

# Enhanced detection of facility-based maternal deaths using the Rapid Ascertainment Process for Institutional Deaths in Kigoma Region Tanzania

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# Tanzania



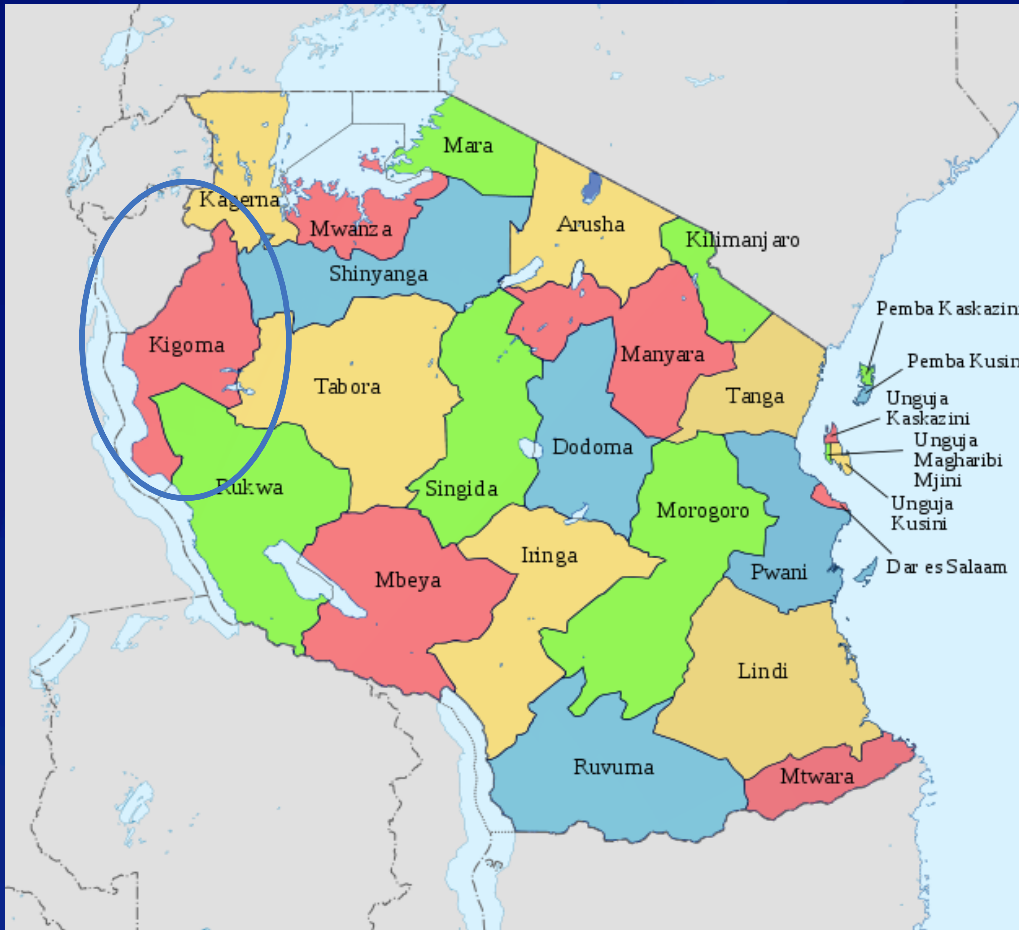
- Estimated population 52 million\*
- Estimated Maternal mortality ratio (MMR) is 410/100,000 live births ‡
- Sixth highest number of maternal deaths in the world ‡
- Total fertility rate 5.4°
- 43 % had at least 4 ANC visits°
- 51% of births occurred in facilities with skilled personnel°
- Cause specific MMR are unknown

\*United Nations Population Division. World Population Prospects, 2014

‡ Trends in Maternal Mortality: 1990 to 2013 Estimates by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division, 2014

°National Bureau of Statistics (NBS) [Tanzania] and ORC Macro. 2011. Tanzania Demographic and Health Survey 2010. Dar es Salaam, Tanzania: National Bureau of Statistics and ORC Macro

