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**Impact assessment of the Save the Children USA LEAP Health
Program, Afdher and Dolobay Woredas, Somali Region, Ethiopia**

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SUMMARY

In an attempt to improve very low levels of basic health service provision in the pastoralist areas of southern Ethiopia, Save the Children USA (SC US) implemented a health project between 2002 and 2007. Funded by USAID, the project was a component of a wider integrated pastoral development program called the *Southern Tier Initiative Livelihoods Enhancement for Agropastoralists and Pastoralists* (LEAP). The health project was broad in scope with objectives related to child immunization, improved knowledge on HIV/AIDS, maternal and neonatal health, and strengthening community-based health service delivery. It was implemented in Afdher and Liben Zones of the Somali Region, and the Borena Zone of Oromiya Region.

In mid-2007 SC US worked with the Feinstein International Center to design and implement an impact assessment of the health component of LEAP, with a focus on the impact of SC US activities on child vaccination, primary health service delivery via community health agents (CHAs), the health care of mothers and infants via trained traditional birth attendants (TBAs), knowledge on HIV/AIDS, and breastfeeding practices. This report presents the main results of the impact assessment and provides recommendations for strengthening community-based health care in pastoral areas covered by SC US.

When considering the findings and recommendations presented in the report, readers should note the two main elements of the impact assessment design. First, the design used a retrospective case control approach in which SC US intervention areas were compared with non-intervention areas. This part of the assessment was completed as planned. Second, the design aimed to compare community-level perceptions in intervention areas with SC US monitoring records of actual activities in specific areas at specific times. As these records were not made available to the assessment team, the process of cross-checking did not take place. This experience pointed to an urgent need for SC US to review its monitoring systems for health activities, with the understanding that impact assessment should include a detailed review of activities, including the specific activities and support to individual CHAs and TBAs.

Community Health Agents - the most positive findings of the impact assessment were on the activities of CHAs, with a 27.1% increase in the proportion of children treated for diarrhoea with ORT and a 79.3% increase in children with pneumonia taken to a CHA. These results illustrate the acceptance of CHAs within communities. Ideally, the results should have been compared with CHA diagnosis and treatment records but as outlined above, these records were not available. Relative to other health service providers, CHAs were preferred in terms of their accessibility, availability and affordability but were perceived as providing a lower quality service than health clinics. This finding related to the limited mandate of CHAs to provide curative treatments. Given SC global strategies which emphasize health care for women and children, an important finding was that CHAs were especially valued by women. If the findings of the impact assessment are combined with experiences with CHA-type workers in pastoralist areas of Somalia in the 1980s, and more recent experiences with community case management for pneumonia in southern Ethiopia, there is now a compelling body of evidence to warrant an expansion of CHA roles to include treatment of

pneumonia and malaria - but only if proper monitoring and supervision can be put in place. In the absence of a broader clinical role for CHAs, it seems highly unlikely that primary-level preventive or curative health care will improve in pastoralist areas. If SC US is not already engaging regional government on these issues, the expansion of CHA roles and further evaluation should be a focus of SC US activities in the health sector.

Traditional birth attendants - the impact assessment recorded a marked increase in the use of trained TBAs in project areas, with a median 79% of births attended by a trained TBA. As TBA records were not made available, the health impacts of TBA activities remain open to question. The SC global strategy for helping children to survive includes '*Refer complications in mother and newborn to emergency obstetric care if needed*'. Therefore, the impact assessment measured the proportion of dystocia cases referred by TBAs to health centers, but found a zero referral rate during the five years of the project. This finding was a major concern and indicated that SC US needed to conduct an urgent review of the TBA system, its linkages with health centers, the quality and acceptance of the staff and facilities at health centers, and possible travel constraints for women seeking health services.

Women's use of health centers - related to the appallingly low level of referral of dystocia cases in SC US project areas, was a more general under-use of health centers by women relative to men. Again, this finding showed that SC US needed to conduct a comprehensive review of health centers and take account of gender dynamics and culture, and the particular difficulties faced by women when trying to access higher-level health care. Evidence from Somalia and the Somali region of Ethiopia shows excess mortality in women and girls relative to boys and men, and SC US urgently needs to fully understand and begin to address this fundamental problem.

Child vaccination - the impact assessment showed that the SC US project had no impact on polio vaccination coverage, and that measles vaccination coverage declined during the project to 56.8% in project areas and 20.2% in non-project areas. Vaccination coverage approaching 100% should be the objective. Given the specific vulnerability of pastoralist children during drought and the risk of high child mortality due to measles outbreaks, proper measles vaccination should clearly be a priority. Again, SC US needs to urgently review its objectives and strategies for measles vaccination given the context of the increasing impact of drought in Somali areas and measles-related child mortality during drought. Measles is the human equivalent of a disease in livestock called rinderpest, and rinderpest has been eradicated from Ethiopia and Africa. In remote pastoralist areas of Ethiopia, community-based workers were central to the rinderpest eradication strategy and yet CHAs have a very limited role in measles vaccination.

Other interventions - the most urgent issues arising from the impact assessment are summarized above. Readers are referred to the Discussion section of the report for the main findings on breastfeeding practices, knowledge on HIV/AIDS and FGM practices.

INTRODUCTION

Primary health care in Ethiopia

Although Ethiopia has reduced its under-five mortality rate by 40% since 1990, one in eight children still die before their fifth birthday¹. These children are most likely to live in poor families in rural areas (where 85% of the population lives) and to have died from malaria, pneumonia, diarrhoea, measles or newborn infections. Almost one third of these deaths occur within the first month of the child's life, and many newborns will die together with their mother². The reasons for these statistics are clear: less than 25% of households in Ethiopia have access to clean water; only 1% of births in the poorest families are attended by a skilled attendant; and only 14% of one-year olds from the poorest families have been fully immunized³. For children aged under five in Ethiopia, 84% are without basic health care and are unlikely to be taken to a health care provider with suspected pneumonia, or to receive oral rehydration therapy (ORT) for diarrhoea⁴.

The Government of Ethiopia's health strategies, outlined in the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) and the Health Sector Development Plan (HSDP III), prioritize rural health services with a focus on extending services from health facilities out to villages and households. With two thirds of the rural population more than 5km away from any kind of health facility and 77% more than 20km from a hospital⁵, the role of community-based health workers is key to achieving the government's MDG-related goals in the health sector⁶. Central to the health extension program is the training of Health Extension Workers (HEWs) at the *kebele* level who are attached to government health posts and who are responsible for delivering basic sanitation, immunization and other health services such as personal and environmental hygiene and family planning. Community health workers such as Community Health Agents (CHAs) and Traditional Birth Attendants (TBAs) are supposed to work under the HEWs to provide support to households for behavioural change (e.g. breastfeeding, immunization, use of bed nets, clean delivery etc).

Ethiopia has extensive experience of using community health workers (CHWs) and the government recognises that they have enormous potential to contribute to improving health services delivery in rural areas, including pastoral areas, as long as they are adequately supervised and supported. Worldwide, Save the Children promotes CHWs as a key strategy for saving the lives of children through the prevention and treatment of pneumonia, diarrhoea, malaria, and measles, and the promotion of exclusive breastfeeding.

¹ Save the Children 2008. State of the World's Mothers Report: Closing the Survival Gap for Children, Save the Children.

² *Ibid*

³ United Nations Development Programme 2007. Human Development Report 2007/2008, New York.

⁴ *Ibid*

⁵ Ministry of Finance and Economic Development 2006. Ethiopia: Building on Progress. A Plan for Accelerated and Sustained Development to End Poverty (PASDEP) 2005/06-2009/10, Vol 1: Main Text, p.29

⁶ Specific goals were to: reduce under-five mortality from 123 to 85/1000; increase DPT 3 vaccination coverage from 61% to 80%; increase share of births attended by skilled health personnel from 9% to 32%, and; increase primary health services coverage to 100% by 2009/10.

