



# Final Results from NetWorks Care and Repair Studies in Nigeria and Uganda

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1

RESEARCH

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# What happens to lost nets: a multi-country analysis of reasons for LLIN attrition using 14 household surveys in four countries

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## Abstract

**Background:** While significant focus has been given to net distribution, little is known about what is done with nets that leave a household, either to be used by others or when they are discarded. To better understand the magnitude of sharing LLIN between households and patterns of discarding LLIN, the present study pools data from 14 post-campaign surveys to draw larger conclusions about the fate of nets that leave households.

**Methods:** Data from 14 sub-national post-campaign surveys conducted in Ghana, Senegal, Nigeria (10 states), and Uganda between 2009 and 2012 were pooled. Survey design and data collection methods were similar across surveys. The timing of surveys ranged from 2–16 months following their respective mass LLIN distributions.

**Results:** Among the 14 surveys a total of 14,196 households reported owning 25,447 nets of any kind, of which 23,955 (94%) were LLINs. In addition, a total of 4,102 nets were reported to have left the households in the sample: 63% were discarded, and 34% were given away. Only 255 of the discarded nets were reported used for other purposes, representing less than 1% of the total sample of nets. The majority (62.5%) of nets given

# Net repurposing – survey results

- 14 household surveys from Ghana, Senegal, Nigeria and Uganda - ~14,000 households
- 29,551 nets in total, of which 3,947 were 'lost' for known reasons
- Most 'lost' nets were discarded (63%) vs given away (34%)
- Discarded nets were much older (median age 2.0 years), and generally torn
- People gave away nets to family members (2/3) and friends (1/3); this occurred primarily immediately following a mass distribution (median age 3 months).
  - About 5% of nets were redistributed overall
- Of the repurposed nets (<1% overall), the majority were already considered too torn, indicating they had already served out their useful life for malaria prevention.

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# Impact of a behaviour change intervention on long-lasting insecticidal net care and repair behaviour and net condition in Nasarawa State, Nigeria

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## Abstract

**Background:** While some data on net durability have been accumulating in recent years, including formative qualitative research on attitudes towards net care and repair, no data are available on how the durability of a net is influenced by behaviour of net maintenance, care and repair, and whether behavioural change interventions (BCC) could substantially impact on the average useful life of the net.

**Methods:** The study used an intervention-control design with before-after assessment through repeated cross-sectional household surveys with two-stage cluster sampling following Nasarawa State's December 2010 mass campaign. All campaign nets were 100-denier polyester, long-lasting insecticidal nets (LLIN). Baseline, midline, and endline surveys occurred at one-year intervals, in March 2012, March 2013, and April 2014, respectively. Outcome measures were the proportion of confirmed campaign nets with observed repairs, and the proportion in ser

# Overview

- Between 2012 and 2014, NetWorks tested this research hypothesis in two studies in Nigeria (Nasarawa State) and Uganda:
  
- Can a BCC intervention improve care and repair behaviors for LLINs? If so, does this have any effect on LLIN lifespan?

# Interventions were largely similar

## Nigeria

- Local Radio
- Community gatherings
- Market Storms
- House to house visits
- Song contest

## Uganda

- Local Radio
- School sewing activities
- Community gatherings

# Study design largely similar – control and intervention sites

## Nigeria

- Mass Campaign (Dec 2010)
- Baseline (Mar 2012)
- Midline (Mar 2013)
- Endline (Apr 2014)
  
- n=600 households at baseline, 770 at endline
- Nets were 3.3 years old at endline

## Uganda

- Mass Campaign (Sep 2012)
- Baseline (Dec 2012)
- Midline Qualitative (Feb 2013)
- Endline (May/June 2014)
  
- n=870 households at endline
- Nets were 1.5 years old at endline

# Challenges

## Nigeria

- Local radio station, which did not reach into the control LGA in 2012, boosted its signal strength during Phase 2 of the BCC intervention
- Significant exposure to radio messages resulted in the control LGA
- -> **combined control and intervention for analysis by exposure**

