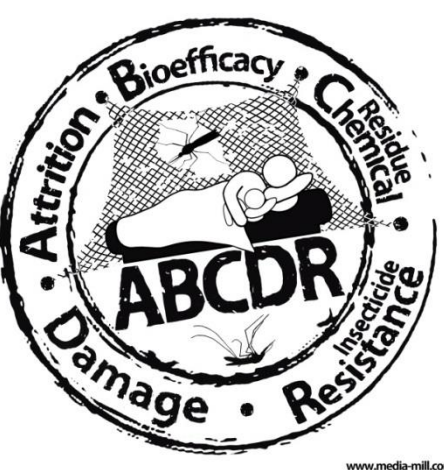


# Long-lasting Insecticidal Nets (LLINs) for malaria control in Tanzania: Attrition, Bioefficacy, Chemical residue, and Damage



Dennis Massue<sup>1,2</sup>, Lena M. Lorenz<sup>3</sup>, Zawadi Mageni<sup>3,4</sup>, Jason Moore<sup>3,4</sup>, Peter Mangesho<sup>1</sup>, Renata Mandike<sup>5</sup>, Karen Kramer<sup>2,5</sup>, John Bradley<sup>3</sup>, Albert Kilian<sup>6</sup>, Jo Lines<sup>3</sup>, William Kisinza<sup>1</sup>, Hans J. Overgaard<sup>7</sup> and Sarah J. Moore<sup>2,4</sup>

<sup>1</sup>National Institute for Medical Research, Amani Research Centre-Muheza, Tanzania. <sup>2</sup>Swiss Tropical and Public Health Institute, Basel, Switzerland. <sup>3</sup>London School of Hygiene and Tropical Medicine, London, UK.

<sup>4</sup>Ifakara Health Institute, Bagamoyo, Tanzania. <sup>5</sup>National Malaria Control Program, Dar es Salaam, Tanzania. <sup>6</sup>Infectious Disease Control – Monitoring and Evaluation, Tropical Health LLP, Montagut, Spain.

<sup>7</sup>Norwegian University of Life Sciences, Ås, Norway.

## INTRODUCTION

Long-Lasting Insecticidal Nets (LLINs) are the main tool used to control malaria. LLINs provide both physical and chemical protection from mosquito bites and hence reduce malaria transmission. Millions of LLINs have been distributed across sub-Saharan Africa, including Tanzania, averting nearly one million malaria deaths in children under-five years of age in the last decade. To sustain this success and pursue the global move towards malaria elimination, it is important to understand the reasons for bed net loss and durability.

## OBJECTIVES

Determine the useful life of Long-lasting insecticidal nets by assessing net loss, bio-efficacy, chemical content, and fabric integrity in retrospective and prospective studies.

## METHODS

- **Retrospective survey:** Evaluate durability of Olyset® nets distributed to households by the National Malaria Control Program (NMCP) in 2009-2010. Field collections in October-December 2013.
- **Prospective study:** Distribute and evaluate durability of ca 3,000 nets (Olyset®, Permanet®2.0, and Netprotect®) over three years (12, 24, 30, and 36 months).
- **Location:** Eight districts in Tanzania chosen for their geographical and epidemiological diversity.
- **Net durability parameters:**
  - **Attrition:** Proportion of nets that are no longer in use due to loss, damage, and alternative uses.
  - **Bioefficacy:** Protective efficacy of nets against malaria mosquitoes using standard WHO bioassays and whole net tests under semi-field conditions.
  - **Chemical residue:** Content of insecticides in a sample of nets by High-Performance Liquid Chromatography.
  - **Damage:** Physical integrity of nets, i.e. number, size, and position of holes and tears.
- **Data collection:** Structured questionnaires on household bed net use and household characteristics. National health survey data. All data will be georeferenced and stored in a GIS database.
- **Analysis:** Regression modelling including multivariable generalized linear models and generalized linear mixed models will be used to determine the effective life of nets, including covariates such as LLIN age, geographical location and data collected from household surveys. Principal Component Analysis (PCA) using socioeconomic variables will be used for household wealth status ranking.

## ANTICIPATED RESULTS

The study will provide useful information about bed net use, factors related to net loss, durability and bio-efficacy under different conditions of use. Collected information can provide useful insights for the NMCP in choosing a cost-effective, long-lasting net that is accepted by communities across Tanzania.



