

# Zanzibar Coverage Survey 2015 Report

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## Contents

1	Executive Summary.....	4
2	Background to the coverage survey .....	5
2.1	Reported coverage from MDA.....	6
3	Coverage survey data collection methods.....	6
3.1	District selection and reported coverage in selected districts .....	6
3.2	Village selection .....	6
3.3	Field methodology .....	7
3.4	Ethical considerations .....	7
4	Data cleaning .....	8
4.1	Data cleaning summary .....	8
4.2	Deviations from protocol.....	8
5	Results.....	8
5.1	Data description and sample sizes.....	9
5.1.1	Age and gender distribution of interviewed children by island.....	10
5.1.2	Age and gender distribution of interviewed children by island for enrolled and non-enrolled	10
5.1.3	Age and gender distribution for interviewed adults by island .....	11
5.2	Validated coverage rates .....	12
5.2.1	Coverage & gender .....	13
5.2.2	Coverage & school attendance .....	14
5.2.3	Drugs swallowed in one go .....	14
5.3	People who did not take the drugs.....	14
5.3.1	Specified reasons for not taking the drugs .....	15
5.3.2	Other reasons for not taking the drugs .....	16
5.4	People who did take the drugs .....	17
5.4.1	Did people know when and where the drug distribution would happen?.....	17
5.4.2	How had people heard about the MDA.....	17
5.4.3	Mode of delivery of drug distribution.....	18
5.5	Additional country-specific analyses .....	19
5.5.1	Coverage split by SCORE study arms .....	19
6	Discussion.....	21
6.1	Coverage results.....	21
6.2	Learnings for the future .....	22

6.2.1	Background information .....	22
6.2.2	Training .....	22
6.2.3	Survey.....	22
7	Appendix I: Associated documentation .....	23
7.1	Historical documentation .....	23
	S:\SCI - post 3 June 2011\Current programmes\DFID\ICOSA\COUNTRIES\Zanzibar\M&E\Performance\Coverage survey 2015 .....	23
7.2	Data cleaning and analysis files .....	23
7.3	Other documentation .....	23
8	Appendix II: Statistical Methodology.....	24

*[Associated spreadsheet: Zanzibar\M&E\Performance\Coverage survey 2015\Data & results\5 Coverage survey results\Tables for Graphs\Zanzibar Coverage Survey 2015 Results 2015-08-17.xlsx]*

*[Associated impact protocol: Zanzibar\M&E\Performance\Coverage survey 2015\Protocol and Forms\Protocol]*

## 1 Executive Summary

The Zanzibar Ministry of Health (MoH) in conjunction with the Schistosomiasis Control Initiative (SCI) have been working towards the elimination of schistosomiasis (SCH) on Unguja and Pemba islands through twice yearly treatment with PZQ and ALB since 2012. To validate the coverage after 3 years of treatment and to determine if an ongoing SCORE research programme to identify additional interventions necessary to achieve SCH elimination was also having a broader effect on coverage, SCI supported a national scale validated coverage survey during February 2015. The 6<sup>th</sup> mass drug administration had taken place during Nov-Dec previously, distributing a triple therapy combination of praziquantel, albendazole and ivermectin to treat SCH, soil-transmitted helminths (STH) and lymphatic filariasis (LF) to the total population of the islands where eligible.

For the first time, the islands used two different methods for drug distribution:

- Unguja – Community-wide mass drug administration (MDA) using community drug distributors (CDDs) treating door-to-door during December 2014
- Pemba – School-based and community-wide MDA using fixed health posts where individuals could attend for treatment during November 2014

Any observable differences in coverage between the islands would assist programmatic decision-making in the optimal approaches to reaching the highest number of targeted individuals during the twice yearly campaigns, and identify issues arising which may be barriers towards the ultimate goal of elimination as a public health problem.

Between 23-33 households from each of 34 Shehia's across both islands, stratified by inclusion in the SCORE research study, were visited during the survey with both children and adults questioned over their participation in the treatment campaign.

Reported coverage across Unguja island was consistently >80% (the performance threshold set by the programme). Reported coverage only met the target in 1 district of Pemba island, with coverage ranging from 40-46% in the remaining 3. In contrast, validated coverage rates indicated that treatment was over-reported in Unguja with the 80% threshold missed for both adults and children, whereas treatment was under-reported in Pemba. Although the 80% target was still not met in the adult population, over 80% of SAC were reached through the school-based platform for MDA. Treatment in the adult population was still in excess of 70%, therefore despite missing the target set, coverage still remains high in this demographic.

Improvements in social mobilisation activities to ensure greater awareness of MDA timeframes, inclusion of pregnant women in accessing treatment and education to allay fears of side effects, accompanied by improvements in logistics to limit drug stock-out are required to increase observed coverage rates still further. Those who did not receive treatment commonly were absent or not aware of the MDA, or had an underlying health condition such as pregnancy which prevented them from receiving treatment at the time of drug distribution. Additionally, directly observed treatment would be beneficial to ensure that accurate dosing is being adhered to and to further validate that treatment has taken place, particularly in those households where drugs are requested to be left for absent family members to take at a later time/date.

The planning of future MDAs will take into consideration the findings of this survey to ensure that each preparatory activity is maximised where feasible, e.g. through improved social mobilisation and increased training scope for the inclusion of pregnant women. The mode of distribution will focus on school-based approaches to ensure that the highest coverage within SAC is achieved. Further discussion is required to determine how best to reach adults to balance high coverage with operational costs.

## 2 Background to the coverage survey

The Zanzibar Ministry of Health (MoH) in conjunction with the Schistosomiasis Control Initiative (SCI) have been working towards the elimination of schistosomiasis (SCH) on Unguja and Pemba islands through twice yearly treatment with PZQ and ALB since 2012. Prior to this, PZQ and ALB were distributed on an annual basis and often integrated with the distribution of ivermectin (IVM) and ALB for the elimination of lymphatic filariasis (LF).

In addition to treatment for SCH, there is also an ongoing research program (SCORE) working to determine the best method for reaching elimination on the islands through the addition of other interventions. This trial involves 45 shehias (lowest administrative unit) on both islands who receive bi-annual treatment but also any combination of mollusciciding, health education and behavioural interventions. As such, there is some understanding of the coverage in each shehia through regular coverage validation albeit on a small geographical scale.

To validate the coverage after 3 years of treatment and to determine if the ongoing research programme is having a broader effect on coverage, SCI supported a national scale validated coverage survey.

As a result of increasing levels of LF in the population, the MoH took the decision to distribute a further treatment for LF as a combined triple therapy for LF, SCH and STH. The treatment campaign of PZQ, ALB and IVM took place during November - December of 2014 with target population of 1.3 million people across all communities on both islands (excluding pregnant women, severely ill, children <3yrs, elderly). Exceptions to this were the South, Urban A and Urban B districts in Unguja, where ALB + IVM only were distributed as they are not endemic for schistosomiasis.

For SCH treatment, the target coverage level is 75% for all drugs, in line with WHO guidelines (WHO, 2011). However as Zanzibar is on track for elimination they are expected to reach 80% coverage during each treatment round. If high drug coverage is not attained, untreated individuals could potentially act as reservoirs of transmission, hindering elimination efforts.

For the first time, the islands used two different methods for drug distribution:

- Unguja – Community-wide mass drug administration (MDA) using community drug distributors (CDDs) treating door-to-door during December 2014
- Pemba – School-based and community-wide MDA using fixed health posts where individuals could attend for treatment during November 2014

Prior to MDA, supervised training, social mobilisation and advocacy/sensitisation activities took place. Training normally happens in a cascade format as teams from the central level conduct training of trainers (ToT), who in turn train Shehia supervisors who then train the teachers and CDD's.

Alongside these activities, advocacy/sensitisation meetings were held with district, Shehia and village leaders. Sensitisation of communities including the targeted population happened through social mobilisation campaigns such as addresses at social gatherings etc. MDA implementation took place the week following these activities.

## 2.1 Reported coverage from MDA

Reported coverage is provided to the central teams after MDA has been completed.