## Uganda

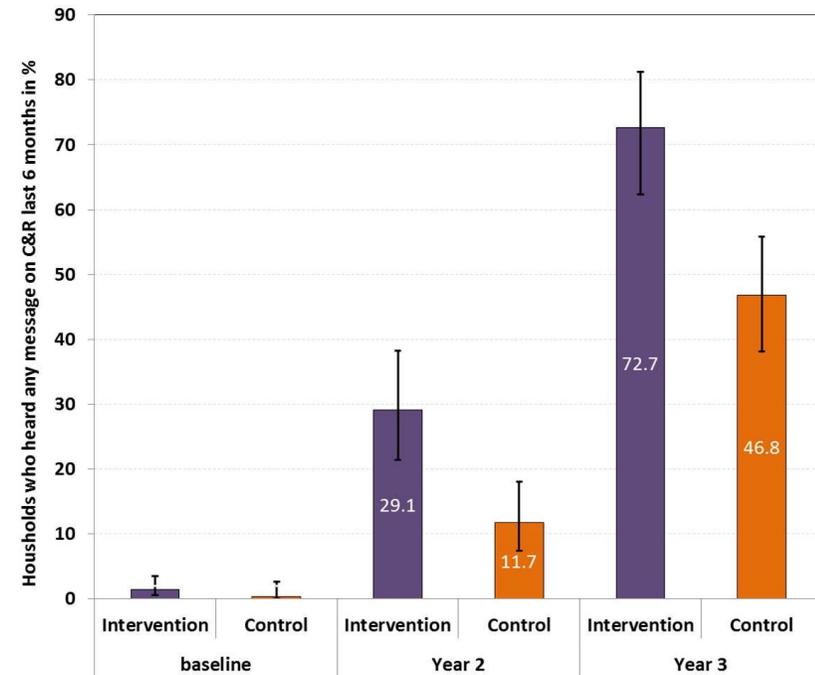
- A 95/5 mix of Permanet and Olyset were distributed in the intervention district, but only Olyset were distributed in the control district.
- Significant difference in net condition between brands
- -> **analysed random Permanet sample only – e.g. intervention district only**

# Methods

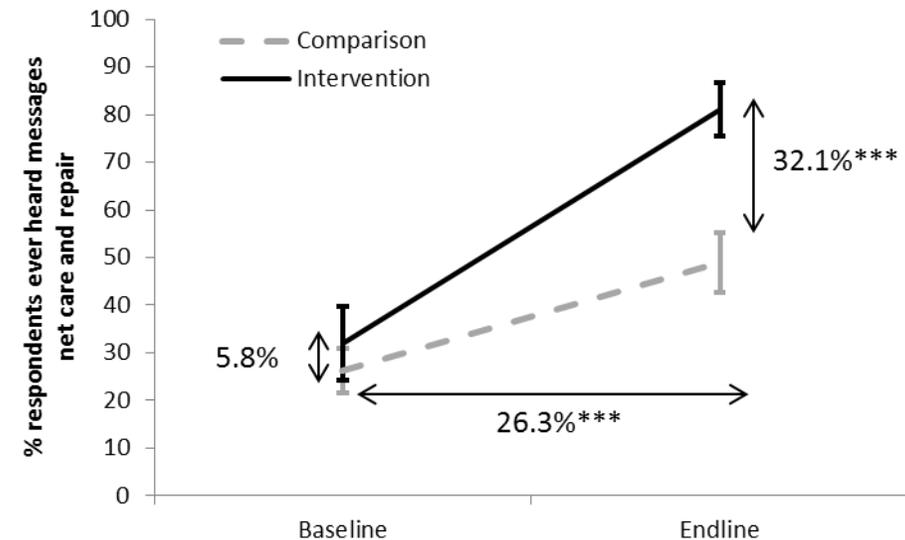
- Only households that received a net from the mass campaign were eligible for interview
- Campaign nets in the household were assessed for holes using the standard hole index training guidelines and net roster
- Household survey questionnaire was administered to head of household, spouse, or other adult
  - Background characteristics
  - Exposure to BCC intervention
  - Attitudes and behaviors around net care and repair
- No household roster (no net use)

