Short Communication

Dengue control mega campaign: A comprehensive, integrated, multisectoral approach for dengue control in Uttarakhand, 2023

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Abstract

To address the public health challenge posed by Dengue in Uttarakhand, the health department, Uttarakhand state government designed and implemented a comprehensive, multi-sectoral, integrated approach for bridging the gaps in containment of anticipated dengue outbreaks during the whole transmission period in vulnerable areas. A well-crafted strategy aimed to implent a containment action plan by timely identification of early Hot-Spots, containment strategy execution by proper micro-planning in a multi-sectoral, integrated approach. The containment action plans were issued from District Magistrate's of respective districts. The surveillance system early identified hotspots of dengue in vulnerable areas and multi-sectoral teams responded to the hotspots to neutralize any occurrence of outbreak/epidemic of dengue. Inspite of anticipated increase in dengue cases in year 2023, the incidence of dengue cases was reduced to less than half in comparison of previous high transmission year i.e. 2019. The dengue mega campaign containment strategy implementation resulted in successful control of incidence of dengue cases in expected high transmission period of dengue in Uttarakhand state.

Keywords: Dengue, Mega campaign, Containment strategy, Multi sectoral approach, Hot Spot, Comprehensive Integrated strategy, Outbreak.

1. Introduction

Dengue poses a significant public health challenge in Uttarakhand a northern hilly state in India. Out of a total geographical area in the state, 86% is hilly area and 14% is plain area.[1] The current estimated population is approximately 1.22 crores.[2] To address the regular public health challenge posed by Dengue in Uttarakhand, the health department, Uttarakhand state government designed and implemented a comprehensive, multi-sectoral, integrated approach for bridging the gaps in containment of anticipated dengue outbreaks during the whole transmission period in vulnerable areas. This well-crafted strategy aimed to implent a containment action plan by including judicious actions like timely identification of early Hot-Spots identification, Containment strategy execution by proper micro-planning in a multi-sectoral integrated approach, time-specific targeted actions, community engagement, political and administrative support, decentralized monitoring by setting up district control room etc. compiled in form of executing Dengue Control Mega Campaign.

The key initiatives in the state include dengue control mega campaign from September to October 2023 aimed to identify early hotspots, promptly recognize impending outbreaks, to establish administrative response mechanisms, and which is monitored by control room.

In the year 2023 there was an anticipation of increased transmission of dengue due to climatic effects, seasonal patterns and global El Nino phenomenon in 2023. Uttarakhand state is also exposed to rapid urbanization, climate and environmental changes and high tourism which are major risk factors for increased dengue transmission. Historical data and previous annual trends of dengue in the state and factors like increase in susceptible population due to in-migration and population mixing were also favouring expected high dengue transmission in year 2023.

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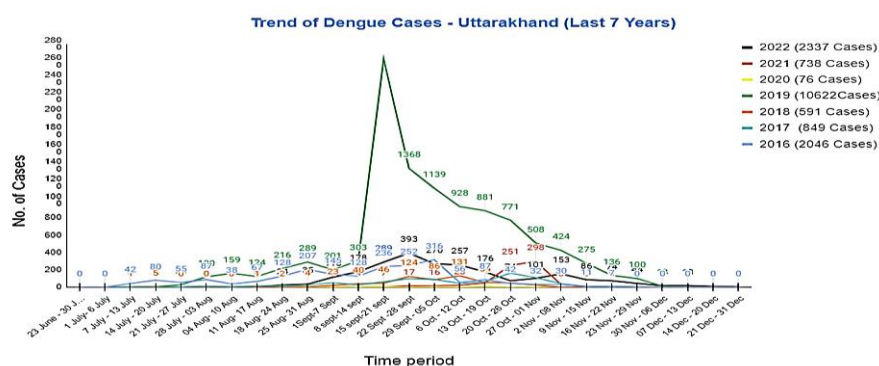Email: drpankajmph@gmail.com

Figure 1: Shows trend of dengue cases in last seven years in the state. The graph depicts that major dengue transmission period in the state lies between months of September to October

2. Materials and Methods

The major objectives of the containment strategy were to early identify hotspots of dengue in vulnerable areas, implementing dengue mega campaign micro action plan at war footing, to respond to any unusual event reported in the hotspot to neutralize any anticipated occurrence of outbreak/epidemic of dengue.

