

## Costs and coverage of reproductive health interventions in three rural refugee-affected districts, Uganda

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### Summary

**BACKGROUND** Uganda has hosted an estimated 200 000 refugees in post-emergency phase settlements interspersed within host communities since 1990. However, refugee health service runs parallel to host in most refugee-affected districts. The process of integration of health services began in 1999.

**OBJECTIVE** To estimate and compare the costs and coverage of reproductive health (RH) interventions in refugee and host populations in three rural West Nile refugee-affected districts of Uganda.

**METHODS** Data on costs of RH interventions were collected through a survey in 38/116 (33%) health facilities (3 public hospitals and 35 health centres). Data on coverage of RH interventions were collected from all 116 health facilities in the three rural refugee-affected districts for 2 years, 2003 and 2004.

**RESULTS** The costs and coverage of RH interventions significantly varied between population categories and among levels of refugee and host health facilities. Per capita cost of health care is 2.7 times higher for the refugee than the host population (US\$13.12 *vs.* US\$4.85). The cost per RH intervention is higher in the refugee than in the host health system (US\$3.02 *vs.* US\$2.73). Significantly more refugees attend antenatal care [99.4% (95% CI, 97.5–100) *vs.* 53.5% (53.22–53.78);  $P < 0.0001$ ]. The proportion of births in health facilities was significantly greater among refugees [37.3% (36.12–38.48) *vs.* 15.2% (15.01–15.39);  $P < 0.05$ ]. Major obstetrical interventions for absolute maternal indications were significantly more frequent among refugees than the host population living in the same region [1.02% (0.79–1.25) *vs.* 0.85% (0.80–0.90);  $P < 0.05$ ].

**CONCLUSIONS** Our study has shown higher costs and coverage in refugee than host health services. The findings suggest policy recommendations for improving the capacity, financing, organization and the performance of host health system in the refugee-affected settings.

**keywords** Reproductive health interventions (antenatal care, vaginal delivery, caesarean section, family planning, sexually transmitted infections) costs, coverage, refugee, host, Uganda

### Introduction

In developing countries, reproductive health (RH) is limited by several factors such as poor access, low quality of health services and low socioeconomic status. In refugee settings, this is usually compounded by low prioritization of RH services during the emergency phase of displacement, although RH conditions become the leading causes of morbidity and mortality during the post-emergency period (Cossa *et al.* 1994; UNHCR 1999).

Since 1990, Uganda has hosted an estimated 200 000 refugees. The majority (80%) lives in post-emergency phase settlements in the West Nile districts of Adjumani, Arua and Moyo (UNHCR 2004). Refugee health services run parallel to host services in most refugee-affected

districts in the country (Orach 1998; GoU 1999), are provided by international, regional and locally based non-governmental organizations (NGOs) and coordinated by the United Nations High Commissioner for Refugees (UNHCR). The Ministry of Health (MoH) and district local government provide health services for the host population.

In 1999, the Government of Uganda (GoU) and UNHCR initiated a strategy to integrate refugee and host population health services in the West Nile region. The strategy aims to make UNHCR/NGOs move away from 'relief thinking' parallel health services organization towards long-term integration of refugee assistance into overall development programme at district level (GoU 1999). One of the reasons is that maintaining parallel

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refugee health service is considered unsustainable in the long run (GoU 1999).

While the importance of providing RH services is universally recognized, there is limited information available on the cost of providing these services. Although the measurement of unit cost and coverage of interventions are critical in the processes of setting priorities and allocating resources efficiently, to date, only few studies have been conducted on costs of RH–maternal health care in developing countries, especially in sub-Saharan Africa (Levin *et al.* 2003). Estimating costs of RH care can provide valuable information on how adequately these services are funded as well as on the efficiency of the interventions (Borghi 2001). In this study, we estimated and compared the costs and coverage of RH interventions–services in refugee and host health facilities in three rural West Nile refugee-affected districts of Uganda to contribute towards evidence-based and equitable health services delivery for refugees and the host population in the region.

## Study methods

### Background to study areas

The three West Nile rural refugee-affected districts (Adjumani, Arua and Moyo) (Figure 1) had a combined total population of 1 439 379 inhabitants, comprising 1 289 462 (89.6%) hosts and 149 917 (10.4%) refugees in 2004. The majority of the refugees have lived for over a decade in the region.

In the region, Adjumani District hosts the majority (38.6%) of the refugees. In 2004, it hosted an estimated 57 913 refugees (UNHCR 2005a), constituting 25.3% of its total population. There are 34 health facilities in the district, comprising 1 public district referral hospital, 1 level IV health centre (HC), 8 level III HCs and 25 level II HCs. Of the 34 facilities, 22 (64.6%) are refugee based, 10 (29.4%) are government/public while 3 (8.8%) belong to faith-based organizations (Adjumani District Planning Office, 2005).

Between 1999 and 2001, a total of US\$2 565 850 was spent on refugee health care and US\$1 732 716 for the host population in Adjumani District (AHA 2002; DDHS 2002). The per capita cost of health care for refugees and host population was US\$13.12 and US\$4.85, respectively. During 1999–2001, annual per capita cost of health care for refugees was 2.7-fold higher than that for host population in Adjumani District.

