OpenXdata aides in monitoring and evaluating a National Dog bite and Rabies surveillance in a low resource setting of Pakistan

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Abstract and Objective

National epidemiological surveys to estimate the burden of disease can become difficult to monitor with limited resources. When the project coordinator is located in one city, and surveillance is being carried out in several urban and rural sites, monitoring the field site becomes very difficult. With the use of cell phones as data collection tools, project coordinators can quickly get feedback on their fieldworkers and their data, which has proved invaluable in managing the study. The patient data captured by the cell phone is then transmitted via GPRS to a central server where it is stored in a database and integrated with Google Earth for later use in epidemiological research. Our implementation required field workers to sign in and sign out daily along with collecting relevant surveillance information. This data is then extracted from the database and presented visually within a google earth web portal.

Keywords:

OpenXdata, Oxd, Rabies, Dog bite, Epidemiology, Public health, Surveillance, Mobile phone, Electronic data collection

Introduction

Rabies is a preventable disease with an estimated average incidence of 10.6 per million population annually in Asia during 1991-1994, although rates as high as 56.3 per million per year have been reported in areas within Asian countries [1]. Dogbite and rabies data for Pakistan are very limited, and reliable national estimates are unavailable. We are carrying out a National surveillance study to determine the frequency of dog bite patients coming to hospitals at 10 urban and rural sites in Pakistan. This is being done using an open source tool, OpenXdata (http://www.openxdata.org).

Methods

This is a prospective, active surveillance study based in 5 rural and 5 urban districts. All patients presenting to selected emergency rooms with a dog-bite or reporting contact with a possibly rabid dog and all patients admitted to hospital isolation rooms with suspected rabies will be screened for enrollment. OpenXdata is an open-source extensible/integrated end-to-end software solution for handling virtually any type of forms based data collection and management using mobile devices and web forms (online or offline). Skip logic can be incorporated within the forms and a hidden time stamp of when the form was opened and when the form was saved will also be stored. This helps program coordinators monitor speed of data entry, where speeds too fast or too slow could both be alerts on low performance by the field worker. Our system is set up such that when the field workers comes to work every morning, they are required to fill the sign-in form on the phone. This form captures their current GPS location, their Id and start time. With this information, the project coordinator can quickly know where the field worker was located during sign in, and how much time it took the fieldworker to enter the form. Similarly, the sign-out form also captures GPS, along with other necessary information.

A video to demonstrate the use of this technology is available here: http://www.youtube.com/watch?v=NaD5DIc5RUc

Conclusion

This system has reduced costs of traveling to different field sites for monitoring and has improved project management from a single location.

References

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