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Managing Dengue Fever by Using the One Health Approach and Electronic Surveillance

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Objective

The objective of this abstract is to share the lessons learned from the dengue epidemic in Lahore, Pakistan in 2011 and development of a comprehensive electronic surveillance system for dengue prevention and management.

Introduction

Various serotypes of DF were frequently reported in different regions of Pakistan on smaller scale. However, the worst dengue outbreak in Pakistan was experienced in 2011 in Lahore which is a 2nd most popolous city of Pakistan and capital of province punjab. This epidemic erupted during the post monsoon season and claimed 301 lives in just 4 months. To address that health crisis, Government adopted a multipronged strategy with a robust dengue fever surveillance program in Punjab.

Methods

Like many other diseases, there was a weak disease surveillance system for DF and dengue haemorrhagic fever (DHF) in Punjab. Immediately after the outbreak, the Punjab Prevention and Control of Dengue (Temporary) Regulations 2011 was promulgated.

The capacity of the hospitals was increased by establishing separate dengue wards with 1500 beds in public hospitals and 500 beds in the private hospitals to accommodate huge influx of dengue Patients. Moreover, 150 Dispensaries were converted into Dengue filter clinics along with establishment of 20 new diagnostic centres and recruitment of more medical personnel.

A uniform and standardized protocol for treatment of dengue patient was enforced in the province. Low cost was fixed for blood test for DF. The interdepartmental coordination was ensured to adopt a multidimensional approach ranging from case management and vector control to advocacy and social mobilization campaign.

A toll free helpline 08009000 was operative round the clock for Patients counselling, receiving requests for solid waste disposal/ fumigation services to advising treatment protocol to the health practitioners.

In 2012, the government took an innovative step by launching an IT (Information technology) based application called 'SATSCAN', which generates early warning signs for dengue on the basis of historic data as well as on the cases reported. Once the patient arrive in hospital, his data is uploaded on the web. If the diagnosis is proved, he is labelled as "confirmed" patient, otherwise categorized as "suspected" case of dengue.

This application "SATSCAN" is uploaded on around 1500 Android smartphones, provided to field workers of different government departments who upload geotagged photos of their vector surveillance efforts. More than 680,000 photos have been received through this system till todate.

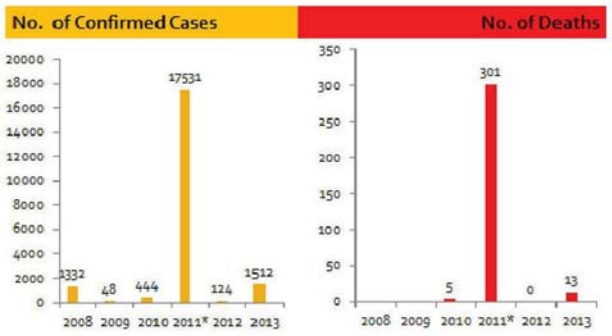
Results

The focus of dengue disease surveillance efforts was Lahore city. During the period of acute dengue outbreak (ie. 2011) more than 300 deaths attributable to dengue were reported. However, after launching this disease surveillance system, no death was reported in 2012 out of 124 confirmed dengue patients. However, in 2013, 13 deaths were reported out of 1512 confirmed patients while only 18 confirmed cases were reported in Lahore. This year, the focus of DF in Punjab was shifted to another city, Rawalpindi which was expected to import disease from another adjoining province of Khyber-Pakhtunkhwa (KPK). In 2013, an outbreak of DF was experienced in Swat district of KPK with 6376 suspected cases and 23 deaths. In the same year, the epidemic was at its worst in Sindh with 15000 patients affected with DF leading and 32 human lives were lost.

Conclusions

This was the first successful coordinated government effort to benefit from multidisciplinary 'One Health approach' coupled with accelerated use of Information technology to curtail the menace of DF in the province Punjab. However, there is still a need to take long term measures/ remedial steps for contrl of this deadly disease on national scale. Therefore, the federal government is required to expand effective vector control measures and dengue surveillance programs to other provinces as well. In addition, mass scale community mobilization efforts need to be strengthened.

Figure 1: No of Confirmed cases Vs No of deaths in Punjab



Keywords

Dengue; Surveillance; SATSCAN

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