Health care in Somali pastoralist areas

Looking specifically at the Somali pastoral areas of Ethiopia, government indicators such as access to hospitals show that these areas are among the most poorly served in the country⁷. More detailed information is available from a livelihoods survey which included pastoral areas of Gashamo, Shilabo and Shinile districts, and which showed major disparities between access to health care between urban and pastoral communities⁸. For example, while 96% of urban respondents reported a health clinic in their community, and within 1km distance, only 12% of pastoralists reported a health clinic in their community and at a nearest average distance of 36km. Similarly, in pastoral areas only 24.4% of children were immunized compared with 49.4% of children in urban areas.

The same report noted the patriarchal nature of Somali society and discrimination against women and girls, which the researchers associated with higher mortality in girls and women relative to boys and men. A male infant had a 22 per cent higher chance of surviving to the age of five than a female infant; crude life expectancy for men in pastoralist areas was 41 years compared with 33 years in women. The findings on female mortality agree with much earlier studies, conducted in the late 1980s, in pastoralist areas of Somalia⁹ and deep-rooted discrimination against women related to the Somali system of blood money compensation (*dia*) which values a man's life at 100 camels but a woman's life at only 50 camels.

The problems of basic service provision in pastoral areas of Ethiopia are well known and in part, are explained by the relatively high transaction costs of delivering services to small, mobile populations in large areas with limited infrastructure. In other sectors, community-based approaches have been applied with some success¹⁰ and government guidelines have existed for community-based animal health workers (CAHWs) since 2004¹¹. Increasingly, these primary veterinary services aim to link CAHWs to private, urban-based veterinary pharmacies as a means to ensure supplies of medicines and equipment, while also providing a clear role for government in terms of regulation and supervision.

Impact assessment of the Save the Children health program

The SC US project *Southern Tier Initiative Livelihoods Enhancement for Agropastoralists and Pastoralists* (LEAP) was a five-year integrated development project in Afdher and Liben Zones of the Somali Region, and the Borena Zone of Oromiya Region in southern Ethiopia. The main components of the project were human health, non-formal education, animal health, marketing,

⁷ CSA/EDRI/IFPRI 2006. Atlas of the Ethiopian Rural Economy. Central Statistical Agency, Ethiopian Development Research Institute and International Food Policy Research Institute, Addis Ababa. <http://www.ifpri.org/pubs/books/oc54.asp#dl>

⁸ Devereux, S. 2006. Vulnerable Livelihoods in the Somali Region, Ethiopia. Research Report 57, Institute of Development Studies, Brighton.

⁹ Aden, A.S., Omar, M.M., Omar, H.M., Högberg, U., Persson, L.A. and Walls, S. 1997. Excess female mortality in rural Somalia - is inequality in the household a risk factor? *Social Science and Medicine* 44(5), 709-715.

¹⁰ Admassu, B. et al. 2005. Impact assessment of a community-based animal health project in Dollo Ado and Dollo Bay districts, southern Ethiopia. *Tropical Animal Health and Production* 37/1, 33-48.

¹¹ Ministry of Agriculture and Rural Development 2004. National Minimum Standards and Guidelines for the Design and Establishment of Community-based Animal Health Worker Systems. Ministry of Agriculture and Rural Development, Addis Ababa.

income generation and conflict mitigation. The project was funded by USAID and ended in October 2007.

The health component of LEAP had the overall intention of improving the health and nutritional status of families in the project area. Under this general result, more specific results and activities included training of CHWs, including training in safe motherhood practices including home-based life saving skills; support and promotion of EPI; increased adoption of HIV/AIDS prevention practices; and promoting positive nutritional practices through maternal and child nutrition education, and through establishing and supporting breastfeeding support groups.

In mid-2007 SC US worked with the Feinstein International Center to design and implement an impact assessment of the health component of LEAP, with a focus on the impact of SC US activities on child vaccination, primary health service delivery via community health agents (CHAs), the health care of mothers and infants via trained traditional birth attendants (TBAs), knowledge on HIV/AIDS and breastfeeding practices. This report presents the main results of the impact assessment and provides recommendations for strengthening community-based health care in pastoral areas covered by SC US.

METHODOLOGY

Impact assessment questions and indicators

In discussion with SC US staff, it was agreed that the questions to be answered by the impact assessment and the indicators to be measured should be as follows:

TBA system

Q1. How has the TBA system affected the implementation and impact of EPI programs?

Indicator: Women's awareness of need for vaccination against polio and measles

Indicator: Proportion of 1-year old children vaccinated against measles¹².

Q2. How has the TBA system affected the prevention or treatment of maternal and child health problems?

Indicator: Proportion of births in community attended by TBA

Indicator: Proportion of children exclusively breastfed for first 6 months

Indicator: Proportion of women with dystocia referred by TBA

Q3. How has the TBA system affected community attitudes and behaviour towards key social and health problems such as FGM and HIV/AIDS?

Indicator: Proportion of girls subjected to FGM

Indicator: Women's knowledge on causes and prevention of HIV

¹² This indicator is also used in *Saving the Lives of Children Under Age 5*, State of the World's Mothers Report, Save the Children (2008).

Q4. How does the TBA system compare with other health service providers?

Indicators: accessibility, availability, affordability, quality

Q5. What are the lessons learned from the TBA system and what strategies are needed to improve the system?

Indicators: non-specific, to be derived from informants

CHA system

Q1. How has the CHA system affected the implementation and impact of EPI programs?

Indicator: Men's awareness of need for vaccination against polio and measles

Indicator: Proportion of 1-year old children vaccinated against measles cf. international coverage targets¹².

Q2. How has the CHA system affected the prevention or treatment of endemic health problems?

Indicator: Change in health impact of diarrhoea and pneumonia on children under-5

Indicator: Proportion of under-5 year old children with diarrhoea receiving ORT¹²

Indicator: Proportion of under-5 year old children with suspect pneumonia taken to CHA¹²

Q3. How does the CHA system compare with other health service providers?

Indicators: accessibility, availability, affordability, quality

Q4. What are the lessons learned from the CHA system and what strategies are needed to improve the system?

Indicators: non-specific, to be derived from informants

Assessment design and sampling

A retrospective case control approach was used, based on a comparison of SC US intervention areas (peasant associations - PAs) with control areas (PAs) where no SC US activities took place. In the control PAs, there were no other programs to train and mobilize CHAs or TBAs, although government vaccination and other health-related programs did take place. For some variables, measures were compared before the start of the SC US intervention in 2002/3 and again after the intervention in 2006/7.

The assessment was conducted in two districts, selected purposively. These districts were judged by the SC US team to be typical of the Somali districts in the LEAP project area. The two districts were Afdher and Dolobay, and within each district 10 intervention PAs and 10 control PAs were selected randomly (total number of PAs = 40; totals of 20 intervention PAs and 20 control PAs). Within each PA, 20 adult male and 20 adult female informants were selected randomly for involvement in individual interviews. The same informants were also involved in group interviews. These group interviews numbered 20 each for men and women in each district.

Methods

Individual interviews

Individual interviews comprised a mix of semi-structured interviews (SSI), and standardized proportional piling and matrix scoring. The SSI included a mix of closed and open questions. Responses to closed questions were coded and recorded as frequencies, whereas responses to open questions were recorded as narrative. Proportional piling and scoring methods produced proportions and scores, and narrative text. All numerical data was handled as parametric data, with relevant statistical tests to compare frequencies, proportions or scores.

The participatory methods used had been used previously with Somali communities for impact assessment in the LEAP project areas, most notably in impact assessments of the SC US support to community-based animal health systems. Although standardized in terms of the scoring or piling methods, each participatory method also included more open-ended questioning to enable field-level cross-checking of results.