# Results – exposure to the BCC intervention increased throughout both study sites

## Nigeria

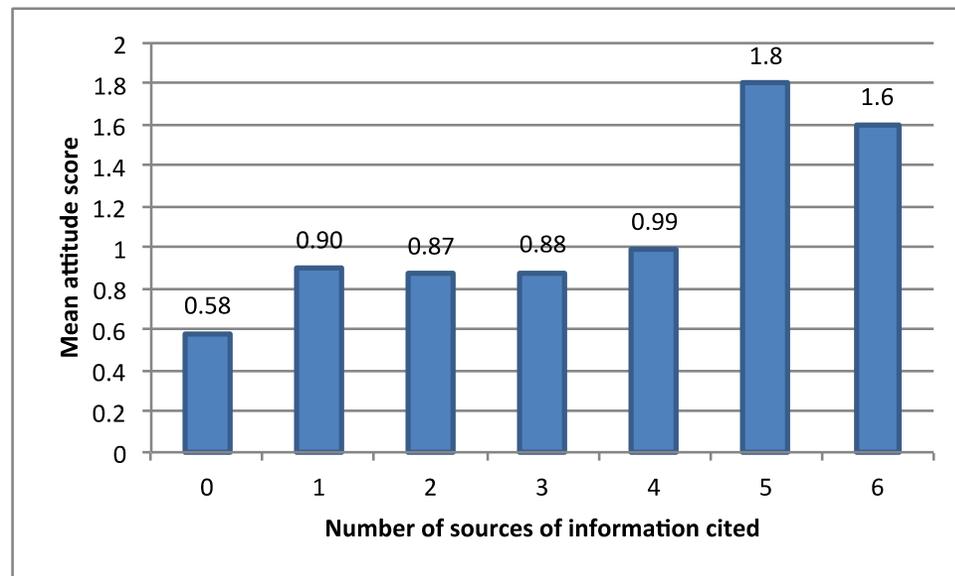


## Uganda

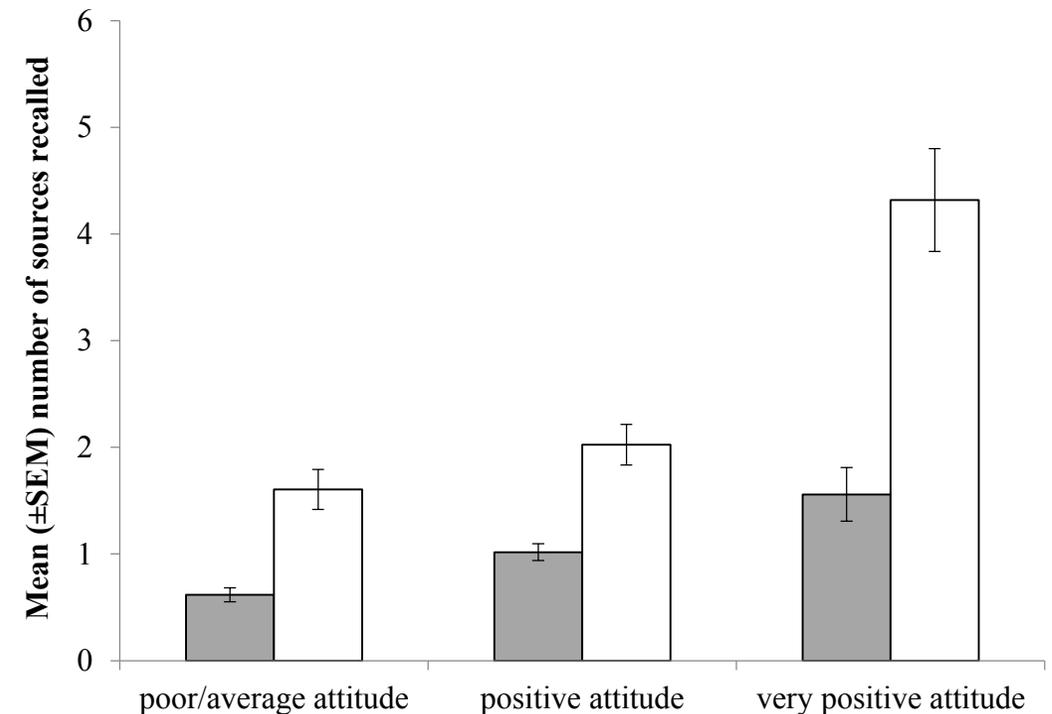


# Results – exposure dose was positively associated with attitude score in both studies

## Nigeria

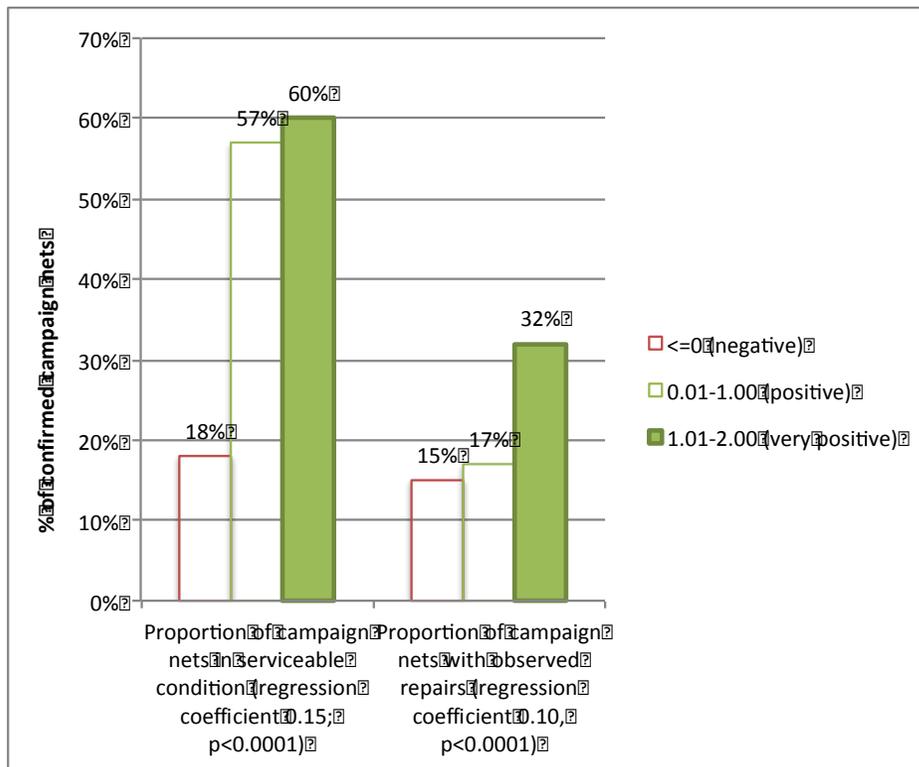


## Uganda

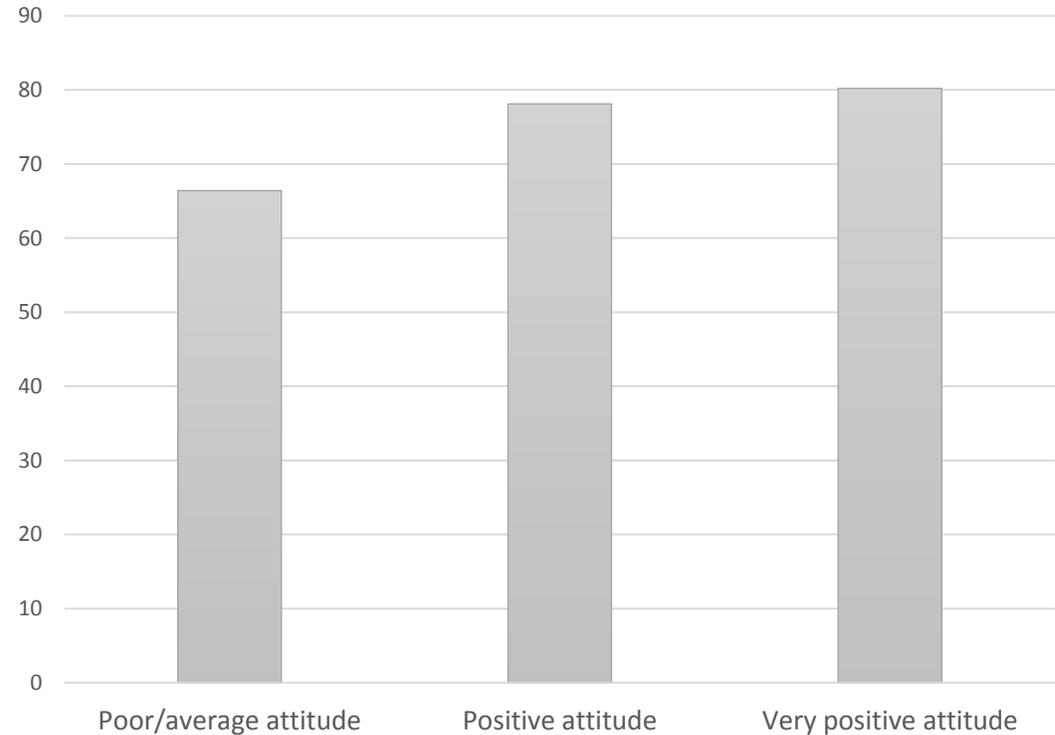


# Results – attitudes are associated with net condition

## Nigeria - % of nets in serviceable condition (left)



## Uganda - % of nets in serviceable condition (Permanet only)



p=-0.033