# Kigoma Region, Tanzania



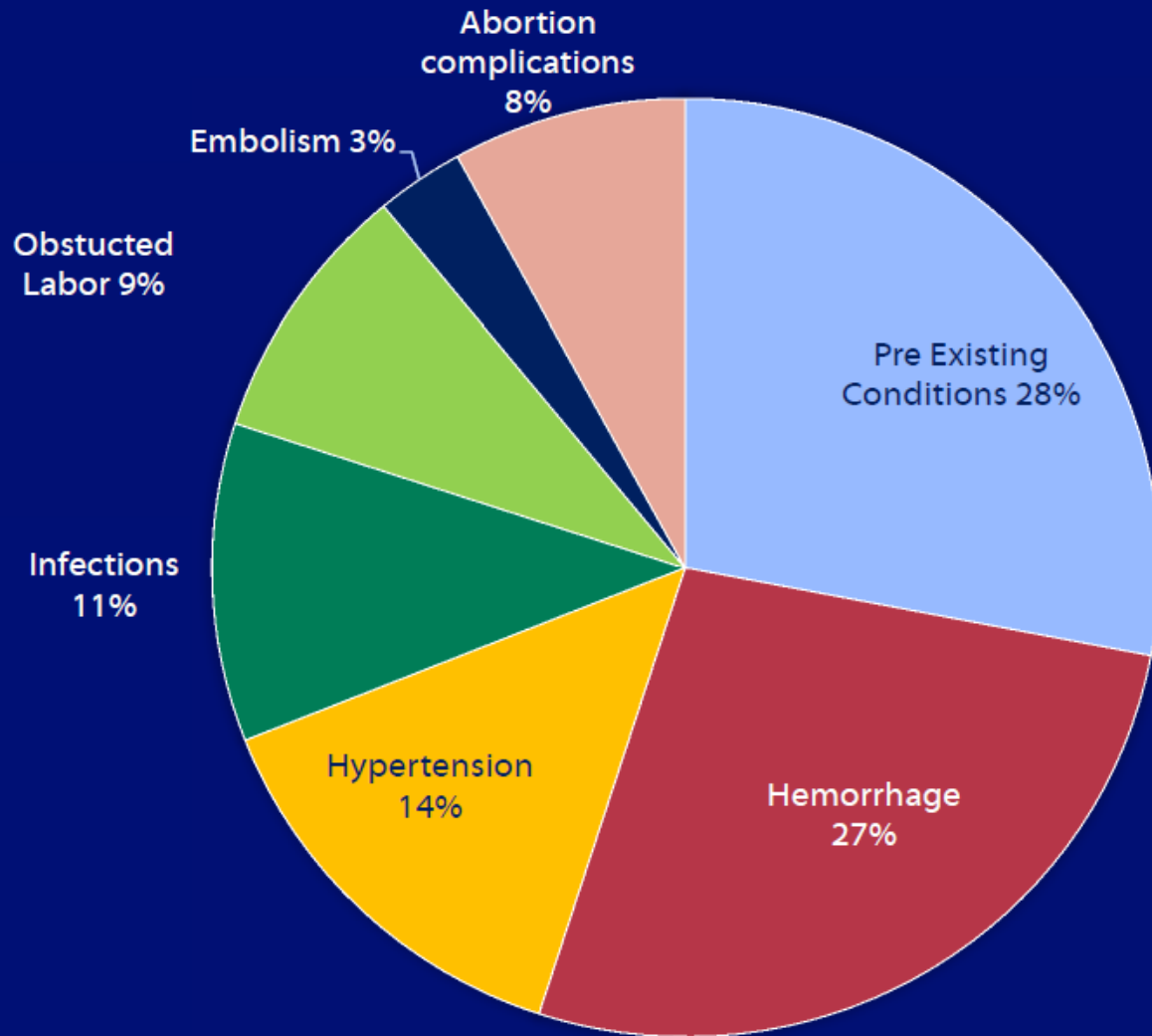
- Population over 2.1 million\*
- 83% of households are classified as rural
- 473,341 women of reproductive age (15–49)\*
- 47% of births occur in facilities with skilled personnel ‡
- No official regional estimates for maternal mortality ratio (MMR)

\* The United Republic of Tanzania National Bureau of Statistics (NBS) and Office of Chief Government Statistician. 2012 Population and Housing Census. Dar es Salaam and Zanzibar: NBS and Office of Chief Government Statistician, March 2013.

