

Design of a real time covid-19 pandemic surveillance system using mobile phone

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Abstract

INTRODUCTION: The menace and spread of COVID-19 from person to person in communities and around the world has brought to fore, the urgent need for an effective public health surveillance system, especially in resource-limited areas. Advance detection and treatment of diseases represents one major strategy to prevent transmission of diseases. Although, public health surveillance systems have improved the administration and management of diseases, there are still challenges such as adoption of new technologies, standardized cases and validly diagnosed cases and validity. However, the current public health surveillance system is often inconsistent and of poor quality.

AIMS AND OBJECTIVE: Our overall goal in this research study is to develop a robust interactive public health surveillance system using mobile phones and the internet for real-time collection and transmission of adverse events related with administration, surveillance and management of COVID-19 pandemic in the world, especially in rural areas. This public health surveillance system will be useful in the day-to-day monitoring and presumptive management of COVID-19 in rural areas.

METHOD: The System Design: This system is an interactive voice response application for mobile phones in English and French, which is based on a server system from Telecommunications Company. There are five elements that made up this system architecture: (i). Central database and Web server. (ii). Remote access to the database from any Internet-connected computer. (iii). Telephone audio computer-assisted personal interview. (iv.) Voice messages and (v). Short message service (SMS)-based communications to and from the server via cell phones.

RESULT: This system addresses three important ingredients for an effective surveillance system: A) Real-time data collection from health workers reporting an adverse event, or from a doctor reporting a COVID-19 outbreak; B) data is rapidly analysed, prompt decisions and rapid allocation of resources are made; C) prompt communications back to the field for coordinated response.

CONCLUSION: This research showed promise and elucidated that mobile phones can be employed as a surveillance system, and that it is not absolutely necessary to have the latest costly equipment like laptop and personal computer (PC) to create a sophisticated public health surveillance system. The study concluded that with the collaboration of the right technology partner, a surveillance system can be built using mobile phones.

Keywords: Segmentation; Thresholding; Blood smear; Malaria parasite

Biography

Amanze Nkemjika Ikwu is currently working in the University Hospitals Plymouth NHS Trust in the department of cardiology



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