

**An Analysis of the Clinical Practice of Emergency Medicine  
In Public District and Regional Hospitals in Tanzania**

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of Medicine in Emergency Medicine in the Faculty of Health Science at  
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## **Declaration**

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## ABSTRACT

**Aim:** The aim of the study was to document the burden of disease presenting to Tanzania mainland public district and regional hospitals' acute intake areas, to describe the range of early diagnostic and procedural interventions performed on acutely ill patients, and to identify the disposition of these patients.

**Method:** We undertook a cross-sectional, prospective study which described the clinical presentation, investigations, procedures and diagnoses of patients presented to public district and regional hospitals in Tanzania. A consecutive convenience sample of patients presenting during the working hours site visit to each hospital were included for those hospitals only open during the day. For hospitals which open for 24 hours, a 12 hour day time visiting period was selected.

**Results:** District hospitals saw 60% of patients, designated district hospitals 16% and regional hospitals 24%. There was no 24 hours functioning acute intake area with a dedicated doctor for such areas in 70% of regional hospitals, 88% of designated district hospitals and 98% of district hospitals. The gender distribution of male to female was 1:1.3. Infants and geriatric patients accounted for 38%, adolescences and adults 50%, children of school age 12%; average work load was 50 patients per day shift.

Medical-Surgical cases were 92% of cases, and the rest were trauma. The three most common complaints were fever, cough and abdominal pains. MVA was the leading cause of trauma. Blood test, X-ray, urinalysis, and stool analysis were the most common investigations. Wound care, fracture reduction, Incision and drainage were the commonest procedures performed.

Malaria, respiratory infections and genito-urinary diseases were the leading causes of morbidity. 23% of cases ended up admitted for workup, treatment and senior doctor's consultation, with only 1% of patients referred to higher level hospitals.

**Conclusion:** The study revealed that almost no public hospitals had any form of emergency care system in place; most emergency patients are seen undifferentiated in OPDs.

Infectious diseases and trauma are the leading cause of morbidity; investigations and treatments are based specifically on treating the cause, with no consideration on treating the complications of these diseases. Urgent work is required to establish hospital-based emergency care systems in Tanzania.

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To my wife for sacrificing her job to support me in South Africa to fulfil this sacred mission and during the program we have been able to bear fruits of having two baby boys Zakir and Zafar.

## **Dedication**

To my two baby boys, Zakir who was born at the beginning of the program and Zafar who was born toward the end of the program inspired me to work hard to fulfil the mission.

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## **List of Abbreviations**

AFEM: African federation of emergency medicine

AIDS: Acquired immune deficiency syndrome

CSF: Cerebrospinal fluid

DDH: Designated District Hospital

DH: District Hospital

EC(s): Emergency centre(s)

ECG: Electrocardiogram

EM: Emergency Medicine

EMAT: Emergency Medicine Association of Tanzania

FBC: Full blood count

GIT: Gastrointestinal tract

HIV: Human immunodeficiency virus

HVS: High vagina swab

Hb: Haemoglobin

IFEM: International federation of Emergency Medicine

MUHAS: Muhimbili University of Health and Allied Sciences

MVA: Motor vehicle accident

OPD: Outpatient department

PTC: Primary Trauma care

RH: Regional hospital

TECCSS: Tanzania Emergency Care Capacity Site Survey

## Glossary

**Acute intake area:** Is a medical treatment facility where patients present without prior arrangements

**Emergency department:** is a medical treatment facility specializing in acute care of patients who present without prior appointment. It is also known as Emergency Centre (in South Africa) and Accident&Emergency (in U.K).

**Casualty:** Historic terminology for acute care facilities, still in use informally.

**Clinical Officer:** A mid-level practitioner who is qualified and licensed to perform general medical duties such as diagnosis and treatment of disease and injury, ordering and interpreting medical tests, performing routine medical and surgical procedures, and referring patients to other practitioners.

**Assistant Medical Officer:** A cadre between a three year diploma (clinical officer) and first degree holders in clinical medicine. Practically they are recognized and valued almost equally with holders of a first degree in clinical medicine (doctor of medicine) in Tanzania and in many other countries in Africa.

**Designated District Hospital (DDH):** These are hospitals owned by faith based organisations in areas which do not have government hospital. Tanzanian government signed memorandum of understanding with this organisations to provide health care services on its behalf.

## **1: Introduction**

### **1.1. Background**

Shortly after achieving independence from Britain in the early 1960s, Tanganyika and Zanzibar merged to form the nation of Tanzania. It is located in eastern Africa, bordering the Indian Ocean, between Kenya and Mozambique. Its total area covers 947,300 sq. km of which land covers 885,800 sq. km. It has population of 42,746,620. (1) Tanzania Mainland is divided into 21 administrative regions and 114 districts with 133 Councils. Each district is divided into four to five divisions, which in turn are composed of three to four wards. Every five to seven villages form a ward. There are a total of about 10,342 villages.

The health services delivery system in Tanzania consists of a network of facilities which assumes a pyramidal structure, starting from a dispensary, health centre through district and regional hospitals to referral hospitals. In principle the referral system is designed for the dispensary to refer patients to health centres and for the health centres in turn to refer patients into hospitals. Unfortunately this system often does not function as intended. A number of factors contribute to this situation, including under-funding, weak management arrangements, inadequate staff and difficulties in transport and communication. A study from rural western Tanzania revealed that a large proportion of people bypass their nearest primary care facilities to seek care in higher level government or private facilities.(2)

Currently the health facilities for both public and private include 4,679 dispensaries, 481 health centres and 219 hospitals distributed throughout the country. (3) The dispensaries and health centres that are at a centre of primary health care facilities were planned to serve an average population of 10,000 and 50,000 respectively. Districts hospitals serve a population of 250000. All 114 districts have district hospitals except for the 21 districts where there are no government hospitals. In these districts, faith based organization hospitals are designated as district hospitals (DDH).(4)

Unstable patients and those with acute complaints are often first evaluated in designated acute intake areas, OPD or directly to the ward though these areas are often staffed with rotating personnel with no dedicated emergency training.

