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Prevention and treatment of malaria in endemic areas of Bangladesh:
How are the NGO partners doing?

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June 2009

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Introduction

Malaria re-emerged as one of the major public health problems in Bangladesh in the 1990s. A population-based survey conducted in the 13 endemic districts¹ found overall malaria prevalence rate to be 3.1% (*P. falciparum* 2.73%, *P. vivax* 0.16% and mixed infection 0.19%) by rapid diagnostic test (RDT) ('FalciVax' Zephyr Biomedicals, India, www.tulipgroup.com). The prevalence was higher in the five south-eastern (SE) districts (7.2%), than the eight north-eastern (NE) districts (0.5%) (with highest concentration in the three hill districts, 11%) and was more common among children under five (Ahmed et al. 2008).

BRAC, an indigenous non-governmental development organization, has been implementing malaria control programme in the hill tract region (3 high endemic hill districts) since 1998 (BHP 2007). The initial activities concentrated mainly on awareness building through health education and referring suspected cases from outreach areas to the government health facilities for diagnosis and treatment. Since then, the programme has evolved to incorporate diagnosis and treatment following national guidelines and expanded to cover all the 25 *upazilas* of the three hill districts. Currently, BRAC is implementing a comprehensive malaria control programme in the 13 endemic districts in partnership with the Malaria and Parasitic Diseases Control (M&PDC) programme of the government of Bangladesh (GoB) and funding from Global Fund for Aids, TB and Malaria (GFATM) round six (2007-2012) (GoB 2009). BRAC is working in the three hill districts and two *upazilas* of Moulvibazar directly while the other *upazilas* in the remaining 10 districts are covered by a BRAC-led consortium of 20 partner non-government organizations (NGOs) selected through competitive bidding. This five-year programme aims to reduce malaria mortality by 50% by the year 2010 through early diagnosis and prompt treatment (EDPT), distribution of long lasting insecticide treated nets (LLINs)/insecticide treated nets (ITNs), and surveillance for epidemic preparedness. Under this programme, BRAC helps in capacity-building of the partners in implementing EDPT following a community-based model, ensures logistics and monitoring feed-backs.

¹ Five high endemic south-eastern districts (Khagrachhari, Bandarban, Rangamati, Cox's Bazar, Chittagong) and eight low endemic north-eastern districts (Sylhet, Hobiganj, Moulvibazar, Sunamganj, Sherpur, Netrakona, Mymensingh, Kurigram)

Rationale and Objectives

It is nearly two years now since the inception and it is a good time to see how the NGO partners are doing in comparison to BRAC itself in implementing the programme. Thus, this cross-sectional study aims to compare different programme-related activities of the partner NGOs to see whether the programme is being implemented uniformly across the intervention areas. More specifically, it aims to:

- estimate the proportion of households owing at least one ITNs/LLINs in different NGO working areas,
- measure the proportion of children aged under five years and pregnant women who sleep under an ITN/LLIN in different NGO working areas,
- explore the knowledge and practice about the use and maintenance of the insecticidal nets (ITN/LLINs) in different NGO working areas,
- explore the time elapsed from fever-to-diagnosis and diagnosis-to-treatment in different NGO working areas, and
- explore the treatment compliance in different NGO working areas.

Materials and methods

Sampling

A convenient sample of 23 *upazilas* were randomly selected from a total of 70 *upazilas* (of 13 districts) where the programme is being implemented. BRAC is implementing the programme in 23 *upazilas* (21 in Khagrachhari and Rangamati + 2 in Moulvibazar) and a consortium of 20 small NGOs led by BRAC is implementing the programme in the remaining 47 *upazilas*. One *upazila* for each of the partner NGO was selected where the NGO started working earliest. For BRAC, two sadar *upazilas* of Khagrachhari and Rangamati and one *upazila* from Moulvibazar were included. Three *upazilas* from BRAC were included because BRAC worked in about 1/3rd of the total *upazilas*. Annex 1 gives a complete list of the sample *upazilas*. Next, three villages from each of the above *upazila* were randomly selected (total villages=69). These villages, again, were among the ones where the NGOs started working earlier. From the selected villages, households having either a pregnant woman or an under-five child were included in the survey. Data were collected from the household head or spouse or any knowledgeable member of the household available on the spot.

