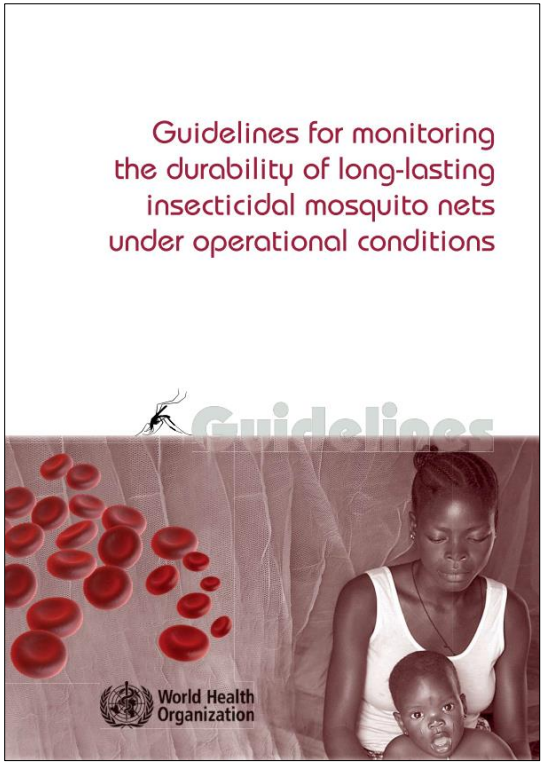
Updates on ABCDR study in Tanzania

10th RBM-VCWG Meeting
Geneva, Switzerland
29th January, 2015

Lena M. Lorenz, ABCDR co-PI & Study Coordinator

Study Overview

- 8 districts in Tanzania – 3,420 households in 76 villages
- Retrospective study: Durability of Olyset campaign nets
- Prospective study:
  - Olyset
  - PermaNet2.0
  - Netprotect
- Compare durability over 3 years
- Attrition, physical degradation, bio-efficacy & chemical content



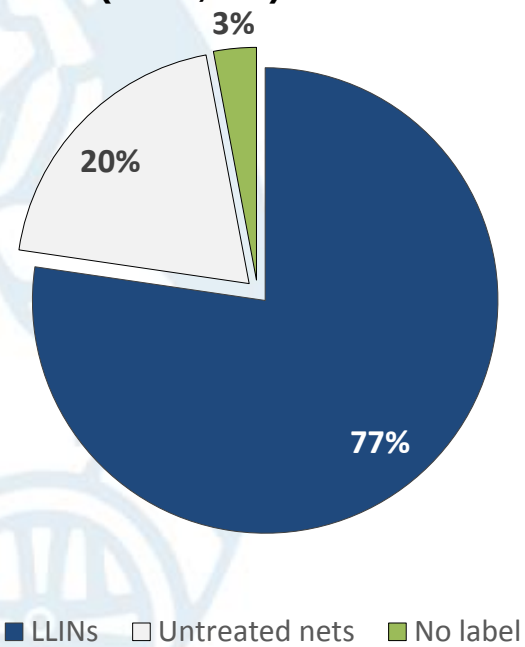
Lorenz *et al* (2014) BMC Public Health **14:**1266.

Net Landscape Tanzania

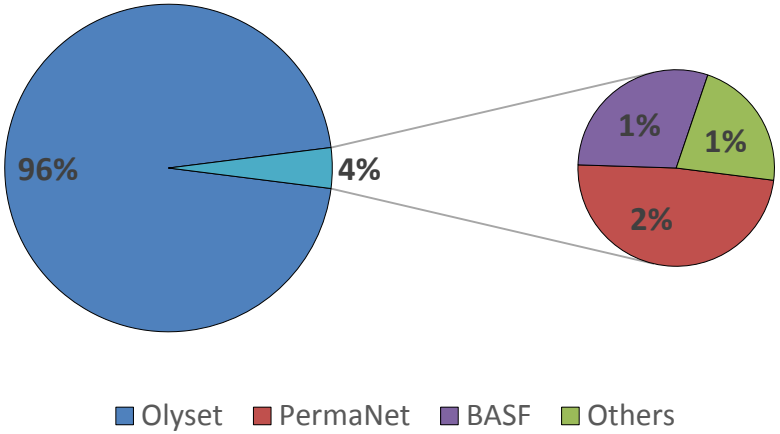
LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Data from return net database
Oct – Dec 2013

