Molecular characterization of the rotavirus strains prevalent in Eastern Kenya

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Background
Rotavirus is the most common cause of severe infantile diarrhoea disease in infants and young children below five years worldwide. Worldwide over 215 000 children <5years die annually due to rotavirus (RV) infection with over 80% occurring in Sub-Sahara Africa. Continual surveillance is important to determine the circulating genotypes and their impact on the vaccines.

Objective: To characterize the circulating rotavirus strains in Eastern, Kenya.

Methods
Faecal samples were collected from 135 infants and children with acute diarrhoea collected from Maua Methodist Hospital were screened first for the presence of human Group A rotavirus antigen using commercially available enzyme linked immunosorbent assay kit (ELISA). The positive samples were evaluated by sodium dodecyl polycrylamide gel electrophoresis (SDS-PAGE) to determine the viral RNA electropherotype profile. Rotavirus strains were also genotyped using reverse transcriptase polymerase chain reaction (RT-PCR) of the VP7 gene.

Results
Assay of these samples with commercial ELISA showed that 17.8% (24/135) were positive for group A rotavirus antigen. Twenty of these ELISA positive samples were also analysed by SDS-PAGE of which 75% (15/20) gave detectable electropherotype pattern with the long electropherotype being predominant 80.0% (12/15) followed by the short RNA profile 20.0% (2/15). Seventeen of the ELISA positive samples were genotyped for VP7 and the results showed that G9 was the most predominant genotype comprising 47.1% (8 /17) followed by G8 29.4 % (5/17), GI 17.4% (3/17) and the mixed genotype was G8/G9 5.9% (1/17). Most patients with rotavirus infection were of the age of 3 - 60 months, with 79% being less than 18 months old.

Conclusion
The overall prevalence of rotavirus infection in young children with diarrhea hospitalised and/or attending the out-patient department of Maua Methodist Hospital was 17.8% with the predominant serotype being G9. These results show that rotavirus plays an important role in severe viral diarrhoea in young children in Maua, Eastern Kenya.