Tools development

A pre-tested, semi-structured questionnaire was used in face-to-face interviews by trained field workers. Besides socio-demographic data, the questionnaire elicited information on the availability and use of insecticidal bed nets, time taken from fever-to-diagnosis-to-treatment, and compliance with treatment. A household was defined as a male (or female) head of household and his/her dependents including wives and unmarried children, usually the group of people sharing a cooking pot. An ITN was defined as a conventional net that had been treated within the past 12 months. Pregnancy status was based on self-report. A child or pregnant woman who was reported to have slept under a net the previous night was analyzed as having used the net.

The survey

The survey team comprised of social science graduates with experiences in conducting field surveys and their supervisors. In hilly areas where an ethnic minority language was the primary language, interviewers from respective ethnic groups were recruited to conduct the interviews. A two-day intensive training was organized for the interviewers which consisted of didactic lectures, mock interviews, role play and field practice at community level. Several teams worked simultaneously in different districts. Households were visited on three repeated occasions at intervals before declared failure, if the first attempt was not successful. The field activities were supervised by the researchers providing guidance as and when needed.

Results

The results are presented by the working *upazilas* of the NGOs, and in some instances, by the high endemic SE districts and the low endemic NE districts.

Socio-demographic characteristics of the sample (Table 1)

The mean household (HH) size of the sample was around 5.5. Around 16% of HHs in SE districts² and 13% HHs in NE districts³ had at least one pregnant woman while around 95% of the HHs had at least one under-five child. Nineteen percent HHs in SE districts and 14% in NE districts were chronically deficit. Seven percent and 5% HHs respectively in SE and NE districts are headed by

² Khagrachhari, Rangamati, Bandarban, Cox's Bazar and Chittagong (high endemic)

³ Sylhet, Hobigonj, Moulvibazar, Sunamgonj, Sherpur, Netrakona, Mymensingh, Kurigram (low endemic)

females. Proportionately, more HH heads from SE districts (35%) than from NE districts (18%) had more than five years of schooling. Majority of the HH heads were engaged in wage-labour (around 35%) for survival.

Table 1: Socio-demographic and economic characteristics of the Households (HHs) by programme areas (%)

	South-eastern (SE) districts ¹		North-eastern (NE) districts ²	
	n	%	n	%
<i>Characteristics of HHs</i>				
Mean household size (\pm sd)	5.5 (\pm 2.2)		5.6 (\pm 2.3)	
HHs that have at least one pregnant women	547	15.8	478	12.8
HHs that have at least one under- five children	3267	94.5	4353	95.9
Self-rated poverty status of HH				
Always deficit	642	18.6	648	14.3
Occasional deficit	1031	29.8	1703	37.5
Break-even/No deficit	783	51.6	2186	48.2
<i>Characteristics of the HH Head</i>				
Sex of HH head				
Male	3206	92.8	4290	93.8
Female	250	7.2	247	5.4
Formal schooling of HH head (years)				
None	1481	42.9	2669	58.8
1-5	770	22.3	1037	22.9
>5	1205	34.9	831	18.3
Occupation of HH head				
Self-employment (agri.)	333	9.6	846	18.6
Self-employment (non-agri)	767	22.2	914	20.1
Wage-labour	1071	31.0	1765	38.9
Service/trade	713	20.6	574	12.7
Others ³	572	16.6	438	9.7
N	3456	100.0	4537	100.0

¹Khagrachhari, Bandarban, Rangamati, Cox's Bazaar, Chittagong (high endemic); ²Sylhet, Hobiganj, Moulvibazar, Sunamganj, Sherpur, Netrakona, Mymensingh, Kurigram (low endemic); ³beggar, unemployed, too old/sick to work etc.

