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## CONFERENCE SCHEDULE

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<td>9.30-9.40 (10 min)</td>
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<td>9.40-9.50 (10 min)</td>
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<td>Christine Kihembo, Senior Medical Epidemiologist, AFENET</td>
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<td>Remarks from AFENET</td>
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<td><strong>Endemic diseases</strong></td>
<td>“The association of positive cryptococcal blood culture with in-hospital mortality compared to cryptococcal meningitis among HIV-seropositive adults in South Africa, 2015-2020.” Nqobile Ngoma (South Africa)</td>
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<td>“Investigation of a Suspected Food Borne Gastrointestinal Illness amongst Guests at a Party in Highfield Suburb, Harare City, 2020.” Linda Kanzara (Zimbabwe)</td>
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<td>“Care and Individual Factors Associated with Non-cure after Treatment of Uncomplicated Malaria, In Luanda Public Health Facilities, August to November 2018” Dilunvuidi Pode (Angola)</td>
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<td><strong>COVID-19 epidemiology</strong></td>
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<td>“Tuberculosis deaths in Bulawayo City, 2016-2019: a secondary data analysis.” Tshebukani Moyo (Zimbabwe)</td>
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<td>“Evaluation of malaria data quality analysis system, Zambesia province, Mozambique, 2019.” Gerson Alfai (Mozambique)</td>
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<td>“An Evaluation of the Adverse Events following Voluntary Medical Male Circumcision Surveillance System in Zvimba District, Zimbabwe, 2020.” Tendai Hlabangana (Zimbabwe)</td>
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<td>Africa CDC Southern RCC remarks</td>
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<td>Maternal and child health (Oral presentations 2)</td>
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| 11.00-12.15  | **Infectious disease investigations**  
(Concurrent poster presentations 3) | “Factors associated with viral suppression in children aged 0-14 years, Mozambique, January to December 2019.”  
Neusa Fataha (Mozambique)  
“Neonatal Tetanus investigation in Rundu Hospital, Rundu District, Namibia, January 2020.”  
Roswitha M. Ndjengwa (Namibia)  
“Implication of measles outbreak in Saurimo municipality, Lunda-sul, May 2019.”  
Luzala Garcia (Angola)  
“Typhoid fever in Neno District, Malawi: A cross-sectional study investigating outbreak source, November 2020.”  
Mtisunge Baluwa (South Africa)  
“Hepatitis E outbreak investigation in Omaruru District, Erongo Region, Namibia, Jan - Dec 2018.”  
Carenn I.M. Shekudja (Namibia)  
“Completeness of the Road-to-Health Booklet in children aged 6 weeks - 2 years at Buffalo City Metro, Eastern Cape Province.”  
Nothembelani Jongisa (South Africa)  
Nyasha Makova (Zimbabwe)  
“Investigation of Covid-19 notified cases, in the Sambizanga Urban District, from September to December 2020.”  
Jonas Hines (moderator), Iyaloo Mwaningange, Mujinga Karakadzai | Emmy-Else Ndevaetela (moderator), Lizzie Heilmann, Naira Luis |

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(Concurrent poster presentations 4) | “Infectious disease investigations”  
(Concurrent poster presentations 3)                                                                                                                                                                          | Emmy-Else Ndevaetela (moderator), Lizzie Heilmann, Naira Luis |


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<td>Alex de Voux (moderator), Addmore Chadambuka, Dabwitso Banda</td>
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<td>“Outbreak investigation into six superspreading COVID-19 clusters in Lusaka December 2020 to January 2021.” John Simwanza (Zambia)</td>
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**Day 3: 27 August 2021**

Josefa Guimarães (Angola)

“Contact tracing of coronavirus disease 2019 cases in a multinational company in Mozambique, April 2020.”

Auria Ribeiro Banze (Mozambique)


Petrus Haita (Namibia)


Emmanuel Tembo (Zambia)

“SARS-CoV-2 Infection Among Students at a High School in Zimbabwe, December 2020.”

Godwell Nhizda (Zimbabwe)

“Testing rates for coronavirus disease in 10 provinces of Zambia, October 2020 to February 2021.”