**Table 1:** Reported Coverage rates across Unguja and Pemba islands during Nov-Dec 2014 MDAs.

Region	District	Total pop'n	Target Pop'n		Total Target Pop'n	Treated Pop'n		Total Treated Pop'n	Programme Coverage (%)		
			Total SAC	Total Adults		Total SAC	Total Adults		SAC	Adults	Total (target pop'n)
UNGUJA	North A	116,492	38,831	77,661	96,979	29,856	68,314	78,333	77%	88%	<b>81%</b>
	North B	73,665	24,555	49,110	64,452	20,414	42,654	52,549	83%	87%	<b>82%</b>
	Central	78,684	26,228	52,456	66,495	19,252	36,653	54,459	73%	70%	<b>82%</b>
	South	40,494	13,538	26,996	35,582	9,442	21,463	32,104	70%	80%	<b>90%</b>
	West	256,039	85,346	170,693	225,722	64,962	132,053	192,290	76%	77%	<b>85%</b>
	Urban	214,999	71,666	143,333	191,991	59,453	126,186	167,340	83%	88%	<b>87%</b>
	<b>TOTAL</b>	<b>780,373</b>	<b>260,164</b>	<b>520,249</b>	<b>681,221</b>	<b>203,379</b>	<b>427,323</b>	<b>577,075</b>	<b>78%</b>	<b>82%</b>	<b>85%</b>
PEMBA	Wete	122,326	19,611	84,696	104,307	16,059	31,453	47,512	82%	37%	<b>46%</b>
PEMBA	Mkoani	120,590	19,439	49,038	68,477	17,333	38,179	55,512	89%	78%	<b>81%</b>
PEMBA	Chake	99,988	16,832	63,524	80,356	12,742	22,115	34,857	76%	35%	<b>43%</b>
PEMBA	Micheweni	98,121	9,443	72,850	82,293	8,315	24,945	33,260	88%	34%	<b>40%</b>
PEMBA	<b>TOTAL</b>	<b>441,025</b>	<b>65,325</b>	<b>270,108</b>	<b>335,433</b>	<b>54,449</b>	<b>116,692</b>	<b>171,141</b>	<b>83%</b>	<b>43%</b>	<b>51%</b>

## 3 Coverage survey data collection methods

### 3.1 District selection and reported coverage in selected districts

36 Shehias were selected for inclusion in the coverage survey, stratified by SCORE and non-SCORE Shehias. There are 3 SCORE study arms (MDA only, MDA plus molluscicide and MDA plus behaviour interventions/health education). 5 shehias were selected from each of these arms (15 in total) plus 21 shehias from the non-SCORE arms. The sample was also stratified by Island with 24 Shehias included from Unguja, and 12 from Pemba. See protocol appendix one for full details of the Shehia selection procedure and appendix 2 for selected Shehias.

### 3.2 Village selection

If a full household list was available for each shehia, 24 households were selected directly from this list. If there is no household list available, 4 'areas' within the shehia were selected and a random walk

method used to identify households. See Figure 1 in the protocol for selection processes from both Pemba and Unguja.

### 3.3 Field methodology

Coverage survey training took place over 4 days. Initially three days had been assigned for training with a further day added to ensure competency in data collection using phones. Throughout the training, Zanzibar program managers were on hand to assist with explanations. Translation of the questionnaire into Kiswahili (the local language) was carried out during the training.

Training manuals and materials used throughout the training and a trip report from visit to Zanzibar are located at

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[S:\SCI - post 3 June 2011\Current programmes\DFID\ICOSA\COUNTRIES\Zanzibar\Zanzibar Coverage Survey ND additions 2015-04-13](#)

After four days of training, three team leaders were identified and the teams were divided to ensure two males and females as well as weak and strong interviewers were combined within a team.

After two days of carrying out the survey it was noted that sampling 24 households within each shehia was not producing the full complement of children needed for the sample size. From day three, 32 households were interviewed.

Please refer to the protocol and training manual for information on the field logistics and organisation of the survey.

### 3.4 Ethical considerations

As this survey was considered an activity of the Ministry of Health's Zanzibar Elimination of Schistosomiasis Transmission programme, separate Ethical Clearance was not required.

**Consent:** The village chief was notified about the study prior to the survey by the team leader, survey coordinator, or through other channels. Upon arrival in the village, there was a meeting with the village chief where the survey was explained and permission to perform the survey in the village obtained before any households were visited.

Additionally, consent from each selected household head was obtained at arrival, but before the team entered the house for interview.

## 4 Data cleaning

### 4.1 Data cleaning summary

Data cleaning and analysis was performed at SCI by the biostatistics team. The data was contained in 6 datasets. There were 3 forms for each island being: shehia questions, household questions and individual questions. These were downloaded as comma separated value spreadsheets (CSVs) from the EpiCollect+ website. Unique keys were generated at each level to link the forms together.

The quality of the data was good, as data from mobile phones were backed up via the EpiCollect+ upload feature there were no instances of duplicated unique keys.

There were four duplicated Shehia forms – Shehia name could only be inputted from prepopulated drop down lists and only team leaders were tasked with completing shehia forms so these were easy to reconcile.

Three household forms were found to be erroneously created and removed, and a further three were duplicates – these were reconciled using the head of household name field.

Several individual forms on both islands were found to be attached to the wrong household, these were reconciled by the head of household name field.

Once this screening had been performed three clean datasets were created, shehia level, household level and individual level with both islands combined. These three datasets were combined when the data was analysed.

During analysis of the coverage survey questions further work was needed as many of the “drugs taken” questions had been left unanswered and the relevant information collected in text input fields later in the survey.

All answers had been input onto the EpiCollect+ forms as long-form and as such no major adjustments or alterations had to be made to answers prior to analysis.

### 4.2 Deviations from protocol

The site selection conducted prior to the survey called for 24 shehias from Unguja and 12 from Pemba. As a result of logistical and timing issues in the end 22 shehias were sampled from Unguja and 12 from Pemba. In terms of the stratification, Fukuchani and Pita Zako were omitted, both from the non-SCORE, Unguja stratum.

Initially each member of the survey teams was to select and complete 6 households with 2 adults and 2 children being randomly selected from each household. After the first two days it was decided to increase this to 8 households each as it was proving difficult to find the full complement of children.

## 5 Results

Validated therapeutic coverage rates were calculated using the following formula:

$$\frac{\text{Number of children/adults that swallowed the drug}}{\text{Total number of children/adults interviewed}}$$

Note that respondents who were unsure of whether they took the drug, or where no answer was given, were classified as not having taken the drug for the purposes of assessing coverage rates.

See **Appendix II** for full details of the statistical methodology.

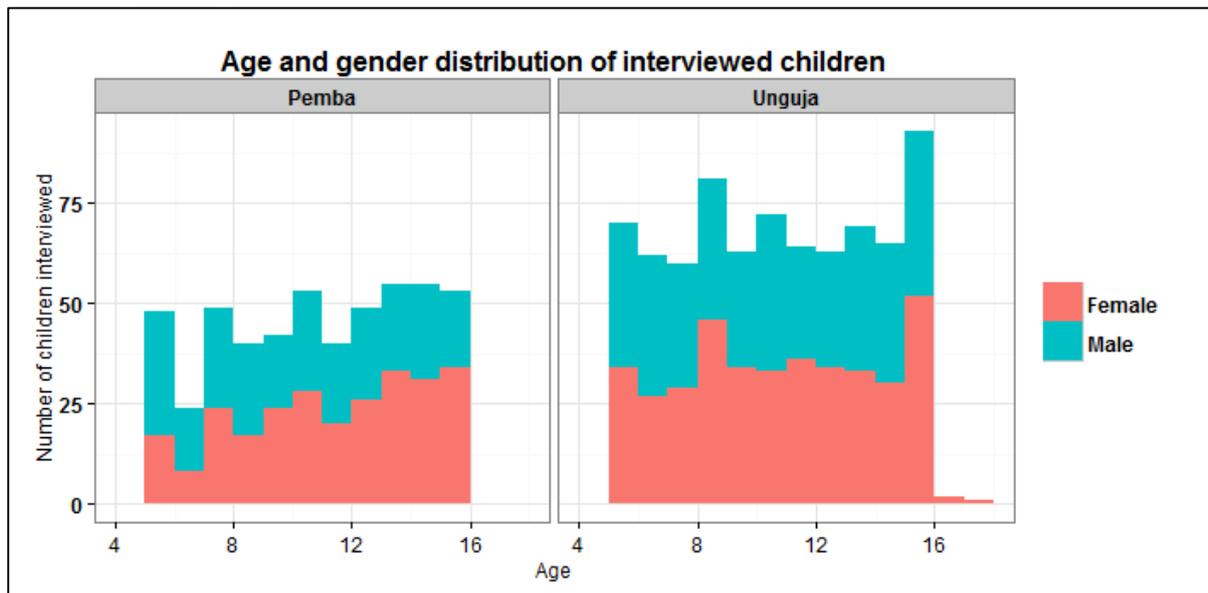
### 5.1 Data description and sample sizes

22 shehias were sampled on Unguja and 12 on Pemba. Between 23 and 33 households were interviewed per shehia, with between 36 and 61 adults interviewed per shehia and between 14 and 56 children interviewed per shehia. The number of SAC that did not attend school ranged from 1 to 13 per shehia.

