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Kumbh Mela 2013: Healthcare for the millions

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ABSTRACT

Mass gatherings pose challenges to healthcare systems anywhere in the world. The Kumbh Mela 2013 at Allahabad, India was the largest gathering of humanity in the history of mankind, and posed an exciting challenge to the provision of healthcare services. At the finale of the Mela, it was estimated that about 120 million pilgrims had visited the site.

Equitable geospatial distribution of adhoc health care facilities were created on a standardised template with integrated planning of evacuation modalities. Innovative and low cost response measures for disaster mitigation were implemented. Emergency patient management kits were prepared and stocked across the health care facilities for crisis response. Dynamic resource allocation (in terms of manpower and supplies) based on patient volumes was done on a daily basis, in response to feedback.

An adhoc mega township created on the banks of a perennial river (Ganga) in the Indian subcontinent for accommodating millions of Hindu pilgrims. Conventional mindset of merely providing limited and static healthcare through adhoc facilities was done away with. Innovative concepts such as riverine ambulances and disaster kits were introduced. Managing the medical aspects of a mass gathering mega event requires allocation of adequate funds, proactive and integrated medical planning and preparedness.

Introduction

The 'Kumbh' Mela (*n.* festival) may be the largest gathering of sentient beings anywhere in the world. This religious festival on the banks of the River Ganga, is celebrated once in every 12 years at Allahabad, India.

A 'mass gathering' (MG) is usually defined as more than a specified number of persons at a specific location for a specific purpose for a defined period of time.[1] During the 2013 Maha Kumbh Mela at Allahabad, reportedly over 120 million pilgrims visited the holy site during its 55 day course.[2]

The challenge faced in planning healthcare for an anticipated influx of millions of pilgrims, to a region of India with relatively underdeveloped permanent healthcare infrastructure, was to ensure optimal resource deployment with assurance of a minimum desired level of healthcare which was both accessible and affordable.

A high level of commitment as evinced by the political leadership, was translated into a meticulously conceived and

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professionally executed medical response. The planning approach adopted was multidisciplinary and also involved non-governmental organizations of the region. The local military medical echelons were actively involved in this process and were designated for backup and crisis response.

The planning process was initiated nearly a year in advance of the event. Unfortunately the planners may not have had the benefit of accessing a shared repository of past experience with the last Kumbh Mela of 2001, due to periodic transfers of key appointment holders and inadequate record keeping of earlier MG events.

In 1966, the extent of the festival area was 810 ha, which had now expanded to about 1936 ha.[3] The budget spent on medical and public health arrangements in 1966 was 20% of a budget of USD 1.35 million (1960 value), in 2013 it was 45% of a budget of USD 30 million (current value), with an adequate budget allocated based on anticipated population visiting the region (assumed to be an incremental percentage of attendance at the last Kumbh Mela in 2001).[3] The medical arrangements earlier hinged primarily on compulsory protective inoculations against cholera, with limited hospital facilities in the form of a central tented hospital with 100 beds and facilities for infectious disease treatment.[3,4]

Healthcare workers were detailed from across the state of Uttar Pradesh, with exclusive tasking for the duration of the festival. The medical planners and the administration had kept scope for induction of more medical and paramedical personnel in case of need. Disaster response plans had been meticulously coordinated and rehearsed with the Government hospitals and the local military medical system.

In the 2013 Kumbh Mela, there were fourteen allopathic zonal hospitals and one central hospital set up in the Mela area. 243 allopathic doctors including 50 specialist doctors were deployed to staff these hospitals. One hundred First Aid Posts were sited along the main axes of pilgrim movement.[5] To cater for alternative forms of medicine, twelve Homoeopathy hospitals and twelve Ayurvedic hospitals were also established. 120 ambulances with wireless radio communication were deployed at all major junctions in the area.

Well planned and optimally sited healthcare facilities with a standardized layout were available for the pilgrims, with excellent sign posting. These facilities were prefabricated and exclusively designed by experts, in consultation with local stakeholders from the State Health Directorate.

The emergency response services were responsive and were available gratis, to the common man. An unscheduled on the spot demonstration of response time, resulted in a summoned ambulance reaching the desired site within 5 min. Mock drills for casualty evacuation were conducted with the police in escort, and had media persons in attendance regularly over the duration of the Mela, to inspire confidence in the masses. This illustrates the importance of media management in planning for any mass gathering health cover.

Over the course of the three months of the Kumbh Mela, 412,703 patients were attended to at the outpatient departments of the hospitals, while 4429 were hospitalized.[5] Of these, 953 patients required referral to the permanent hospitals in Allahabad for further management. The healthcare monitoring and evaluation system was not designed for sustained surveillance activities due to the sheer scale of information logistics involved. OPD attendance patterns were studied daily, for resource mobilization and reallocation as required.[5] A summary based on daily interactions with the medical staff revealed a morbidity pattern as given in the Table.

An overview of laboratory testing revealed positive Widal tests in 116 cases. There were six slide confirmed cases of malaria reported. There were seven deaths recorded over the course of the Mela from various non-acute causes.

