Final Evaluation of the

GAVI Alliance Health System Strengthening Project (2007-2013) in the Republic of Yemen

Final Report

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April 14, 2014

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Acknowledgements

The evaluation team would like to thank the entire PHC sector of the MoPHP for their most helpful cooperation and support during the desk and field analysis. From the Deputy Minister to the department heads, MoPHP staff supported this effort through providing interviews, data and reports. HSS program management staff, including IMU staff, facilitated all coordination, technical and logistic aspects of the evaluation. EPI, especially, was helpful during both the field survey and desk review, facilitating communication and providing documents and statistics. In the field, health office staff, especially EPI coordinators, of the nine targeted governorates and the 19 targeted districts, were tremendously helpful in coordinating and facilitating the fieldwork. Development partner staff also generously took time out to assist in this effort. The evaluation would not have been possible without such generous support.

List of Acronyms

ANC	Antenatal care
APR	Annual Progress Report
ARI	Acute Respiratory Infection
CHV	Community Health Volunteer
CSO	Central Statistical Organization
DFID	Department for International Development
DG	Director General
DP	Development partner
DHO	District Health Office
DRHP	Dhamar Rural Health Project
EOP	End of project
EPI	Expanded Program on Immunization
EC	European Commission
FP	Family planning
GAVI	Global Alliance for Vaccines and Immunization
GHO	Governorate Health Office
GOY	Government of Yemen
HDI	Human Development Index
HF	Health Facility
HMIS	Health Management Information System
HPP	Health and Population Project
HSCC	Health Sector Coordination Committee
HSSCC	Health System Strengthening Coordination Committee
HSS	Health System Strengthening
HW	Health worker
ICC	Inter-Agency Coordinating Committee for Immunization
IMCI	Integrated Management of Childhood Illnesses
IMU	Integrated Management Unit
ISS	Immunization Services Support
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MoF	Ministry of Finance
MoPHP	Ministry of Public Health and Population
MoPIC	Ministry of Planning and International Cooperation
NGO	Non Governmental Organization
Penta	Pentavalent vaccine (tetanus, diphtheria, pertussis, hepatitis B and H. Influenza B)
PHC	Primary Health Care
PNC	Postnatal care
PRSP	Poverty Reduction Strategy Paper
RH	Reproductive Health
ROY	Republic of Yemen
SPSS	Statistical Package for Social Sciences
SWAp	Sector Wide Approach
TOR	Terms of Reference
TT	Tetanus toxoid
UNICEF	United Nations Children's Fund
U5MR	Under five mortality rate
U5YO	Under five year old
WB	World Bank
WCBA	Women of Childbearing Age
WHO	World Health Organization
YER	Yemeni rial

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EXECUTIVE SUMMARY

HSS description and objectives

The GAVI HSS project was implemented between October 2007 and November 2013. Its goal was to improve the performance, efficiency and reach of district health systems, through initiation of a model that integrated the resources and operations of vertical programs, that complemented fixed site health care provision with outreach, and that utilized results-based motivational systems. The ultimate goal was to improve MDG performance nation-wide in reducing child and maternal mortality, and to halt and reverse the spread of malaria and TB. The main strategy of GAVI HSS was to strengthen the district health care system, primarily through i) establishing a system of routine outreach based on micro-planning/other best practices that maximize the use of all available resources, and through ii) the functional integration of vertical programs for improved management and support of health workers at the district level and below. It was implemented directly by the MoPHP. It consisted of four components: integrated outreach, micro planning at district level, integrated supervision, and CHV training and deployment.

Evaluation objectives and methodology

1. The overall objective of the final evaluation is to provide solid evidence about the relevance and effectiveness of the HSS Project. The HSS final evaluation took place between January 21 and April 7, 2014. The evaluation methodology consisted of both a desk review and a field survey. The field survey covered 9 governorates and 19 districts, within which 615 respondents were interviewed:over 336 female, and 275 male. Survey districts were selected according to performance in Reproductive Health and IMCI outreach coverage – half low performers and half high performers. Health facilities, community health volunteers (CHVs) and communities were randomly selected, as were households within communities. A total of 9 survey instruments were utilized, and 9 different types of respondents were interviewed, including HW at peripheral facilities, outreach teams, DHO and GHO staff, CHVs and communities.

The evaluation examined each of the four project components in detail, as well as quality of project processes, inputs, outcomes and outputs. It also assessed access/coverage, effectiveness, efficiency, relevance, impact and sustainability.

Findings

Findings of the final evaluation are highly positive. HSS is shown to have achieved positive initial achievements, and the building of a very strong institutional basis for integration of vertical programs, of integrated outreach, and a CHV program. It substantially strengthens the credibility of the argument that a **two-pronged**

approach of outreach and HF-based services is necessary for service provision in a poverty and geographic environment like Yemen's. Coverage, efficiency and effectiveness are strong across most indicators, outreach and CHV services are valued and utilized by communities, and many of the bases for sustainability have been put in place.

Having said this, not all project targets have been achieved. Also, there is high variability among districts in terms of coverage and efficiency, demonstrating the need for further fine-tuning of the HSS components and of its monitoring system. Finally, in order for this effort to be transformed from a 'project' into an integral system of the Ministry, and a long term service modality, further policy and budgetary measures will need to be put in force, as well as guidelines for development partners.

In summary, it can be said that the extent of 'health system strengthening' that occurred in this phase of the HSS was primarily 1) introducing a highly workable model, b) building a good level of consensus and experience within the MoPHP systems and development partners in implementing the model, and c) improving the skills level of health staff, especially in IMCI, micro-planning and management. Converting these building blocks into a 'system' of the Ministry, with all the policy, budgetary, and structural changes this requires, will be a task of the second phase. The evaluation team considers the achievements of this first phase to be reasonable, especially considering the political and budgetary environment prevailing between 2010 and 2013. Any weaknesses in implementation should be treated as lessons for the second phase to be used to further improve effectiveness and impact.

Recommendations

The evaluation team has made eight main recommendations related to:

- Scaling up
- Strengthening integrated outreach coverage and impact
- Expansion of the service package
- Design of written protocols
- Targeting
- Intensification of project management
- CHV program strengthening
- Integrated supervision

One of the challenges HSS will face for sustainable long-term integration of PHC services is to conclusively demonstrate the superiority of the integrated outreach methodology (in terms of quality, efficiency, impact) in a way that is convincing to all stakeholders, including vertical programs and all MoPH sectors, as well as the Ministry of Finance. There is very good reason to believe that this model can show such results, based on the findings of this evaluation. The second phase should strive to make this case conclusive.

CHAPTER 1: BACKGROUND

I. Project Description

The Ministry of Public Health and Population (MoPHP) received a grant from GAVI for Health System Strengthening (HSS) focused on strengthening its District Health System. The goal of the support was to improve the performance, efficiency and reach of district health systems, through initiation of a model that integrated the resources and operations of vertical programs, that complemented fixed site health care provision with outreach, and that utilized results-based motivational systems. The ultimate goal was to improve MDG performance nation-wide in reducing child and maternal mortality, and to halt and reverse the spread of malaria and TB.

The GAVI HSS support was originally provided for 39 months (October 2007 to December 2010),withtotal funding of US$ 6.5 million. Due to the national situation leading up to the events of 2011 and 2012, the project received a budget neutral extension, and was ultimately completed in November 2013. The core of the HSS Project was implemented in 64 districts in 17 governorates, but with some components implemented nation-wide.

A. OBJECTIVES AND EXPECTED RESULTS OF GAVI HSS SUPPORT

The GAVI HSS project has four main objectives:

1) To improve the accessibility, quality and utilization of district health systems to underserved populations, through the provision of targeted, integrated, and results-based outreach interventions, and through strengthening and creating demand for the fixed site services that support them.

2) To improve the efficiency and coordination of vertical programs for greater impact and sustainability through their functional integration;

3) To improve central, governorate, and district level managerial systems to support these two process of outreach and integration;

4) To develop through piloting in 64 districts, and building national consensus for country-wide implementation of a results-based model of district health service provision that incorporates the core elements of outreach and integration, that utilizes underutilized female health staff, that encourages and motivates health workers and district and governorate level local authorities to improve service provision in high priority areas, that efficiently utilizes all available resources in-country, and that attracts greater funding into the sector.

According to the project document, it was expected that by end of project (EOP), the integrated outreach system will have been successfully implemented in 64 districts, and supported by policy measures and by a strengthened management and health information system at all levels of the Ministry. Improved coverage and impact of immunization and other essential health services will have been accomplished. By 2010, the model will have been adjusted through experience, presented to all major HSS stakeholders, and used as the road map for the national health service provision strategy to be implemented within the following five year sectorial development plan, and supported by donors through shared national programming.

Other key elements of the design is that it will utilize the underutilized female health staff, will encourage and motivate health workers and district and governorate level local authorities to improve service provision in high priority areas, and will attract greater funding into the sector.

B. STRATEGIC APPROACH OF GAVI HSS

The main strategy of GAVI HSS was to strengthen the district health care system, primarily through i) establishing a system of routine outreach based on micro-planning/other best practices that maximize the use of all available resources, and through ii) the functional integration of vertical programs for improved management and support of health workers at the district level and below. This strategy was designed to supplement the currently in place fixed site approach, and to replace the fragmented and vertical training, supervision and service provision systems. The institutionalization of an outreach mechanism at a reasonable cost was expected to both i) improve population coverage, and ii) create demand for and utilization of health facility (HF) based services. The strategy utilized cost-effectiveness and management lessons learned from the EPI outreach experience, and built on these, using an integrated 'scale across' methodology to reach populations currently un-reached by fixed site services. These two main components of outreach and integration were designed to complement and support each other. Demonstration of the outcome of this dual approach was expected to provide a clear and consistent road map for a national service provision strategy, able to be supported on a national scale by donors within the framework of the next five-year development plan.

C. COUNTRY AND HEALTH SECTOR CONTEXT

The project was implemented during a time of great change and tumult in Yemen's history. Beginning in 2009, the country was beginning to experience severe budgetary constraints, which impinged on its ability to provide services in its various sectors. In 2011, Yemen entered into a period of popular uprisings and political conflict, including a secessionist movement, as part of the 'Arab Spring', which culminated in a change to a transitional government, and to engagement in a National Dialogue process, aimed at reconciliation of national differences. This process has just been completed, and has led to the expected establishment of a

federal system within Yemen. Constitutional changes and new Presidential and Parliamentary elections are still pending.

These events have further exacerbated the poverty and need already existing in Yemen. During the time of project implementation, 47% of the population lived under $2 a day, malnutrition affected approximately half of all children under five years of age, food insecurity was high, and Yemen ranked 160 out of 184 on the UNDP Human Development Index (HDI).

It had been expected, at the time the HSS proposal was written that the health system will benefit from policies of the PRSP policies, including"increasing the budget of the health sector, especially for PHC, and supporting various health sector goals such as improving effectiveness, providing good quality and low cost drugs, providing free treatment to the poor, improving the overall organization of health services, controlling common diseases, improving nutrition and maternal and child health, improving health services, and encouraging community participation. "(HSS project document) However, due to the severe and unexpected circumstances described above, many of the outcomes of these policies did not come to pass. The budget of the Ministry has actually decreased during these years, according to verbal sources.These and other changes have had the effect of hampering the overall system within which the project worked. These included, lowered staff morale, increasing poverty, destruction of HF in conflict areas, and cessation of public services in some areas. Thus the supportive context was undermined, creating multiple difficulties in implementing this project. Despite this, the project moved forward. This is exceptional in a time when many project stopped.

II. Evaluation methodology

A. PURPOSE AND OBJECTIVES OF HSS FINAL EVALUATION

Overall objective

The overall objective of the final evaluation is to provide solid evidence about the relevance and effectiveness of the HSS Project. The purpose is to demonstrate results, and to show what works" and "what made/makes the difference" in order to learn from experience and to link evidence to policy and strategic development. The evaluation should be "action oriented". The aim is that the evaluation becomes a learning tool for MoPHP and other stakeholders, makes recommendations to possible adjustments of the policies and strategies, and enables the MoPHP as well as development partners to become fully accountable and cost-effective.

Specific objectives

1) Evaluate the performance of the HSS Project in the period of implementation 2007-2013 against project's objectives and plausibility of achieving goals, and links to achieving MDGs;
2) Evaluate the major interventions implemented by the project namely (the integrated outreach, the integrated PHC training, community health

volunteers' experience, the integrated supervision), focusing on the successes, pitfalls, lessons learned, recommendations for improvement;
3) Evaluate the impact on target population;
4) Assess the sustainability prospects for the project, including the principal sustainability factors;
5) Evaluate partnership in terms of cooperation modalities, harmonization and alignment between the Government and other stakeholders over the same period.

B. OVERVIEW OF METHODOLOGY

The HSS final evaluation took place between January 21 andApril 7, 2014. The evaluation methodology consisted of both a desk review and a field survey, as specified in the terms of reference (TOR). In addition, three feedback sessions were held with HSS stakeholders, in order to guide the evaluation design to best meet stakeholder information needs. Whereas the desk review was essential in provide an independent assessment and verification of project processes and results, and to provide new insights and perspectives, for those key HSS stakeholders involved in the project from the beginning, it was not expected to result in new information per se. The field survey, on the other hand, was expected to result in both verification of national level data, and new data on project functioning.

The evaluation team consisted of an international team leader, a national co-researcher, eight experienced field researchers, a data analyst and a data entry specialist. Please see Annex Afor a complete list of the team members.

The evaluation methodology utilizedto answer the questions posed in the TORincluded a focus on both HSS project *processes* and *results*. This dual focus enabled the evaluation team to identify a 'chain of causation' that linked sufficiency of inputs and processes to the ultimate outputs and outcomes achieved by the project. For example, the quality of IMCI training was assessed, because it is an important factor determining the quality of IMCI service provision, and ultimately child mortality. Similarly, the availability of IMCI drugs during outreach, and the person days allocated for IMCI outreach as a ratio of the population of U5YO children was assessed, as both factors will determine the adequacy of IMCI outreach, and thus its impact on child mortality.

C. EVALUATION TIMELINE

The time line of the evaluation was as follows:

January 21	Desk review begun
January 26	Kickoff meeting (feedback session I) to discuss stakeholder expectations
Jan 27-Feb 9	Desk review, interviews at national level, preparation of field design
February 10	Feedback session II to present and discuss initial desk review findings and proposed field survey methodology
Feb 11-14	Preparation for field survey

February 15	Training for field survey held
February 16	Pilot testing of field methodology, additional training
February 17	Field survey initiated
February 28	Field survey finalized
March 1-20	Cleaning and analysis of data and preparation of draft evaluation report
March 30	Circulation of draft evaluation report
April 7	Feedback session III, to present evaluation findings
April 14	Submission of final report

D. DESK REVIEW

The desk review consisted of semi formal interviews of key HSS stakeholders at the national level, and review of all relevant documents. Interviewswere held with the main stakeholders in the Primary Health Care (PHC) of the MoPHP, including the Deputy Minister for PHC, the HSS project management, a sample of the program staff of the PHC sector involved in the HSS, and other MoPHP staff. Development partners from WHO, the World Bank and UNICEF were also interviewed. Most, but not all interviews sought took place, with those that didn't due to scheduling issues. Please see Annex B for a complete list of those interviewed.

The documents review utilized allavailable key project documents, including progress reports, training manuals, survey reports, systems designed, consultant reports, training manuals, and management and data systems developed by HSS. A sample of training and supervision reports were assessed for quality, a sample of meeting minutes was assessed for decision making processes, and workshop presentations were assessed for content. All data on inputs, costs, and results were sought from the PHC sector and from project staff. Relevant background documents were perused to assess context and policy issues. Studies and project documents from development partners were also sought and utilized. Data on coverage, cost, training, service provision and catchment area statistics were sought in order to answer questions of project reach, efficiency, and sustainability. Please see Annex C for the basic set of documents reviewed. Most, but not all data requested was received.

The desk review began with akickoff meeting, held on January 26. The objectives of this kickoff meeting were to inform the participants of the evaluation methodology, to seek their cooperation, and to seek early feedback from them on their data needs. Participants were the relevant officials and program staff from HSS and from the PHC sector, a sample of GHO participants, and involved or participating development partners. This kickoff meeting resulted in valuable feedback, which was subsequently incorporated into the evaluation design.

A second feedback session was held on February 10, with an expanded group of HSS stakeholders. The purpose of this feedback session was to present initial findings of the desk review, as well as the design of the field survey methodology, and to gain feedback from the participants on both. The presentation of the desk review was

based on completion of approximately 70% of desk review tasks. Some of the essential data had not yet been made available to the consultant, and some interviews had been delayed. As such, the findings presented in this session were expected to be further modified through additional interviews and documents review. The presentation focused on specific HSS components and results rather than the larger picture, because of the need to gain clarity on these specifics. It would have been premature to draw conclusions by that point, so only very broad and conditional conclusions were stated. Participants provided valuable feedback, and their insights, data and clarifications were incorporated into the final draft report. A third session took place on April 7. During this session, the final results of both the field and desk review were presented, with a greater focus on the field findings. Conclusions and recommendations were made, and feedback was taken. This feedback informed the final version of the report.

E. FIELD SURVEY

The field survey was designed based on the objectives outlined in the evaluation TOR. It was refined based on the findings of the desk review, focusing particularly on those areas where there were gaps in the national level data, and where the greatest need for verification existed. The results of the desk analysis suggested that the field analysis should focus on:

- Verification of centrally available data and statistics
- Process, quality and results of integrated outreach
- Process, quality and results of integrated micro-planning and other district planning exercises
- Process, quality and results of integrated supervision of health facilities
- Process, quality and results of the work of community health volunteers
- Impact, sustainability, and efficiency of each of the above topics
- Level and degree of integration of the relevant seven programs
- Gender and other issues affecting access of women
- Client satisfaction
- Lessons learned on each of the above topics

Technical and logistic preparation for fieldworkwas begun in January, and was finalized by February 14. As noted in the above section, the proposed field methodology was presented to HSS stakeholders formally, and their feedback obtained. The feedback, particularly clarifications on some aspects of project implementation at the district level, was helpful in tightening the focus of the evaluation field methodology, so as to be most suitable to the actual situation on the ground.

Interview schedules

The following nine interview schedules were designed and utilized in the field survey. Design and content wasbased on the findings from the desk review, and the main research questions. They have been revised by the field team, and then revised a second time following the piloting exercise. The correspondence of the

Arabic to the English versions has been refined through a series of reviews. The nine interview schedules are as follows:

- Interview Schedule I — Trainees in management course: "Intensive Management Training Program for Health Teams Targeted by HSS" [DHO, GHO]
- Interview Schedule 2:
  A. DHO preparation & use of integrated district micro-plans
  B. DHO experience with integrated outreach
  C. DHO experience with integrated supervision
  D. DHO experience with general integration of services
  E. DHO experience with community health volunteers
- Interview Schedule 3:
  A. GHO preparation & use of integrated district micro-plans
  B. GHO experience with integrated outreach
  C. GHO experience with integrated supervision
  D. GHO experience with general integration of services
- Interview Schedule 4.a — Trainees in course "Integrated training course for health staff IMCI] TARGET: OUTREACH TEAMS
- Interview Schedule 4.b — Trainees in course "Integrated training course for health staff IMCI] TARGET: HW IN HEALTH FACILITIES
- Interview Schedule 5 — Integrated outreach implementation team
- Interview Schedule 8: — HW in HF from targeted integrated outreach areas
- Interview Schedule 9: — CHV – trainees and active volunteers
- Interview Schedule 10: — Men and women from outreach and CHV villages

*[***Note: There is no schedule 6 and 7. Topics from these have been incorporated into other schedules]*

Please see Annex D to view the interview schedules used.

Composition of field team

The field team was all Yemeni and all Arabic speaking. The team consisted of eight experienced field researchers (enumerators), the national co-researcher as team leader of the field survey, a data entry specialist and two drivers. The evaluation team leader provided guidance remotely from Sana'a. All were highly experienced in field research in Yemen. The composition of the field research team was gender balanced (four female and four male researchers) in order to provide cultural access to the full range of desired interviewees. In order to provide the correct balance between health system knowledge and non-bias, two team field researchers were selected for their knowledge and experience of the health system, and the others were selected from outside the public health system, from disciplines relevant to their role.

Sampling procedures

A three stage sampling methodology was used to select 1) governorates, 2) districts, and 3) participants, health facilities and communities within districts. The sampling procedure utilized for the evaluation was designed to gain a fair representation of the managers, health care providers and beneficiaries of the HSS. Sampling was designed to result in the participation of stakeholders in at least one third of

currently functioning HSS governorates, and at least one fourth of HSS districts. Selection of specific governorates was based on the need to include all major socio-geographic areas.

Selection of districts was based primarily on the results of the outreach coverage data calculated during the desk review. The goal was to include equal numbers of high performing and low performing districts in regards to both IMCI and reproductive health (RH) outreach service coverage, in order that lessons could be learned across the spectrum of performance. The results of the 2010 outreach activities were utilized for this calculation, because 2010 was considered the 'fairest' year to assess implementation coverage, given the rapid deterioration of security and governmental services in the ensuring two years. The pool of districts from which the final selection of districts was made was based on 1) security considerations, with 11 districts removed from consideration in order that the field team would not be endangered, given the high level of instability currently present in some areas of Yemen; and 2) the presence of trained community health volunteers (CHV) in those districts, in order that this aspect of the program could be assessed. CHVs were not trained in all districts. Finally, practical considerations for scheduling the maximum number of field visits during the allocated field time caused minor changes to be made in the specific districts selected, without interfering with the criteria for selection.

Within each district the following sampling methodologies were used to ensure coverage of key stakeholders, and non-bias and gender representation in the selection of beneficiaries, CHVs and health facility (HF) staff.

- Within each district, the District Health Office (DHO) and the district level outreach team, if existing, was always selected. [Interview schedules 1, 2, 4a and 5)
- Within each district, a sub-district was selected randomly from a list of sub-districts in which both i) CHVs were trained and ii) integrated outreach took place. The lottery method was used to guarantee random results. An exception was made when choosing Dhamar because despite not having CHVs in place, it was selected because it was considered a unique example of outreach and integration of supervision.
- Following verification with the DHO that these outreach services actually took place, that the CHV existed, and that a HF was open in that sub-district, the HF closest to the CHV in that sub-district was selected, as was the village which the CHV served [interview schedules 4.b, 8, 9 10].
- Governorate level Health Office [GHO] visited if accessible from the survey route. This was judged possible in 6 out of 9 governorates [interview schedule 3].