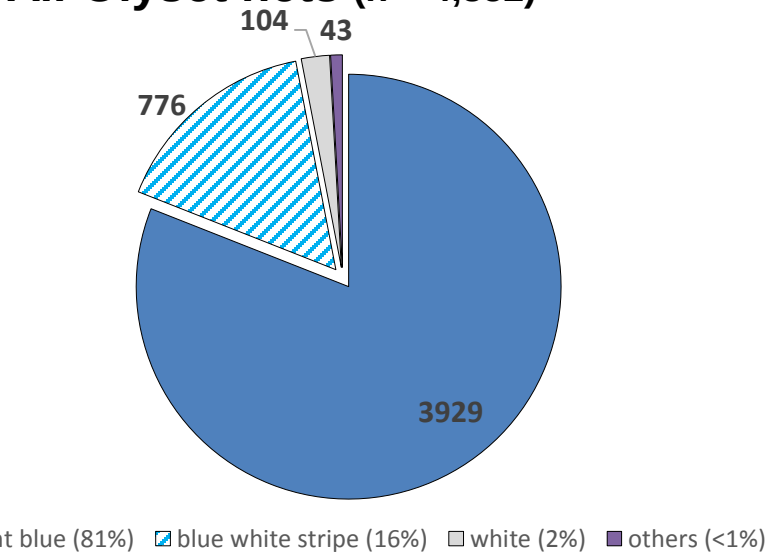
All collected nets (n = 6,537)



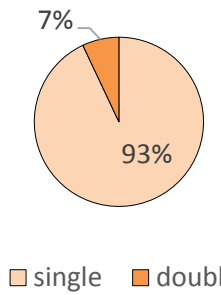
All LLINs (n = 5,054)



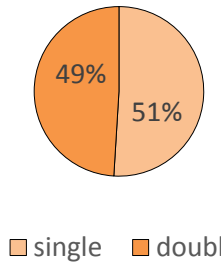
All Olyset nets (n = 4,852)



