

Abstract

Background: Influenza sentinel surveillance at the KEMRI-National Influenza Centre (NIC) was rolled out in 2006. A team of collaborators from Kenya Medical Research Unit (KEMRI), US Army Medical research unit –Kenya (USAMRU-K) and Centre for Disease Control-Kenya (CDC) came together to produce a document that was used to initiate Influenza surveillance in 8 civilian hospitals and 5 military hospitals across Kenya. Setting up the surveillance sites required a lot of input from the laboratory personnel, the principal investigator, field site coordinators and field staff including clinical/nursing officers and laboratory technologists.

Methods: Prior to opening any of the sentinel sites, the field staff were brought to central Lab in Nairobi for a one week intensive training on Biosafety, Quality Assurance and all the Site Specific Standard Operating Procedures (SOPs). These included sample transportation, sample collection, Inclusion and exclusion criteria and sample rejection SOPs among others. An influenza starter pack was then sent to the respective sites including transport media, cool boxes, Dry shippers, nasopharyngeal swabs, documentation, SOPs among other Laboratory supplies. Patient samples were transported weekly to the NIC in dry shippers to maintain cold chain by courier. On reception in the central laboratory a robust inventory system was put in place and tests were conducted first by real time PCR.

Results: Eight Sentinel sites were activated over a period of one year. A total of 17980 samples were collected during this time period. On analysis approximately 25% of the samples showed positive results on analysis. Upper respiratory viruses discovered recently like HMPV and HCoV were later introduced to the study through student programs. By real time PCR a total of 1067 influenza A and Influenza B 879 were detected. Virus Isolation yielded 2847 Isolates. Of these the most isolated virus was adenovirus at 21% and respiratory syncytial virus at 19%.

Discussion and Conclusion: Over the past eight years a lot of information was acquired through this robust surveillance program. 75% of the samples still remain undiagnosed and could be a potential source for novel viruses. Next Gen sequencing would be instrumental in detected what made the patient ill enough to have fevers of >38 degrees centigrade. This program also played a significant role during the 2009 pandemic H1N1 outbreak and still has capacity to detect MERS CoV currently circulating in the Middle East and H7N9 circulating in China. Influenza and other Upper respiratory tract viruses' surveillance remains critical in Kenya where tourism, is a major income earner. The capacity to not only detect but disseminate information in a timely manner can help contain potential outbreaks and arrest potentially dangerous situations