The top ten causes of admission for patients aged five years and above include: (3)

- Uncomplicated Malaria (42%)

- Acute respiratory infection (13.3%)
- Severe Malaria (10.3%)
- Diarrhoea disease (7.2%)
- Intestinal worms (4.3%)
- Pneumonia (3.4%), Anaemia (2.2%)
- HIV/AIDS (1.1%)
- Tuberculosis (0.99%)
- Ill-defined symptoms (0.84%).

The top ten leading causes of deaths for patients aged five years and above are: (3)

- Severe Malaria (19%)
- HIV/AIDS (12%)
- Uncomplicated Malaria (6.9%)
- Pneumonia (6.4%)
- Typhoid diseases (6.2%)
- Tuberculosis (5.9%)
- Anaemia (5.0%),
- Diarrhoeal diseases (2.9%)
- Neoplasm (2.8%)
- Cardiac failure (2.6%).

The Case fatality Rates for top ten leading causes of deaths for patients aged five years and above are; (3)

- Neoplasm (83.5%)
- Cardiac failure (29.0%)
- Thyroid diseases (27.1%)
- Tuberculosis (12.3%)
- HIV/AIDS (5.6%)
- Pneumonia (3.9%)
- Anaemia (2.5%)
- Severe Malaria (1.4%)
- Uncomplicated Malaria (0.9%)
- Diarrhoeal Diseases (0.8%).

## 1.2. Problem Statement

Emergency medical care has three components: care in the community, care during transportation (which is related to the question of access), and care on arrival at the receiving health facility. It is designed to overcome the factors most commonly implicated in preventable mortality, such as delays to first contact with medical provider, lack of access to a health facility, and the provision of adequate care at the facility, especially early stabilization and resuscitation. (5)

One of the key steps in setting up a speciality is firstly identifying the need: there has never been any analysis of the nature of patients presenting to hospital acute intake areas in Tanzania. There is no existing research looking at the case mix of acute clinical presentations at District hospitals across the country or at district facilities' capacity to respond to emergent presentations. Most research looking at burden of disease is derived from mortality figures and as such does not include those diseases contributing to morbidity. (6) A recent study from South Africa concluded that the current South African emergency medicine residency curriculum doesn't prepare trainees for the burden of diseases they see and redraft of curriculum was recommended to be guided by a practical analysis of emergency medicine workload.(7)

An accurate assessment of the workload and patient population will be useful not only in terms of defining the practice of emergency care in Tanzania, but also to guide the development and dissemination of emergency care and training initiatives, health system priorities in general, and primary prevention strategies. The results of our practice analysis will provide a foundation to ensure that the development of the speciality of emergency medicine in Tanzania is targeted to the emergency care needs of the local context.

## 2: Literature Review

### 2.1. Introduction

“Emergency medicine is a field of practice based on the knowledge and skills required for the prevention, diagnosis and management of acute and urgent aspects of illness and injury affecting patients of all age groups with a full spectrum of episodic undifferentiated physical and behavioural disorders; it further encompasses an understanding of the development of pre-hospital and in-hospital emergency medical systems and the skills necessary for this development” (8)

Traditionally training initiatives in low and middle income countries have emphasized targeted or vertically-oriented programmes aimed exclusively at maternal and child health, or at control of specific communicable diseases, with little focus on general emergency and critical care.(5)

A community survey done in Pakistani showed that 98% of people were not satisfied with emergency care provided in their health facilities. Most health care providers (98%) were of the opinion that their health facilities are not equipped to treat emergencies, and (74%) had no budget allocated for emergency care. The conclusion was that assessment of emergency care should be part of health system analysis in Pakistan.(9) An analysis of clinical practise of emergency medicine in public emergency centres in Kenya revealed an undifferentiated patient population in which most of the immediate therapy was given to patients with minor conditions who were subsequently discharged. Sicker patients had to wait for transfer to the wards or specialist units for initial treatment.(10) A cross-sectional survey of patients presenting to a South African urban emergency centre showed clear trends for patient demographics and temporal attendance pattern which are important for resource allocation and planning.(11, 12)

The Tanzania government has developed the Primary Health Service Development Programme (PHSDP). The program has a duration of 10 years from (2007-2017) and aims at promoting access to basic health care for all as well as empowering and involving the community in the provision of health services. 17 components are identified and prioritized:

- Human resources
- District health services
- Maternal
- New-born and child health,
- Malaria
- HIV and AIDS

- Tuberculosis and leprosy
- Non-communicable diseases
- Health promotion and education
- Nutrition
- Traditional medicines
- Neglected tropical diseases
- Public private partnership
- Advocacy
- Institutional arrangement,
- Health care financing and
- Monitoring and evaluation.(13)

There is no doubt that improvement in emergency care is expected to play a big role in achievements of the aims of this program.

Tanzania also is struggling to achieve Millennium Development Goals (MDGs) by the year 2015. To achieve MDGs, it embarked on the Third Health Sector Strategic Plan 2009-2015(HSSP III). This strategic plan is expected to contribute to Tanzania's efforts to reduce child and maternal mortality and to control important infectious diseases, as well as, its efforts to improve the environment and access to clean water.(14) Recent evidence revealed significant improvement on the burden of diseases and effect of ill health if emergency care systems are in place.(15) (16) It has been shown that emergency care systems lead to better individual care, quicker admissions, reductions in secondary problems, shorter in-patient stays, fewer nosocomial infections and ultimately less workload for an already overburdened and understaffed service. (17)

## **2.2. Current status of Emergency care in Tanzania**

Emergency medicine is a newly recognized specialty in Tanzania. The first residency program in Emergency medicine was initiated at Muhimbili University of Health and Allied Sciences (MUHAS) in October of 2010, with a class of eight residents who are expected to graduate in 2013. Tanzania emergency medicine physicians and nurses with active involvement in emergency medicine practice founded the "Emergency Medicine Association of Tanzania" (EMAT) which was successfully registered by the Registrar of Societies in May 2011. Primary Trauma Care (PTC) training, Emergency Medical Services (EMS), Basic and Advanced Cardiac Life Support training, and Community Services are the current EMAT projects underway. (19)

Recent review about state of emergency care in the republic of Tanzania showed that at most, emergency care is provided by untrained staffs in poor resourced casualties or OPD's.(20) Our study, which is also a part of large study in Tanzania Emergency Care Capacity Survey (TECCS), gave us a clear picture of emergency care in Tanzania.