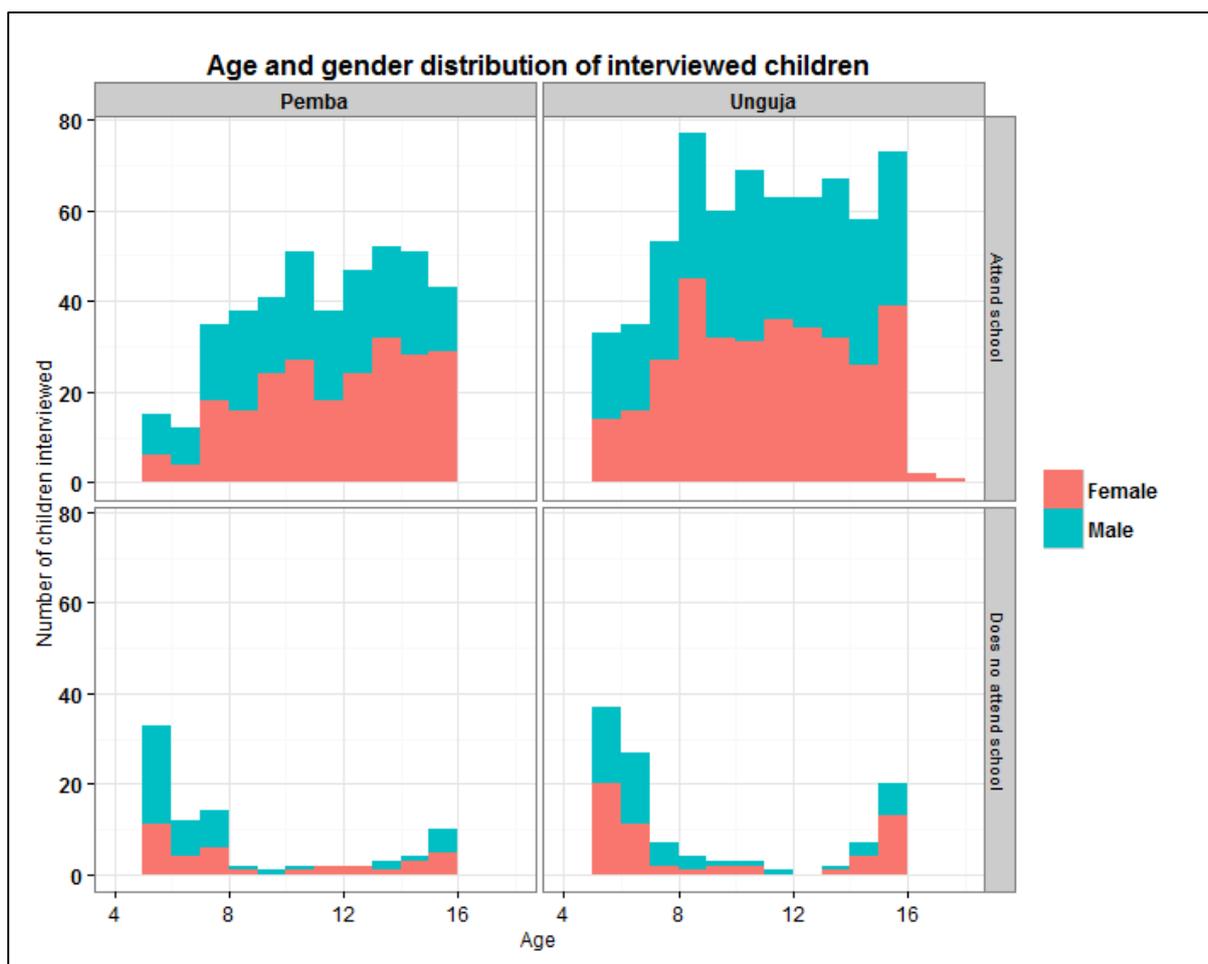
**Table 2:** Coverage Survey sample sizes, stratified by SCORE and non-SCORE shehias across Pemba and Unguja islands of Zanzibar, 2015.

	Unguja				
	Total	Non-SCORE	MDA only	MDA + Snail control	MDA + Behaviour change
Shehias	22	13	3	3	3
Households	637	381	80	95	81
Adults interviewed	1043	625	117	169	132
Mean age adults	148.1	36.0	36.8	38.5	36.8
Children interviewed	770	483	81	136	70
Mean age children	40.9	10.1	10.5	10.3	10.0
Children enrolled	656	425	64	108	59
Children not enrolled	114	58	17	28	11
Number girls	392	248	38	72	34
Number boys	378	235	43	64	36
	Pemba				
	Total	Non-SCORE	MDA only	MDA + Snail control	MDA + Behaviour change
Shehias	12	6	2	2	2
Households	381	191	64	62	64
Adults interviewed	595	295	95	96	109
Mean age adults	37.5	37.3	39.0	35.6	38.1
Children interviewed	509	271	69	79	90
Mean age children	10.4	10.4	10.2	10.5	10.3
Children enrolled	424	225	60	65	74
Children not enrolled	85	46	9	14	16
Number girls	263	141	31	43	48
Number boys	246	130	38	36	42

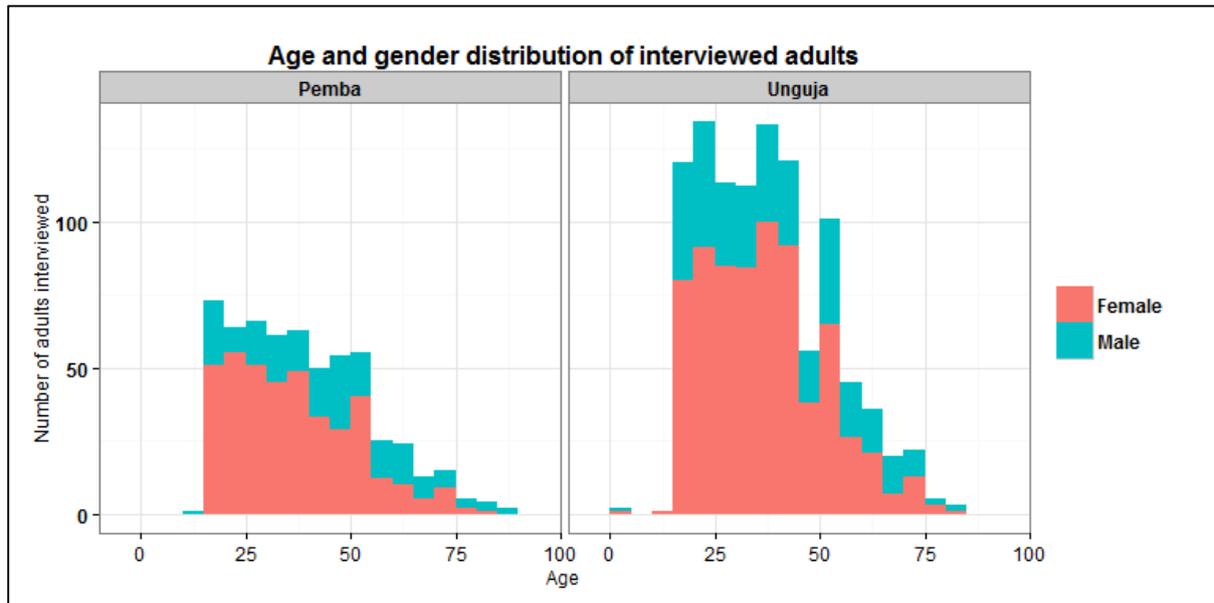
### 5.1.1 Age and gender distribution of interviewed children by island