Cheepa Haabeenzu (Zambia)
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CONFERENCE COMMITTEES

Conference planning
Prof Mufuta Tshimanga (Conference Chair)
Dr. Notion Gombe (Chair)
Dr. Emmy-Else Ndavaetela
Tsitsi Juru
Dr. Cynthia Sema
Dr. Lazarus Kuonza
Dr. Julio Leite
Dr. James Zulu
Dr Dabwiso Banda

Scientific committee
Dr. Sinyange Nyambe (Chair)
Dr. Jonas Hines
Dr. Lazarus Kuonza
Dr. Cynthia Sema
Dr. Christine Kihembo

Information Communication Technology (ICT) committee
Michael Nkanika
Racheal Chelimo
Ayub Kakaire
ABSTRACT REVIEWERS

AFENET thanks the following individuals for serving as voluntary abstract reviewers for this conference (list is alphabetized by first name).

Adam Wolkon
Alden Henderson
Alex De Voux
Angela Kiskeye
Augusto Lopez
Ben Masiira
Brian Muyunda
Christine Kihembo
Cristolde Salomão
Cynthia Semá Baltazar
Dabwitsa Banda
David Chukwuma Okwonko
Delia Bandoh
Diane Morof
Emmanuel Govha
Erika Rossetto
Evelyn Kim
Herbert Kazoora
Hetani Mdose
James Exnover
Jonas Hines
Joseph Magoola
Kevin Mugenyi
Khuliso Ravhuhali
Kristen Heitzinger
Lazarus Kuonza
Lilian Bulage
Linda Quick
Maurice Owiny
Notion Gombe
Nyambe Sinyange
Paola Rullan Oliver
Reina Turcois
Rick Gelting
Setiala Kanyanda
Seymour Williams
Tracie Gardner
Tsitsi Juru
AWARDS

The following awards will be presented during the closing ceremony on 27 August 2021.

Best Oral Presentation
Best Oral Presentation, 1st Runner Up
Best Oral Presentation, 2nd Runner Up

Best Poster Presentation
Best Poster Presentation, 1st Runner up
Best Poster Presentation, 2nd Runner up

Award Selection Process: Eligibility for oral and poster presentation awards is determined by the quality of the presenter’s delivery at the conference. Every presentation will be assessed by three evaluators according to set criteria.
The association of positive cryptococcal blood culture with in-hospital mortality compared to cryptococcal meningitis among HIV-seropositive adults in South Africa, 2015-2020

Investigation of a Suspected Food Borne Gastrointestinal Illness amongst Guests at a Party in Highfield Suburb, Harare City, 2020


Care and Individual Factors Associated with Non-cure after Treatment of Uncomplicated Malaria, In Luanda Public Health Facilities, August to November 2018
The association of a positive cryptococcal blood culture with in-hospital mortality compared to cryptococcal meningitis among HIV-seropositive adults in South Africa, 2015-2020

Nqobile Ngoma¹,²,³, L. Shuping¹,², R. Mathebula¹,², A. De Voux¹,²,⁴, A. Musekiwa¹,²,³, H. Mdose¹,², N.P. Govender²,⁴,⁵

¹South African Field Epidemiology Training Programme; ²National Institute for Communicable Diseases, Johannesburg, South Africa; ³School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa; ⁴School of Pathology, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa; ⁵Division of Medical Microbiology, Faculty of Health Sciences, University of Cape Town, Cape Town, South Africa

*National Institute for Communicable Diseases, 1 Modderfontein Road, Sandringham 2131 South Africa. Email: NqobileN@nicd.ac.za; Tel: +27 76 2530 315.

Background: Cryptococcaemia is a bloodstream infection caused by the fungal pathogen Cryptococcus. Among adults with advanced HIV, this can occur with or without cryptococcal meningitis (CM). The Infectious Diseases Society of America recommends that HIV-associated cryptococcaemia is treated as CM. We aimed to determine if cryptococcaemia without CM was associated with an increased risk of in-hospital death compared to CM.

Method: We analyzed secondary cross-sectional data from the GERMS-SA national surveillance programme for cryptococcosis in South Africa from January 2015–December 2020. We included HIV-seropositive adults (aged ≥18 years) with cryptococcosis. Cryptococcaemia was defined as Cryptococcus cultured from blood without CM. CM was defined by the presence of Cryptococcus in the cerebrospinal fluid detected by culture, India ink microscopy or a cryptococcal antigen test. To determine the association between cryptococcaemia (versus CM) and in-hospital death at 30 enhanced surveillance sites (ESS), we conducted multivariable logistic regression analysis.