Another study by Penoyer et al, on emergency surgical service capacity, revealed significant gaps in the capacity for emergency and essential surgical services in Tanzania including deficits in human resources, essential equipment and infrastructure. (21)

In view of poor data on emergency care in Tanzania, a situational analysis is needed to determine how closely resources are matched with local burden of diseases presenting in the acute intake areas. This will help in planning on how to prioritize the resources and trainings in emergency care.



### **3: Methods**

#### **3.1. Motivation and aim of the study**

The aim of the study was to document the burden of disease presenting to Tanzania mainland public district and regional hospital acute intake areas, to describe the range of early diagnostic and procedural interventions performed on acutely ill patients, and to identify the disposition of these patients.

To achieve this aim, the study undertook the following objectives:

- We undertook a cross-sectional prospective audit of all public district and regional hospitals in Tanzania documenting the presenting symptoms, investigations, procedures and diagnoses of patients presented for acute evaluation during the site visit.
- The results of our study will serve to inform the development of emergency care in Tanzania.

#### **3.2. Research Design**

We undertook a cross-sectional, prospective study which described the clinical presentation, investigations, procedures and diagnoses of patients presented to public district and regional hospitals in Tanzania.

##### **3.2.1. Study population**

- Target population: The target population was all patients visiting the acute intake areas of the district and regional hospitals over the study period
- Inclusion criteria: All patients seen and treated in acute intake areas of each study hospital over the study period were included.
- Exclusion criteria: Patients presenting for planned follow up in the study period were excluded

##### **3.2.2. Sample size and sampling methods**

All district and regional hospitals were included in the audit. A consecutive convenience sample of patients presenting during the working hours site visit to each hospital were included for those hospitals only open during the day. For hospitals which open for 24 hours, a 12 hour day time visiting period was selected.

A workload of at least 5000 patients was expected during the period of study based on the current documented volume at these facilities. Geographic regions were assigned to each data collector and

where travel distance allows. Analysis day for each site was determined by the ease of access route to reach the destination so that as many sites could be covered consecutively.

### **3.2.3. Study procedure**

We conducted the study from June to November 2012. It was part of the Tanzania Emergency Care Capacity Survey, a larger assessment of the general emergency care capacity of district and regional hospitals in Tanzania. Five emergency physicians participated in collecting data for an integrated clinical audit and survey. The study was conducted across all 21 Tanzania mainland regions covering the functioning government district and regional hospitals.

### **3.2.4. Data**

A purpose designed data collection sheet was used (Appendix A). The principal investigator and other identified investigators visited each facility for a designated 12 hour or working hours of the hospitals, and asked treating providers to complete de-identified data sheets on all patients presented within that period with the assistance of the treating providers. Researchers did not have direct patient contact. Data not gathered as the patient moved through the facility were collected later the same day from the patient's medical notes.

The following de-identified data were collected:

- Basic Demographics
- Clinical Presentations
- Investigations done
- Procedures done
- Clinical Management including medications
- Disposition

Simple descriptive statistics were used to analyse the data in terms of age, sex, clinical presentations, procedures, investigations, management and disposition of patients.

### **3.2.5. Limitations**

This was a once off study- we did not compare weekend and weekdays attendances in any one facility.

Random sampling of the visiting day was impossible due to vast geographical locations and transportation constraints. Hence visiting days were based on the accessibility of the site.

The seasonal variation was not taken into consideration although it's well known that most diseases in tropical areas of Tanzania are affected by seasons.

Some of the obstetric emergencies went straight to the labour wards and were not included in the study.

### **3.2.6. Ethics**

All data were held by the Principal Investigator (PI) in a password protected and encrypted Excel database, on a work computer.

As no patient or provider identifying details were kept, and no patients contact was made, no patient consent was required.

In addition to ethics approval from the University of Stellenbosch (Ethics Reference number: S12/04/097), permission was obtained from the Ministry of Health and Social Welfare of Tanzania (Ref.No.HB.209/450/01A/135).

## 4: Results

### 4.1. Epidemiologic characteristic of the study population

#### 4.1.1. Number of Hospitals

A total of 96 hospitals were surveyed, giving a response rate of 98% of expected hospitals. Four district hospitals couldn't be reached due to weather constraints and two were omitted due to their status as health centres. There were 60 (62%) district hospitals (DH), 16 (17%) designated district hospitals (DDH) and 20 (21%) regional hospitals (RH) were studied.

#### 4.1.2. Study population per hospitals

Table 4.1 illustrates the work load of the patient seen during the visiting days

Table 4.1: Number of patients seen per hospital type

Type of hospital	No of patients	Average per 12hrs day shift
District Hospital	3079	51
Designated District Hospital	796	50
Regional Hospital	1250	62

#### 4.1.3. Dedicated 24-hour acute intake area

Only nine out of 96 hospitals had a dedicated 24-hour acute intake area with a dedicated doctor on call to attend the emergencies. Six were in regional hospital, two in designated district hospital and one in district hospital.

#### 4.1.4. Sex

The gender distribution revealed more women visiting hospital than men. The number would be even higher if the women channelled directly to the labour ward were included.

