

Community-directed health (CDH) workers enhance the performance and sustainability of CDH programmes: experience from ivermectin distribution in Uganda

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The performance and 'drop-out' rates of ivermectin (Mectizan[®]) distributors in the Ugandan programme for community-directed treatment with ivermectin (CDTI) were investigated and related to the manner in which the distributors were recruited. Distributors, from randomly selected communities endemic for onchocerciasis in seven of the 10 affected districts, were interviewed. Questionnaires were initially completed for 296 communities (in which ivermectin had been distributed in 1998 but not in 1999) and then extended to another 310 communities (in which ivermectin had been distributed in both study years). Discussions were also held with some other community members, in participatory evaluation meetings (PEM) in 14 communities from four districts.

Despite the CDTI being labelled as 'community-directed', the first round of interviews and questionnaires revealed that there were in fact three categories of distributors: 322 (69.4%) of those questioned had been selected by community members and were therefore truly community-directed health workers (CDHW) but 101 (22%) were community-based health workers appointed by the leaders of the local council (CBHW-LC) and 41 (9%) were self-appointed volunteers (CBHW-SA). During 1999, only the CDHW received good community support; they still helped to mobilise and educate their community members and advocate CDTI, and 98% of them agreed that they would distribute ivermectin during the following year. In contrast, many of the CBHW-LC were neither supported nor appreciated by the community members. Presumably in consequence, many of the CBHW-LC did not help to mobilise or educate their community members in 1999, nor did they advocate CDTI. Almost all (95%) of the CBHW-LC said that they would not be available to distribute in the following year, and were therefore regarded as total 'drop-outs' from the CDTI. The CBHW-SA were better supported by community members than were the CBHW-LC, they did more to advocate the CDTI, and 93% reported that they would distribute ivermectin during the following year. The 'drop-out' rates for 1999 were <2% for the CDHW, 7% for the CBHW-SA, and 95% for the CBHW-LC. The results also indicated that the CBHW-SA were not as reliable as the CDHW.

Similar results were obtained from the second round of questionnaires, in which 224 (73%) of the interviewees were CDHW, 57 (18%) were CBHW-LC and 28 (9%) were CBHW-SA. The results of the PEM showed that the CDHW, who mainly came from the same kinship groups as the people who selected them, were likely to achieve higher ivermectin coverage within a week than the other categories of distributors. It is clear that, for the optimum performance and sustainability of the CDTI, the distributors used should be CDHW selected by their own community members.

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Communities are being asked to shoulder more responsibility for rural health-care programmes. The African Medical and Research Foundation has suggested that the use of community-based health workers (CBHW) could be the solution to providing health-care to communities where the infrastructure of the public health service (PHS) is weak or non-existent (Anon., 1993). However, part-time CBHW can easily become over laden with work and consequently inefficient and discouraged. The issue of volunteerism has also entered into the debate of community-based health services. Some CBHW agree to render free services to their communities whereas others demand incentives ('motivation'), either in 'kind' (from community members) or in cash (from the government or donors). Failure to retain CBHW, represented by the 'drop-out' rate, is also a significant problem that can demand constant recruitment, orientation, and initial training, increasing costs and undermining programme performance and sustainability (Othieno, 1991).

A newer concept in community-based treatment, that of 'community-directed' health-care programmes (CDHCP), is currently being promoted by some agencies of the United Nations (e.g. the World Health Organization), non-governmental development organizations (NGDO) and ministries of health. CDHCP provide more authority and responsibility to the communities themselves, and so help to promote overall community development. However, this new concept demands more attention to promote smooth interactions at the interface between community members and the supporting government health-care-delivery services.

