partner participation in the three regions, and given the limitations of financial data, partner participation was not found to be a major factor in determining cost effectiveness.

3. What would it cost to replicate these activities and is it cost effective?

To calculate the cost of replication of LAM promotion activities, only the costs of implementation activities are included (start-up activities would not be incurred again, and evaluation costs do not produce behavior change and are not included in comparable studies). The cost of replicating the package of LINKAGES and partner interventions to promote LAM is $68,403. The total cost per beneficiary to replicate this set of activities is $1.56.

The total cost per new LAM acceptor, if LAM interventions were replicated, is estimated to be $29.83. There is a significant regional variation in cost effectiveness. The cost per new LAM acceptor is higher in the South ($69.38) as compared with the Center ($36.11) and the North ($18.60).

4. How can LINKAGES improve its cost effectiveness?

LINKAGES may be able to improve its cost effectiveness by:

- Lowering the cost of LAM interventions by mainstreaming LAM
- Targeting activities in areas with low LAM baseline rates

The cost structure of the interventions is such that most of the costs are fixed costs and activity costs are not tied to the target population. Mainstreaming LAM into an integrated package of existing MCH

activities will allow spreading those costs across several interventions resulting in lower cost per intervention.

An analysis of marginal costs shows that there is a clear relationship between selecting areas with low baseline rates of the targeted behavior and cost effectiveness. LINKAGES may improve its cost effectiveness by targeting areas with lower baseline rates, where impact may be achieved at lower marginal cost.

The data were insufficient to provide a thorough analysis of the effect of the target population size on cost effectiveness. Nevertheless, one suggestion from the analysis is that there appears to be an optimal size of population that intervention activities should target. This optimal size is defined as that, which fully realize economies of scale and any further increase the size of the target population will result in decreased cost effectiveness. Any further increase in cost effectiveness, after this optimal threshold is reached, may only be obtained through direct interventions affecting the behavior change rates in the current size of the target population through different or additional activities. If the target population in the program area has not reached the determined optimal level, and economies of scale may still be gained, increasing the target population size may improve cost effectiveness. However, with only three data points and one variable used in this study, further analysis is needed to make concrete recommendations.

One important limitation of this study is that it does not allow for an analysis of the cost effectiveness of individual activities or the optimal mix of activities. Thus, no recommendation can be made regarding ways to improve cost effectiveness by manipulating the package of activities.

Implications for the Future

The MOH/MCH has made the decision to mainstream LAM into all reproductive health programs in Jordan, regardless of donor support. This means that the costs associated with offering and counseling in LAM will be shared across the costs of offering all family planning methods, thus increasing the cost effectiveness of LAM activities (assuming rates of LAM behavior outcomes are maintained). Additionally, the cost structure for USAID-funded programs will differ from the cost structure of programs implemented by UN agencies, NGOs and other donors. This also has implications for cost effectiveness.

The MOH is establishing the Breastfeeding Unit in 2004. While its goal is to increase exclusive breastfeeding among infants less than six months old, it would be cost effective to integrate related behaviors, such as complementary feeding and LAM, into the Unit's activities.

Discussion and Conclusions

While this study provided data that will be useful in shaping future activities, there are nonetheless many other important questions that could shape future activities that have not been addressed:

- What is the impact of each of the individual activities?
- What is the optimal mix of activities?
- What is the level of input required for specific activities, given program parameters such as target population, population density?

- How does the scale and scope of the program impact cost effectiveness?
- How sustainable is the behavior change?

This study was not designed to determine the cost effectiveness of specific activities, but of the package of LINKAGES and partner activities. While it has been demonstrated that this package of activities produces behavior change, we are unable to determine whether all of the activities conducted were necessary or whether the outcomes could have been achieved by undertaking just one, or some limited combination, of these activities. Additional research to determine the optimal package of activities to maximize cost effectiveness would be useful for guiding future program design. Lastly, the sustainability or longevity of LINKAGES interventions is a key question affecting cost effectiveness. This study does not measure ongoing behavior change beyond the period of intervention, nor does it measure the input of intervention toward establishing the targeted behaviors as self-sustainable cultural norms.

1. Background to the Study

In an effort to better understand program effectiveness, LINKAGES has initiated a series of studies to estimate the costs and cost-effectiveness of program activities in multiple field offices. While LINKAGES has been successful in increasing target behaviors, USAID and other stakeholders are interested in the cost of these interventions relative to results. To date, a costing methodology applicable across countries and programs has been developed, and studies of costs in Ghana and Madagascar have been completed; an analysis is currently being completed of program costs in Zambia.

This cost effectiveness study of LINKAGES/Jordan LAM Project was undertaken to provide comprehensive estimates of the costs of integrating the Lactational Amenorrhea Method (LAM) into the Ministry of Health (MOH)/Maternal Child Health (MCH) family planning service delivery system. The key objective of the LAM Project in Jordan is to increase acceptance and quality offering of LAM as a transition to the use of other modern contraceptive methods.

As the MOH seeks to support and strengthen the program and integrate LAM into all reproductive health programs, the data will enable the Ministry to estimate financing requirements of the existing program and the start up costs for any new intervention areas. The study should serve as a valuable tool for the MOH planners as well as potential donors considering whether such a program is feasible to implement in terms of costs.

2. Objectives of the Study

This study was conducted to provide information to USAID and the Kingdom of Jordan MOH/MCH, LINKAGES' in-country partner, on the costs and cost-effectiveness of the LINKAGES-supported LAM intervention in Jordan. The objectives of this study are:

- to analyze the cost-effectiveness of LINKAGES' LAM activities in Jordan from December 2001 – December 2002; and
- to determine the cost implications of replicating these activities in the other countries in the region or similar programs in Jordan.

Because of the dual objectives and different audiences for this study, data are presented in several ways. For example, USAID may be more interested in the cost effectiveness of its funding through LINKAGES, while the Jordanian MOH may wish to see the total costs borne by the health system. Depending on their objectives, different readers will be interested in an analysis performed in somewhat different ways. While all data analysis adheres to the methodology described in Section 4, costs are disaggregated in various ways to answer different questions. The specific questions of interest are:

- How do costs and outcomes compare across the three regions of Jordan – North, Center, and South?
- What are the determinants of costs and cost effectiveness across the regions?
- What would it cost to replicate these activities and is it cost effective?
- How can LINKAGES improve its cost effectiveness?

As detailed in the findings section, the data collected aimed to answer these questions, but drawing conclusions in other areas will require further analysis.

3. Description of LINKAGES and Partner Activities

The Lactational Amenorrhea Method (LAM), which is based on the natural infertility resulting from certain patterns of breastfeeding, is a culturally acceptable method of family planning in Jordan. LAM supports both optimal infant feeding and child spacing.

In February 1998 LINKAGES/Jordan began its LAM Project with the support of USAID funds to further integrate and expand the offer of LAM services into the MOH/MCH family planning service delivery system. The key objective of the program is to increase acceptance and quality offering of LAM as a transition to the use of other modern contraceptive methods.

LAM User Rate was identified as an indicator to measure program's achievements for this study. The LAM User Rate is the proportion of women who consciously use LAM as a family planning method of all women of reproductive age who use a family planning method.

The project has focused on building the capacity of the MCH to promote acceptance of exclusive breastfeeding and LAM through policy and advocacy, training of health providers at MCH clinics in the 12 governorates, supervision of counseling, development and dissemination of breastfeeding and LAM materials and media spots to counsel and inform clients, establishment of mother-to-mother support groups, and monitoring and evaluation of practices at the sentinel sites.

To protect exclusive breastfeeding and LAM, and to ensure the sustainability of training, supervision, and clinic and community support instituted by the project, a national institution within the MOH will assume responsibility after LINKAGES transfers the project in 2004. With the support of LINKAGES, the MOH will establish the Breastfeeding Unit under the umbrella of the MCH Directorate to lead the national effort to promote and support breastfeeding and LAM[1]. The Unit will be directed by and staffed by Jordanian health providers.

3.1. LINKAGES Activities during the study period

This study focuses on LINKAGES' LAM activities in Jordan from December 2001 – December 2002. During this period LINKAGES focused on providing technical assistance to the MCH Directorate to develop the Breastfeeding Unit's operational and technical capacity. Three physicians from the MCH Directorate were selected as master trainers for the Breastfeeding Unit, and a long-term strategy for the Unit was drafted. LINKAGES helped the MCH Directorate to develop a training implementation plan, build the capacity of the master trainers in lactation management and management of the Unit, and supported the development of the Unit infrastructure.

During the study period LINKAGES' core activities included training of trainers on breastfeeding and LAM for 15 MCH health providers and fifteen 5-day training courses for total of 249 MCH health providers in LAM, lactation management, and counseling in all governorates of Jordan. In addition, LINKAGES enhanced the breastfeeding and LAM knowledge and training capacity of 60 previously trained MCH health providers through refresher workshops held at four governorates over a one-day period.

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[1] The Breastfeeding Unit was established in August 2004 (following the study period).

The mother-to-mother support group (MTMSG) approach to breastfeeding support was introduced. Twenty four MOH personnel from MCH centers were trained as trainers. These trainers and the MCH training counterpart then facilitated MTMSG with mothers and pregnant women from around selected MCH sites.

The project produced a flipchart on breastfeeding and LAM to facilitate counseling in MCH centers, distributed 338 copies and in all 12 governorates, and trained MOH stakeholders and MCH trainers (10) in their use. LINKAGES also provided technical assistance to Primary Health Care Initiative, the USAID bilateral project in Jordan during the study period, to develop a LAM brochure and drafted a breastfeeding and LAM brochure in Arabic. With UNICEF, LINKAGES produced posters and a billboard displaying breastfeeding messages throughout Amman. The Resident Advisor participated in the annual UNICEF review meeting, urging UNICEF to revive its role in the Baby-Friendly Hospital Initiative in Jordan.

The MCH Directorate committed a monitoring and evaluation (M&E) counterpart to the project to enhance supervision and ensure routine breastfeeding and LAM counseling in MCH services. The counterpart provided counseling training for midwives in 7 governorates on breastfeeding and LAM messages, maintaining LAM registers, and following up LAM users; arranged monthly visits to 3 project sentinel surveillance sites; followed up with trainees, and held a one-day M&E workshop for 28 midwife supervisors. A questionnaire was developed to evaluate trained health providers' knowledge of breastfeeding and LAM through a telephone survey. MCH's LAM data were collected through the Contraceptive Logistics System and reviewed with stakeholders to monitor change in LAM use. Questions capturing LAM use were included in the DHS questionnaire for the first time.

3.2. Partner Activities during the study period

3.2.1. Maternal and Child Health Directorate/MOH

Jordanian women seek antenatal, postpartum, and family planning services from a variety of providers. In Jordan LINKAGES works primarily with the Maternal and Child Health Directorate of the Jordanian Ministry of Health.

LINKAGES and the MOH expanded their activities to 347 maternal and child health (MCH) centers active in the country during the study period. The number of MCH centers includes those that were operational during the study period. Those that were closed before the study period or established after the study period were not counted[2]. Currently there are 351 MCH centers in Jordan.

The MOH delivers family planning services through its network of MCH centers rather than facilities dedicated solely to family planning. The antenatal period is an opportune time to begin counseling women about breastfeeding, LAM, and other family planning methods. Twenty-three percent of women receive antenatal care through this network of centers. Another opportunity presents itself during postpartum and well-baby (immunization) visits. Approximately 11 percent of women who attend antenatal care at MCH centers return for postpartum services. Among all contraceptive users, 11 percent obtain their family planning method at one of the government's MCH centers. The clients

[2] See Annex C for complete list of the MCH centers included in the study. Centers are numbered for convenience. The original list was provided by the MCH.

of MCH services are mostly women of lower socio-economic status and they usually can not afford private practitioners' services.

At the health facility level, MOH health staff are trained to incorporate the promotion of breastfeeding and LAM behaviors into their health facility activities, including patient consultations and formal and informal health education talks.