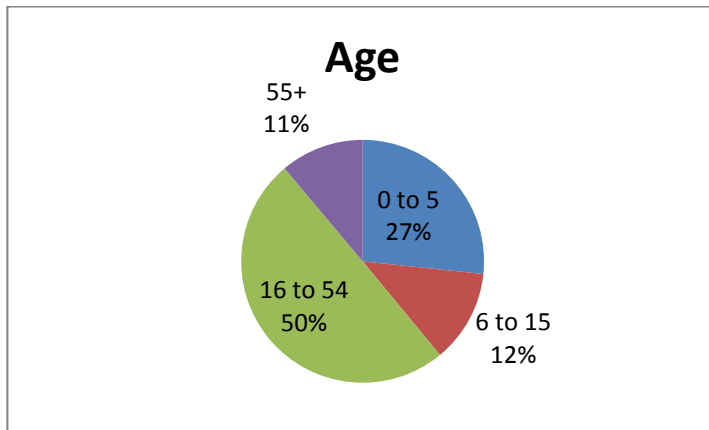
Table 4.2 Distribution of the patients according to sex

Sex	Male	Female
Number	2233	2896
	44%	56%

#### 4.1.5. Age

The age group distribution is shown in the figure below. Adolescents and adults occupied 50% of overall patients surveyed.

Figure 4.1: Distribution of age groups



## 4.2. Clinical, investigation and procedural study

### 4.2.1. Complaints

- Nature of complaints

Most complaints were medical-surgical in nature, and trauma contributed 8% of the cases.

4740 patients had medical-surgical complaints and 388 had trauma related complaints.

- Medical-Surgical complaints

The most common complaints were fever, followed with cough and abdominal pains. Skin rashes, diarrhoea, vomiting and uro-genital symptoms also contributed significant number of complaints.

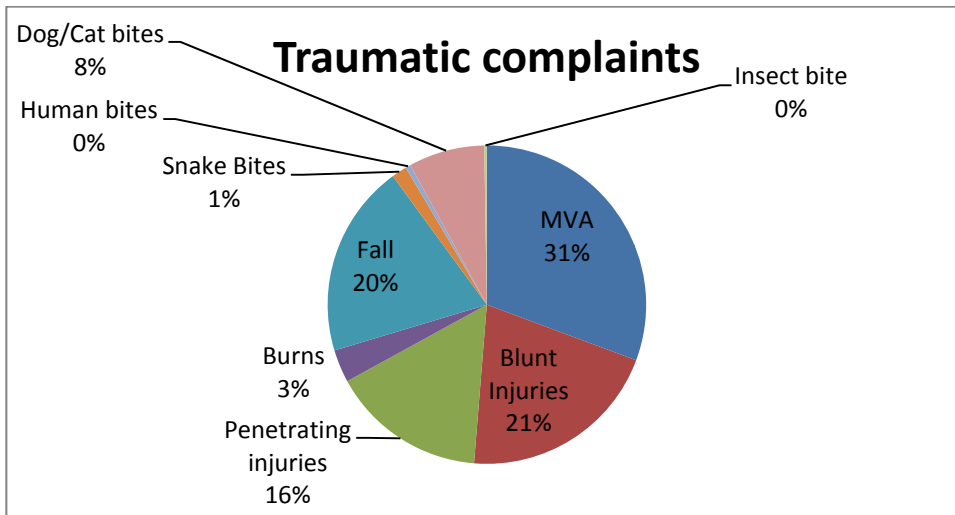
Figure 4.2 illustrate the distribution of medical-surgical complaints



- **Traumatic-complaints**

Motor Traffic accidents were the most common causes of trauma related complaints followed by blunt injuries from assaults, fall and penetrating injuries. There were significant cases of dog bites, but no rabies cases were reported during the surveys.

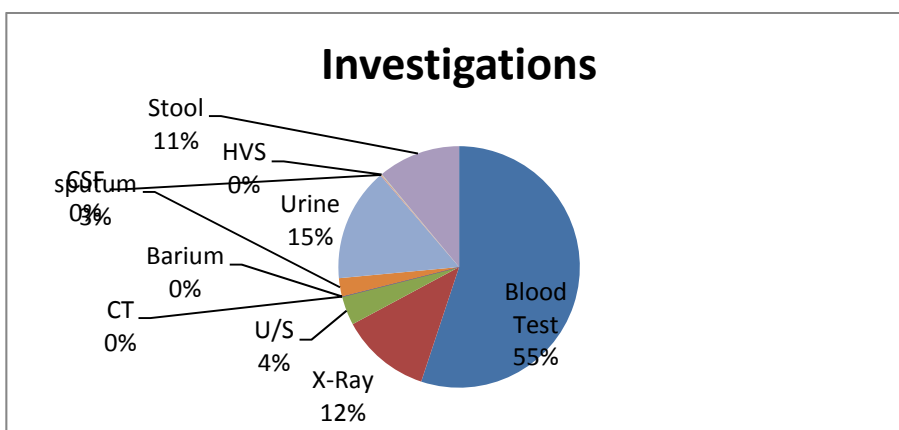
Figure 4.3: Traumatic complaints



#### 4.2.2. Investigations

Blood tests were the most common investigations, followed by urinalysis, x-rays and stool analysis. The blood tests performed were mostly for Malaria diagnosis, Haemoglobin level, blood glucose and Widal test (for typhoid). A total of 2959 (57%) patients had investigations done at acute intake areas.

