

were found among 97 (42.4%) and 24 (10.5%) subjects respectively. Among those with positive RDT, 13 (48.0%) were women of reproductive age. Haemoglobin AS was found among 53 (23.1%) of the subjects; none had haemoglobin SS. The median (range) hematocrit was 36% (4.0 – 52%). The FGD revealed that respondents considered malaria as an important cause of ill-health but lack knowledge of appropriate preventive measures against it. None of the participants was aware of SCA as a disease not to talk of how to prevent it.

Conclusion: The high prevalence of malaria, haemoglobin AS, and absent haemoglobin SS implies devastating effect of malaria decimating individuals with haemoglobin SS in early childhood. This could significantly impact food production. Public health authorities should devise innovative measures to reach this neglected, vulnerable population. The impact of high prevalence of malaria parasitaemia to poor foetal outcomes and early childhood deaths in the community should be further evaluated.

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Sources of water deterioration in the rural department of Yoro, area of Honduras



G.E. Halder¹, G. Bearman^{2,*}, K. Sanogo³, M.P. Stevens³

¹ Virginia Commonwealth University School of Medicine, Richmond, USA

² Richmond, VA, USA

³ Virginia Commonwealth University, Richmond, Va, USA

Background: The contamination of tested fecal-free drinking water following its collection from improved water sources has been documented. Post-collection water deterioration has been linked to fecal contaminated fingertips and storage containers. The published WHO Guidelines for Drinking Water Quality emphasizes a holistic approach - from the point of distribution to the point of consumption - as a means of increasing the safety of drinking water. This study aimed to compare and contrast the sanitation of water containers, container lid usage, and hand sanitation among the suburban community of Coyoles and the rural and geographically distinct communities of La Hicaca and Lomitas in the Department of Yoro area of Honduras.

Methods & Materials: A total of 263 randomly selected individuals receiving care from a June 2011 medical brigade to the area completed a 20-item, anonymous, brief, interviewer-administered water sanitation questionnaire in Spanish. We assessed self-reported practices for the sanitation of water transport and storage containers, water container lid use, and hand sanitation prior to filling water containers.

Results: The use of chlorine and soap for the sanitation of containers for water transport and storage was significantly different among the three communities (<0.01). Coyoles most commonly employed chlorine for sanitizing water transport (68.8%) and storage (73.9%) containers. La Hicaca and Lomitas most commonly used soap for sanitizing both container types. Although 86% of participants in Lomitas identified using a lid on their water storage

containers, lid-use in this community was significantly less compared to the communities of Coyoles and La Hicaca, where over 95% of participants identified their use ($p=0.02$). Lomitas also had the fewest respondents (29.5%) placing a lid on water containers at the water source site ($p<0.01$). Over 97% of all individuals at each site identified washing their hands with soap and water prior to filling water containers ($p=0.57$).

Conclusion: Across the three Honduran communities, water container sanitation method and lid usage varied, while hand sanitation remained relatively constant. These data suggest that sanitation practice interventions are of least importance in the most suburban area of Coyoles, and in most need in the remote and rural communities of La Hicaca and Lomitas.

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Suspected outbreak of shigellosis in Nelson Mandela Bay Health District, Eastern Cape Province - South Africa, November 2012 to February 2013



G.M. Ntshoe^{1,*}, J. Thomas¹, A. Cengimbo¹, N. Muvhango², P. Ekerms³, F. Fourie⁴

¹ National Institute for Communicable Diseases (NICD) of the National Health Laboratory Service (NHLS), Johannesburg, South Africa

² University of Pretoria, Pretoria, South Africa

³ National Health Laboratory Service, Port Elizabeth, South Africa

⁴ Department of Health, Nelson Mandela Bay Health District, Port Elizabeth, South Africa

Background: In November 2012 a sudden increase of *Shigella* cases was reported in Nelson Mandela Bay Health District, with 12 cases reported between 23 and 26 November 2012. The National Outbreak Unit (NOU) assisted the District Outbreak Response Team (DORT) with the outbreak investigation and response.

Methods & Materials: Public and private healthcare facilities instituted active case finding and stool specimen collection from patients with illness suggestive of shigellosis. A subset of cases was interviewed to interrogate possible common risk factors. Stool specimens underwent routine bacteriology testing and *Shigella* spp isolates were referred to the Centre for Enteric Diseases (NICD-NHLS) for characterisation. Water samples collected at strategic sites were serially tested for quality indicators.

Results: From 1 November 2012 to 28 February 2013, a total of 69 cases (63 laboratory-confirmed, 1 probable, and 5 possible) with one death was reported. Children ≤ 5 years accounted for the highest proportion (35%) of cases. The median age was 13 years (range 7 days to 83 years). The majority (48%) of cases resided in two neighbouring suburbs but shared no other common risk exposures. Diarrhoea was reported in 98% of cases, which in 38% was bloody. Of laboratory-confirmed cases, 90% were *Shigella flexneri*, 68% of which were *Shigella flexneri* type 1b. Water testing conducted on 19 November 2012 in the two suburbs with most cases showed higher than acceptable *E. coli* counts and sub-standard chlorine levels. Following intensified efforts to improve water chlorination, a

noticeable decrease in the number of shigellosis cases was observed and subsequent water testing on 10 December 2012 showed no *E. coli*.