Group interviews

Group interviews comprised a mix of SSI, and standardized proportional piling and simple scoring. The SSI used mainly open questions, with responses recorded as narrative. Proportional piling and scoring methods produced proportions and scores, and narrative text. All numerical data was handled as nonparametric data, with relevant statistical tests to compare proportions or scores.

Triangulation

It was proposed that the results derived from participatory methods would be further cross-checked against four main types of secondary data to be provided by SC US:

- The LEAP project baseline survey of April 2003 - this report presented collated data for the entire LEAP project area. Disaggregation of the data on human health issues for the specific PAs covered in the assessment was needed.
- Collation of polio and measles vaccination data - for the specific PAs covered by the assessment.
- SC US baseline surveys on "*Access to PHC and Health Facilities*". These baselines needed to be accessed and the data organized for the specific PAs covered in the assessment.
- Collation of data by SC US derived from the monthly monitoring reports for the CHAs and TBAs working in the PAs covered by the assessment. These reports needed to describe and quantify the activities of the CHAs and TBAs, and were to cover the period 2003/4 to 2006/7.

RESULTS

Impact of CHA/TBA systems on polio and measles vaccination

Polio and measles vaccination coverage figures are shown in Table 1. Child immunization and vaccination programs in the SC US areas were conducted by government teams on a mass vaccination, campaign basis. Since 2002/3 the government conducted regular polio vaccination campaigns using a WHO fund to support woreda health centers in the form of vehicle rental, fuel and staff per diems. For measles, a regular vaccination program was initiated in 2006, but this was reported to be less successful due to the relatively higher cost as the vaccine required a cold chain facility, and technical skills needed to administer the vaccine. Only two measles vaccination campaigns took place between 2002/3 and 2006/7, for children over nine months old. For both diseases, the vaccination campaigns were reported to be limited to the main settlements. SC US support to the vaccination campaigns during the project intervention period was limited to the provision of a vehicle for government staff. No fuel or per diems were provided by SC US.

Table 1. Polio and measles vaccination coverage

Type of vaccination and area	Mean (95% CI) vaccination coverage (%)	
	2002/3	2006/7
<u>Polio</u>		
Control area (n=368)	81.7 (78.18, 85.13)	88.4 (85.74, 91.14)
Intervention areas (n=376)	76.2 (72.31, 80.14)	86.3 (83.25, 89.26)
<u>Measles</u>		
Control areas (n=368)	50.3 (45.52, 55.17)	20.2 (16.31, 24.16)
Intervention area (n=376)	67.5 (63.18, 71.75)	56.8 (52.37, 61.26)

ns - not significant

Results derived from proportional piling with individual informants.

The results in Table 1 indicate no significant impact of SC US activities on polio vaccination coverage. Informants reported a significant increase in the proportion of children vaccinated between 2002/3 and 2006/7 in both control and intervention areas.

In control areas there was significantly lower measles vaccination coverage than in intervention areas at the start of the project in 2002/3. In both areas, measles vaccination coverage declined during the project, but with a greater decline in control areas. This suggests some impact of the project in terms of preventing a major decline in measles vaccination coverage, rather than improving coverage to internationally-recommended levels. Two measles vaccination campaigns were carried out by government between 2002/3 and 2006/7.

Levels of knowledge on the need to vaccinate children are shown in Table 2, and the results indicate some impact of the project on women's knowledge on the need to vaccinate children.

Table 2. Knowledge on the need to vaccinate against measles and polio

Informant	Proportion (%) of people with knowledge of vaccination		Difference in proportions (95% CI)
	Control areas	Intervention areas	
Women	96.8% (n=190)	100% (n=210)	3.2% (0.70%, 6.70%)
Men	100% (n=190)	100% (n=210)	0.0% (0%, 0%)

ns – not significant

Results derived from closed questioning of individual informants during SSI.

The combined results of Tables 1 and 2 indicate that weaknesses in vaccination coverage were not due to limitations in knowledge at community level, and were more likely due to government capacity to deliver vaccination campaigns. There was no evidence from informant interviews that the TBA/CHA system affected the implementation or impact of the EPI program. Government campaign-based vaccination programs did not involve the active participation of TBAs and CHAs. In many cases campaigns were coordinated by PA chairmen, who were also involved in giving vaccinations.

Impact of TBA system on breastfeeding practices

Figures on breastfeeding practices in control areas and intervention areas are presented in Table 3.

Table 3. Breastfeeding practices in control and intervention areas, before and after the SC US interventions

Area	Year	
	2002/3	2006/7
<u>Control area (n=189)</u>		
- Proportion of women exclusively breastfeeding up to 6 months of age ¹	0.5%	0.5%
- Mean (95% CI) number of days to start of breastfeeding	2.5 (2.39, 2.67)	2.4 (2.29, 2.59)
- Proportion of women using milk-water mix from day 1 ¹	99.5%	99.5%
<u>Intervention area (n=210)</u>		
- Proportion of women exclusively breastfeeding up to 6 months of age ¹	1.9%	1.9%
- Mean (95% CI) number of days to start of breastfeeding	2.1 (1.99, 2.28)	0.4 (0.28, 0.95)
- Proportion of women using milk-water mix from day 1 ¹	98.0% ²	98.0% ²

ns – not significant

¹ Data derived from closed questioning of individual women during SSI.

²The remaining 2% of women started using milk-water mix when the child was six months of age. The women citing this practice in 2002/3 were the same women who cited it in 2006/7.

The LEAP baseline survey of April 2003 stated that the average time from birth to the start of breastfeeding was 1.4 days for the entire project area, with Somali women starting breastfeeding relatively later, although the specific figure for Somali women is not provided in the report. Only 1.8% of children were exclusively breastfed for six months.

The proportion of infants exclusively breastfed for 6 months (0.5% in control areas and 1.9% in intervention areas) showed no change over time. The normal practice amongst Somali women in

the intervention areas was to introduce newborn infants to cows milk mixed with water on the day of birth. Most women (including the women interviewed during the assessment) believed that the initial milk, colostrum, was either dangerous, or would not nourish the baby. Therefore, a delay of up to three days from birth to the start of breastfeeding was common. LEAP project staff confirmed that they did not promote exclusive breastfeeding during the intervention but instead promoted a reduction in the delay from birth to the start of breastfeeding.

Use of TBAs and referral rates in maternal health care

The TBAs were trained on key symptoms, diagnostic methods and preventive measures of pregnancy-related problems and difficult pregnancies/ labor, including oedema, anaemia, hypertension, and pre- and post-natal bleeding. In addition to attending normal births, the TBAs were responsible for early referral to health centers in dystocia cases, and basic infant and child health care.

Table 4. Birth attendance by trained and untrained TBAs, and referral rates for dystocia cases

Type of birth attendance	Median proportion of births attended (95% CI)	
	2002/3	2006/7
<u>Control areas (n=20 informant groups)</u>		
- use of untrained TBAs	19% (10%, 29%)	35% (19%, 50%)
- proportion of women with dystocia referred by TBA to health center	0% (0%, 0%)	0% (0%, 0%)
<u>Intervention areas (n=20 informant groups)</u>		
- use of trained TBAs	0% (0%, 0%)	68% (53%, 76%)
- proportion of women with dystocia referred by TBA to health center	0% (0%, 0%)	0% (0%, 0%)

ns – not significant

Results derived from proportional piling with informants groups.

The LEAP baseline survey of April 2003 stated that 62.7% of births in the entire project area were attended by untrained TBAs, and that 6.5% of births were attended by a health professional or para-professional, including trained TBAs. The LEAP baseline survey of April 2003 did not collect or present data on the incidence of maternal health problems, or mother or infant mortality during birth.