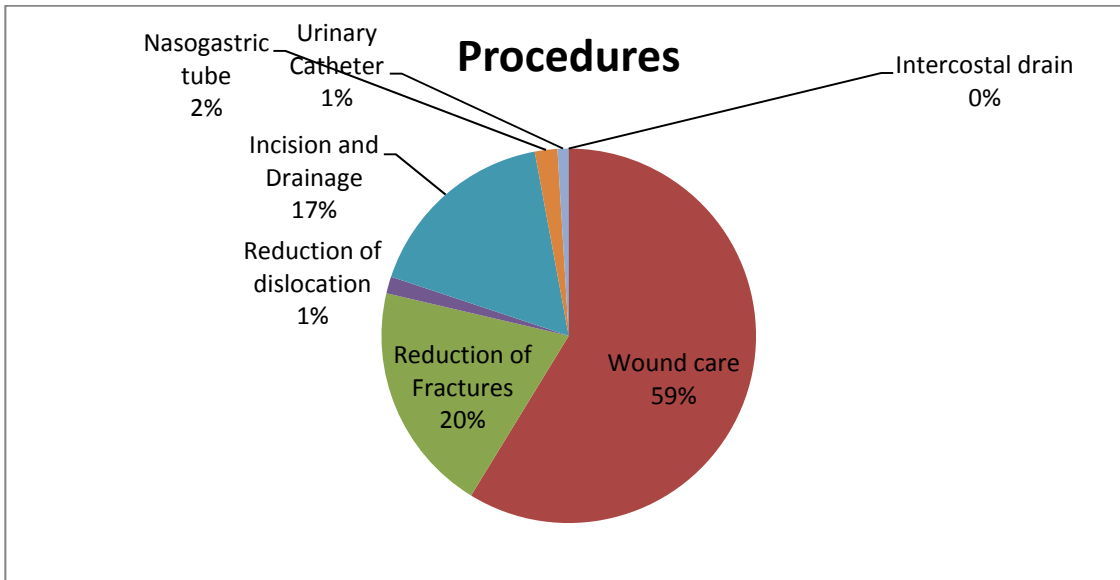
Figure 4.4: Investigations



### 4.2.3. Procedures

A total of 206 patients (4%) had procedures done. Wound care was the most common procedure followed by fracture reduction and incision and drainage procedures. No chest drain insertions were documented during the study period.

Figure 4.5: Procedures

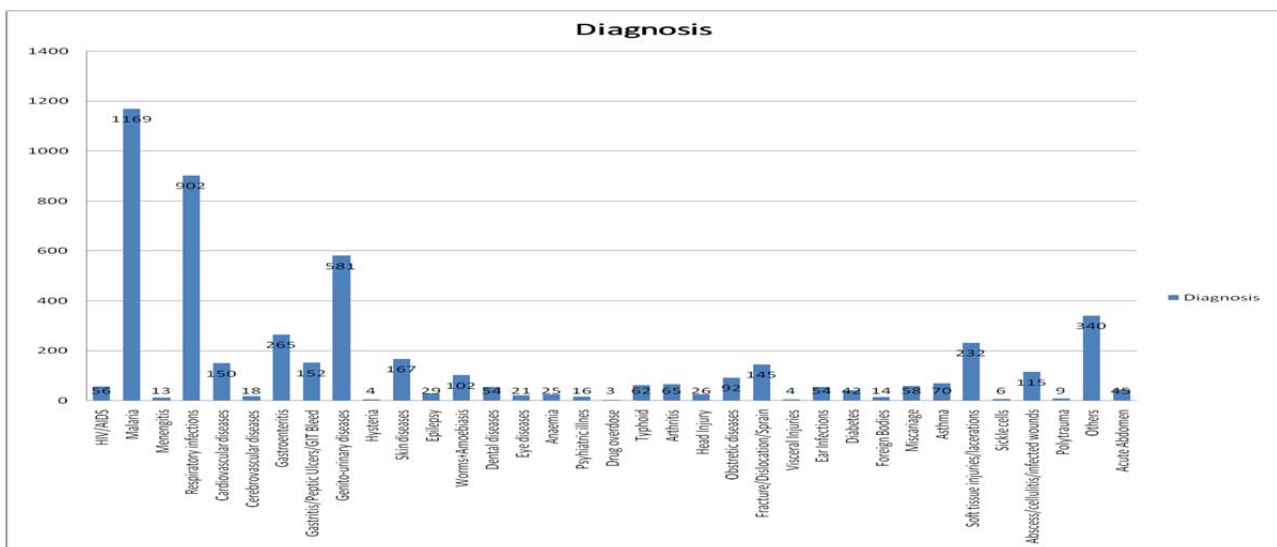


### 4.3. Diagnosis and disposition

#### 4.3.1 Diagnosis

The most common diagnosis was malaria followed by respiratory system infection and genito-urinary diseases.

Figure 4.6: Diagnosis

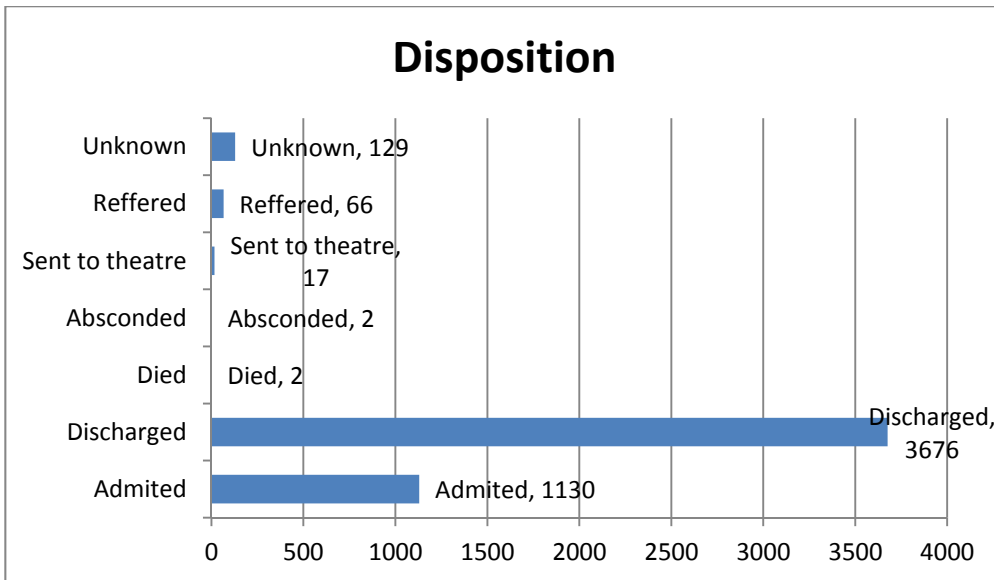




### 4.3.2. Disposition

Most patients were discharged while only 22% of the patients were admitted.