Final sample obtained

The final sample obtained met the criteria of the methodology with only one exception. Results are as follows:

Table 1: Adherence of field survey to sampling criteria

Sample level	Criteria	Conformity of sample to criteria	Conformity score
Governorate:	≥ 1/3 of all functioning HSS governorates	9/14 = 64%	Conforms
	Representing all socio-geographic areas	All but the eastern areas i.e.Seyoun, Mukullah, Mareb	Conforms with one exception
District and DHO	> ¼ of all functioning HSS districts	19/57 districts = 33%	Conforms
	Fairly represents both high and low performers for IMCI and RH	IMCI high: 5 IMCI low: 5 RH high: 5 RH low: 5 NO EXTREME:2	Conforms
HF	Randomly selected and with outreach carried out in its catchment area	All	Conforms
CHV	One per district where possible	All except Dhamar. Despite having no CHVs, Dhamar was deliberately included due to its unique situation.	Conforms
Beneficiaries of outreach and CHV	Randomly selected from outreach area	All. No CHV in Dhamar, as noted above.	Conforms
Total no. interviewed	400-500	615 respondents in 379 interviews	Conforms

The total sample included the following number of interviews and respondents, calculated by interview type, and gender. A total of 615 stakeholders were interviewed. The gender representation was balanced as much as possible, but inevitably more male than female health workers were interviewed due to their larger numbers in the health offices and health facilities. More women than men were interviewed in the community interviews, in order that women's perspectives would be fairly represented.

Table 2: Stakeholders interviewed in field

Interview schedules	Number of interviews			Number of respondents		
No.	**No of governorates**	**No of districts**	**Total interviews**	**(f)**	**(m)**	**Total**
Schedule 1	8	17	17	12	35	47
Schedule 2	9	18	18	24+	53+	78
Schedule 3	4	NA	4	2	18	20
Schedule 4.a	8	15	15	11	20	31
Schedule 4.b	9	19	20	27	22	49
Schedule 5	8	16	24	23+	36+	62
Schedule 8	9	19	20	33	34	67
Schedule 9	8	15	18	18	0	18
Schedule 10	9	19	243	186	57	243
Total			**379**	**336+**	**275+**	**615**

DHO and GHO interviews
Intended respondents (by name or by position) at the DHO and GHO level were selected in advance, and their participation requested. A calculation of how many of the intended respondents were actually interviewed was made. Results show a level of attendance of requested participants of over 90% overall, thus ensuring the validity and representativeness of the sample.Please see Annex E for more detail regarding the sampling methodology and the final selection of districts made.

Brief description of health facilities, and communities surveyed
Twenty health facilities were visited. Distance from the district center varied from zero i.e. located in the district center itself (1) to 2 hours drive (1). The median distance was a 40 minutes drive, and 15 facilities were 25-minute drives or further from the district center.

The 20 CHV and beneficiary communities sampled were located between 15 minutes to one-hour drive from the health facility. Sixteen out of a total of 20 were located 30 minutes or more from the nearest health facility. The most frequent descriptors of these villages receiving outreach services, according to the judgment of the research team, were:

- Mountainous and/or difficult roads (12)
- Long distance from health facility (10)
- Overall lack of health facilities in the area (7)
- High poverty (6)
- Large population without services (4)
- Poor transportation options of population (2)
- Scattered population (2)
- Located in catchment area of poorly functioning health facility (1)
- Low health awareness of the population (1)

Quality assurance measures utilized
At all stages of the field survey, quality measures were put in place to ensure that the survey results would be robust and representative. Among the key measures utilized were:

- A careful sampling methodology, as described above
- Multiple reviews of field survey schedules
- Field testing (pilot) and subsequent revision of field survey schedules
- Use of triangulation techniques i.e. using multiple sources of data to understand a concept, and asking the same question of different respondents
- Thorough training of field team prior to field work,
- Training, observation and support of survey team in field by field supervisor
- ‘Specialization’ of field researchers in particular survey schedules based on their particular set of skills and background, in order that each becomes the field expert on specific schedules (rather than all researchers carrying out all nine types of interviews)
- Review and correction of survey schedules every evening during field work

- Data entry carried out during field survey itself in order to provide an additional daily check on data quality
- Daily review of sample of data entered into SPSS by field supervisor
- Periodic review of data entered into SPSS during data entry phase by data analyst, with feedback provided to data entry specialist
- Remote daily monitoring of fieldwork by evaluation team leader through the use of daily summary forms and daily communication with field team leader. Problems and discrepancies addressed immediately.
- Thorough review and cleaning of data entered into SPSS and data analysis table.

F. LIMITATIONS OF EVALUATION METHODOLOGY

As with all evaluation methodologies, this evaluation has limitations. Due to circumstances of the staff of Governorate Health Offices (GHOs) during implementation of the field survey, only four rather than six GHO level interviews could take place. This sample was too small to allow for generalization of conclusions about GHO performance or perspectives to all HSS governorates. Second, some of the data for all 64 districts could not be obtained e.g. number of technical staff andnumber of health facility visits to HSS district HFs annually. As an alternative, a sample of HFs were surveyed during the field study to obtain these data. Such data can only be considered indicative rather than conclusive, ideally followed up with more comprehensive studies in the future. Third, GAVI staff members were not interviewed, due to lack of clarity on this point in the TOR.

III. Organization of report

The remainder of this report is organized into a Findings chapter, and a Conclusions and Recommendations chapter. The chapter on findingsis organized into four main sections, conforming to the main structure of the project and to the TOR of the evaluation. These are:

- HSS Design and process elements: This section examines the functioning of overall project processes e.g. management, and decision-making processes. These processes can be considered to be the backbone of the project, and the appropriateness of these will affect the performance of each of the main project components.
- HSS components: Each of the four main project activity sets or components are examined in detail in four separate sections.
- Overall project performance: This section examines the overall performance of the project according to both DAC criteria and specific expected results of the project, such as transference of the model to other MoPHP projects.
- Adherence to project design and meeting of objectives: This sectionlooks at the extent to which implementation and outcomes adhered to the project proposal.

CHAPTER 2: FINDINGS

Brief description of actual implementation of project
The project is implemented and managed by the PHC sector of the MoPHP, with participation of staff of seven programs, six from the PHC sector, and one from the population sector. The seven programs selected for integration were EPI, IMCI, malaria, nutrition, reproductive health, bilharzia and Tb. Prioritization and selection of these programs was according to high burden of disease and cost-effectiveness of the intervention.

The HSS project proposal outlined the general principles and the two core elements of the design i.e. integration and outreach. However, the document was flexible regardingthe details of the design, in order that the various programs could fashion interventions that met their needs. The main activities of the project, as designed and implemented, are as follows:

- District level integrated micro-planning [64 districts]
- Integrated outreach [64 districts]
- Integrated supervision [all districts in Yemen]
- Community health volunteers [majority of 64 districts]

Initial training and other preparatory activities supported each of these mainactivities. They were also supported by an overall design process and management system, to be described in the following section.

I. HSS Design and Process Elements

The evaluation examined the overall design and process elements of the HSS. Those elements judged to be the most important ones affecting results of the various components and interventions of the project are the 1) district selection process, 2) baseline, 3) process by which the different vertical programs jointly designed and planned HSS interventions, 4) overall project management, 5) the functional integration model used, and 6) monitoring and evaluation systems.

A. BASELINE

In 2007, immediately upon project inception, a baseline survey was carried out. It was meant to fill information gaps, set baseline indicators, and suggest priority actions needed for integration. The survey was almost entirely health facility oriented, presumably in order to assess the functioning and needs of each of the seven vertical programs. A total of 192 randomly selected health facilities in all 64 districts were sampled, stratified to three levels: 1 hospital (if any), health center and health unit per each of the 64 districts. District Health Offices (DHOs) were also sampled. While it provided some useful information, the baseline survey exhibited some weaknesses as well. Because it focused almost entirely on health facilities, it

provided little usable data on some key aspects of the intended activities of the program, especially related to outreach, client needs and gender issues. Notably missing from the baseline, given the HSS objectives and planned methodologies, was:

- Information on community-based midwives, and insight into the adequacy of female health facility based staff and how to involve them in outreach;
- Community needs, satisfaction with existing services and their perception of how to improve access;
- Detailed realities of integration at the district level.

In addition, the baseline contained little analysis, and most data presented were simple counts e.g. numbers and types of equipment, health staff etc. It was also difficult to assess the accuracy of the data collected due to insufficient elaboration of methodology and analysis. It is also unclear the extent to which the baseline data were used in programming.

In summary, the baseline survey was timely, and its sampling methodology of health facilities - stratified random sampling - was appropriate. It also provided some very useful data on health facilities and health worker perceptions. However, the quality and analysis of data was somewhat weak. Because it was almost entirely health facility based, it also did not provide a complete information basis for HSS, given the HSS focus on outreach, the decision to use CHVs, and the needs of the currently underserved, including women.

B. JOINT PLANNING AND DESIGN BY RELEVANT MOPHP PROGRAMS

All seven MoPHP programs (six from the PHC Sector, plus Reproductive Health from the Population Sector) participated in the design and implementation of the four project components, under the direction of the PHC Sector. It is clear that there was a high degree of positive involvement of each of the seven programs through: 1) joint HSS design and decision making; 2) participation in implementation of activities by all programs; and 3) the different programs taking leadership roles in different HSS components.

Joint HSS design and decision-making

From the beginning of HSS, the seven programs participated together in elaboration of the HSS design and decision-making. This was accomplished through the setting up of a technical committee composed of all seven programs. Each program provided design input and/or feedback on the tools,forms, training manuals, etc.

Implementation of activities and components

Once design decisions had been reached, the staff of the various programs participated in implementation of agreed upon tasks. For example:

- Integrated supervision: Supervision tasks were divided among all programs, using a unified common methodology and form.
- Integrated outreach training: Each program designed the content of the training manual related to its field of expertise.

Leadership roles
Different programs took lead roles in those aspects of HSS programming they were best suited for. For example:

- EPI: leadership role in micro-planning and supervision of outreach
- IMCI: Leadership role in integrated outreach training
- Nutrition: Community volunteer component, including manual design

Interviews with program directors and other HSS stakeholders reveal that this inclusive and participatory approach resulted in individual programs showing an improved understanding of and willingness to work with other PHC programs in an integrated manner. It broke down some barriers of thinking in regards to verticality. As such, there was an attitude shift; one that was necessary to facilitate further integration. In addition, as a result of this approach, the design of the different HSS components are perceived to be more responsive to the objectives of the different programs than if the joint planning had not taken place. This process also had the benefit of facilitating the reach and the compiling of a database for each of individual programs. For example, integrated outreach provided opportunities for some of the less well-funded programs to gather data from the field relevant to their own programs.

Summary on joint planning and design
In summary, the joint planning approach provided an excellent basis for helping to meet the program needs of the seven involved programs, and for instilling a common understanding among their staff.

C. FUNCTIONAL INTEGRATION MODEL

Functional integration was defined by the project as: *" the process of bringing together common functions within/between organizations to solve common problems, developing a commitment to a shared vision and goals, and using common technologies and resources to achieve these goals."*The philosophy behind this very pragmatic approach is that weaker or less well-funded programs can benefit from some of the tools and systems built by stronger programs, such as EPI. It does not require full integration of vertical programs, but simply integration where a common benefit may be found. This is a 'learning by doing' approach. Together with the participatory planning and implementation approach, this pragmatic model of learning provides sufficient flexibility for design of integration best suited to Yemen's needs.

The functional integration framework builds on evidence from the literature on functional design, and the functional integration document contains a description of the prerequisites and steps to be followed in implementing an integrated approach. It also contains guidance on utilization of already existing tools and standards such as the Essential Service Package, and a set of monitoring tools. Overall, it focuses on the *process* of integration, but does not prescribe all the tools, mechanisms, and

systems required for full integration. These were envisioned as separate aspects of the design process, to be arrived at through consultation and experience.

The design of functional integration framework was based on extensive consultation with the involved governorates and the 64 districts. Workshops were organized with all 64 districts to gain insights and feedback from district level staff, and to encourage their positive understanding and participation, as well as consensus.

Comparison of the tools and processes described in the Functional Integration Framework, and those actually used in HSS shows approximately a 70% correspondence, indicating that this framework has been adopted in reality. Furthermore, some of the tools have been further developed through the joint design work of the various HSS partner programs. For example the integrated supervision forms show greater elaboration and detail, and improved practicality.

Summary on functional integration

In summary the Functional Integration Framework was well researched and builds on evidence from the literature. It is detailed, provides good guidance, and builds on already existing MoPHP tools and standards. It also provides well designed monitoring and other tools, though it does not attempt to comprehensively provide all the systems and tools needed for a fully developed integration. There is good evidence that HSS has utilized the framework, and even improved on some of its tools.

D. DISTRICT SELECTION

Appropriateness of district selection criteria set and district continuity over life of project

The selection criteria set by the project were appropriate to the circumstances of Yemen. These selection criteria were designed to allow the project to gain experience in widely varying circumstances, and also to facilitate the spread of the methodologies from government center to other districts in later phases. They also were designed as a means to reach a large number of the underserved population (rural levels 2 and 3, and those with relatively low coverage by health services, using EPI data as a proxy). It is to be expected that many of the target population were also poor, since the underserved also tend to be poor and rural.

By 2010, seven of the original 64 districts had discontinued their participation in the HSS outreach activities, primarily due to issues of political conflict and insecurity. Of those districts, four were in Amran, two in Sa'ada, and one in the capital of Sana'a. Discontinuation of the district in Sana'a was due to administrative issues internal to the districts, according to verbal reports. The districts remaining in the program numbered 57, located in 14 governorates. Given the circumstances in the country at the time, the loss of these districts is considered a part of the general political picture, and not the result of internal HSS factors. As noted earlier, some elements of the project were implemented nation-wide, such as integrated supervision, not just in the 64 districts.

Conformity of districts selected to selection criteria

Comparison of the districts selected for inclusion in outreach to the selection criteria showed high conformity to the selection criteria in the proposal.

Table 3: Conformity of selected districts to selection criteria

Criteria	# Districts conforming	Conformity
⊙ Rural	100%	high
⊙ Pop/ district > 50,000. ⊙ Total pop >25% of Yemen	All but 3 districts. Total pop = 30%	high
⊙ 1 HC and 3 HU/ district	All but 2	high
⊙ 3 M & 3 F HW available/ district	Data not available, but most districts have male and female HWs	Probably high
⊙ 50% of districts with PENTA3 coverage ≤ 80%, ⊙ &low TT2+ coverage.	31 districts low PENTA3 37 districts TT2 < 15%	. high
⊙ Districts represent ≥10 governorates	17 governorates	high
Overall		High

Verification of the geographic and economic circumstances in these districts was sought in the field study. Overall, the evidence from the field supports the conclusion that the districts selected for integrated outreach were appropriate. The perception of GHO, DEO, outreach teams and peripheral HF staff about the outreach areas they were responsible for was that the majority contained a high percentage of poor (68% of outreach districts), and a similar majority (70%) were considered either areas of difficult access (38%) or medium access (32%). Please see Annex Finally, the evaluation field team itself assessed each of the 20 outreach communities it visited. Sixteen out of 20 of these communities were found to be located between 30 and 60 minutes from the closest health facility, and most were characterized as either located on difficult roads and/or at long distances from health facilities, high poverty, as having large or scattered populations without health services, and/or with low health awareness of the population. It was usually the case that the outreachcommunities described as located the closest to health facilities, and thus seemingly not in need of outreach, in fact were located next to health facilities that were only marginally functioning or frequently closed, or it was a high poverty area with a large population.

This would indicate that at least for a minority of the outreach areas, the long-term solution would be upgrading or building a health facility in the area. For all others, however, the catchment area was sufficiently removed from the health facility to make outreach the better option. Since about 6% of outreach communities were

characterized by government health staff as 'above average' economicallyand 14% as having easy access to health services, a small percentage of these areas may not in fact be appropriate for outreach and should be reassessed.

Summary on district selection
The selection criteria set by the project were appropriate to the circumstances of Yemen, and to the objectives of the project. Field evidence reveals that the majority of districts and communities selected for integrated outreach were appropriately selected in terms of poverty level and access. Only a small number should be reassessed based on experience.

E. PROJECT MANAGEMENT

Technical management and implementation of the HSS is directly through the PHC sector of the MoPHP. A coordinator, who is also the Family Health General Director, leads project management. There have been two coordinators since HSS began, due to staff changes in the position of the Family Health General Director. In addition to the coordinator, a technical committee consisting of the directors of all involved programs was formed, and constituted the principal technical design and decision-making body of HSS. These are the program directors of child health, nutrition, reproductive health, disease control (including bilharzia), EPI, and malaria and Tb. This technical committee was formed once the decision was made as to which programs would participate in HSS. This body was the main driving force behind technical planning and decision making, as described in the above section. Thus the technical management staff were fully integrated into the Ministry.

In addition, a planning/information officer was employed until the end of 2011. He was highly competent, as judged through meetings with him, and reviewing samples of his work. His task was data management and analysis, as well as planning. (Note: A TOR was not made available for these positions, and this description of tasks is based on verbal reports). He was not replaced when he resigned. An executive secretary was also employed until 2011, and also was not replaced.

Financial management is the role of the Integrated Management Unit [IMU], which is staffed by a financial officer and a secretary. Financial oversight is achieved through annual external audits, and a one-time GAVI Financial Assessment, performed by an external consultant in 2010. This report assessed the ten standard categories of financial risk as low (7/10 categories) or moderate (3/10 categories) Financial management and HSSCC oversight were judged to be positive.

Project oversight is by the HSSCC. Membership of the HSCC is consistent with that listed in the proposal. A review of selected minutes of HSSCC meetings shows high attendance, meetings taking place at least two to three times per year, and briefings of the members on progress and key management topics. Decisions appear to be made in a timely manner.

This management structure has both extremely positive aspects, as well as weaknesses. The fact that it is integrated within the MoPHP gives it high potential for sustainability. Without this type of deeply integrated Ministry-based management, it is unlikely that functional integration of vertical programs and the integrated outreach strategy would have already become as established a part of the system at the district and governorate level as it has become, that the different programs in the Ministry would have been so deeply involved, nor that the commitment at the level of the sector and below would have been as high.

However, this is a highly ambitious project. It seeks to modify the way the MoPHP delivers services i.e. through adding outreach and integration of vertical programs to facility-based services, two 'revolutionary' changes. It is the judgment of the evaluation team that the staffing levels were not sufficient for this task. Employing one coordinator to oversee the technical management of the project, the same person who must also manage a General Directorate of the Ministry, and who has direct management responsibilities for other donor funded projects, means that at most he can devote 20% of his time to HSS. Though this position was supplemented with that of aplanning/information officer, a technical committee, and administrative staff, these were not enough to cover all the necessary tasks, especially monitoring. Though it is clearly desirable that this project remains within the Ministry, and that it stays integrated within the normal systems of the Ministry, supplementation with full time technical staff would be desirable. In particular, M&E should be strengthened (see conclusion in following section)

A second management weakness is that of data management and archiving. Technical data for the project are housed in different locations in the Ministry among different programs, with no central repository for data. While this situation is a direct function of the (positive) participation of different programs in this project, this decentralization of data makes it very difficult for project managers to monitor the project, to have ready access to needed data, and to have a clear understanding at any one point in time what the standing and progress of the project is. Improving the archiving and data management would have direct benefits in terms of project monitoring and sharing of tools and systems.

F. PROJECT MONITORING AND EVALUATION

This is perhaps the biggest issue that requires attention by the HSS in its second phase. As a project which seeks to convince other stakeholders, including the various Ministry programs, other sectors of the Ministry, the Ministry of Finance, and development partners to adopt this model, the gathering and analysis of data on efficiency, effectiveness, coverage and impact is vital. Though a large amount of data were indeed collected, there are gaps and deficiencies in these data which weakens their ability to convince other stakeholders of the merits of the HSS model. Some of the issues are as follows:

- No indicators or proxies for measuring impact are available. While the DHS, conducted in 2014, will provide morbidity, mortality and health service-related data, the DHS sampling methodology is such that it will not be able to

differentiate impact of HSS interventions from other factors influencing morbidity and mortality.

- The HSS baseline focused almost entirely on health facilities, and thus provided little usable data on some key aspects of the intended activities of the program, especially related to outreach, client needs and gender issues. Neither did it establish a baseline on health care coverage, and health facility usage by the population, for comparison by end of project.
- Specific targets for outreach were not set for either IMCI or RH services. This made it difficult to implement a results-based approach such as is used by EPI, or to monitor progress based on set targets.
- Quality of outreach services was not measured or recorded e.g. % of correct diagnoses, % of IMCI consultations for which appropriate essential drugs were available, % of RH consultations following the stated protocol, etc.
- Some of the tremendously valuable data collected, such as that of the integrated supervision, were not analyzed in time to use for assessment of quality improvement.
- A post-intervention survey was not conducted, though it was in the plan.

The final evaluation was able to collect indicative data on a number of efficiency, impact and coverage aspects of HSS performance, but without the collection of certain types of data by the project itself on an ongoing basis, and without a full set of baseline data to compare with, these findings will not be able to fully illuminate the impact of the HSS.

II. – V. HSS components

In the next four sections, each of the four main project activity sets or components are examined in detail.

II. PROJECT COMPONENT 1: Micro-planning and District Level Management

Findings in this section are based on both the desk review and the field study. For the desk study, interviews were held with GHO staff in four governorates, and with DHO staff in 18 districts, representing 9 governorates. A total of 20 GHO staff were interviewed, 18 male and 2 female. A total of 78 DHO staff were interviewed; 53 male and 24 female. The majority of these participated in some aspect of integrated micro planning.

1. Desk review of training manual on management

An assessment of the training manual for HSS district level management and of training reports was also carried out. The training manual was well done in terms of theoretical content,but was not particularly targeted to HSS topics, nor practical, It was perhaps more suitable for university or Health Management Institute (HMI) level students.

The management training was designed as a nine-day course. It consisted of three modules: health management, human resources management and target-based health planning. Three training reports were reviewed (Hodeidah, Dhamar GHO, DHO, 11 districts total, 2010) by the evaluation team, and the reviewed training reports were found to be of high quality. Each contained results of pre- and post-tests, as well as a copy of the test questions asked – a very transparent reporting technique. Post-test results showed improvement of knowledge compared to pre-training i.e. 71-75% correct responses per training to 88 - 93% correct responses post-training. These results demonstrate a reasonably good level of knowledge even pre-training, indicating that the participants already knew much of what was taught in the course. The high post-training levels of knowledge indicatedadditional learning, however. Also positive was the fact that attendance in these training courses was high.