# Results - Nigeria Multivariate Model

Confirmed campaign net is in serviceable condition	Odds Ratio	95% CI	p
Positive attitude towards care and repair	6.17	2.19-17.36	0.001
Net has any observed repair	0.36	0.18-0.73	0.005
Net is tied up	2.70	1.50-4.86	0.001
Dose			
1 source	4.00	2.30-6.94	0.000
2 sources	2.67	1.35-5.31	0.006
3+ sources	9.34	3.75-23.29	0.000
# of children under five	0.82	0.69-0.97	0.022
Poorest Quintile	0.47	0.24-0.95	0.035
Respondent is the spouse	1.62	1.00-2.62	0.05
Intervention LGA	0.48	0.24-0.97	0.04

# Results – Uganda Multivariate Model

Confirmed campaign net is in serviceable condition (Permanet only)	Odds Ratio	95% CI	p
Positive attitude towards care and repair	1.72	1.01-2.93	0.047
Very Positive	2.11	1.21-3.65	0.009
Net has any observed repair	0.33	0.23-0.49	<0.001
<del>Net is tied up</del>			
<del>Dose</del>			
<del># of children under five</del>			
Wealth Quintile (ref poorest)			
Second	2.29	1.46-3.60	P=0.001
Third	2.61	1.46-4.67	P=0.002
Fourth	1.78	1.05-3.02	P=0.033
Highest	3.17	1.59-6.31	P=0.002

# Results - differences

## Nigeria

- Increasing damage with more children under five
- Nets observed hanging up were in better condition

