

## Systematic Review of Non-Communicable Diseases (NCD) in Kenya Using STEPs Survey: Hypertension, Pre-Diabetes and Diabetes Mellitus, Cervical Cancer, Injury and Their Risk Factors

Grace Grifferty, Adrienne Orriols, Andre Pascal Kenge Ph.D<sup>1</sup>, Naomi Levitt Ph.D<sup>2</sup>, Richard Wamai PhD<sup>3</sup>; [Brianna Osetinsky<sup>4</sup>, Omar Galarraga Ph.D<sup>5</sup>]

<sup>1</sup>Non Communicable Diseases Research Unit, South African Medical Research Council, Francie van Zijl Drive, Parow Valley, Cape Town, Western Cape, South Africa, <sup>2</sup>Diabetic Medicine and Endocrinology and Chronic Disease Initiative for Africa (CDIA), University of Cape Town, J47/86 Old Main Building Groote Schuur Hospital, Observatory, Cape Town, 7925, South Africa  
<sup>3</sup>Integrated Initiative for Global Health, Department of Cultures, Societies and Global Studies, Northeastern University, Boston, MA, USA, <sup>4</sup>PhD Candidate at Brown University, School of Public Health, <sup>5</sup>Population Studies and Training Center, Department of Health Services, Policy and Practice, Brown University, Providence, RI, USA



### Opportunity

#### Abstract

Disease surveillance is at the core of population health. The goal is to systematically collect, interpret and disseminate data to address and monitor interventions in order to reduce disease morbidity and mortality. Globally, there has been a lack of quality surveillance data of NCDs for low and middle-income countries. Of the 54.7 million people that died globally in 2016, 72.3% were linked to NCDs. Using the STEPwise approach to surveillance (a standardized NCD surveillance protocol developed by the World Health Organization (WHO)) demographic, behavioral and biochemical measures were obtained in the first nationally representative cross-sectional survey in Kenya conducted during April-June 2015. The survey estimated indicators of risk factors for NCDs in a sample size of 6,000 (ages 18–69). **Data was published in 10 articles in a special issue of BMC Public Health in 2018;18(3).** As the first of its kind in Kenya, the survey will act as a baseline against which future progresses will be monitored. The Kenya survey adds to the 142 countries that have implemented STEPs, thereby expanding understanding of NCDs across to globe and contributing to the WHO global NCD targets for 2025.

#### Background

- 72.3% of 54.7 million global deaths in 2016 linked to NCDs
  - Leading causes: cardiovascular diseases, diabetes and cancer
- 86% of deaths due to NCDs are in low and middle income countries, most are premature
- Sub-Saharan Africa undergoing socio-economic transformation thus increasing NCDs
- In Kenya, NCDs represent 50%-70% of all hospital admissions today**
- WHO developed “Global Monitoring Framework for NCDs”
  - 9 targets to **reduce mortality due to NCDs by 25% by 2025**
- To meet, need disease surveillance:** systematically collect, interpret and disseminate data to address and monitor interventions to reduce disease morbidity and mortality

### Approach

#### Disease surveillance = STEPwise approach to surveillance (STEPS)

- Standardized NCD surveillance protocol by WHO
- 142 countries implemented, 41 in Africa
- 3 steps to gather self-reported data (demographics, behavioral risk factors, physical and biochemical measures from nationally representative populations)

#### STEPS Kenya Data Collection: April/June 2015

- National cross-sectional household survey**
- 6000 persons aged 18-69
- nationally representative by sex (male/female) and residence (urban, rural)
- Through interviews collected:
  - demographic and behavioral info** (tobacco, alcohol, diet, physical activity)
  - physical measurements** (height, weight, waist and hip circumference)
  - biochemical measures** (blood pressure, fasting blood glucose, triglyceride and cholesterol levels)

### Data/Results

Condition	% aware of condition (a)	% treated of (a) (b)	Risk factors	Key factors associated
Hypertension	16%	27%	older age, higher body mass index, harmful use of alcohol	Prevalence ≈ global average
Pre-diabetes or diabetes	44%	20%	high blood pressure, obesity in women, old age	7% of (b) achieved glycemic control
Cervical cancer	N/A	16 screened	N/A	Awareness linked to higher education, highest income quintile and urban residence