One example of a highly developed CDHCP is that of the programme of community-directed treatment with ivermectin (CDTI) currently operating, for the mass treatment for the control of onchocerciasis, in Uganda (Katabarwa *et al.*, 2000*c*). In this programme, distribution of the drug within each target community is (or should be) the responsibility of at least one community-directed health worker (CDHW), strictly defined as a person

from the community who has been selected by his or her own kinsmen and neighbours (Katabarwa *et al.*, 2000*c*). The CDHW, it has been found, are among those most willing and able to perform specific duties for the general improvement of health of their respective communities. There remains, however, a lack of understanding as to how the CDHW differ from the CBHW, who remain as the 'front-line' of the programme. The main aims of the present study were to determine the levels of involvement, dropping-out, and effectiveness in executing and sustaining the programme, of each of the different categories of community health worker involved in the programme.

Community health workers are described as 'drop-outs' if they: (1) do not get involved at a level appreciated by other the members of their communities; (2) have a negative attitude towards their work or the people they serve; (3) stop work if their demands are not met; and (4) are not willing to continue providing the same service(s). In this respect the CDHW should be distinguished from CBHW. In the Ugandan CDTI, the latter may be appointed by leaders of the local council (CBHW-LC) or they may be self-appointed volunteers (CBHW-SA). Both categories of CBHW have been criticised in a World Bank report (World Bank, 1994) as frequently being detrimental to health-care programmes, and this has certainly been the experience of the Ugandan ivermectin-distribution programme (Katabarwa *et al.*, 2000*b, c*).

SUBJECTS AND METHODS

Study Area

The study was carried out in the onchocerciasis-endemic districts of Adjumani, Apac, Gulu, Kabale, Kasese, Kisoro, Mbale, Moyo, Nebbi and Rukungiri, all of which have received financial and technical support from the River Blindness Foundation, The Carter Center, and the African Programme for Onchocerciasis Control (APOC). Mass-treat-

ment activities for the control of onchocerciasis, based on ivermectin (Mectizan®), began in these districts in 1993. Since 1998 these activities have been moving towards the APOC-recommended strategy of CDTI. In most places, this transition began with health education and with meetings between community members, who selected those who should distribute ivermectin, and decided where, when, and how the drug should be distributed.

Subjects and Interviews

At the time of the present study, most endemic communities in the study districts had at least three distributors each. All distributors received the same training through the district health services (DHS). This training focused on the distributors' responsibilities in mobilising the rest of the community members for: (1) health education; (2) census; (3) collection of ivermectin from designated centres; (4) treatment of all 'eligible' persons in the community (Taylor *et al.*, 1990); and (5) submission of simple reports on each treatment round. The DHS provided the ivermectin and palliative drugs (to treat any mild adverse reactions associated with treatment) as well as support for the distributors in terms of training, supervision and management/referral of adverse reactions (Katarwa *et al.*, 2000c).

Interviews (guided by structured and semi-structured questionnaires) with the ivermectin distributors were conducted in two rounds, with a particular focus on each interviewee's stated intention to continue to participate in CDTI activities.

FIRST ROUND

A total of 469 distributors who had distributed ivermectin during 1998 but not in 1999 [in 296 (82%) of the 360 communities treated in Gulu, Kasese and Kabale districts in 1998] were interviewed in order to evaluate the drop-out rates for each category of distributor, and to determine the reasons for dropping out. Following random selection of distributors in random selections of the communities under mass treatment, 308 distributors from 182 (87%) of the 209 endemic communities in Gulu district, 122 from 87 (70%) of the 124

endemic communities in Kasese district, and 39 distributors from all 27 endemic communities in Kabale district were interviewed.

The questions put to the ivermectin distributors, each of which could be simply answered 'yes' or 'no', were designed to explore the difficulties that the ivermectin distributors faced during 1998, to determine if they continued to support the CDTI when they did not distribute ivermectin during 1999, and to see what improvements the distributors would like to see in the programme. Lack of interest in any of the required CDTI activities and/or refusal to continue serving as a distributor were taken as indications that the interviewee had dropped out of the programme.

