A GIS Based Predictive Model for Prevalence of Infectious Diseases in Sub-saharan Africa: Case Study of Cholera

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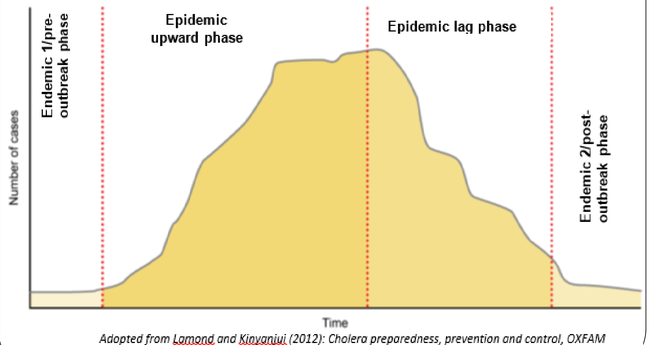
Overview

- Worldwide, infectious diseases are the leading cause of death of children and adolescents, and adult
- majority in low- and middle-income countries
- Interventions unavailable to needy populations
- Commonest outbreaks (Africa): Cholera, dysentery, malaria and hemorrhagic fevers
- They are sporadic in nature – diff places
- Instigation: Weak health systems, natural disasters or civil unrest
- Several outbreaks have demonstrated that the world remains unprepared to rapidly and effectively respond to serious public health events (WHO, 2016)

Disease curve



Adopted from Lamond and Kinyanjui (2012): Cholera preparedness, prevention and control, OXFAM

Problem: There is no precise reporting on spatial and temporal viability of different epidemics to estimate the true burden in the region (WHO, 2003; Susan et al, 2012; and Lessler (2016).

Goal: To develop a GIS based predictive model for prevalence of Cholera in Sub-Suharan Africa to facilitate planning and allocation of resources.

Methodology

Diagnosis:
To determine spatial and non spatial factors for cholera prevalence

- •Literature review
- •Conduct a survey

Action Planning:
To obtain data on disease management levels

- •Develop a conceptual framework
- •Interview key medical personnel : sampling in MOH, referral Hospitals
- •Collect data sets

Action Taking:
To analyse and design the model

- •Analysis of data
- •Develop a prototype
- •Design a model

Evaluating:
To train and test the model

- •Train and Test the model using surveillance data
- •Validate the model with key medical personnel

Specifying learning:
To document and obtain lessons learnt for further research

- •Document lessons learnt
- •Report and review state of the model for further learning

Available Technologies

Scope

- The four regions of Uganda
  - North
  - East
  - Central
  - And the \west

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