2. Participant evaluation of management training

Participant evaluations were not carried out by HSS for this course. In its place, the evaluation team carried out participant evaluations in the field. Interviews and participant evaluations were implemented in 17 districts in 8 governorates. A total of 47 former course participants were interviewed: 35 male and 12 female. A total of 39 of these participants were health staff from DHOs and seven were from HFs (with data missing on one participant).

The evaluation showed a high level of satisfaction of participants with the course. The percentage either 'satisfied' or 'very satisfied' with the course overall was 84%. The category of the evaluation criteriashowing the highest scores was 'knowledge' of the trainer', with 98% of participants satisfied with knowledge of the trainer. Please see Annex F for more detailed results on the participant evaluation.

3. Micro-planning description

Micro planning, a process of detailed planning at the district level, is the planning methodology originally developed for immunization services by EPI. This process has been adopted and adapted by HSS for the integrated outreach component, and is led by EPI.

4. Training on integrated micro-planning

Two training courses on micro planning took place – one in 2008/2009 and one in 2013. It was not possible to gain training materials for these. These courses were attended, according to verbal reports, by EPI and PHC staff from the governorate and district levels. RH staff members were not included in these trainings.

During the field study, GHO and DEO health staff were interviewed. At the GHO level, eight of the 20 respondents interviewedhad been trained in integrated micro planning, seven in 2008/09 and seven in 2013. At the DHO level, 45 of the 72 were trained in micro-planning, 25 of them in 2008/09, and 33 in 2013. Thus not all who

participate in micro planning have received the training. However, in each district and governorate, at least two DHO and GHO staff members, respectively, were trained.

The desk review shows that three programs are included in micro planning: EPI, RH and IMCI. It also reveals that the micro planning forms as well as the planning process is well developed and appropriate. EPI provides sound leadership for this aspect of the project. Review of a sample of 15 micro-plans shows both weak and strong plans, but with a trend of improvement over time, with the most recent micro-plans of high quality. These micro-plans show full compliance with the required forms, they include population statistics on EPItargets as well as WCBA and U5YO children, they contain an analysis of their districts, and they identify the required population data and resources needed for integrated outreach. Overall, the level of achievement is sophisticated. Also, micro-planning also become more inclusive over the life of the project, with health facility staff fully involved in the planning process beginning in 2013. On average, four DHO staff membersper DHO prepare the micro-plans together.

Field data show that integrated micro planning is now well established in the field sample of districts and governorate. All GHOs and DHOs were able to produce copies of all micro-plans since 2008, demonstrating their importance and use in outreach. Nearly all GHO and DHO teams interviewed felt that the quality of integrated micro-plans has improved over time. This is consistent with the desk review on quality described above. The GHO, DHO, and HF staffmembers were very positive about the benefit of integrated micro planning, and voiced strong opinions that microplanning has improved the reach, efficiency, quality and overall integration of the health system.

Table 4: Perceived improvement of health system functioning by category by DHO and GHO staff of impact of micro-planning

DHO/GHO perception of micro-planning impact on:	DHO		GHO	
Category of positive impact	Yes	No	Yes	No
Coverage of population	17	1	4	0
Integration in general	18	0	4	0
Quality of health services	18	0	4	0
Efficiency of health services	18	0	4	0

At the HF level, health teams demonstrated a sound knowledge of the micro-plans for their catchment areas, and were able to demonstrate at least some data from the most recent micro-plan. Interviews revealed a sense of cooperation and spirit of teamwork among RH, PHC and EPI staff. In about a quarter of the HFs, however, there was not a strong team spirit, and incomplete participation of the different staff

in the micro planning. In those cases, it was mostly the EPI staff person and HF director who prepared the micro-plans.

The participation of women in micro planning at DHO and HF level is quite good, while the GHOlevel shows less participation. Of those present at the interviews, women constituted between one third and one fourth of those who participated in all stages of the micro-planning process, from preparing, to monitoring, to evaluating. Given the overall low ratio of women to men in heath staffing at these levels, the relatively high proportion of women involved in micro planning is a very good indication of RH participation.

Only two areas for improvement were detected in the micro-planning process, both of which can be readily corrected. First, micro-plans did not state coverage targets for IMCI and reproductive health services. By not setting a measurable target for these services, the project was unable to determine whether the level of coverage by any given outreach team was sufficient, nor to hold the team accountable for a certain level of achievement, nor to calculate accurately the resources required to reach that level of service. Perusal of documents and discussion with outreach teams at the health facility level indicate that no clear guidance was given to outreach teams in terms of expected number of IMCI, RH and FP contacts to be achieved each visit. Staff stated they were waiting from guidance from the Ministry on this. Clear EPI targets are of course set, as before.

A second area of improvement is related to the limited communication of plans to the different health sector programs. Copies of micro-plans are shared by DHOs mostly with EPI at the GHO and national level, and much less frequently with RH or PHC. This is likely to create a knowledge vacuum for those other programs at both national and governorate level, and interfere with their ability to plan and to monitor progress. Please see annex G for data on the communication of micro-plans.

III. PROJECT COMPONENT 2: Integrated Outreach

This component is the central and essential activity of the HSS, both as conceived in the project document and as implemented. Integrated outreach is considered the most successful of all four components by all stakeholders interviewed; it has received the most project attention; and has the most tangible results.

The data presented in this section were gathered from both the desk review and field study. In the field, five categories of respondents were interviewed regarding integrated outreach. These were:

1. Health workers in peripheral health facilities (67 participants in 20 interviews in 19 districts)
2. Integrated outreach teams from the district level (62 participants in 16 interviews in 16 districts)
3. DHO staff (78 participants in 18 districts)
4. GHO staff (20 participants in 4 governorates)

5. Beneficiary communities (243 randomly sampled households in 20 randomly selected communities in 19 districts)

NOTE: Findings on integrated outreach specifically related to coverage, efficiency, effectiveness, and impact will be explored in a later section

A. DESK REVIEW

1. Training on integrated outreach

IMCI took the lead in the design of an integrated training manual to support this component, with the remainder of the seven programs also involved in the design. This training manual was evaluated by the research team to be of high quality and well written - containing both practical and theoretical components. It included the strategic framework for integration, and technical material from each of the seven HSS components. It is designed as a 16-day training course.

The target of the training courses was health workers deployed in government health facilities, especially those health workers who were designated to take part in outreach activities. HSS records show that 1,181 health workers were trained in integrated PHC, and that 19 trainers were trained through TOT courses.

Three training reports were reviewed in order to assess quality of training (Abyan, Ibb, Dhamar GHO, DHO, 2008 – 2010). Review of these training reports showed the training quality to be high, and with the results of pre and post-tests included in the reports. Comparison of pre and post-test results shows almost a doubling of knowledge by the end of the course [32 to 44% of responses correct for the pre-test compared to 62 to 80% post-test]. This indicates that while learning is obviously high, the results of some training courses (e.g. the course showing only 62% correct responses post-test) reveal that there are still some learning gaps that need filling before the health workers have sufficient skill to provide high quality IMCI services.

Both the reports and the courses (as judged by the manual) were well organized, with courses utilizing both theoretical and practical training methodologies. The courses were led by trainers from each of the involved programs, which would have added to their technical strength, with the notable exception of the malaria program. The training reports document that the number of training days devoted to each course was variable, between 12 and 18 days. Suggestions for improvement documented in the training reports are minor, and do not reflect any strong perceptions of course deficits. The most important suggestion was to “utilize more interesting teaching methodologies for some topics” (the classic lecture methodology was used for some topics).

During the field survey, participant evaluations were administered by the evaluation team to49 health workers who had taken the course. Results show that the level of satisfaction with the course was high; between 81 and 89% of responses per course

criteria were positive. Please see Annex H for further details on the results of the participant evaluation.

2. Implementation

As noted above, three out of the seven HSS programs participated in integrated outreach – EPI, RH, and IMCI. This is considered a good starting package but for the future, greater benefits would be incurred through expanding it to the other programs as well. Reasons that other programs are not implementing through this mechanism include at least the following:

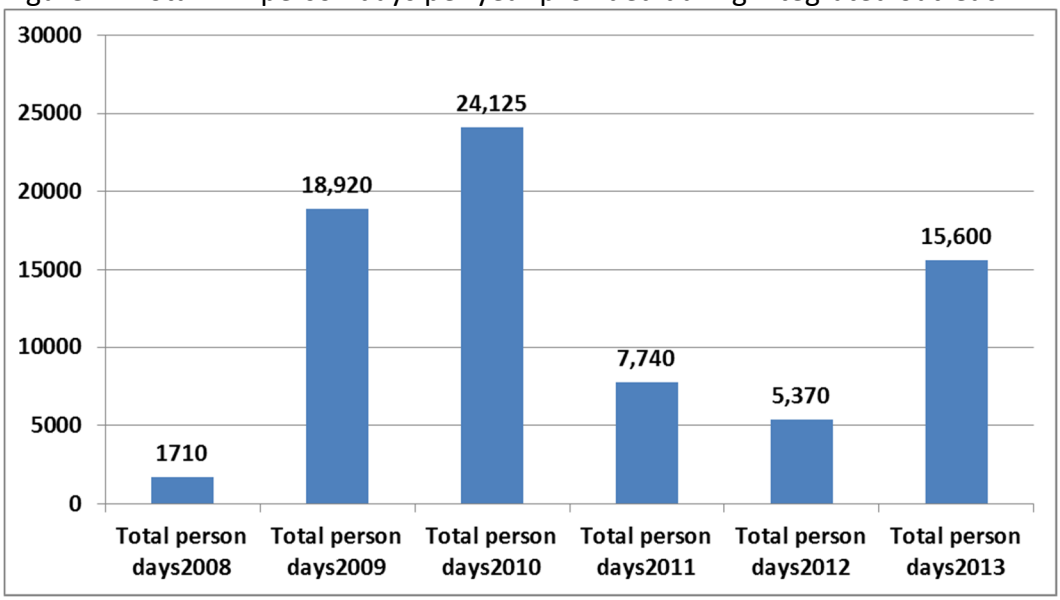
- Difficulty in resolving targeting and activity differences within a single activity or time plan
- Funding issues
- Some programs too busy with implementation of vertical donor funded projects.
- Outreach mechanism not considered suitable for all programs by all stakeholders (though no justification was given for this sentiment)

These reasons indicate that more coordination effort needs to be made to involve all remaining programs, and some attitudinal changes are needed as well. In addition, it is clear that development partners need to be involved in the effort, so that they do not inadvertently create reasons for vertical programs not to integrate (see bullet 3). At the same time, it needs to be strongly emphasized that IMCI is, in itself, a 'mini' integration, because it includes elements of health education, diagnosis and treatment geared to all seven of the programs.

Reproductive health services provided during outreach include antenatal care, post natal care, family planning and referral. IMCI services are primarily curative care. EPI services continued as before, and consisted of all services in the national EPI program for children and women.

Implementation of outreach began during the last quarter of 2008, and steadily expanded through 2010, but then declined during 2011 and 2012 due to the political events taking place in those two years. Altogether, 73,465 person days of outreach services were provided between 2008 and 2013, a very high level of activity.

Figure 1: Total HW person days per year provided during integrated outreach



3. Supervision and data collection

Integrated outreach is supported by supervision from national, governorate and district level staff. EPI takes a lead role in supervision and organization of outreach. Supervisors submit forms to EPI, thus ensuring that a complete set of supervisory data is available to EPI, and through EPI to HSS. EPI enters the outreach data for EPI-related activities and the HSS IMU enters the data for reproductive health and for IMCI. A wealth of information has been collected and analyzed by the project. These data have been routinely analyzed and presented to the different programs and stakeholders at the HSSCC meetings.

An analysis of these data shows that very good records were kept of the breakdown of services provided. These data constitute an excellent and unique set of health statistics, not just for this project, but also for the health system as a whole, because the data are from the second and third catchment areas – a source not captured by any other set of data. However, review of the data reveals that some of the information provided for on the forms was not filled in by the HW. For example, no data were filled in on newborns. This isan important age group because a large proportion of infant deaths occur among newborns. Also, hemoglobin levels are not recorded, despite the original intention that these levels be checked and recorded.

The data forms themselves are very useful, but could be further improved by including data useful for quality control purposes e.g. drugs or vitamins provided to pregnant women, complication status, and health education topics covered, as well as IMCI drugs provided to children with agiven diagnosis. In addition, these forms could usefully be expanded to include data on CHV activity or need for follow up on outreach cases. Finally, no data on some of the HSS programs were collected e.g. bilharzia and Tb. These are all potential areas of improvement for the future.

Interviews with key stakeholders reveal that in-field supervision is mostly geared to ensuring that the outreach is taking place, and to supporting the outreach process. Quality controls such as checks that IMCI diagnoses are correct, and that RH protocols are being followed do not appear to take place. Thus there are no data available on quality of service provision, a very important aspect of programming, which would help determine impact.

In addition, analysis of data to track efficiency and quality aspects of programming could be strengthened. Much data are collected, but not necessarily analyzed for these purposes. For example, as noted under the monitoring section above, routine analysis of number of contacts per outreach HW per day is not carried out. Such an analysis would allow the program to pinpoint low performing and high performing individuals and teams, and to carry out corrective measures when necessary. Analysis of data on diagnosis would also be useful. For example, in 2010, about one fourth of all IMCI recipients were diagnosed with pneumonia, and follow-up showed that *all* cases had improved, a very unlikely scenario. Analysis of such data for consistency and plausibility, could aid in uncovering program issues, and should be considered for the future.

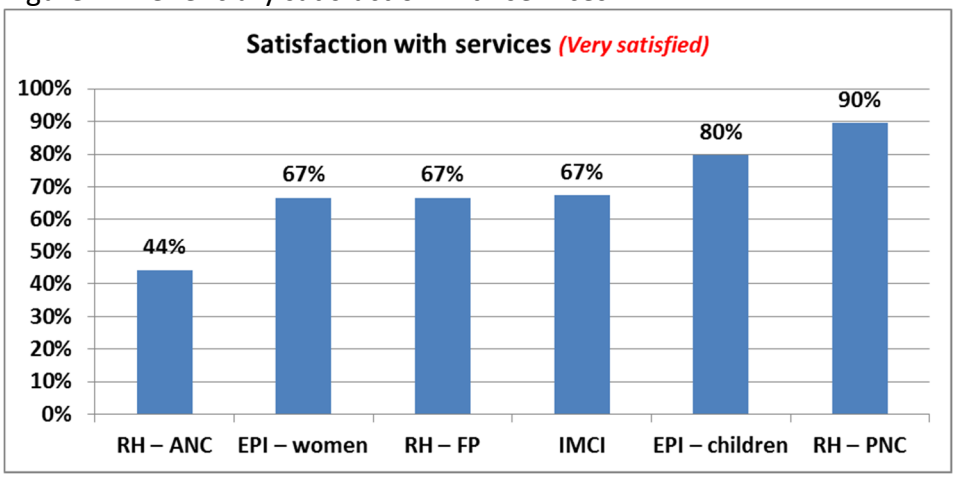
Finally, data collection on impact and on satisfaction with integrated outreach services does not take place within HSS. For example, no HSS studies on beneficiary satisfaction have carried out. The only information availableon satisfaction with integrated outreach is from an Independent study in four districts of Dhamar, which shows satisfaction levels of 52-57% for three types of satisfaction measures i.e. type of outreach services provided, timing of services, and location of services.

B. FIELD SURVEY; BENEFICIARY INTERVIEWS

1. Use and satisfaction of communities with integrated outreach services

The field survey showed beneficiary use and satisfaction with integrated outreach services to be high. Virtually each one of the 243 households interviewed during the field survey had used one or another of the outreach services between 2008 and 2013, and between 44 and 90% per outreach component were very satisfied with the services. Ratings by communities for relevance and suitability of services, quality of the outreach team, and timing of services was also high, between 62-92% per component. The majority of households considered that outreach provided them with greater access to health care (84%), they saw the services as helping to prevent illness (76%), as saving them money (66%), and as curing their illnesses (54%). Other perceived benefits are that outreach also saves them time, creates health awareness in the community, and provides better cultural access for women, among other benefits. Suitability of services from a gender perspective was also rated reasonably high, but with room for improvement. The majority of respondents (61%) described the services as comfortable and acceptable for women.

Figure 2: Beneficiary satisfaction with services



2. Community suggestions for improvement

Though households had all expressed a very high level of satisfaction with the services, almost unanimously (242 out of 243 respondents) they also wanted to see the services improved or changed in some way. The needs they expressed were: a) more drugs to be provided (66%), b) expansion of the types of services provided (54%), c) more frequent outreach visits more often (48%), d) more regular outreach visits (45%), and e) more females on the team (37%).

These responses are consistent with those of health staff, outreach teams and CHVs, to be discussed below. Drug shortage is a major problem as perceived by all categories of respondents, especially IMCI drugs, followed by irregular or infrequent outreach services. In addition, the needs of communities are high and the current outreach program meets some of these needs. Finally, insufficient numbers of female members on outreach teams limit cultural access of some women to the services.

3. Health seeking behavior in outreach communities

Each household was asked about the last time they sought health care for one of their children at a health facility. The breakdown of responses is as follows:

Table 5: Most recent HF visit for children of households in outreach communities

Most recent pediatric visit	Number of households
1-6 months ago	210
7-12 months ago	19
≥1 - 2 years ago	3
> 2 years ago	7
missing data	4
Total	243

Thus most households made at least one visit to a HF in the last six months for at least one of their children. Of these 243 visits, 187 (77%) were curative and 50 (23%) preventive. The breakdown of facilities visited was as follows:

- Government HF for that catchment area: (28%)
- Government HF outside of catchment area: (33%)
- Private HF:(35%)

These data show a relatively even spread of preferences over the different categories of health facilities, but with private HFs slightly more popular than government HF, and with the HF responsible for the catchment area somewhat less likely to be visited by those households

Cost of seeking health care per child health visit was calculated. For this most recent visit, the breakdowns of costs is as follows:

Table 6: Cost in YER of most recent pediatric health facility visit

Category of cost	Mean	Median	Minimum	Maximum
Transportation	2,254	0	0	10,000
Heath services	10,894	6,000	0	200,000
Other e.g. hotel	714	0	0	20,000
Total cost of visit	14,015	9,000	0	205,000
Total -Least expensive half		5,000	0	9,000

These visits are for both curative and preventive care. It is clear that seeking health care is expensive, with a mean cost of YER 14,015 s per visit, and a median cost of YER 9,000. If we assume, conservatively, that only the least expensive visits are comparable to the cases seen during IMCI outreach, the median cost per visit to a HF is YER 5,000. These data will be examined again in the section on efficiency, below.

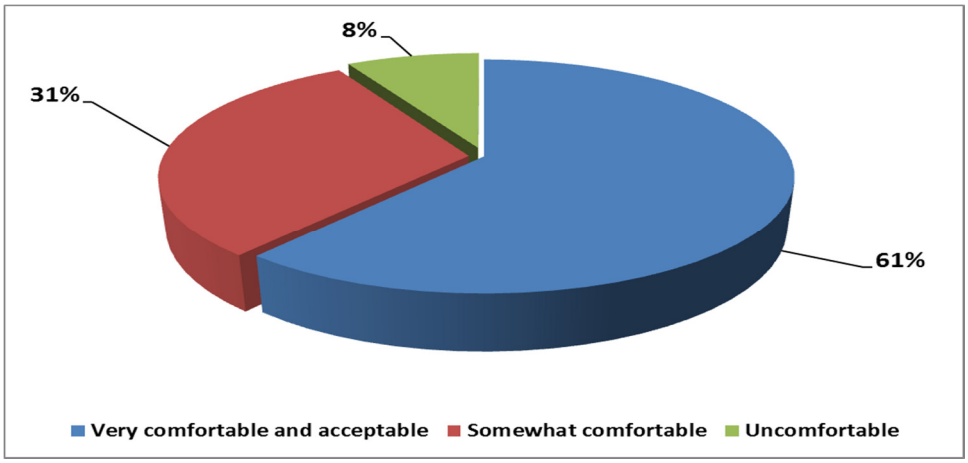
4. Alternatives for communities if no integrated outreach services available

Households were asked what alternatives they would have if no integrated outreach services were offered in their communities. Most community members stated they would utilize health facilities, at least sometimes, and depending on their circumstances. Others, approximately one quarter of respondents, stated that would remain without services. These were their only two perceived alternatives. These responses demonstrate that a significant proportion of families in remote areas do not have the means to travel to HFs to obtain health care, and that others have the means to cover some but not all their health care needs.

5. Gender issues voiced by communities

The acceptability and comfort of outreach services from a gender perspective were explored with outreach communities. The majority of survey respondents (61%)described the services as comfortable and acceptable for women to use. This is clearly not as high a rating as for other aspects of the service, described above, and it demonstrates the need for some improvement.

Figure 3: Beneficiary experience of the comfort and acceptability of integrated outreach services for women

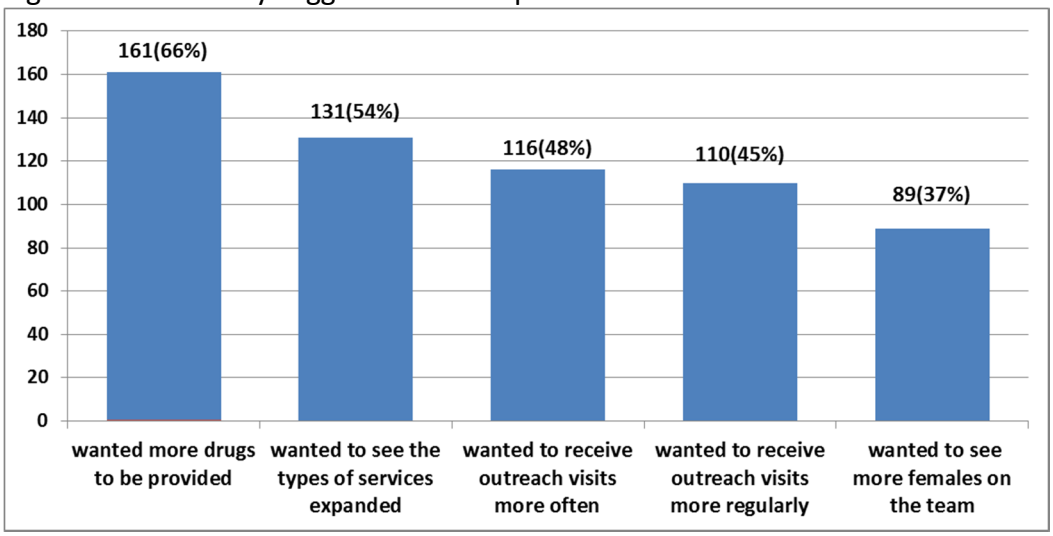


When asked how the outreach services could be provided in a way that would best meet women's needs, responses included suggestions related to cultural acceptability, as well as to other felt needs. The most common response was for the outreach team to be composed of well-experienced staff, especially women (10). Other responses were to provide a HF close to their community (8), for midwives and female health staff to carry out services in their villages (6), and to providehome-based services (3). Provision of medications was another common request (6) as was frequent awareness raising campaigns (5).