Table 4 shows that the proportion of births attended by TBAs was higher in 2006/7 than in 2002/3 in both the intervention and control areas; this change was significant in intervention areas. In the control areas, TBAs were untrained in both the pre- and post-intervention period. In the intervention areas, 19/20 women's groups cited confidence in the trained TBAs as a reason for the increased use of trained TBAs.

Impact of TBA system on FGM

During the field testing of the assessment methodology it became apparent that the indicator 'Proportion of girls subjected to FGM' was unlikely to be a useful measurement of changes in local attitudes towards FGM, because people were aware that FGM was illegal. Local health staff advised that because many girls were still subjected to FGM in 2006/7, a more useful indicator would assess

the change from the more harmful practice of infibulation *fronii* to the less harmful practice of *sunii* (involving a cut in the tip of the clitoris).

Interviews with groups of women (n=20) indicated that in control areas a median proportion of 94% of girls were subjected to *sunii* whereas 6% of girls were subjected to *fronii*. In intervention areas the figures were very similar with 95% of girls subjected to *sunii* and 5% of girls subject to *fronii*. The change in FGM practice in both areas was attributed solely to religious leaders who had been condemning *fronii* for several years, as part of government HIV control programs. The assessment found no evidence that the SC US interventions had influenced attitudes towards FGM or FGM practice.

Impact of TBA and CHA systems on knowledge of HIV transmission

Levels of knowledge on methods of HIV transmission among men and women are shown in Table 5, and show that significantly more women in intervention areas expressed knowledge on HIV transmission (all three modes of transmission) than women in control areas. Results in Table 5 also show that significantly more men in intervention areas were aware of HIV transmission by sharp objects and blood transfusion, than men in control areas. At the start of the project, all men in the intervention areas were already aware of the transmission of HIV through sexual contact, hence the project was unlikely to have had an impact on this knowledge.

Table 5. Knowledge on HIV transmission

Type of informant	Mode of transmission ¹		
	Sexual intercourse	Sharp objects ²	Blood transfusion
<u>Women</u>			
Control areas (n=190)	90.0%	58.4%	40.0%
Intervention areas (n=210)	99.0%	92.9%	79.0%
<i>Difference in proportions (95% CI)</i>	9.0% (4.81%, 14.22%)	34.4% (26.45%, 42.17%)	39.0% (29.86%, 47.44%)
<u>Men</u>			
Control areas (n=200)	99.5%	88.5%	45.0%
Intervention areas (n=200)	100.0%	97.0%	79.5%
<i>Difference in proportions (95% CI)</i>	0.5% (-2.86%, 1.43%)	8.5% (3.52%, 13.92%)	34.5% (25.33%, 42.91%)

ns – not significant

¹ Data derived from closed questioning of individual informants

² Such as razors used during FGM

In the LEAP baseline survey of 2003, 97.8% of women expressed knowledge of HIV transmission through sexual contact, 62.5% mentioned sharp objects and 26.8% mentioned blood transfusions. These figures referred to the entire LEAP project area.

Sources of information on HIV/AIDS are shown in Table 6, and indicate that in intervention areas, TBAs (who are all women) were an important source of information on HIV for women, whereas CHAs (who are all men) were an important source of information for men. The extent to

which public media was referred to as a source of information was significantly less for women than men in both intervention and control areas. Note that only two of the 400 women interviewed mentioned their husbands as a source of information about transmission of HIV/AIDS.

Table 6. Use of information sources on HIV/AIDS

Type of informant	Source of information ¹			
	Media ²	CHA	TBA	Other ³
<u>Women</u>				
Control areas (n=189)	71.1%	0.0%	0.0%	80.0%
Intervention areas (n=210)	50.5%	18.1%	46.7%	20.0%
<u>Men</u>				
Control areas (n=200)	97.0%	1.5%	0.0%	8.0%
Intervention areas (n=200)	87.0%	60.5%	10.5%	21.5%

¹ Data derived from closed questioning of individual informants.

² Including radio programs in Somali broadcast by Ethiopia radio and BBC.

³ Including government staff, relatives in towns, and friends.

Correlation between knowledge on modes of HIV transmission and use of different information sources is shown in Table 7.

Table 7. Correlation between knowledge of HIV transmission and use of information sources in SC US intervention areas

Source of information	Correlation coefficient - mode of HIV transmission		
	Sexual intercourse	Sharp object ¹	Blood transfusion
<u>Women (n=210)</u>			
Media ²	0.268, p<0.001	ns	-0.212, p<0.001
CHA	ns	0.138, p<0.01	0.191, p<0.001
TBA	0.135, p<0.01	0.272, p<0.001	0.316, p<0.001
Other ³	ns	ns	ns
<u>Men (n=210)</u>			
Media ²	ns	ns	ns
CHA	ns	0.151, p<0.01	0.247, p<0.001
TBA	ns	ns	ns
Other ³	ns	ns	ns

ns – not significant

¹Such as razors used during FGM

²Including radio programs in Somali broadcast by Ethiopia radio and BBC

³Including government staff, relatives in towns, and friends

There was a significant positive correlation between the use of TBAs and CHAs as sources of knowledge, and knowledge on HIV transmission. For women the correlation was highest for TBAs whereas for men it was highest for CHAs. These results indicate impacts that were attributable to the SC US interventions.

The results also show a significant negative correlation between women's use of media and their knowledge on blood transfusion as a mode of HIV transmission. This suggests that media information on this aspect of HIV might be confusing or misleading. 'Unblessed sex' i.e. sex outside

marriage, was the most commonly mentioned means of HIV transmission - the possibility of HIV transmission within a married sexual relationship was not recognized or admitted to.

CHAs and TBAs as health service providers

The comparison of health service providers in SC US intervention areas using the indicators 'accessibility', 'availability' and 'affordability' are shown in Figure 1 to 3.

Figure 1. Relative accessibility of health service providers in SC US interventions areas, Afdher and Dolobay woredas, 2007

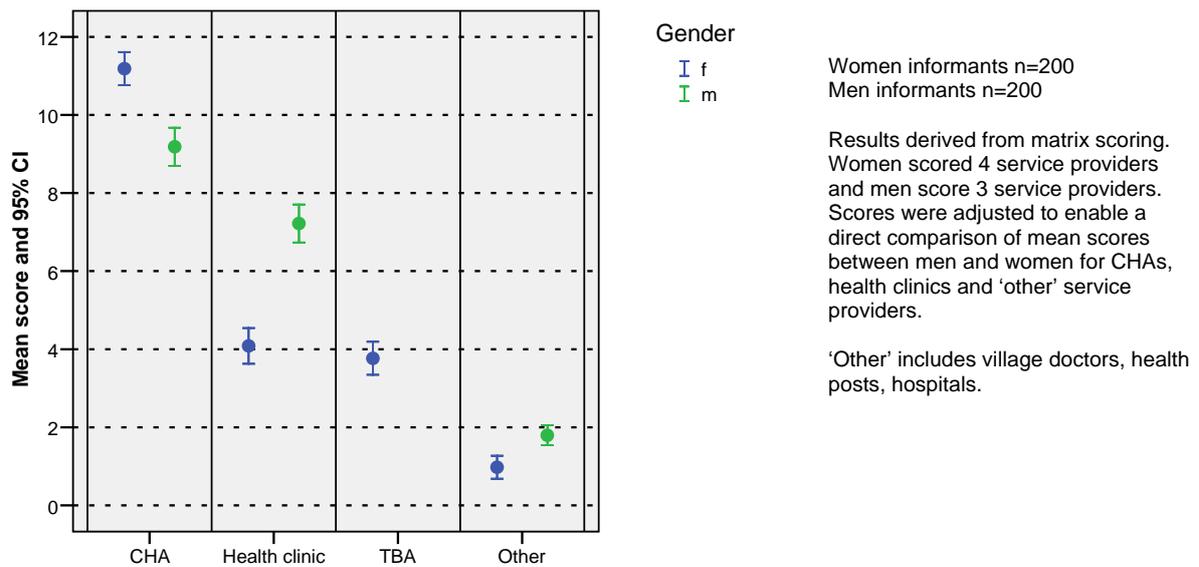


Figure 2. Relative availability of health service providers in SC US interventions areas, Afdher and Dolobay woredas, 2007

