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Investigation of a suspected diarrhoeal illness outbreak in Upington – ZF Mgcawu District, Northern Cape, South Africa, March – July 2015

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Background: Diarrhoeal diseases are a leading cause of morbidity and mortality in children <5 years. About 40% of diarrhoea hospitalizations in children <5 years of age is caused by rotavirus. In response to a report about an increased number of diarrhoeal cases in a public hospital in Northern Cape Province, a situational assessment was conducted to confirm the existence of an outbreak, determine the cause/s and to prevent and control future outbreaks.

Methods & Materials: We conducted a retrospective review of hospital registers and patients' files between March – July 2015 using a standardized case investigation form. We also interviewed parents of children admitted to the ward using a structured questionnaire. Stool samples were screened using the ProSpect Rotavirus ELISA and reverse-transcription polymerase chain reaction (RT-PCR) for genotyping and real-time RT-PCR for virus detection.

Results: Between 30 March and 05 July 2015, 638 diarrhoeal cases were identified. Children <5 years accounted for 50% (n = 318) and adults ≥45 years for 16% (n = 103) of the cases. We found that about half of the affected people were females (326/638, 51%) and there were (278/638, 44%) males affected. Two peaks were identified at epidemiological week 16 (16 cases) and epidemiological week 24 (18 cases). Of the nine children admitted in the paediatric ward, one did not receive any dose of rotavirus vaccine. Eight had received one dose of rotavirus vaccine and five of the age-eligible children had received two doses of rotavirus vaccine. Rotavirus was detected in six of the nine stools collected with G9P[8] detected in all cases. Other enteric pathogens detected include sapovirus (n = 1), norovirus (n = 1) and adenovirus (n = 1).



Conclusion: A seasonal increase in rotavirus is a possible explanation for the observed increase in cases. A seasonal increase in rotavirus is typically seen during the winter months (April – June). We recommend that rotavirus vaccination coverage be strengthened and diarrhoeal surveillance improved through routine data collection, analysis and monitoring.

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Active veterinary and entomological surveillance to assess emerging vector-borne disease risk in the Autonomous Province of Bolzano (Italy)

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Background: The Province of Bolzano (pop. 520,000), Italian Alps, is a non-endemic area for Leishmaniasis and Arboviruses. The first record of Leishmania vector Phlebotomus perniciosus was in 2008. Continuous arrivals of infected dogs from endemic Mediterranean locations however raise the risk of zoonotic transmission. The last five years have also seen growth in other disease vectors such as Aedes albopictus mosquitoes. The new epidemiological situation is being monitored.

Methods & Materials: Several surveys were performed. In 2008, phlebotomine sandflies were collected using sticky traps, identified and geographic maps of sites produced. Leishmania serology was performed on local kennel dogs. Blood samples were tested with IFAT using L.infantum promastigotes as antigen source. The serological survey was repeated in 2009 on owned dogs with the collaboration of veterinarians at health district level. In 2014, a new entomological survey focused on sandflies and on adult mosquitoes, using CDC light, BG-Sentinel and sticky traps. Geographic distribution maps were updated. RT-PCR for Rotavirus presence were performed on mosquito RNA. In 2015, a retrospective case finding of dogs positive for canine Leishmaniasis was carried out with continued surveillance of human vector-borne disease cases as foreseen by law.

Results: In 2014, vectors were collected under unfavourable weather conditions (summer temperatures under 25°C). Tiger mosquitoes were the prevalent mosquito species (85.3%) in low urban settlements, whereas autochthonous Culex spp. were ubiquitous, frequently found in rural areas at varying altitudes (247–774 m a.s.l.). Phlebotomine sandflies showed comparable densities to 2008 (0.675–3.45 vs. 0.5–5.8 specimens/m² sticky trap) and were discontinuously distributed at sites with very specific ecologies at 300–480 m a.s.l. Canine Leishmaniasis carriers are increasing. In 2008, no infected resident dogs were recorded. First cases were reported in 2009 and by 2015 prevalence was 6.1/10,000 dogs.

Four imported Dengue and two visceral Leishmaniasis cases were recorded in humans.