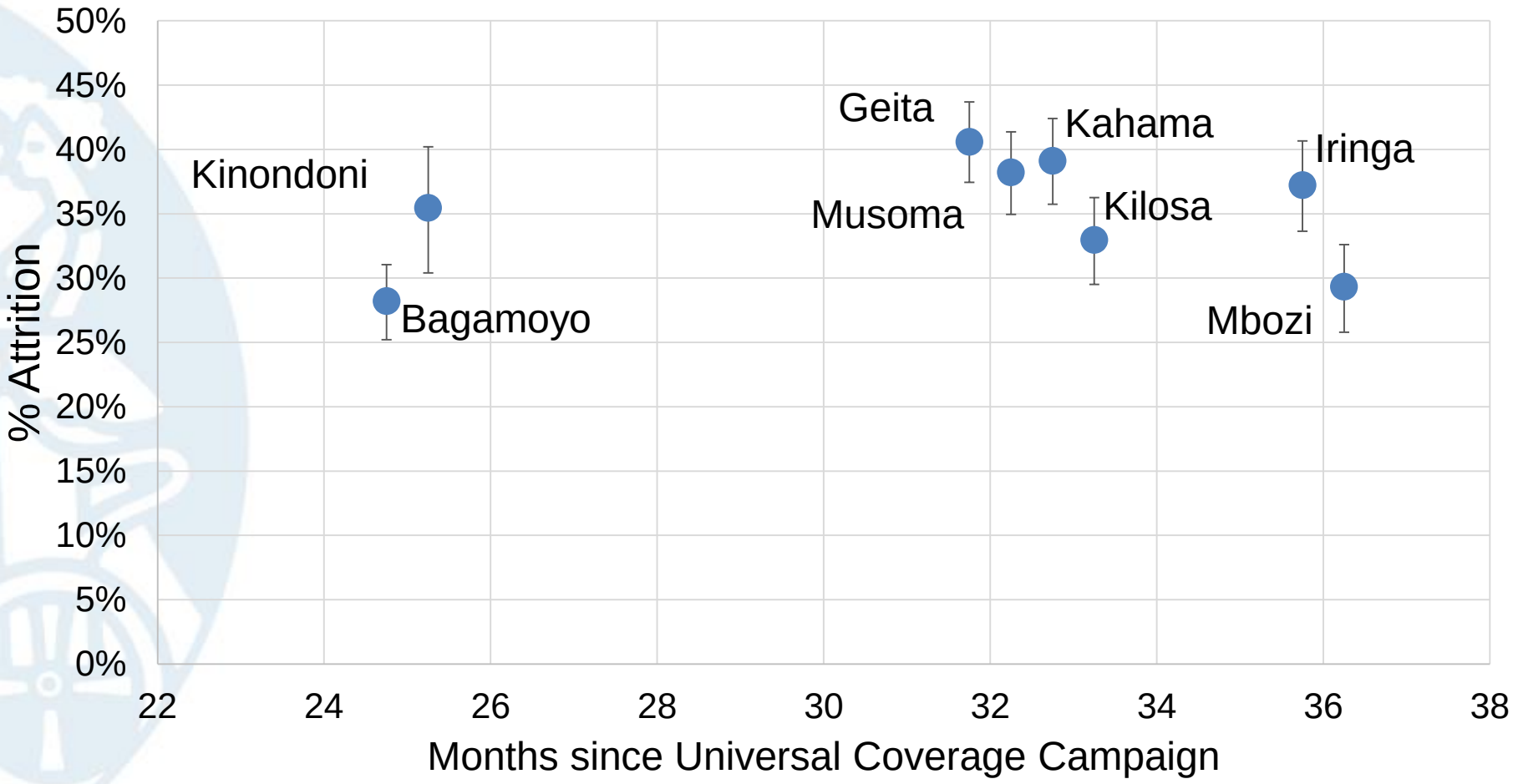
Olyset net sizes



Untreated net sizes



Attrition of campaign nets



$$\text{Attrition} = \frac{number\ of\ light-blue\ Olyset\ nets\ collected}{reported\ number\ of\ campaign\ nets\ received}$$

➔ **Add unique identifiers to distinguish nets for monitoring– labels fall off**

Bioefficacy and Holes

Number of campaign nets failing WHO criteria

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

	4 years (n=24)	3 years (n=122)	2 years (n=48)	TOTAL
<80% *Anopheles* 24hr mortality (WHO cone)	20 (83.3%)	98 (80.3%)	31 (64.6%)	**149 (76.8%)**
<80% *An.* 24 hr mortality & >10% blood-feeding (WHO tunnel)	1 (4.2%)	5 (4.1%)	4 (8.3%)	**10 (5.2%)**
<15.0 g/kg permethrin (HPLC)	9 (37.5%)	28 (23.0%)	5 (10.4%)	**42 (21.7%)**
'Too torn' [1]	13 (54.2%)	42 (34.4%)	21 (43.8%)	**76 (39.2%)**