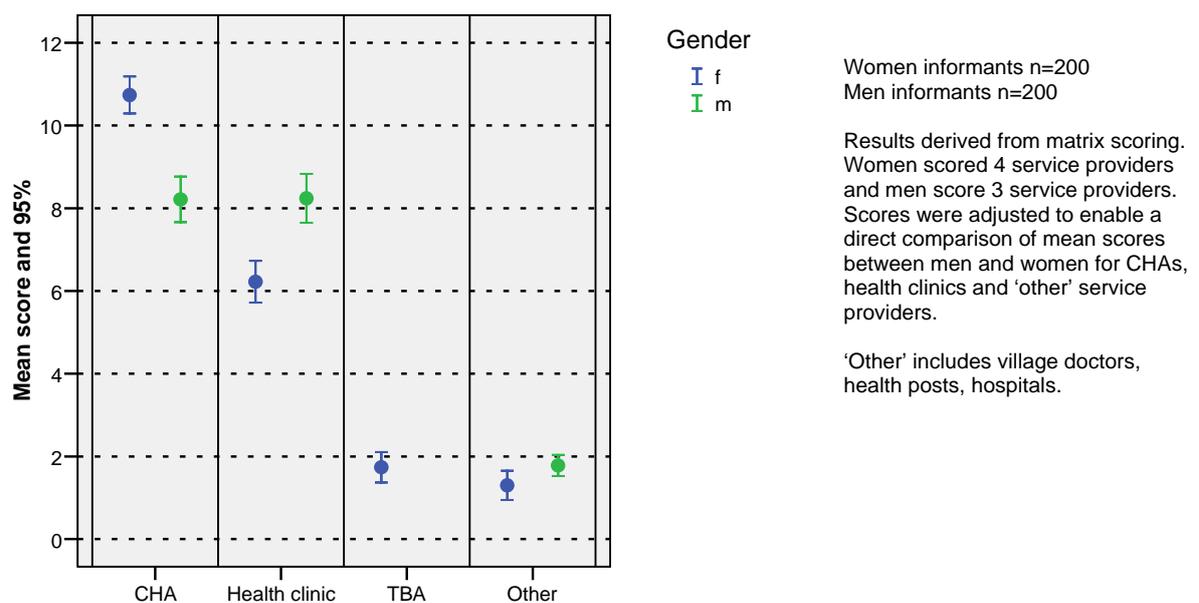


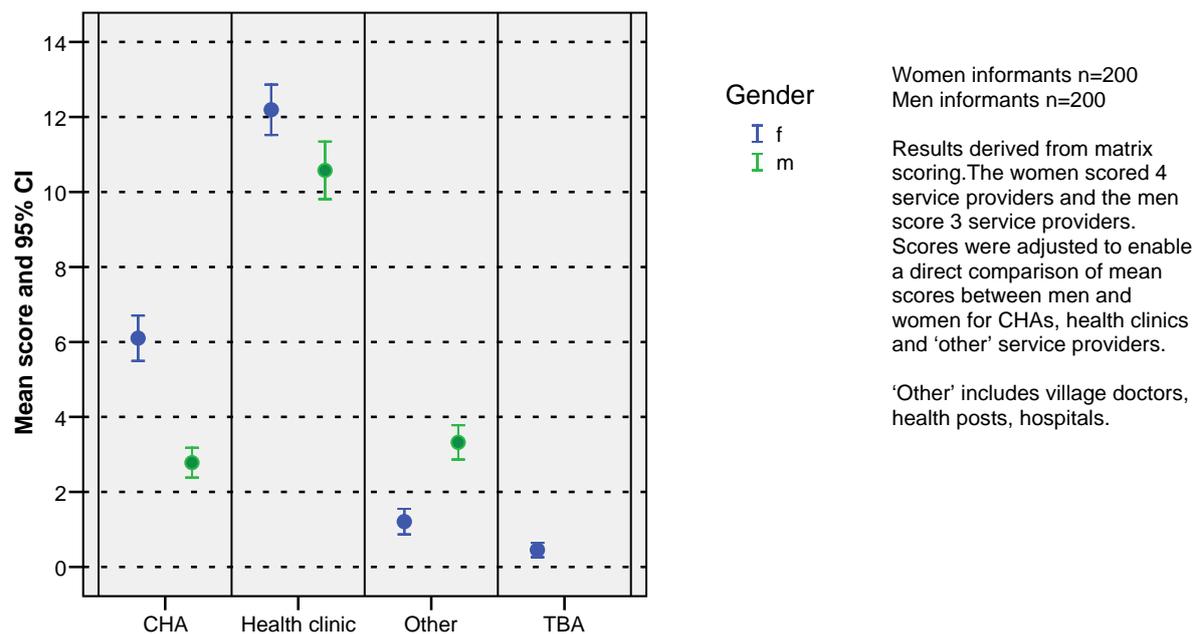
Figure 3. Relative affordability of health service providers in SC US interventions areas, Afdher and Dolobay woredas, 2007



The overall pattern of scoring in Figures 1, 2 and 3 was similar. Women scored CHAs significantly higher than other service providers, and women's scores for CHAs were significantly higher than those of men. In contrast, men scored CHAs higher (Figure 1) or similar (Figures 2 and 3) to health clinics.

The relative quality of health service providers is shown in Figure 4 and shows that health clinics were viewed as the best-quality service by both women and men. Women then preferred CHAs in terms of quality whereas men preferred other service providers.

Figure 4. Relative quality of health service providers in SC US interventions areas, Afdher and Dolobay woredas, 2007



With regard to the TBA system, TBAs were not highly scored for any indicator. Women scored them significantly lower than CHAs on all indicators and significantly lower than health centers on all indicators except accessibility, for which the scores were similar. On quality, they were scored the lowest of all service providers, including 'other'.

Impact of CHA system on diarrhoea and pneumonia

Diarrhoea, pneumonia and malaria were identified by all informant groups as the priority endemic diseases in children under five in both intervention and control areas. In two of the 20 PAs covered in the study, 'bloody urine' (presumed to be schistosomiasis) was the most common problem in both 2002/3 and 2006/7¹³. Child health services provided by the CHAs included supportive treatment for diarrhoea in the form of ORT, and preventative services, being mainly provision of advice on disease transmission and control measures. They did not give vaccinations or prophylactic treatments and were not supposed to prescribe or supply antibiotics. Although the government health centers were their main source of drugs, the CHAs were not formally linked to the centers and often faced drug shortages.

Table 8 shows indicators for the use of CHAs in the project intervention areas. There was a significant increase over time in the proportion of children with diarrhoea treated with ORT, and the proportion of children with diarrhoea taken to a CHA.

Table 8: Use of CHAs for cases of diarrhoea and pneumonia in children in SC US intervention areas, Afdher and Dolobay woredas, 2007

Indicator	Year		Difference in proportions (95% CI)
	2002/3	2006/7	
Median proportion of children with diarrhoea treated with ORT ¹	54.3%	81.4%	27.1% (16.53%, 40.10%)
Median proportion of children with pneumonia taken to CHA ¹	0%	79.3%	79.3% (62.66%, 81.20%)

ns – not significant

¹ Data derived from 20 groups of women.