Conclusion: The sudden unprecedented increase in *Shigella* cases was likely due to contaminated potable water exposure and additional secondary cases. The investigation highlighted the necessity for continual monitoring of potable water quality and prompt corrective action to maintain a safe water supply in the district. The efficient, timely outbreak response resulted in appropriate public health interventions and underscores the value of a well-functioning DORT and NOU-DORT collaboration within the South African public health context.

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Immunological markers of poor adherence to antiretroviral therapy among HIV-infected adults at Themba Lethu HIV Clinic, Helen Joseph hospital, Johannesburg, South Africa



M. Nambalirwa¹, L. McNamara¹, D. Evans¹, P. Nyasulu^{2,*}

¹ University of the Witwatersrand, Johannesburg, South Africa

² Monash University, South Africa, Johannesburg, South Africa

Background: There has been no consensus on the ideal way to measure adherence in resource limited settings (RLS). Viral load is perhaps the most reliable indicator of poor adherence but is not easily accessible in RLS. We aimed to identify routinely collected markers that could be used to assess adherence to ART.

Methods & Materials: Retrospective analysis of HIV-positive ART-naïve adults (≥ 18 years) initiating standard first-line ART at the Themba Lethu Clinic in Johannesburg, South Africa between April 2004 and January 2012. We assessed the association between the last self-reported adherence, change in mean cell volume (MCV) calculated from baseline to 6 months, change in CD4 count calculated from baseline to 6 months and missed visits and poor adherence (defined as a viral load ≥ 400 copies/ml after 6 months on ART). Poisson regression models with robust error variance were constructed to estimate incidence rate ratio (IRR) and 95% confidence interval (CI). The IRR was used to approximate the relative risk (RR) of poor adherence.

Results: A total of 7160 patients were eligible for the study. Of these, 18.9% had poor adherence at 6 months. The marker of poor adherence was change in CD4 count stratified by change in MCV at 6 months (change in CD4 \geq expected and change in MCV < 14.5 fL; Attributable risk ratio (aRR) 3.11, 95% CI 2.41–4.02, change in CD4 $<$ expected and change in MCV ≥ 14.5 fL; aRR 1.23 95% CI 0.76–2.00 and change in CD4 $<$ expected and change in MCV < 14.5 fL; aRR 6.98 95% CI 5.35–9.09).

Conclusion: The CD4 cell count stratified by change in MCV at 6 months was identified as a predictor of poor adherence to ART. This finding could help health workers identify and manage poor adherence to ART in the absence of viral load testing. Further stud-

ies are needed to determine whether this predictor remains useful beyond 6 months of ART medication as the number of patients on tenofovir (TDF)-based regimens increases.

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Enteric fever surveillance in selected rural and urban health facilities of Bangladesh



M.M. Husain^{1,*}, K. Ara², S. Haider³, M. Rahman⁴, S. Jubayer⁴, A.S.M. Alamgir⁴, B.-N. Ahmed²

¹ Institute of Epidemiology, Disease Control & Research (IEDCR), Dhaka, Bangladesh

² Directorate General of Health Services, Dhaka, Bangladesh

³ Ministry of Health & Family Welfare, Dhaka, Bangladesh

⁴ Institute of Epidemiology Disease Control and Research (IEDCR), Dhaka, Bangladesh

Background: Incidence of Enteric fever in Dhaka (2005) was 3.9/1,000 population/year. It decreased in 2010, still it is high. Now no surveillance at national level. Hospital based surveillance undertaken to determine: number of febrile cases positive for enteric fever; antibody against salmonella, i.e., *S. typhi* & *S. paratyphi A, B*; antimicrobial sensitivity pattern of the isolated organism; estimate the age specific occurrence of enteric fever and high risk groups identification; assess socio demographical characteristics.

Methods & Materials: Surveillance covered two rural and three urban hospitals. Case-patients had axillary temperature $> 38^\circ\text{C}/100^\circ\text{F}$ for > 3 consecutive days, taken no antibiotic, enrolled every 2 days/week. Socio-demographical, epidemiological data and 7 ml (5 ml from ≤ 12 years) of venous blood was collected Oct 2009 – May 2011. Widal tube agglutination test was performed, using plasmatic reagents (Plasmatec Laboratory Products), containing O and H antigens of *S. Typhi*, *S. Paratyphi A* & *B*. Positive and negative serum controls were included, a titre of $> 1:80$ and $> 1:160$ to either antigen in a single serum specimen was taken as indicative of enteric fever. Salmonella typhi O and H agglutinin titres $> 1:80$ and $> 1:160$ were taken as significant (88% sensitivity and 98% specificity). Lyzed blood from AISBACT inoculated into solid media, McConkey agar and selective media, Salmonella and Shigellae agar and incubated aerobically 37°C for 18 hours.

Results: In 2015 patients, male 55.2%, 49.4% (n=996) detected as enteric fever by Widal test and/or blood culture, typhoid 76.3% (n=103) by blood culture, while 92.7% (n=874) by Widal test. Paratyphoid a 5.6% (n=53), Paratyphoid b 1.7% (n=16) by Widal test; Paratyphoid a 23.7% (n=32) by culture.

Blood culture showed Ceftriaxone (90.4%), Ciprofloxacin (88.9%), and Ceftazidime (86.7%) sensitivity; 95.3% resistant to Cotrimoxazole; Among patients 39.8% typhoid and 28.1% paratyphoid A were multidrug resistant (MDR). More (10–55 cases/week) cases in early summer (2nd week of March to 1st week of July 2010); 84.5% (n=114) patients were 13–59 years. No significant difference between drinking water from different sources for having enteric fever.