## Uganda (Permanet-only)

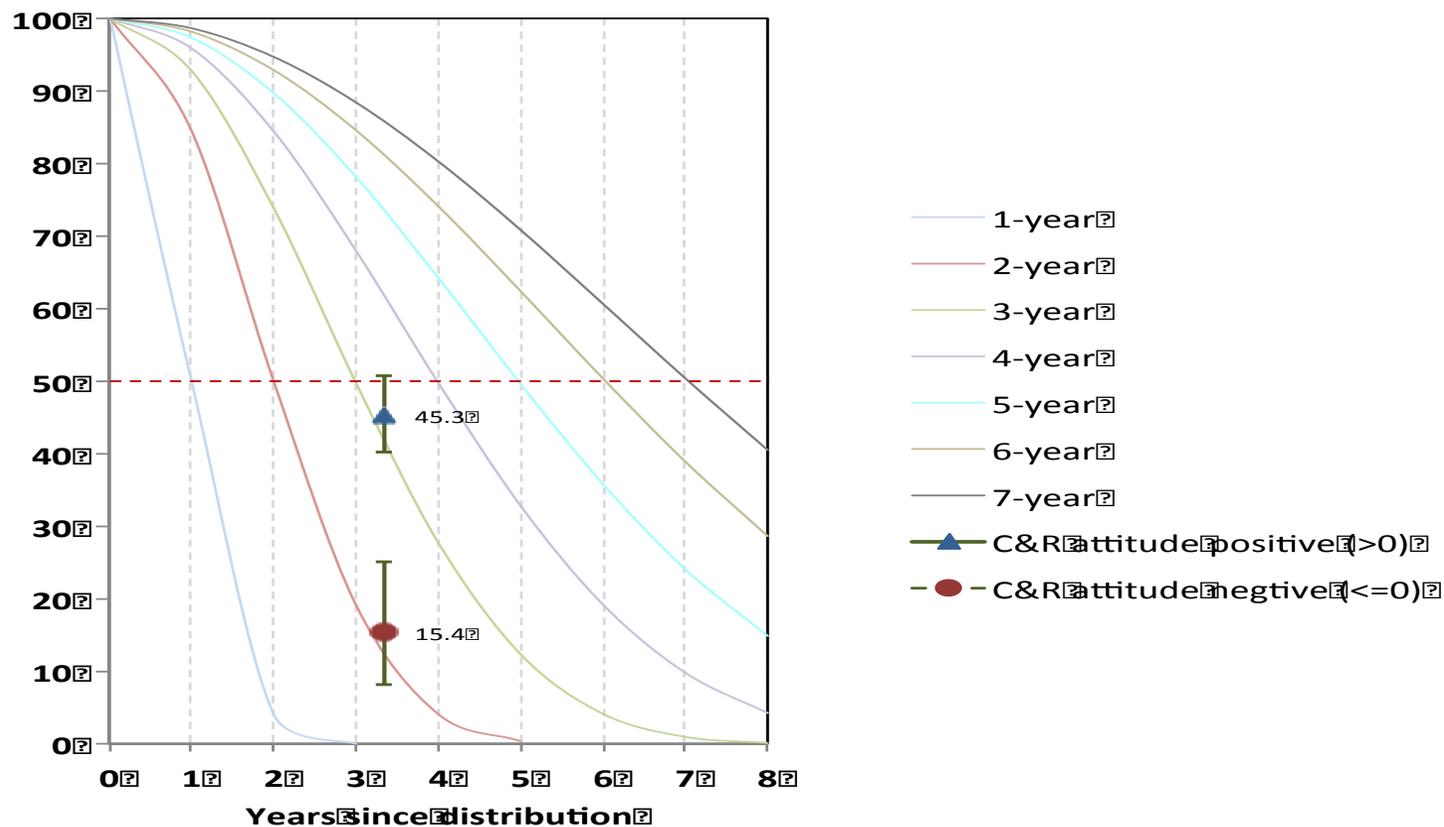
- No association (yet) of damage with presence of children under five
- Nets observed hanging up were not in significantly better condition

# Results – common to both studies

- Net survival was worse among the poorest households
- Signs of repair are correlated with more damaged nets –
  - repairs are being done very late, and do not change the net's pHI category
- Exposure to the BCC intervention remained a significant predictor of net condition in the multivariate regression models (Nigeria combined; Uganda intervention district only)

# Results – implications for median lifespan

## Nigeria – 3.3 years post distribution



# Implications for Programming

- Care and repair messages should become standard part of LLIN BCC strategies
- Primary focus on the preventive behaviors
  - Tying nets up during the day
  - Keeping small children away from the net
  - Not storing net where rats/kids can get at it
- Radio may be enough if budgets are limited
  - Exposure to radio-only in Nigeria still had a significant effect on net condition in the multivariate
- Washing frequencies vary, and impact on net condition does too
- The poorest households need the most assistance
- Attitudes are important
- BCC and improved behaviors cannot 'save' all nets – textile itself is also important

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