The data on total (per capita) costs of hosts and refugees health care were collected from district directorate of health services (DDHS) and all NGOs involved in health care provision to refugees in the district. The total cost data

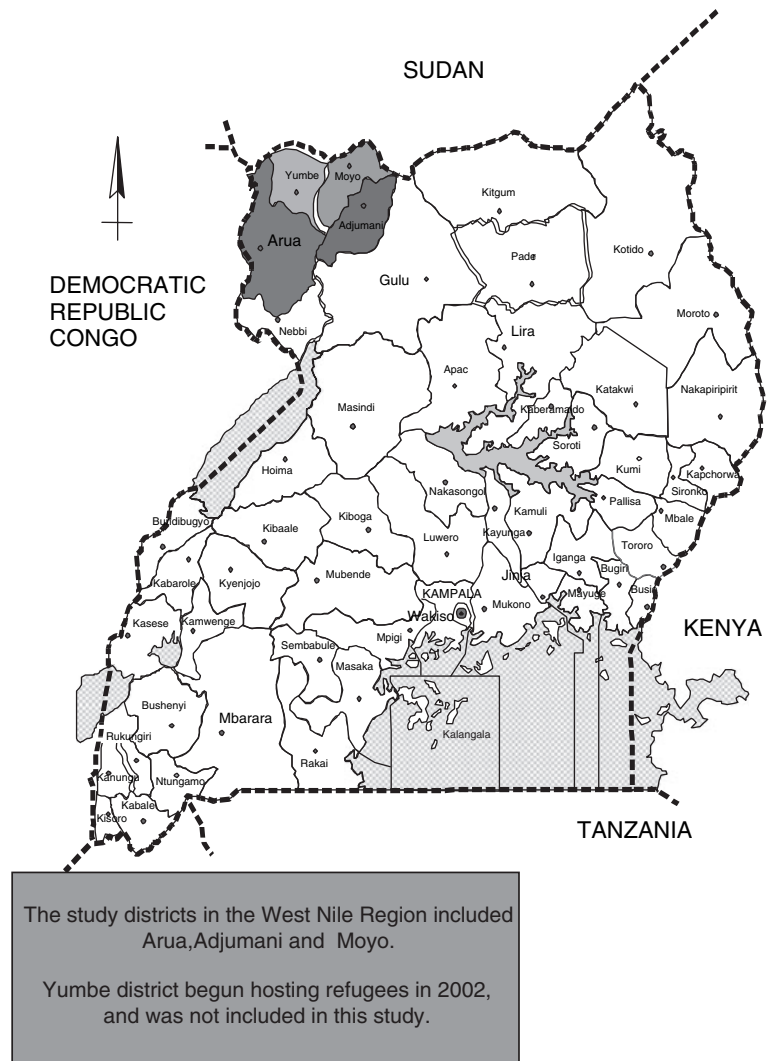
included recurrent cost items such as personnel remuneration/salary, equipment, drugs and supply and overhead costs in all refugee and host health facilities per financial year. In both host and refugee health systems, the data were collected on similar line (cost) items to ensure comparability and scrutinized (checked) to eliminate double entry (counting) to ensure reliability.

Moyo District had 239 713 inhabitants, with 203 312 (84.8%) hosts (Moyo District Planner 2005) and 36 402 (15.2%) refugees in 2004 (UNHCR 2005b). The district has 24 health units including 1 district referral hospital, 1 level IV HC, 9 level III HCs and 13 level II HCs. Of the 24 (16.7%) health facilities, 4 are refugee based, 18 (75%) are government/public and 2 (8.3%) are faith based. The health service organizations for refugees and hosts in the districts of Adjumani and Moyo run in parallel.

In 2004, Arua District had a total of 971 102 inhabitants (District Planner Arua 2005), comprising 915 500 (94.3%) hosts and 55 602 (5.7%) refugees (UNHCR 2005c), respectively. There were 58 health units in the district, consisting of 3 hospitals – 1 government regional referral hospital and 2 faith-based hospitals, 5 rural level IV HCs, 15 level III HCs and 34 level II HCs, respectively. Of the 58 health facilities, 45 (78%) are host/public, 7 (12%) are faith based while 6 (10%) belong to refugees. Health services (for refugee and host populations) in the district were integrated in 2000 and are being run by the district local government – DDHS with assistance from MoH and UNHCR. The integrated health system is co-funded by the host government and UNHCR. Integration of refugee and host health services is planned to take place in the other refugee-affected districts (Adjumani, Moyo and Yumbe) of the West Nile region.

### Sampling of health facilities

The three West Nile refugee-affected districts of Arua, Adjumani and Moyo had a total of 116 health facilities in 2004. These included five hospitals (i.e. three public and two faith based), and the rest are first-line health facilities (FLHF). A total of 38 (33%) of the health facilities, which included the 3 public hospitals and 35 (27 host and 8 refugee) FLHF, were selected using random and purposive sampling techniques for the cost analysis study. All three public hospitals in the West Nile districts of Arua, Adjumani and Moyo were purposely selected for the study. Three of seven HCs level IV (43%) were selected in the study. As Adjumani and Moyo Districts have one HC level IV each, the two were automatically included in the study. Two of five HC level IV facilities were randomly selected from Arua District. In the region, no refugee HC level IV or hospital exists, hence only host HC level IV



**Figure 1** Location of refugee-affected districts, West Nile region, Uganda.

and hospitals were included in the study. Of 28 (43%) public HCs level III, 12 were selected through probability proportionate to size (PPS) sampling technique, i.e. 6 HCs level III from Arua and 3 each from Adjumani and Moyo Districts. Of 38 (32%) public HCs level II, 12 were also randomly selected through PPS: 7 facilities from Arua, 3 from Moyo and 2 from Adjumani. In Adjumani and Moyo Districts where refugee and host health services run in parallel, all 4 (100%) refugee HC level III were purposely selected and 4 of 20 (20%) refugee HC level II were randomly selected in the study.