### 5.1.2 Age and gender distribution of interviewed children by island for enrolled and non-enrolled

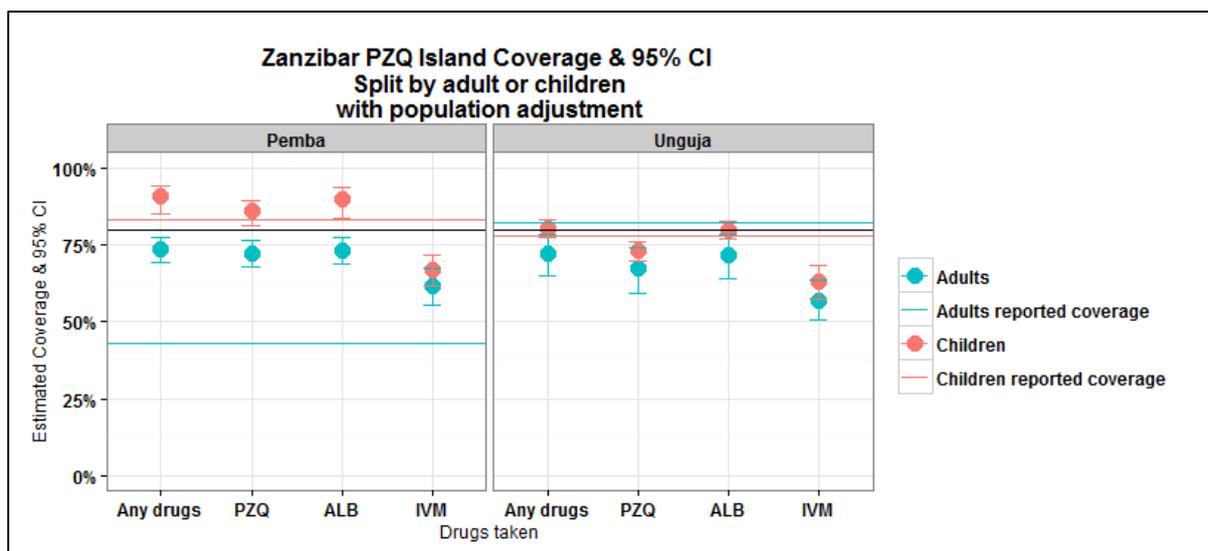
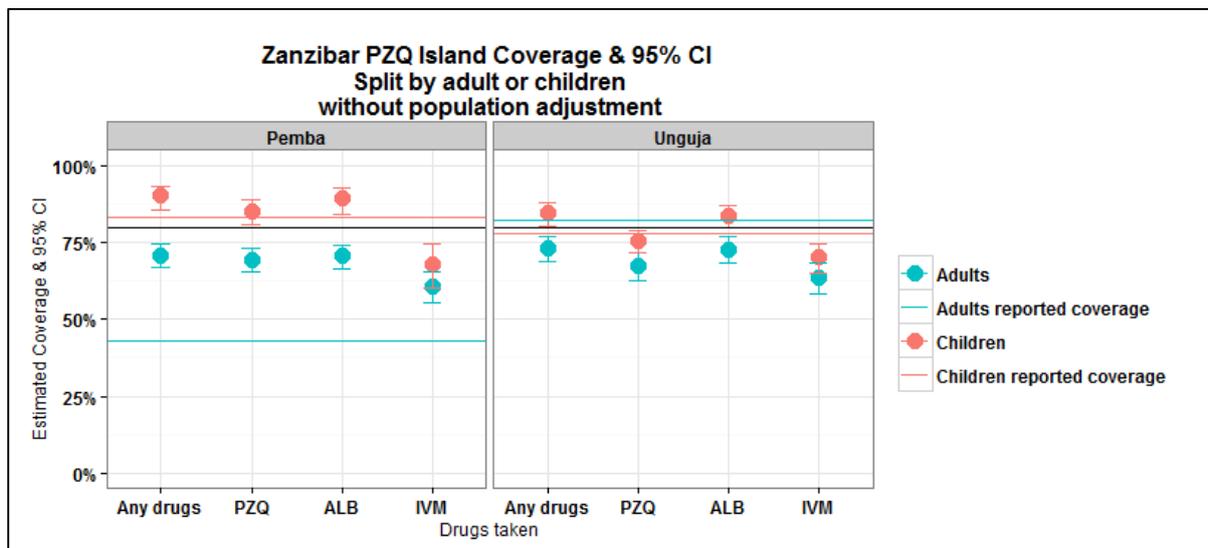


### 5.1.3 Age and gender distribution for interviewed adults by island



**NB.** A couple of responses in the "0" bin are due to "NA" values, i.e. the information wasn't recorded

## 5.2 Validated coverage rates



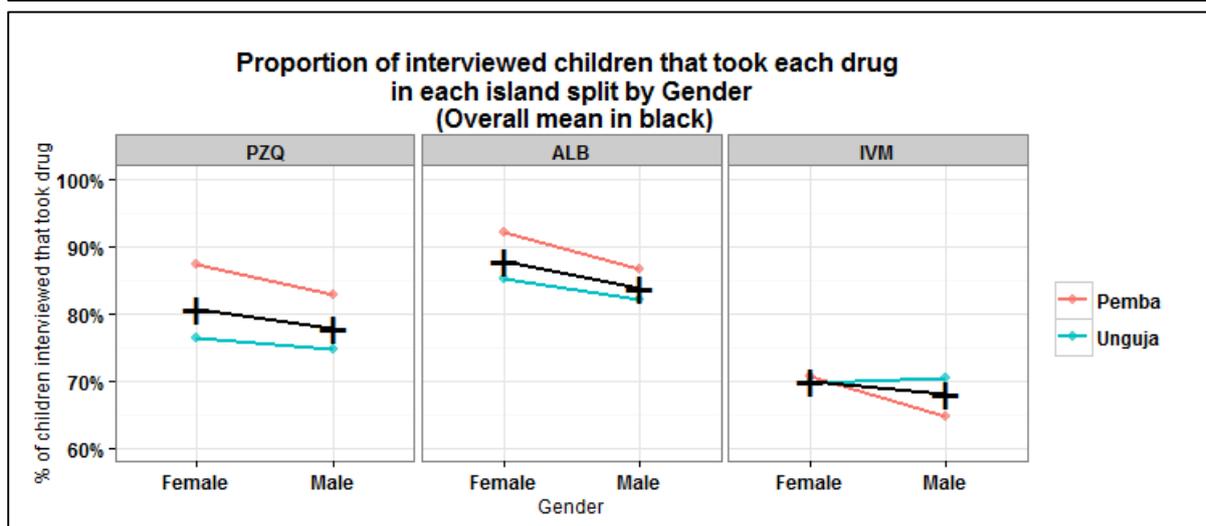
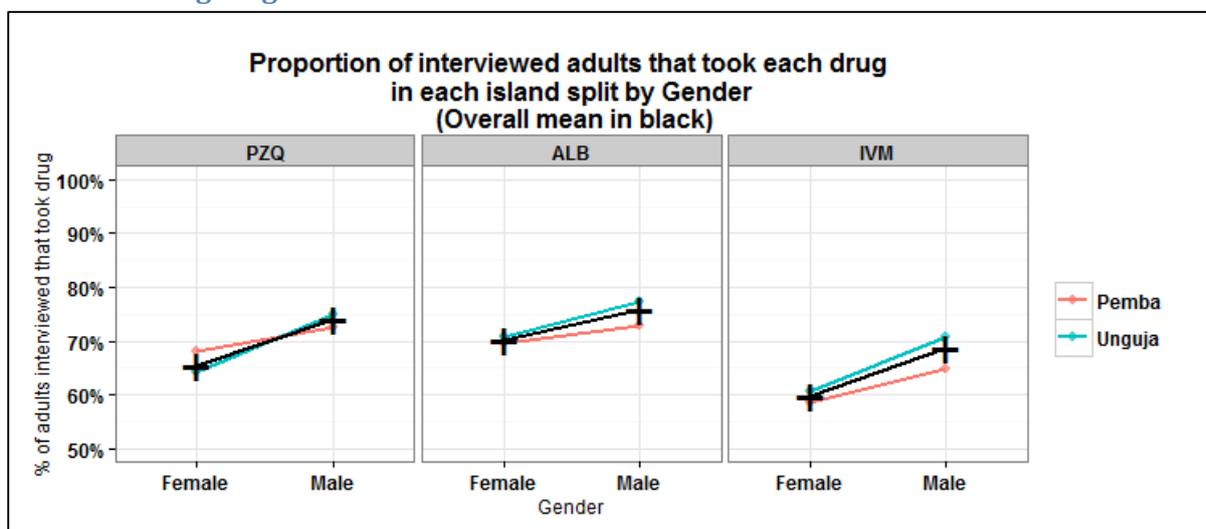
Looking at the validated and reported coverage rates, we can see that the Pemba NTD control programme under-reported coverage for both adults and children, though much more significantly for adults. On Unguja the reported coverage for children was fairly close to the findings of the coverage survey however coverage for adults appears to be over stated.