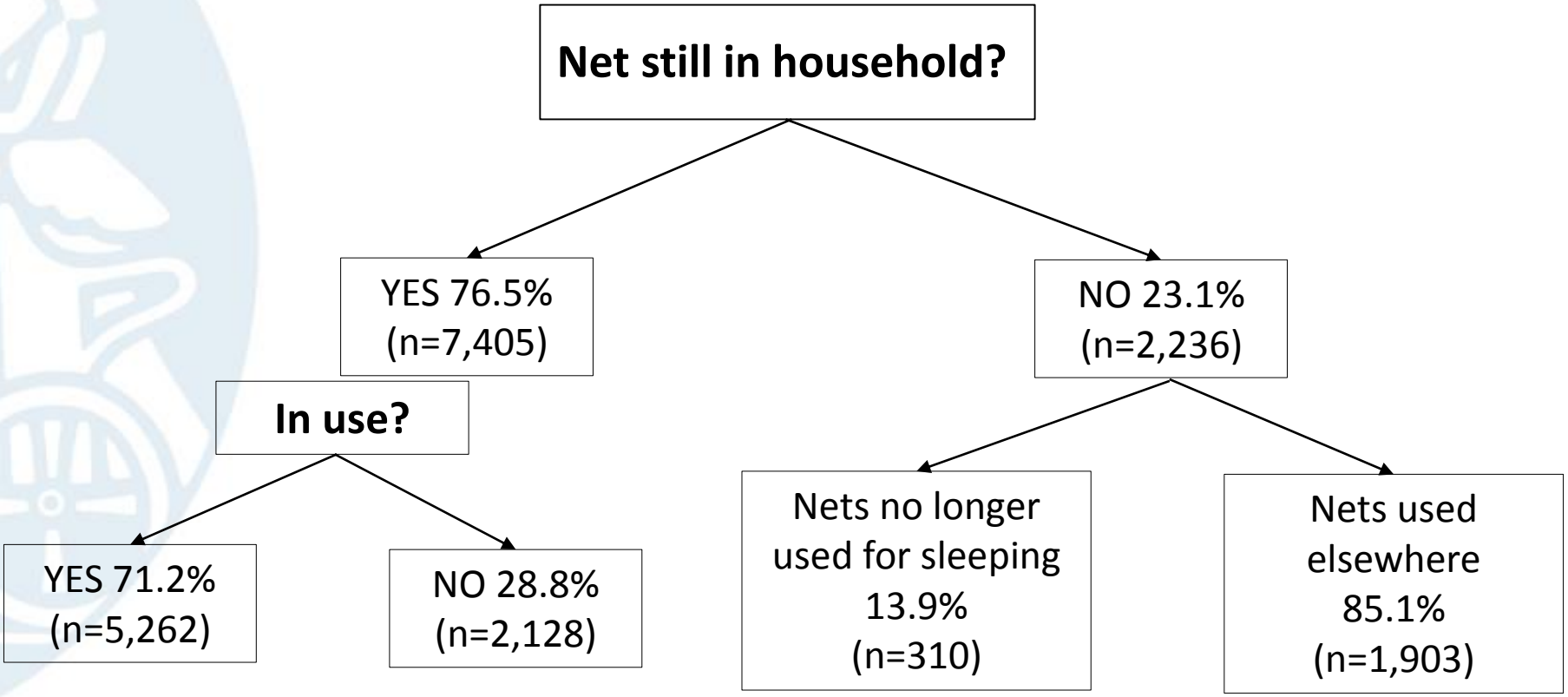
[1]using hole counts, proportionate Hole Index (pHI) >643 & hole surface area >790cm^2