The overall goal of the partnership is to effectively integrate LAM into Jordan's family planning services. To this end, the MCH/MOH seconded three staff members to work directly with the project, provided premises for trainings and other program activities, as well as supported LINKAGES office operations by providing office space and ensuring adequate working conditions for LINKAGES staff.

4. Methodology

The methodology used in this study has been developed for the LINKAGES Project by Abt Associates Inc. It uses retrospective financial data to analyze cost effectiveness. The methodology is described in detail in the "Methodology for Analyzing Cost and Effectiveness of LINKAGES' Interventions" prepared by Abt Associates[3].

The period examined in this study is December 2001 through December 2002. By this time the start-up phase of the project was completed and implementation activities were underway. The selection of this particular period allowed for a relatively clear-cut analysis of the replication costs associated with effective LAM counseling.

The measure of effectiveness is provided by the MOH's Jordan Contraceptive Logistics System. Data cover the period December 2001 through December 2002, with the first and last months' data serving as baseline and endline data for the study period. A comparison of baseline and endline data provides documentation of activity outcomes during the study period.

This cost effectiveness study uses LAM User Rate indicator to measure the increase in acceptance of LAM as a method of family planning during the study period.

While increasing the exclusive breastfeeding (EBF) rate of infants 0–5 months of age was also one of LINKAGES' goals, baseline and outcome data are not available for the study timeframe, and so cost effectiveness with respect to an EBF indicator can not be evaluated at this stage.

4.1. Types of Costs Included in the Analysis

This study focuses on LAM promotion activities only. Costs related to breastfeeding activities are not included, because their cost effectiveness can not be evaluated at this time. While EBF data are available in the DHS for 1997 and 2002, these are national data and do not reflect specific EBF rates for women who attend MCH clinics.

LINKAGES' efforts to promote LAM counseling and adoption incur costs at both the LINKAGES/Jordan office and at the program headquarters in Washington, DC. This study considers all these costs.

All field costs incurred during the study period to support and implement LINKAGES/Jordan LAM promotion activities are included in this analysis. This includes direct activity implementation costs and the allocation of all overhead/fixed costs (office administration, office equipment, etc.) associated with the LINKAGES/Jordan office in Amman.

Direct costs of the LINKAGES/DC office associated with LAM promotion activities in Jordan are also included. Indirect costs of LINKAGES/DC (including DC office rent, accounting, financial management and billing, contracts management, etc.) are not included. This is in part because the overhead costs related to LINKAGES/DC would not be incurred in replication in-country. Further,

[3] This document is available upon request.

the administrative and overhead structure exists for a wide array of activities, and does not vary based on LAM promotion activities in Jordan.

Partner costs related to LAM promotion activities are also included. Examples of these costs are staff time, costs of premises provided for training workshops and advocacy meetings, office space for LINKAGES/Jordan, electricity and water services for LINKAGES/Jordan office. Partner overhead/fixed costs are excluded because LAM promotion represents a very small portion of their overall activities, and have minimal impact on their fixed costs, whether analysis is of cost effectiveness or replication costs.

During the study period there were no volunteers involved in LINKAGES' activities. In general, the costs of volunteer time are not incurred costs and the opportunity cost of the volunteers would have minimal impact on overall cost effectiveness.

Table 1 summarizes the types of costs included in this analysis.

Table 1: Types of Costs Included in Analysis

Partner	Costs Included	Costs Excluded
LINKAGES/DC	• Direct costs – TDY costs, consultancies, direct technical, financial and administrative backstopping of LAM activities in Jordan, etc.	• Indirect costs of the AED/DC office – will not be incurred for replication in-country; exist for wide array of activities and do not vary based on LAM promotion activities in Jordan (AED/DC office rent, financial and contracts management, etc)
LINKAGES/Jordan	• Direct costs – cost of staff, training workshops, development of materials, supervision, monitoring and evaluation, etc. • Indirect costs – cost of Jordan office in Amman (equipment, support staff, administration, office repairs and maintenance)	
Partners	• Direct costs – cost of staff, training workshops, supervision, monitoring and evaluation, etc.	• Indirect costs – administration exists primarily for other activities

4.2. Allocation of Costs to Activities

The direct costs for each activity that took place during the study period were compiled. LINKAGES/Jordan staff costs were allocated specifically by attendance in workshops, advocacy sessions, etc. with unspecified time allocated pro-rata across all activities based on the direct cost of the activity. LINKAGES/DC costs were allocated to specific activities where appropriate (consultancies, workshop attendance, etc). Non-specific support costs were pro-rated across all LINKAGES/Jordan activities based on the direct cost of the activity. Overhead and administrative costs were pro-rated across all activities based on the direct cost of each activity. A one-year estimate of the capital costs was calculated based on useful life, and then pro-rated across all activities based on the direct cost of each activity. Thus, all costs incurred during the study period were allocated to the full set of LINKAGES' activities.

After that each activity that took place during the study period was reviewed with consideration of its objectives and content, and a subset of activities was identified as one supporting appropriate LAM activities at the MCH sites during the study period and directly contributing to the behavior change among the target population. This subset of activities was included in the study (see Annex A for a list of all LINKAGES activities, specifying whether the activity costs were included in this study). Activities such as study tours, regional meetings and curriculum development for University students were important elements of LINKAGES' program in Jordan. However, these activities are not directly related to LAM counseling at the MCH sites and thus are excluded from the calculations.

All activities incorporated in the study were included at full cost with an exception of development of IEC materials, the strategic planning process for the establishment of the Breastfeeding Unit, and lactation management training courses for the MOH staff. Those activities impact project results over a period longer than the study period. For example, strategic planning process for the establishment of the Breastfeeding Unit is implemented over longer period of time than the study period and therefore impacts results beyond the study period. Most of the IEC materials produced in large quantities during the study period would be used beyond the study period. Because LINKAGES project is planned to end in 2004, costs of such activities are evenly allocated over the three year period and costs for one year only are included in the study to mirror more precisely cost of the package of LINKAGES and partner activities included in the study.

Costs for partner activities were calculated in a similar way. Data on the direct costs of each activity were collected through interviews and written communication with partners (MOH/MCH officials, MOH/MCH counterparts, and health facility staff). Activities included training workshops, advocacy visits, data collection, and supervision and monitoring. Staff costs were allocated based on actual time in workshops and staff estimates of time allocated to LAM activities. Staff time not directly attributable to workshops was allocated across activities based on the direct partner cost of the activity.

4.3. Allocation of Activity Costs to Regional Level Behavior Change

LINKAGES' costs for each activity were allocated to each of LINKAGES' intervention regions using several methods. Costs for regional-level activities were allocated directly to the regions in which the

activities were implemented. This includes costs for local regional trainings, supervision, and advocacy activities. For central-level workshops which involved MCH professions from all regions, such as training of trainers, costs were allocated based on number of participants from each region. Costs of activities reaching all of LINKAGES intervention clinics in all three regions were allocated based on the number of MCH clinics in each region during the study period. Such activities include development and production of IEC materials, strategic planning activities at the Breastfeeding Unit, capacity building of master trainers of the Unit.

MOH/MCH costs were allocated in the same manner as LINKAGES costs.

The content of each activity was reviewed and apportioned based on its specific LAM and EBF content. For trainings, apportioning an activity to a behavior was based on a review of each training module and the time spent discussing each topic. Costs of IEC materials were allocated based on the review of the content and specific messages or materials. For some activities, there was no quantitative basis for apportionment to targeted behavior – for example, routine supervisions by LINKAGES and MOH/MCH staff. In these cases, the costs of activities were apportioned evenly to LAM and EBF indicators.

4.4. Use of MOH Logistics Data to Measure Outcomes

Data to measure outcomes are derived from the MOH's Contraceptive Logistics System data for the study period. The Jordan Contraceptive Logistics System project was funded over a three year period (1996-1999) by the United States Agency for International Development (USAID) and was implemented by John Snow Inc. to assist the Ministry of Health in establishing a new contraceptive logistics system. The logistics system covers all of the MOH facilities, Royal Medical Services, and NGOs providing family planning services in the Kingdom, and is now managed centrally by the MOH/MCH.

Data used in this study are based on MCH family clinic attendance. At these clinics all women who come for family planning counseling are registered as a new or continuing user of a particular method; LAM was included in the Logistics system beginning January 1999. These clinic-level data are then sent monthly to the MCH where they are input into the database. To assure the quality of data the Logistic staff make periodic supervisory visits to the clinics.

Target population or project beneficiaries include the total number of antenatal and postpartum women with children < 6 months served by all MCH clinics during the study period. Total number of women served by MCH clinics is based on new registered women. The LAM User Rate is calculated based on the number of women choosing LAM as a family planning method out of all women of reproductive age who use MCH for family planning services.

Table 2 shows the December'01 baseline and December'02 endline data, by region, for each of the two LAM indicators.

Table 2: Key Indicators – Baseline and Outcome Data

Region	LAM User Rate	
	Dec'01	Dec'02
Center	5.52%	9.98%
North	1.53%	8.30%
South	6.67%	9.94%
Total	4.26%	9.33%

As the endline data show, there were significant increases in both indicators in all three regions during the study period. Both indicators show more than doubling of the national rate, with regional variation in the level of change.

4.5. Indicators of Cost Effectiveness

Two measures of cost and effectiveness are used in this study: 1) cost per beneficiary, or cost per targeted woman; and, 2) cost per new acceptor. While the first indicator looks at unit cost, the second indicator compares costs with outcomes. Since the outcome data available are at the behavior change level (not actual health outcomes), it is necessary to use an indicator that compares costs with behavior change.

The indicator used throughout this study to measure cost effectiveness of providing quality LAM counseling in each region is the cost per new LAM acceptor, which is expressed in the following formula:

$$\frac{\text{[cost of activities to promote LAM]}}{\text{[target population] * ([LAM User Rate-Dec'02] – [LAM User Rate-Dec'01])}}$$

The denominator, the difference in LAM User Rate between December 2002 and the baseline data multiplied by the target population, represents the number of new acceptors, or women whose behavior has changed as a result of the LAM intervention. The cost of activities to promote LAM is divided by the estimated number of new acceptors, providing a measure of the costs incurred per new acceptor to obtain the desired behavior change.

4.6. Study Regions

During the study period, INKAGES and MOH/MCH interventions expanded their work to all 347 MCH clinics from all 12 governorates in Jordan (Ajlun, Al 'Aqabah, Al Balqa', Al Karak, Al Mafraq, 'Amman, At Tafilah, Az Zarqa', Irbid, Jarash, Ma'an, Madaba). Data from all MCH sites are available. This study includes all MCH clinics in all 12 governorates of Jordan grouped by region – Central, North, and South.

4.7. Comparability and Applicability of this Study

There have been few studies of the cost effectiveness of breastfeeding and LAM interventions in developing countries, and no studies of programs that are similar to LINKAGES' model of integrating LAM into the Ministry of Health (MOH) family planning service delivery system through capacity building of the local health professionals. It is therefore difficult to provide results that are directly comparable with other studies. This study does not address the question of whether LINKAGES' interventions are more or less cost effective than others. However, the methodology developed can be used to analyze other breastfeeding, child survival and reproductive health interventions and is applicable across LINKAGES' program countries.

4.8. Limitations of the Study

As discussed earlier, the measures of cost effectiveness are based solely on a comparison of the results of the baseline and outcome data. These measures are accurate to the extent that the rates estimated through data collection by the MOH Logistics Project represent behaviors in LINKAGES' target areas. While LINKAGES has provided technical assistance and to the extent possible monitored data collection, we rely on the Logistics Project for accurate data collection.

The LAM user rate underestimates the uptake of LAM by eligible women – women with infants less than 6 months. The Logistics system includes all women of reproductive age, and thus LAM use cannot be calculated for this specific group of eligible women. The LAM user rate refers to the proportion of all women of reproductive age who use LAM within this catchment population.