#### Data collection procedures

The cost study design was modelled on the WHO Mother–Baby package costing protocol and a detailed description

has been published elsewhere (WHO 1999). But we limited the cost estimates to six RH interventions: antenatal care (ANC), normal vaginal delivery, caesarean section, family planning (FP) methods (condom, depo-provera and oral contraceptive pills); sexually transmitted infection (STI) syndromic treatment and syphilis treatment. We collected data through two quantitative data collection techniques. We carried out a survey using exit interviews and reviewed medical records of clients/patients treated in the 38 sampled health facilities.

The exit interviews were conducted with clients/patients who had had clinical consultations (i.e. ANC, normal vaginal delivery, STI syndromic and syphilis treatment) and FP services (i.e. condom, depo-provera and oral contraceptive pills). Interviewers were trained for 3–4 days. Questionnaires were pre-tested. Systematic

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sampling technique was used to select the clients/patients for the interview. In the hospitals, based on records of daily attendance of various interventions, every second client/patient of ANC and STI was systematically selected and an average of 10 clients/patients per hospital were interviewed per day. In the HCs, every second client/patient was systematically selected and on average, five clients/patients were interviewed per day. However, all clients who had FP consultation during the study period and received condoms, depo-provera or oral contraceptive pills were included in the study, because they were few. Information was collected on the type and quantity of drugs and supplies dispensed. The interviewers verified the quantity of drugs received by each patient/client through observation of what drugs they actually got.

To supplement data gathered through exit interview, additional cost data were collected through review and analysis of treatment records for STI and FP interventions. For each intervention, records of 10 clients/patients treated in each hospital were systematically sampled and analysed. In lower level health facilities (centres), records of 5–10 clients/patients were systematically sampled and analysed. Records were obtained from maternity ward, STI, ANC and FP clinics, respectively. Data collection for cost analysis was carried out between mid January and end of August 2003 and took on average 3–5 days at each facility. Data on patients who had caesarean section were collected only in Adjumani District. The data were collected both retrospectively by reviewing treatment and operation records of patients who had caesarean section between 1 April and 31 May in the year 2003 and prospectively from patients, who were hospitalized, for a two-month period, between 1 June and 31 July 2003. Data were collected from a total of 82 patients who had caesarean section. In addition, records of 53 patients who were evacuated for emergency obstetrical conditions and had a major obstetrical intervention (MOI) (caesarean section) between 1 April and 31 July 2003, from Adjumani District were collected and analysed.

To calculate the cost of RH interventions, the unit prices of drugs and supplies used in both public and refugees health facilities were obtained from National Medical Stores (NMS) and Joint Medical Stores (JMS) price index catalogue for February 2003 (NMS 2001; JMS 2003). These prices of the drugs were considered similar to the open market/retail price of the drugs in the study districts.

The duration each category of staff takes to carry out a RH intervention under investigation (i.e. ANC, normal delivery, caesarean section, provision of condom, depo-provera, oral contraceptive pills and treating a case of STI and syphilis) was modelled on the WHO Mother–Baby package protocol (WHO 1999). Discussions with senior

health providers and administrators in host and refugee health services indicated that in the rural health facilities, the average period of time a staff effectively works was about 5 and 6 h a day in each of the two health systems (host and refugee), respectively (Medical Superintendent Adjumani Hospital, personal communication). Thus, at each facility, the record of staff members was obtained and using the government or NGO salary scales, the unit hourly cost of intervention per staff was calculated for host and refugee health facilities, respectively. The unit cost of personnel per intervention was calculated by multiplying the unit time a staff spends per intervention by his/her salary and/or benefit.

To measure the coverage of RH interventions in refugee and host populations in the region, we collected data on the RH interventions under study performed in all the 116 health facilities comprising 5 hospitals and 111 FLHF in Arua, Adjumani and Moyo Districts during the years 2003 and 2004. The data were collected between 1 February and 15 March 2005. Records of health service statistics in 110 of 116 (95%) facilities were complete. However, records from the other health facilities were incomplete for a period of 2–3 months.

Data on MOI performed on refugee and host populations for the period 2003–2004 were collected from all the five hospitals, comprising two faith based – NGO (Kuluva and Maracha) hospitals in Arua District, and three public hospitals namely Arua, Adjumani and Moyo in each of the three study districts. MOI included caesarean section, hysterectomy and craniotomy (De Brouwere *et al.* 1996). Absolute maternal indication (AMI) include conditions such as severe ante-partum haemorrhage – placenta previa and abruptio; severe post-partum haemorrhage requiring surgical intervention; cephalo-pelvic disproportion; pre-rupture and uterine rupture; shoulder or transverse lie and brow presentation (UONN 2005). The AMIs reflect conditions that, without interventions, carry a high probability of the women dying during childbirth or having sequelae (Belghiti *et al.* 1998).