The key activities conducted include collaborative efforts of the health department, municipal corporation, other departments & NGOs. Multi-sectoral engagements were instrumental in preventive actions such as source reduction, cleanliness campaigns, fogging & generating awareness for diving community engagement.

Frontline workers like ASHA workers, sanitary workers/inspectors, Anganwadi workers & Dengue Volunteers etc. were engaged for dedicated dengue prevention and control activities, Inter-sectoral and inter-convergent actions were systematically executed in identified hotspots, focusing on source reduction, fogging, and awareness activities, Daily mega drives, with assigned house coverage targets for door-door campaign workers was keystone of the campaign.

Hot spots were identified through robust surveillance mechanism and immediate actions were undertaken. Timely identification of hotspots was done based on number of dengue cases & larval indices. An area specific dengue containment micro-planning was done on standard strategy basis for identified hotspot.

The containment action plans were issued from District Magistrates of respective districts. The surveillance system early identified hotspots of dengue in vulnerable areas and multi-sectoral teams responded to the hotspots to neutralize any occurrence of outbreak/epidemic of dengue.

Control rooms were established for monitoring of Dengue situation, resolving all admission, treatment and platelets related grievances of people. These combined efforts resulted significantly towards improved operational efficiency of dengue control measures in Uttarakhand, demonstrating the state's commitment to effective dengue management and preparedness.

There were additional measures also instituted to support dengue control like upto 30% beds in all government and private hospitals were reserved during the peak periods, Bed requirements and platelet requirements were monitored and resolved through the district level control rooms, Adequate dengue testing was ensured at government labs and state government empanelled private labs, District Rapid Response Team (RRT) visiting all hospitals to ensure standard treatment of Dengue cases, Quality of testing was monitored by RRTs at private labs and hospitals to avoid unnecessary panics in the community, Financial penalties were imposed on individuals or institutions posing a risk of mosquito breeding places, Awareness campaigns were conducted utilizing various mediums.

3. Results

Dengue Serotype testing was done in 35 samples, out of which 20 samples were found positive for DEN-2 virus strain. Based on hot-spot assessment, initially 24 wards identified in District Dehradun, further extended to 40 wards. Similarly Hot-spots were identified in wards & villages of others districts.

During the dengue mega campaigns a total of 13,46,830 houses surveyed, inspecting 30,74,797 containers, and reduction or cleaning of 2,35,020 containers was conducted which were found positive with dengue larvae. A total of 1,12,377 houses surveyed by Dengue volunteers, inspecting 9,67,159 containers, out of which 1,01,115 containers with Dengue larvae were identified and breeding site cleaned. A total of 997 calls received and resolved during the period of August-November 2023.

The **Figure 2** shows that inspite of anticipated increase in dengue cases in year 2023, the incidence of dengue cases was reduced to less than half in comparison of previous high transmission year i.e. 2019. A total of 4320 cases were reported in year 2023 which are substantially less in comparison to anticipated occurrence of dengue cases in 2023.
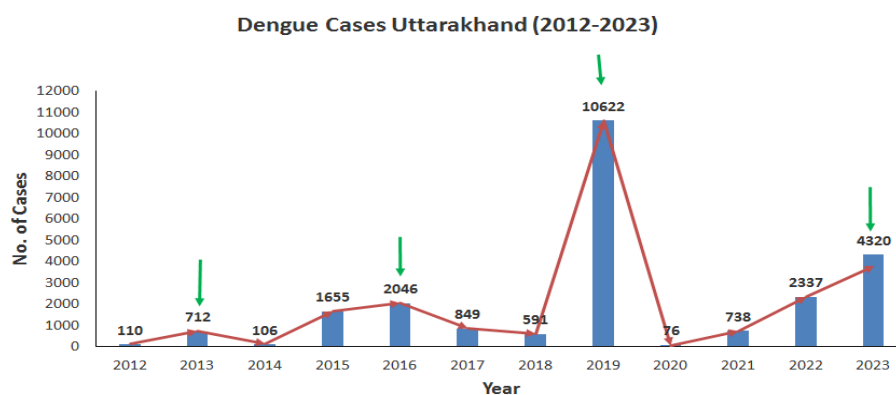
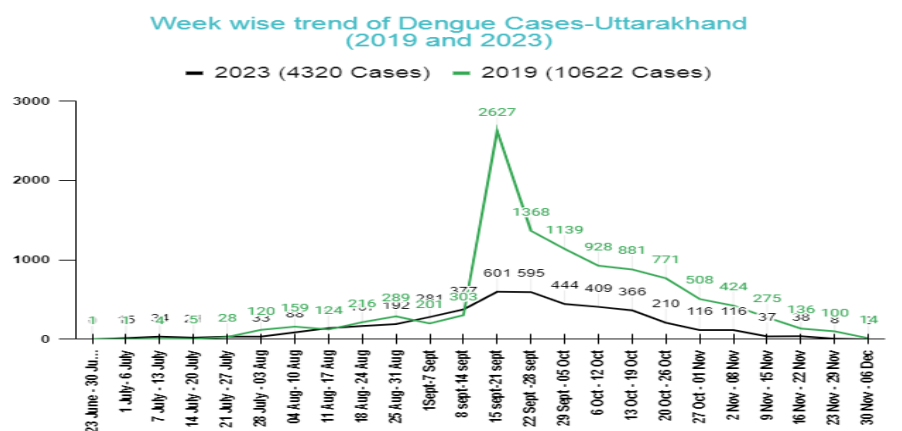**Figure 2:** Trend of dengue cases in Uttarakhand (2012-2023)