The exclusive breastfeeding rate was not measured within the project catchment areas and therefore cannot be included as an outcome measure. This study therefore does not reflect the cost effectiveness of the entire intervention, but LAM promotion activities only. Breastfeeding activities comprise 67% of total program costs and LAM activities comprise 33% of total program costs. It is likely that this split is reflective of project's early years as well, because project activities focused on breastfeeding as an "entry point" for LAM.

The study is limited to one LAM indicator – LAM User Rate. Data to complete analysis by the other LAM indicator - Couple of Years of Protection (CYP) for LAM, were not sufficient. CYP is the estimated protection provided by family planning services during a one-year period and yields an estimate of the duration of contraceptive protection provided per unit of the method, in this case, LAM. To calculate CYP for LAM, data on CYP for each method of family planning included in the Logistics Project reports for December'01 and December'02 are required but not available.

LINKAGES' intervention is targeted to women served by the MCH for antenatal and postpartum services. The data do not include women who use other family planning services. While these data reflect actual behavior, the outcomes of the LINKAGES/Jordan program may not be representative of outcomes if all women used MCH services for family planning services.

Because the cost effectiveness analysis is conducted over a limited time period, the results may not be representative of cost effectiveness over a longer time period. Interventions may become more efficient (increasing cost effectiveness) or it may be increasingly difficult to sustain high rates of the targeted behaviors (reducing cost effectiveness).

Lastly, this study is not able to distinguish LAM that satisfies unmet demand for family planning from LAM that substitute for other family planning methods or LAM that provides a transition to other family planning methods. In each case the impact on fertility would be different.

5. Financial Data Collection

5.1. LINKAGES' Costs

Data on total costs related to Jordan activities were collected from accounting records kept at the LINKAGES DC office. Data were disaggregated by general DC office support/management, field-based costs, and by specific consultancies to support in-country activities.

LINKAGES' in-country (field-based) costs for activities during the study period were collected from the LINKAGES/Jordan monthly imprest reports. The majority of costs to support activities in country are paid directly by the Jordan field office and are accounted for through monthly financial reports - imprests. These reports have detailed cost information for the study period readily available. Cost data was disaggregated by specific activities (such as the cost for a training on a line item basis), and for administrative costs (such as office equipment and supply expenditures).

The data from the imprest reports were compared with aggregate figures of field-based costs from the general DC accounting system. There were some differences in field-based cost data collected through imprest reports and the DC accounting system. Data collected from monthly imprest reports were available with a high level of detail which allowed disaggregating of data by individual activity and excluding costs related to activities that took place outside the study period, but reported during the study period. Imprest data in DC accounting system are reported on an aggregated basis and include all costs reported in the imprest for the period, which may include both costs of the activities in the study period and costs for previous period activities. The difference therefore relates to the costs of previous period activities.

Data on costs paid directly by the DC office were collected from the DC accounting system and whenever applicable cross-referenced with payment records for each vendor kept at the DC office. Those costs primarily include costs related to DC-based management, administrative, and technical support costs, technical assistance trips and consultancies to support in-country activities. There were also some in-country costs that were paid directly from LINKAGES DC office, including resident advisor costs, direct payments for contracts that exceed maximum amount allowed for field-based transactions, and corporate equipment insurance payments.

5.2. MOH/MCH Partner Costs

Data on MOH/MCH partner costs were collected through interviews and financial data provided by the MOH/MCH. Data were collected on activities conducted, expenditures made, and estimates of staff time spent on LAM activities. Interviews were conducted with key MOH/MCH personnel, including project counterparts and trainers, to determine staff time spent on LINKAGES and MOH/MCH trainings, planning and reporting on LAM-related activities, integrated supervision visits to health facilities, and LAM data collection.

5.3. Data Limitations

There were instances of incomplete data – in these cases estimates were made to complete the study. When data on actual MOH staff time spent by activity were not available, assumptions were made based on the specific scope of work for each MOH staff member to allocate time to a specific activity. Unspecified time was allocated pro-rata across all activities based on the direct cost of the activity.

Much of the data on MOH staff costs are based on recall of activities implemented, estimates of staff time commitments, and estimates of activity costs from the study period. Although MOH/MCH provided written estimates of costs, no historical documents (expense reports, budgets, etc.) were available to verify the cost estimates.

6. Findings

The findings presented are organized to reflect each of the study questions:

- How do costs and outcomes compare across the three regions?
- What are the determinants of costs and cost effectiveness?
- How can LINKAGES improve its cost effectiveness?
- What would it cost to replicate these activities and is it cost effective?

Selected information is shown in the sections below to address the questions of interest. Annex B includes detailed cost data for LINKAGES and its partners.

6.1. How Do Costs and Outcomes Compare Across the Three Study Regions?

Overall Finding: *There appears to be no relationship between costs and LAM behavior change outcomes. Cost per beneficiary was the lowest and LAM behavior change outcome the highest in the North region. The reverse pattern exists in the South with the highest cost per beneficiary and the lowest LAM behavior change outcome.*

To answer the question of how costs and outcomes compare across regions, all costs for LINKAGES Jordan and DC-based activities and partner activities to promote LAM are included.

6.1.1. LINKAGES and Partner Costs

Table 3 shows the LINKAGES incurred costs for the three regions allocated by LAM User Rate. Total LINKAGES' costs to promote the LAM behavior change indicator were $37,078 in the Center, $28,247 in the North, and $17,302 in the South. On a per beneficiary basis (defined as the number of antenatal and postpartum women served by MCH clinics during the study period), the cost was $1.85 in the Center, $1.60 in the North, and $2.86 in the South.

Table 3: LINKAGES' Costs Allocated by Indicator

	North		Center		South	
Number of Beneficiaries	17,693		20,065		6,042	
Indicator	**Total Cost**	**Cost per Beneficiary**	**Total Cost**	**Cost per Beneficiary**	**Total Cost**	**Cost per Beneficiary**
LAM User Rate	$28,247	$1.60	$37,078	$1.85	$17,302	$2.86

Table 4 shows that the total cost of LINKAGES' infant feeding and LAM activities across the three study regions was $247,284. Of all activities, it is estimated that 67% of the total cost was spent on improving breastfeeding behavior, and 33% was spent on LAM. Based on these percentages, the total cost of activities is $82,627 to support LAM and $164,657 to support EBF.

Table 4: Total Cost of LINKAGES Activities to Promote LAM and BF in Study Regions

	North	Center	South	Total	As % of Total Cost
Total Cost	**75,540**	**111,483**	**60,261**	**247,284**	
Costs allocated to BF activities	47,293	74,405	42,959	164,657	67%
Costs allocated to LAM activities	28,247	37,078	17,302	82,627	33%

6.1.2. Partner Costs

Total costs incurred by the MOH/MCH are shown in Table 5.

Table 5: MOH/MCH Costs Allocated by Indicator

	North		Center		South	
Number of Beneficiaries	17,693		20,065		6,042	
Indicator	**Total Cost**	**Cost per Beneficiary**	**Total Cost**	**Cost per Beneficiary**	**Total Cost**	**Cost per Beneficiary**
LAM User Rate	$5,508	$0.31	$6,831	$0.34	$2,021	$0.33

Total partner costs in the North were $5,508, representing $0.31 per beneficiary; in the Center, total partner costs were $6,831, representing $0.34 per beneficiary; and in the South, total partner costs were $2,201 representing $0.33 per beneficiary.

6.1.3. Package of LINKAGES and MOH/MCH Interventions Compared with Outcomes

Based on an analysis of the three regions, there appears to be no relationship between the costs incurred and LAM behavior change outcomes. Table 6 shows the total cost of LINKAGES and partner LAM activities in each of the three regions compared with behavior outcomes. While the cost per beneficiary is the lowest in the North ($1.91), the percentage change in the LAM User Rate is the highest (6.78%). The reverse pattern is observed in the South, where the cost per beneficiary is the highest ($3.2) and percent change in the LAM User Rate the lowest (3.28%).

The low behavior change rate in the South may be partially explained by a lower intensity of implementation activities, primarily fewer training courses. Out of a total of fifteen 5-day training courses on BF and LAM, only two were carried out in the South compared with 7 in the Center and 6 in the North. This means there were fewer women who attended MCH centers and were exposed to LAM counseling messages in the South. At the same time, the high cost per beneficiary can be explained by the lower number of MCH sites located in the South resulting in a lower number of potential project beneficiaries. Only 21% of all MCH centers are located in the South region, compared with 42% in the North and 37% in the Center.

Table 6: Relationship Between Costs and Outcomes (LINKAGES and Partner Costs)

	North			Center			South		
Number of Beneficiaries	17,693			20,065			6,042		
Indicator	**Cost**	**Per Beneficiary**	**PCT Chg in Indicator**	**Cost**	**Per Beneficiary**	**PCT Chg in Indicator**	**Cost**	**Per Beneficiary**	**PCT Chg in Indicator**
LAM User Rate	$33,755	$1.91	6.78%	$43,909	$2.19	4.47%	$19,323	$3.20	3.28%

6.2. What are Determinants of Costs and Cost Effectiveness?

Overall Finding *The cost of training activities and IEC are the key cost drivers. The key factors affecting cost effectiveness include baseline and outcome behavior change rates and the size of targeted population.*

Higher total cost or cost per beneficiary does not necessarily imply lower or higher cost effectiveness (defined as cost per new acceptor). Many factors affect total costs and cost effectiveness. Costs are disaggregated in a variety of ways to examine patterns among different types of costs, and factors that affect cost effectiveness.

6.2.1. Key Cost Drivers

The cost patterns in the three regions are similar – costs were concentrated in BF/LAM training activities (60% of costs in the Center, 58% in the North, and 54% of costs in the South region), with IEC, mother-to-mother support group activities, and monitoring and evaluation the next largest cost components.

Although BF/LAM training is clearly the highest cost activity in all regions, there are regional differences in the cost per beneficiary. Table 7 shows the cost of each activity by region. Total BF/LAM training cost per beneficiary in the North is $1.06, in the Center $1.32, and in the South $1.73.

There is a difference in the proportional distribution of MTMSG activity costs across the regions. They comprise 3% of total costs in the North, 7% in the Center, and 11% in the South. Further, the MTMSG costs per beneficiary were six times higher in South ($0.36) than in North ($0.06), and twice that of the Center region ($0.16).

Another notable difference in the proportionate distribution across the regions can be found in IEC costs. IEC costs represent 20% of the total costs in the North and 13% of costs in the Center. On a per beneficiary basis, the costs in the North ($0.38) were 31% higher than in the Center region ($0.29). Even though total IEC costs in the South were lower than in the North and Center regions, cost per beneficiary ($0.54) was 86% higher than in the Central region and 42% higher than in the North. This is due to the fact that the coverage population in the North was triple and in the Center 3.3 times that in the South.

M&E costs in the South are drastically lower than in the other two regions. Total M&E costs in the South were $925 compared to $4,358 in the North and $5,288 in the Center, comprising only 5% of total costs in the South as opposed to 13% and 12% in the North and Center respectively. M&E costs in the North and Center are very similar in terms of both percentage of total costs and on a per beneficiary basis.

Table 7: Cost by Activity (LINKAGES and Partner Costs)

	North			Center			South		
Activity	**Cost**	**As % of Total Cost**	**Cost per Beneficiary**	**Cost**	**As % of Total Cost**	**Cost per Beneficiary**	**Cost**	**As % of Total Cost**	**Cost per Beneficiary**
BF/LAM Training	$18,819	56%	$1.06	$26,480	60%	$1.32	$10,479	54%	$1.73
IEC	$6,641	20%	$0.38	$5,868	13%	$0.29	$3,275	17%	$0.54
MTMSG (incl. trng)	$1,084	3%	$0.06	$3,254	7%	$0.16	$2,175	11%	$0.36
M&E	$4,358	13%	$0.25	$5,288	12%	$0.26	$925	5%	$0.15
Mgmt Training	$1,372	4%	$0.08	$1,212	3%	$0.06	$676	4%	$0.11
Mgmt/Spvsn	$1,086	3%	$0.06	$1,459	3%	$0.07	$1,597	8%	$0.26
Advocacy	$395	1%	$0.02	$349	1%	$0.02	$195	1%	$0.03
TOTAL	**$33,755**	**100%**	**$1.91**	**$43,909**	**100%**	**$2.19**	**$19,323**	**100%**	**$3.20**

6.2.2. Cost Effectiveness and Partner Participation and Input

There was little difference in the level of partner participation, the MOH/MCH, in the three regions. LINKAGES costs represented 84% of total costs in the North and Center, and 90% of total costs in the South. Partner costs comprised 16% and 10% respectively.