To calculate rates of MOI for AMI, we calculated the denominator (i.e. the number of expected births) in refugee and host populations. The number of expected births in the host population was estimated based on general age-specific fertility rates for northern Uganda, obtained from demographic health surveys of 2000/2001 (UBOS 2001). Age-specific expected births were calculated according to the available general fertility rates for the age groups 14–49 years for the female sector of the population (UBOS 2001). The expected births for the various age groups were then calculated and summed up to obtain the overall expected births for the district, county and subcounty,

respectively. For the refugee population, we used actual recorded number of births and stillbirths compiled by the UNHCR and other international NGOs working with refugees in the study districts. The cases of STI included in the study were diagnosed based on syndromic case management approach. The cases of syphilis included in the study were those screened by Rapid Plasma Reagin test and found positive.

### Data analysis

Data on costs of RH interventions were entered and analysed using Excel spreadsheets. The data on coverage of RH interventions were entered and analysed using EPINFO version 6.04 and SPSS version 10 software packages. The chi-square test was used to test for differences in proportions. Statistical comparisons were considered significant for  $P$ -values  $< 0.05$ .

### Results

The average cost of ANC ranged from US\$2.38 to US\$3.56 in public facilities (HC level II and public hospital) but were higher (US\$3.31) in refugee HCs level II and III compared with host, respectively (Table 1). Costs of vaginal delivery in public HC levels II and III ranged from US\$4.92 to US\$6.48. The costs of vaginal delivery were higher in refugee HC levels II and III ranging from US\$6.55 to US\$6.65, respectively. The average cost of caesarean section was US\$58.68 in the district referral hospital. FP interventions were the cheapest. Unit costs of oral pills ranged between US\$1.07 and US\$1.47 in public facilities (HC level II and public hospital) and US\$1.19–US\$1.31 in refugee HC levels II and level III, respectively (Table 1).

Personnel were the most costly component of the safe motherhood interventions (i.e. antenatal care and vaginal delivery) in both government and refugee health facilities comprising between 56% and 78% cost of ANC and 68–75% of the cost of vaginal delivery, respectively. Materials were the most costly component in all three FP interventions, comprising 64–80% unit cost of condom; 60–68% depo-provera and 86–94% cost of oral pills. Drugs were the most costly component in the syndromic management of STIs, comprising between 59% and 68% of the cost of the intervention (Table 1). In general, average costs of the interventions are higher in refugee than in public HCs of the same levels. The costs of RH interventions are comparatively higher in hospital than in (public or refugee) FLHF (Table 1).

The average cost per RH intervention was higher for refugees than host population US\$3.02 *vs.* US\$2.73 during 2003–2004 (Table 2).

The total costs of ANC and delivery care and syndromic treatment of STI, although relatively inexpensive on a per case basis, represent a major proportion of RH services costs because of the large number of women/clients who require these interventions in both refugee and host populations (Figure 2).

During 2003–2004, the coverage of ANC was significantly higher for refugees than hosts at 99.4% (95% CI, 97.5–100) *vs.* 53.5% (53.22–53.78);  $P < 0.0001$ . Similarly, the proportion of births attended in health facility was significantly higher for refugees than hosts at 37.3% (36.12–38.48) *vs.* 15.2% (15.01–15.39);  $P < 0.0001$ . However, the contraceptive prevalence rate was significantly higher in the host than in the refugee population at 17.6% (17.45–17.75) *vs.* 10.5% (10.15–10.85);  $P < 0.0001$  (Figure 3).

During 2003–2004, a total of 1309 MOI for AMI were performed in the region. A total of 1233 (94.2%) were performed on host population with 76 (5.8%) performed on refugee women (Table 3). The rates of MOI for AMI were significantly higher for refugees than hosts during 1999–2001, 1.01% (95% CI, 0.77–1.25) *vs.* 0.51% (0.47–0.53);  $P < 0.0001$  and during 2003–2004, 1.02% (0.79–1.25) *vs.* 0.85% (0.80–0.90);  $P < 0.05$ .

During the periods 1999–2001 and 2003–2004, the rates of MOI for AMI for the host significantly increased from 0.51% (0.47–0.53) to 0.85% (0.80–0.90);  $P < 0.0001$ . Rates of MOI for AMI for refugees, however, remained similar at 1.01% (0.77–1.25) *vs.* 1.02% (0.79–1.25);  $P = 0.376$  (Table 3).

### Discussion

We found significant variations in the cost and coverage of RH interventions between categories and among levels of (public or refugee) health facilities in the West Nile refugee-affected settings of Uganda. The costs of RH interventions were generally higher in refugee than host FLHF (except for syndromic management of STI and condom). The per capita cost of health services was 2.7-fold higher for refugees than host population in Adjumani District. Our findings confirm higher per capita cost of health care for refugees than for hosts reported by Van Damme (1998), and are consistent with those of Levin *et al.* (2003) who reported higher costs of maternal health care in NGO compared with public health facilities. Several factors may account for this. First, refugee health services are run by staff of higher professional qualifications (e.g. medical doctors, clinical or nursing officers) compared with the less qualified personnel who work in host FLHF. Secondly, drugs, materials and supplies are more readily available, prescribed and used in refugee than

C. G. Orach *et al.* **Costing host-refugee reproductive health interventions in Uganda****Table 1** Unit cost of reproductive health interventions by level and category of health facility (in USUS\$)