Possession of insecticidal bed nets

Overall, 66% of the HHs possessed at least one insecticidal bed net (LLIN/ITN) (See Annex Table 1) whereas in BRAC programme areas, this peaked to 84% (Annex Table 2). This or higher level was achieved in the working areas of Ekota, Ghoroni, Mamata, NUS (SE districts) and Sajida

Foundation (NE districts) only. In some of the NGO working areas, e.g. Mukti in SE districts, and Hitaishi and Rasdo in NE districts, this was found to be as low as 30-40%. Treatment of bed nets with insecticides (ITN) within past six months was poor (e.g., <10% in ACLAB, IACIB and Rasdo, VARD) except in few instances e.g., Ghoroni (60%), Mamata (71%).

Use of insecticidal bed nets

Overall, 61% of the under-five children (69% and 56% respectively in the SE and NE districts) slept under an insecticidal bed net the night before while only 50% of the pregnant women (57% and 44% respectively in the SE and NE districts) did so (Annex Table 1). It is interesting to observe that around 80-90% of the under-five children slept under an insecticidal bed net (LLIN/ITNs) in the night before the day of survey in some of the NGO's working areas such as Ekota (91.5%), Mamata (81.5%), and Sajida (81.5%) while in case of some other NGOs', it was found to be very low such as in the case of Hitaishi (28.2%) and Mukti (30.1%) (Annex Table 3). On the other hand, the percentage of pregnant women who slept under an insecticidal bed net in the night before the day of survey varied from around 20% (in IACIB and SSS's working areas) in the NE districts to 35% (in Mukti's working area) in the SE districts; the highest (83%) being observed in the Ekota's working area in the SE districts. Even in BRAC areas, this was 60%. There was also poor knowledge with respect to hanging of insecticidal bed nets at appropriate time (just before evening) among the different NGO working areas, with few exceptions e.g., Ghoroni (83%), Sajida Foundation (62%), and PRDS (56%). In BRAC areas this was 24%.

Washing insecticidal bed nets by working areas of the partner NGOs

In some of the NGO's working areas, the ITNs were washed twice in the previous three months e.g., Ekota (8.4%), Bandhan (2.7%), Heed (5.7%), Sajida Foundation (2.9%) and Shimantik (4.2%) (Annex Table 4). In some cases, the ITN bed nets were even washed for more than twice in previous three months e.g. Ekota (1.2%) and Shimantik (2.8%).

Knowledge on the use of insecticidal bed nets by working areas of the partner NGOs

The respondents' knowledge on different aspects of proper use of the insecticidal bed nets was universally very poor (Annex Table 5). Thirty percent of the respondents from the working areas of

Ghoroni, 26% from NUS, 19% from SKUS and 21% from Sajida Foundation could state all the norms of using LLIN/ITNs.

Treatment of malarial illnesses in the working areas of the partner NGOs

In BRAC working areas, malaria was mainly diagnosed by RDT while in most of the other NGOs' working areas, microscopy remained the main diagnostic tool e.g., Ghoroni (71%), Mukti (89%), FIVDB (100%), and Hitaishi (100%) (Annex Table 6). The time interval between onset of illness and diagnosis, and diagnosis and initiation of treatment varied widely in the working areas of the different NGOs. In the case of illness-to-diagnosis interval, the mean time varied from 9 hours for Mukti to 168 hours for Shimantik and 104 hours for BRAC. In the case of diagnosis-to-treatment initiation interval, the mean time varied from one hour (Ghoroni, SSS, Shimantik) to 48 hours (SKUS). However, the compliance with full treatment was encouraging: 100% compliance was achieved in the working areas of 12 NGOs while around 80% was achieved in another four NGO working areas. In this respect, VARD (64%) and HEED (75%) were poor performers.