Table 8 shows the breakdown between LINKAGES and partner costs allocated to the study indicators.

Table 8: Comparison of LINKAGES and Partner Costs

(In US$)	**North**			**Center**			**South**		
Indicator	**Total Cost**	**LINKAGES Cost as % of Total**	**MOH Cost as % of Total**	**Total Cost**	**LINKAGES Cost as % of Total**	**MOH Cost as % of Total**	**Total Cost**	**LINKAGES Cost as % of Total**	**MOH Cost as % of Total**
LAM User Rate	$33,755	84%	16%	43,909	84%	16%	19,323	90%	10%

Given the small differences in partner participation between the two regions, and the lack of detail in the MOH/MCH financial data reviewed, the level of partner participation does not appear to be a major factor in determining cost effectiveness.

6.2.3. Cost Effectiveness and Target Population

Table 9 shows the target population for each of the key indicators and the total cost per new acceptor.

Table 9: Comparison of Target Population and Cost Effectiveness

(In US$)	North			Center			South		
Indicator	Total Cost	Target Population	Cost per New Acceptor	Total Cost	Target Population	Cost per New Acceptor	Total Cost	Target Population	Cost per New Acceptor
LAM User Rate	$33,755	17,693	$28	$43,909	20,065	$49	$19,323	6,042	$98

While population in the Center is just 13% higher than in the North, the total cost per new acceptor is 75% higher. Given that target population in the two regions is relatively similar, one of the key reasons why the Northern region is more cost effective is its better behavior change outcome - percent change in LAM User Rate in the North is 1.5 times higher than in the Center (6.78% compared to 4.47%, respectively). More and/or different intervention activities targeted at increasing behavior change in the current size of target population may result in higher cost effectiveness in the Center region.

Cost per new acceptor in the South is 3.5 times higher than in the North and double that of Center region. The numbers of beneficiaries in the North and in the Center regions are approximately three times (or 200%) higher than that in the South, while total costs in North and the Center are only 75% and 127% higher respectively. One explanation for the lower cost per new acceptor in the North and Center is the existence of economies of scale gained by increased size of target population in these areas.

At the same time, the fact total costs in the Center are 30% higher than in the North, while the current number of beneficiaries in the Center is only 13% higher, may reveal that further economies of scale can not be gained. This may suggest there may be economies of scale up to a certain threshold population, after which no further economies can be realized.

While these data alone does not allow drawing definite conclusions, one suggestion from the analysis is that there appears to be an optimal size of population that the intervention activities should target. Increasing the target population size to reach this threshold level of population improves cost effectiveness. Once this threshold level is achieved, further increase of the target population results in decreased cost effectiveness since the program costs grow at a higher pace than the target population. At this stage, additional activities or different package of activities aimed at increasing behavior change outcomes in the current size of population may improve cost effectiveness. Determining this threshold would contribute to improving the cost effectiveness of similar, future interventions. However, with only three data points and one variable used in this study, further analysis is needed to make concrete recommendations.

6.2.4. Cost Effectiveness and Marginal Costs

Differences in cost effectiveness between regions may be partially explained by the increasing marginal cost of achieving higher indicator rates. Marginal cost refers to the additional cost required to produce one additional unit of output. Marginal cost is generally expected to increase as you reach higher behavior rates – that is, it may be more costly to increase LAM User Rate from 19% to 20%

than it is to increase from 9% to 10%. Table 10 shows the baseline and outcome rates of the targeted behaviors, together with the cost per new acceptor.

Table 10: Comparison of Baseline and Outcome Behavior Rates and Cost Effectiveness

(In US$)	North			Center			South		
Indicator	**Indicator Baseline Rate**	**Indicator Outcome Rate**	**Cost per New Acceptor**	**Indicator Baseline Rate**	**Indicator Outcome Rate**	**Cost per New Acceptor**	**Indicator Baseline Rate**	**Indicator Outcome Rate**	**Cost per New Acceptor**
LAM User Rate	1.53%	8.30%	$28	5.52%	9.98%	$49	6.67%	9.94%	$98

Across all three regions, lower baseline rates are associated with a lower cost per new acceptor – for example the North region has the lowest baseline rate and the lowest cost per new acceptor for LAM User Rate. The data for LAM User Rate costs and outcome suggests there is a direct relationship between higher baseline rates of LAM User Rate and lower cost effectiveness, which can be explained by increasing marginal costs for behavior change at higher LAM User Rate levels.

One of the interpretations of this analysis is that LINKAGES may be able to improve its cost effectiveness of its LAM interventions by targeting areas with low behavior change rates. It should be noted that these results relate to LAM interventions only and these data alone do not allow us to draw conclusions about the cost effectiveness of other behavior change indicators.

6.3. What Would It Cost to Replicate These Activities and Is it Cost Effective?

Overall Finding: *The total cost per beneficiary to replicate this set of activities is $1.56. The total cost per new LAM acceptor is $29.83*

6.3.1. Cost to Replicate Package of LINKAGES and Partner Activities

Determining the replication costs entailed a review of all activities included in this study and classification of those activities as start-up/development activities, ongoing implementation activities, and monitoring and evaluation activities. Start-up or development activities are one-time activities that would not be replicated, such as the development of IEC materials and mass media messages, initial assessment visits, the one-time lactation management training for project counterparts, etc. Implementation activities are an ongoing part of the program and include training workshops, facilitation of mother-to-mother support groups, advocacy meetings, production of IEC materials, and radio broadcasts. Monitoring and evaluation activities are aimed only at assessing outcomes from the interventions.

Disaggregating costs associated with implementation activities provides the most accurate estimate of the costs of replicating activities. To calculate the cost of replication, only the costs of implementation activities are included, because start-up activities would not be incurred again, and evaluation costs do not produce behavior change and are therefore not included in LINKAGES' cost effectiveness studies.

Table 11 shows the classification of all behavior change activities conducted by LINKAGES and its partners.

Table 11: Classification of LINKAGES and Partner Activities from December 2001 – December 2002

ACTIVITIES	Start-up, Implementation, or Monitoring/Evaluation
IEC Materials (development, production, dissemination)	Start-up/Implementation
Advocacy sessions and meetings	Implementation
Courses on BF and LAM for health workers	Implementation
Training of trainers on BF and LAM	Implementation
Mother-to-mother support groups (MTMSG) training of trainers	Implementation
Facilitation of MTMSG	Implementation
Initial visits to establish MTMSG	Start-up
Lactation management course for master trainers	Start-up
Session on LAM for trainees from PHCI project	Implementation
1-day Workshops to discuss BF, LAM, M&E and MTMSG	Implementation
Refresher workshops on BF and LAM	Implementation
IEC and Monitoring and Evaluation workshop	Implementation /Monitoring and Evaluation
Monitoring and supervision visits	Implementation
Design of Quantitative Baseline Survey on IF and LAM in North Sentinel Site (preparation phase)	Monitoring and Evaluation
Monitoring health provider knowledge (phone survey)	Monitoring and Evaluation
M&E workshop for MCH midwife supervisors	Monitoring and Evaluation

The costs associated with implementation activities to promote LAM are shown in Table 12. These activities target antenatal and postpartum women with infants less than 6 months old, and can be grouped together to estimate replication costs per woman. Total implementation costs for this subset of activities were $22,308 in the North, $32,358 in the Center, and $13,737 in the South. The implementation cost per beneficiary was $1.56 across all regions, $1.26 in the North, $1.61 in the Center, and $2.27 in the South.

Table 12: Costs of Replicating LAM Promotion Activities, LINKAGES and Partner Implementation Costs Only

	North	Center	South	Total
LINKAGES Costs (US$)	16,954	25,702	11,896	54,552
Partner Costs (US$)	5,354	6,656	1,841	13,851
Total Costs of LAM Promotion Activities (US$)	22,308	32,358	13,737	68,403
Total Beneficiaries	17,693	20,065	6,042	43,800
Cost per Beneficiary (US$)	**1.26**	**1.61**	**2.27**	**1.56**

The implementation costs for the complete package of LINKAGES' activities aimed at improving both breastfeeding and LAM indicators is $206,420, out of which $54,552 to the subset of LAM promotion activities and the $151,868 are associated with breastfeeding interventions.

It should be made clear that this section examines only the cost of replicating activities in Jordan. Difference in local costs should be taken into consideration in order to estimate replication costs in other countries, even in ones with similar programs. Further, costs in this study are expressed in nominal terms, i.e. actual expenses at the time of the study period. Costs will need to be adjusted to reflect inflation if replicated.

It is worth mentioning that substantial part of the costs during the study period was incurred for capacity building of the MCH staff. Later in the life of such projects when most of the staff is trained costs will be decreased since staff will be available to provide the services, without the cost of the training. This is an important factor for MCH in estimating costs of further expansion of LAM services in Jordan. If replicated, costs will need to be adjusted to reflect diminished need for training depending on the local staff capacity.

6.3.2. Cost Effectiveness of Replication

In addition to examining the cost of replicating these activities, it is also useful to examine the cost effectiveness of replicating these activities. As described in the previous section, the cost of replicating these activities is limited to implementation costs only. Thus to measure cost effectiveness of replication, total implementation costs are compared with the number of new acceptors of the targeted behavior, e.g. LAM User Rate - to calculate the implementation cost per new acceptor.

Table 13 presents the cost effectiveness of replicating activities to promote the use of LAM. The cost per new LAM acceptor, if LAM interventions were replicated, is estimated to be $29.83. There is a significant regional variation in cost effectiveness. The cost per new LAM acceptor is the highest in the South ($69.38) as compared with the Center ($36.11) and the North ($18.60).

Table 13: Cost Effectiveness of Promoting LAM, LINKAGES and Partner Implementation Costs

	North	Center	South	Total
LINKAGES and Partner Costs (US$)	$22,308	$32,358	$13,737	$68,403
Target Population/Total Beneficiaries	17,693	20,065	6,042	43,800
Percent Difference between Baseline and Outcome Rate	6.78%	4.47%	3.28%	5.07%
Est. Number of New LAM Acceptors	1,199	896	198	2,293
Cost per New LAM Acceptor (US$)	**$18.6**	**$36.11**	**$69.38**	**$29.83**

It should be noted that there are likely economies of scale to the integrated package of activities conducted by LINKAGES and its partners, such that the cost of targeting individual behaviors in isolation is likely higher. That is, if LINKAGES were to implement a program aimed at only LAM behavior change, the cost per new acceptor would likely be higher than what is shown here because

some portion of the costs are fixed (for example, office space for administration), and would not be reduced if only one behavior were targeted.

6.4. How Can LINKAGES Improve its Cost Effectiveness?

***Overall Finding**: Activity costs, baseline and outcome behavior rates, and size of target population are three factors that influence cost effectiveness. LINKAGES may be able to improve its cost effectiveness by mainstreaming LAM interventions into comprehensive MCH reproductive health programs. Spreading costs of a single intervention through implementing integrated package of MCH activities lower cost and leads to higher cost effectiveness.*

Due to insufficient data, recommendations on the impact of target population are limited. Nevertheless, there appears to be an optimal size of population that intervention activities should target. Determining an optimal population level at which economies of scale are realized and a different package of activities aimed at increasing outcome behavior change in the current size of population is needed would be a key task to improve cost effectiveness of future interventions. Further analysis is needed to make concrete recommendations.

More data and further analysis of the impact of the mix of activities is needed to better inform cost effective program design.

Table 17 shows the target populations, together with baseline and outcome behavior rates and the cost per new acceptor.