Prospective Study

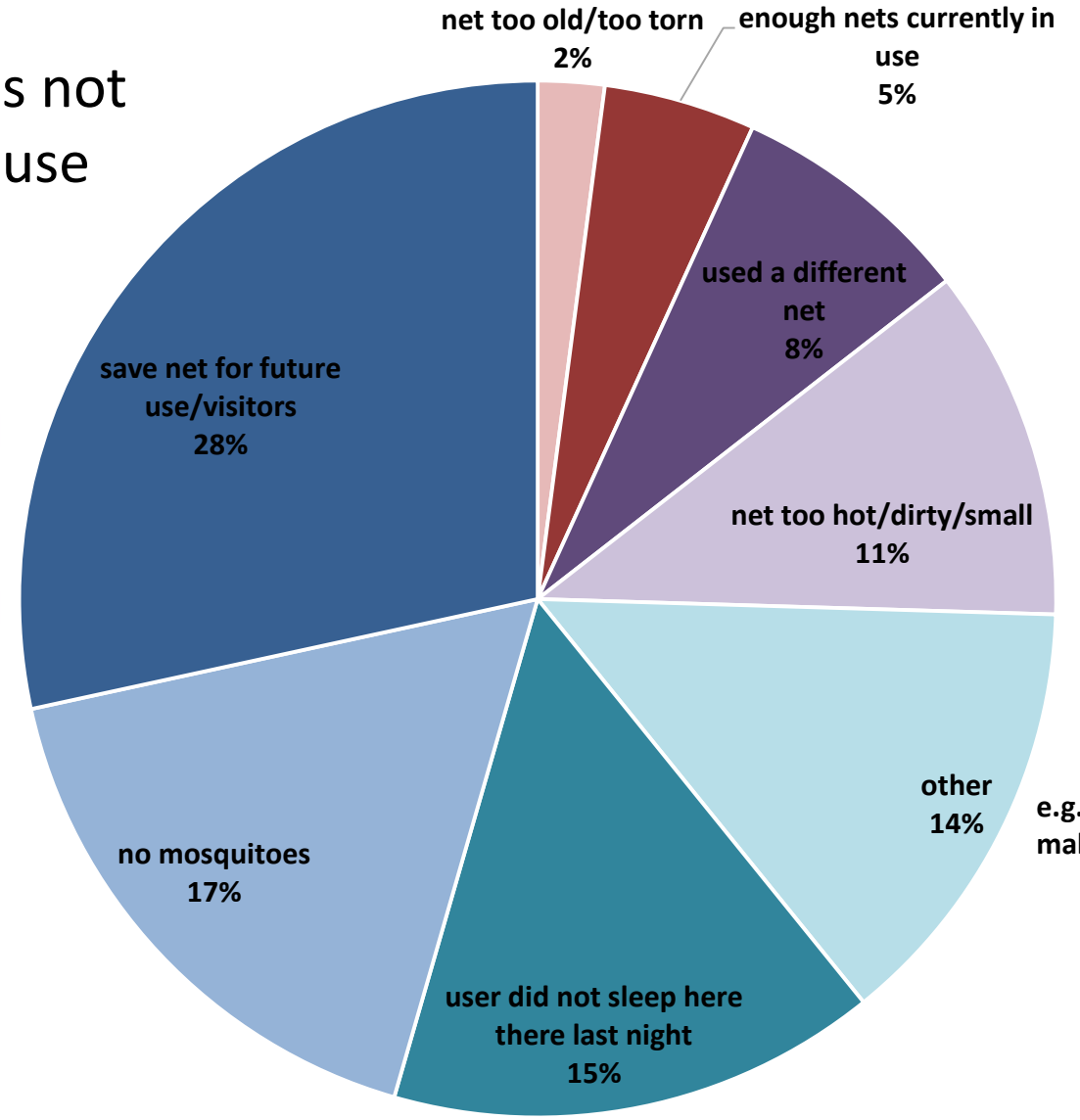
LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Attrition at "Year 1"

- 10,598 nets distributed Oct-Dec 2013 – equal numbers of 3 LLIN brands
- 10 months follow up (Aug-Oct 2014): 9,684 nets accounted for