Figure 4.7: Disposition



## **5: Discussion**

The aim of the study was to document the burden of disease presenting to Tanzania mainland public district and regional hospital acute intake areas, to describe the range of early diagnostic and procedural interventions performed on acutely ill patients, and to identify the disposition of these patients. The findings of this study are expected to be utilized in resource allocation and training health care providers in emergency care.

### **5.1: Epidemiologic characteristic of the study population**

In this analysis we looked at the type of hospital patient presented, availability of 24-hour dedicated acute intake area, age and gender of the patients.

5029 patient were seen in 96 hospitals. There were 60 district hospitals, 16 designated district hospitals and 20 regional hospitals. Regional hospitals serve as referral centres for district hospitals but at the same time they are used as district hospitals in the areas found. An average of 50 patients per day shift was seen; very few hospitals had dedicated acute intake areas- only one of the district hospitals had such an area. Due to lack of dedicated acute intake areas for emergency care, seriously ill patients are usually rushed into the wards to receive treatments. Valuable time is lost during these inefficient processes, which most developed countries moved away from decades ago. During the night time, most OPDs are closed and patients attending the hospital at this time are usually admitted straight to the ward where the doctor on call will be called from home to attend the patient. Clearly this shows lack of the concept of emergency medicine in Tanzania public hospitals. The roles of acute intake areas need to be identified so that proper structure, equipment and staff are supplied to deal with needs of emergency care.

The age groups have been chosen on the basis of government policies where by children under the age of five years and elderly above fifty five years of age are given special priorities and hence seen separately in the hospitals. In this study, they occupied 38% of visits, but unfortunately no special investigations or treatment to deal with their specific requirements was offered.

On the gender distribution, there were slight more female than male, and this excluded female admitted directly through maternity wards. This difference can be attributed partially from the general population distribution and partly through cultural behaviours of males (who are typically reluctant to use hospital services).

## **5.2. Clinical, investigation and procedural study**

Most patients were seen by clinical officers who assess and treat most cases based on clinical information without investigations. Critical cases are mostly admitted immediately to ward where the assistant medical officers (AMO) on call for the wards will review the patient and commence treatment. Hence most procedures and intervention are not done in the acute intake areas. CT scan was not available in any of the hospitals. The most common blood tests were for malaria diagnosis, typhoid, blood glucose and haemoglobin level.

There were 8% trauma cases and 92% medical/surgical cases in nature. Fever, cough and abdominal pains were the three most common complaints, comprising 50% overall. Trauma cases were led by MVA, blunt injuries, fall, penetrating injuries and dog bites. This has a significant impact on planning for educational interventions.

The most common investigations were blood test, x-rays, urinalysis and stool analysis. Most patients were diagnosed to have malaria despite having negative rapid test for malaria. Very few investigations were for assessing organs dysfunction or severity of illness. Full blood counts, electrolytes, kidney function tests, arterial blood gases, lumbar punctures were rarely performed. None of the hospitals had ECGs performed.

The three common procedures were wound care, fracture reductions and incision and drainage. Most of these procedures were done in the minor theatre which is used as a day surgery theatre. Wound care included stitching, debridement and dressings.

## **5.3. Diagnostic and Disposition Study**

Most diagnoses were made based on patient clinical presentations with little or no investigation support to back up the findings. Most of the cases appeared to warrant further investigations, urgent treatment or opinion from senior doctors: these patients typically ended up admitted or referred with minimal or no intervention in acute intake areas.

The three common diagnoses made were Malaria, Respiratory tract infections and Genito-Urinary diseases, contributing more than half of the cases; these were followed up with trauma related diagnoses. Known HIV related cases are seen in special clinics, hence the burden of diseases due to HIV reported in this study was lower than population demographics may have predicted.

## **6: Conclusions**

The study revealed that almost no public hospitals had any form of emergency care system in place; most emergency patients are seen undifferentiated in OPDs.

Infectious diseases and trauma are the leading cause of morbidity; investigations and treatments are based specifically on treating the cause, with no consideration on treating the complications of these diseases. Urgent work is required to establish hospital-based emergency care systems in Tanzania.

## **7: Recommendation**

The following recommendations are made based on the research findings:

1. All district hospital and regional hospitals should have allocated 24-hour acute intake areas with dedicated doctor on call.
2. Malaria, respiratory infections, genito-urinary diseases and trauma contributes majority of the presenting complaints. All curricula for emergency care training should place emphasis on these topics.
3. The graduates from MUHAS emergency medicine residency program should be deployed to the regional hospitals and utilised as a source of training to district hospitals; they should help create dedicated emergency centres.