Discussion

This study was done to investigate how the different partner NGOs are doing in implementing the programme two years since inception, and compare with that of BRAC (the lead NGO). Due to constraints in time and resources, a convenient sampling was done to represent the working areas of each of the partner NGOs including BRAC. Findings reveal a mixed picture: in some indicators such as compliance with treatment, the performance was encouraging while in many other indicators, large gaps remain.

The wide variation observed among the working areas of the different NGOs deserves special mention. A number of different reasons may be responsible for this variation. Investigation reveals that the NGO partners entered into the programme at different time, from May 2007 (13 in 2007) to May 2008 (7 in 2008) (See Annex). The distribution of the RDTs and LLINs was done in 2008, sometimes as late as September and the re-treatment of ITNs were done in 2008, sometimes as late as October. This should be kept in mind while interpreting the results.

The households' possession of bed nets (41 to 66%), percentage of under-five children (36 to 61%) and pregnant women (30 to 50%) sleeping under an ITN/LLIN bed net increased since June 2008

(Ahmed and Hossain 2008). However, there is wide variation in the working areas of the different NGOs in the consortium with respect to possession, coverage of under-five children and pregnant women, knowledge of proper use of insecticidal bed nets and treatment of malaria. For reaping the 'herd immunity' benefit from distribution of insecticidal bed nets, coverage has to be 'sufficiently high' (> 80%) and for a family size of five, three bed nets are recommended (Teklehaimanot et al. 2007). The programme is yet to achieve these targets. Also, knowledge and practice regarding proper use and maintenance of the insecticidal bed nets were found to be poor. However, compliance with acceptance and use of insecticidal bed nets are influenced by other factors such as climate, work, evening social activities etc. besides knowledge and awareness on malaria (Atkinson et al. 2009). Thus, further research is needed to understand the situation in Bangladesh.

Except BRAC, in most of the other NGO working areas microscopy remained the main diagnostic tool. RDT is yet gain a foothold in these areas. The mean time interval for illness-to-diagnosis (lowest 9 hours) and diagnosis-to-treatment initiation (lowest 1 hour) was uneven, and sometimes unacceptably prolonged (highest 168 hours and 48 hours respectively). The Abuja declaration (Roll Back Malaria/WHO 2003) stipulates that 60% of the patients with malaria should have treatment started within 24 hours. Thus, more efforts are needed for prompt diagnosis and early initiation of treatment, and more use of RDT may help.

Insecticidal bed net coverage of the under-five children (61%) was better than the pregnant women (50%), but far short of target, and is uneven among the different NGO working areas. Efforts are needed to eliminate these discrepancies. It is encouraging to note that the NGOs performed uniformly well with respect to compliance with treatment. This is not surprising as it has been shown earlier that pre-packaging of malarial drugs improves compliance (Qingjun et al. 1998, Yeobah-Antwi et al. 2001).

Recommendations

- Different NGOs started working at different time. Differential efforts should be given to bring them on a level-playing ground, e.g., streamlining supplies and logistics, and intensifying supervision in the working areas of the late-starters, etc.
- IEC campaigns need to be strengthened to improve knowledge and practice on different aspects of malaria uniformly across the working areas of the partner NGOs. This is needed

for increasing uptake of preventive (e.g., proper use and maintenance of bed nets) and curative services (e.g., seeking early diagnosis and treatment) within a reasonable period of time. Also, measures to increase the coverage and number of bed nets are needed.

- Concerted effort to expand the use of RDT in the working areas of partner NGO is warranted for ensuring early diagnosis and initiate treatment promptly. For this, programme needs to identify barriers (e.g., problems with supply of RDT or training of the health workers in its use) and overcome these so that the NGOs perform uniformly.
- As the leader of the consortium, BRAC itself also needs to revisit its programme operation to improve performance e.g., increasing the bed net coverage for pregnant women or reducing the time gaps for diagnosis and treatment initiation.