6. Community suggestions for improvement of integrated outreach

Though households had all expressed a very high level of satisfaction with the services, almost unanimously (242 out of 243 respondents) they also wanted to see the services improved or changed in some way. This gives us useful information about demand. The needs they expressed were:

Figure 4: Beneficiary suggestions for improvement of outreach services



C. FIELD SURVEY; HEALTH STAFF INTERVIEWS

1. Daily schedule and HW roles in integrated outreach

Outreach teams reported that normally they would begin travel to outreach areas between 7:00 and 8:30 AM, and return between 1:00 and 6:00 PM. Thus the starting times are similar for the different teams, but the stated return times vary considerably. This suggests that for some teams there may be scope for improved coverage if they utilize more hours in the day. Other teams require very long days toreach their target populations due to the difficult terrain, the distance and the scattered nature of the communities.

The great majority of outreach staff carried out outreach in their own catchment areas. The exception was when a neighboring health facility did not have the required category of HW such as a midwife or an IMCI-trained staff person. Health workers from both peripheral and district levels took on multiple roles in outreach, covering more than one of the three types of services offered. This was especially the case for small health facilities where numbers of health staff were fewer than required for a three-person team. These findings suggest that sometimes the (more rare) female staff may have had to cover more than one role e.g. RH and EPI for pregnant women, which would have reduced her ability to cover either sufficiently. Indeed, most outreach teams consisted of one female HW and two male HW, while at the same time, almost all outreach teams stated that TT was provided by afemale HW- the same staff person who also provided RH services.

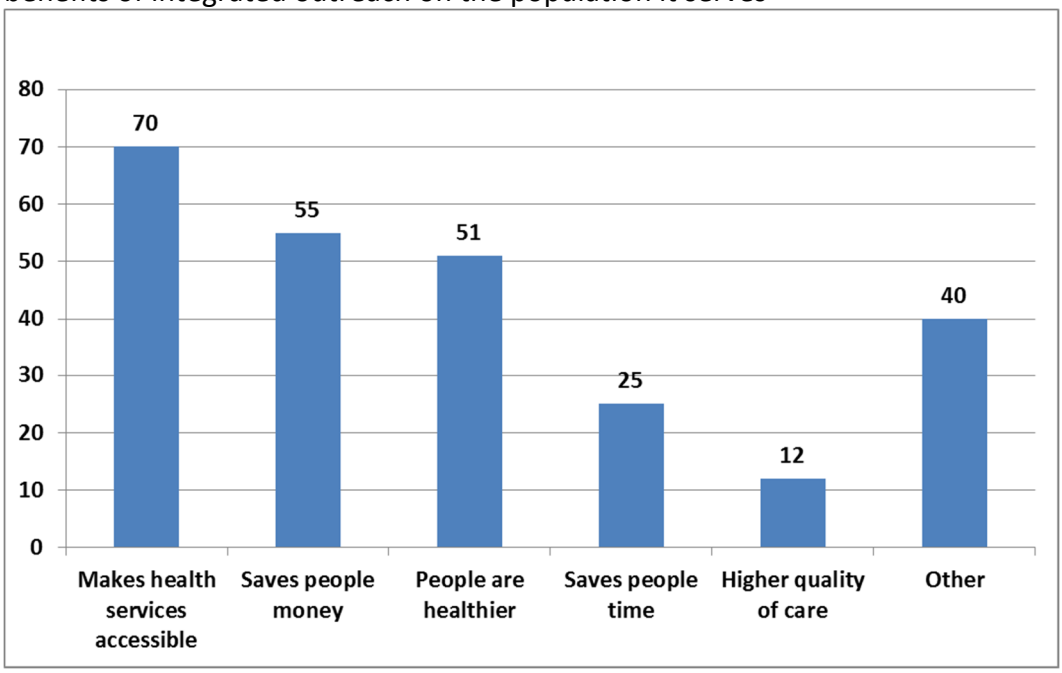
Table 7: Gender of outreach staff who provide TT to women (18 teams)

Male only	Female only	Both
0	9	9

2. Perception by health staff of the impact of integrated outreach services

The responses by HWs on the benefits and weaknesses of outreach are consistent with those of communities and CHVs. Outreach is universally perceived as positive by health staff, with the major benefits seen as creation of health care access, saving households time and money, and improving the health status of the population. In terms of weaknesses, drug shortage is a major problem perceived by all categories of respondents, especially IMCI drugs, followed by irregular or infrequent outreach sessions.

Figure 5: Perceptions of different categories of health staff in 74 interviews of the benefits of integrated outreach on the population it serves



3. Perception of the impact of integrated outreach on stationary HF-based services

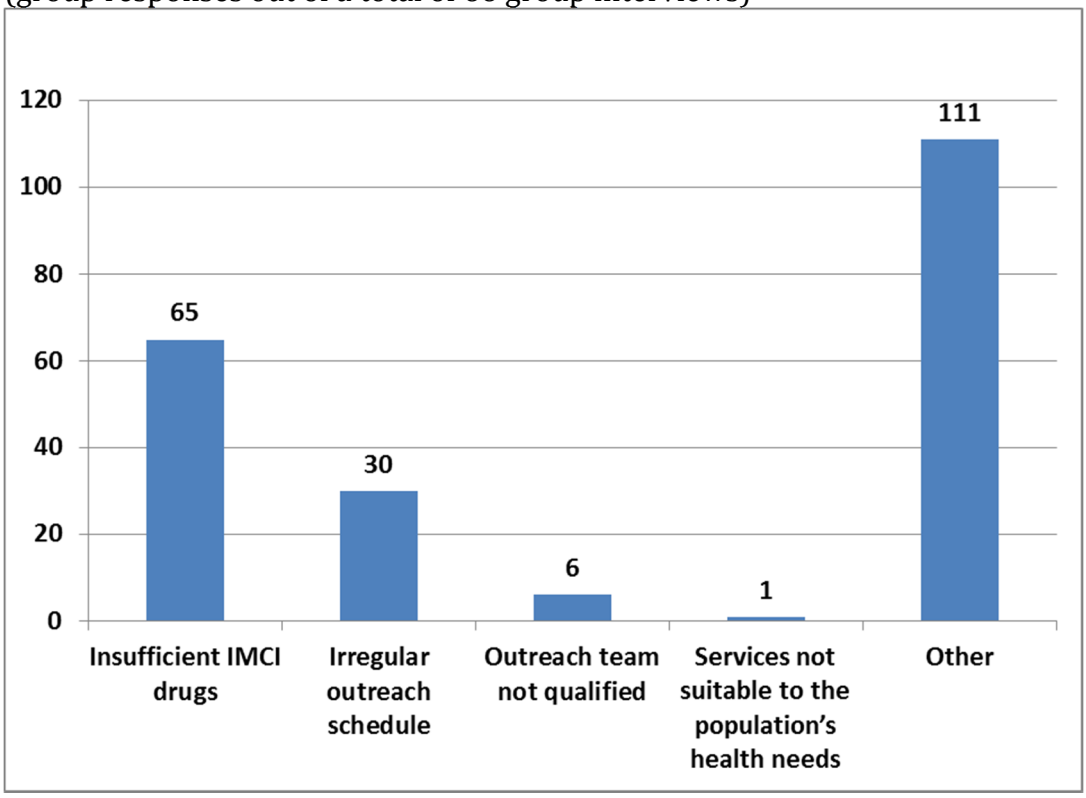
In all four GHO interviews, integrated outreach was seen to have a positive impact on most HF-based health services. The impact on EPI and RH services was seen as universally positive, while the impact on IMCI was seen as positive by three out of four GHOs. At the DHO level, and at the level of the peripheral and district health facilities, the overwhelming majority of health staff interviewed perceived the impact of outreach on the services in their own facilities as positive. At the HF and outreach team level, the belief of HWs is that there has been an improvement in rate of usage of HFs by people in their catchment area, that EPI coverage has increased as a result of integrated outreach, that service provision is more integrated, and that because of the training and experience of HWs in outreach, they have improved the quality of services in their HF-based role. Please see Annex I for further elaboration of the assessment of health staff on the stationary H-based services.

Staff members in all GHO and DHO interviews describe outreach as improving over time. The main reasons they give for this assessment is that service coverage, skills of the outreach team, and quality of services provided has improved; that more teams have been trained and deployed; that the adding on of new programs such as nutrition and health education into the outreach services has expanded the service package; there is improved compliance and awareness by communities; and follow up has improved. The minority of respondents - those who felt deterioration has occurred - pointed to a decrease in funding, with a consequent decrease in number of rounds of outreach, as well as insufficient quantities of medications and supplies.

4. Perceived weaknesses of integrated outreach services

Health staff at all levels listed weaknesses as well as strengths of integrated outreach. Weaknesses described by GHO and DHO staff were insufficient supplies of IMCI drugs, irregular outreach services, and low qualification of outreach teams, in that order. There is unanimity of opinion among health staff that the single most important weakness of the current integrated outreach program is lack of IMCI drugs, with irregularity of outreach services also very common.

Figure 6: Perceptions by health staff of weaknesses of integrated outreach (group responses out of a total of 66 group interviews)



Please see Annex J for a breakdown of these responses by category of health staff. Other weaknesses described by the outreach teams were:

- Lack of adequate incentives for the outreach team. This was a much more frequent complaint among the district outreach team than those working out of peripheral facilities (35)
- Insufficient number of outreach sessions, days or cadre (23)
- Insufficient financial means to implement the activity e.g. covering transportation costs (17)
- Insufficient number of instruments, equipment and supplies e.g. blood pressure cuffs, thermometers, and diagnostic tools (14)
- Difficulty of access in some outreach areas (8)
- Inadequate qualifications, training or performance of outreach staff (14)
- Insufficient supervision (5)

- Insufficient supply of family planning supplies and RH drugs (4)
- Poor planning (3)
- Lack of awareness in communities (2)

Suggestions made for improvement of integrated outreach were a logical corollary to the weaknesses described above e.g. provision of an adequate supply of drugs and equipment, increasing incentives to outreach team and drivers, increasing the number and regularity of outreach sessions, further training of outreach teams.

5. Gender considerations related to integrated outreach

In general, gender aspects of the program are positive, though with some room for improvement seen. At the DHO level, the RH department is involved in the great majority of districts in 1) planning RH outreach targets, 2) evaluating results of micro-plans each round, and 3) problem solving. At the GHO level, there is less participation of RH in these tasks.

Table 8: Role of RH in integrated outreach

	Planning RH outreach services/targets	Evaluating results of micro-plans each round	Problem solving
GHO (4)	2	3	3
DHO (18)	**16**	**15**	**15**

The gender composition of most outreach teams was one third female. The female team member would most commonly provide RH services as well as TT for women. All18 districts described the policy of utilizing female staff for the provision of TT to women, with half of the districts utilizing women only, and half utilizing both men and women. This shows a good level of gender sensitivity for TT coverage, but also the need for the addition of female team members, because the one female member in each ofthe outreach teams must divide her time between two essential services – RH and EPI for pregnant women – with insufficient time for each.

Health staffwere asked to state how TT and RH service coverage could be improved in order that coverage of women with these services could be improved. At the peripheral and district HF level, the following suggestions were made:

- More effort to reach women with health education, educational media and awareness raising (27)
- Qualify more female cadres, especially midwives (20)
- Carry out special campaigns on tetanus, especially for school girls(9)
- Train more community midwives, CHVs and girl guides (8)
- More outreach to distant areas (3)
- More outreach and home visits (3)
- Incentives for midwives based on performance (2)
- Provide new programs for maternal and child health (2)
- Provide centers for motherhood and childhood, especially in remote areas (2)

- Provide more medicines and services for RH (1)
- Provide incentives to women to obtain five doses of TT (1)

D. SUMMARY OF FINDINGS

In summary, integrated outreach is highly popular and widely seen by beneficiaries and health staff alike as conferring many benefits on the population in terms of health care access, savings to the poor, and improvement of health status. Relevance, efficiency, and effectiveness are all high, as will be discussed in a later section. Remaining issues revealed by the field and desk review are:

- Further improvement of the gender composition of outreach teams
- A regular supply of IMCI and other drugs
- Regularity and adequacy of number of outreach days
- Greater focus on monitoring the quality of services provided

IV. PROJECT COMPONENT 3:Community Health Volunteers

The desk review showed this component to be the least developed of all the four HSS activity components, but with high potential, nevertheless. The MoPHP Nutrition Program took the leadership role for this component.

1. Training

The MoPHP Nutrition Program developed three training manuals, with the eventual support of JICA. Volume 1 deals with preventive care, including such topics such as nutrition education, family planning, infectious disease and maternal health. Volume 2 deals with curative care related to diarrhea, ARI, anemia, etc. Volume 3 will deal with surveillance issues. Assessment of volumes 1 and 2 shows the manuals to be of good quality, with the use of appropriate training methodologies, and with useful pictorial as well as written information. To date only volume 1 has been utilized.

815 CHVs from 41 HSS districts were selected according to a set of standard criteria, and were trained in volume I - the majority in 2010. Review of training reports showed the training and reporting to be of variable quality. Two of these reports included the results of pre and post-tests (11-63% correct pre-test and 52-70% correct post test in Amran, and 10 - 61% correct pre-test and 53 - 92% correct in Alhaymah). This range of scores signifies considerable learning for some trainees, though for others, the level of proficiency at end of course is not high. A review of TOT reports recorded pre-test scores of between 39 and 85% and post-test scores of between 63 and 91%. The lower end of the range of these scores suggests that some trainers were not fully proficient in the course content, and so this aspect could use some improvement.

2. Support and activation of CHVs post-training

Post training, CHVs have not been the target of HSS support. To date, the HSS has not collected nor analyzed the activity reports of the CHVs, nor carried out any field reviews. It is not possible to state how many of the trained CHVs are still working. Neither has a program of supervision and support been initiated by the HSS. As such, the evaluation team relied on the collection of field data to assess the actual activity level of the CHVs. These field data showed a surprisingly high \level of achievement of the CHVs – surprising because they have received only minimal support post training. This is very encouraging and shows the potential of this component, as it becomes better developed.

3. CHV descriptors and HSS selection process

A total of 18 CHVs from eight governorates, and 15 districts were randomly selected and interviewed during the field survey, as were 203 randomly selected community members in the CHV communities. DHO and outreach and HF staff in these governorates and districts were also interviewed concerning the role of CHVs.

Age range of the CHVs interviewedwas between 16 to 32 years, with the majority of them (15) in their twenties. Seven were married. Number of years of education completed was for most CHVs between grade 9 and 12. Three women had less education - only 6th or 8th grade education; and one had more - a university degree.

CHVs were selected for their position variously by community leaders or influential community members e.g. school principals or 'aqel al hara' (local leader) (3), community committees (5), or women in the community (2). Others were either exclusively or concomitantly selected by health staff e.g. the health facility director, EPI staff or supervisors (6), the local council or local council member (3), or the Red Crescent Committee (1). In total, only seven were selected by their communities. The others were selected by individuals of influence, which could potentially have a negative influence on their acceptance by the community, and is at variance with the selection procedures outlined for the CHV program.

4. Summary of field results on the activities of CHVs and results of service

Interviews with the different stakeholders yielded a rich body of data, which can be used for further programming of CHVs. Some of the most interesting findings about CHVs are as follows:

- 74% of randomly selected households knew the name and role of the CHV, indicating a fairly high level of exposure of her role.
- 65% of these households have already made use of the services of these CHVs.
- 42% of these were 'very satisfied' and 49% were 'somewhat satisfied' with the services they received. Main reasons for this positive assessment was

for the information the CHV provided them (24) and for the services she delivered (18).

- All but four of the services community members received were within the job description of the CHV. These services included, most frequently, measurement of nutritional status, general health awareness, health awareness for women, nutritional advice, breast feeding advice, immunization, treatment of diarrhea, and advice on iodization of salt. This list of services shows that the CHV is providing the services she is trained for, and that communities are aware of her role.
- 59% of DHOs and31% of HF staff described the work of CHVs as 'very beneficial'. Reasons for the positive assessment were primarily the perception that CHVs provided useful services such as carrying out health awareness (11), identification of serious cases of illness, referral of casesto HFs and otherwise facilitating linkages to HF (10), finding, treating and referring malnutrition cases (7), treatment of common illnesses e.g. diarrhea, helminthes (4), encouraging community to participate during outreach (4), helping increase service coverage rates, especially immunization (3), follow up for immunization and health conditions(3), distribution of FP methods (1), and reporting (1). District level outreach teams stressed how helpful CHVs were in preparing the communities for outreach.
- Reasons for negative assessments of CHVs by HWs were not that they disagreed with the concept but that the CHVs were not properly linked to the HF nor supported.
- 15 out of the 18 CHVs trained worked as CHVs post training. They all described the training they received in positive terms, and felt the skills they gained were useful and relevant. Two of the three who discontinued their work stated they did so because of lack of support by the health system. The other stopped to finish her studies.
- Most CHVs describe initial skepticism by their communities about their role, which was then replaced by confidence once the CHVs had established themselves. Each was able to describe success stories. For example: "The daughter of my neighbor was malnourished, and was very short. I took her MUAC measurement, and advised her family to take her to the nearest health center. The HF gave her some nutritional advice, and food and vitamins, and now she is very normal."

Table 9: Community satisfaction with CHV services

Very satisfied		**Somewhat satisfied**		**Not satisfied**	
No.	%	No	%	Yes	%
56	42%	66	49%	14	10%

5. CHV needs for support and supervision by health system

The issues facing CHVs are primarily weak linkage with HFs, and lack of resupply of kits, with resultant limitations of their effectiveness. Some (a minority) have begun

to be treated as 'doctors', engaging in practices such as giving injections without training. Previous experience in Yemen shows that such cadres can easily misuse their roles, and transform them from positive and educational to a profit making curative one. Results from this and earlier studies also show that some CHVs stop work when offered better-compensatedvolunteer roles in donor projects. Interestingly, the CHVs interviewed in the field appear to feel proud of the role they play and seem to desire positive recognition and support by the health system more than they value or seek monetary compensation. This is encouraging, and strengthens the Ministry's position of not providing monthly stipends. Given the fact that integrated outreach communities and CHV communities overlap, it would be an easy matter to combine supervision and support and resupply of CHVs with quarterly outreach visits.

Overall then, CHVs enjoy a substantial level of respect, and level of usage of their services by their communities. This is particularly remarkable given the very low level of support they have received from the health system post training. It bodes well for the future, especially if CHVs begin to be better supported. For more details about the field results on CHVs, please see Annex K.

V. PROJECT COMPONENT 4: Integrated Supervision

1. Desk review

Integrated supervision refers to supervision of health facilities that meets the information needs of the seven different HSS programs, as an alternative to each program conducting its own vertical supervision visits.

Using a participatory process, an integrated supervision form for HFs was designed as part of the functional integration framework. Summary forms at governorate level were also designed. Following this, the different MoPHP programs reviewed the health facility level form again, and revised it according to their needs.

Comparison of the actual utilized form to that which appears in the functional integration framework document, shows the former to be much more detailed, and thus improved. It collects useful data on each program and on the overall functioning of each health facility. The data collected in these forms represents a goldmine of information that can be profitably used by each of the programs and by PHC as a whole. Integrated supervision has covered all health facilities throughout Yemen, not just the 64 districts; approximately 3000 health facilities in all. The task of supervision was divided among the seven different MoPHP programs, with their national level staff each covering a specified number of governorates and districts.

National level staff members from the different programs have commented on how useful this exercise had been for them. This was especially the case for those programs that do not have their own detailed database and who have restricted access to the field for budgetary reasons. The integrated supervision exercise

provided them the opportunity to learn about the field circumstances relevant to their own program. Because each supervisor collected data on all seven programs, it also strengthened his /her awareness in very practical terms of the needs and circumstances of each of the other programs. In this way, programs engaging in this practical exercise were able to increase their understanding of the functioning of PHC as a whole. This is invaluable for encouraging an integration mindset as a basis for further integration.

HSS initiated integrated supervision in 2009 and continued until 2013. To date, each HF has received only one visit. The data on each health facility have been entered into a database, and an early analysis of the results of supervision visits to the first 1028 health facilities was carried out in in January 2010, and the results shared with HSS stakeholders. However, the full set of data have not yet been analyzed fully, nor provided to district or governorate health offices.

It is clear that this component has acted more like a survey than a supervision exercise, because it was carried out only once per health facility, and it has not yet provided feedback to the governorates or the districts. Neither does it fit the currently accepted concept of 'supportive supervision', in which the supervisor provides on-the-job training to the health worker, or assists the health worker problem solve, and brings health facility issues to the attention of the district or governorate level health office. Interviews with HSS staff reveal that the reason this component was developed as a national data-gathering exercise, rather than an ongoing supervision system was to provide a service i.e. data that would be valuable to all involved programs, thus increasing the incentive of each for integration.

2. Field findings

The topic of integrated supervision was briefly addressed in the field. Because integrated supervision was not an ongoing activity, but rather a one-time exercise, there was not a large amount of program data to be collected. Interviews were held with GHO staff in four governorates, and with DHO staff in 18 districts, representing 9 governorates. A total of 20 GHO staff were interviewed - 18 male and 2 female. A total of 78 DHO staff were interviewed; 53 male and 24 female.