National experience in disaster management was distilled into a plan for six 'Quick Reaction Medical Teams' which were constituted for disaster preparedness. Stockpiles of 'Emergency Response Kits' for different situations in cardboard cartons (for 10 casualties each) were positioned at all health care facilities and in ambulances. Dedicated corridors (with police protection) for movement of ambulances as also provision of boat based 'water ambulances' had been done for the first time. The lead planner (BPS) drew upon past military experience in the planning process.

Emerging consensus is that 'mass gatherings health' as a new academic and scientific discipline is required to evolve to address the multidimensional and multidisciplinary complexity of such events.[6] A multisectoral approach is required for provision of a safe and healthy environment at mass gatherings, and this goes beyond the domain of the conventional practice of medicine. What characterises events such as the Kumbh Mela, is that they stretch the capacity—including that for shelter, provision of food and water, waste management, physical security, and health care—of host cities beyond what they have to accommodate in routine.[6]

Every medical planner dreads the outbreak of gastrointestinal disease due to the potential for water and food contamination in an MG event. Cholera is the most feared of all, and its prevention requires safe water supplies and food hygiene to be assured, as vaccination is no longer considered adequate or even feasible. Improving the overall hygiene and sanitation helps combat diarrhoeal diseases which will continue to be a risk for any MG event. Adequate fluids for intravenous and oral hydration were stocked up in advance at all the health care facilities along with means for disinfection of stools and surfaces, in anticipation of any diarrhoeal disease outbreak.

Table – Pattern of illnesses at the Kumbh Mela 2013.

Morbidity/Illness	Distribution
Upper respiratory tract infections (The spectrum of COPD being more prevalent among elderly pilgrims)	70%
Already on treatment for diabetes and hypertension	10%
Various types of traumatic injuries due to accidents	10%
Diarrhoea/Dysentery	5%
Burns of varying degrees	1%
Dog/monkey/snake bite	1%
Other miscellaneous ailments including epileptic seizures, dental problems, eye/ear ailments	3%

With MG events such as the Kumbh Mela potentially involving millions of people arriving from anywhere in the country or from around the world, systems that can provide rapid health surveillance information are essential. The use of 'smart' handheld devices for collecting and transmitting incident reports is an emerging area for implementation based on research. During the Kumbh Mela, a team from Harvard University utilized mobile cellular enabled tablet devices to catalogue data from across health care centres.[7] The scalability of the outcomes of such research, as also the perceived need, in resource limited settings in a low technology environment needs to be pragmatically evaluated, before being advocated for future events.

For MG events with long intervals between them, following the event, public health developments may not be integrated into routine practice and the valuable planning experience may be lost as the teams established for the events are dissolved, resulting in the loss of 'institutional memory', which can be compounded by the failure to archive documents and procedures.[7] Hence it is essential for medical planners to attempt to publish in the scientific literature as a record for posterity, besides administratively ensuring comprehensive record keeping.

Conclusion

The 'pop up tent city' that housed millions for over three months on the banks of the Ganga and the Yamuna rivers, holds a special significance not just for Hindu pilgrims but also for those involved in planning mass gathering healthcare systems.[9] The meticulous attention to detail, from layout and geospatial distribution of healthcare facilities, from the proactive resource reallocation that was undertaken on a dynamic basis in response to ground level clientele feedback, all are examples to uphold for future similar events. An area that needs more attention is that of disease monitoring and surveillance which requires to harness technology and be more wide ranging in its scope to detect outbreaks and disease patterns.

Earlier efforts too, were successful in managing to prevent outbreaks of disease.[8] The success of the medical arrangements reported on, can be gauged by the fact that no outbreak of infectious disease arose at the Kumbh in 2013.

Planning and delivery of health care services for the largest human gathering in history was indeed a mammoth and challenging task, when even the personnel, habitats and infrastructure available were temporary. Mass gatherings thus present complex challenges as the influx of large numbers of people, often from different regions (and even countries) and cultures, and the infrastructural changes needed to support them, can severely strain the public health systems and services; resulting in stretching of healthcare systems, which may have to operate for long periods at surge capacity.[10]

The planning parameters must also address areas including but not limited to, water sanitation, disposal of solid and liquid waste, systems of quality assurance of food and water etc. Preparation and allocation of medical resources for accidental injuries and morbidity, such as in stampedes and other emergencies and disasters are also recommended to be factored in, with jurisdictional overlaps being ironed out.[11]

Despite the elaborate medical arrangements that were in place, external experts found that the resource utilisation and allocation required a rethink, as less than one percent of outpatients eventually got admitted to the hospitals.[7] There were also major voids in medical record keeping pertaining to the disease burden and clinical resource utilization. Dynamic disease surveillance and monitoring are thus essential to be emphasized upon in future similar events.

Military medical planners can suitably benefit from experiential learning such as this example of a mass gathering, with applicability in the domestic and international context, in situations of internal displacement and also operations of war.

Lessons learnt

- Health care planning for mass gatherings requires an integrated, and intersectoral approach with participation of all stakeholders within and outside a Government system.
- In planning for health care, medical planners need to be proactive in their approach to planning and distribution of medical resources, with dynamic reallocation and seamless trans- jurisdictional coverage being the keystone.
- 'Mass gatherings Medicine' needs to be developed as an area of academic interest and training for doctors and paramedical personnel.

Conflicts of interest

All authors have none to declare.

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