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Annexes

Annex Table 1: Distribution of households with insecticidal net, and under-five children and pregnant women sleeping under an insecticidal net the previous night, by programme areas %

	SE districts	NE districts	All
% HHs with at least one LLIN/ITN	48.3	51.7	66.2
% under-five children who slept under LLIN/ITN last night	69.0	55.6	61.1
% pregnant women who slept under LLIN/ITN last night	56.8	43.6	50.5

Table 3: Use of LLIN/ITNs in the study areas by the partner NGOs involved in malaria programme

	SE Districts										NE Districts										Both																					
	AC	EK	GH	MA	MA	MU	NU	SK	YP	BA	BD	F	HE	HIT	I	PR	RA	S	S	S	SA	SHI	VA	BR																		
Five children who slept LLIN/ITNs yesterday	53.9	91.5	78.7	81.5	30.1	69.5	67.0	55.6	63.4	50.9	66.7	55.5	28.2	43.9	67.2	45.2	40.0	81.5	57.3	44.4	77.3	LA	OT	OR	MA	KT	S	US	SA	ND	SC	I	ED	AIS	AC	DS	SD	S	J	MA	RD	AC
Young women who slept LLIN/ITNs yesterday	60.0	83.3	64.6	73.6	34.8	59.7	57.8	47.8	50.0	37.1	48.9	34.2	41.3	20.8	56.2	30.9	20.0	60.6	47.9	45.9	59.6	B	A	ON	TA	I	N	HA	VD	B	I	HI	O	S	ID	NT	IK					
that hang LLINs/ITNs first before evening before sleep	7.8	18.6	82.6	1.3	5.4	34.8	34.7	15.7	0.8	11.0	51.8	1.0	45.8	9.9	56.1	23.0	4.4	62.4	3.3	11.9	23.8	294	344	376	389	273	422	275	422	360	350	320	323	366	329	346	412	350	326	341	341	1034
	92.2	81.4	17.4	98.7	94.6	65.2	65.3	84.3	99.2	89.0	48.2	99.0	54.2	90.1	43.9	77.0	95.6	37.6	96.7	88.1	76.2																					

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Annex Table 4: Treatment of ITNs in the study areas by the partner NGOs

	SE Districts										NE Districts										Both	
	AC	EK	GH	MA	MU	NU	NU	SK	US	YP	BA	BDS	F	HE	HIT	I	PR	RAS	S	SA	SHI	VA
net insecticidal nets washed	63.2	35.4	88.4	14.6	65.6	91.9	90.3	90.3	85.5	83.4	82.4	78.7	76.2	91.8	80.5	88.2	100.0	89.3	38.0	71.2	81.3	81.4
in 1 month	35.5	55.0	10.6	84.8	34.4	7.6	9.2	9.2	12.2	13.5	17.6	20.9	18.1	7.4	19.5	11.8	0.0	8.3	59.1	21.9	17.6	16.1
washed once	1.0	8.4	0.7	0.6	0.0	0.3	0.5	0.5	1.9	2.7	0.0	0.4	5.7	0.8	0.0	0.0	0.0	1.8	2.9	4.2	1.1	2.1
washed two times	0.0	1.2	0.3	0.0	0.0	0.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	2.8	0.0	0.4
washed > two times	294	344	376	389	273	422	275	275	422	360	350	320	323	366	329	346	+12	350	326	3+1	3+1	103+

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Annex Table 5: Knowledge on the use of LLIN/ITNs in the study area by the partner NGOs

