Communicable Diseases

Chairpersons: RC Landis, K Springer

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Changing trends in dengue fever in the English and Dutch-speaking Caribbean, 1980–2011

EV Boisson, A Valadere, S Quesnel, A George, L Edwards, V Morris-Glasgow, L Boodram, R Salas
Caribbean Epidemiology Centre (CAREC), Port-of-Spain, Trinidad and Tobago
E-mail: *boissoel@ paho.org*

Objective: To describe the epidemiology of dengue fever in the English and Dutch-speaking Caribbean during the period 1980–2011.
Design and Methods: The numbers of dengue fever (DF) and dengue haemorrhagic fever/dengue shock syndrome (DHF/DSS) cases were extracted from official surveillance reports submitted to the Caribbean Epidemiology Centre (CAREC). Dengue serotype data were obtained from CAREC laboratory archives and country surveillance reports. Tests used for confirmation of dengue infection were virus isolation, serology and reverse transcription polymerase chain reaction (RT-PCR).
Results: During 1980–2011, a total of 81 930 cases of DF and 1870 cases of DHF/DSS were reported, with outbreaks occurring approximately every 4–5 years. During 1980–1991, there were relatively low levels of DF. During 1992–2002 there were a total of 46 215 DF cases, with a general increasing trend. During 2003–2011 a total of 36 786 DF cases were reported, with peaks of DF and DHF/DSS in some years. Multiple dengue serotypes circulated; and for 10 of the 15 years during 1997–2011, all four serotypes were in circulation. During 2007–2011, the 25–44-year age group most frequently reported DF and DHF/DSS cases. There was almost a 1:1 ratio of DF cases by gender, while slightly more (52.2%) DHF/DSS cases were male. During 2007–2011, peaks in DF cases were observed during January–February and August–September.
Conclusions: During the period 1980–2011, DF changed from being hypoendemic in some countries to hyperendemic in many countries. The dengue vector, *Aedes* mosquito, is ubiquitous and all four dengue serotypes now circulate. The best intervention is a multisectoral, interdisciplinary integrated management strategy.

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Epidemiological trends and clinical manifestations of dengue among children in Barbados

A Kumar, C Ugwuagu, M Gittens-St Hilaire, AL Nielsen
Faculty of Medical Sciences, The University of the West Indies; Queen Elizabeth Hospital, Barbados
E-mail: *alokkumar.uwichill@gmail.com*

Objectives: The **e**pidemiology and clinical presentation of dengue among children in the Caribbean is very poorly characterized. We studied the epidemiology, clinical presentation, immunological characteristics, morbidity and mortality from dengue among children in Barbados over a ten-year period.
Design and Methods: In this population-based, retrospective, descriptive study, we report on all the laboratory confirmed cases of dengue. All of the children on the island up to the age of 16 years who presented with febrile illness and suspected to be dengue were screened.
Results: The annual incidence rate of dengue among children ranged between 0.29 and 2.92 cases/1000 children, with most cases seen during October through January. Children presented as undifferentiated fever (53%), classical dengue fever (41%), dengue haemorrhagic fever (3%) and expanded dengue syndrome – severe organ involvement such as liver, kidneys, brain or heart and unusual manifestations (3%). The majority (73%) of the cases had secondary dengue infection. A total of 30% of cases were diagnosed among hospitalized children and the overall crude mortality rate was 0.3%.
Conclusions: This study provides the first description of the epidemiology and disease characterization of dengue in the Caribbean sub-region of the Americas, and quantifies the morbidity and mortality of this rapidly emerging public health problem among children.

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Helicobacter pylori infection in Montserrat: An assessment of the epidemiological factors associated with infection

I Buffonge, G West, J Lee
Ministry of Health, Montserrat
E-mail: *uffonge@yahoo.com, grethlynwest@hotmail.com, jeaniev19@hotmail.com*

Objectives: To explore the factors associated with *Helicobacter pylori* infection in Montserrat, compare the findings with studies done elsewhere and determine if living in Montserrat puts persons at increased risk of *H pylori* infection.
Design and Methods: The list of all patients who had had a *Helicobacter pylori* test at the Glendon Hospital laboratory was used as the sampling frame (552 persons between June 2009 and August 2012). Of the 339 patients for which contact details could be obtained, 288 were contacted and interviewed by telephone (236) or by face to face contact (52) by six trained interviewers. Data were analysed using SPSS v 19. *T*-tests were used for quantitative data and Chi-square tests were used for categorical data.
Results: *H pylori* positivity was associated with growing up in a rural area ($p = 0.005$), having heartburn ($p = 0.032$) and being older ($p = 0.07$). There was some association with being educated to primary level only ($p = 0.027$). No association was found between *H pylori* infection and gender, country of birth, living in Montserrat for a long period of time, drinking water and having symptoms other than heartburn.
Conclusion: In Montserrat, *H pylori* infection is associated with having a lower level of educational attainment, growing up in a rural area and having heartburn. Apart from the association with heartburn, these findings are similar to what has been found in other studies. Living in Montserrat does not put persons at increased risk of *H pylori* infection.