n=2,128 nets not currently in use



e.g. bed bugs, no place to hang, makes me sneeze

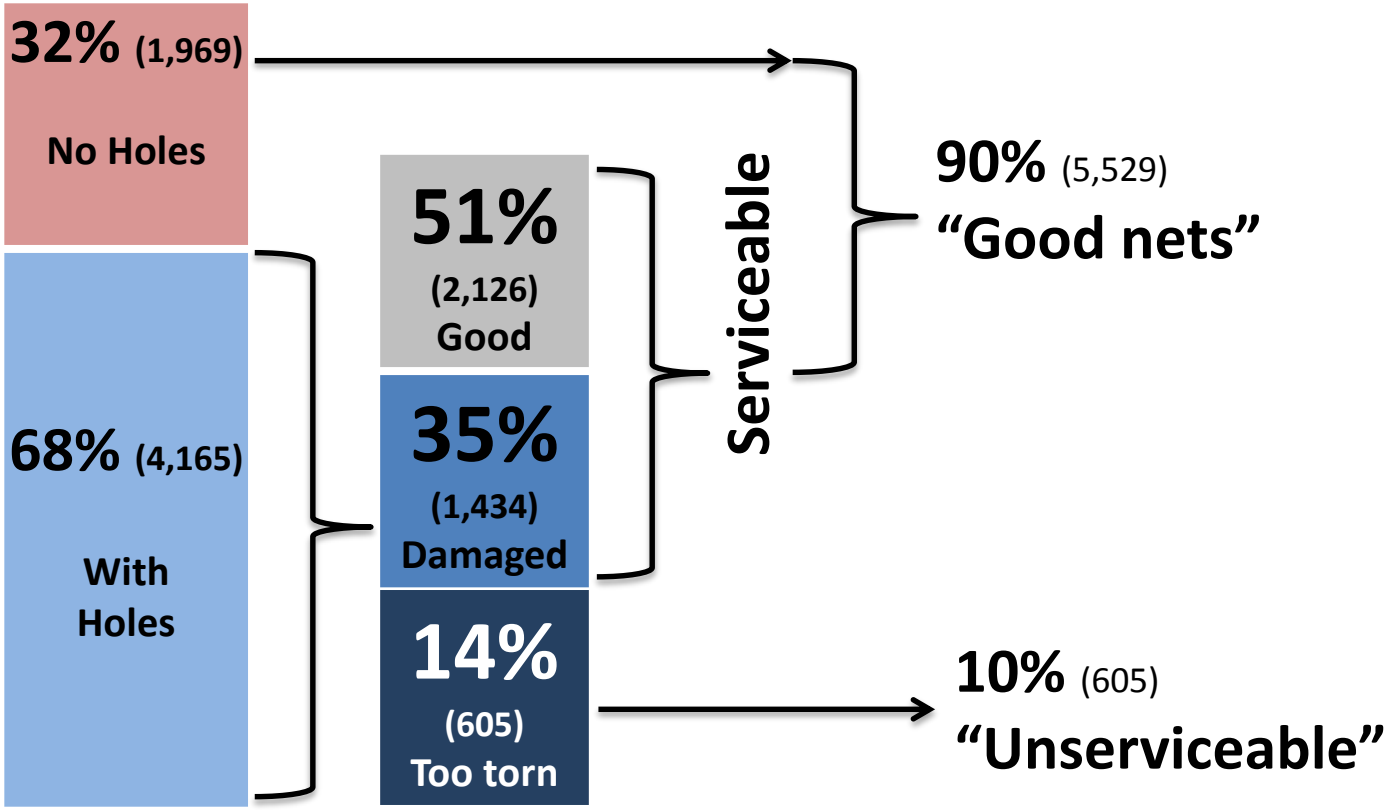
Hole counting

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Category of Hole	Hole Size Description	Hole Size
Size 1	Smaller than a thumb (finger)	0.5 - 2 cm diameter
Size 2	Larger than a thumb but smaller than fist (hand)	2 - 10 cm diameter
Size 3	Larger than a fist but smaller than a head (head)	10 - 25 cm diameter
Size 4	Larger than a head	> 25 cm diameter

Physical degradation

Following WHO protocol; hole counts in the field of 6,134 nets



Category	pHI	Hole surface area
Good	0 - 64	<79 cm^2
Damaged	65 - 642	80–789 cm^2
Too torn	643+	>790 cm^2

What's next?

1. At what level does net loss and degradation occur?

ENVIRONMENT
HOUSEHOLD
SLEEPING SPACE
INDIVIDUAL USER

2. When does a net stop being truly protective against mosquitoes?

➔ Correlating semi-field tests using whole nets from the field with WHO cut-offs and laboratory tests

3. What happens to nets when they are no longer deemed useful to sleep under?

Acknowledgements

Global Health and Vaccination Research (GLOBVAC)