	SE Districts												NE Districts												Both																																																																																																					
	AC	EK	GH	MA	MU	NU	SK	US	YP	BA	BD	F	HE	HI	I	PR	RA	S	SA	SHI	VA	BR	LA	OT	OR	MA	KT	S	US	SA	ND	SC	I	ED	TAI	AC	DS	SD	S	J	MA	RD	AC	B	A	ON	TA	I	HA	N	VD	B	SHI	I	O	S	ID	NT	IK	A	IK																																																																	
about rules of use of ITNs	29.9	12.5	59.6	7.7	23.1	36.7	33.1	9.7	0.3	12.9	50.9	0.0	13.1	6.7	45.1	10.4	2.0	66.9	1.5	9.4	20.8	39.8	21.2	49.7	72.8	26.4	59.5	40.4	24.4	10.6	14.9	46.3	6.2	23.5	15.8	44.2	10.2	2.9	73.0	1.8	18.2	31.1	25.5	68.3	54.3	73.8	15.0	66.1	61.5	29.6	5.6	40.0	30.0	9.9	21.3	37.1	41.6	30.8	0.6	53.1	5.6	30.8	38.1	6.8	63.4	44.4	75.1	7.0	55.7	54.5	28.4	2.2	24.9	12.7	6.5	3.6	18.2	6.1	25.0	3.7	34.7	5.9	15.0	36.5	1.0	5.5	30.1	7.2	0.0	25.6	19.3	3.6	0.0	4.0	5.6	0.0	1.0	1.8	0.6	1.7	0.0	20.9	0.0	2.9	4.3	29.4	34.4	376	389	273	422	275	422	360	350	320	323	366	329	346	412	350	326	341	341	103
s/ITNs to be hanged just re evening starts																																																																																																																														
/four washes in a year																																																																																																																														
wash directly in the pond or water																																																																																																																														
keep in the sun after drying																																																																																																																														
all the rules of use of LLINs																																																																																																																														
	29.4	34.4	376	389	273	422	275	422	360	350	320	323	366	329	346	412	350	326	341	341	103																																																																																																									

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Index Table 6: Treatment of malarial illnesses in the study areas by the partner NGOs

	SE Districts												NE Districts												Both																																								
	AC	EK	GH	MA	MU	NU	SK	US	YP	BA	BD	F	HE	HI	I	PR	RA	S	SA	SHI	VA	BR	LA	OT	OR	MA	KT	S	US	SA	ND	SC	I	ED	TAI	AC	DS	SD	S	J	MA	RD	AC	B	A	ON	TA	I	I	VD	HA	N	B	SHI	I	B	O	S	ID	NT	IK				
Number of the HH had fever with malarial fever in the last two weeks	3.7	7.3	1.9	4.6	3.3	0.5	0.4	1.9	0.0	0.3	0.6	1.2	0.3	3.3	1.7	12.1	0.3	1.5	0.3	3.2	0.5	294	344	376	389	273	422	275	422	360	350	320	323	366	329	346	412	350	326	341	341	103																							
Number of a fever, method of diagnosis	36.4	48.0	0.0	0.0	11.1	50.0	0.0	12.5	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	9.1	80.0	54.5	32.0	71.4	27.8	88.9	0.0	0.0	25.0	0.0	0.0	100.0	50.0	100.0	36.4	0.0	36.0	0.0	60.0	100.0	36.4	20.0	9.1	20.0	28.6	72.2	0.0	50.0	100.0	62.5	0.0	0.0	50.0	0.0	63.6	0.0	64.0	100.0	40.0	40.0	0.0	54.5	0.0		
Hours elapsed from starting of diagnosis (mean)	11.7	31.5	79.8	20.3	9.1	84.0	48.0	76.0	0.0	72.0	22.0	89.5	24.0	74.7	43.0	89.6	48.0	28.4	168.0	41.0	104.0	2.0	4.6	1.1	9.4	1.89	2.5	48.0	5.5	0.0	2.0	10.0	10.0	4.0	11.0	3.8	14.8	1.0	3.6	1.0	2.9	4.4	100.0	83.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hours elapsed from diagnosis on of treatment (mean)	11	25	7	18	9	2	1	8	0	1	2	4	1	11	6	50	1	5	1	11	5	100.0	83.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					
Number of full course of treatment	11	25	7	18	9	2	1	8	0	1	2	4	1	11	6	50	1	5	1	11	5	100.0	83.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																					