Feedback on the integrated supervision exercise

All four GHOs reported receiving feedback from the integrated supervision visits, as did 12 of the 18 DHOs. Most GHOs and DHOs felt that the data collected during the integrated supervision exercise should be used in the future to support the health workers to improve services through training, and to address the deficiencies of health facilities through the provision of equipment and other needed support. This has happened to some extent, according to staff of both the GHO and the DHO. They state that the practical outcome of the exercise has been better understanding of the weaknesses of the HFs, the provision of more equipment to some HFs, in-service training and feedback to some health staff of the facilities, and correcting some of the HF weaknesses. In some districts, it is stated that it has also led to increased ongoing supervision and support.

General perception and practices of integrated supervision

The term 'integrated supervision' was not commonly understood by practitioners in the field in the same way as it was practiced by the HSS. The confusion is mostly regarding the difference between supervision of *integrated services* such as outreach, versus supervision of HF by *integrated teams*. This latter type of supervision is the model practiced in Dhamar governorate, as opposed to the actual integrated supervision exercise that was carried out by HSS by national level teams. The confusion over the meaning of the term, and differences in concepts makes it somewhat difficult to interpret all the data gathered on this topic in the field.

In the districts visited, there are in fact a wide variety of supervision practices, with no standard practices observed across districts. For some health facilities, there is no supervision at all, and for others, traditional PHC supervision takes place. In other cases, supervision is carried out only by vertical programs, and then only by the programs that have funds available for supervision e.g. EPI. In other cases - five out of 19 districts - integrated supervision in its broadest sense (i.e. teams of supervisors visiting HFs) takes place. In these cases, either the district or the governorate health office takes the initiative of using donor funding supplied by one vertical program to support integrated supervision by a team, or alternatively, donor funding for this model of integrated supervision directly supports such supervision practices. This is the case with both Netherlands and European Union support.

Despite a low level of practice of integrated supervision of health facilities, there is a general awareness by health workers and DHO and GHO staff of the benefits of integrated supervision, and a desire for such supervision to be implemented. There is a general belief that it makes logical sense for several programs to utilize the same resource (e.g. vehicles) to visit a HF, rather than for each program to visit independently, and to use separate vehicles. For the most part, however, DHOs and GHOs do not carry out integrated supervision because there is no formal system for the use of funding for such a model, and each vertical program continues to have its own supervision budget, supervision forms, and supervision schedules. Systems are not in place at the governorate and district level to activate integrated supervision.

There are individual and limited initiatives taking place that show promise and commitment to integrated supervision. One example described in the field is as follows:"At the district level, integrated supervision was developed between 2010 – 2013 but only conducted by the EPI supervisor due to shortage of funds. Then in early 2014, integrated supervision was conducted to the HFs by 3 programs together (RH, IMCI, EPI), taking advantage of available resources from EPI and nutrition. The district staff, at their own initiative, modified the HSS integrated supervision form, and use the data collected for their own purposes at the DHO level."

A second example is from Dhamar: "At the district level, the integrated supervision team is active and visits each HF twice a year. The team consists of 4 persons (EPI, RH, Director of the DHO and one other). A fifth individual from the Local Council of

the district also joins the supervision team. Integrated outreach has been supported by the Netherland project, and the forms used are those developed at the governorate level. The Local Council is planning to cover the integrated supervision costs in the future. A feedback system exists, utilizing forms and registers copied to the HF, DHO and GHO. At the HF level, these visits are documented in the supervision visit register".

3. Summary of integrated supervision

In summary, integrated supervision has sprung from an excellent integrated and participatory design process, and has generated invaluable programmatic data. However, it is more accurately described as a survey than a supervision exercise. It was implemented once per each health facility in the country, between 2009 and 2013. The decision to carry out this exercise was due to the desire to create a product – the information base – that would be valuable to all seven programs, and thus facilitate positive attitudes towards integration among these programs.

In the field there is very little evidence of the impact of the one-time integrated supervision exercise today. There is no formal system in place for the use of funding for such a model, and each vertical program continues to have its own supervision budget, supervision forms, and supervision schedules. However, there is a high degree of interest by GHO, DHO and HF staff in an integrated supervision concept - one that refers not only to data gathering, but also to a system of regular supportive team supervision to HFs. They have seen how an integrated supervision model can work, through the work of other donors, and through the integrated supervision of outreach. They have also, in some cases, modified and used the HSS integrated supervision form and adapted it to their own purposes. Overall, it appears that an attitude shift has taken place, and that the time is ripe for setting up systems of integrated supervision of health facilities.

The great value of the data collected in the integrated supervision exercise will be to have it fully analyzed (this is planned) and to feed back the data to the HSS stakeholders including the various MoPHP programs, the district and governorate level health offices, and donors. A simplified version of it can also be incorporated into routine supervision visits in the future, so that it will continue to yield an information value and be a basis for supportive supervision. Thus it has great potential, which should be taken advantage of as soon as possible. Development of a model of integrated supervision can also be developed from this early exercise, and from other experiences in the HSS districts. The positive attitudes encountered in the field suggest that such an initiative is already understood at the field level.

VI. Overall Extent of Integration of Vertical Program Achieved

Examination of all four components combined shows that the HSS has achieved various degrees of functional integration of seven different vertical programs; six within the PHC sector and one in the RH sector. The HSS has used a participatory

planning and implementation approach as well as a functional integration model to create this change. Overall degree of integration achieved to date, as assessed by the evaluation team, can be summarized as follows:

- ✧ Attitudinal shift within MoPHP PHC/RH programs
- ✧ Policy shift within MoPHP towards integration
- ✧ Groundwork at national, governorate and district level set through training and early experience with integration
- ✧ Outreach achieved integration of three programs, across two MoPHP sectors
- ✧ DPs beginning to adopt integrated approach e.g. World Bank, UNICEF, DRHP
- ✧ District level micro-plans have begun to reflect integration of three programs, at least for outreach
- ✧ Experience of Integrated Supervision exercise as first step towards integrated supervision of HFs.
- ✧ CHVs trained and beginning to provide integrated package of services

VII: Overall Project Performance

This section examines the overall performance of the project according to both DAC criteria and specific expected results of the project, such as transference of the model to other MoPHP projects. The data presented in this chapter refer primarily to integrated outreach, because this is the main focus of the HSS. This is especially the case for the topics of coverage, efficiency, impact and effectiveness.

A. REACH AND COVERAGE

1. Background on methodology used

The indicator set in the project document for coverage was that at least 70% of their target population would be reached with the integrated intervention package. It will be noted that thisindicator did not mention the time frame within which this 70% coverage was to be achieved e.g. over the life of the project vs. annually. For the sake of the analysis, it will be assumed that 70% coverage was expected to be achieved *annually*. However, coverage over the life of the project will also be calculated. In summary, coverage can be conceptualized and will be calculated in different ways.

1. Percentage of the target population in levels 2 and 3 who received the three types of outreach services in any given year (indicates actual service coverage).
2. Coverage of households per community who received services over the life of the project (indicates access and acceptability)

It will be remembered that integrated outreach targets only levels two and three of the health system, while level one is covered by fixed health facilities. On average, the percentage of the population in these districts who reside in levels two and three is 47%. There is very great variation per district, with only 9% of the population of some districts living in these remote areas, while for others as many as

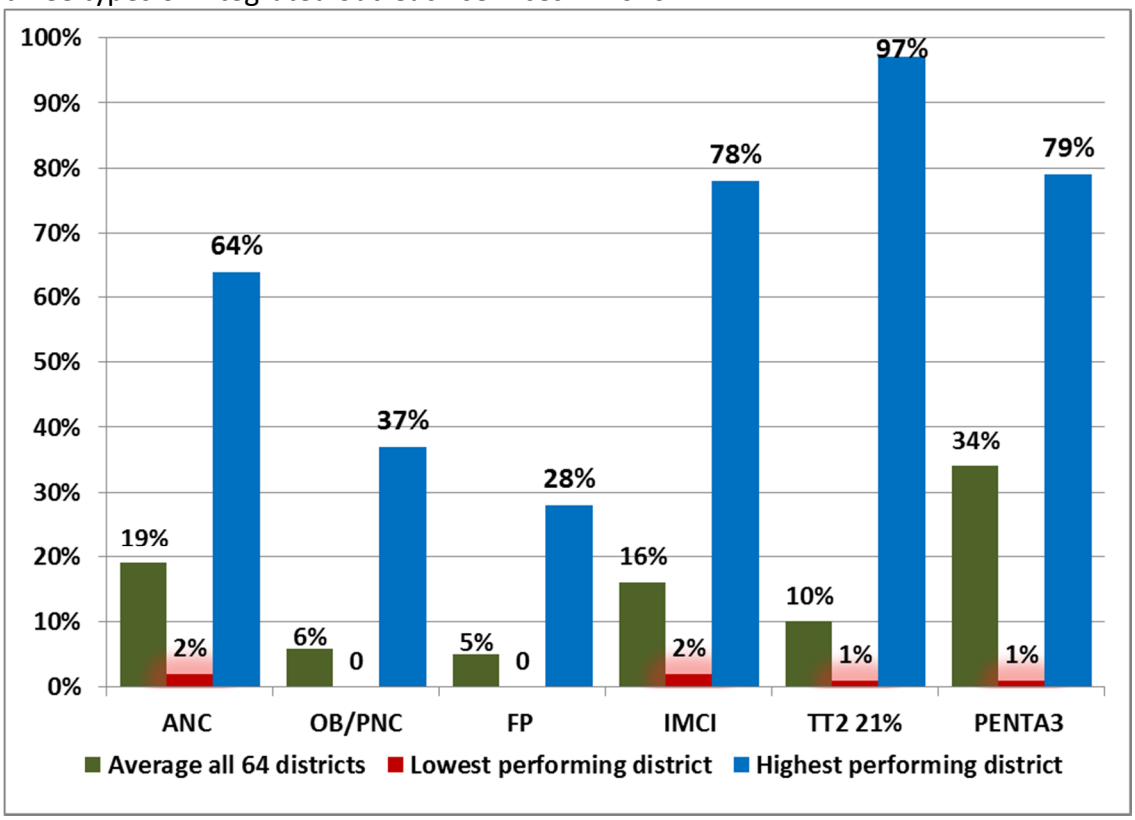
97% of the population live there. Obviously, given this degree of variation, the importance of outreach for achieving high service coverage will vary dramatically by district.

We have selected the year 2010 as the fairest year to analyze coverage results of integrated outreach. This is because by 2010, the project had already had one year to begin implementing a stable outreach program, and it was not yet affected by the upcoming political events. The years 2011 and 2012 were severely affected by the events in Yemen, and 2013 saw already a number of HSS districts taken over by World Bank HPP. 2010 is considered the year in which the situation was still somewhat normal, and thus most fairly represents the potential the integrated outreach methodology has.

2. Coverage calculated as percentage of the target population in levels 2 and 3 who actually received the three types of outreach services <u>in any given year</u>

This calculation utilized 1) the 2010 EPI population estimates for the second and third levels of districts targeted by outreach services, by target group e.g. WCBA, U5YO children, infants, number of pregnant women etc, 2) 2010 HSS data on number of service contacts for RH and IMCI, and 3) 2010 EPI coverage data for Penta3 and TT2+. Using these data to calculate actual outreach coverage per type of service, the coverage of the target population of levels 2 and 3 of the targeted districts is as follows:

Figure 7: Percentage of the target population in levels 2 and 3 who received the three types of integrated outreach services in 2010



Interpretation of these data is relatively straightforward for RH (ANC, FP, PNC) but less so for IMCI and EPI. A figure of 19% ANC coverage means that of all the pregnant women residing in levels two and three of the HSS districts, a maximum of 19% received ANC through integrated outreach in 2010. These data are unable to differentiate between repeat visits to the same woman, versus new visits to different women. Data on repeat versus new visits were not collected byHSS.

A figure of 16% IMCI coverage means that of all the U5YO children residing in levels two and three of the HSS districts, a maximum of 16% received IMCI services. Like the RH data, these data are unable to differentiate between repeat visits to the same child, versus new visits to different children. However, the interpretation of *adequacy*of coverage is very different than for the RH data. This is because not all children in the U5YO age group will have been sick at the time of the outreach visit and will not have needed IMCI services, whereas ideally all pregnant women should receive ANC visits. This highlights a monitoring issue of HSS. Calculations were not made nor targets explicitly set by HSS in relation to the expected number of sick children. The 16% may actually represent a high percentage (and thus a high coverage) of those children in the catchment areas served who were ill enough to require diagnosis and treatment at the time of the outreach visit. It is recommended that HSS set an IMCI coverage target based on expected number of sick children at any point in time (prevalence), based on sound epidemiologic data. Without this, it is not possible to assess whether or not coverage of 16% of U5YOs represents coverage of the majority of expected ill children or whether it falls short, and by how much.

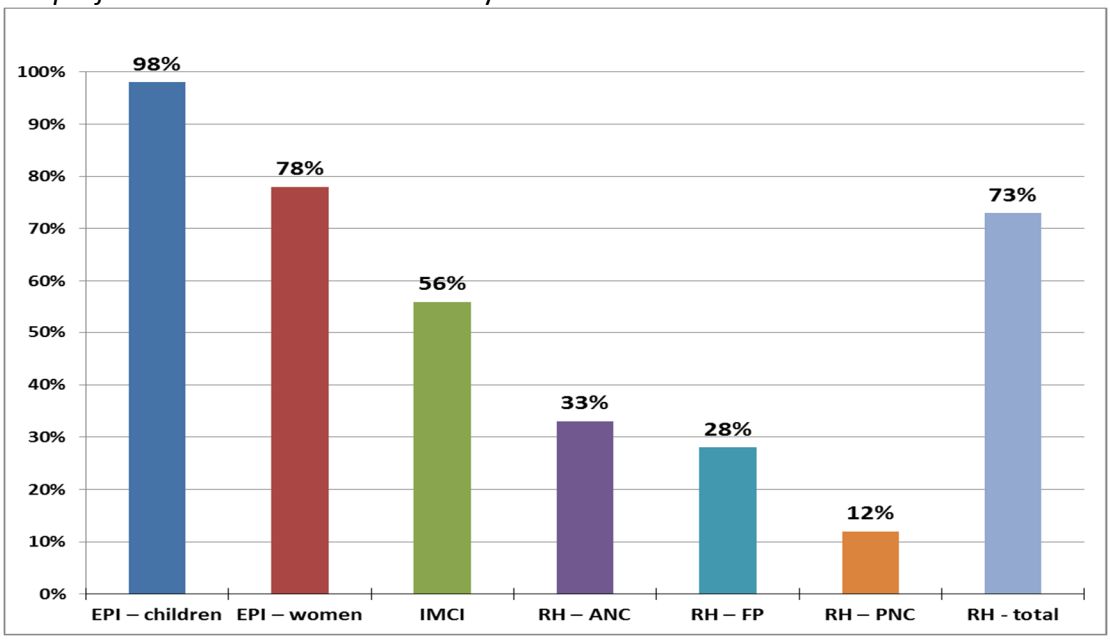
The EPI Penta3 coverage of 34% and TT2+ coverage of 10% is a more exact measure, and means that these percentages of the target population have been covered. However, *adequacy* of EPI outreach coverage can be assessed more easily than IMCI or RH, because EPI also collects statistics on coverage by fixed HF, by district. These coverage data show that for 2010, for example, even though only 34% of the target population was reached with Penta3 through outreach, 54% was reached through fixed HF services for a total of 88% coverage. Data collected on RH and IMCI by HSS do not include coverage by fixed facilities. Because some proportion of the population in levels 2 and 3 will be able to seek care at HFs for RH and IMCI, the data presented above do not tell us what proportion of the population has received needed health services, only what percentage received the services *through integrated outreach*. Adequacy of coverage can only be calculated by collecting data on both fixed HF and outreach coverage. It is recommended that for phase II of HSS, such data be collected.

Finally, the above figure shows that there is tremendous variation among districts. Those with low coverage represent potential for improvement.

3. Coverage calculated as percentage of households per community who received services <u>over the life of the project</u>

The field data tell a somewhat different story from the HSS desk review statistics. Of the 243 households interviewed during the field survey, only one had not received services of some type from the integrated outreach program between 2008 and 2013 i.e. *over the life of the project.* The highest percentage of households received EPI services for children, followed by EPI services for women. A total of 73% of all households received some type of RH care, as did 56% for IMCI services. Thus the actual reach over the life of the project was highest for EPI, followed by RH, and then IMCI services. This indicates that over time, a much higher percentage of households had access to and utilized the integrated outreach services over the life of the project than is the case annually.

Figure 8: Households receiving specific integrated outreach services*over the life of the project*out of a total of 243 surveyed



4. Discussion on coverage

Since an estimated 47% of the population in the HSS districts residesin the second and third levels of the HF catchment areas, outreach has the potential of reaching nearly double the number currently served by fixed health services alone. Indeed, EPI has achieved 93% coverage for Penta3 in the HSS districts in 2013, with 36% of this due to outreach services. It is clear that for RH and IMCI services as well as EPI TT++ services, coverage has been greatly expanded through integrated outreach, though not at the levels set by the project. RH and EPI TT services show especially low coverage compared to their targets. The setting by HSS of more specific targets for IMCI, based on sound local epidemiological data, and the collection of data on coverage at the HF level would have allowed a much clearer picture to emerge as to the adequacy of coverage by integrated outreach for each of the three components.

The field data presented earlier indicate that outreach is highly popular and appreciated by communities, and that nearly all households have taken advantage of outreach services over the life of the project (though not necessarily annually).

However, there are still barriers to access, as shown in earlier sections. These include:

- Insufficient numbers of female staff in some outreach teams
- Irregular and low number of person days allocated per service per round
- Insufficient IMCI drugs
- Weak linkage with CHVs, to improve awareness and follow up
- Insufficient supplies and equipment in general
- Low awareness of the population about the importance of preventive services such as ANC, PNC, FP and TT.
- No health education and awareness component attached to the outreach
- Low performance in some districts, lowering the average number of client contacts per person day of outreach

B. EFFICIENCY

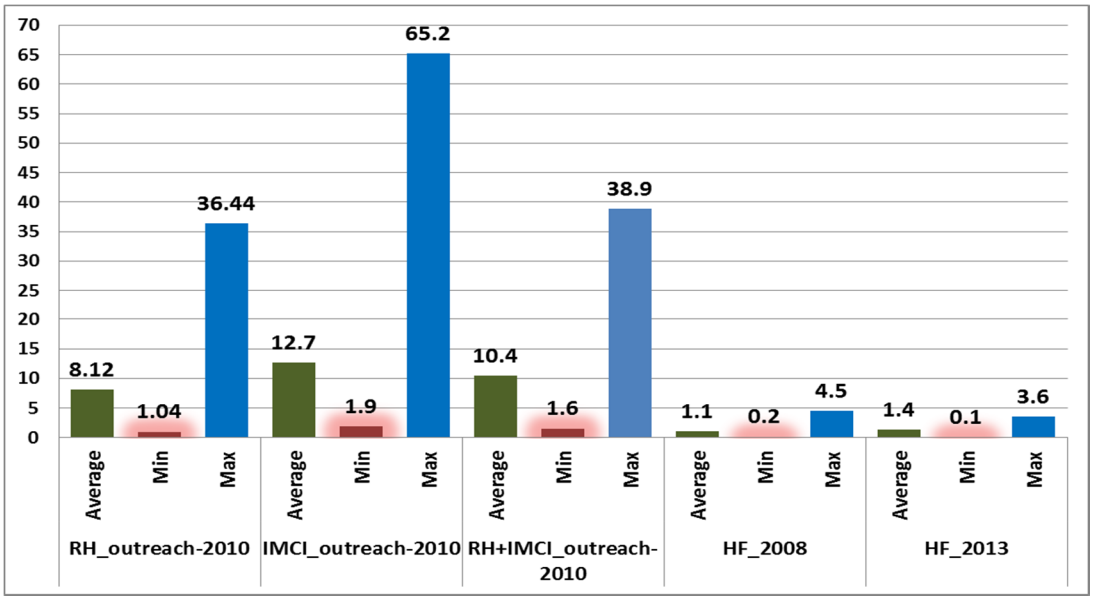
This project sought to increase coverage in a cost effective manner. Integrated outreach to levels two and three of the health system was considered to be more cost effective than either vertical outreach or HF based services. According to the proposal document, the cost of service per contact at the sub-district level at start of project was US$28.90. It was expected that cost per contact would decrease by 40% to $17.34 through using integrated outreach. The evaluation team did not have ready access to the required data to calculate the cost of integrated outreach per contact. However, it examined efficiency in two other ways. These measures show the integrated approach to be efficient for both the patient and the health system, especially in comparison to fixed services.

1. Relative efficiency of time use of health workers for services provided through a fixed HF versus through outreach

Using HSS 2010 data for outreach team numbers and services provided in all 64 districts, contacts per day for reproductive health and IMCI service per person day were calculated. As shown below, an average of 8.1 RH service contacts were made per person day of outreach, and 12.7 for IMCI.

For comparative purposes, data were also collected during the field survey from 16 HF that serviced outreach areas in 16 districts. Data were collected on both 1) the numbers of technical staff available per facility and 2) the number of patient visits per year per HF visited. Total staff per facility ranged from 1 to 21. These data show that for 2013, average number of patient visits per year per technical staff member was 351, and in 2008, it was 299. Assuming 264 working days per year per staff member (44 weeks x 6 day), and using the 2013 patient visit data, it can be calculated that 1.3 patient visits per day per health facility are made on average. While this is an improvement from 2008, it represents a very inefficient use of staff time. In comparison to patients seen per HW during outreach, it is also very inefficient. Averages, maximums and minimums for both 2008 and 2013 for fixed facilities and for outreach services are shown below.

Figure 9: Comparison of time use of HW in fixed facility-based services versus outreach services



We see that even without explicitly bringing cost into the equation, and just considering the efficiency of use of the time of technical staff, staff are about 7 times more efficient when used in outreach than when providing HF based services, under current circumstances. Given the fact that salaries are the single most expensive budget item of the health system, improving efficiency of use of health staff will represent significant cost savings to the system.

The graph above also highlights the fact that there is significant variation among districts for both outreach and fixed health services. Some of the data shows very low contacts per person day of outreach, leading to concerns about efficiency of service provision, and indicating a need to identify the problems in these districts and resolve them. On the other hand, some of the figures are improbably high, such as 65 IMCI contacts per person day. This leads to questions about the quality of the data. In general, however, the average numbers of contacts per day are reasonable, given the terrain that needs to be covered in these catchment areas.