Intervention	Level and category of facility					
	Hospital		HC III		HC II	
	Host	Host	Refugee	Host	Refugee	Host
<i>Safe motherhood</i>						
<i>Antenatal care</i>						
Personnel	2.47 (69.5)	1.97 (76.8)	2.03 (61.3)	1.84 (72.1)	1.86 (56.2)	1.86 (78.2)
Drugs	0.31 (8.5)	0.49 (19.2)	0.89 (27.0)	0.45 (17.9)	0.45 (13.7)	0.30 (12.5)
Materials	0.78 (22.0)	0.10 (4.0)	0.39 (11.7)	0.26 (10.0)	1.00 (30.1)	0.22 (9.3)
Total	3.56 (100)	2.56 (100)	3.31 (100)	2.55 (100)	3.31 (100)	2.38 (100)
<i>Vaginal delivery</i>						
Personnel	4.86 (75.0)	4.70 (71.3)	4.54 (68.3)	3.94 (70.3)	4.65 (71.0)	3.46 (70.4)
Drugs	0.16 (2.4)	0.41 (6.3)	0.61 (9.1)	0.42 (7.5)	0.43 (6.6)	0.27 (5.4)
Materials	1.46 (22.6)	1.48 (22.4)	1.50 (22.6)	1.24 (22.2)	1.47 (22.4)	1.19 (24.2)
Total	6.48 (100)	6.59 (100)	6.65 (100)	5.60 (100)	6.55 (100)	4.92 (100)
<i>C-section</i>						
Personnel	10.66 (18.3)					
Drugs	14.43 (24.8)					
Material	12.60 (21.7)					
Transport	20.47 (35.2)					
Total	58.16 (100)					
<i>Family planning</i>						
<i>Condom</i>						
Personnel	0.62 (26.1)	0.48 (36.4)	0.60 (30.3)	0.50 (19.7)	0.61 (33.3)	0.44 (21.9)
Materials	1.76 (73.9)	0.83 (63.6)	1.38 (69.7)	2.05 (80.3)	1.21 (66.7)	1.56 (78.1)
Total	2.38 (100)	1.31 (100)	1.98 (100)	2.55 (100)	1.82 (100)	2.00 (100)
<i>Depo-provera</i>						
Personnel	1.25 (60.0)	1.16 (67.7)	1.15 (67.5)	1.11 (66.7)	1.16 (67.7)	1.10 (66.4)
Materials	0.83 (40.0)	0.56 (32.3)	0.56 (32.5)	0.56 (33.3)	0.56 (32.3)	0.55 (33.6)
Total	2.08 (100)	1.72(100)	1.71(100)	1.67(100)	1.72(100)	1.65(100)
<i>Oral pills</i>						
Personnel	1.29 (87.6)	1.17 (93.6)	1.13 (87.3)	1.08 (90.4)	1.02 (86.0)	0.95 (88.4)
Materials	0.18 (12.4)	0.08 (6.4)	0.18 (12.7)	0.12 (9.6)	0.17 (14.0)	0.12 (11.6)
Total	1.47 (100)	1.25 (100)	1.31 (100)	1.20 (100)	1.19 (100)	1.07 (100)
<i>STI syndromic treatment</i>						
Personnel	0.65 (30.6)	0.67 (40.4)	0.62 (38.8)	0.62 (36.7)	0.58 (40.9)	0.53 (32.3)
Drugs	1.36 (63.7)	1.00 (59.6)	0.99 (61.2)	1.06 (63.3)	0.84 (59.1)	1.11 (67.7)
Materials	0.12 (5.7)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
Total	2.13 (100)	1.67 (100)	1.61 (100)	1.68 (100)	1.42 (100)	1.64 (100)
<i>Syphilis</i>						
Personnel	1.11 (31.2)	1.16 (40.4)	1.18 (40.0)	1.08 (31.3)		
Materials	1.11 (31.2)	1.11 (38.5)	0.65 (22.2)	1.26 (36.5)		
Drugs	1.34 (37.6)	0.61 (21.1)	1.11 (37.8)	1.11 (32.2)		
Total	3.56 (100)	2.88 (100)	2.94 (100)	3.45 (100)	NA	NA

Health centre level II facilities often have no laboratory facilities to carry out tests.

NA, not applicable.

host facilities. For example, ergometrine is consistently prescribed during the third stage of labour in refugee compared with host health facilities. Thirdly, laboratory facilities are often available in functional state and used for