Table 17: Cost Effectiveness of Promoting LAM, LINKAGES and Partner Total Costs

	North	Center	South	Total
LINKAGES and Partner Costs (US$)	$33,755	$43,909	$19,323	$96,988
Target Population/Total Beneficiaries	17,693	20,065	6,042	43,800
Percent Difference between Baseline and Outcome Rate	6.78%	4.47%	3.28%	5.07%
Est. Number of New LAM Acceptors	1,199	896	198	2,293
Cost per New LAM Acceptor (US$)	**$28**	**$49**	**$98**	**$42**

Overall, low costs in the North together with this high increase in the LAM behavior change outcomes result in the lowest cost per new acceptor and therefore the highest cost effectiveness. For the North and Center, where the size of the target population is relatively similar, the behavior rates change is the major factors that determined cost effectiveness. These same factors help explain why the South region, which shows the South is less cost effective than the other regions. Additionally, the cost per new acceptor is more than 3.5 times higher in the South than in the North and two times higher than in the Center. This is explained by the other factor – target population, which is significantly lower in the South than in the North or Center. In this case, the targeted behavior outcomes and the size of the target population together impact cost effectiveness. These data show that while each of the factors alone does not explain cost effectiveness, the interplay of these factors does provide suggestions for improving cost effectiveness.

Based on this analysis, LINKAGES may be able to improve its cost effectiveness by:

- Lowering the cost of LAM interventions by mainstreaming LAM
- Targeting activities in areas with low LAM baseline rates

The cost structure of interventions is such that most of the costs are fixed costs and activity costs are not tied to the target population. Mainstreaming LAM into an integrated package of existing MCH activities will allow spreading those costs across several interventions resulting in lower cost per intervention.

An analysis of marginal costs shows that there is a clear relationship between selecting areas with low baseline rates of the targeted behavior and cost effectiveness. LINKAGES may improve its cost effectiveness by targeting areas with lower baseline rates.

Determination of an optimal population size that the intervention activities should target appears to be another important factor in achieving cost effectiveness. The limited data suggest that the package of activities may need to be adjusted once the target population exceeds certain levels. When this threshold is reached, a further increase of the target population results in decreased cost effectiveness since the program costs grow at a higher pace than the target population. If this threshold is not reached, however, and economies of scale may be gained, increasing the target population size may improve cost effectiveness.

One important limitation of this study is that it does not allow for the analysis of the cost effectiveness of individual activities or of the optimal mix of activities. Thus, no recommendation can be made regarding ways to improve cost effectiveness by manipulating the package of activities.

7. Discussion and Conclusions

7.1. Review of Key Research Questions

Review of the cost data and cost effectiveness ratios allows us to answer some key questions about LINKAGES' work:

- *How do costs and outcomes compare across the study regions?*
  Comparing costs on a per beneficiary basis (defined as the total number of antenatal and postpartum women served by the MCH clinics), there appears to be no relationship between costs and LAM behavior change outcomes. Total cost of LAM activities (LINKAGES and MOH/MCH costs) across all three regions is $96,988 and cost per beneficiary is $2.21. On a regional basis, the total cost is $33,755 in the North, $43,909 in the Center, and $19,323 in the South. Costs on a per beneficiary basis are $1.91 in the North, $2.19 in the Center, and $3.20 in the South.

- *What are the determinants of costs and cost effectiveness across the study districts?*
  The cost of training activities and IE&C are the key cost drivers. The key factors affecting cost effectiveness includes baseline and outcome behavior change rates and the size of target population. Total activity costs do not appear to be a major factor in this study impacting cost effectiveness, because it focuses only on LAM activities.

- *What would it cost to replicate these activities in Jordan and is it cost effective?*
  The cost of replicating LINKAGES' activities to promote LAM is $68,403. The total cost per beneficiary to replicate this set of activities is $1.56. The total cost per new LAM acceptor is $29.83.

- *How can LINKAGES improve its cost effectiveness?*
  Activity costs, baseline behavior rates and size of target population are three factors that influence cost effectiveness. 1) LINKAGES may be able to improve its cost effectiveness by mainstreaming LAM interventions into comprehensive MCH reproductive health program. Spreading costs of a single intervention by implementing an integrated package of MCH activities will lower costs and lead to higher cost effectiveness. 2) Targeting areas with lower baseline rates will improve cost effectiveness. 3) Limited data suggest that there may be economies of scale up to a certain threshold population, after which no further economies can be realized. Determining an optimal population level at which economies of scale are realized and a different package of activities aimed at increasing behavior change outcomes in the current size of target population is needed, would be a key task to improve the cost effectiveness of future interventions. If this threshold level is not reached, however, and economies of scale can be gained, increasing target population will improve cost effectiveness.

  More data and further analysis of the impact of the mix of activities is needed to better inform a cost effective program design.

7.2. Implications for the Future

The MOH/MCH has made the decision to mainstream LAM into all reproductive health programs in Jordan, regardless of donor. This means that the costs associated with offering and counseling in LAM will be shared across the costs of offering all family planning methods, thus increasing the cost effectiveness of LAM activities (assuming rates of LAM behavior outcomes are maintained). Additionally, the cost structure for USAID-funded programs will differ from the cost structure of programs implemented by UN agencies, NGOs and other donors. This also has implications for cost effectiveness.

The MOH is establishing the Breastfeeding Unit in 2004. While its goal is to increase exclusive breastfeeding among infants less than six months old, it would be cost effective to integrate related behaviors, such as complementary feeding and LAM, into the Unit's activities.

Annex A: List of All LINKAGES Activities

ACTIVITIES	Costs Included in this Study
IEC/BCC	
Design and production of flipchart on BF and LAM	Y
IEC and M&E workshop	Y
POLICY AND ADVOCACY	
Advocacy sessions and meetings	Y
World Breast feeding Week Activities	Y
Workshop on Supervision of Reproductive Health at the MOH level	Y
CAPACITY BUILDING/TRAINING	
Training of trainers on BF and LAM	Y
5-day training course on BF and LAM for health providers	Y
Training of trainers on MTMSG	Y
Facilitation of MTMTSG	Y
Study Tours	N
Lactation management course for MCH staff	Y
Regional meetings/conferences	N
Session on LAM for PHI Project trainees	Y
Curriculum development workshop for School of Nursing of the University of Jordan	N
Refresher workshops on BF and LAM	Y
SUPERVISORY ACTIVITIES	
Supervision visits of staff at MCH Centers	Y
PROGRAM DESIGN	
Strategic Planning Session to Establish the Breastfeeding Unit	Y
Assessment of primary health care services and needs for BF/LAM training in Aqaba	Y
MONITORING AND EVALUATION	
Design of Quantitative Baseline Survey on IF and LAM in the North Sentinel Site	Y
Evaluation of trained health providers knowledge (phone survey)	Y
M&E workshop for MCH midwife supervisors	Y

Y – cost of activity was included in this study.

N – cost of activity was excluded from this study as it did not directly promote targeted behaviors

Annex B: Detailed Cost and Indicator Data

I. LINKAGES and MOH/MCH Cost Data

SUMMARY OF LINKAGES AND MOH/MCH LAM ACTIVITY COSTS IN EACH REGION

all costs in US Dollars

Partner/Activity	North	Center	South	TOTAL
LINKAGES				
IE&C/BCC	6,561	5,797	3,236	15,594
Training on BF and LAM	13,971	20,819	8,833	43,623
Mother-to-mother support group activities (incl. training)	1,070	3,213	2,148	6,431
Policy/Advocacy	352	311	173	836
Management Training for MCH staff	1,372	1,212	676	3,260
Program Design/Supervision	659	563	1,361	2,582
Monitoring and Evaluation	4,261	5,164	875	10,301
TOTAL	**28,247**	**37,078**	**17,302**	**82,627**
MOH/MCH				
IE&C/BCC	80	71	40	191
Training on BF and LAM	4,848	5,661	1,646	12,155
Mother-to-mother support group activities (incl. training)	14	41	27	82
Policy/Advocacy	43	38	21	102
Management Training for MCH staff/Capacity Building	-	-	-	-
Program Design/Supervision	427	896	237	1,559
Monitoring and Evaluation	97	124	50	271
TOTAL	**5,508**	**6,831**	**2,021**	**14,360**
LINKAGES and MOH/MCH				
IE&C/BCC	6,641	5,868	3,275	15,785
Training on BF and LAM	18,819	26,480	10,479	55,779
Mother-to-mother support group activities (incl. training)	1,084	3,254	2,175	6,513
Policy/Advocacy	395	349	195	938
Management Training for MCH staff	1,372	1,212	676	3,260
Program Design/Supervision	1,086	1,459	1,597	4,142
Monitoring and Evaluation	4,358	5,288	925	10,572
TOTAL	**33,755**	**43,909**	**19,323**	**96,988**

LAM COST EFFECTIVENESS RATIOS BY REGION (LINKAGES & MOH/MCH Costs)

	North	Center	South	TOTAL
Total LAM costs	33,755	43,909	19,323	96,988
Percent Change in LAM User Rate	6.78%	4.47%	3.28%	5.07%
Target Population/Number of beneficiaries	17,693	20,065	6,042	43,800
Number of New LAM Acceptors	1,199	896	198	2,293
Cost per New Acceptor	**$28**	**$49**	**$98**	**$42**

COST OF LAM ACTIVITIES PER BENEFICIARY, ALLOCATED BY REGION

	North	Center	South	TOTAL
Total LAM costs (LINKAGES and MOH/MCH)	33,755	43,909	19,323	96,988
Target Population/Number of beneficiaries	17,693	20,065	6,042	43,800
Cost Per Beneficiary	**$1.91**	**$2.19**	**$3.20**	**$2.21**

LINKAGES' LAM Activity Costs by Element of Cost

Activities	Direct Field Staff Cost	Other Direct Field Cost	Alloc Field Staff and Admin Cost	Direct DC Staff Cost	Other Direct DC cost	DC Consul Cost	Alloc DC Support Cost	TOTAL
IE&C/BCC	129	7,138	2,847	-	-	-	5,480	**15,594**
Training on BF and LAM	4,293	12,264	7,786	1,927	1,390	974	14,989	**43,623**
Mother-to-mother support group activities (incl. training)	194	1,483	1,174	723	598	-	2,260	**6,431**
Policy/Advocacy	242	147	153	-	-	-	294	**836**
Management Training for MCH staff/Capacity Building	161	1,358	595	-	-	-	1,146	**3,260**
Program Design/Supervision	296	592	471	181	134	-	908	**2,582**
Monitoring and Evaluation	129	2,265	1,881	2,135	271	-	3,620	**10,301**
TOTAL	**5,444**	**25,247**	**14,907**	**4,966**	**2,393**	**974**	**28,696**	**82,627**