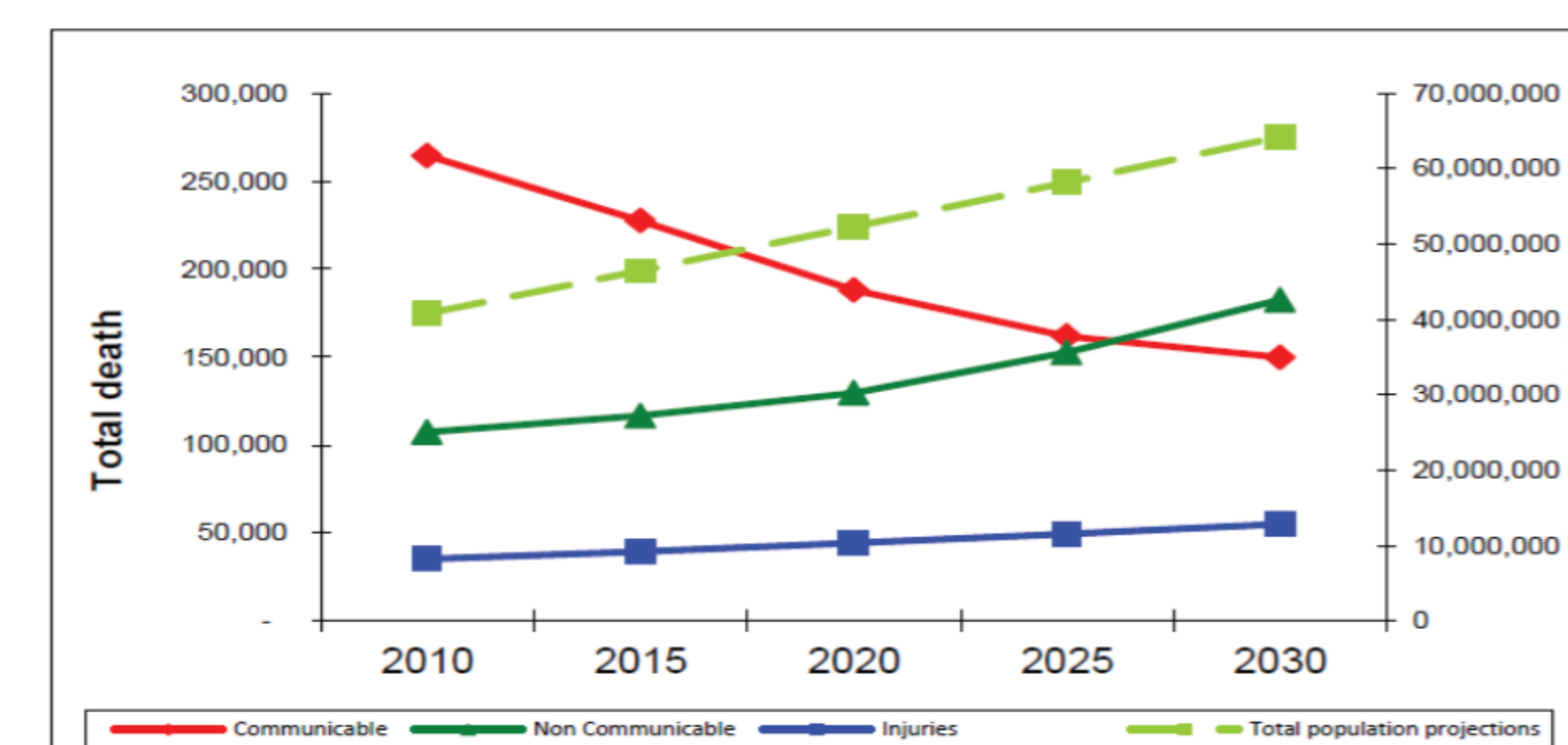
Activity	Prevalence	Risk factors
Tobacco use	75% < 50 years Highest daily use 50-59 years	male, youth, lower level of education
Physical inactivity	7.7%	female and aged 30-49, higher education and income
Injuries (falls, cuts)	60% occurred in males	rural areas
Unhealthy diet	18% high salt intake, 88% aware 14% high sugar intake, 91% aware	male, under 46 years old, being a student

**Key finding:** Different portions of the population are exposed to differing risk factors creating diverse risk profiles. Findings are reported in [1] below.