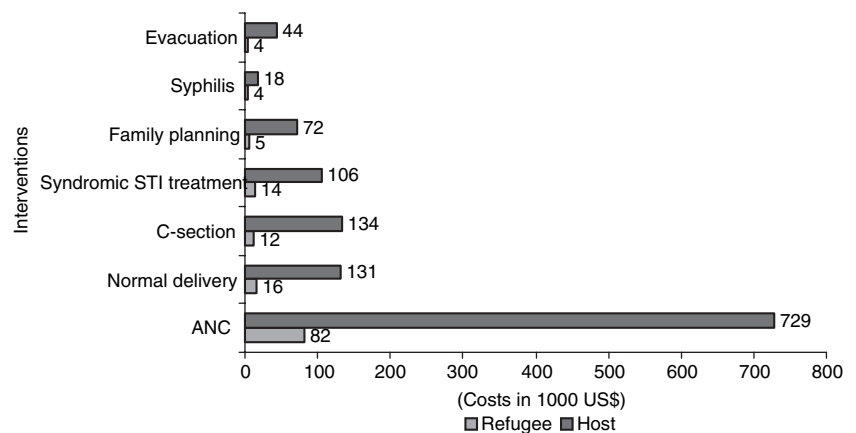
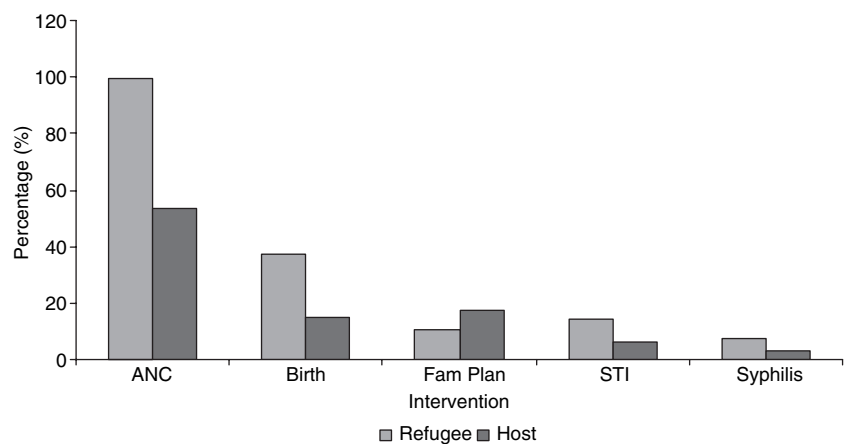
routine investigations in refugee compared with host health facilities.

When we compared the findings of our study with costs of RH interventions estimated by Weissman *et al.*

C. G. Orach *et al.* Costing host–refugee reproductive health interventions in Uganda**Table 2** Cost per inhabitant and interventions for refugee and host populations in West Nile region, 2003–2004 (in USUS\$)

Population category/year	Intervention and cost in USUS\$				
	Total population	Total RH interventions	Total cost	Total cost/inhab/year	Total cost/RH intervention
<b>Host</b>					
Year 2003	1 237 744	223 609	591 800	0.48	2.65
Year 2004	1 289 462	228 758	642 050	0.50	2.81
Total	2 527 206	452 367	1233 850	0.49	2.73
<b>Refugee</b>					
Year 2003	134 157	25 321	74630	0.56	2.95
Year 2004	149 917	19 862	61 890	0.41	3.12
Total	284 074	45 183	136 520	0.48	3.02

RH, reproductive health; inhab, inhabitant.

**Figure 2** Total cost of intervention (in USUS\$).**Figure 3** Coverage of reproductive health interventions for refugee and host, West Nile region, 2003–2004.

(1999), in Uganda, using similar costing methodology, the results were generally similar. Furthermore, our study showed similar average costs of STI treatment as those reported by Daly *et al.* (1998) in Malawi. The results of our study, however, revealed lower costs of RH interventions than those reported by Levin *et al.*

(2003) in three Anglophone countries (Uganda, Malawi and Ghana). We attribute the differences in the costs of RH interventions to the different methodological approaches used in the two studies. For example, in the study of Levin *et al.*, indirect costs of labour and other inputs – such as utilities and maintenance that

C. G. Orach *et al.* Costing host–refugee reproductive health interventions in Uganda**Table 3** Rates of major obstetrical interventions for absolute maternal indications for refugee and host populations in West Nile region†, 1999–2001 and 2003–2004

Population and intervention	Period	
	1999–2001	2003–2004
<b>Host</b>		
Number of MOI	901	1233
Expected births	175 338	140 175
Rate of MOI/AMI	0.51	0.85
95% CI	0.48–0.54	0.80–0.90
<b>Refugee</b>		
Number of MOI	65	76
Recorded births	6425	6477
Rate of MOI/AMI	1.01	1.02
95% CI	0.77–1.25	0.79–1.25

†The West Nile refugee-affected study districts were Arua, Adjumani and Moyo.

support maternal health care were included, but not in our study.

We found that currently the Ugandan government and UNHCR spent less than half a dollar (US\$0.485) per capita on RH care for hosts and refugees in the region. The higher cost per RH intervention for refugees may be suggestive of the higher investment by UNHCR and NGOs on refugee health services in general, in terms of human resources, material supplies and equipment availability. We, however, found a marginally higher per capita cost per RH intervention for hosts than refugees (Table 2). This may be attributable to the additional financial support given by UNHCR and other international organizations to the local district health services in the refugee-affected West Nile districts. The provision of direct financial support to district local health service by UNHCR commenced in Arua District in 2000, in the framework of the self-reliance strategy developed to integrate refugee and host health services in the region (GoU 1999). Today, financial and logistical assistance is being provided by the humanitarian organizations (UN and NGOs) to support health and social services delivery in the other refugee-affected districts.