Hans Overgaard, NMBU

Sarah Moore, IHI & Swiss TPH

William Kisinza, NIMR

Renata Mandike, NMCP

Jason Moore, LSHTM & IHI

Ubydul Haque, John Hopkins

Rose Nathan, IHI

Honorati Masanja, IHI

Olivier Briët, Swiss TPH

Zawadi Mageni, IHI & LSTHM

Dennis Massue, NIMR & Swiss TPH

Karen Kramer, NMCP & Swiss TPH

Albert Kilian

Jo Lines, LSHTM

Erasto Maziba, IHI

Richard Amaro, IHI

John Bradley, LSHTM

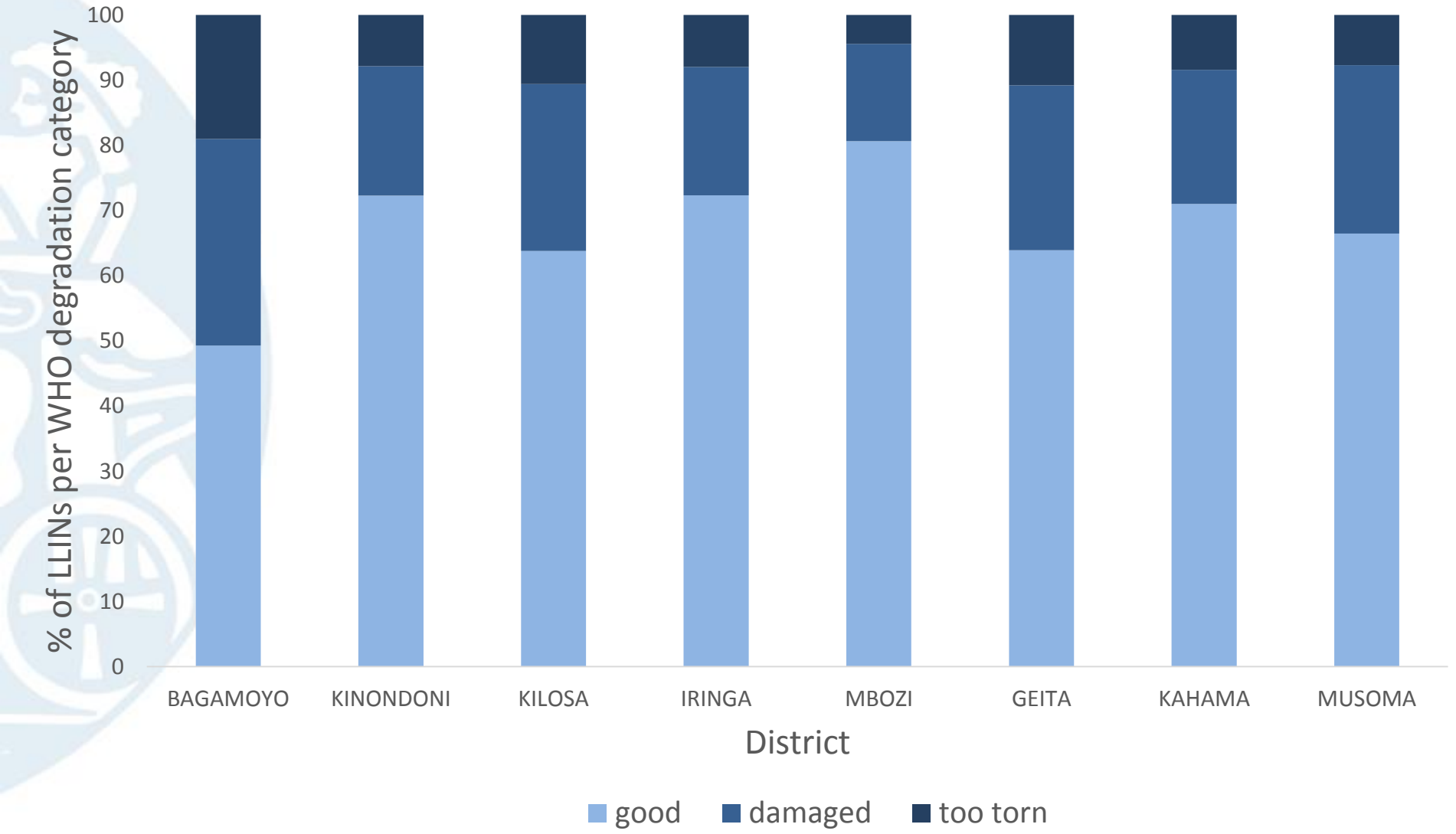
Olivier Pigeon, Walloon Agricultural Research Centre

Thank you!!!

Perceptions of net vs its WHO categorization

	Good	Damaged	Too Torn
The net is still in a good condition and can be used without restrictions	80.1% (n=3,279)	32.2% (n=462)	12.0% (n=73)
This net is beginning to fall apart and should be replaced soon	19.5% (n=800)	62.3% (n=893)	64.0% (n=387)
This net is no longer usable and definitely needs to be replaced	0.4% (n=16)	5.5% (n=79)	24.0% (n=145)
TOTAL	**n=4,095**	**n=1,434**	**n=605**

WHO degradation category by district



WHO degradation category by net brand