Detailed LINKAGES' LAM Activity Costs Allocated to Study Regions

	Central	North	South	TOTAL
IEC/BCC				
Flip charts on BF and LAM	5,139	5,816	2,868	13,823
Flip chart launch ceremony	659	745	368	1,771
Distribution of flip charts to all MCH centers	-	-	-	-
Presentation at live talk show on BF/LAM	-	-	-	-
Total	**5,797**	**6,561**	**3,236**	**15,594**
POLICY/ADVOCACY				
Workshop on Supervision of Reproductive Health at the MOH level	311	352	173	836
Advocacy meeting with Major of Salt and Director of Salt DOH	-	-	-	-
Advocacy meeting with Director of Health in Ajloun	-	-	-	-
Advocacy Meetings to include LAM Module in DHS Instrument	-	-	-	-
Advocacy session in Salt for Municipality staff (14 participants)	-	-	-	-
Total	**311**	**352**	**173**	**836**
TRAINING on BF and LAM				
BF/LAM course in Salt (16 pp)	1,778	-	-	1,778
BF/LAM course in Mafraq (15 pp)	-	1,456	-	1,456
BF/LAM course in Amman (14 pp)	1,498	-	-	1,498
BF/LAM course in Ajloun (16 pp)	-	2,023	-	2,023
BF/LAM course in Salt (14 pp)	1,399	-	-	1,399
BF/LAM course in Tafilah (17 pp)	-	-	1,254	1,254
BF/LAM course in Ajloun (25 pp)	-	1,978	-	1,978
BF/LAM course in Madaba (16 pp)	967	-	-	967
BF/LAM course in Jerash (14 pp)	-	1,317	-	1,317
BF/LAM course in Irbid (23 pp)	-	1,084	-	1,084
BF/LAM course in Salt (18 pp)	905	-	-	905
BF/LAM course in Ajloun (16 pp)	-	1,097	-	1,097
BF/LAM course in Zarqa (15 pp)	1,618	-	-	1,618
BF/LAM course in Aqaba (16 pp)	-	-	2,883	2,883
BF/LAM course in Amman (Sahab Hospital) (14 pp)	936	-	-	936
ToT on BF/LAM (15 participants)	6,924	3,957	3,957	14,838
Training on use of BF/LAM flipchart	4,635	579	580	5,793
1-day workshops in Irbid and Zarqa to discuss BF, LAM, M&E and MTMSG				-
BF/LAM refresher workshops in 5 governorates	160	480	160	800
Total	**20,819**	**13,971**	**8,833**	**43,623**
MOTHER-TO-MOTHER SUPPORT GROUP ACTIVITIES				
MTMSG training of trainers (24 participants)	3,211	1,070	2,141	6,422
MTMSG sessions (2) in Ajloun	-	-	-	-
MTMSG sessions (3) in Ma'an,Tafilah,and Amman (Wadi Srour)	2	-	4	6
MTMSG sessions (2) in Karak and Salt	-	-	-	-
Initial visit to governorate of Ramtha to establish MTMSG	-	-	4	4
MTMSG session (1) in Der-ala, Ghor	-	-	-	-
MTMSG sessions (2) in Wadi Srour clinic (Amman)	-	-	-	-
Total	**3,213**	**1,070**	**2,148**	**6,431**
MANAGEMENT TRAINING/CAPACITY BUILDING				
Lactation management course, Institute of Child Health, London	1,083	1,226	605	2,914
Session on LAM for trainees from PHI project	129	146	72	346
Total	**1,212**	**1,372**	**676**	**3,260**
PROGRAM DESIGN/SUPERVISION				
Monitoring and supervision visit in Ajloun	-	-	-	-
Monitoring and supervisory visits in Amman (2), Ajloun (1) and Madaba (2) = 5 visits	-	-	-	-
Monitoring and supervisory visits in Amman (9), Zarqa (3), Salt (3), Irbid (2) = 17 visits	4	1	-	5
Supervisory visits to 4 governorates: Amman (2), Irbid (1), Mafraq (3), Jerash (1)	19	48	-	68
Monitoring and supervision visits (2) to Karak and Amman (Wadi Srour)	-	-	-	-
Supervisory visits and follow-up phone calls	-	-	-	-
Monitoring and Supervision visits	72	82	40	194
Strategic Planning Session to establish BF/LAM Center (19 pp)	467	529	261	1,257
Assessment of primary health care services and needs for BF/LAM training in Aqaba			1,060	1,060
Total	**562**	**660**	**1,361**	**2,583**
MONITORING and EVALUATION				
Design of Quantitative Baseline Survey on IF and LAM in North Sentinel Site (preparation ph	-	3,083	-	3,083
Evaluation of trained health providers knowledge (phone survey)	269	305	150	724
M&E workshop for MCH midwife supervisors (28 participants, 1 day)	260	295	145	700
Use of flip chart and M&E workshop (10 participants)	4,634	580	579	5,792
Total	**5,164**	**4,262**	**874**	**10,299**
GRAND TOTAL	**37,078**	**28,247**	**17,302**	**82,627**

Detailed MOH/MCH' LAM Activity Costs Allocated to Study Regions

	Central	North	South	TOTAL
IEC/BCC				
Flip charts on BF and LAM	51	57	28	136
Flip chart launch ceremony				-
Distribution of flip charts to all MCH centers				-
Presentation at live talk show on BF/LAM	20	23	11	54
Total	**71**	**80**	**40**	**191**
POLICY/ADVOCACY				
Workshop on Supervision of Reproductive Health at the MOH level	38	43	21	102
Advocacy meeting with Major of Salt and Director of Salt DOH				-
Advocacy meeting with Director of Health in Ajloun				-
Advocacy Meetings to include LAM Module in DHS Instrument				-
Advocacy session in Salt for Municipality staff (14 participants)				-
Total	**38**	**43**	**21**	**102**
TRAINING on BF and LAM				
BF/LAM course in Salt (16 pp)	778			778
BF/LAM course in Mafraq (15 pp)		778		778
BF/LAM course in Amman (14 pp)	778			778
BF/LAM course in Ajloun (16 pp)		778		778
BF/LAM course in Salt (14 pp)	778			778
BF/LAM course in Tafilah (17 pp)			778	778
BF/LAM course in Ajloun (25 pp)		778		778
BF/LAM course in Madaba (16 pp)	778			778
BF/LAM course in Jerash (14 pp)		778		778
BF/LAM course in Irbid (23 pp)		778		778
BF/LAM course in Salt (18 pp)	778			778
BF/LAM course in Ajloun (16 pp)		778		778
BF/LAM course in Zarqa (15 pp)	778			778
BF/LAM course in Aqaba (16 pp)			778	778
BF/LAM course in Amman (Sahab Hospital) (14 pp)	778			778
ToT on BF/LAM (15 participants)	105	60	60	225
Training on use of BF/LAM flipchart	44	5	5	54
1-day workshops in Irbid and Zarqa to discuss BF, LAM, M&E and MTMSG	40	40		80
BF/LAM refresher workshops in 5 governorates	24	72	24	121
Total	**5,661**	**4,848**	**1,646**	**12,155**
MOTHER-TO-MOTHER SUPPORT GROUP ACTIVITIES				
MTMSG training of trainers (24 participants)	41	14	27	82
MTMSG sessions (2) in Ajloun				-
MTMSG sessions (3) in Ma'an,Tafilah,and Amman (Wadi Srour)				-
MTMSG sessions (2) in Karak and Salt				-
Initial visit to governorate of Ramtha to establish MTMSG				-
MTMSG session (1) in Der-ala, Ghor				-
MTMSG sessions (2) in Wadi Srour clinic (Amman)				-
Total	**41**	**14**	**27**	**82**
MANAGEMENT TRAINING/CAPACITY BUILDING				
Lactation management course, Institute of Child Health, London				-
Session on LAM for trainees from PHI project				-
Total	**-**	**-**	**-**	**-**
PROGRAM DESIGN/SUPERVISION				
Monitoring and supervision visit in Ajloun		34		34
Monitoring and supervisory visits in Amman (2), Ajloun (1) and Madaba (2) = 5 visits	136	34		170
Monitoring and supervisory visits in Amman (9), Zarqa (3), Salt (3), Irbid (2) = 17 visits	511	68		579
Supervisory visits to 4 governorates: Amman (2), Irbid (1), Mafraq (3), Jerash (1)	49	122		170
Monitoring and supervision visits (2) to Karak and Amman (Wadi Srour)	51		51	102
Supervisory visits and follow-up phone calls				-
Monitoring and Supervision visits	127	143	71	341
Strategic Planning Session to establish BF/LAM Center (19 pp)	23	26	13	61
Assessment of primary health care services and needs for BF/LAM training in Aqaba			102	102
Total	**896**	**427**	**237**	**1,559**
MONITORING and EVALUATION				
Design of Quantitative Baseline Survey on IF and LAM in North Sentinel Site (preparation phase)				-
Evaluation of trained health providers knowledge (phone survey)				-
M&E workshop for MCH midwife supervisors (28 participants, 1 day)	81	91	45	217
Use of flip chart and M&E workshop (10 participants)	44	5	6	55
Total	**124**	**97**	**51**	**272**
GRAND TOTAL	**6,831**	**5,508**	**2,022**	**14,361**

Detailed LINKAGES and MOH/MCH LAM Activity Costs Allocated to Study Regions

	Central	North	South	TOTAL
IEC/BCC				
Flip charts on BF and LAM	5,189	5,873	2,896	13,959
Flip chart launch ceremony	659	745	368	1,771
Distribution of flip charts to all MCH centers				-
Presentation at live talk show on BF/LAM	20	23	11	54
Total	**5,868**	**6,641**	**3,275**	**15,785**
POLICY/ADVOCACY				
Workshop on Supervision of Reproductive Health at the MOH level	349	395	195	938
Advocacy meeting with Major of Salt and Director of Salt DOH				-
Advocacy meeting with Director of Health in Ajloun				-
Advocacy Meetings to include LAM Module in DHS Instrument				-
Advocacy session in Salt for Municipality staff (14 participants)				-
Total	**349**	**395**	**195**	**938**
TRAINING on BF and LAM				
BF/LAM course in Salt (16 pp)	2,556	-	-	2,556
BF/LAM course in Mafraq (15 pp)	-	2,235	-	2,235
BF/LAM course in Amman (14 pp)	2,276	-	-	2,276
BF/LAM course in Ajloun (16 pp)	-	2,801	-	2,801
BF/LAM course in Salt (14 pp)	2,177	-	-	2,177
BF/LAM course in Tafilah (17 pp)	-	-	2,032	2,032
BF/LAM course in Ajloun (25 pp)	-	2,756	-	2,756
BF/LAM course in Madaba (16 pp)	1,745	-	-	1,745
BF/LAM course in Jerash (14 pp)	-	2,096	-	2,096
BF/LAM course in Irbid (23 pp)	-	1,863	-	1,863
BF/LAM course in Salt (18 pp)	1,683	-	-	1,683
BF/LAM course in Ajloun (16 pp)	-	1,875	-	1,875
BF/LAM course in Zarqa (15 pp)	2,396	-	-	2,396
BF/LAM course in Aqaba (16 pp)	-	-	3,661	3,661
BF/LAM course in Amman (Sahab Hospital) (14 pp)	1,715	-	-	1,715
ToT on BF/LAM (15 participants)	7,029	4,017	4,017	15,062
Training on use of BF/LAM flipchart	4,679	584	585	5,848
1-day workshops in Irbid and Zarqa to discuss BF, LAM, M&E and MTMSG	40	40	-	80
BF/LAM refresher workshops in 5 governorates	184	552	184	921
Total	**26,480**	**18,819**	**10,479**	**55,779**
MOTHER-TO-MOTHER SUPPORT GROUP ACTIVITIES				
MTMSG training of trainers (24 participants)	3,252	1,084	2,168	6,504
MTMSG sessions (2) in Ajloun	-	-	-	-
MTMSG sessions (3) in Ma'an,Tafilah,and Amman (Wadi Srour)	2	-	4	6
MTMSG sessions (2) in Karak and Salt	-	-	-	-
Initial visit to governorate of Ramtha to establish MTMSG	-	-	4	4
MTMSG session (1) in Der-ala, Ghor	-	-	-	-
MTMSG sessions (2) in Wadi Srour clinic (Amman)		-	-	-
Total	**3,254**	**1,084**	**2,175**	**6,513**
MANAGEMENT TRAINING/CAPACITY BUILDING				
Lactation management course, Institute of Child Health, London	1,083	1,226	605	2,914
Session on LAM for trainees from PHI project	129	146	72	346
Total	**1,212**	**1,372**	**676**	**3,260**
PROGRAM DESIGN/SUPERVISION				
Monitoring and supervision visit in Ajloun	-	34	-	34
Monitoring and supervisory visits in Amman (2), Ajloun (1) and Madaba (2) = 5 visits	136	34	-	170
Monitoring and supervisory visits in Amman (9), Zarqa (3), Salt (3), Irbid (2) = 17 visits	515	69	-	584
Supervisory visits to 4 governorates: Amman (2), Irbid (1), Mafraq (3), Jerash (1)	68	170	-	238
Monitoring and supervision visits (2) to Karak and Amman (Wadi Srour)	51	-	51	102
Supervisory visits and follow-up phone calls	-	-	-	-
Monitoring and Supervision visits	199	225	111	535
Strategic Planning Session to establish BF/LAM Center (19 pp)	490	555	274	1,318
Assessment of primary health care services and needs for BF/LAM training in Aqaba	-	-	1,162	1,162
Total	**1,459**	**1,086**	**1,597**	**4,143**
MONITORING and EVALUATION				
Design of Quantitative Baseline Survey on IF and LAM in North Sentinel Site (preparation ph	-	3,083	**-**	3,083
Evaluation of trained health providers knowledge (phone survey)	269	305	**150**	724
M&E workshop for MCH midwife supervisors (28 participants, 1 day)	341	386	**190**	917
Use of flip chart and M&E workshop (10 participants)	4,678	585	**585**	5,847
Total	**5,288**	**4,358**	**925**	**10,571**
GRAND TOTAL	**43,909**	**33,755**	**19,323**	**96,988**

