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Preparing for seasonal flu vaccination in Uganda: Flu seasonality and the most vulnerable population

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Influenza is a serious public health problem that causes severe illness and death worldwide. The purpose of this study was to assess flu seasonality in Uganda and to examine the exposed groups of people to be taken account of, in the flu vaccination plans. We established a sentinel surveillance system for influenza in five hospitals and out-patient clinics respectively and other identified areas of outbreaks in four distinct geographical regions of Uganda (northern, eastern western and central), using standard case definitions for influenza like illness (ILI) and severe acute respiratory illness (SARI). Nasopharyngeal and oropharyngeal specimens were collected from April 2007 through Mar 2014 from patients with ILI and SARI aged ≥2 months, tested for influenza A and B with real-time reverse-transcription polymerase chain reaction and sub-typed for seasonal A/H1, A/H3, A/H5, and 2009 pandemic influenza A (pH1N1). Out of 11,254 specimens tested for Influenza, 1054 (9.4%) were positive for Influenza A, 415 (4%) positive for B and 2 (0.01%) were co-infections of Influenza A and B. The median age of patients affected with influenza was 5 years, patients aged less than 5 years had the highest influenza-positive percentage (45%), and patients aged 45 and above years had the lowest percentage (2%). Influenza circulated throughout the years and percentage of influenza-positives peaked during June. Supply of seasonal flu vaccinations should be carried out prior to the flu season and special emphasis should be put on targeting the most vulnerable populations.

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Multiple antigenic peptides (MAP) based on B and T cell epitopes of E2 glycoprotein of chikungunya virus showed enhanced immunogenicity and induced neutralizing antibodies in mice

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Chikungunya is a viral disease caused by positive sense single stranded RNA virus. This virus transmitted to human by *Aedes* mosquitoes. High fever, myalgia, joint swelling, body rashes are characteristic features of Chikungunya. Earlier studies demonstrated that dominant epitopes of envelope E2 protein can be used for diagnostic/vaccine design. In the present study we constructed Multiple Antigenic Peptide (MAP) based on the in house established immunodominant B and T cell epitopes of E2 protein. 3 MAPs (MAP-1, MAP-2 and MAP-3) were constructed on lysine back bone and characterized by SDS-PAGE, immunoblot and immunoreactivity with E2 antisera. Humoral and cell mediated responses were studied in outbred and inbred mice. Mice were immunized intramuscularly with different formulations with/without adjuvants (CpG, ODN and Murabitide) in microspheres. MAP in microspheres with CpG ODN showed highest IgG peak titer (300,000) with IgG subclass mostly IgG2a/2b distribution compared to other formulations. Individual epitopes of MAPs showed immunoreactivity with MAPs antisera and a few epitopes showed dominance. In T-cell mediated response, all the MAPs showed high stimulated index. Cytokine profile showed significant higher levels of mostly TH-1 & TH17 *viz* IL-1β, IL2, IL-12, IL-17, TNF-α. All the MAP antibodies are involved in virus neutralization. This is an alternative approach for vaccine design for Chikungunya.

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