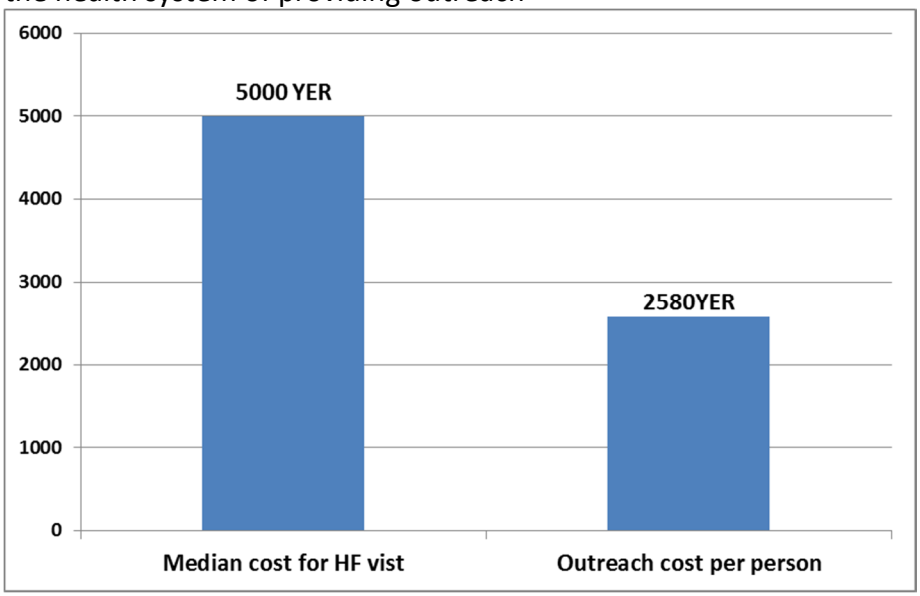
2. Efficiency gains of services brought to communities through outreach (cost to system) versus households traveling to HFs to seek services (cost to households)

During the field survey, households were asked about the cost of the most recent health care visit they sought for one of their children. These data were already presented in table 6, and show that the median cost per visit of basic health services (curative and preventive) is YER 5,000.

In comparison, we know that the cost per IMCI visit to the health system is YER2,580 ($12) per service provided in integrated outreach (according to the World Bank costing study of 2011, and assuming no inflation). Comparing this cost to the health system with the cost incurred by household to bring their children long distances for

health care, we see a significant cost savings overall using outreach; with integrated outreach costing only about 50% that incurred by households seeking HF-based services. These data indicate that the estimated efficiency for the country and the cost savings to the poor of using an outreach model is very high.

Figure 10: Comparison of costs incurred by household for HF visits versus the cost to the health system of providing outreach



3. Relative efficiency of an integrated outreach versus a vertical outreach approach

Two studies have already examined the relative efficiency of an integrated versus a vertical approach. One is the 20100 World Bank costing study, which made numerous assumptions in carrying out its comparative analysis. A second costing study was carried out by the HSS itself using actual 2008 data. Both studies showed that integrated outreach is less expensive than vertical research in terms of cost per service provided. The World Bank study also showed that both types of outreach are significantly less expensive than fixed facility services. Please see Annex

The qualitative results of the evaluation back up this finding of greater efficiency of an integrated package. Health workers involved in outreach shared their perceptions that community acceptance was higher when an integrated package of services was provided, increasing the number of recipients per outreach round. In addition, the simple logic of the argument that utilization of one vehicle and driver for three services rather than one represents cost savings is difficult to argue with.

Second, the present study has been able to test some of the assumptions of the World Bank study. It shows that some of its assumptions should be adjusted. An important assumption this study made is the number of patients each team would reach per day through integrated outreach. It is assumed for the World Bank calculation that a team of four would reach 80 patients per day i.e. 400 a week, and 20 per person per day. The present study shows that average contacts per person

day is 10.4, approximately half of that assumed. This will affect the cost estimates considerably. Thus these assumptions should be revisited. This does not necessarily affect the World Bank's conclusions however, because the conclusions are based on comparisons with fixed facility and vertical outreach services, and the assumptions behind these types of services were not tested by the current study.

C. EFFECTIVENESS

The HSS project document stated the expectation that the provision of integrated outreach would have the effect of improving the health services provided at the level of the health facility. This was assumed to be mediated at the HF level through 1) referrals and other linkages between HFs and communities, stimulated by outreach, and 2) improved skills of HWs due to integrated PHC training and practice. It was also expected that integrated supervision of HFs and management and micro-planning training and systems development would stimulate improved HF service provision. Three measures of effectiveness were used in this evaluation study. These were:

1. Possible impact of outreach on the functioning of fixed health facilities,
2. Effectiveness of outreach per district,
3. Community satisfaction with outreach services.

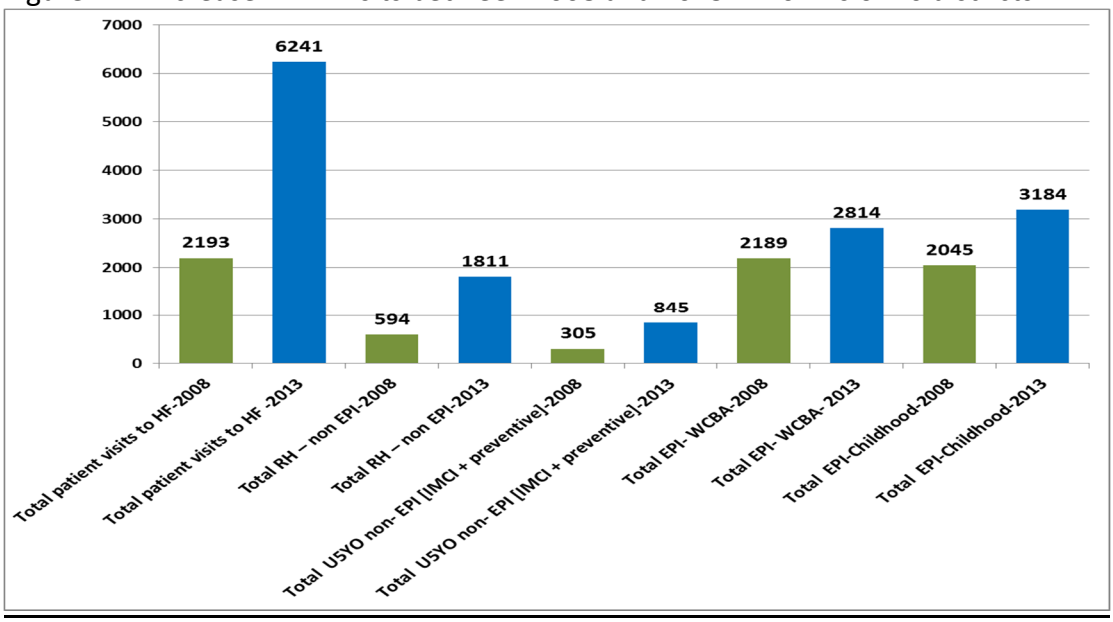
1. Possible impact of outreach on the functioning of fixed health facilities

The project document expected a three-fold increase in patient visits as a result of outreach. The evaluation was unable to determine the exact status of this indicator due to lack of access to reliable data. HSS did not collect data on fixed facility usage, only outreach.

To gain indicative data on this topic, the field survey compared 2008 with 2013 fixed facility patient visits. The field data sample of 16 HF in 16 districts show fixed site service provision to have increased 2.85 times between 2008 and 2013, from 35,095 to 99,856, nearly reaching the objective of a three-fold increase of health service provision. However, this does not indicate cause and effect from integrated outreach services. The increase in service provision appeared to be correlated primarily with an 80% increase in number of health care providers, and also a small increase in the number of patient visits per health care provider (1.1 (2008) versus 1.4 (2010) patients per technical staff member).

It is interesting that non-EPI related RH and U5YO care visits nearly tripled over this time period, while EPI related visits increased by only 29% for women, and 36% for children. This probably reflects already high coverage by EPI services, at least for children.

Figure 11: Increase in HF visits between 2008 and 2013 in 16 HFs of 16 districts



2. Effectiveness of outreach per district

As noted in other sections, the performance of integrated outreach varied substantially by district, which would indicate room for improvement in a number of districts. The analysis examined whether the level of performance varied by component (EPI, IMCI, RH) or whether performance was primarily a function of district management capacities. This tells us a little about the difference between programs versus overall management capacity in each district.

Curiously, the analysis shows that the districts with the highest performance for each category of service (i.e. top ten performers) rarely performed at high levels for the other categories of service. As shown in the table in Annex M, Jebel Ash Sharq district performed well for 5 out of 6 services, but no other district performed well in more than three categories. This is puzzling. One would have expected that high performance was due to good management, good supervision, high coverage geographically, good quality services, and public acceptance; all qualities which should cross over categories of service. Instead high performance at the district level appeared to be component-specific.

Another puzzling pattern was detected for immunization coverage. Though performance, on average, improved for Penta3, 37 districts out of 64 showed a decline in performance in Penta3 performance between 2008 and 2010, as did 28 districts between 2010 and 2013. The other districts of course improved their performance during these periods, leading to an overall improvement in EPI coverage. Examination of patterns for fixed plus outreach Penta3 coverage shows similar results. This indicates significant room for improvement by some districts and/or perhaps problems with the data. These patterns should be a signal for closer examination and district-level problem solving by the project.

3. Community satisfaction with outreach and CHV services

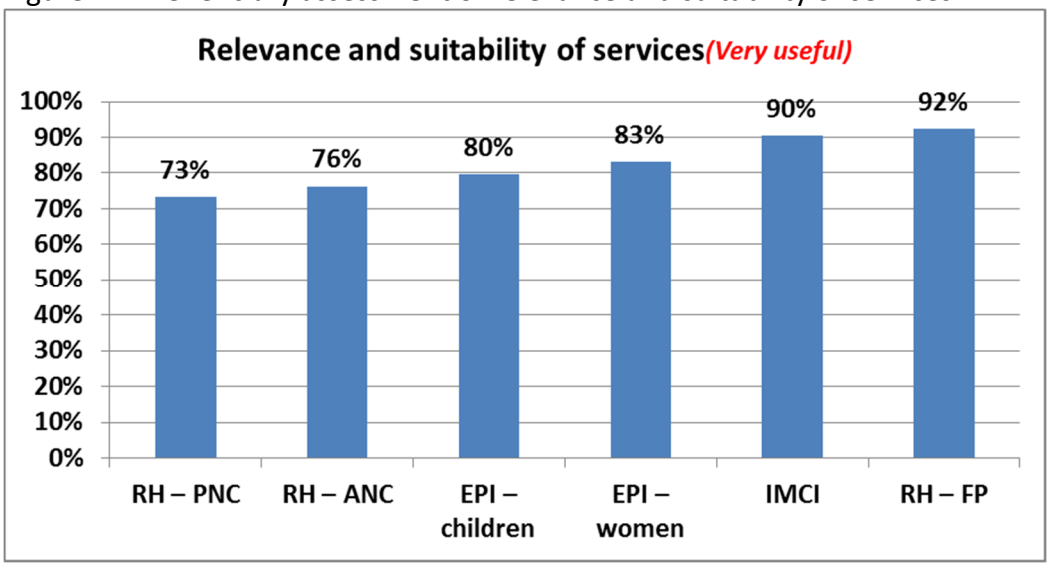
Perhaps the best indicator of effectiveness is community satisfaction with services. As already noted in earlier sections, the satisfaction of communities with both outreach and CHVs is high – 80 and 65% respectively. This indicates that households believe the health care they receive to be effective.

D. RELEVANCE

Relevance of the HSS activities can be examined from the point of view of the health system as well as from that of communities. Its relevance to the health system derives from the fact that it presents a methodology for reaching previously un-served populations with basic services, at a cost relatively affordable to the health system, especially in comparison to vertical service provision and fixed health facility health care provision. The efficiency data, as presented above, are crucial for relevance to the health system. Health staff at all levels of the system believe that the services provided are important for meeting the health needs of the population.

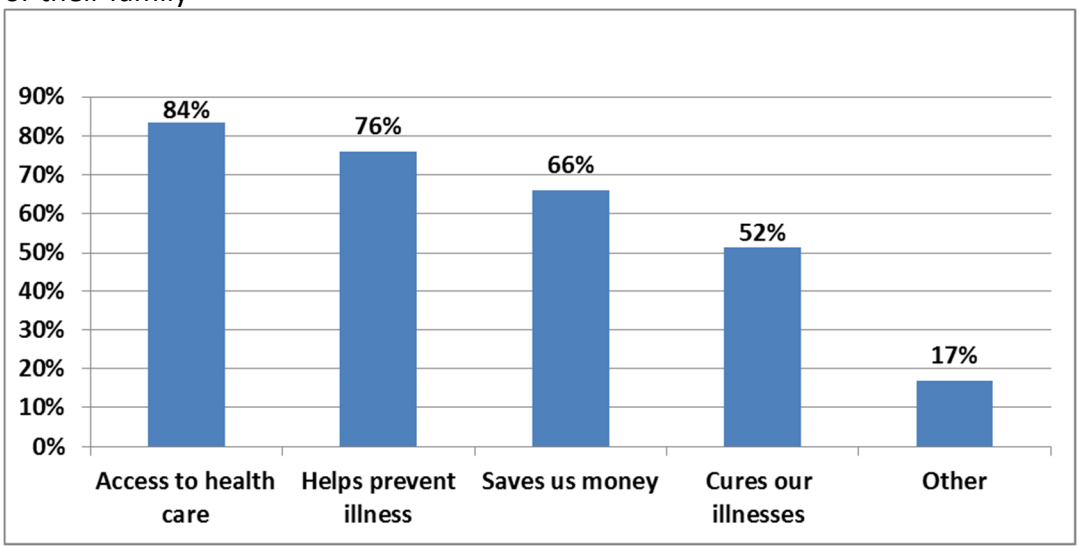
In terms of relevance for communities, for those 47% of the population who reside in 2nd and 3rd levels of the HF catchment areas, they show positive attitudes towards outreach. Between 73 and 92% of respondents per service find the services offered to be very relevant and suitable.

Figure 12: Beneficiary assessment of relevance and suitability of services



Communities are also very clear about the benefit of the outreach and CHV services. Outreach was seen to provide them access to valued health care, prevent and cure illness, and save them money. CHV services were seen as leading to greater health awareness and access to health care.

Figure 13: Community perceptions of the benefit of outreach services to themselves or their family



E. IMPACT

It was not possible to collect data on actual impact during this evaluation, as no baseline data on morbidity or mortality or quality of services were collected. Neither were quality indicators for service provision monitored over the course of the project. However, the following findings would indicate that the expected impact may be significant:

- The majority of 2nd and 3rd level communities (47% of the population) have gained periodic access to RH, IMCI and EPI services through integrated outreach
- High satisfaction of communities with outreach (44-80% per type of service) and CHV services (65%)
- Nearly a tripling of service provision at surveyed HFs in 16 districts between 2008 and 2013
- Most households (as indicated by the survey data) have received some category of service through outreach.
- Extensive training of HWs on integrated PHC, with pre and post test scores indicating a significant level of learning
- Perceptions by communities that they enjoy improved health as a result of these programs, and that they have more awareness of health issues. 76% feel outreach services have helped them prevent illnesses, and 54% believe that their illnesses have been cured through outreach.
- Perceptions by health staff at all levels that communities enjoy improved health

Perhaps of greatest importance for impact is that over a quarter (26%) of households state that without the integrated outreach services, they would not have sought health care for their children, and other households would have sought it less frequently, with obvious morbidity and mortality impact.This 26% potentially represents the impact of outreach on mortality and morbidity. The provision of

integrated outreach has led to higher levels of care seeking in some cases, and to cost savings for the poor in other cases.

Those factors that are expected to have limited the impact of HSS are:

- Insufficient IMCI and other drugs and supplies for outreach
- Less than optimal number of days, or irregularity, of outreach
- Insufficient numbers of female staff involved in outreach
- Lower than targeted coverage rates with the outreach services
- Weakness of quality supervision and monitoring of outreach
- Minimal support for CHVs post-training
- Inadequate setting of RH and IMCI service provision targets, nor indicator-oriented programming for these two components.

Potential negative impact of HSS

Interviews with health staff in peripheral health facilities, outreach teams, and at GHOs and DHOs explicitly explored possible negative effects of the integration of vertical programs and of integrated outreach and other aspects of HSS programming. Out of all interviews, in only three cases did health staff comment on negative effects of HSS programming on the health system. One health worker stated that people are becoming dependent on outreach, and so do not utilize services in HFs. Another felt that EPI services dominate and thus have a negative effect on the other components, and a third noted that HFs have to close their doors on those days that their health teams to carry out outreach, so that people coming to the HFs are denied services. However, such responses were rare. Most health staff perceived that there has been an improvement in rate of usage of HFs by people in their catchment areas, that EPI coverage has increased as a result of integrated outreach, that care is more integrated, and that because of the training and experience of HWs for outreach, they provide better services in HFs.

F. SUSTAINABILITY

Sustainability has both institutional and financial dimensions. It is dependent on both Ministry and donor commitment. As noted above, technical management and implementation of the HSS is directly through the PHC sector of the MoPHP. The fact that it is integrated within the MoPHP gives it high potential for sustainability. Without this type of deeply integrated Ministry-based management, it is unlikely that functional integration of vertical programs and the integrated outreach strategy would have already become as established a part of the system at the district and governorate level as it has done, that the different programs in the Ministry would have been so deeply involved, nor that the commitment at the level of the Deputy Minister and others would have been as high.

For sustainability, it is clear that the integrated outreach model, and the micro planning and the community volunteers are ideal vehicles for programming across numerous programs. It can also flexibly accommodate many donor interests. It has the flexibility and potential to be able to piggyback many programs onto it; in the same way that HFs can accommodate a number of programs.

In order for this effort to be transformed from a 'project' into an integral system of the Ministry, and a long term service modality, however, further policy and budgetary measures will need to be put in force, as well as guidelines for development partners. In addition, further fine-tuning of the HSS components and of its monitoring system will be required.

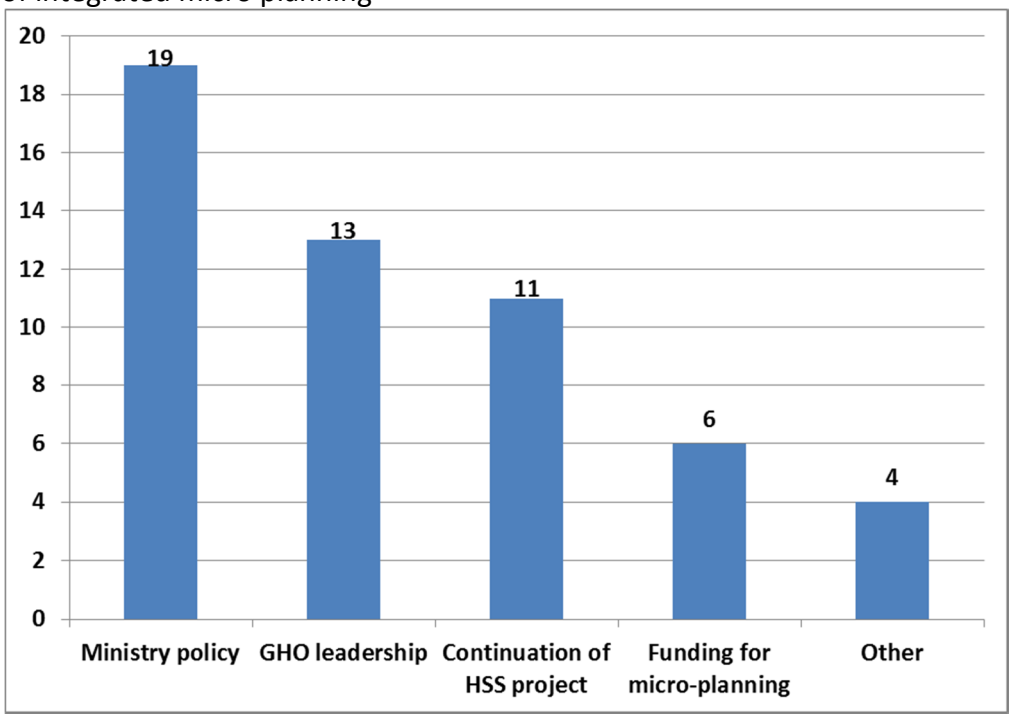
Integrated outreach has now been adopted by other projects, notably the World Bank funded HPP (100 districts, governorate-wide in Ibb, Sana'a, Hodeidah, Dhala'a, Rayma and Al Beidha governorates), UNICEF (20 districts), and the Netherlands funded DRHP project in Dhamar governorate. By 2013, HPP has taken over some of the former HSS districts. In addition, JICA has supported the CHV training activities of the HSS. This is a very high level of uptake of the HSS methodology, especially since it has taken place in the first phase of HSS, even before data on the effectiveness of the model were published. This is a major success in terms of alignment and harmonization, and will contribute to the sustainability of the model.

At the same time, many donors continue to support vertical programs directly, which sets up a competition with integrated programming. Both donors and the ministry will need to chart a path to make the transition of HSS from a project to an organizationally sustainable Ministry way of working. As was stated by some stakeholders, vertical programs will not risk long-term integration if HSS is only a project that may eventually disappear. Vertical funding offered by donors to vertical programs will continue to take priority. Thus both donors and the different programs of the PHC sector will need to work together to make this transition. The following briefly describes the findings and conclusions on the sustainability of each of the four HSS components.

Sustainability of micro planning

As noted above, field data show that integrated micro planning is now well established in the field sample of districts and governorate, and has become part of their normal way of working. In an attempt to understand what needed to be in place in the health system in order for integrated micro-planning to continue, participants at the GHO and DHO level were asked what their continued ability to carry out micro-planning in the future depended on. The factors they listed as most important were Ministry policy and GHO leadership, with project continuation and funding for micro planning mentioned less frequently. These responses give one a sense that micro planning is already considered a part of the health system, and not simply part of a project approach.

Figure 14: Factors considered necessary by DHO and GHO staff for continuation of integrated micro planning



Sustainability of integrated supervision

In the field there is very little evidence of the impact of the one-time integrated supervision exercise today. There is no formal system in place for the use of funding for such a model, and each vertical program continues to have its own supervision budget, supervision forms, and supervision schedules. However, there is a high degree of interest by GHO, DHO and HF staff in an integrated supervision concept - one whichrefers not only to data gathering, but also a system of regular supportive team supervision to HFs. They have seen how an integrated supervision model can work, through the work of other donors, and through the integrated supervision of outreach. They have also, in some cases, modified and used the HSS integrated supervision form and adapted it to their own purposes. Overall, it appears that an attitude shift has taken place, and that the time is ripe for setting up systems of integrated supervision of health facilities. Sustainability will require policies and systems of integrated supervision to be put in place.