Coverage (%) with no population adjustment				
Pemba	Any drugs	PZQ	ALB	IVM
Adult	70.8(66.7,74.5)	69.4(65.5,73)	70.6(66.5,74.3)	60.5(55.3,65.5)
Children	90.2(85.8,93.3)	85.3(80.9,88.8)	89.4(84.3,93)	67.8(60.4,74.4)
Unguja				
Adult	73.2(68.8,77.1)	67.4(62.8,71.7)	72.8(68.4,76.8)	63.7(58.5,68.5)
Children	84.5(80.5,87.9)	75.4(71.5,79.0)	83.8(79.8,87)	70.1(65,74.8)

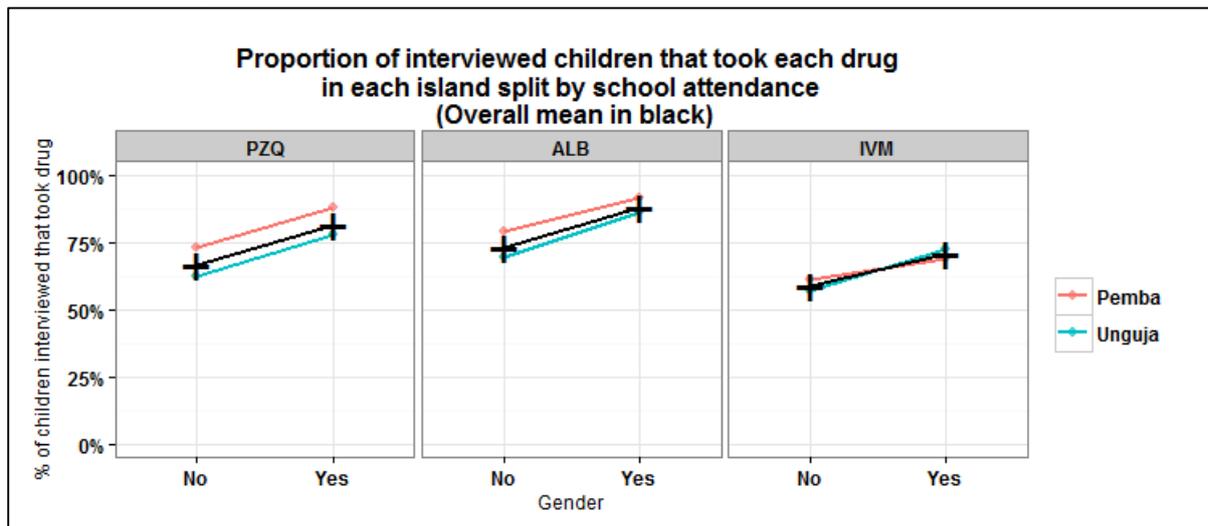
Coverage (%) with population adjustment				
Pemba	Any drugs	PZQ	ALB	IVM
Adult	73.7(69.4,77.5)	72.3(68,76.3)	73.3(69,77.2)	61.7(55.5,67.5)
Children	90.8(85.3,94.4)	86(81.5,89.5)	89.9(83.5,94)	67(61.8,71.9)
Unguja				
Adult	72.3(64.9,78.6)	67.2(59.4,74.1)	71.7(64.1,78.2)	57.1(50.4,63.5)
Children	80.4(77.3,83.3)	72.9(69.6,76)	80.0(76.8,82.8)	63.1(57.5,68.3)

The validated therapeutic coverage targets on both islands were 80% for all SAC (enrolled and not enrolled) and 80% for SCH for at risk adults. From above we can see that the programme on Pemba achieved this target for SAC but not adults and Unguja did not manage to reach the target for either group.

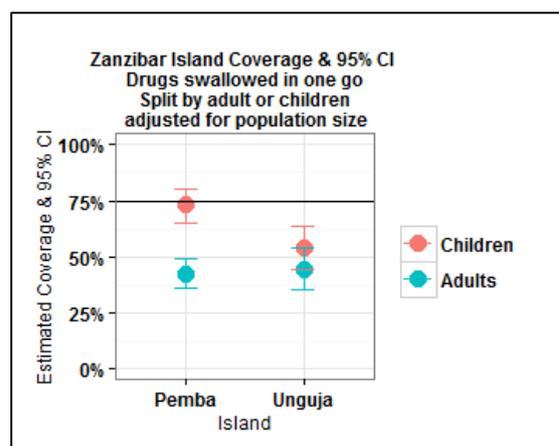
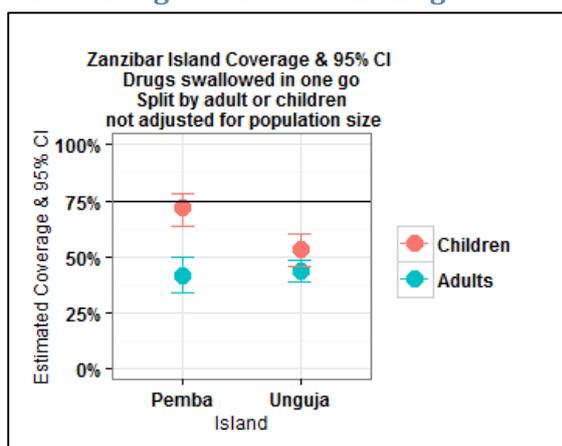
### 5.2.1 Coverage & gender



### 5.2.2 Coverage & school attendance



### 5.2.3 Drugs swallowed in one go



From the plots above we can see that only children on Pemba came close to achieving the WHO coverage target of 75% when considering if all the pills were swallowed in one go. This is probably due to the fact that children on Pemba received the drugs at school where they would have been supervised while taking them. On the basis of drugs swallowed in go, neither island managed to achieve their stated target of 80% validated therapeutic coverage for any of the target groups.

### 5.3 People who did not take the drugs

The two most significant reasons for people not taking the drugs were because they were not at home (or the community) when the distribution took place or because of pregnancy. IVM is not currently advised in pregnancy and therefore this demographic are excluded from all LF MDAs. As LF treatment will not continue, SCH treatment is recommended for pregnant and breastfeeding mothers therefore considerable effort will be required to include pregnant and breast-feeding mothers in the next MDA. No doubt this will be a challenge as attitudes towards the drugs and pregnancy may be difficult to change. Additionally many people reported IVM being unavailable during the MDA.

### 5.3.1 Specified reasons for not taking the drugs

Reason any drug not swallowed	N	Reason PZQ not swallowed	N
Absent from school or village	123	Does not know	31
Pregnant	100	Too young	29
Does not know	67	Other	21
There was no distribution	62	Bad smell or taste	20
Other	38	Pregnant	15
Breast feeding	35	Tablets too large	12
Drugs ran out	24	Fear of side effects	8
Fear of side effects	19	Feels healthy	7
Not invited to distribution	19	There was no distribution	6
Too sick	17	Drugs ran out	5
Refused to answer	14	Too old	5
Had not heard about MDA	13	Breast feeding	3
Too young	13	Rumours	3
Feels healthy	11	Refused to answer	2
Was at work	10	Too sick	2
Rumours	7	Absent from school or village	1
Had not eaten before distribution	4	Does not attend school	1
Too many tablets	4	Not invited to distribution	1
Too far from distribution point	3	Too many tablets	1
Too old	3	Was at works	1
Bad smell or taste	2	Question not answered	618
Does not attend school	2		
Question not answered	2		
Medicine does not work	1		

Reason ALB not swallowed	N
Pregnant	5
Does not know	4
Breast feeding	3
Other	3
Feels healthy	2
There was no distribution	2
Fear of side effects	1
Not invited to distribution	1
Question not answered	616

