



Virology Division

Viral Gastroenteritis Unit

BACKGROUND

The Viral Gastroenteritis Unit has been tasked with the establishment of a national surveillance system for the detection and characterization of viruses associated with gastroenteritis. This includes rotavirus, adenovirus type 40 and type 41, astrovirus, norovirus and sapovirus. In addition, the incidence of newly emerging viruses including picobirnavirus, aichivirus, torovirus and picotrnavirus will have to be assessed in the South African population. The unit also aids the Epidemiology Department in identifying any viral aetiology involved in diarrhoeal outbreaks and characterizing the viruses isolated.

ACTIVITIES, HIGHLIGHTS AND ACHIEVEMENTS

A total of 973 stool specimens were received in the unit during 2007. The majority of the stool specimens were received from the Western Cape although sporadic stool specimens were also received from outbreak investigations in Gauteng, Limpopo, Northern Cape and Mpumalanga. Serotype G1P[8] strains predominated in the Western Cape with G2P[4] and G1P[6] strains also circulating, albeit at lower levels. Rotavirus strains detected during outbreak investigation included G1P[8] in Northern Cape, G1 and G2 strains in Gauteng, G1P[6] and G1P[8] in Limpopo and G1P[6], G2, G9 and G10 strains in Mpumalanga.

In collaboration with Prof Maureen Taylor and Dr Walda van Zyl, Department of Medical Virology, University of Pretoria, reverse transcriptase real-time detection assays for norovirus genogroup I and genogroup II, sapovirus and astrovirus have been developed in part fulfillment of PRF grant objectives. Selected diarrhoeal specimens (n=76) received from the NHLS Witbank Laboratory in October and November 2007 from an outbreak of diarrhoeal disease in Delmas, Mpumalanga and from the surrounding communities were analyzed for the presence of calicivirus and astrovirus. Norovirus genogroup I was detected in 10 specimens, norovirus genogroup II in 10 specimens, astrovirus in 5 specimens and sapovirus in 4 specimens.

In addition, all diarrhoeal specimens received from the NHLS Witbank Laboratory in October and November 2007 were analyzed on polyacrylamide gels for the presence of picobirnaviruses. Picobirnavirus double

bands at 2.3 to 2.6 kbp and 1.5 to 1.9kbp, indicative of the presence of a viral infection, were detected in 13 specimens. However, molecular testing will be conducted to confirm these observations and sequencing will be done if picobirnaviruses are detected.

Dr Page was invited to present a paper titled "Rotavirus Burden of Disease and Cost of Illness in South Africa: Implications for Vaccine Introduction" at the Fourth International Conference on Vaccines for Enteric in Lisbon, Portugal in April 2007.

In addition, Dr Page was invited to be a guest editor on the African Rotavirus Supplement to be published in the Journal of Infectious Diseases and visited Dr Duncan Steele in the Department of Immunizations, Vaccines and Biologicals, World Health Organization, Geneva in June 2007. Articles for the African Rotavirus Supplement, aimed at showcasing the research conducted in rotavirus disease in Africa, were written, edited and reviewed. These articles are currently being reviewed by external reviewers and the supplement is expected by end-2008.

COLLABORATIONS

Dr Johann Görgens, Department of Process Engineering, University of Stellenbosch, Prof Emile van Zyl, Department of Microbiology, University of Stellenbosch, Prof Albie van Dyk, North-West University, Dr AC Potgieter from the Onderstepoort Veterinary Institute, Prof Ed Rybicki, University of Cape Town, Mrs Ina Peenze, Diarrhoeal Pathogens Research Unit, University of Limpopo Medunsa Campus for the Rotavirus/HPV subunit vaccine consortium funded by the South African Department of Science and Technology for the South Africa/Cuba science collaboration project.

Prof Maureen Taylor and Dr Walda van Zyl for the project titled "The development of real-time detection techniques and increased surveillance of diarrhoeal disease viruses in the South African population" funded by the PRF.

Mrs Ina Peeze, Mr Pieter Bos, Miss Mapaseka Seheri and Prof Jeff Mphahlele, Diarrhoeal Pathogens Research Unit, University of Limpopo Medunsa Campus for projects including rotavirus surveillance projects in South Africa and various other African countries and rotavirus vaccine studies.

CAPACITY BUILDING

Co-supervisor for Mr Harry Ngoveni, Miss Leah Nemarude and Mr Phathutshedzo Ramudingana at the University of Limpopo Medunsa Campus for MSc (Med) Medical Virology degrees.

Supervisor for Mr Khuzwayo Jere at the University of Limpopo Medunsa Campus for MSc (Med) Medical Virology degree.

Supervisor for Mrs Ina Peenze at the University of Limpopo Medunsa Campus for PhD degree.

Dr Page, in collaboration with Prof Duncan Steele, Department of Immunization, Vaccines and Biologicals, World Health Organisation (WHO), Dr Jason Mwenda, co-ordinator WHO AFRO and staff at the Diarrhoeal Pathogens Research Unit (DPRU), University of Limpopo Medunsa Campus, organized the seventh African Rotavirus Network Workshop. The workshop was held at the DPRU laboratory from the 5th- 30th March 2007 and six delegates were invited to participate. Delegates attended lectures by Prof Steele and were trained in rotavirus analysis techniques including ELISA detection, electron microscopy, polyacrylamide gel electrophoresis and RT-PCR genotyping.