Photo: Clive Howard (Off the Radar/Tony Blair Foundation)



Photo: Sarah J. Moore



Photo: Sarah J. Moore



Photo: James Gathany, CDC

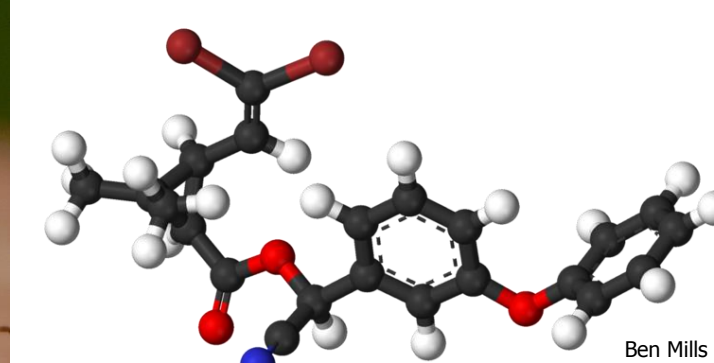
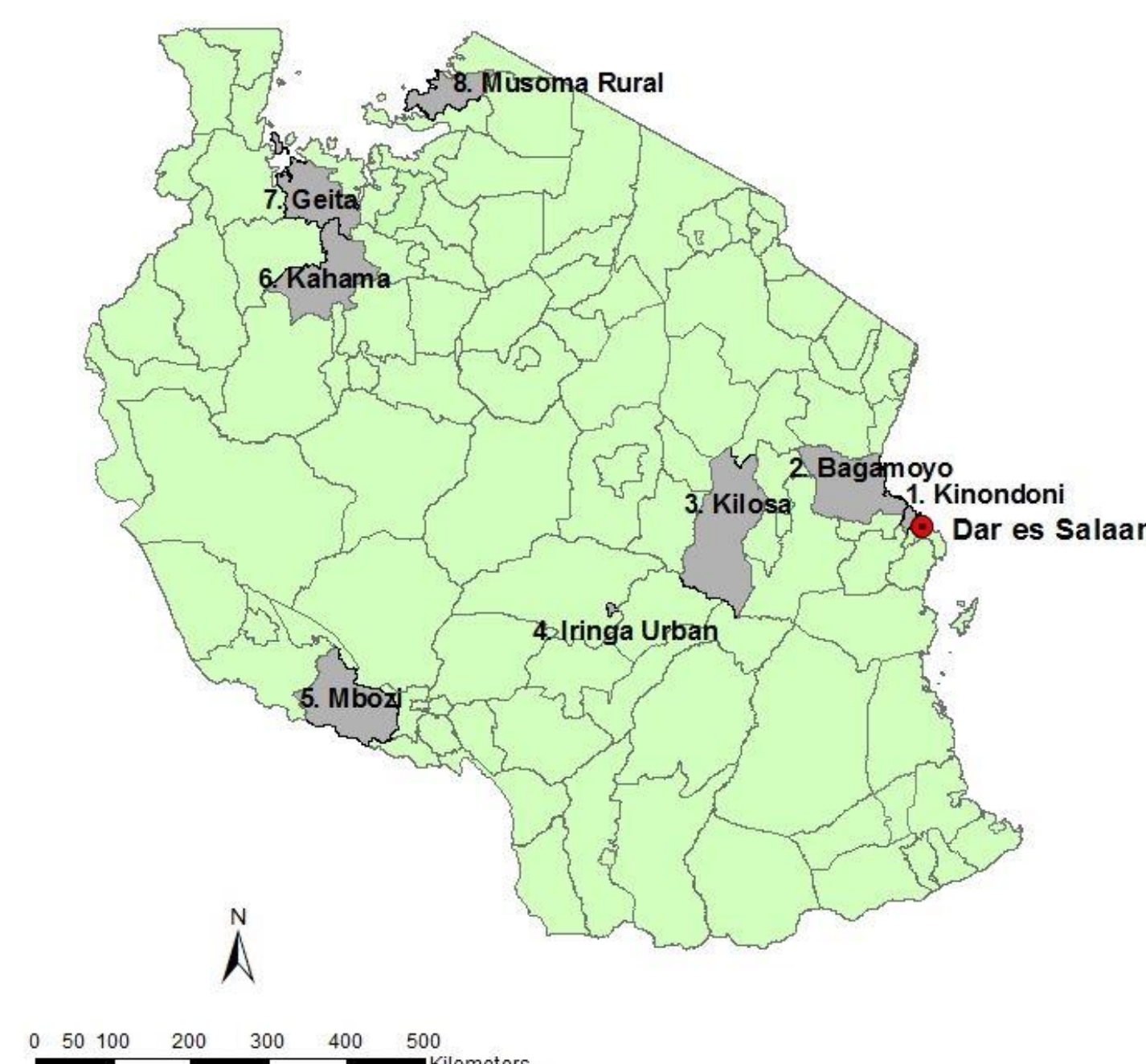


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