The finding of significantly higher rates of MOI for AMI for refugees than for hosts (Table 3) is an indication of better coverage of met obstetric needs of refugees compared with the host population. Previous studies by Orach and De Brouwere (2004) also showed significantly higher rates of MOI for AMI for refugees compared with the host population in the region during 1999–2001. The explanation for the higher met obstetric needs for refugee than host population is that refugees have better accessibility to and higher quality health services (which are better equipped, staffed and financed) compared with hosts. It is

important to note that such significantly better results in refugees have been obtained at a relatively marginal cost. On the contrary, the host population faces multiple temporal, geographical and financial barriers to accessing basic and comprehensive essential obstetric care. For example, the hosts have to pay for health care from their own pockets, unlike refugees whose health care costs are paid for by UNHCR/NGOs. Nationwide, accessibility to a health facility within 5 km radius reported at 49% is low in Uganda (GoU 1994).

It is noteworthy that in the region, during the periods 1999–2001 and 2003–2004, the rates of MOI for AMI for hosts' women significantly increased (Table 3). This finding is not surprising. We attribute the increment in accessibility to major obstetric interventions to the improvement in geographical and temporal access to basic and comprehensive essential obstetrical care to the integration of health services in the region. Following the commencement of integration of the health services in Arua, the other refugee-affected districts of the region (Adjumani, Moyo and Yumbe) are integrating refugee health care as well. Thus, the host population who resides in rural refugee-affected areas in the West Nile districts have gained access to both refugee FLHF and transport (ambulance) services, which they had previously been denied (Orach & De Brouwere 2006). The finding underscores the importance of establishing a model of health services organization that caters for the needs of both refugee and host populations including for basic and emergency obstetrical care in resource-constrained refugee-affected settings.

There were limitations to our study. We used the same price of drugs in refugee or host health facilities. It is, however, possible that the NGOs providing health services to refugees acquired some drugs from other sources at higher prices. Discussions with staff of UNHCR/NGOs, however, suggested that drugs and supplies were mainly purchased locally within Uganda. We observed that nearly all patients/clients obtained the prescribed drugs in refugee facilities. However, this was not the case in host facilities where for example 5–10% of ANC clients did not receive the prescribed drugs, while between 25% and 30% of STI patients did not receive the prescribed drugs. Thus, differential accessibility to drugs, materials and supplies could have contributed to lowering average costs of RH interventions in host compared with refugee FLHF. The costing methodology does not take into consideration the fixed cost of offering the services (e.g. deliveries) on a permanent 24 h basis (whatever the number of users is). This may have an inherent effect of lowering unit cost of the interventions. In this study, records of RH interventions reviewed were incomplete in a few (5%) of the lower level



health facilities. We adjusted for incomplete records by taking averages to complete for 12 months. We therefore considered that the amount of missing data was limited and could not have significantly affected the overall level of coverage of the RH interventions determined.

In Uganda, the policy of government is to host refugees in settlements as opposed to camps. In the West Nile region, the refugees live in stable post-emergency settlements interspersed within host communities, and access comprehensive essential obstetrical care (MOI) from host district and regional referral hospitals. Paradoxically, refugee FLHF/services still run parallel to hosts in most refugee-affected districts in the country. Since 1999, the GoU and UNHCR have embarked on a strategy to integrate refugee and host health services. The integration of services has implications for promoting equitable access and cost-effective delivery of health services delivery for both host and refugee populations living in the refugee-affected areas through investments made to improve the capacity of host health system including in the areas of material and equipment supply, as well as communication and transport facilities – ambulance services.

Uganda faces several challenges to effective implementation of health services. It experiences problems of inadequate financial, material and human resources. The health sector is underfunded. Per capita cost of health care is low US\$9 (MoH 2003). Two thirds of this spending is by individuals, while government caters for the remaining. Thus, for the GoU like for other resource-constrained countries, caring for refugees puts additional burden on the national or local health systems and often disrupts or overwhelms (Porignon *et al.* 1995) and fails to effectively meet the basic health needs of refugees leaving alone their own citizens (Dick 1985).

In resource-constrained refugee-affected settings, refugee health facilities set up by international agencies and NGOs may be the only ones available. Refugee health services are often better funded and render higher quality health services than host (Van Damme 1998; GoU 1999; Burnham *et al.* 2003). However, several authors (Girald & Waldman 2000; Hynes *et al.* 2002; Orach & De Brouwere 2004) have raised important equity concerns regarding disparities in access to health services for hosts in refugee-affected settings. The study by Van Damme *et al.* (1998) has shown that linking long-term refugee assistance with the host country development programmes, through integrating refugee and host services such as in Guinea, benefited host population through improved accessibility to health and social services. Orach and De Brouwere (2006) also reported that integration of refugee and host health services contributed to improved accessibility to health services and better relationships between refugees

and hosts in the West Nile region, Uganda. Lawrie and Van Damme (2003) have alluded to the importance of supporting all affected parties or vulnerable people in refugee situations through promotion of balanced assistance to help build trust, peace and reduce tension between refugees and hosts. Similarly, Wynd and Durrheim (2004) have alluded to the need to improve links between relief and development work through local integrated plans that include refugee needs into national development strategy of the host country. In resource-constrained refugee-affected areas, therefore, policies governing health service delivery should streamline the organization, financing and development of capacities of local host health systems to render cost-effective, equitable and sustainable services for entire refugee and host populations.

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C. G. Orach *et al.* **Costing host-refugee reproductive health interventions in Uganda****Coûts et couverture des interventions de santé reproductive dans trois districts ruraux affectés par les réfugiés en Ouganda**

**DONNEES DE BASE** L'Ouganda a accueilli près de 200.000 réfugiés depuis 1990 au cours des phases d'installation post-urgence répartie dans les communautés. Cependant, les services de santé des réfugiés fonctionnaient en parallèle avec ceux de l'hôte dans la plupart des districts affectés. Le processus d'intégration des services de santé a commencé en 1999.