Conclusion: Competent vectors of non-endemic diseases such as Leishmaniasis, Dengue or Chikungunya, and West-Nile virus

are now established in the northernmost Italian Alps. Although no infected vectors were collected, the risk of infection transmission should be monitored. Insect adaptation to local ecology is evident and animal/human hosts are introducing the infections.

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Unexplained neurological illness in children, Malkangiri district, Odisha, India 2014

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Background: India has reported seasonal outbreaks of acute encephalitis syndrome (AES) among children leading to substantial morbidity and mortality. From 2008-2014, 44,097 cases and 5,728 deaths were reported due to AES in India. Japanese Encephalitis (JE) virus is one of the key aetiological agent for AES outbreaks in India. Malkangiri district of Odisha reported 9 deaths in 2009 and 38 deaths in 2012 among children due to AES. The current AES outbreak in November 2014 is unusual in terms of seasonality, geographical distribution and clinical manifestations in comparison to the epidemiological features of JE. We investigated to study the etiology and epidemiological characteristics of the outbreak.

Methods & Materials: Medical records of the cases admitted in District hospital were reviewed and line-list was prepared. The family members of deceased children (n=14) were interviewed. A case was defined as illness presenting with vomiting, altered sensorium and convulsions among children < 10 years of age in Malkangiri during November 2014. Serum/CSF (Cases = 4) and serum (Contacts = 44) samples were processed for JE IgM ELISA and RTPCR at RMRC laboratory. Entomological survey was conducted by VCRC field station, Koraput.

Results: The median age was 3 years (Range: 1.5 – 4.6 years) with female preponderance (60%). Overall attack rate was 4% with highest among 1-3 years age group (7%) and case fatality rate (CFR) was 93%. All cases had vomiting, altered sensorium without fever and 60% had convulsions. Blood and CSF specimens were negative to JEV, Chandipura virus (IgM & RTPCR) and also negative for WNV and Nipah antibody. Among 116 mosquitoes from six *Culex* species subjected to RTPCR for detection of JE virus, all were negative. In 2012, Malkangiri had reported 38 child deaths due to AES (CFR 40%) and 10/78 serum samples were positive for JE by IgM ELISA.

Conclusion: This is an outbreak of unexplained neurological illness as we could not establish the etiology. Further entomological survey and assessment of other risk factors including test for additional pathogen should be carried out to confirm the diagnosis.

Training of healthcare staff, early case detection with active surveillance, and symptomatic management will effectively control the disease outbreak.

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Prevalence of Methicillin-Resistant Staphylococcus Aureus (MRSA) nasal colonization among healthy AAU undergraduates

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Background: The colonization of different parts of body by *Staphylococcus aureus* has been incriminated in many disease conditions and has become a major problem in the control of both community and hospital associated infections. A healthy carrier can therefore serve as a pool for regular and consistent release of the organism to the community. This study was therefore carried out to assess the carrier status of MRSA among healthy undergraduate students of Adekunle Ajasin University, Nigeria.

Methods & Materials: A well structured questionnaire which captured participant's biodata and determined their suitability for the investigation was administered on each volunteer. Nasal swab samples for the culture and isolation of *S. aureus* were obtained from 350 apparently healthy students spread across the five faculties of the University. Samples were cultured on Manitol Salt Agar and MacConkey agar. Confirmed *S. aureus* isolates were screened for methicillin resistance using oxacillin disc. Susceptibility of all isolates was done on Mueller-Hinton agar using disc diffusion method.

Results: The volunteers were made up of 142 males and 198 females with mean age of 19.5 ± 2.1 . Ninety-eight samples (28%) were positive for *S. aureus* out of which 9(2.6%) were screened positive for MRSA. Other organisms isolated were *Klebsiella* sp, *Pseudomonas* sp and Coagulase -ve *Staphylococci*. The frequency of isolation of MRSA was higher (1.7%) among the female volunteers.

Conclusion: A prevalence rate of 2.6% MRSA observed in this study was high enough to generate concern, since they were all healthy carriers. Personal hygiene is therefore advocated among this studied group to curb its spread.

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