## Appendices

### A: Data collection sheet

Hospital Name: \_\_\_\_\_  DDH  DHORH Hospital Code:  Page Number:

Date: 

DAY	DD	MM	YYYY
-----	----	----	------

No	AGE	SEX <input type="checkbox"/> M <input type="checkbox"/> F	Presenting Time	Presenting Complaint			Investigations		Procedures	Final Diagnosis	Disposition		
							Blood Tests <input type="checkbox"/>	Specimen Tests			<input type="checkbox"/> D/C	<input type="checkbox"/> Ward	<input type="checkbox"/> SX
		<input type="checkbox"/> M <input type="checkbox"/> F		CNS	CVS	R/S	Imaging X-Ray <input type="checkbox"/> U/S <input type="checkbox"/> CT <input type="checkbox"/> Other <input type="checkbox"/>	Sputum <input type="checkbox"/> Urine <input type="checkbox"/> CSF <input type="checkbox"/> Other <input type="checkbox"/>			Other		
		<input type="checkbox"/> M <input type="checkbox"/> F		GIT	GUT	MSS	Blood Tests <input type="checkbox"/> Imaging X-Ray <input type="checkbox"/> U/S <input type="checkbox"/> CT <input type="checkbox"/> Other <input type="checkbox"/>	Specimen Tests Sputum <input type="checkbox"/> Urine <input type="checkbox"/> CSF <input type="checkbox"/> Other <input type="checkbox"/>			Other		
		<input type="checkbox"/> M <input type="checkbox"/> F		Skin	ENT	Eyes	Blood Tests <input type="checkbox"/> Imaging X-Ray <input type="checkbox"/> U/S <input type="checkbox"/> CT <input type="checkbox"/> Other <input type="checkbox"/>	Specimen Tests Sputum <input type="checkbox"/> Urine <input type="checkbox"/> CSF <input type="checkbox"/> Other <input type="checkbox"/>			Other		
		<input type="checkbox"/> M <input type="checkbox"/> F					Blood Tests <input type="checkbox"/> Imaging X-Ray <input type="checkbox"/> U/S <input type="checkbox"/> CT <input type="checkbox"/> Other <input type="checkbox"/>	Specimen Tests Sputum <input type="checkbox"/> Urine <input type="checkbox"/> CSF <input type="checkbox"/> Other <input type="checkbox"/>			Other		

## B: Ethic approval from the Stellenbosch University



### Approved with Stipulations New Application

14-May-2012  
MBAYA, Khalid Rajabu

Ethics Reference #: S12/04/097

Title: An analysis of the clinical practice of emergency medicine in public district hospitals in Tanzania

Dear Dr Khalid MBAYA,

The New Application received on 13-Apr-2012, was reviewed by members of Health Research Ethics Committee 2 via Expedited review procedures on 23-Apr-2012.

Please note the following information about your approved research protocol:

Protocol Approval Period: 11-May-2012 - 11-May-2013

The Stipulations of your ethics approval are as follows:

1. Please correct the typing error in the title of the research project: clinical should be (clinical).
2. Please indicate that this study is indeed for degree purposes in Section 3.
4. Please correct the typing error in the department name field: department = department.
5. Please answer the questions in Section 7.
6. On page 2, paragraph 2, line 3: Please change to "...with a class of 8 residents..."
7. On page 3, paragraph 2, line 7: Please change to "...revealed that a large proportion of people..."
8. On page 10, Reporting of Results, first sentence: Please change to: "A full comprehensive report will be given to the ministry of health and social welfare to assist in planning and policy making decisions involving the practice of emergency care."
9. Please complete the checklist.

Please remember to use your protocol number **Copyright** on any documents or correspondence with the REC concerning your research protocol.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

#### After Ethical Review:

Please note a template of the progress report is obtainable on [www.sun.ac.za/rds](http://www.sun.ac.za/rds) and should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number projects may be selected randomly for an external audit.

Translation of the consent document in the language applicable to the study participants should be submitted.

Federal Wide Assurance Number: **Copyri**  
Institutional Review Board (IRB) Number: **Copyrig**

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

#### Provincial and City of Cape Town Approval

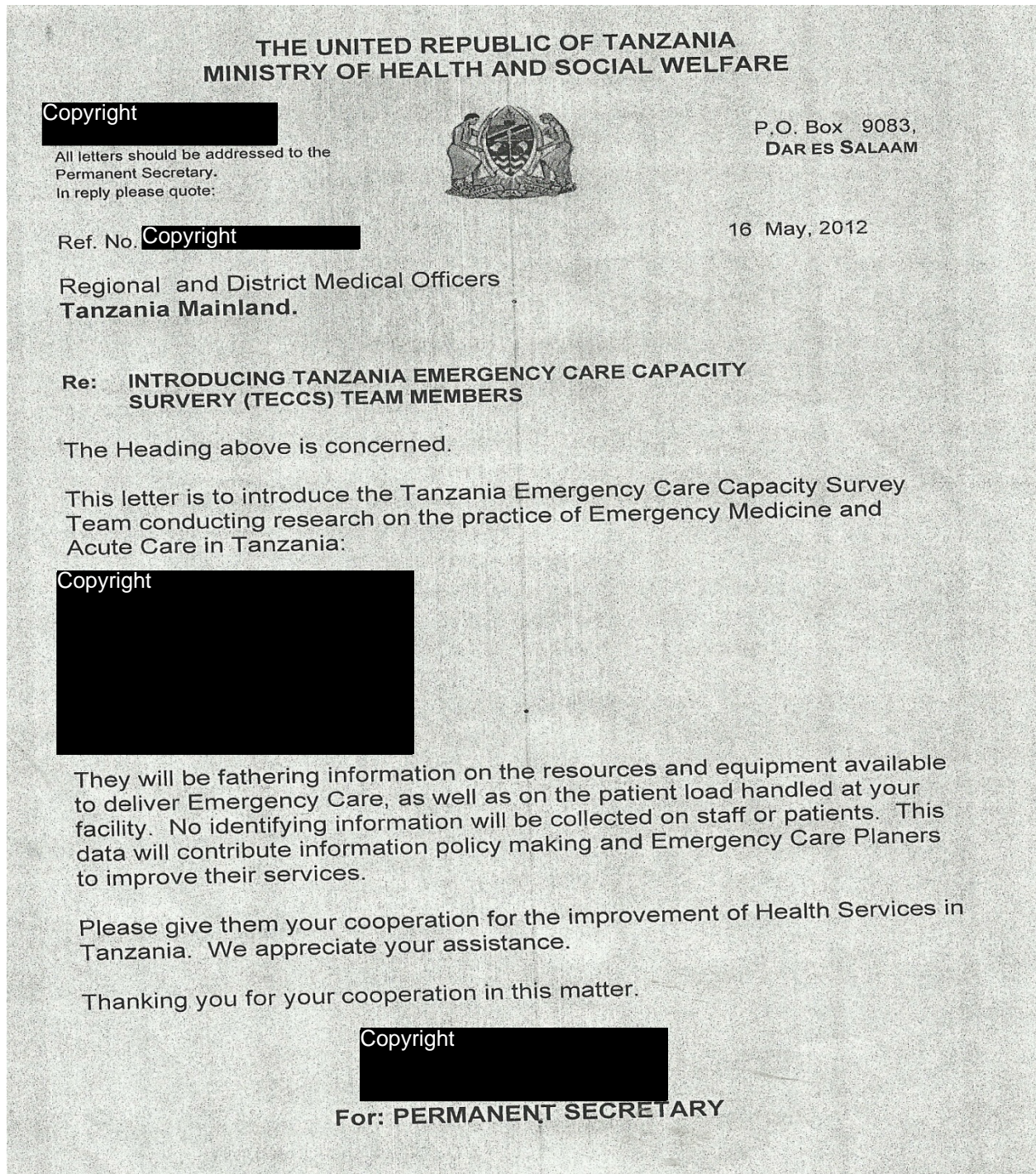
Please note that for research at a primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are **Copyright** at Western Cape Department of Health **Copyright** and **Copyright** at City Health **Copyright**. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.  
For standard REC forms and documents please visit: [www.sun.ac.za/rds](http://www.sun.ac.za/rds)