SECOND ROUND

A second round of interviews was conducted, to give a better understanding of the characteristics of the distributors, and how these influenced the level of distributor performance and commitment to the CDTI. Unfortunately, the civil insecurity that affected Kasese and Gulu districts during 1999 prevented interviews in these areas (although mass treatment with ivermectin was completed successfully). Interviews, with structured and semi-structured questions, were carried out in a total of 310 (33%) communities randomly selected from the 949 under treatment in four districts: 41 (35%) of the 116 communities in Adjumani district; 26 (96%) of the 27 in Kabale; 61 (36%) of the 169 in Moyo; and 182 (29%) of the 637 in Nebbi. In each community, one ivermectin distributor, who had distributed during 1998 and 1999, was interviewed.

EVALUATION MEETINGS

Participatory evaluation meetings (PEM) were also conducted in a number of endemic communities in Adjumani, Kisoro, Moyo and Nebbi districts (Katarwa *et al.*, 2000a). The aim of these meetings was to get a broader picture of what had happened in terms of decision-making, suggestions from community members, and performance (i.e. coverage). In each district, at least three PEM (one per community) were conducted, each

involving 40–60 community members aged ≥ 15 years.

Data Analysis

The data were analysed using Epi Info 2000 (Centers for Disease Control and Prevention, Atlanta, GA). The values relating to the performance, retention and function of each of three categories of ivermectin distributor—those selected by community members (CDHW), those selected by the leaders of the local council or other village leaders (CBHW-LC), and self-appointed volunteers (CBHW-SA)—were compared using χ^2 tests (Kuzma, 1992).

RESULTS

Of the 464 distributors who completed first-round interviews, all of whom distributed ivermectin during 1998 but not during 1999, 322 (69%), 101 (22%) and 41 (9%) were CDHW, CBHW-LC and CBHW-SA, respectively (Table 1). (Five subjects failed to answer all the questions posed to them and the data collected from these individuals were excluded from further analysis.)

CDHW

Most (87%) of the CDHW interviewed in the first round considered that their communities had been kept well informed about the distribution exercise and most (59%) indicated that their community members had kept to the times allotted for the distribution in 1998. Many of the CDHW had been involved in a programme activity (but not drug distribution) in 1999: 62% in urging family members to go for treatment, 70% in mobilising community members, 75% in educating community members, and 93% in advocating the programme. This significant level of involvement in CDTI activities meant that few of the CDHW could be considered 'drop-outs', especially as almost all (98%) of the distributors in this category stated that they would distribute ivermectin in the following year (2000). The latter observation tallied with the information from the PEM, when community

members endorsed the idea that the CDHW who did not distribute ivermectin during 1999 should be allowed to distribute ivermectin during 2000. Of those CDHW, interviewed in the second round, who distributed in both 1998 and 1999 (Table 2), the great majority stated that their communities appreciated their services as distributors and that they were willing to continue distributing in the following year (2000). Further analysis indicated that the CDHW had largely been selected by their relatives ($P = 0.005$) and that 186 (83%; $P < 0.001$) had collected ivermectin from designated centres.

CBHW-LC

Most (73%) of the CBHW-LC interviewed in the first round felt that they had not been supported by community members, even though they thought their community members had been kept informed about the distribution exercise (Table 1). Most (80%) CBHW-LC also indicated that their community members had not kept to the times agreed upon for distribution of ivermectin in 1998. During 1999, the majority (64%) of the CBHW-LC who had not distributed ivermectin in that year did not provide any health education to community members, and only 14% advocated the programme. Many of these distributors had not been involved in any CDTI activity in 1999, and can therefore be considered true 'drop-outs'. Worse still, 95% of them said they were not willing to distribute ivermectin during the following year (2000). Of the CBHW-LC who were still distributing ivermectin in 1999 (Table 2), the great majority (96%) thought that their services were not appreciated by their communities, and 93% stated they would not be willing to continue any CDTI activity during the following year (2000). During the PEM it became evident that the community members were not happy with the services provided by the CBHW-LC, and wanted to select their own distributors.