Kigoma Region, Tanzania

‡Kigoma, Tanzania Reproductive Health Survey, 2014

# Causes of Maternal Deaths



Causes of maternal death in the world by percentage  
Source: Say L et al. Global causes of maternal death, 2014.

# Methods

- **Study population and timeframe**
  - Kigoma Region, Tanzania
  - All health facilities (dispensaries, health centers, hospitals) that provide >90 deliveries a year
  - Data from 2008–2012
- **Rapid Ascertainment Process for Institutional Deaths (RAPID)**
  - Retrospective data collection
- **Health Management Information System (HMIS) Tanzanian National Reproductive Health (RH) annual Reports**

# Rapid Ascertainment Process for Institutional Deaths (RAPID)

Delivery Room/Obstetric Ward

Maternal  
Deaths

## Other Wards:

- Obstetric Admission and Discharge
- Gyn/Female Wards
- Nurse Ward Round Notebooks
- Emergency/ Outpatient
- Operating theatre (major, minor)

## Other forms/ registers:

- Morgue Register
- Maternal death notification
- Maternal death audits

1. Review of all registers and forms for deaths to women of reproductive age (WRA)
2. Subsequent review of all WRA deaths to classify maternal deaths

# Data collection

Best case scenario



Worst case scenario



# Reproductive Health Reports

- Standard regional reports
- Annually reported by district

WILAYA	WATOTO WLIJAZALI WA HAI	IDADI	SABABU ZA VIFO DIRRECT CAUSES							SABABU ZA VIFO INDERECT CAUSES						
			PPH	APH	PIH	ECLAMPSI A	SEPSIS	ABORTIO N	OBSTRUC TED LABOUR	MALARIA	ANAEMIA	HIV/AIDS	LOCAL HERBS	OTHERS	MMR IN 100000	VITUONI + JAMII
KIBONDO	16,788	8	2	0	0	1	3	0	1	0	1	0	0	0	48	0
KASULU	29,560	17	6	0	1	3	2	1	4	0	0	0	0	0	58	0
KIGOMA(V)	20,478	5	0	1	0	0	0	1	0	0	1	0	0	2	25	12
KIGOMA(M)	8369	26	8	1	0	1	2	5	0	0	1	0	0	8	311	27

Health Management Information System (HMIS) Tanzanian National Reproductive Health (RH) annual Reports 2012 shown here



## **Analysis**

- **Frequencies of deaths by cause were reported by source**
- **Calculated differences between RAPID and HMIS reporting on Maternal deaths**
- **95% Confidence intervals calculated for difference between the two sources**