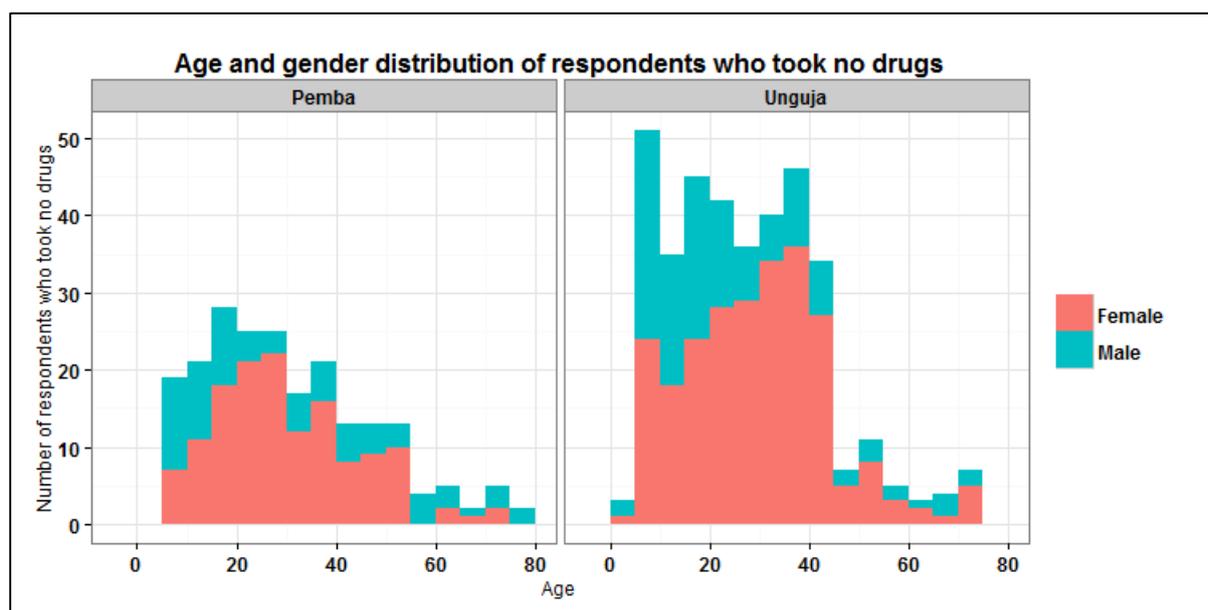
Reason IVM not swallowed	N
There was no distribution	127
Does not know	76
Too young	36
Drugs ran out	31
Other	17
Pregnant	15
Bad smell or taste	14
Fear of side effects	12
Feels healthy	9
Refused to answer	7
Breast feeding	3
Too old	3

Too sick	3
Rumours	2
Tablets too large	2
Medicine does not work	1
Not invited to distribution	1
Too many tablets	1
Was at work	1
Question not answered	628

### 5.3.2 Other reasons for not taking the drugs

Of particular interest to the programme are the people who responded that “there was no drug distribution”. Looking at the geographic distribution of these responses we see that the majority come from West District on Unguja (with the 45% of these coming from Kinuni). This is perhaps understandable given West is one of the most urban areas of Unguja with high population density.

Island	District	N
Pemba	Chake Chake	8
Pemba	Mkoani	2
Pemba	Wete	2
Unguja	Central	5
Unguja	North B	5
Unguja	West	40
<b>Total</b>		<b>62</b>



Looking at an age and gender distribution of those who did not take the drugs there is a peak for women of child-bearing age but no obvious differences otherwise.

## 5.4 People who did take the drugs

### 5.4.1 Did people know when and where the drug distribution would happen?

	Unguja	Pemba	Total
Knew when and where the MDA would take place	308	343	651
Knew when but not where	70	5	75
Knew where but not when	152	112	264
Did not know where or when	879	420	1299
Question not answered	5		5
	1414	880	2294
<b>Proportion who knew when and where</b>	<b>21.78%</b>	<b>38.98%</b>	<b>28.38%</b>

Sensitization seems to have been more effective on Pemba than on Unguja with a much larger proportion of people reporting that they were aware of where and when the MDA would take place.

### 5.4.2 How had people heard about the MDA

Of the people who reported taking the drugs during the MDA:

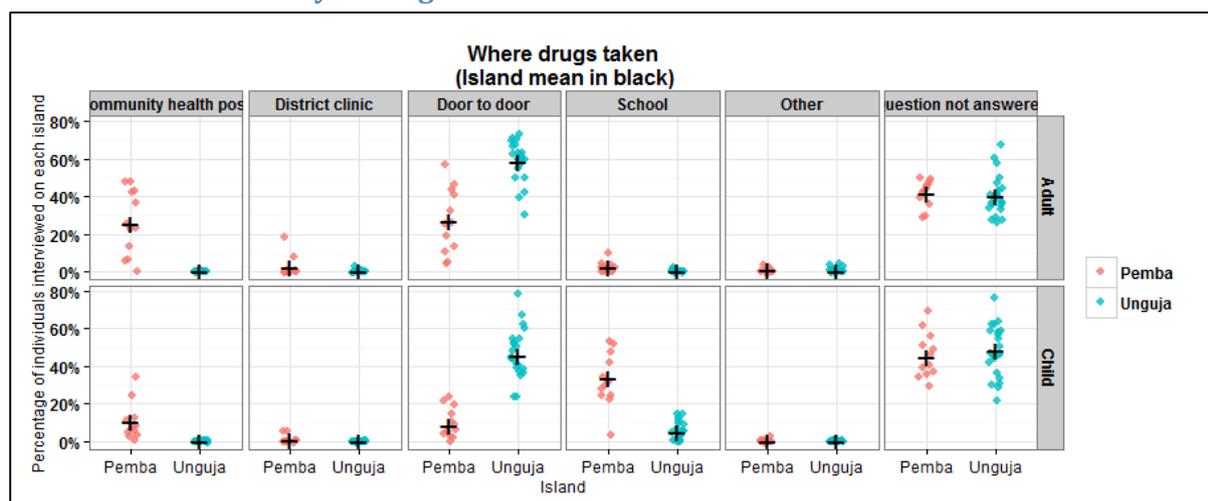
How had adults heard about the MDA	Unguja		Pemba	
Did not know when or where	359	47.05%	169	40.14%
Sheha (village leader)	245	32.11%	125	29.69%
Town crier	52	6.82%	94	22.33%
Radio	41	5.37%	5	1.19%
Friend, family or neighbour	29	3.80%	5	1.19%
Does not know	10	1.31%	1	0.24%
Health worker	7	0.92%	5	1.19%
Village meeting	6	0.79%	2	0.48%
Question not answered	4	0.52%		0.00%
Teacher	4	0.52%	14	3.33%
TV	3	0.39%	1	0.24%
Other	2	0.26%		0.00%
Traditional healer	1	0.13%		0.00%
	763		421	

How had children heard about the MDA	Unguja		Pemba	
Did not know when or where	520	79.88%	251	54.68%
Sheha (village leader)	50	7.68%	26	5.66%
Friend, family or neighbour	25	3.84%	7	1.53%
Teacher	18	2.76%	146	31.81%
Does not know	12	1.84%	3	0.65%
Town crier	9	1.38%	23	5.01%

Radio	8	1.23%	1	0.22%
Question not answered	3	0.46%		0.00%
Had not heard about distribution	2	0.31%	1	0.22%
Health worker	2	0.31%		0.00%
Other	1	0.15%		0.00%
Village meeting	1	0.15%		0.00%
IEC		0.00%	1	0.22%
	651		459	

On both islands a larger proportion of adults reported being aware of the MDA than children. The difference was smaller for Pemba where sensitization efforts via school teachers seems to have been effective. The most effective forms of communication about the MDA appear to be through the Shehas (village leaders), town criers (for Pemba) and through teachers (again for Pemba).