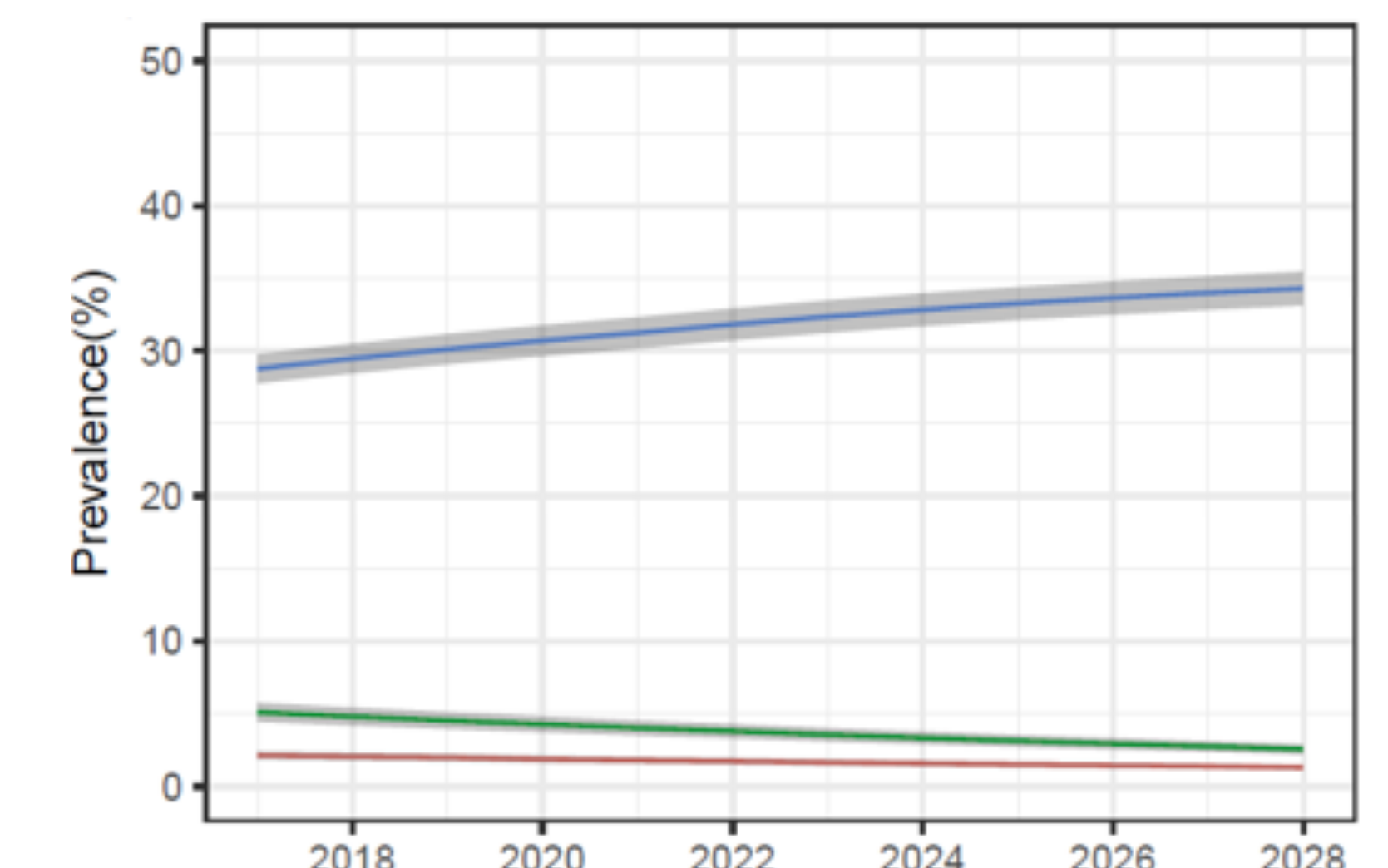
### Impact & Conclusion

The unique feature about our innovation is it a review of the first standardized NCD surveillance protocol (Kenya)

This solves the problem of the lack of quality surveillance data of NCDs in Kenya.



Source: Health Sector Strategic and Investment Plan 2013-2017.



Kenya is undergoing an epidemiological transition with a decreasing burden of infectious diseases and rising burden of NCDs. **The point of transition is modelled to occur around year 2028** (left chart). With the prevalence of hypertension already much higher than HIV (5.6%) at current levels, hypertension and HIV-hypertension comorbidity is modelled to continue upwards beyond 2028 in western Kenya (right image). **These data will guide the MOH to enact measures to control NCDs in line with the WHO targets for 2025.**

1. Wamai RG, Kengne AP, Levitt N. Non-communicable diseases surveillance: overview of magnitude and determinants in Kenya from STEPwise approach survey of 2015. *BMC Public Health* 2018; 18(Suppl 3):1224