Office of Global Health (OGH)
UT Southwestern Medical Center
Doctoral Residency

Road Traffic Injury Surveillance in Nigeria

Dima F. Turkmani, DrPH, MBA
December 5, 2012
Professional Journey

2000------------------------/  /-----------------------2008-----------------------------------------2010

Taybah for Healthcare Consulting

Yale University

2000------------------------/  /-----------------------2008-----------------------------------------2010
DrPH Residency
October 2011 – July 2012

Newsroom

UT Southwestern launches global health office

DALLAS – Sept. 9, 2010 – UT Southwestern Medical Center has established an Office for Global Health to direct and develop training and research initiatives with partners around the world. Dr. Fiame Nwariaku has been named associate dean for global health to oversee the office.

“This initiative is a strategic priority for UT Southwestern and represents an exciting step forward as we seek to expand UT Southwestern’s worldwide presence,” said Dr. Greg Fitz, executive vice president for academic affairs and provost, and dean of UT Southwestern Medical School.

The new office will help expand the institutional mission by integrating existing international activities, establishing new programs and training courses, and serving as a resource for faculty and students who wish to work abroad. Dr. Daniel K. Podoleczyk, president of UT Southwestern, established a task force for global health and care for the underserved as part of the medical center’s strategic planning process last year.

Dr. Fitz said, “International health programs offer enormous potential to reinforce our three-part mission of patient care, research and education. To that end, we would like to develop opportunities on this campus to train students and faculty for careers in international health.”

Efforts in the new office will encompass exchange programs, global research
UT Southwestern Office of Global Health
Organizational Background

• Established in 2010
• Mission to reduce the global burden of disease by developing transformative educational programs
• Partnership with five universities abroad in Lima, Tel Aviv, Paris, Cape Town, and Guangdong Province
Road Traffic Injury Surveillance in Nigeria
Global Burden of Injuries

- Expected 40% increase in injury-related deaths (2002 – 2030)
- Low and Middle Income Countries: 75% increase

Sources:
Global Burden of Injuries

- 32 Disability Adjusted Life Years lost per death
- $518 billion total cost
- Under-funded research

Sources:
Nigeria: Country Background

- **Population**
  154 million

- **RTA Mortality**
  32 per 100,000 (86th percentile)

Sources:
1. WHO. Nigeria 2009 Global Health Observatory Data.
Nigeria’s Road Safety Profile
Burden of Disease in Nigeria (Deaths per 100,000)

Injuries: Nigeria vs. United States

Source:
WHO. Global Burden of Disease 2004 Summary Tables.
Project Aims
RTI Surveillance in Nigeria

- Evaluate feasibility of conducting RTI surveillance using available data
- Determine burden of injuries and evaluate temporal and geographic distribution
- Recommend strategies for RTI surveillance
Methods
Overall Approach

1. Conducted literature review / informal environmental scan
2. Secured IRB approval
3. Identified conceptual framework
4. Requested injury data from Federal and Lagos State Ministries of Health
5. Analyzed data
6. Prepared two papers for publication
Assessment of Nigeria’s Burden of RTIs

Analysis 1:
Calculate RTI incidence and mortality rates & assess temporal and geographic trends

Analysis 2:
Evaluate RTI incidence and mortality rates in outlier states between 2001 and 2010

Analysis 3:
Validate FRSC data against police data
Analysis 1: Temporal and Geographic Variation in RTI Incidence and Mortality Rates

• Data Sources:
  – Federal Road Safety Commission (FRSC) RTI counts
  – Annual national population densities

• Approach:
  – Project annual state-level population densities
  – Calculate annual state-level RTI incidence and mortality rates
  – Assess geographic trends 2001-2005 and 2006-2010
## State Population Estimates

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Inter-Quartile Range of RTI Incidence Rate (FRSC Data)
Inter-Quartile Range of RTI Mortality Rate (FRSC Data)
Reference FRSC Trend

Impact of FRSC Initiatives

RTCs have reduced significantly following the introduction of the FRSC and the following initiatives:

- UN Decade of Action
- Road Transport Safety Standardization Scheme (RTSSS)
- Emergency Response Initiative
- Road safety infusion in school curricula
- Standardisation of school buses
- Seat belt enforcement
- Drivers' License scheme
- Driving School Standardization Programme (DSSP)

Average RTI Mortality Rate (FRSC Data)

2001-2005

2006-2010

per 100,000

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree
Analysis 2: RTI Incidence and Mortality Rates in Outlier States (2001-2010)