### 5.4.3 Mode of delivery of drug distribution



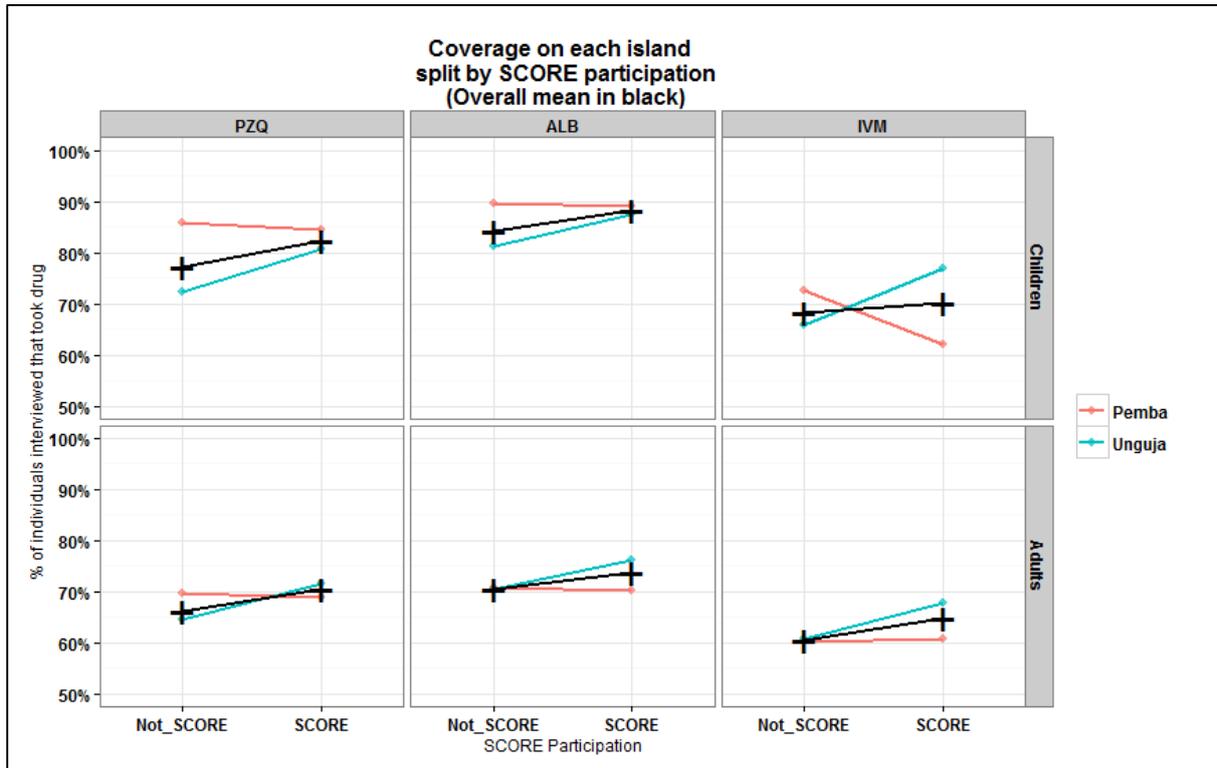
**NB.** Data used from the question “Where was PZQ taken” as this response had the least number of “Question not answered” responses.

For adults we can see that on Pemba there were similar numbers for people who received the treatment at a community health post and at home (door to door). On Unguja, delivery was predominantly door to door.

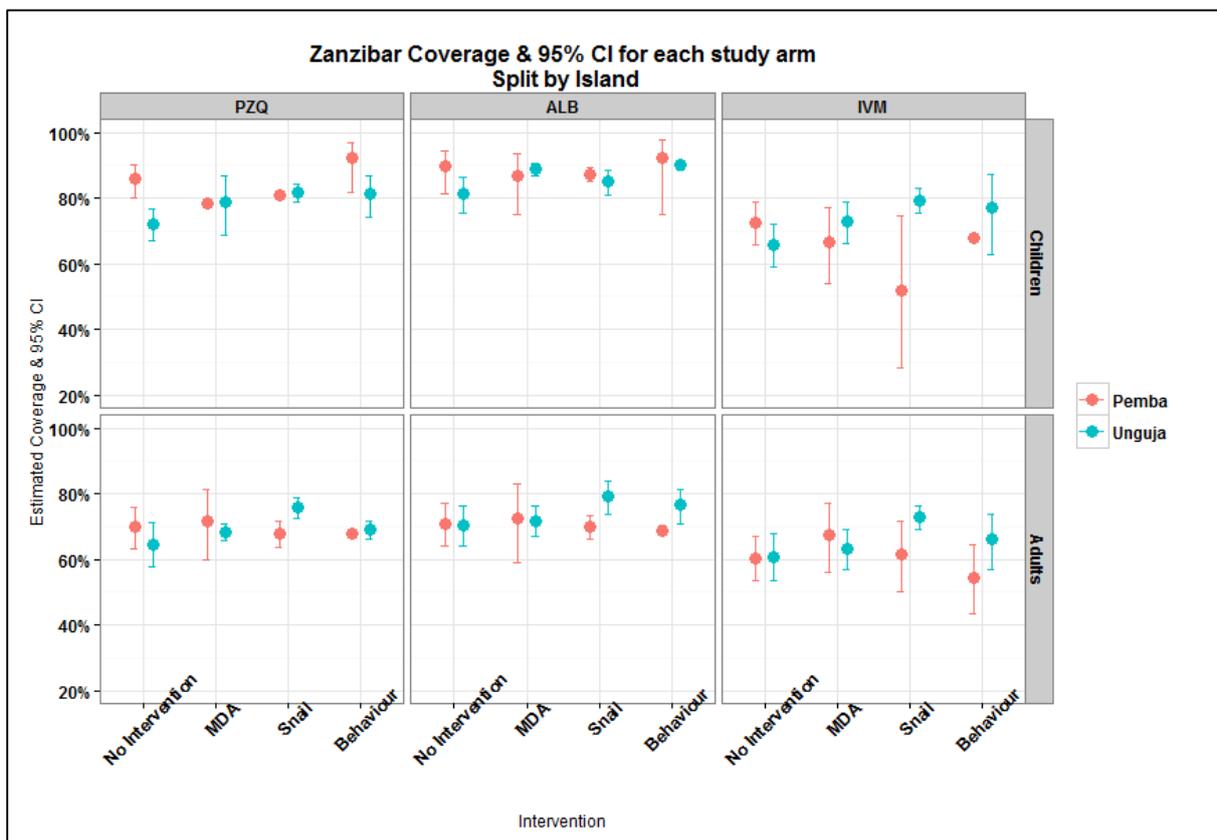
For children, on Pemba the majority of children received the drugs at school while on Unguja it was door to door. This is likely why children on Pemba were much more likely to swallow all the drugs in one go than any other group on Zanzibar as treatment within schools is directly observed, i.e. the teachers issue and confirm that all drugs have been swallowed (see below).

## 5.5 Additional country-specific analyses

### 5.5.1 Coverage split by SCORE study arms



Considering the coverage achieved by each study arm of the study (and non-study arms):



		Coverage (%)			
<b>Pemba</b>		<b>Any drugs</b>	<b>PZQ</b>	<b>ALB</b>	<b>IVM</b>
<b>Adults</b>	No Intervention	70.9(64.0,76.9)	69.8(63.1,75.8)	70.9(64.0,76.9)	60.3(53.5,66.8)
	MDA only	72.6(58.8,83.2)	71.6(59.6,81.1)	72.6(58.8,83.2)	67.4(56.1,76.9)
	MDA+Snail	69.8(65.9,73.4)	67.7(63.5,71.6)	69.8(65.9,73.4)	61.5(50.3,71.6)
	MDA+Behaviour	69.7(69.5,70.0)	67.9(67.7,68.1)	68.8(67.5,70.1)	54.1(43.4,64.5)
		)	)	)	)
<b>Children</b>	No Intervention	90.8(84.0,94.9)	86.0(80.2,90.3)	89.7(81.4,94.5)	72.7(65.7,78.7)
	MDA only	87.0(75.0,93.7)	78.3(77.5,79.0)	87.0(75.0,93.7)	66.7(54.0,77.3)
	MDA+Snail	87.3(85.3,89.1)	81.0(80.4,81.6)	87.3(85.3,89.1)	51.9(28.2,74.7)
	MDA+Behaviour	93.3(79.3,98.1)	92.2(82.0,96.9)	92.2(74.9,97.9)	67.8(66.9,68.7)
		)	)	)	)
<b>Unguja</b>					
<b>Adults</b>	No Intervention	70.9(64.3,76.7)	64.6(57.8,71.0)	70.4(63.8,76.2)	60.8(53.3,67.8)
	MDA only	71.8(67.2,76.0)	68.4(65.8,70.9)	71.8(67.2,76.0)	63.3(57.1,69.0)
	MDA+Snail	79.9(74.3,84.5)	75.7(72.6,78.6)	79.3(73.7,84.0)	72.8(69.1,76.2)
	MDA+Behaviour	76.5(70.8,81.4)	68.9(66.2,71.6)	76.5(70.8,81.4)	65.9(57.0,73.8)
		)	)	)	)
<b>Children</b>	No Intervention	82.2(76.1,87.0)	72.3(67.2,76.8)	81.4(75.3,86.2)	65.8(59.0,72.1)
	MDA only	88.9(86.8,90.7)	79.0(68.6,86.7)	88.9(86.8,90.7)	72.8(66.0,78.8)
	MDA+Snail	86.8(84.0,89.1)	81.6(78.8,84.2)	85.3(81.1,88.7)	79.4(75.5,82.9)
	MDA+Behaviour	91.4(87.9,94.0)	81.4(74.2,87.0)	90.0(88.6,91.3)	77.1(62.7,87.1)
		)	)	)	)

A mixed effects model was fitted to the data with covariates Age, Gender, Intervention and Island and random effects for Shehia and Household (the clusters for the survey), with “Took PZQ” as the response variable. There were no statistically significant differences ( $p < 0.05$ ) for coverage between the study arms (and non-study Shehias). The only significant factors were Gender (Male) ( $p = 0.0028$ ), males were slightly more likely than females to receive PZQ and Island (Unguja) ( $p = 0.0364$ ), people on Unguja were less likely to receive PZQ than on Pemba.