Percentage of Each Activity Allocated to Study Regions				% Allocated to BF and LAM indicators	
	Central	North	South	BF	LAM
IEC/BCC					
Flip charts on BF and LAM	37%	42%	21%	20%	80%
Flip chart launch ceremony	37%	42%	21%	20%	80%
Distribution of flip charts to all MCH centers	37%	42%	21%	20%	80%
Presentation at live talk show on BF/LAM	37%	42%	21%	20%	80%
POLICY/ADVOCACY					
Workshop on Supervision of Reproductive Health at the MOH level	37%	42%	21%	50%	50%
Advocacy meeting with Major of Salt and Director of Salt DOH	100%	0%	0%	50%	50%
Advocacy meeting with Director of Health in Ajloun	0%	100%	0%	50%	50%
Advocacy Meetings to include LAM Module in DHS Instrument	37%	42%	21%	-	100%
Advocacy session in Salt for Municipality staff (14 participants)	100%	0%	0%	50%	50%
BF/LAM TRAINING					
BF/LAM course in Salt (16 pp)	100%	0%	0%	70%	30%
BF/LAM course in Mafraq (15 pp)	0%	100%	0%	70%	30%
BF/LAM course in Amman (14 pp)	100%	0%	0%	70%	30%
BF/LAM course in Ajloun (16 pp)	0%	100%	0%	70%	30%
BF/LAM course in Salt (14 pp)	100%	0%	0%	70%	30%
BF/LAM course in Tafilah (17 pp)	0%	0%	100%	70%	30%
BF/LAM course in Ajloun (25 pp)	0%	100%	0%	70%	30%
BF/LAM course in Madaba (16 pp)	100%	0%	0%	70%	30%
BF/LAM course in Jerash (14 pp)	0%	100%	0%	70%	30%
BF/LAM course in Irbid (23 pp)	0%	100%	0%	70%	30%
BF/LAM course in Salt (18 pp)	100%	0%	0%	70%	30%
BF/LAM course in Ajloun (16 pp)	0%	100%	0%	70%	30%
BF/LAM course in Zarqa (15 pp)	100%	0%	0%	70%	30%
BF/LAM course in Aqaba (16 pp)	0%	0%	100%	70%	30%
BF/LAM course in Amman (Sahab Hospital) (14 pp)	100%	0%	0%	70%	30%
ToT on BF/LAM (15 participants)	47%	27%	27%	70%	30%
Training on use of BF/LAM flipchart	80%	10%	10%	20%	80%
1-day workshops in Irbid and Zarqa to discuss BF, LAM, M&E and MTMSG	50%	50%	0%	70%	30%
BF/LAM refresher workshops in 5 governorates	20%	60%	20%	70%	30%
MOTHER-TO-MOTHER SUPPORT GROUPS					
MTMSG training of trainers (24 participants)	50%	17%	33%	90%	10%
MTMSG sessions (2) in Ajloun	0%	100%	0%	90%	10%
MTMSG sessions (3) in Ma'an,Tafilah,and Amman (Wadi Srour)	33%	0%	67%	90%	10%
MTMSG sessions (2) in Karak and Salt	50%	0%	50%	90%	10%
Initial visit to governorate of Ramtha to establish MTMSG	0%	0%	100%	90%	10%
MTMSG session (1) in Der-ala, Ghor	0%	100%	0%	90%	10%
MTMSG sessions (2) in Wadi Srour clinic (Amman)	100%	0%	0%	90%	10%
MANAGEMENT TRAINING/CAPACITY BUILDING					
Lactation management course, Institute of Child Health, London	37%	42%	21%	70%	30%
Session on LAM for trainees from PHI project	37%	42%	21%	0%	100%
PROGRAM DESIGN/SUPERVISION					
Monitoring and supervision visit in Ajloun	0%	100%	0%	0%	100%
Monitoring and supervisory visits in Amman (2), Ajloun (1) and Madaba (2)	80%	20%	0%	0%	100%
Monitoring and supervisory visits in Amman (9), Zarqa (3), Salt (3), Irbid (2)	88%	12%	0%	0%	100%
Supervisory visits to 4 governorates: Amman (2), Irbid (1), Mafraq (3), Jerash (1)	29%	71%	0%	0%	100%
Monitoring and supervision visits (2) to Karak and Amman (Wadi Srour)	50%	0%	50%	0%	100%
Supervisory visits and follow-up phone calls	37%	42%	21%	0%	100%
Monitoring and Supervision visits	37%	42%	21%	0%	100%
Strategic Planning Session to establish BF/LAM Center (19 pp)	37%	42%	21%	50%	50%
Assessment of primary health care services and needs for BF/LAM training in Aqaba	0%	0%	100%	50%	50%
MONITORING and EVALUATION					
Design of Quantitative Baseline Survey on IF and LAM in North Sentinel Site (preparation p	0%	100%	0%	0%	100%
Evaluation of trained health providers knowledge (phone survey)	37%	42%	21%	0%	100%
M&E workshop for MCH midwife supervisors (28 participants, 1 day)	37%	42%	21%	0%	100%
M&E workshop (10 participants)	80%	10%	10%	20%	80%

II. Target Population Data by Region

Pregnant and Postpartum Women at MCH Centers in Year 2002 (new registered only)*

	# of Pregnant Women	# of Postpartum Women	TOTAL
NORTH			
Irbid	4,631	1,038	5,669
N. Agwar	1,360	521	1,881
N. Badia	396	63	459
Ramtha	734	162	896
Koura	1,358	511	1,869
Mafraq	868	103	971
Bani Kinaneh	1,264	850	2,114
Jerash	841	180	1,021
Ajloun	2,242	571	2,813
Sub Total - NORTH	**13,694**	**3,999**	**17,693**
CENTER			
Balqa	1,910	452	2,362
Zarqa	3,137	773	3,910
S. Shouna	646	283	929
Amman	4,567	1,794	6,361
Dir Ella	1,027	528	1,555
East Amman	2,362	459	2,821
Madaba	1,599	528	2,127
Sub Total - CENTER	**15,248**	**4,817**	**20,065**
SOUTH			
Tafileh	974	364	1,338
Aqaba	391	130	521
Karak	2,109	461	2,570
Maan	1,192	421	1,613
Sub Total - SOUTH	**4,666**	**1,376**	**6,042**
GRAND TOTAL	**33,608**	**10,192**	**43,800**

* Data Source: MOH Contraceptive Logistics

III. LAM Indicator Data by Region

LAM User Rate Calculations - NORTH
Data Source: MOH Contraceptive Logistics System
HD=Health Directorate

December-01	Irbid HD	Koura HD	Bani Kinana HD	Ramtha HD	North Agwar HD	Ajloun	Jerash	Mafraq & Badia	TOTAL
Condom	101	20	22	19	32	17	18	62	291
Depoprovera	15	0	0	0	12	3	3	9	42
Femulen	0	0	0	0	0	0	0	0	0
IUD	109	0	11	23	26	25	0	21	215
LAM	5	0	0	0	1	7	5	0	18
Lo-femenal	113	21	27	34	35	16	17	64	327
Microgynon	0	0	0	0	0	0	0	0	0
Norplant	0	0	0	0	0	0	0	0	0
Ovrette	114	19	17	14	35	16	17	53	285
VFT	0	0	0	0	0	0	0	0	0
Total	457	60	77	90	141	84	60	209	1178
LAM User Rate	1.09%	0.00%	0.00%	0.00%	0.71%	8.33%	8.33%	0.00%	1.53%
CYP									5

December-02	Irbid HD	Koura HD	Bani Kinana HD	Ramtha HD	North Agwar HD	Ajloun	Jerash	Mafraq & Badia	TOTAL
Condom	103	22	43	25	29	27	18	76	343
Depoprovera	15	0	0	3	10	2	1	9	40
Femulen	0	0	0	0	0	0	0	0	0
IUD	154	19	15	49	52	17	0	22	328
LAM	3	31	42	0	10	12	18	3	119
Lo-femenal	88	26	37	39	28	19	9	62	308
Microgynon	0	0	0	0	0	0	0	0	0
Norplant	0	0	0	0	0	0	0	0	0
Ovrette	102	14	25	22	31	24	9	68	295
VFT	0	0	0	0	0	0	0	0	0
Total	465	112	162	138	160	101	55	240	1433
LAM User Rate	0.65%	27.68%	25.93%	0.00%	6.25%	11.88%	32.73%	1.25%	8.30%
CYP									30

LAM User Rate Calculations - SOUTH
Data Source: MOH Contraceptive Logistics System

HD=Health Directorate

December-01	Karak HD	Tafileh HD	Maan HD	Aqaba HD	TOTAL
Condom	41	17	26	16	**100**
Depoprovera	18	6	6	2	**32**
Femulen	0	0	0	0	**0**
IUD	42	20	2	0	**64**
LAM	25	7	1	1	**34**
Lo-femenal	59	15	31	25	**130**
Microgynon	0	0	0		**0**
Norplant	0	0	0		**0**
Ovrette	75	24	34	17	**150**
VFT	0	0	0		**0**
Total	**260**	**89**	**100**	**61**	**510**
LAM User Rate	**9.62%**	**7.87%**	**1.00%**	**1.64%**	**6.67%**
CYP					9

December-02	Karak HD	Tafileh HD	Maan HD	Aqaba HD	TOTAL
Condom	62	23	28	17	**130**
Depoprovera	16	3	5	2	**26**
Femulen	0	0	0	0	**0**
IUD	33	13	5	0	**51**
LAM	10	23	18	1	**52**
Lo-femenal	58	28	40	13	**139**
Microgynon	0	0	0	0	**0**
Norplant	0	0	0	0	**0**
Ovrette	67	25	18	15	**125**
VFT	0	0	0	0	**0**
Total	**246**	**115**	**114**	**48**	**523**
LAM User Rate	**4.07%**	**20.00%**	**15.79%**	**2.08%**	**9.94%**
CYP					13

LAM User Rate Calculations - CENTER
Data Source: MOH Contraceptive Logistics System
HD=Health Directorate

December-01	Amman HD	Wadi Sroor	East Amman HD	Madaba HD	Zarqa HD	Balqa HD	South Shuna HD	Dir Alla HD	TOTAL
Condom	137	15	51	17	126	82	3	21	**452**
Depoprovera	13	0	3	3	15	3	9	4	**50**
Femulen	0	0	0	0	0	0	0	0	**0**
IUD	80	14	19	2	89	48	5	11	**268**
LAM	58	0	3	11	2	3	1	9	**87**
Lo-femenal	114	2	84	44	118	39	11	8	**420**
Microgynon	0	0	0	0	0	0	0	0	**0**
Norplant	0	0	0	0	0	0	0	0	**0**
Ovrette	82	1	61	16	71	37	17	15	**300**
VFT	0	0	0	0	0	0	0	0	**0**
Total	484	32	221	93	421	212	46	68	1577
LAM User Rate	11.98%	0.00%	1.36%	11.83%	0.48%	1.42%	2.17%	13.24%	5.52%
CYP for LAM									22