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Phage typing of _Salmonella enteritidis_ in selected English and Dutch-speaking Caribbean countries, 2005–2012: The changing epidemiology of foodborne infections

L Indar, L Francis, R Singh, L Boodram
Caribbean Epidemiology Centre (CAREC), Port-of-Spain, Trinidad and Tobago
E-mail: *indarlis@carpha.org*

Objective: To describe the changing epidemiology of foodborne infections using phage typing trends for *Salmonella enteritidis* (SE) in selected Caribbean countries, 2005–2012.
Design and Methods: A total of 650 isolates of SE received at the Caribbean Epidemiology Centre from January 2005 to June 2012 were phage typed using the standard international phage typing scheme for SE.
Results: Phage typing differentiated 589 (91%) of the 650 SE strains into 25 SE phage types (PTs). The SE strains were from Trinidad and Tobago, Barbados, Jamaica and Suriname, accounting for over 50% of reported Salmonella infections. There was a predominance of six SE PTs: PTs 8, 22, 13a, 8var, 13 and 21. This was markedly different from the PTs that predominated during 1989–2001 (PTs 4, 8, 1, 4b and 4 var) in these countries. Different PTs of SE predominated in each country (PTs 1, 13 and 21 in Trinidad and Tobago, PTs 22 and 13a in Barbados, and PTs 8 and 13a in Jamaica).
Conclusions: Phage typing demonstrated that SE infections in the Caribbean were polyclonal and that different SE strains existed in each country and during 2005–2012 compared to 1989–2001. This implies a changing epidemiology of SE and changing imported sources of SE in the Caribbean. It also suggests that the primary egg-related sources of SE, mainly associated with SE PT4, that dominated in 1989–2001, is changing in the Caribbean and other food sources are now becoming important sources of SE. This information is instructive for guiding prevention and control measures in each country.

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The burden and impact of acute gastroenteritis and foodborne diseases in the Caribbean

L Indar, E Perez, Caribbean Burden of Illness Steering Committee
Caribbean Epidemiology Centre (CAREC), Trinidad and Tobago; Pan American Health Organization, Panama
E-mail: *indarlis@carpha.org*

Objective: To determine the true burden and impact of acute gastroenteritis (AGE) and food borne diseases (FBD) in the Caribbean.
Design and Methods: Burden of illness (BOI) studies were conducted in Grenada, St Lucia, Trinidad and Tobago, Dominica, Guyana, Jamaica and Barbados during 2008–2012. In each country, retrospective, cross-sectional population surveys were conducted during the low and high AGE seasons, and laboratory surveillance of AGE specimens was conducted for a year. The economic burden of AGE was based on medical care costs and loss of productive days.
Results: Under-reporting of syndromic AGE in the seven countries ranged from 64%–83% and for laboratory-confirmed FBD pathogens from 74%–99%. Monthly prevalence of AGE ranged from 4.03%–12.7% and the yearly incidence from 0.52 to 1.4 episodes/year. Children aged 1–4 years had the highest prevalence of AGE (13%–25%).

Between 15.4% and 36% of cases of AGE sought medical care and 12.5–28% were requested to submit a stool sample. The proportion of AGE that tested positive for an FBD pathogen ranged from 8.5%–40.9%. Loss of productive days due to AGE ranged from 1–20 days. Norovirus had the highest BOI followed by *Salmonella, Campylobacter* and *Giardia* infections. Annual economic costs of syndromic AGE ranged from $US2.2M–40.4M. Under-reporting, infrequent stool collection, inadequate laboratory capacity and underdiagnoses were the major surveillance gaps identified.

Conclusions: The burden and impact of AGE and FBD were significantly higher than that reported to national surveillance systems. There is an urgent need to improve the surveillance of AGE and FBD and implement appropriate and targeted food safety measures in the countries.

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Norovirus outbreak: An emerging public health threat in the Caribbean with implications for small tourist dependent economies such as the Turks and Caicos Islands

S Handfield, S Malcolm, S Ramkallowan, K Neely, N Astwood, TE Maitland
National Epidemiology and Research Unit, Ministry of Health and Education, Turks and Caicos Islands
E-mail: *temaitland@gmail.com*

Objectives: To describe a resort/hotel-centred norovirus outbreak in Providenciales, Turks and Caicos Islands (TCI), May 1–June 29, 2012.

Design and Methods: Upon notification of gastrointestinal disease affecting resort guests, the National Surveillance Committee (NSC) deployed a multidisciplinary outbreak investigation team of local, regional/international experts to Providenciales to conduct the outbreak investigation and response. This included field interviews, specimen collection, enhanced hygiene and disinfection measures and pathogen-specific training.

Results: The 805 cases were primarily guests/staff from 16 resorts (80%) and local healthcare facilities (20%); dates of onset were obtained for 750 (93%). Most (55%) ranged in age from 20–59 years with both genders similarly affected. Noroviruses (genotypes I and II) were the laboratory-confirmed aetiological agents in 47 (71%) stool samples. Symptoms included diarrhoea (77%) and/or projectile vomiting (73%), which lasted 12–72 hours. There were no reported deaths or hospitalizations. The outbreak was controlled after the largest affected resort closed and industry-wide deep cleaning and sanitization procedures implemented as *per* norovirus protocol.

Conclusions: The outbreak's final economic cost, estimated as millions of dollars, is not yet available. Preventive measures, universally proven most cost-saving interventions to control/contain norovirus outbreaks must be implemented, coupled with strengthened enforcement of communicable disease reporting in TCI. A comprehensive, optimally functional syndromic surveillance system with more reporting sites and guidelines to manage norovirus outbreaks in the TCI community and hotels/resorts is imperative. This has implications for tourist-dependent economies like TCI as norovirus outbreaks are increasingly prevalent in the Caribbean.