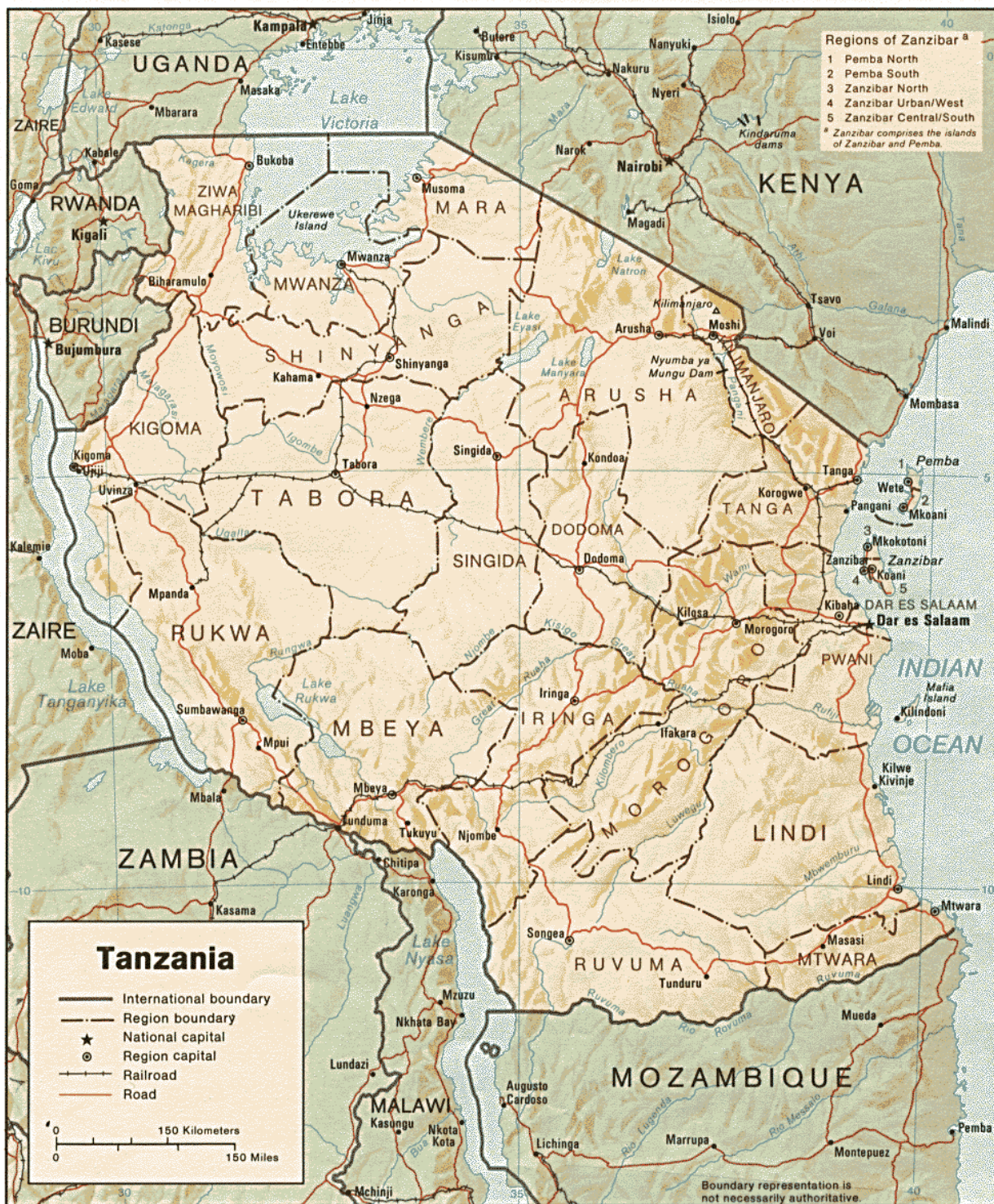
If you have any questions or need further help, please contact the REC office at 0219389207.

Included Documents:

**C: Letter from ministry of Health**



**D. MAP OF TANZANIA**





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