CBHW-SA

Of the 41 CBHW-SA interviewed in the first round (Table 1), 68% considered that iver-

TABLE 1
Responses from 322 community-directed health workers (CDHW), 101 community-based health workers selected by local councils (CBHW-LC) and 41 community-based health workers who were self-appointed (CBHW-SA), all of whom distributed ivermectin in 1998 but not in 1999

Question	A		B		C		P-value for comparison:		
	No. and (%) of CDHW answering:		No. and (%) of CBHW-LC answering:		No. and (%) of CBHW-SA answering:		A v. B	B v. C	A v. C
	Yes	No	Yes	No	Yes	No			
DURING THE 1998 DISTRIBUTION									
1 Did the community give good general support to the distributors?	274 (95)	14 (5)	27 (27)	74 (73)	13 (32)	28 (68)	<0.001	NS	<0.001
2 Were you personally well supported by the community?	290 (97)	8 (3)	27 (27)	74 (74)	28 (68)	13 (32)	<0.001	<0.001	<0.001
3 Did you distribute without monetary incentives?	216 (72)	82 (28)	75 (74)	26 (26)	37 (92)	3 (8)	NS	NS	NS
4 Did your personal problems affect your work in the CDTI activities?	129 (43)	172 (57)	37 (37)	64 (63)	15 (37)	26 (63)	NS	NS	NS
5 Were the communities kept well informed about distribution?	262 (87)	39 (13)	70 (69)	31 (31)	30 (73)	11 (27)	<0.001	NS	NS
6 Did community members keep to the times agreed for distribution?	111 (59)	78 (41)	20 (20)	81 (80)	18 (44)	23 (56)	<0.001	<0.01	NS
7 Was house-to-house distribution a problem?	213 (71)	88 (29)	75 (76)	23 (24)	27 (66)	13 (34)	NS	NS	NS
8 Was central distribution a problem?	5 (2)	219 (98)	0 (0)	101 (100)	0 (0)	41 (100)	NS	NS	NS
9 Were adverse reactions to ivermectin a problem?	69 (24)	220 (76)	16 (16)	85 (84)	3 (7)	38 (93)	NS	NS	<0.05

TABLE 1
Continued

Question	A		B		C		P-value for comparison:		
	No. and (%) of CDHW answering:		No. and (%) of CBHW-LC answering:		No. and (%) of CBHW-SA answering:		A v. B	B v. C	A v. C
	Yes	No	Yes	No	Yes	No			
DURING 1999, WHEN YOU WERE NOT DISTRIBUTING:									
10	186 (62)	114 (38)	52 (57)	39 (43)	21 (54)	18 (46)	NS	NS	NS
11	205 (70)	86 (30)	50 (55)	41 (45)	20 (51)	19 (49)	<0.001	NS	<0.02
12	210 (75)	72 (25)	33 (36)	58 (64)	12 (31)	27 (69)	<0.001	NS	<0.001
13	270 (93)	21 (7)	13 (14)	78 (86)	15 (39)	24 (61)	<0.001	<0.001	<0.001
DURING 2000:									
14	281 (98)	5 (2)	5 (5)	95 (95)	38 (93)	2 (7)	<0.001	<0.001	NS
15	266 (89)	32 (11)	81 (80)	20 (20)	31 (78)	9 (22)	NS	NS	NS
16	258 (87)	40 (13)	80 (79)	21 (21)	35 (88)	5 (12)	NS	NS	NS

NS, Not significant ($P > 0.05$); CDTI, community-directed treatment with ivermectin.

TABLE 2
Responses from 224 community-directed health workers (CDHW), 57 community-based health workers selected by local councils (CBHW-LC) and 28 community-based health workers who were self-appointed (CBHW-SA), all of whom distributed ivermectin in 1998 and 1999

Question	A		B		C		P-value for comparison:		
	No. and (%) of CDHW answering:		No. and (%) of CBHW-LC answering:		No. and (%) of CBHW-SA answering:		A v. B	B v. C	A v. C
	Yes	No	Yes	No	Yes	No			
1 Did the community appreciate your services as a distributors?	207 (97)	7 (3)	2 (4)	54 (96)	24 (89)	3 (11)	< 0.001	< 0.001	NS
2 Will you continue distributing ivermectin next year?	190 (87)	29 (13)	4 (7)	53 (93)	22 (85)	4 (15)	< 0.001	< 0.001	NS