December-02	Amman HD	Wadi Sroor*	East Amman HD	Madaba HD	Zarqa HD	Balqa HD	South Shuna HD	Dir Alla HD	TOTAL
Condom	153		42	12	127	86	2	19	**441**
Depoprovera	9		5	2	22	3	6	3	**50**
Femulen	0		0	0	0	0	0	0	**0**
IUD	111		17	3	107	48	3	2	**291**
LAM	94		2	16	23	13	0	26	**174**
Lo-femenal	139		69	13	125	39	5	11	**401**
Microgynon	0		0	0	0	0	0	0	**0**
Norplant	0		0	0	0	0	0	0	**0**
Ovrette	100		46	10	136	41	22	31	**386**
VFT	0		0	0	0	0	0	0	**0**
Total	606	0	181	56	540	230	38	92	1743
LAM User Rate	15.51%	#DIV/0!	1.10%	28.57%	4.26%	5.65%	0.00%	28.26%	9.98%
CYP for LAM									44

* Wadi Sroor data included with Amman HD Data

Annex C: List of MCH Centers in Year 2002

Amman Health Directorate

1. Abu-Nseir (Amman)
2. Eastern Al-Weibdeh
3. Jabal Al-Hussein
4. Jabal Al-Naser
5. Na'or
6. Northern Al-Hashmi
7. Al-Amira Basma (Amman)
8. Al-Tatweer Al-Hadari (Marka)
9. Al-Manara
10. Al-Taj
11. Al-Hilal
12. Al-Odeh
13. Wadi Al-Seir
14. Marj Al-Hamam
15. Al-Mahatta
16. Um-Al-Basateen
17. Sweileh
18. Al-Nuzha
19. Al-Nathif
20. Al-Bassah
21. Dahiat Al-Hussein (Amman)
22. Tabarbour
23. Al-Hashmiyeh (Amman)
24. Jabal-Al-Jofeh
25. Badr
26. Al-Zuhoor
27. Hisban (Amman)
28. Al-Rawdah (Amman)
29. Wadi Sroor (Amman)
30. Safh Al-Nuzha

East Amman Health Directorate

31. Sahab
32. Al-Jiza
33. Entel
34. Nuzhat Sahab
35. Al-Lubban

36. Al-Muwaqar
37. Al-Faisaliya (East Amman)
38. Al-Nqairah
39. Um-Al-Amad
40. Rajim Al-Shami
41. Abu-Alanda
42. Kharibet Al-Souk
43. Al-Quweismeh
44. Um-Quseir (Muqablin)
45. Um-Nuwarah
46. Al-Juwaideh
47. Al-Rmeil
48. Al-Taybeh (East Amman)
49. Khoshafiyeh Al-Dabaybeh
50. Al-Mustaneda
51. Eastern Thahiba

Ma'Daba Health Directorate

52. Thiban
53. Eastern Ma'Daba
54. Western Ma'Daba (Al-Riyadi)
55. Ma'Daba Camp
56. Mleih
57. Jreineh Al-Shawabkeh
58. Ma'in
59. Hanina (Ma'Daba)
60. Al-Areedh
61. Al-Faisaliyeh (Ma'Daba)
62. Southern Ma'Daba
63. Lub

Zarqa Health Directorate

64. Al-Azraq
65. Southern Al-Rusayfeh
66. Al-Mshirfeh (Zarqa)
67. Al-Taribi
68. Wadi Al-Hajar
69. Al-Zawahreh
70. Hay Al-Amir Moh'd
71. Hay Al-Amir Abadía
72. Iskan Al-Amir Talal (Yajooz)
73. Jabal Al-Amir Faisal
74. Northern Al-Rusayfeh
75. Al-Tatweer Al-Hadari (Al-Naqab)
76. Al-Dhalil

77. Beirin
78. Al-Sukneh
79. Iskan Al-Hashmiyeh
80. Al-Hashmiyeh (Zarqa)
81. Al-Rashid (Zarqa)
82. Um-Al-Sleih
83. Eastern Al-Hallabat
84. Awajan
85. Al-Zarqa Al-Jadidah
86. Hay Al-Amir Al-Falah
87. Western Al-Hallabat
88. Hay Al-Hussein (Shabib)
89. Jabal Tareq
90. Al-Amir Hamza
91. Abu-Sayyah

Balqa Health Directorate

92. Al-Baqee
93. Ein Al-Basha
94. Zay
95. Al-Salt (Al-Riyadh)
96. Wadi Al-Akrad
97. Al-Salalem
98. Al-Manshiyeh (Balqa)
99. Mahes
100. Al-Mudari
101. Abu-Nseir (Balqa)
102. Al-Fihes
103. Um-Juza
104. Al-Uazidiyeh
105. Eira
106. Eira & Yarqa
107. Salhoub
108. Irmimin
109. Safout
110. Al-Sbeihi
111. Allan
112. Eastern Bayoudah
113. Al-Salihi
114. Al-Salalem Al-Olwi

Dir Alla Health Directorate

115. Ma'di
116. Dir Alla
117. Northern Al-Twa'l (Al-Rabee)

118. Southern Al-Twa'l (Al-Dayat)
119. Dirar Ibn-Al-Azwar
120. Al-Balawneh
121. Khazma
122. Al-Riyadi (Dir Alla)

South Shuna Health Directorate

123. Southern Al-Shuna
124. Al-Jofa
125. Al-Rawdah (South Shuna)
126. Al-Karameh
127. Sweimeh
128. Al-Rammah
129. Al-Mishrifa (South Shuna)

Irbid Health Directorate

130. Al-Sareeh
131. Kufur Youba
132. Ibn Sina (Al-Rashid)
133. Dahiat Al-Hussein (Al-Tadribi)
134. Irbid
135. Al-Bareha
136. Hanina (Irbid)
137. Al-Zahrawi
138. Hakma
139. Ala'l
140. Beit Ras
141. Sa'l
142. Al-Mugayer
143. Bushra
144. Kitem
145. Edoon
146. Erhaba
147. Dir Yousif
148. Al-Mazar al-Shamali
149. Enaba
150. Beit Yafa
151. Al-Taybeh (Irbid)
152. Asma
153. Qmim
154. Kufur Asa'd
155. Soum
156. Doukoura
157. Foara

158. Al-Neima
159. Al-Husun
160. Hawa'rah
161. Al-Razi (Irbid)
162. Al-twa'l
163. Yarmouk University
164. Dir Al-Sa-Nah
165. Al-Farouq
166. Zahar
167. Kufur Jayez

North Agwar Health Directorate

168. Waqa's
169. Northern Al-Shuna
170. Al-Manshiyeh (North Agwar)
171. Al-Masharea
172. Abu-Seido
173. Kriyma
174. Sheik Hussein

Ramtha Health Directorate

175. Al-Ramtha
176. Western Al-Ramtha
177. Northern Al-Ramtha
178. Southern Al-Ramtha
179. Al-Shajarah
180. Al-Bowaydah
181. Amrawa
182. Northern Al-Turrah
183. Al-Thneibeh
184. Southern Al-Turrah

Kora Health Directorate

185. Dir Abi-Said
186. Kufur Al-Ma'
187. Al-Ashrafiyeh
188. Kufur Rakeb
189. Beit Eidis
190. Kufur Awan
191. Kufur Abeil
192. Samoa
193. Jdeita
194. Jenin Al-Saf'a
195. Tibna

196. Jiffien
197. Izma’l

Bani Kinana Health Directorate

198. Sama Al-Rousan (Al-Yarmouk)
199. Harima
200. Yabla
201. Kufur Soum
202. Um Qeis
203. Al-Mukaiba Al-Fuqa (Himma Ordoniya)
204. Saham
205. Harta
206. Samar
207. Kharja
208. Harem
209. Malka
210. Akraba
211. Al-Mansoura (Bani Kinana)
212. Abdar
213. Al-Rafeed
214. Hibras
215. Al-Mukaiba Al-Tahta

Ajloon Health Directorate

216. Jalón
217. Al-Amir Hasan (Kufuranjah)
218. Anjara
219. Sakra
220. Al-Hashmiyeh (Jalón)
221. Ein Jana
222. Arjan
223. Khirbet Al-Wahadneh
224. Rajeb
225. Ba’on
226. Halawa
227. Abeen Ableen
228. Osara
229. Ballas
230. Rasoon
231. Esfeeneh
232. Al-Istiqlal

Jarash Health Directorate

233. Jarash

234. Soof
235. sakeb
236. Al-Razi (Jarash)
237. Barma
238. Qafqafa
239. Balila
240. Al-Mastaba
241. Jobbah
242. Kufur Khil
243. Mars'a
244. Nahla
245. Al-Qadisiyeh (Jarash)

Mafraq Health Directorate

246. Rihab
247. Al-Khalidiyeh
248. Al-Mafraq
249. Sama Al-Sarha'n
250. Mgayer Al-Sarha'n
251. Al-Mansoura (Mafraq)
252. Balama
253. Al-Baej
254. Al-Za'tari
255. Al-Hamra
256. Al-Harsh
257. Hayyan Al-Ruwaibedh
258. Manshiyeh Bani Hasan
259. Al-Dajaniah
260. Hay Al-Hussein Al-Riyadi (Mafraq)
261. Khalid Ibn Al-Waleed
262. Hosha
263. Um Al-Sareb
264. Al-Hay Al-Janobi

Badia Shamalia Health Directorate

265. Badia Shamaliyeh
266. Um Al-Qutain (Badia Shamalia)
267. Sabha (Badia Shamalia)
268. Dir Al-Kahf (Badia Shamalia)
269. Al-Ashrafiyeh (Badia Shamalia)
270. Al-Safawi (Badia Shamalia)
271. Al-Ruwaishid (Badia Shamalia)
272. Rawdat Al-Amira Basma (Badia Shamalia)
273. Um-Al-Jima'l (Badia Shamalia)
274. Al-Koum Al-Ahmar (Badia Shamalia)
275. Amra & Omaira (Badia Shamalia)

Kayak Health Directorate

276. Al-Rabbeh
277. Al-Karak Al-Riyadi
278. Southern Al-Mazar
279. Al-Qatraneh
280. Ay
281. Al-Yaroot
282. Mohye
283. Al-Marj (Tadribi)
284. Ghor Al-Safi
285. Talal
286. Amr'a
287. Moa'b
288. Majra
289. That Ras
290. Mu'ta
291. Adar
292. Al-Taybeh (Karak)
293. Al-Qasr
294. Al-Sumakiyeh
295. Faqoa
296. Al-Jad'a
297. Ghor Al-Mazr'Ah
298. Al-Gwayyer
299. Rakin
300. Al-Iraq
301. Al-Adnaniyah
302. Al-Jdaydeh
303. Manishiyeh Abu-Hammor
304. Al-Shahabiyah
305. Batir
306. Sarfa

Karak Health Directorate

307. Wadi Al-Karak
308. Al-Karak Al-tadribi
309. Soul
310. Kathrabbah
311. Ghor Al-Haditha
312. Dumnah
313. Al-Husseiniyeh (Karak)

Tafeela Health Directorate

314. Al-tafeela
315. Bsaira
316. Al-Tafeela Al-Shamel
317. Al-Eiss
318. Al-Qadisiyeh
319. Al-Hassa
320. Ein Al-Baida
321. Eima
322. Sanfaha
323. Garandal
324. Al-Mansoura (Tafeela)
325. Abu-Bana
326. Erwaim
327. Abel
328. Wad Zaid

Ma'n Haealth Directorate

329. Ma'n
330. Al-Shobak
331. Wadi Mousa
332. Southern Al-Taybeh
333. Ayl
334. Al-Husseiniyeh (Ma'n)
335. Al-Mraiga
336. Al-Amira Rahma
337. Al-Jafer
338. Al-Abdaliyah
339. Al-Manshiyeh (Ma'n)
340. Western Ma'n
341. Athroh

Aqaba Health Directorate

342. Al-Qwaira
343. Al-Dissa
344. Al-Khaza'n
345. Al-Amira Basma (Aqaba)
346. Al-Balda Al-Qadeema
347. Al-Aqaba