**OBJECTIF** Estimer et comparer les coûts et la couverture des interventions de la santé reproductive chez les populations hôtes et réfugiées dans trois districts de l'Ouganda affectés par les réfugiés dans la région du West Nile.

**METHODES** Des données sur des coûts d'interventions de la santé reproductive ont été collectées à travers des enquêtes dans 38/116 (de 33%) des services de santé (3 hôpitaux publics et 35 centres de santé). Des données sur la couverture des interventions de santé ont été collectées dans tous les 116 services de santé des trois districts ruraux affectés par des réfugiés au cours de deux années: 2003 et 2004.

**RESULTATS** Les coûts et la couverture des interventions de la santé reproductive variaient de manière significative selon les catégories de population, les taux de réfugiés et les services de santé de l'hôte. Le coût des soins de santé par capita était 2,7 fois plus élevé pour les réfugiés que pour la population hôte (US\$13,12 contre US\$4,85). Le coût par intervention de la santé reproductive était plus élevé pour les réfugiés que dans le système de santé de l'hôte (US\$3,02 contre US\$2,73). Une proportion plus significative de réfugiés ont fait recours aux cliniques anténatales (99,4%; IC95%: 97,5-100 contre 53,5%; IC95%: 53,22-53,78;  $P < 0,0001$ ). La proportion de naissances dans des services de santé était significativement plus élevée chez les réfugiés (37,3%; IC95%: 36,12-38,48 contre 15,2% IC95%: 15,01-15,39;  $P < 0,05$ ). Les interventions obstétriques majeures pour des indications maternelles absolues étaient significativement plus fréquentes chez les réfugiés que dans la population hôte (1,02%; IC95%: 0,79-1,25 contre 0,85%; IC95%: 0,80-0,90;  $P < 0,05$ ).

**CONCLUSIONS** Notre étude a révélé des coûts et une couverture plus élevés chez les réfugiés que dans les services de santé de l'hôte. Ces observations suggèrent des recommandations en matière de politique de santé pour l'amélioration de la capacité, du financement, de l'organisation et de la performance du système de santé de l'hôte dans les endroits affectés par les réfugiés.

**mots clés** Interventions de la santé reproductive (soin prénatal, accouchement vaginale, césarienne, planification familiale, infections sexuellement transmises), couverture, réfugié, hôte, Ouganda

**Costos y cobertura de las intervenciones en salud reproductiva en tres distritos afectados por refugiados en Uganda**

**ANTECEDENTES** Se estima que, desde 1990, Uganda ha acogido en una fase post-emergencia, alrededor de 200 000 refugiados en asentamientos intercalados con las comunidades hospederas. Sin embargo, los servicios sanitarios para los refugiados funcionan de forma paralela a las de sus huéspedes en la mayoría de los distritos. El proceso de integración de los servicios sanitarios comenzó en 1999.

**OBJETIVO** Estimar y comparar los costos y la cobertura de las intervenciones en salud reproductiva (SR) en poblaciones de refugiados y de hospederos, en tres distritos rurales del Nilo Occidental (Uganda).

**MÉTODOS** Los datos con los costes de las intervenciones en SR fueron recolectados a través de una encuesta en 38/116 (33%) centros sanitarios (3 hospitales públicos y 35 centros de salud). Los datos sobre la cobertura de las intervenciones en SR se recogieron durante dos años (2003 y 2004) en los 116 centros sanitarios de los tres distritos rurales afectados por refugiados.

**RESULTADOS** Los costos y la cobertura de las intervenciones en salud reproductiva variaron significativamente entre las categorías poblacionales y entre los niveles de los centros, tanto de refugiados como de hospederos. El costo de cuidado de la salud per capita es 2.7 veces mayor para los refugiados que para la población hospedera (US\$13.12 *vs.* US\$4.85). El costo por intervención sanitaria es mayor en el sistema de salud para los refugiados que en el de los hospederos (US\$3.02 *vs.* US\$2.73). Un número significativamente mayor de refugiados buscan cuidados prenatales [99.4% (95% CI, 97.5-100) *vs.* 53.5% (53.22-53.78);  $P < 0.0001$ ]. La proporción de nacimientos en los centros sanitarios era significativamente mayor entre refugiados [37.3% (36.12-38.48) *vs.* 15.2% (15.01-15.39);  $P < 0.05$ ]. Las intervenciones obstétricas importantes (IOI) para indicaciones maternas absolutas eran significativamente más frecuentes entre refugiados que entre las población hospedera viviendo en una misma región [1.02% (0.79-1.25) *vs.* 0.85% (0.80-0.90);  $P < 0.05$ ].

**CONCLUSIONES** Nuestro estudio demuestra que existen mayores costes en los servicios de salud para los refugiados que para los hospederos. Estos resultados sugieren recomendaciones en las políticas que mejoren la capacidad, la financiación, la organización y el desempeño de los sistemas sanitarios de los hospederos en asentamientos afectados por refugiados.

**palabras clave** Intervenciones en salud reproductiva (cuidados antenatales, parto vaginal, cesárea, planeación familiar, infecciones de transmisión sexual) costes, cobertura, refugiado, hospedero, Uganda