Two outbreaks of 'acute watery diarrhoea' occurred in some intervention areas between 2002/3 and 2006/7. For the post intervention period (2006/7), respondents were specifically asked about the 'last 12 months'. In intervention areas 18/20 women's groups cited use of CHAs as an attribution factor affecting changing health status of children.

No baseline data on the prevalence or mortality of endemic diseases in children was collected or presented in the LEAP baseline survey report of April 2003.

¹³ This was specific to the PAs around Dawa River.

DISCUSSION

Use of baseline surveys and monitoring data

The impact assessment used a retrospective case control design and compared SC US intervention areas with non-intervention areas. In addition, the assessment intended to use SC US baseline surveys and monitoring data to cross-check findings in intervention areas.

Regarding the use of the LEAP baseline survey of 2003 it was assumed that the survey findings could be disaggregated by district and PA for the specific areas covered by the assessment, thereby providing a specific 2003 baseline for some indicators in these areas. However, it seemed that the original baseline data was not accessible in a form which enabled such disaggregation. This raises questions about the value of the baseline survey if it could not be used for future evaluations. The baseline survey covered 3,240 households and so was probably a costly and time-consuming activity. It can also be noted that the baseline survey was weak from the perspective of measuring future health impacts. For example, no information was collected on: the prevalence of endemic diseases in children such as diarrhoea, pneumonia or malaria; the prevalence of maternal health problems or birth complications; the basic indicators of health service provision such as accessibility, availability, affordability and quality. Although the project proposal included an activity *Conduct 'Access to PHC and Health Facilities Surveys'*, it seems that these surveys were not implemented.

Regarding the use of LEAP project monitoring data, the impact assessment intended to compare detailed accounts of CHA and TBA activities with community perceptions of changes in health status for the specific areas covered by the workers in question. For example, if informants stated that the health impacts of diarrhoea in children were reduced due to the provision of ORT by a CHA, it would have been useful to examine the supply of ORT to that CHA, and his records of diagnoses of diarrhoea and treatment with ORT. This combination of information of different types and from different sources would have enabled the assessment team to determine the biological feasibility of community perceptions of health impacts. The delay in producing this report was partly due to repeated requests to SC US for the CHA and TBA records, which were never submitted to the assessment team. The implications of weak monitoring are self-evident. If programme managers cannot track progress of both activities and impacts then real-time adjustments of activities during a project (if any) are unlikely to be evidence-based. In terms of influencing policy at regional or national levels, the capacity of SC US to advocate for policy reform is likely to be undermined by the weak monitoring system.

Impact on child vaccination

In terms of saving children's lives the global strategy of SC emphasizes the importance of comprehensive immunization programmes¹⁴. Yet vaccination coverage, especially for measles,

¹⁴ Save the Children 2008. Closing the Survival Gap for Children Under 5, State of the World's Mothers 2008.

remained unacceptably low in SC US project areas and actually declined during the project to 56.8% in project areas and 20.2% in non-project areas. Considering the 85% efficacy of the measles vaccine¹⁵, 100% coverage should be the aim. The impact assessment did not conduct a detailed review of government vaccination programs but recommends that SC US revisits its support to child immunization in pastoralist areas as a matter of urgency - it is, after all, supposed to be a SC global priority. The review process should take account of the vulnerability context of pastoralist communities, the increasing impact of droughts and the known risk of high mortality in pastoral children during drought and due to a combination of malnutrition and measles outbreaks - *as recorded in Somali areas of Ethiopia*¹⁶.

The assessment did provide some insights into attitudes towards vaccination. For example, when asked whether they were ready to take their children to health centers for vaccination, women in both control and intervention informant groups commonly responded negatively. Whilst government campaigns had convinced women that vaccination did not harm their children (as was widely believed in the past) they were not necessarily convinced of the positive benefits to the extent that they would actively seek vaccination. The response may also be due to the fact that vaccination services seemed not to be always available in the health centers.

It seems likely that community-based workers such as CHAs and TBAs could play a more active role in promoting vaccination, for example at health centers. However, their role may have been undermined by the campaign-based vaccination strategy, and also by their lack of connection and relatively poor relationship with the health centers (see sections below and Annex 1).

As SC US engages government on child vaccination strategies it may be worth noting that in livestock, rinderpest eradication in key pastoralist areas of Ethiopia was achieved using community-based animal health workers (CAHWs) under government supervision¹⁷. Ethiopia will celebrate the national eradication of rinderpest in April 2009, and biologically, rinderpest is the livestock equivalent of measles. There is an opportunity for cross-sectoral learning, and using the experiences from CAHWs in pastoral areas to strengthen measles vaccination. There may also be an opportunity to make better use of the participatory approaches to health planning which have already been well tested in Ethiopia¹⁸.

Impact on breastfeeding practices

The impact assessment recorded a reduced time to the start of breastfeeding from 2.1 days to 0.4 days in SC US intervention areas (Table 3), and partly attributed this change to the project. The health implications are that infants are more likely to receive colostrum, with the consequent health benefits such as prevention of diarrhea. Future impact assessments should look at these

¹⁵ Paquet, C. 1999. Vaccination in emergencies. *Vaccine* 17, S116-S119

¹⁶ Salama, P. et al. 2001. Malnutrition, Measles, Mortality, and the Humanitarian Response During a Famine in Ethiopia. *Journal of the American Medical Association* 286(5), 563-71.

¹⁷ Catley, A. and Leyland, T. 2001. Community participation and the delivery of veterinary services in Africa. *Preventive Veterinary Medicine* 49, 95-113

¹⁸ Bhattacharyya, K. and Murray, J. 2000. Community assessment and planning for maternal and child health programs: a participatory approach in Ethiopia. *Human Organization* 59(2), 255-266.

aspects in more detail and could, for example, explore whether mothers associate early breastfeeding with improved infant health. If so, the change is more likely to be sustained and the practice is more likely to spread throughout communities without much support from external actors.

The SC US project staff confirmed that women were not advised to exclusively breastfeed for six months. However, whether breastfeeding starts immediately or after a few days it remains important to prolong breastfeeding for as long as possible and it is not clear why both an earlier start and a longer period of exclusive breastfeeding could not be promoted at the same time. The women interviewed did not present any cultural or economic reasons for not maintaining exclusive breastfeeding, suggesting that it should be possible to have an impact through raising awareness on this issue. However, in the cultural context it may be more appropriate to focus on the promotion of exclusive breastfeeding as a child health issue, rather than as a contraceptive measure (since large families are valued highly). This would need to be investigated further. Similarly, further analysis needs to take account of fundamental linkages between breastfeeding practices and poverty, such as the need for women to return to work and the nutritional status of poorer women.

Impact of TBAs on maternal and child health

The impact assessment recorded a very substantial increase in the use of trained TBAs in SC US intervention areas (Table 4). It was assumed that this trend led to improved mother and infant health in terms of the specific health problems which TBAs were trained to prevent or treat. However, as explained above the project baseline survey did not collect information on the prevalence of these health problems and the project did not make TBA reports available to the assessment team. Therefore, future monitoring and assessment of TBA activities needs to examine specific health impacts on mothers and infants. Although more women were using TBAs than before, respondents raised various issues with the service that may have contributed to the low scores indicated in Figures 1 to 4. For example, TBAs were only supposed to attend normal births and did not have the requisite skills or treatments available to deal with oedema, anaemia, dystocia or other pregnancy or birth-related complications. In other words, they did not provide the services that women needed most and expected from them. As mentioned above, in the absence of a viable alternative (e.g. accessible, equipped health center with female birth attendants), the TBAs may end up handling cases that they are not qualified or equipped to deal with. This may account for the low scores for availability and quality of the service that they provided.