NS, Not significant ($P > 0.05$).

mectin distributors generally were not supported by community members, although the same proportion (68%) claimed that they, as individuals, received good support. Most (73%) of the CBHW-SA indicated that their communities had been kept well informed about the distribution exercise, although few claimed that community members kept to the times agreed upon for the distribution of ivermectin. During 1999, 31% of the CBHW-SA who were not distributing ivermectin helped to provide health education to community members, 51% helped to mobilise community members and 39% advocated the programme; 93% of these distributors stated that they would agree to distribute ivermectin during the following year (2000). Among the distributors who did not distribute ivermectin in 1999, the percentage of CBHW-SA involved in other CDTI activities in 1999 was significantly lower than the percentage of the CDHW. Of those still distributing ivermectin in 1999 (Table 2), most thought that their communities appreciated their services and said that they would be willing to continue working in the following year.

Comparing CDHW with CBHW-LC (Tables 1 and 2)

In general, whereas the CDHW agreed that they were supported by the community members and that their services were appreciated, the CBHW-LC did not feel so supported or appreciated ($P < 0.001$ for each). During a year in which they did not distribute ivermectin, the CDHW were generally promoting the CDTI in another way (through health education, mobilising their community and/or advocating the programme) and most indicated that they would be prepared to offer their services again in the following year (2000). In contrast, most of the CBHW-LC who had not distributed ivermectin in 1999 did not provide health education or advocate any CDTI activity in that year.

Later, in the PEM, it appeared that the reasons why some of the CDHW did not distribute ivermectin during 1999 were mostly associated with unavoidable family difficulties, such as sickness, or being away on business or

other community-related activities. On the other hand, the reasons given by the CBHW-LC who failed to deliver ivermectin in 1999 were lack of support from community members, the work being too much, and the lack of monetary incentives.

Comparing CDHW with CBHW-SA (Tables 1 and 2)

The CBHW-SA generally felt that they were not supported by community members, whereas the CDHW felt that community members did give them support. During 1999, a CBHW-SA who had not delivered ivermectin in that year was much less likely to have helped with health education, community mobilisation or with advocating the CDTI programme than a CDHW who had not distributed the drug in 1999. It was apparent that the CDHW were more likely to be reliable servants of the community members than were the CBHW-SA.

Comparing CBHW-LC with CBHW-SA (Tables 1 and 2)

The results indicate that CBHW-SA generally did a better job, in advocating the CDTI programme, than the CBHW-LC. Most CBHW-SA agreed that, as individuals, they were supported and appreciated by their communities, and they therefore wanted to continue providing services to the community members. In contrast, most of the CBHW-LC claimed that they had not received community support and therefore did not want to continue distributing ivermectin. Not surprisingly, many distributors in all three categories (CDHW, CBHW-LC and CBHW-SA) said they would like to receive monetary incentives and free mid-day meals (Table 1).

Other Issues Noted in the PEM (Table 3)

It was observed that a high coverage was achieved within a week in each of those communities where the community members had selected members of their kinship group/zone to distribute ivermectin. However, those CDHW who crossed into other kinship zones during distribution always had problems that

affected ivermectin-distribution exercises. In the Gopi community in Moyo district, for example, the CDHW in their kinship zone were rejected by members of the community belonging to another kinship group. In consequence, even though a month was spent treating this community, a high coverage was never attained.

Whenever a treatment centre was not convenient, the CDHW, along with his or her kinsmen, selected a new location or method of distribution that was convenient. However, the CBHW-LC or CBHW-SA never changed a treatment centre that was not convenient to the community members because (in most cases) they found that the centre was convenient for themselves. CBHW-LC would ask for monetary incentives from the community members who did not select them, but neither the CBHW-LC nor the CDHW dared to ask for monetary incentives from their own relatives. However, the relatives of CDHW or CBHW-LC did support them when it came to asking for monetary incentives from either NGDO or the government.