# Rapid Results: Source Data

## 22 Sources of maternal death data

Case notes

Female Ward Admission & Discharge Register

Female Ward Report Books

General Ward Admission & Discharge Register

General Ward Report Book

Gynecology Report Books

Gynecology Rounding Book

Gynecologic Surgery Ward Book

Hospital Bed Count Log

Labor and Delivery Registers

Maternal Death Audit Forms

Morgue Registers

Nursing 24 Hour Duty Book

Obstetric Admission & Discharge Book

Obstetric Report Books

Obstetric Rounding Book

Obstetric Operating Theatre Log

Oral report

Postpartum ward Registers

Private Ward book

Surgical Report books

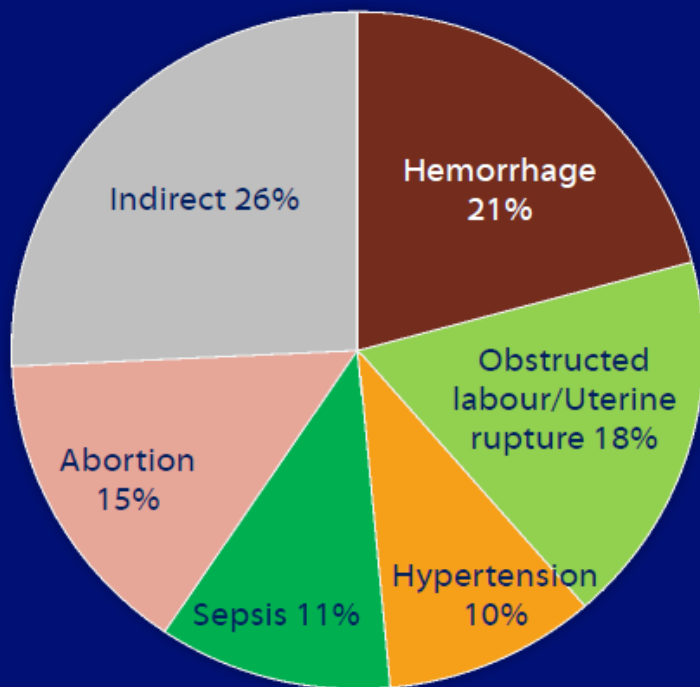
Surgical Rounding Book

# Results

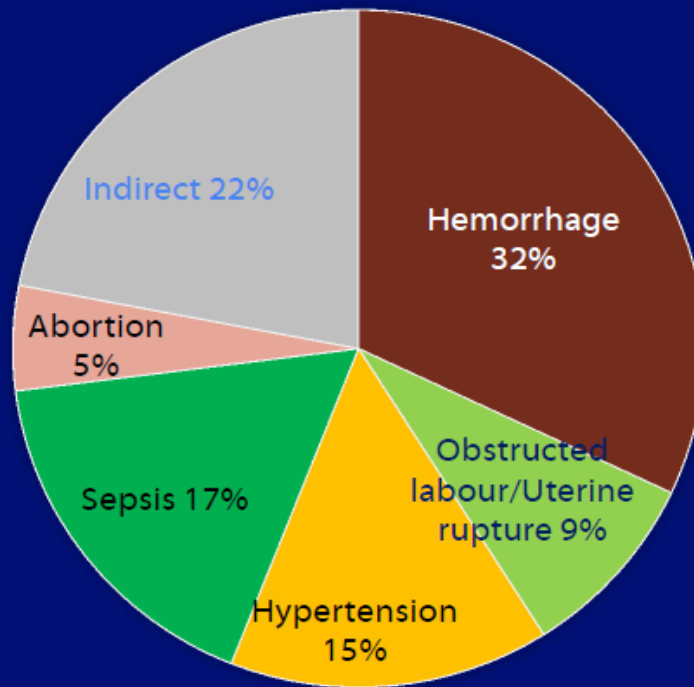
	<b>Total maternal deaths reported</b>	<b>95% Confidence Interval</b>
RAPID	427	386–468
RH Reports	280	247–313
Difference	147	95–199

# Maternal Deaths by Cause

## RAPID MATERNAL DEATHS



## RH REPORTS



## Cause of Death Comparison

Cause	RAPID	RH REPORTS	WHO
Hemorrhage	21%	32%	27%
Hypertension	10%	15%	14%
Sepsis/ Infections	11%	17%	11%
Abortion	15%	5%	9%
Obstructed Labor/ Uterine Rupture	18%	9%	----
Obstructed labor			9%
Embolism	----	----	3%
Pre-Existing Conditions	----	----	28%
Indirect	26%	22%	----

## Limitations

- **Inaccurate capture of all maternal deaths in facilities**
  - Matching of individuals across sources
  - Incomplete records
  - Smaller facilities not included
- **Misclassification of cause of death may have occurred**
  - Relying on written records- no autopsy or verification
- **Register types varied by facility**
- **Some data sources had missing timeframes**
  - Improvement by year of recording
- **Facility-based detection does not capture community deaths**

## Conclusions

- **RAPID methodology was successful in identifying more maternal deaths in facilities**
- **Identification of deaths is complicated by the large number of data sources.**
- **Review of all sources available is needed to ensure all maternal deaths are identified**
- **Comparison with the most recent WHO causes of death is limited by use of different categories**
- **RH reports are likely underestimating maternal death counts; improved data collection and verification could provide more accurate data for decision making**

## Recommendations

- **A unified register is needed to centralize identification of deaths to women of reproductive age and maternal deaths**
- **Data quality checks should be undertaken to ensure capture of all maternal deaths**
  - **RAPID methodology can be used to improve ascertainment of maternal deaths**
- **Improved ascertainment of maternal deaths and causes of death are urgently needed to design effective interventions to reduce maternal deaths**



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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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