The SC global strategy for helping children to survive includes '*Refer complications in mother and newborn to emergency obstetric care if needed*'¹⁹. Therefore, the impact assessment measured the proportion of dystocia cases referred by TBAs to health centers, but found a zero referral rate (Table 4). It was assumed that while TBAs might be able to deal with those dystocia cases that were due to minor malpresentations, more severe birth complications would require treatment by higher-trained workers. It was also assumed that more severe, untreated dystocia

¹⁹ Ibid

cases would result in high case fatality rates, and therefore, the zero referral rate - during a five-year project - was a major concern.

Two opposing narratives were evident. The TBAs reported that women refused to go to health centers due to the poor quality of service and facilities available, staffing by health workers who were also not culturally acceptable (men rather than women), and transport problems. Health center workers reported that TBAs exceeded their responsibilities and capacities by trying to treat cases that should be referred. These findings demonstrate an urgent need to review the TBA system in terms of the linkages to health centers and the referral system. Such a review should also *'examine broader issues and include a thorough gender analysis of the state of the women in these areas, looking at look at their movement and decision-making ability within the household and what THEY talk about as security risks and where those risks are and how they are trying to avoid them - likely by curtailing or restricting movement when threats are from outside'*²⁰.

Understanding the reasons behind the low referral rate for dystocia cases must also be a priority. Clearly, there are issues around women's access to health centers (Figure 1) and their perceptions about the quality of care provided at the centers - for example, the lack of a clean maternity room or female staff to deal with women experiencing pregnancy or birth-related complications (see Annex 1). On the other hand, TBAs may not be adequately trained to decide when a referral is necessary or may not recognize the limitations of their knowledge. Health professionals at health centers also need to acknowledge that it is not the responsibility of TBAs to ensure that maternity rooms in health centers are technically and culturally acceptable. Faced with women who refuse to travel to health centers, TBAs may have little option but to attempt to handle birth complications that are beyond their capacity. While health professionals did not hesitate to criticise TBAs, they also seemed unable to apply basic hygiene measures in the centers under their professional responsibility.

A deeper review of the TBA system might also make use of the comparative data presented in Figures 1 to 4, but bearing in mind the limited range of services that TBAs were supposed to provide. These results indicated that women perceived TBAs to be only as accessible as health clinics, suggesting that transport to health clinics was not a constraint. The results also indicated that TBAs were far less available than health clinics, were less affordable and were of far lower quality. This kind of comparative analysis needs to be repeated but with a focus on specific maternal and infant health problems.

Impact on FGM

The impact assessment found no evidence that the project had influenced changing FGM practices, and attributed the trend towards less radical forms of FGM to religious leaders. It should be noted that Muslim leaders in Ethiopia have been advocating the less extensive *sunni* circumcision since the

²⁰ Dyan Mazurana, personal communication.

late 1990s²¹. The LEAP project started in 2003 and the specific FGM objectives were unclear in terms of the types of FGM to be addressed and targets for measuring impact. There appeared to be limited information in the project on the health consequences of FGM or how health problems varied according to the type of FGM which was practiced. Given the increase in the use of trained TBAs in project areas (see above) and assuming that TBAs attended 68% of births and examined women, in future it should be possible to verify trends in FGM practice and through participatory research, work with TBAs and women to gain a far better understanding of the health benefits of less radical FGM. For example, how might *sunii* circumcision affect the incidence of dystocia or urinary tract disease? At some point, it will also be necessary to develop strategies for addressing the *sunii* practice.

Impact on knowledge on HIV transmission

The impact assessment found that TBAs and CHAs were important sources of information on HIV/AIDS for women and men respectively, with significantly higher levels of knowledge in intervention areas compared with control areas (Tables 5 to 7). However, if we assume that the main route of HIV transmission in these areas is sexual intercourse then levels of knowledge on this were very high before the project started. For example, the LEAP baseline assessment in 2003 reported that 97.8% of women were aware of HIV transmission through sexual contact, whereas the impact assessment showed that 99.0% of women were aware in 2007 (Table 5). It follows that the project had limited impact on women's knowledge about the main route of HIV transmission.

If an objective of SC US is to prevent HIV transmission then it is probably important to examine both knowledge *and practice*, and understand issues such as 'unblessed sex', attitudes towards and use of condoms, and levels of prostitution. Such studies should place these issues within the context of livelihoods, and the assumption that poorer women may be forced into prostitution as a livelihoods strategy, as already reported in Jijiga and Gode towns²².

CHAs as health service providers

Figures 1 to 3 show the value of CHAs in terms of their accessibility, availability and affordability relative to other health service providers. Even though CHA curative activities were restricted to the use of ORT, they were clearly highly valued by informants in the assessment areas. The relatively low quality of CHAs relative to health clinics (Figure 4) reflects their limited mandate, rather than problems within their mandated clinical skills. These findings are supported by the disease-specific indicators for pneumonia and diarrhoea presented in Table 8.

Given these findings, it seems appropriate to broaden the range of services provided by CHAs towards a system which is more in line with the community health worker system used in

²¹ Missailidis, K. and Gebre-Medhin, M. 2000. Female genital mutilation in eastern Ethiopia. *The Lancet* 356, 137-8.

²² Devereux, 2006 *ibid*.

pastoral areas of Somalia in the 1980s²³. This system emphasized the importance of curative services for diseases such as malaria, diarrhoea and pneumonia, while also providing supervision of CHWs by government. When designing the Somalia program, it was assumed that:

'No one would listen to education messages about diarrhoea prevention delivered by health workers unable to answer the immediate needs of the child with pneumonia, or the pregnant woman with malaria. The lack of (functioning) infrastructure and referral points also make it necessary that health workers should be provided with antibiotics as necessary, particularly for treatment of acute lower respiratory tract infections'.

This highly practical approach, supported by UNICEF and the Ministry of Health in Somalia, was evaluated and the results included a 46% increase in the use of ORT in children under-5 with diarrhoea and a 59% increase in measles vaccination coverage, in program areas compared with non-program areas.

Further evidence for expanding CHA roles in pastoralist areas is provided from experiences with community case management (CCM) in many African and Asian countries²⁴ and from SC US's own experience with the use of CCM for pneumonia, malaria and diarrhoea in children in pastoralist communities in Liben district, Oromiya region from 2001 to 2006. An evaluation of this approach showed that trained CCM workers successfully treated pneumonia cases in children using antibiotics²⁵, and that the availability and quality of CCM workers was high; the evaluation recommended scaling-up CCM for the three illnesses. In Somali areas, CHAs could provide antibiotic therapies for pneumonia in children, and also provide malaria treatment and control services, for example through the sale of bed nets.

A third reason for expanding CHAs activities relates to their capacity to provide basic health services to women. The SC global strategy proposes the design of health care programs to better target the poorest and most marginalized mothers and children²⁶, and this impact assessment showed that relative to male informants, women consistently scored CHAs higher in terms of accessibility, availability, affordability and quality (Figures 1 to 4). In other words, *while CHAs were viewed as very useful service providers, they were especially valued by women.*

If SC US is to engage regional or federal government in discussion on CHAs, then current thinking within government - both formal and informal - will need to be understood. The government's health extension program for pastoralists includes a focus on training and equipping HEWs and TBAs to facilitate primary and reproductive health education, but seems not to mention their role in disease prevention and treatment. In terms of the integration of CHAs, referrals and government supervision, there is also an ongoing problem of professional staff retention at the health centers, which can be partly attributed to the drain of government health staff to better

²³ Bentley, C. 1989. Primary health care in northwestern Somalia: A case study. *Social Science and Medicine* 28(10), 1019-1030.

²⁴ Marsh, D.R., Gilroy, K.E., Van de Weerd, R., Wansi, E., Qazi, S. 2008. Community case management of pneumonia: at a tipping point? *Bulletin of the World Health Organization* 86(5), 321-416.