DISCUSSION

In Uganda, where the ratio of health workers to community members is very low (e.g. there is one qualified physician for every 24 000 people and one nurse for every 6500) and the national health budget is < U.S.\$20 per capita annually, the future of 'health for all' lies in the utilisation of community-directed health workers. Public-health measures, such as control of tuberculosis, malaria, schistosomiasis, lymphatic filariasis, trachoma and sexually transmitted diseases (including HIV/AIDS), will only be successful if the communities themselves are mobilised to provide and support their CDHW. High drop-out rates among community health workers may, in part, be an indication of a lack of awareness, on the part of the initiators of public-health programmes, of the sociological and anthropological issues affecting rural communities.

Although none of the CDHW who were interviewed in the first round had distributed

ivermectin during 1999, they were still useful as advocates for the 1999 distribution activities. They urged their family members to go for treatment, educated community members about onchocerciasis and its control, and helped to mobilise community members. Thus, the majority of this group of community-selected erstwhile CDHW, who did not distribute ivermectin in 1999, should not be classified as 'drop-outs' from the CDTI programme. A significant number of CDHW agreed that their community members had been supportive, both to them in particular and to the CDTI programme in general. These community members had adhered to the times agreed upon for the distribution of ivermectin. The CDHW identified short-term personal problems, such as sickness and being away on business, as their prime reasons for not distributing ivermectin during 1999.

In contrast, most of the CBHW-LC interviewed in the first round were clearly drop-outs since they had not advocated the CDTI and said they were unwilling to distribute ivermectin the following year (2000). The majority said that distribution of ivermectin was too time-consuming and that they were not supported by community. They also felt that the community members had not appreciated their services and, therefore, that they would cease to offer their services during the following year. This was reflected in the opinion of the community members who spoke during PEM and indicated that they were not happy with the services provided by their CBHW-LC, demanding the immediate termination of the services of CBHW-LC in favour of CDHW. Although house-to-house distribution may have been a cause of discontent among CBHW, it did not appear to affect the enthusiasm of all the groups (CDHW, CBHW-LC and CBHW-SA) to continue distributing ivermectin.

As observed previously (Katarbarwa *et al.*, 1999), CDHW (like the CBHW-LC) stated that would be happy to receive monetary incentives (from the government or NGDO) but for traditional legal reasons were unwilling to confront their community members with such a request. Katarbarwa *et al.* (1999) thought that

TABLE 3
Results from the participatory evaluation meetings (PEM) held in 14 communities, in four districts, during 1999

	Adjumani district				Kisoro district				Moyo district				Nebbi district			
	Nzobohwe	Papinyo	Pagiriny	Kafuga	Kikomo	Higabiro	Madulu	Dolikaata	Aringa	Gopi	Odhure	Ataka	Abeju	Omeke		
No. of people in attendance	31	56	33	37	35	38	59	45	41	35	34	38	32	37		
% who received CDTI-related health education	32	75	97	100	20	100	68	56	73	71	74	50	100	41		
% involved in selection of distributors	29	75	97	41	20	100	5	11	73	0	71	5	94	11		
% involved in selection of treatment centre	0	89	97	41	0	100	5	0	73	0	65	5	94	11		
No. of active CDHW in community	0	4	4	0	0	3	0	0	3	0	3	0	3	0		
No. of active CBHW-LC in community	3	0	0	1	2	0	2	2	0	1	0	1	0	4		
No. of treatment centres	1	1	2	1	1	3	2	2	1	1	2	2	3	2		
No. of clans or sub-clans	5	3	2	4	3	3	5	3	1	2	1	5	3	4		
% treated	84	98	94	89	85	100	64	60	90	69	94	63	97	81		
Period taken to distribute ivermectin (days)	14	7	7	30	14	3	30	10	7	24	3	30	3	21		
DO DISTRIBUTORS DEMAND INCENTIVES FROM:																
Community?	INR	INR	INR	Yes	Yes	INR	INR	INR	INR	INR	INR	INR	INR	INR		
NGDO or government?	No	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes		
Relatives?	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No		
Have the relatives of distributors pleaded for monetary incentives for the distributors?	INR	INR	INR	Yes	Yes	Yes	Yes	INR	INR	INR	Yes	Yes	Yes	Yes		