Sustainability of integrated outreach

As indicated in previous sections, outreach shows high efficiency and coverage benefits. These data and conclusions have already been presented elsewhere. In this section, the point simply needs to be made that efficiency results show that from a financial perspective, outreach is one of the most affordable options for providing health care to un-served populations, perhaps the most affordable. It also makes much more efficient use of HW than fixed facilities do. Its sustainability will depend on 1) the provision of a greatly expanded health care budget for outreach, and 2) donor support being channeled through this integrated approach. Both of these will in turn depend on convincing both the Ministry of Finance and the development partners of the relative, efficiency and effectiveness of the integrated

approach. This will require strengthening the statistical case for the benefits of this approach, and additional policy work.

Sustainability of CHV program

This program still needs considerable building before issues of sustainability of the CHV component can be addressed. However, two obvious issues that have clear implications for sustainability are 1) the issue of incentives for CHVs, and 2) the variety of volunteer programs that exist, some of which compete with the CHV program. Field data show that monetary incentives for CHVs are not absolutely necessary in order for them to perform well. More important to them is the support and recognition they get from the health system and from their communities. Introducing a system of financial incentives for them would likely undermine sustainability because it would be unaffordable in the long run. It is more reasonable to put extra funds into support, supply and supervision of CHVs rather than financial incentives. Such tasks can easily be combined with outreach visits to the CHV communities. Mapping and consolidation of the various heath and nutrition volunteer programs that exist throughout the country would also foster sustainability, as would the setting a detailed policy for these volunteers. By having a nationally recognized volunteer program integrated into the health system, it would enable their support both during outreach visits and through supervision visits. At present, most of these programs are 'invisible' to the health system, and thus will disappear when the donor support ceases. Consolidation would also vastly expand the network of CHVs, since volunteers would have a common job description.

VIII. Adherence to Project Design and Meeting of Objectives

This section looks at the extent to which implementation and outcomes adhered to the project proposal.The project sought to:

1) Improve the accessibility, quality and utilization of district health systems to underserved populations,
2) Improve the efficiency and coordination of vertical programs
3) Improve central, governorate, and district level managerial systems to support the two process of outreach and integration;
4) Develop through piloting in 64 districts, and building national consensus for country-wide implementation of a results-based model of district health service provision

The findings of the evaluation are highly positive, and these objectives have been largely met. Indeed accessibility, utilization, efficiency, coordination, management, and a district model of service provision have been all improved and developed, as shown in the above sections. Some provisos on this general statement need to made, however, and there is some room for improvement, as will be discussed below. Achievement of outputs and outcomes are as follows:

A. OUTPUT INDICATORS ACHIEVED

The following table summarizes the outputs of the project.

Table 10: HSS output indicators and summary of achievement

Indicator	Target	Actual Achievements
1. National policies in place which support the integrated outreach system	Full set of required policies approved and in place.	Policies in place, but desirable to supplement with donor alignment policies
2. # of vertical programs that have achieved integration of their workplans, logistics, and supervision systems	6	Work-plans: 3 (outreach) Logistics: 3 (outreach) Supervision: 3 (outreach) One time supervision: 7
3. Percentage of districts reaching the objectives of their micro-plans and initiating at least one innovative district fund activity (district fund is reward for achieving targets)	80%	Meeting micro-plan objectives: Only EPI set and monitored objectives consistently. Innovative district fund: Not initiated. 2 other incentive systems set up.
4.Per capita cost per individual of the six integrated interventions (at sub-district level) (cost per service)	40% decrease in cost per service overall	WB study shows theoretical decline from$26 to $23 per contact. Other efficiency gains high.
5. Percentage of female health workers participating in integrated outreach programs	At least a 45% increase (to reach 36% participation)	Field sample EOP shows: Implementation: ≥ 33% Micro-planning: Preparation 31% Evaluation 26% Monitoring 29% M&E 2013: 31% RH role: 15/16 DEOs.
6.Percentage of districts in which Integrated management system is functioning well, as measured by a standard set of criteria	80%	Criteria not set nor measured. Field survey shows micro planning and outreach systems working well.

These results on outputs show that most outputs have been achieved, with the following provisos, and suggestions for improvement.

1. National Policies in place to support integrated outreach

The policy environment of the integrated outreach component can be considered to be pre-existing. Beginning with the Health Sector Reform (HSR) strategy, not only outreach, but also the general policy on volunteers was described. PHC as a whole is based on an integrated model of service provision, even though in practice, programs tend to be managed vertically. Thus, HSS did not require a change in the policy environment to accommodate integrated outreach as a Ministry strategy. As noted by one stakeholder, the relative lack of resistance to integrated outreach was due in part to the fact that it didn't introduce entirely new approaches. It simply implemented what was already in the books of the Ministry. In addition, an outreach budget is already present in the national budget. It has been used primarily for EPI but is budgeted for use by PHC in general. Beyond policy, the project has introduced a number of tools that support integration. These are:

- Integrated PHC training manual,
- Integrated micro-planning training manual,
- Integrated micro-planning model,
- Integrated supervision tools,
- CHV manuals (3)

Having said this, **t**here is still more room for the development of additional policies that support the sustainable implementation of outreach specifically, and integration more generally. The first is for a policy on donor support of outreach through the integrated model. Currently, vertical programs receive donor funding for outreach activities, and these outreach activities tend to be implemented vertically. A policy to encourage all outreach support to be channeled through an integrated basket of services would encourage the participation of other vertical programs in the integrated package, which would help develop an ongoing sustainable system of outreach. The current system creates some competition between the Ministry desire to integrate and the vertical funding priorities. There is significant scope for added efficiency gains from such a policy. Second a detailed policy on CHV training, role and support is essential. The numerous health related volunteer programs currently existing are uncoordinated, and there is no national data base on number, location and type of volunteers, nor on compensation schemes. Programs sometimes compete for the same volunteers, a phenomenon seen in the current field survey. The efficiency gains of establishing a policy on volunteers would be high. Both of these initiatives would need to cross sector lines, because RH is an essential part of the integrated package. This means the policy would need to be Ministry-wide, and not restricted to the PHC sector.

2. Vertical programs achievement of integration of work plans, logistics and supervision systems

Work plans

Micro planning was the main tool used by HSS to integrate work plans. This tool was used specifically for district outreach activities by three programs; EPI, IMCI and RH. Also, planning for the integrated supervision exercise was carried out collaboratively, as was the design and planning work for HSS as a whole. HSS itself acted as a framework that encouraged integration of planning, at least of activities. This was evident both at the national and district levels, as well as the HF levels, especially in recent years, when HF staff began to be more actively involved in micro planning.

Logistics

Integration of logistics took place mainly for the outreach activities of the three relevant programs, referred to above. To a certain extent, logistics was also integrated for the integrated supervision activities, with each program utilizing its own resources for part of the supervision visits.

Supervision system

Integration of supervision took place for two activities. Supervision of outreach activities was shared primarily by EPI, and PHC. Integrated supervision of HF was, as

noted in the earlier sections, more a data gathering exercise than a supervisory visit. However, this exercise was completely coordinated and integrated among all seven programs.

At the governorate, district and HF level, the field survey showed that micro planning and implementation was well integrated among the three participating programs. Most HF technical staff also had participated in micro planning. At all levels, an appreciation of working together as a team was expressed; a phenomenon encouraged by the integrated approach. Integrated supervision was seen as having potential for expansion into an ongoing supervision model, albeit with some modifications. At least one governorate informally used its donor and government budget to carry out integrated supervision. However, budgetary and management systems to support integrated supervision did not exist.

As a conclusion, it may be said that for the integrated *activities* supported by HSS, systems are well integrated. However, no formal integration of national, governorate, or district budgets or programs has taken place as a result of HSS, making it difficult to systematize integrated work plans, logistics and supervision systems. It would have been overly optimistic to do this within the first phase of HSS. This should be a task set for the second phase.

3. Percentage of districts reaching the objectives of their micro-plans and initiating at least one innovative district fund activity (a district fund is reward for achieving targets)

Reaching objectives of micro-plansEPI national targets were set and monitored, and as shown in the outcomes below, these levels have been reached. Micro-plan objectives for IMCI and RH, however, were not clearly stated. This is considered one of the weaknesses of the program. Without setting clear targets, it was not possible for DHOs and GHOs to adequately budget for and monitor their RH and IMCI activities, nor to be 'results oriented', as stated in the objectives. The same level of activity appeared to take place each year in each district. Outreach coverage for IMCI and RH appeared to be activity driven, rather than target or objective driven.

Innovative district level fundsThis component was not initiated, the reason given by one HSS stakeholder being that it was felt that establishing rewards at the district level would be unsustainable. Under the ISS, supervisors received bonuses if their districts reached their targets, and EPI and PHC directors of two governorates were rewarded with computers and certificates for reaching a high rate of EPI coverage. However, this reward system did not filter into other programs, nor was this a HSS activity.

4. Decrease of per capita cost per individual per service of the six integrated interventions

According to the proposal document, the cost of service per contact at the sub-district level is US$ 28.90. It was expected that cost per contact would decrease by

40% to $17.24 through using an integrated outreach approach. A 2011 World Bank costing exercise calculated, using theoretical assumptions, that actual cost per contact would decline from $18 to $15 using an integrated approach, and that the current cost was US$ 27 per contact for similar basic services provided through fixed facilities. These calculations clearly show a clear (theoretical) advantage of outreach over HF based services (48% decline in cost per contact) and a 17% decline using an integrated rather than a vertical approach to outreach. An internal costing exercise carried out by HSS itself showed that the cost of outreach declined from YER259 per contact to YER199, a 23% decline in cost.

The field findings support the case for high efficiency of an integrated approach, especially over fixed HF approaches of service delivery. The evaluation, using data collected from 19 districts, looked at various indicators of efficiency. These are 'indicative' as they are derived from a sample, not a 64-district data set, but are nevertheless compelling. Please see the section on efficiency for further details. Findings include:

- Efficiency of use of health staff increases by a factor of seven when utilized in outreach rather than fixed site delivery of health care (10.2 patient contacts per HW per day for outreach versus 1.3 contact per day in fixed facilities on average)
- The cost burden of health visits, when shifted from households living in 2nd and 3rd level catchment areas to the health system, through the provision of outreach services, declines from YER 5000 to YER 2580 (per pediatric contact), using the World Bank costing data and field survey data as a basis for calculation. This represents a 98% decrease in the overall cost of health service provision for children.
- Anecdotal data from the field show that the same cost and effort of gathering people for a single vertical program outreach exercise is spread over several programs using an integrated approach, that there is a higher response from households when several programs are offered in one package, and that a degree of cross-learning among health workers takesplace when health workers work as one team to deliver services. Female health workers also occupy multiple roles during outreach, another efficiency gain.
- The simple logic of combining several services into one package, thereby using one vehicle rather than three, and creating a synergy through providing more than one service per contact, makes a strong case for integrated outreach. Nothing in the field survey findings contradicted this logic, and indeed many participants in outreach voiced this reasoning.

5. Percentage of female health workers participating in integrated outreach programs

The project objective is to increase the percentage of females participating in outreach by 45% from a pre-project level of 25%. This would require an EOP level of 36%. Unfortunately, there is no central repository of documentation on gender composition of outreach teams. As such, no data could be examined for all outreach

teams. Neither did the baseline look at the gender composition of EPI outreach teams at initiation. As such, in order to measure this indicator, the evaluation team chose to examine various indicators of participation of women in the 19 districts in which it carried out its field study. Key findings are as follows:

- For most (16/19) of those outreach teams surveyed in the field survey that offered RH services, the team composition wasat least 33% simply because out of three team members one was female. In three out of 19 districts, however, men either carried out RH services, and/or no RH component was offered during outreach.
- In nine out of 18 districts for which interviews took place, women *only* were stated to provide TT for women, while in the other nine, teams of both women and men provided this service.
- At the DHO level, 31% of those who participated in preparation of integrated outreach were women, 26% of those evaluating outreach were women, and 29% of those monitoring it were women. In 2013, 31% of those either monitoring or evaluating outreach were women. In at least 15 out of 18 districts surveyed, women were involved in at least one of these three aspects of outreach.
- At the GHO level, using a sample of 4 GHOs, only 2 out of 25 of those who participate in micro-plans are women. At the national level, of the 7 heads of programs, 2 out of 7 are women. Thus at the higher levels, fewer women participate. Also, RH at the GHO or national level do not receive copies of micro-plans , effectively removing them from the planning and information loop.
- RH at the GHO and national level do not receive copies of micro-plans, effectively removing them from the planning and information loop.

In conclusion,the gender participation in outreach is good, though not quite as high as the target of 36%. In order to cover both RH services and EPI TT services, more women need to be included in the outreach teams. In addition, women decision makers in RH at the national and governorate level could usefully play a larger role.

6. Percentage of districts in which an integrated management system is functioning well, as measured by a standard set of criteria

It was expected that 80% of the districts would comply with the criteria by end of project, as compared to zero before the project. However, no such criteria have been set, nor could an integrated management system be discovered to have been designed. If we assume, however, that 'integrated management system' refers to micro planning, then the field survey shows very high levels of achievement in terms of micro planning.

B. OUTCOMES

The following table summarizes the outcomes of the project.

Table 11: HSS outcome indicators and summary of achievement

Indicator	Baseline Value	Target	Resultsachieved
1. National PENTA coverage	85%	90%	93% (2013) HSS districts 88% (2013) National
2.districts achieving ≥80% DTP3 coverage (changed to Penta3)	58%	100%	94% (60/64) (2013)
3. U5MR (per 1000)	102	85	No data
4. % of districts reaching≥70% of population with the integrated intervention package	0	90%	Use of Integrated outreach (IO)services in 2010* in 64 districts, levels 2 and 3 • ANC 19% • FP 5.9% • IMCI 16% • TT2 10% • PENTA3 34% – Use of IO services over life of project: 20 community, 243 household field sample: 100% – 15 community CHV survey shows 65% of households have used CHV services.
5. # of service provision contacts per district (fixed + outreach services)/ year	Varies by district	Tripled	– Field data sample of 16 HF in 16 districts show fixed site service provision to have increased 2.85 times between 2008 and 2013
6. TT2+ coverage (gender-access indicator)	20%	90%	21% (2013) National data shows 3% point decline between 2008 and 3013, HSS districts show a 3% point improvement = positive difference of 6%

*As explained in the section on coverage, 2010 data were used because 2010 was determined to be the fairest year to calculate HSS coverage, given the political and service level changes that occurred in 2011 and beyond throughout Yemen.

1. Increase of national Penta coverage from 85% to 93%

Nationally, Penta3 increased to 88%, lower than the target. However, in the 64 districts, Penta3 reached 93%, higher than the target. As shown in the section on effectiveness, most of the improvement occurred for outreach services, with less positive change in the fixed facility statistics. It is not possible to show cause and effect in this study, but the association of higher coverage in districts with integrated outreach is indeed compelling, especially combined with the qualitative findings that health workers feel that integration of services increased immunization coverage. However, though on average, Penta3 increased, HSS data shows that a percentage of districts showed an actual decline in Penta3 coverage over the life of the project. The evaluation was unable to determine the reason for this, and recommends that these districts be closely monitored by HSS.

2. 100% of districts achieve ≥80% Penta3 coverage

Of the HSS districts, 94% (60/64) of them achieved ≥ 80% Penta coverage, up from a baseline of 58%. Thus the target was nearly met, with significant improvement achieved in the HSS districts.

3. U5MR decreased to 85 from 102

No data were collected by the project on this indicator, and it was unrealistic to expect it to do so, given the expense of mortality surveys. While the2014 DHS survey will be able determine the 2014 mortality levels at the governorate and national level, this will not shed light on the mortality levels in the HSS districts, as this survey will not provide district level data. Thus it will not be possible to determine a correlation between HSS activity and U5YO mortality.

4. 90% of districts reaching≥70% of their population with the integrated intervention package

The indicative field data in 19 districts on integrated outreach show that of the 2nd and 3rd level catchment areas reached with integrated outreach services, nearly all households have taken advantage of these services *over the life of the project*. This indicates reach of the project and acceptability of services. The household survey also showed that 15 out of 19 districts surveyed were served by CHVs. Of the communities surveyed, 65% of the household respondents stated that they had used the services of the CHVs. This is a lower percentage than those taking advantage of integrated outreach, and does not meet the target of 70%, but reach and use of CHV services is still significant.

However,HSS outreach data covering all 64 districts shows that for each category of those targeted, a much lower percentage actually received services***annually****; a more demanding and useful measure of coverage*. These data are shown in the table above. For a full discussion of coverage, and interpretation of the coverage numbers, please see the section on 'Reach and Coverage (section VII.A). The data presented in earlier sections of the report would indicate the need to both intensify services and to create greater awareness and acceptance of the services, especially RH services, in order to increase coverage. They also indicate the need for more precise coverage measures, in order to accurately measure the *adequacy* of reach with the services. An additional coverage measures recommended to be measured by HSS is HF-based coverage statistics.

5. Number of service provision contacts per district (fixed + outreach services)/ year tripled

The evaluation was unable to determine the status of this indicator for all 64 districts due to lack of access to reliable data on district level HF-based patient visits for each of the relevant services. HSS did not collect data on fixed facility usage, only

outreach. To gain indicative data on this topic, the field survey collected data for both 2008 (year 1 of project) with 2013 (end of project) fixed facility patient visits. The field data random sample of 16 HF in 16 districts in 7 governorates show fixed site service provision has increased 2.85 times between 2008 and 2013, from 35,095 to 99,856, nearly a tripling of fixed site service provision. Like outreach services, the number of patient visits per health worker varied tremendously from facility to facility.

The increase in service provision appeared to be correlated primarily with an increase in number of health care providers (80%) in these facilities, and also a small increase in the number of patient visits per health care provider: 1.1 (2008) versus 1.4 (2010) patient contacts per technical staff member. It is interesting that non-EPI related RH and U5YO care visits nearly tripled over this time period, while EPI related visits increased by only 29% for women, and 36% for children. This probably reflects already high coverage by EPI services, at least for children.

As such, the indicative data from the 16 districts show nearly a tripling of service provision contacts at the health facility level, alone. The integrated outreach contacts, especially for RH and IMCI are all additional to the pre-project contacts. These data cannot be considered conclusive evidence, but they are a very good indication that the project has succeeded in tripling service contacts. It is recommended that the next phase of HSS collect monitoring data on both outreach and fixed facility data.

6. Increase of TT2+ coverage for pregnant women from 20 to 90%

TT2+ coverage was utilized by HSS as a proxy for gender access. This indicator shows little change between pre-project and post-project levels; 20% and 21% respectively. Indeed the 2008 levels dipped from 20 to 18% for the 64 HSS districts. Because of this early dip, the improvement between 2008 (when integrated outreach began) and 2013 is 3%. Most of that difference is attributable to improvement in coverage through outreach, according to EPI statistics. In contrast, the *national* coverage rate *declined* by 3% during that period, revealing a comparative superior performance by the HSS districts of 6%. However, even this improvement is small compared to the objective set.

The evaluation was unable to conclusively determine the reason behind this low level of achievement. Possible explanations are the gender of the vaccinator in some districts or other gender-related access issues, strong beliefs against immunization during pregnancy, or indifference to it. Indeed, a high percentage of households requested for more services to be provided through female health staff, indicating that gender of staff is at least one reasons behind low coverage rates in some communities. The fact that ANC outreach services in general have achieved a similar low level of coverage could favor either the access or attitudinal explanation.

TT2 coverage varied between 2% and 79% per district, the higher levels indicating that it is possible to achieve a much higher level of coverage than the current level,

and that the problem is not necessarily with the indicator, as has been suggested by some stakeholders. Nevertheless, only 11 districts out of 64 achieved higher than a 30% coverage rate. This is a topic that needs further exploration in the second phase of HSS, and greater focus.

CHAPTER 3. CONCLUSIONS AND RECOMMENDATIONS

The evaluation covered a large number of topics in depth. The conclusions chapter cannot do justice to these findings, and can only cover highlights. It is recommended that stakeholders carefully read the entire document, including the annexes, for a full understanding of the findings.

I. Conclusions

General

Findings of the final evaluation are highly positive. A thorough desk review and a 9-governorate, 19-district field study have shown positive initial achievements, and the building of a very strong institutional basis for integration of vertical programs, of integrated outreach, and a CHV program. It substantially strengthens the credibility of the argument that a **two-pronged approach of outreach and HF-based services** is necessary for service provision in a poverty and geographic environment like Yemen's. Coverage, efficiency and effectiveness are strong across most indicators, outreach and CHV services are valued and utilized by communities, and many of the bases for sustainability have been put in place.

Having said this, not all project targets have been achieved. Also, there is high variability among districts in terms of coverage and efficiency, demonstrating the need for further fine-tuning of the HSS components and of its monitoring system. Finally, in order for this effort to be transformed from a 'project' into an integral system of the Ministry, and a long term service modality, further policy and budgetary measures will need to be put in force, as well as guidelines for development partners. As stated above, the project succeeded in demonstrating the efficacy of its approach. As such, any weaknesses in implementation should be treated as lessons for the second phase to be used to further improve effectiveness and impact.

In summary, it can be said that the extent of 'health system strengthening' that occurred in this phase of the HSS was primarily 1) introducing a highly workable model, b) building a good level of consensus and experience within the MoPHP systems and development partners in implementing the model, and c) improving the skills level of health staff, especially in IMCI, micro-planning and management. Converting these building blocks into a 'system' of the Ministry, with all the policy, budgetary, and structural changes this requires, will be a task of the second phase. The evaluation team considers the achievements of this first phase to be reasonable, especially considering the political and budgetary environment prevailing between

2010 and 2013. Any weaknesses in implementation should be treated as lessons for the second phase to be used to further improve effectiveness and impact.

Access/coverage with integrated outreach and CHV services

The field survey shows that integrated outreach is highly popular and appreciated by communities, and that nearly all households in the target communities have taken advantage of outreach services at some point over the life of the project. At the same time, analysis of HSS integrated outreach data shows that *annual* coverage is substantially lower than targeted for RH (ANC, PNC, FP) and IMCI services and EPI TT services for pregnant women. Thus **access** to health care has been greatly improved due to integrated outreach, but **coverage** is lower than targeted.