²⁵ Degefie, T., Marsh, D., Gebremariam, A., Tefera, W., Osborn, G., Waltensperger, K., 2008. Community Case Management Improves Use of Live-Saving Curative Interventions among Pastoralists in Ethiopia's Oromiya Region. **Check reference - need permission to quote.**

²⁶ Save the Children (2008) *ibid*

paid private facilities such as pharmacies, and to NGOs. In the case of NGOs, the problem is exacerbated when the hiring organization fails to obtain clearance from the relevant regional and *woreda* health authorities before hiring government employees. Unless they do so, staff employed by NGOs can continue to draw their government salary and the government becomes paralyzed in terms of hiring replacement staff. A 2006 study on the performance of health workers in Ethiopia identified the transition from public to private health service provision and weak and poorly enforced human resource policies as key factors leading to poor performance and low staff retention rates. The study highlighted the need for a radical revision of human resource policies and a greater understanding of what motivates professional health workers both in their careers and day-to-day professional activities²⁷. Such understanding is all the more necessary given that government might aim to link CHWs, including TBAs, to health posts and offer them formal employment under the MOH.

A further element of the policy dialogue with government should focus on the mobility of pastoral communities, and the problems of fixed-point delivery systems. Workers such as CHAs are one way to overcome these problems, but only if these workers are not so physically tied to health clinics that they become immobile and therefore, difficult to access for pastoralists. Again, there may be lessons to be learnt from the use of CAHWs in Ethiopia who are not fixed to government veterinary facilities but increasingly, linked to private pharmacies²⁸. Other relevant experiences from the CAHW policy process in Ethiopia include contrasting positions on the possible misuse of medicines by CAHWs, due to incorrect diagnosis or misdosing. Veterinarians often used this scenario as a reason for explaining drug resistance although over many years, were never able to produce a single proven case of drug resistance associated with CAHWs. Proponents of CAHW systems argued that well-trained and supervised CAHWs could handle medicines properly, and in the absence of training, were likely to access and use these medicines anyway and with a higher risk of mis-use.

Women's use of health centers

As suggested above, health centers have a role to play by acting as a point of referral and as a source of professional staff for the monitoring and supervision of community-based workers such as CHAs and TBAs. However, although women noted the relatively high quality of the health centers relative to other service providers (Figure 4), relative to men they consistently provided low scores for health centers in terms of accessibility, availability and affordability (Figures 1 to 3). As shown in Table 4, TBAs and pastoralist women did not use the health centers as a referral service in cases of dystocia (also see Annex 1).

Given that the health centers need to become an integral part of the overall primary health care system, the reasons behind women's reluctance or inability to access health center facilities

²⁷ Lindelow, M. and Serneels, P. 2006. The performance of health workers in Ethiopia: Results from qualitative research. *Social Science and Medicine* 62, 2225-2235.

²⁸ Admassu, B. (2003). Primary Animal Health Care in Ethiopia: The experience so far. In: Sones, K. and Catley, A. (eds). (2003). Primary Animal Healthcare in the 21st Century: Shaping the Rules, Policies and Institutions. Proceedings of an international conference, 15-18 October 2002, Mombasa, Kenya. African Union/Interafrican Bureau for Animal Resources, Nairobi.

urgently need to be understood and addressed²⁹. For example, it seems feasible that the different scoring of health clinics by men and women (Figures 1 to 3) reflects the gender issues in Somali areas, and the possibility of husbands not allowing their wives or daughters to travel to the clinics or provide the resources to enable this travel or cover the cost of the service. These kinds of questions indicate that SC US needs to invest far more in developing its in-house understanding of gender and health care in Somali pastoral areas, and produce evidence to justify a particular strategy for primary health care in pastoralist areas which promotes greater equity. The Somalia study published in 1997³⁰ suggested that modern health care could be a factor in maintaining gender differences. Ensuring that health services are non-discriminatory and increasing the focus on improving the quality of maternal health care provided by community health workers, especially TBAs, could have a huge impact on improving the health outcomes for pastoralist women and children in Ethiopia.

²⁹ Note that during the study, two women reportedly died of post-natal haemorrhaging from a single village only four kilometres from Dollo Ado health center. The infants had also died.

³⁰ Aden et al. 1997, *ibid*

Annex 1

Notes on visit to Dollobay Health Center, 28th July 2007

Elizabeth Bontrager, Tufts University

The health center facilities were initially constructed by MSF Holland in 1995. Other NGOs, such as PCAE and PDAP have contributed additional structures, including several office spaces (incomplete, due to corruption in the construction proceedings), a water system, and a fence surrounding the compound (added eight months ago). Two long, low buildings contain the out-patient facilities (dispensary, immunization room, exam room, etc.) and *woreda* offices, and two equivalent buildings house the in-patient rooms. Additionally, there are two pavilions, a bank of incomplete showers, two sets of latrines, three mobile containers intended for drug storage, a guardhouse, the aforementioned incomplete office building construction, and a living space for the on-site doctor.

At the time of construction, it was determined that the in-patient beds should be permanent structures, and were designed as concrete blocks supporting thin, plastic mattresses which can be easily wiped clean. The weather and heat make the rooms and beds uncomfortable to patients, who often choose not to remain in the clinic or to sleep outdoors in the pavilion on the premises. The rooms were visibly very dirty – remnants of insect nests and cobwebs on all the walls, blood stains on the walls and floor – and may well act as a deterrent to health center referral from the surrounding PAs. The current doctor believes that the cinder block construction of the buildings and beds does not allow for proper cleaning or disinfecting, as blood easily soaks into the material and can not be removed, allowing for the growth and accumulation of bacteria. Cleaning methods at the health center are limited, as is the water supply. Although water systems have been put into place at the center by various NGOs over the past 12 years, none are currently operable, and water from the nearby river is delivered instead to the center in tanks by donkey-drawn carts.

The doctor reports observations of bacterial resistance to certain antibiotics, such as ampicillin, as being more common in this part of the country than in others. Since the cheap and effective drugs can no longer be used to treat infections, he must buy and prescribe stronger antibiotics, such as third-generation cephalosporin, which are significantly more expensive – he estimates 400 Birr per round of antibiotic. The doctor attributes the increased prevalence of bacterial resistance to the inappropriate use or overuse of antibiotics by Community Health Agents in the region. In his view, the training regimen for the CHAs is not well-organized and does not help them to understand the limitations of their knowledge, thereby giving them unwarranted confidence in their skills and awareness and making them more “dangerous” than if they had received no training at all. In some cases, he has observed CHAs dispensing ceftriaxone, a third-generation cephalosporin, to their patients. Similarly, he believes that the trained TBAs are over-confident, believing they now have the scientific knowledge to support their traditional knowledge, leading them to “over-practice” or to wait until a complicated birth has reached a critical stage before referring the mother to the health center for additional care. When a mother suffers from pre-eclampsia, the TBAs should be able to recognize the symptoms and should refer her to the clinic for care well in advance of the later stages of the condition, as is often the current procedure. In cases of breach birth, he claims that the trained TBAs often manipulate the baby in the womb too early and attempt to remove it before the cervix is fully dilated.

The doctor also recognizes, however, that additional constraints to appropriate referral may exist beyond the implied over-confidence of the TBAs. The health center does not employ any female staff in care-providing roles, which may be a deterrent to the utilization of the services by Somali women, who may be uncomfortable with treatment by a male physician. Additionally, the long distance between some of the PAs served by TBAs and the health center in Dollo Ado may also prevent patients from following through on referrals.

On a final note, while the doctor’s concerns deserve acknowledgement and warrant additional research into issues such as regional differences in antibiotic resistance or TBA awareness of limitations, it should be noted that his experience in the region has been limited to two years, and therefore does not cover the entire lifespan of the human health interventions. In addition, while he was critical of the training received by the CHWs, he also admitted that he has never observed it and is not familiar with the material communicated to the CHWs in the training process.