## 6 Discussion

### 6.1 Coverage results

22 shehias were sampled on Unguja and 12 on Pemba in February 2015. Between 23 and 33 households were interviewed per shehia, with between 36 and 61 adults interviewed per shehia and between 14 and 56 children interviewed per shehia. The number of SAC that did not attend school ranged from 1 to 13 per shehia. Prior to the survey being conducted training of 12 interviewers took place over four days. Due to the size of the sample the survey was completed in two weeks and was finished in the allocated time.

The results from the coverage survey will guide the programme to make the necessary adjustments required to programme activities to ensure maximum coverage at each MDA and thus in achieving elimination of SCH. Prior to 2012, historical annual treatment for SCH had reduced prevalence levels to under 10% but had plateaued with no further declines observed. The MoH therefore strategically decided to intensify treatment to twice yearly in the hope to reduce prevalence still further to below elimination thresholds. However, this can only be achieved if consistently high coverage is observed during treatment rounds, and particularly in those areas where prevalence has stabilised yet transmission rates remain high.

The results of this survey indicate that validated coverage rates are not reaching the 80% coverage target across the population. Only on Pemba were 80% SAC reached through school-based drug distribution, indicating that the best way to achieve a high coverage in this target population in Zanzibar is likely through the school platform. Distribution methods are therefore an important factor in determining the levels of coverage achievable during MDAs.

There was no observable differences in gender access to treatment, although there was a trend for for more adult males to receive treatment in contrast to more girls receiving treatment in the SAC population.

Improvements to social mobilisation strategies will be key to ensuring high coverage in future treatment rounds. The issue of access to treatment by pregnant and lactating women will be challenging as a result of the previous exclusion criteria during LF treatments. Increased education on the benefits of SCH treatment to both the mother and child will need to be included in campaigns going forward. Other reasons identified as barriers to treatment included absenteeism during treatment rounds, drugs shortages, fear of side effects and lack of awareness of the MDA. All such issues can be addressed by the central team in terms of logistics, for example expanding the duration of the campaign to provide more opportunity for access to treatment, ensuring the social mobilisation activities include a greater component on understanding treatment side effects etc. All results will be beneficial for future planning.

One other key result from the surveys is the extent to which drugs are taken in one go. Through the school based approach, this can be improved by teachers directly observing treatment, which is the norm on this platform. This is more difficult for community based MDA whereby the balance must be taken between the practicality of a community drug distributor remaining at a residence to administer treatment to all household occupants versus reaching the maximum number of households in the

village. Improvements in educating on the importance of taking the correct dosage can be made through training of CDDs prior to MDA.

The results did observe that there was no difference between shehias included in the current research efforts to reduce SCH to elimination levels. This is likely due to the inclusion of MDA in all arms of the study therefore there is consistency in treatment delivery. One potential factor which will need to be explored further is the influence of urban environments in MDA coverage. It is clear that coverage was low in those densely populated areas which may be a result of lack of awareness of the programme, or little acknowledgement of the extent of the problem in these areas.

Future treatments in Zanzibar are being planned to include both school-based MDA expanded to include the religious schools in the community which have high attendance rates. Community MDA will also play a significant role in reaching the adult populations and further discussion is required on the best method to use to reach this demographic.

## **6.2 Learnings for the future**

Please refer to trip report by JW and ND for more a more detailed review of the survey learnings. Below is a brief summary of the main points.

### **6.2.1 Background information**

In general the survey was very successful, the initial reservations we had prior to arriving in country due to lack of information were resolved very quickly on arrival in Zanzibar.

It is important that the PM or someone with knowledge of the country and experience with working with the in country staff leads the program. In this case the set up worked well, however if SCI staff had more knowledge on the MDA set up it would have made the process much easier.

Having two SCI staff present for training and activity was extremely useful as a lot of supervision was needed throughout the training and survey.

### **6.2.2 Training**

On reflection more time should have been allocated to training initially, particularly on using the phones. However, the team were extremely enthusiastic and were happy to add on an additional days training over the weekend prior to the survey beginning.

First impressions of the interviewers during training and which team members may be strong did not hold true by the end of the training. We would suggest that more interviewers than needed are trained and then those who performed best during the pilot should be used for the survey.

Additional support is needed from a social scientist in how to carry out the interviews to ensure we are receiving unbiased information.

### **6.2.3 Survey**

It was very apparent that the SCI team members needed to be there for the first few days of the survey to correct the errors in the sampling at villages as well as correcting deviations from the protocol.

More emphasis on team leader roles should have been made. Because JW and ND were present to review the first few days of the survey they did not take the lead in supervising the teams and talking

through corrections on a daily basis. After a week of the survey the teams were very competent and performing well.

If it is apparent that any team member has a superior method in conducting the interviews they should present to the group as early as possibly to improve the teams efficiency. This was done on the 4<sup>th</sup> day of the survey as one team member had excellent organisation when approaching a household.

Ensuring that the teams were not focussed on specific areas on reflection was extremely appropriate for this survey as it ensured no interview bias in results from geographical areas. This should be followed in all future surveys.

## **7 Appendix I: Associated documentation**

### **7.1 Historical documentation**

S:\SCI - post 3 June 2011\Current  
programmes\DFID\ICOSA\COUNTRIES\Zanzibar\M&E\Performance\Coverage survey 2015

### **7.2 Data cleaning and analysis files**

S:\SCI - post 3 June 2011\Current  
programmes\DFID\ICOSA\COUNTRIES\Zanzibar\M&E\Performance\Coverage survey 2015\Data &  
results\2 Data cleaning

“Zanzibar coverage survey 2015 data cleaning notes 2015-04-14.xlsx”

S:\SCI - post 3 June 2011\Current  
programmes\DFID\ICOSA\COUNTRIES\Zanzibar\M&E\Performance\Coverage survey 2015\Data &  
results\4 Data analysis

Relevant R files being:

- “1 Shehia Questions 2015-06-04”
- “2 Household Questions 2015-06-08”
- “3 Adult Questions Pemba 2015-06-09”
- “3 Adult Questions Unguja 2015-06-11”
- “3 Child Questions Pemba 2015-06-11”
- “3 Child Questions Unguja 2015-06-11”
- “4 Island level Adult Questions 2015-06-15”
- “4 Island level Adult Questions 2015-06-15”
- “5 Zanzibar Coverage 2015-06-16”

### **7.3 Other documentation**

Provide locations and links for any other relevant documentation

## 8 Appendix II: Statistical Methodology

Validated coverage rate in each sub-county was calculated using the 'survey' package in R. Each sub-county was analysed separately using the 'logit' method to account for the binary structure of the data, and a term for village and household to account for clustering at these levels.

We approached the calculation of validated coverage in two ways:

1. Firstly, we made no adjustment for the proportion of villages sampled in each sub-county, the proportion of households sampled in each village or the proportion of children sampled in each household.
2. We then re-ran the analysis adjusting for these three factors and both methods are presented above. The adjustments are expected to change both the validated coverage estimate (primarily because large villages will contribute more towards the calculation than smaller villages) and the confidence intervals associated with the validated coverage estimate.

The association of coverage with gender, school attendance and implementer was assessed using a binomial mixed model, with random effects of village and households and fixed effects of sub-county (as a factor) and either gender, whether or not the interviewed child attended school or implementer. The significance of the specific effect was determined by using log-likelihood ratio tests on models with and without the specific effect term. The graphs show the raw mean coverage in each sub-county and overall.