Main project reasons behind this level of coverage have to do with insufficient supplies of IMCI drugs and other types of supplies and equipment, insufficient number of outreach days, insufficient number of female staff in some outreach teams, low health awareness of communities, especially in relation to RH services, and weak monitoring systems of outreach services which did not catch problems of low coverage quickly enough. Low levels of usage of RH services is a chronic problem in fixed HF as well, and though integrated outreach has resulted in greatly increasing RH access in the second and third level communities it targeted, numbers of women taking advantage of these services remain relatively low. RH coverage, including TT for pregnant women is the main problematic area of coverage that requires improvement.

The fact that the HSS did not meet its coverage targets also has to do withthe indicators used and the type of data collected by the project. For example, a 16% IMCI coverage rate of children may actually represent a very high rate of coverage of those children who were ill at the time of the outreach visit. The project, by setting its target at 70% rather than basing it on an epidemiological profile of expected prevalence of illness in U5YO children, was unable to calculate actual coverage of those children needing services. In other words, general **coverage targets** (70%) were set, but realistic **targets per component** were not set. Second, at the level of the district and of each outreach team, data on number of visits per component were collected but not analyzed against target objectives with the view of detecting and improving coverage in those districts showing low coverage. This resulted in outreach being more activity-oriented than target-oriented, with consequent weaknesses in achieving targets.

Third, coverage is a function of outreach plus fixed HF services. Unlike the EPI program, HSS did not collect data on fixed facility coverage for the services it offered. EPI data, for example, show that while the 2010 outreach statistics for Penta5 suggests only a 34% coverage rate of the target population through outreach, in fact 54% of the target population of the entire district was reached through fixed HF services, for a total coverage rate of 88% per district. In order to understand coverage for the RH and IMCI services as well, it is essential to collect both outreach and HF data.

Finally, in order to reach 70% of the target population of women and children (non-EPI), assuming an average of 10 contacts per HW per day, the number of person days of integrated outreach will have had tobegreatly increased. Taking ANC and IMCI as examples, person days would have had to be increased by a factor of 4 for ANC, and by a factor of 5 for IMCI. Even if the project achieved a doubling in efficiency to achieve a mean of 20 contacts per person day of service services, the number of person days for these two services would need to have doubled or tripled in order to accommodate the 70% level of coverage. Given the budgetary requirements to meet such a target, the HSS should 1) reconsider the level of its coverage targets, and 2) focus more project attention on the low-performing and low efficiency districts, as well as the low coverage components such as FP and PNC.

Efficiency

This project sought to increase coverage in a cost effective manner. Integrated outreach to levels two and three of the health system was considered to be more cost effective than either vertical outreach or HF based services. According to the proposal document, the cost of service per contact at the sub-district level at start of project was US$28.90. It was expected that cost per contact would decrease by 40% to $17.34 through using integrated outreach. The evaluation team did not have ready access to the required data to calculate the cost of integrated outreach per contact. However, it examined efficiency in two other ways. It measured the efficiency of use of health workers in fixed HF versus integrated outreach services, and it measured the relative cost to households of seeking care at HFs located in level 1 to the cost to the health system of providing that same service. These measures show the integrated approach to be efficient for both the patient and the health system, especially in comparison to fixed services. Efficiency findings include:

- Efficiency of use of health staff increases by a factor of seven when they are utilized in outreach rather than fixed site delivery of health care (10.2 patient contacts per day for outreach versus 1.3 contact per day in fixed facilities on average)
- The cost burden, when shifted from households living in 2nd and 3rd level catchment areas to the health system through the provision of outreach services, declines from YER 5000 to YER 2580, using the 19 district field survey data, and the World Bank cost data as a basis for calculation. This represents a 98% decline in the cost of health service provision.
- Anecdotal data from the field show that the efficiency gains are due to 1) spreading out the cost and effort of gathering people for a single vertical program outreach exercise over several programs using an integrated approach, that 2) there was a higher response rate from households when several services were offered in one package, and that 3) a degree of cross-learning between health workers took place when they worked as one team to deliver services. 4) Female health workers could also occupy multiple roles during outreach, another efficiency gain.
- The simple logic of combining several services into one package, thereby using one vehicle rather than three, and creating a synergy through providing more than one service per contact, makes a strong case for integrated

outreach. Nothing in the field survey findings contradicted this logic, and indeed many health workers voiced this reasoning.

Effectiveness

Three measures of effectiveness were used in this evaluation study. These were:

1. Possible impact of outreach on the functioning of fixed health facilities,
2. Effectiveness of outreach per district,
3. Community satisfaction with outreach services.

Two of these measures showed positive results. The field survey foundthe satisfaction of communities with both outreach and CHVs to be high – 80 and 65% respectively. This indicates that households believe the health care they receive to be effective. Also, the field data sample of 16 HF in 16 districts show fixed site service provision to have increased 2.85 times between 2008 and 2013, from 35,095 to 99,856, nearly reaching the objective of a three-fold increase in health service provision. The increase in service provision appearedprimarily to be correlated primarily with an 80% increase in number of health care providers in these facilities, and also a small increase in the number of patient visits per health care provider (1.1 (2008) versus 1.4 (2010) patients per technical staff member). However, qualitative findings that suggest that some of this increase may also have to do with the HSS project include: 1) the HW perceptions that the skills they learned in outreach transferred to their work in HFs, 2) the very large IMCI training program for HF-based HWs, and 3) the HW perception that outreach contacts and CHV referrals resulted in higher use of and greater confidence in HFs. As with outreach services, the number of patient visits per health worker varied tremendously from facility to facility.

The third measure of effectiveness; effectiveness of integrated outreach at district level, looked at variations by district of both 1) coverage of the target population per service offered per district, and 2) outreach contacts per person day of outreach. This measure of effectiveness was meant to detect effectiveness of management by district. Performance on both indicators was shown to vary greatly by district, as expected. But surprisingly, performance per district varied mostly by component, with almost no districts showing either high or low performance across the board. This is puzzling. One would have expected that high performance was due to good management, good supervision, high coverage geographically, good quality services, and public acceptance; all qualities which should cross over categories of service, and be primarily management-related. Instead high performance at the district level appeared to be component-specific. These patterns should be a signal for closer examination of the HSS data itself, as well as component-specific weaknesses per district.

Relevance

Relevance of the HSS activities can be examined from the point of view of the health system as well as from that of communities. Its relevance to the health system derives from the fact that it presents a methodology for reaching previously un-served populations with basic services, at a cost relatively affordable to the health system, especially in comparison to vertical service provision and fixed health facility

health care provision. The strong efficiency data, as presented above, are crucial for relevance to the health system. Health staff at all levels of the system believe that the services provided are important for meeting the health needs of the population.

In terms of relevance for communities, for those 47% of the population who reside in 2nd and 3rd levels of the HF catchment areas, they show positive attitudes towards outreach. Between 73 and 92% of respondents per service find the services offered to be very relevant and suitable. Communities are also very clear about the benefit of the outreach and CHV services. Outreach was seen to provide them access to valued health care, prevent and cure illness, and save them money. CHV services were seen as leading to greater health awareness and access to health care.

Impact

It was not possible to collect data on actual impact during this evaluation, as no baseline data on morbidity or mortalitywere collected. Neither were sufficient quality indicators for service provision monitored over the course of the project. However, the following findings indicate that the expected impact may be significant. These include: 1) The majority of 2nd and 3rd level communities (47% of the population) have gained periodic access to RH, IMCI and EPI services through integrated outreach; 2) High satisfaction of communities with outreach (44-80% per type of service) and CHV services (65%); 3) Nearly a tripling of service provision at surveyed HFs in 16 districts between 2008 and 2013; 4) Most households (as indicated by the survey data) have received some category of service through outreach; 5) Extensive training of HWs on integrated PHC, with pre and post test scores indicating a significant level of learning; 6) Perceptions by communities that they enjoy improved health as a result of these programs, and that they have more awareness of health issues; 7) 76% feel outreach services have helped them prevent illnesses, and 54% believe that their illnesses have been cured through outreach; 8) perceptions by health staff at all levels that communities enjoy improved health, and 9) over a quarter (26%) of households state that without the integrated outreach services, they would not have sought health care for their children, and other households would have sought care less frequently, with an obvious morbidity and mortality impact. This 26% potentially represents the impact of outreach on mortality and morbidity. The provision of integrated outreach has led to higher levels of care seeking in some cases, and to cost savings for the poor in other cases.

Having said this, program weaknesses, mentioned above, would also have weakened HSS's potential impact. For the upcoming phase of HSS, it would be helpful for the program to design impact indicators, and to measure them at project outset and end of project i.e. pre and post surveys, in order to show impact. This type of evidence is extremely useful in convincing both the GOY and development partner stakeholders to support further institutionalization of this methodology.

Impact of the integrated approach on EPI coverage

Nationally, Penta3 increased to 88%, lower than the project target, while in the 64 HSS districts, Penta3 reached 93%, higher than the target. Most of the improvement occurred for outreach services, with less positive change in the fixed facility

statistics. It is not possible to show cause and effect in this study, but the association of higher coverage in districts with integrated outreach is indeed compelling, especially combined with the qualitative findings that health workers feel that integration of services increased immunization coverage. However, though on average, Penta3 increased, HSS data shows that a percentage of districts showed an actual decline in Penta3 coverage over the life of the project. The evaluation was unable to determine the reason for this, and recommends that these districts be closely monitored by HSS.

Similarly, TT2+ coverage for pregnant women improved between 2008 (when integrated outreach began) and 2013 by 3% in the project districts. Most of that difference is attributable to improvement in coverage through outreach, according to EPI statistics. In contrast, the *national* coverage rate *declined* by 3% during that period, revealing a comparatively superior performance by the HSS districts of 6%. However, even this improvement is small compared to the objective set.
In summary, it is reasonable to assume that the superior performance of both Penta and TT in the HSS districts is due to the HSS inputs, but a different type of study would be necessary to actually prove cause and effect.

Sustainability
The fact that it is integrated within the MoPHP gives it high potential for sustainability. Without this type of deeply integrated Ministry-based management, it is unlikely that functional integration of vertical programs and the integrated outreach strategy would have already become as established a part of the system at the district and governorate level as it has done. For sustainability, it is clear that the integrated outreach model, and the micro planning and the community volunteers are ideal vehicles for programming across numerous programs. It can also flexibly accommodate many donor interests. It has the flexibility and potential to be able to piggyback many programs onto it, in the same way that HFs can accommodate a number of programs. In order for this effort to be transformed from a 'project' into an integral system of the Ministry, and a long term service modality, however, further policy and budgetary measures will need to be put in force, as well as guidelines for development partners. In addition, further fine-tuning of the HSS components and of its monitoring system will be required.

Integrated outreach has now been adopted by other projects, notably the World Bank funded HPP (100 districts, governorate-wide in Ibb, Sana'a, Hodeidah, Dhala'a, Rayma and Al Beidha governorates), UNICEF (20 districts), and the Netherlands funded DRHP project in Dhamar governorate. This is a very high level of uptake of the HSS methodology, and is a major success in terms of alignment and harmonization, and will contribute to the sustainability of the model. At the same time, many donors continue to support vertical programs directly, which sets up a competition with integrated programming. Both donors and the ministry will need to chart a path to make the transition of HSS from a project to an organizationally sustainable Ministry way of working. As was stated by some stakeholders, vertical programs will not risk long-term integration if HSS is only a project that may eventually disappear. Vertical funding offered by donors to vertical programs will

continue to take priority. Thus both donors and the different programs of the PHC sector will need to work together to make this transition.

Assessment of HSS Process Elements

Six key process elements of the project were assessed. These process elements were generally found to be positive, and to have supported successful implementation of the project. However, some weaknesses were apparent in some of these processes such as the baseline, which have been documented in the findings chapters. Please review the 'Findings' chapter for further details.
The overall conclusions of the process assessment are:

Table 12: Summary assessment of performance of HSS process elements

Key process element	Rating
1. District selection	**excellent**
2. Baseline	**weak to moderate**
3 Joint planning and design	**excellent**
4. Project management	**Mixed – from excellent to weak**
5. Functional integration model	**Excellent**
6. Monitoring and Evaluation system	**Extensive but with some vital weaknesses**

Please see the following section for more detail on the project management process.

Project Management

This management structure has both extremely positive aspects, as well as weaknesses. The fact that it is integrated within the MoPHP gives it high potential for sustainability. Without this type of deeply integrated Ministry-based management, it is unlikely that functional integration of vertical programs and the integrated outreach strategy would have already become as established a part of the system at the district and governorate level as it has done, that the different programs in the Ministry would have been so deeply involved, nor that the commitment at the level of the Deputy Minister and others would have been as high.

However, it is the judgment of the evaluation team that the staffing levels were not sufficient for this task. While it is clearly desirable that this project remains within the Ministry, and that it stay integrated within the normal systems of the Ministry, supplementation with full time technical staff would be desirable. In particular, monitoring and evaluation staff numbers should be strengthened. A second management weakness is that of data management and archiving. Improving the archiving and data management would have direct benefits in terms of project monitoring and sharing of tools and systems.

Community Health Volunteers

The desk review showed this component to be the least developed of all the four HSS activity components, but with high potential, nevertheless. Though CHVs have received little project support post training, they showed a surprisingly high level of activity, and of acceptance by their communities. Interviews with the different stakeholders yielded a rich body of data, which can be used for further programming of CHVs. Some of the most interesting findings about CHVs are as follows:

- 74% of randomly selected households knew the name and role of the CHV, indicating a fairly high level of exposure to her role.
- 65% of these households have already made use of the services of these CHVs.
- 42% of these were 'very satisfied' and 49% were 'somewhat satisfied' with the services they received.
- All but four of the services community members received from CHVs were within the job description of the CHV. This shows that the CHV is providing the services she is trained for, and that communities are aware of her role.
- 59% of DHOs and 31% of HF staff described the work of CHVs as 'very beneficial'.
- Most CHVs describe initial skepticism by their communities about their role, which was then replaced by confidence once the CHVs had established themselves. Each was able to describe success stories.

II. Recommendations

Many lessons and decisions can be derived from the findings of this evaluation study. The evaluation team recommends that the HSS team should review the findings carefully, and make their own decisions on the way forward, based on the data provided. For this reason, the findings have been extensively documented. However, if we, the evaluation team, were to choose the top eight recommendations that would make a positive difference in impact, they would be as follows:

1. Requirements for scaling up Integrated outreach have proven to be an efficient and cost effective method to provide services to deprived populations. This methodology should be further refined and implemented nation-wide. This can happen rapidly because a strong institutional basis is already in place in most governorates in the country. Two things will be required to do this effectively.
   - First, stronger data need to be collected to show conclusivelyto stakeholders what the efficiency, service provision and health status gains are. This should be the main focus of the coming phase of the HSS project. If possible other similar projects such as HPP and UNICEF supported outreach should also attempt to gather such data. It is preferable the types of data gathered by different project are unified and consistent.
   - The second requirement is that donors need to be brought into the effort more effectively. Already in its first phase, the HSS has already had major

success in reproducing this model through other projects e.g. HPP, UNICEF, and DRHP. However, other vertical projects need to be encouraged to channel their health education, and outreach activities through this mechanism. This will bring the needed funding into the program and will build systems. A policy to encourage all outreach support to be channeled through an integrated basket of services would encourage the participation of other vertical programs in the integrated package, which would help develop an ongoing sustainable system of outreach. The current system creates some competition between the Ministry desire to integrate and the vertical funding priorities. This does not have to be a one-time shift, but can happen gradually, by putting some of their eggs into the integrated outreach basket. In order for this to happen, policy at the level of the Minister will need to be strongly drafted, because integration goes beyond only the PHC sector. There is significant scope for added efficiency gains from such a policy.

2. Strengthening integrated outreach reach and impact Despite its proven strengths, the full potential of integrated outreach has not been reached. This is particularly apparent when looking at the large performance differences among districts, and between components, and when reviewing the coverage data for each component. Those measures which have the greatest potential of improving coverage, efficiency, quality, and impact are:
   - Set national, governorate, and district level coverage targets for RH and IMCI in the same way that EPI sets coverage targets for women and children. This will encourage a more results-oriented approach. Establish a policy of quarterly monitoring, analysis and communication of results to all required stakeholders. Initiate measures to improve coverage, based on the results of each monitoring exercise. Include HF-based as well as outreach data in coverage targets.
   - Tackle the problem of drug and supply shortages (IMCI as well as other types) as a high priority item, and monitor progress in resolving this issue on a quarterly basis.
   - Carry out operational research in a timely manner on any issue that interferes with coverage, and for which adequate data are not available from the regular monitoring exercises. One already identified area of operational research is related to low RH coverage, and to TT coverage of pregnant women.
   - Increase the number of rounds and number of person days of outreach to allow greater coverage of the target population. This may require a larger budget.
   - Ensure that sufficient numbers of female staff are engaged in outreach. At a minimum, each team should have one female staff member carrying out RH outreach. Any competition for female staff by TT versus RH services should be resolved, so that the one female team member does not have to sacrifice coverage of one component for another. This means, in all likelihood that 2 female staff should be present in each outreach team.

- Institute a quality control system by supervising outreach staff in order to judge the extent of conformity of diagnosis, treatment and preventive services provided to the existing protocols. This will improve the impact of outreach on morbidity and mortality.

3. Expansion of service package Begin a gradual expansion of the package of services provided through integrated outreach to encompass the remaining four HSS programs. Addition of these programs will increase the efficiency of the approach, as well as create a new mode of service provision for each of the individual programs. A relevant additional program to add would be health education, in order that health awareness of the population improves. Awareness is expected to translate into increased uptake of outreach services, especially RH services. This effort at expansion should include communication with those development partners who support those particular vertical programs being incorporated into outreach, in an effort to gain their cooperation and support at an early stage.

4. Written protocols Though there has been extensive training and participation of health staff at all levels in the HSS program, as yet, no set of formal protocols has been issued. It is recommended that a detailed protocol for each of the four HSS components be compiled for reference for all stakeholders at all levels and for development partners. These protocols should include, among other things, detailed instructions for the collection of data, monitoring of quality, and for analysis and use of these monitoring data. It is good timing to do this now, at the outset of the second HSS phase, now that a system has already been established, and lessons have been learned for the second phase. Such a protocol will facilitate communication, and allow easier monitoring of conformity of districts to standards.

5. Targeting Both the desk survey and field analysis showed the districts selected to be appropriate to the objectives of the project. Indicative data from the field survey show the communities targeted by integrated outreach to be suitable for outreach. In the second phase, it will be useful to tighten targeting to focus on those districts, and those components within each district that show the lowest coverage, and also those districts of highest need. This may mean additional rounds of activities, greater monitoring and problem solving, and additional activities to improve community awareness and uptake of services. Using a more targeted approach will require setting and monitoring quarterly performance,using criteria such as coverage per component (i.e. plotting targeted population against those actually reached per outreach team), and efficiency (i.e. calculating patient contacts per person day for each component). These data should be collected and analyzed at a district and an outreach team level, in order to understand exactly which teams need more support.

6. Intensification of project management Project management was very well integrated into the PHC system. However, the number of management staff was insufficient for the scope and objectives of the project, particularly the data

management and monitoring aspects of the work. In addition, data archiving and analysis, and other project tools are scattered in different programs and departments. This decentralization of data makes it very difficult for project managers to monitor the project, to have ready access to needed data, and to have a clear understanding at any one point in time what the standing and progress of the project is. It is recommended that:

- The number of management staff be increased, especially for monitoring and for timely analysis and decision making on monitoring data.
- Data management and archiving be centralized and strengthened.

7. CHVs The issues facing CHVs are primarily lack of linkage with HFs, and lack of resupply of kits, limiting their effectiveness. Some (a minority) have begun to be treated as 'doctors', giving injections without training. Two other issues are 1) incentives for CHVs, and 2) the variety of volunteer programs that exist, some of which compete with the CHV program.
   - Field data show that monetary incentives for CHVs are not absolutely necessary in order for them to perform well. More important to them is the support and recognition they get from the health system and from their communities. Introducing a system of financial incentives for CHVs - an idea favored by some development partners - would likely undermine sustainability because it would be unaffordable in the long run. It is recommended, rather, to put extra funds into support, supply and supervision of CHVs rather than financial incentives. Such tasks can easily be combined with outreach visits to the CHV communities,
   - Mapping and consolidation of the various heath and nutrition volunteer programs that exist throughout the country will foster sustainability, as would be setting a detailed policy for these volunteers. Having a nationally recognized volunteer program integrated into the health system would facilitate health system support for them both during outreach visits and through supervision visits. At present, most of these volunteer programs are 'invisible' to the health system, and thus will disappear when the donor support ceases. Consolidation would also vastly expand the network of CHVs, since volunteers would have a common job description.
   - Finally the evaluation team strongly recommends against the training of CHVs to provide medications beyond the vitamins and other very basic ones they now provide. Past experience indicates that curative tasks would supplant their very necessary and valuable role in prevention and awareness raising. It also runs the very considerable risk of them being regarded as 'doctors', and to a dangerous abuse of this role. This danger is especially acute given the fact that monitoring and support systems have not yet been set up for them. At most, a small, well monitored pilot could be set up for an expanded role, and any decision to expand system wide to other CHVs be based on the well considered results of this pilot.

8. Integrated supervision The great value of the data collected in the integrated supervision exercise will be to have it fully analyzed) and to feed back the data to the HSS stakeholders including the various programs, the district and

governorate level health offices, and donors. A simplified version of it should also be incorporated into routine supervision visits in the future, so that it will continue to yield an information value and be a basis for supportive supervision. Thus it has great potential, which should be taken advantage of as soon as possible. Development of a model of integrated supervision can also be developed from this early exercise, and from other experiences in the HSS districts. The positive attitudes encountered in the field suggest that such an initiative is already understood at the field level. Sustainability will require policies and systems of integrated supervision to be put in place.

One of the challenges HSS will face for sustainable long term integration of PHC services is to conclusively demonstrate the superiority of the integrated outreach methodology [in terms of quality, efficiency, impact] in a way that is convincing to all stakeholders, including vertical programs and all MoPH sectors, as well as the Ministry of Finance. There is very good reason to believe that this model can show such results, based on the findings of this evaluation. The second phase should strive to make this case conclusive.