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Annex: List of selected Upazilas

SL	District	Selected Upazila		Selected NGO	NGO/Working upazila
1	Rangamati	1	Rangamati sadar	BRAC	BRAC (10)
2	Khagrachari	1	Khagrachari Sadar	BRAC	BRAC (5)
3	Bandarban	1	Lama	Ekota	Ekota (2), BRAC (1)
4	Cox's bazaar	1	Cox's bazaar Sadar	MUKTI	Mukti (2), Ghoroni (1), Hitaishi (1), ACLAB (2)
		2	Chakoria	ACLAB	
5	Chittagong	1	Rangunia	YPSA	YPSA(1), Ghoroni (2), NUS (3), MAMATA (1), IACIB (1), SKUS (2), RASDO (1), Hitaishi (1)
		2	Potia	NUS	
		3	Bashkhali	GHORONI	
		4	Sitakundu	SKUS	
		5	Chndalaish	MAMATA	
6	Habiganj	1	Madhobpur	SSS	SSS (2)
7	Sunamganj	1	Bishwvampur	FIVDB	FIVDB (1), Bandhan (1), Sajida (1), VARD (2), BDSC(1)
		2	Chatok	BANDHAN	
		3	Dhormopasha	SAJIDA FOUND	
8	Moulavi bazaar	1	Rajnagar	BDSC	VARD(1), SSS (2), BDSC(1) BRAC (2)
		2	Sreemongol	BRAC	
9	Sylhet	1	Goainghat	VARD	Heed (1), Shimantik (1), VARD(2)
		2	Jiontapur	HEED	
		3	Kanaighat	SHIMANTIK	
10	Mymensingh	1	Haluaghat	HITAISHI	RADSO (1), Hitaishi(1)
11	Netrokona	1	Kolmakanda	PRDS	PRDS (2)
12	Sherpur	1	Sreebordi	RASDO	RASDO(2)
13	Kurigram	1	Roumari	IACIB	IACIB (2)

Annex: Inception of NGO partner activities

Sl.	NGO name	Date of signing contract with BRAC as a partner	Month of commencing use of RDT in the working area	Month of commencing distribution of LLIN in the working area	Month of commencing bed net treatment with insecticides (ITN) in the working area
1	N.Z. Ekata	May 2007	March 2008	August 2008	September 2008
2	Mukti Cox'sbazar	May 2007	April 2008	March 2008	September 2008
3	VARD	May 2007	February 2008	March 2008	September 2008
4	GHARONI	May 2007	March 2008	March 2008	September 2008
5	ACLAB	June 2007	March 2008	March 2008	July 2008
6	BDSC	June 2007	March 2008	March 2008	October 2008
7	IACIB	June 2007	April 2008	March 2008	September 2008
8	PRDS	June 2007	April 2008	March 2008	September 2008
9	RASDO	June 2007	March 2008	March 2008	September 2008
10	SSS	June 2007	April 2008	March 2008	September 2008
11	SKUS	July 2007	February 2008	March 2008	February 2008
12	NUS	July 2007	March 2008	March 2008	September 2008
13	Hitaishi Bangladesh	July 2007	April 2008	March 2008	September 2008
14	BANDHAN	July 2007	April 2008	March 2008	September 2008
15	SHIMANTIK	April 2008	September 2008	September 2008	September 2008
16	SAJIDA Foundation	May 2008	September 2008	September 2008	October 2008
17	MAMATA	May 2008	August 2008	September 2008	September 2008
18	FIVDB	May 2008	September 2008	September 2008	September 2008
19	YPSA	May 2008	September 2008	September 2008	September 2008
20	HEED Bangladesh	May 2008	September 2008	September 2008	September 2008