CDHW, Community-directed health worker; CBHW-LC, community-based health worker selected by local council; NGDO, non-governmental development organization; INR, issue not raised at PEM.

CDHW hesitated to ask for cash incentives because most of their community members were their relations or neighbours, even though these distributors had the freedom and support from their kinsmen to approach outsiders for monetary incentives. Even if the CDHW are not 'encouraged' with cash incentives, community pressure is generally sufficient to push them to perform the desired service. The existence of such a cultural imperative was reinforced in the PEM discussions, where it was found that, although monetary incentives were considered important to all categories of distributors, it was only the CBHW-LC who felt that they could not continue offering their services to community members unless monetary incentives were given (either by community members, NGDO or the government). In PEM in communities where each clan/kinship group or zone had selected its own CDHW, the community members reported that high treatment coverages had been achieved within 1 week of the launching of the previous treatment exercise. Katarwa *et al.* (2000b) similarly reported that selection of CDHW by community members was associated with success (i.e. achieving at least 90% coverage of the eligible population), whereas selection of distributors by community leaders or self-appointment were associated with lower coverage. Interestingly, where the CDHW had to cross over to provide treatment to different clan/kinship zones, coverage was low and often failed to reach the target until the district health personnel in charge of the programme intervened and asked those other clan/kinships to select their own CDHW. It was only after this intervention, and when the 'silent' friction between the clans/kinships and the CBHW-LC or CBHW-SA had been removed, that good treatment coverages with ivermectin were obtained (Katarwa *et al.*, 2000c).

It is clear that CBHW-LC feel free to ask any community members outside their own kinship/clan to contribute monetary incentives and, when most of the latter refuse to comply with their demands, the CBHW-LC withhold CDTI services. Most of the community members were not willing to help an

outsider progress at their expense, a phenomenon known as the principle of the 'limited good' (Salzman, 1999). Supporting a CBHW-LC was likened to assisting a stranger (and his or her kinship) to progress at the expense of members from another kinship where the distributor is offering his or her services (i.e. a loss of resources to the kinship/clan).

Although, in the present study, CBHW-SA were in many respects better than CBHW-LC, it was clear that communities cannot rely on the services provided by self-appointed volunteers. Many CBHW-SA did not educate community members or advocate the CDTI during 1999 (when they were not distributing ivermectin) and many felt that they were not supported by their community members. CBHW-SA were often suspected of having an ulterior motive for volunteering, such as transmitting witchcraft (unpubl. obs.). In order to minimise this problem, all those volunteering for community service should be approved by a relevant, indigenous, socio-cultural institution within the community, or by those having known legal codes. Such approval would, in effect, turn a CBHW-SA into a CDHW. The community members in the PEM felt strongly that their CBHW-SA were not accountable to other community members from different kinship groups.

The present results indicate that the high drop-out rate seen in some parts of the CDTI programme in Uganda may in part be due to the recruitment of CBHW (by some interest group within or outside the community), rather than the use of truly community-directed health workers (CDHW) selected by their own community members. CBHW are being required to provide their services to community members who are largely outside their own kinship and who never participated in their selection. A true CDHW, however, should only be acting for and within his or her own kinship or neighbourhood. In order to improve community-directed health programmes in Uganda, it is important that kinsmen and neighbours be empowered to select their own health workers. The use of kinships in such programmes should be included as a major 'proxy' indicator for good performance

and sustainability at the community level. Communities should be encouraged to select as many health workers as practicable, since their services are vital for the integration of many health programmes now being offered.

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