• Data Sources:
  – FRSC RTI counts
  – National and state population densities

• Approach:
  – Identify outlier states using 10-years of data
  – Assess incidence and mortality rates in outlier states
# Identification of Outliers

<table>
<thead>
<tr>
<th>Incidence of RTI (per 100,000)</th>
<th>Mortality Rate (per 100,000)</th>
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<tr>
<td><strong>High</strong></td>
<td><strong>Low</strong></td>
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<td>Sokoto 1</td>
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</table>

75th Percentile | 3.5 |
75th Percentile | 2 |
75th Percentile | 2.5 |
75th Percentile | 3 |
Updated RTI Incidence and Mortality Rates in Lagos State

![Graph showing updated RTI incidence and mortality rates in Lagos State from 2001 to 2010. The graph includes two lines: one for Death Rate and one for Injury Rate. The Death Rate shows a peak in 2002, followed by a steady decline. The Injury Rate shows an initial peak in 2001, followed by fluctuations until 2007, when it begins to decrease significantly.]
Analysis 3: Data Sources Validation

• Data Sources:
  – National RTI FRSC counts
  – National RTI police counts

• Approach:
  – Compare FRSC data to police data at the national level
Data Validation: Police vs. FRSC

The chart illustrates the number of injuries due to RTIs in Nigeria from 2005 to 2011. The data is compared between Police and FRSC sources.

- **Police Data** is represented by blue bars.
- **FRSC Data** is represented by red bars.

- * Only police data are available for 2011.
Discussion
Surveillance Steps

1. Defining the problem
2. Collecting the data
3. Entering the data
4. Processing the data
5. Interpreting the data
6. Reporting the results
7. Evaluating the surveillance system
8. Using the results to plan prevention/treatment

- Other stakeholders
- International agencies
- Private sector & NGOs
- Health departments
- Other public sector agencies
Recommended Staged Approach

Stage 1: Use an Existing Data Source

Stage 2: Combine Two or More Data Sources

Stage 3: Require Hospital Aggregate Data Collection and Submission

Stage 4: Motivate Hospitals to Collect and Submit Patient-Level Data

Stage 5: Collect Pre & Post Hospitalization Data
Components of Injury Surveillance System

**CORE**
- MINIMUM DATA SET (MDS)
  - Identifier, age, sex, intent, activity, place of occurrence, nature of injury, mechanism of injury

**Supplementary for assaults**
- ODS
  - Object used
- MDS
  - Circumstances, victim/perpetrator relationship

**Supplementary for traffic injuries**
- ODS
  - Counterpart
- MDS
  - Mode of transport, type of road user

**Supplementary for suicides**
- ODS
  - Previous attempts
- MDS
  - Proximal risk factors

**Supplementary for “other specific injury”**
- ODS
- MDS
Conclusions
Project Reflections

- RTIs present a health problem in Nigeria
- It is possible to do temporal and geographic analysis at the sub-national level
- Discrepancies exist between FRSC, police, and WHO-reported data
- Standardize definitions of data elements and train data collector/reporters
OGH Future Directions

• Publications
• Incorporate highway grid into mapping
• Reconcile incident reporting protocols and jurisdictions for police and FRSC
• Pursue future grants using this proof of concept study
• Continue to collaborate with partners in Nigeria
Follow-up Project

• Three-month pilot study
• Test usability of tool and evaluate validity of data
• Range of issues
  – Educate staff & leadership to obtain buy-in
  – Establish business associate agreements /data access agreement
  – Secure server space
  – Assure data confidentiality
  – Secure adequate wireless signal
  – Establish remote access via Citrix
  – Allocate needed staff & students at PHHS
  – Define trauma catchment areas
  – Assure capture of needed data elements
Residency Reflections

- Feasibility of conducting global health activities regardless of location
- Importance of relationships
- Rapid decision-making
- Patience
- Complexity of injury surveillance work
- Process of grant development
Acknowledgments

• **UT Southwestern:**
  Dr. Fiemu Nwariaku,
  Dr. Sandi Pruitt, Ms. Wendeline Jongenburger, and Ms. Phyllis Perere

• **UT Dallas:**
  Mr. Greg McGuire

• **UNTHSC:**
  Dr. Christine Moranetz,
  Dr. Sharon Homan, Dr. Oladimeji Akinboro, and Dr. Oladayo Akinwolemiwa

• **Classmates, friends and family everywhere!**
Questions and Comments!