Figure 3: Weekly trend of dengue cases in Uttarakhand (2019 & 2023)

The **Figure 3** shows that the dengue mega campaign containment strategy implementation resulted in successful control of incidence of dengue cases in expected high transmission period of dengue in Uttarakhand state. A huge number of dengue case occurrence was prevented with the help of adequate and timely implementation of dengue Mega campaign containment strategy.

4. Discussion

Dengue has become a major Public Health concern in state of Uttarakhand specifically in plain regions of state. Control of dengue through early identification of emerging Hotspots by surveillance of incidence of dengue cases and dengue larva survey activities is proven to be an effective public health intervention.

The dengue statistics in the year 2023 depicts that the hotspot identification and timely implementation of dengue containment strategy in form of dengue mega campaign in the identified Hotspots is very effective and help significantly reducing the anticipated morbidity due to dengue in Uttarakhand state.

A study conducted in Brazil shows that the use of information on dengue incidences rates, mapping their patterns and dynamics of spread using spatial autocorrelation analysis, can be a valuable tool to analyze the spatial patterns

change over time and it may be more efficient to improve the surveillance system and optimize disease control.[3]

A study conducted in Andhra Pradesh state of India shows spatial and temporal clusters of dengue and hot spot and cold spot regions in the state of Andhra Pradesh, using GIS techniques. Identifying spatial clusters of dengue disease is an essential tool in planning policy and estimating the local resources required and the timescales over which targets can be achieved.[4] Multidisciplinary outbreak response teams plays a key role during the outbreak.[5] Outbreak planning must ensure that governance over the response is present, particularly through highlighting the stakeholders to be involved, providing details of monitoring of the response, ensuring that transparent risk communication is in place, and allowing for human resource preparedness planning.[6] A study emphasizes on the necessity of a multidisciplinary approach for vector control, including involvement of other government sectors, the private sector and local nongovernmental organizations, was recognized as a priority.[7] Along with the multi-sectoral approach.

Integrated surveillance is considered a promising working strategy[8-12] to enhance early warning of emerging infections such as arboviral diseases. In addition to providing early signals, integrated surveillance by systematically integrating multiple sources of surveillance data in a timely

manner (indicator- and event-based surveillance, case-based surveillance, vector surveillance, and virus and environmental data and information) could contribute more effectively to accurate risk assessments (RA).[13]

5. Conclusions

Inspite of anticipated surge in dengue cases because of the various risk factors as mentioned above, the dengue incidence was effectively controlled in the state in 2023 by instituting the focused, time bound, multi-sectoral & rigorously monitored Dengue mega campaign containment strategy.

6. Way Forward

With the encouraging results of Dengue Mega Campaign containment strategy implemented in year 2023, the health department, Government of Uttarakhand may continue timely implementation of the strategy in future years for effective prevention & control impacts of dengue in Uttarakhand state.

It is imperative to strengthen mechanisms to timely identify early warning signals for dengue transmission for instituting adequate response. Uptaking modern IT based tools, strengthening dengue cases, vector and larval surveillance mechanisms will be explicitly helpful in future prevention and control of dengue.

7. Source of Funding

8. Conflict of Interest

None.

9. Acknowledgement

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