Results: We identified 52681 case patients, of whom 4795 were documented as HIV-seropositive. Of these, cryptococcaemia occurred among 402/4795 (8%), CM among 4357/4795 (91%), and other forms of cryptococcosis (non-CM/non-blood) were diagnosed in 36/4795 (1%). Among 4688 ESS cases with available outcome data, the in-hospital case-fatality ratio was 35% (1618/4688) and this proportion was higher (62% [245/393]) among those with cryptococcaemia versus CM (31% [1373/4295]). The unadjusted association of cryptococcaemia with in-hospital mortality, compared to CM, was 3.52 (95%CI, 2.84-4.36; p<0.001). However, after adjusting for age, induction-phase antifungal regimen, sex, CD4 count, antiretroviral treatment and mental status at diagnosis in the model (n=1067 with complete data), the odds of mortality among those with cryptococcaemia was 1.62 times that of CM cases (95%CI, 0.96-2.71; p-value=0.06).

Conclusion: Cryptococcaemia was a less-commonly diagnosed manifestation than CM, though associated with a similarly high mortality, after adjusting for confounders. Blood cultures should be included as a standard investigation among in-patients with advanced HIV disease.
Investigation of a Suspected Food Borne Gastrointestinal Illness amongst Guests at a Party in Highfield Suburb, Harare City, 2020

Background: On 2 November 2020, five patients presented at Highfield Polyclinic with fever, diarrhea, abdominal pain, vomiting and dehydration. By end of 3 November 2020, 32 cases with similar symptoms had been reported, all of which attended a party on 31 October 2020. We determined the risk factors for contracting foodborne gastrointestinal illness (GI) at a party in Highfield, 2020.

Methods: We conducted a retrospective cohort study. A suspected case was any person who developed diarrhea, abdominal pain and/or vomiting within 72 hours of consuming food from the party. Participants were drawn from the guest list that was informed by preliminary investigations. Demographic, clinical and food consumption history data were collected using a pretested questionnaire. Environmental and outbreak preparedness checklists were administered. There were no food leftovers for analysis. Fifteen stool and 4 water samples were collected for bacteriological analysis. Descriptive statistics, attack rates (AR), risk ratios (RR), attributable risk ratios and % confidence intervals were generated using Epi Info 7.2.4.0.

Results Sixty-three out of 80 guests were interviewed. Of these, 40 who consumed food at the party fell ill (AR=63%). All cases experienced abdominal cramps while 36/40 (90%) reported watery diarrhea and fever. The median incubation period was 12 hours (Q₁=6; Q₃=30). No pathogens were isolated from the stool and water specimen. Eating coleslaw (AR=67.75%) (aRR= 7.4; 95% CI=1.1-50) and eating cold macaroni (AR=53.48) (aRR=4.1; 95% CI=1.1-14.7) were significant risk factors for contracting foodborne GI. Food handlers reported that food was not stored in appropriate temperatures.

Conclusion: The outbreak was a common point source foodborne outbreak. Coleslaw and cold macaroni were risk factors for illness. Despite not isolating any etiological agent, the incubation period, course of illness and clinical presentation largely fit the profile of bacteria such as non-typhoidal Salmonella. Health promotion on food handling practices was conducted.

Key Words: Foodborne Gastrointestinal Illness, Outbreak, Risk Factors, Harare

Situmbeko Mwangala¹,²,⁴, B. Hangombe³, Lwito Mutale³, Leevie M Lwimba¹,⁴, Sinyange Nyambe¹,² Benson Bowá⁴, Biggie Inambao⁴, Leocrisia Mwanamoonga⁴, Muzala Kapina²,⁴

¹Zambia National Field Epidemiology Training Programme; ²Zambia National Public Health Institute; ³University of Zambia School of Veterinary Medicine; ⁴Ministry of Health

Background: Anthrax is endemic in Western Province, Zambia, where annual outbreaks are reported among humans and cattle. On 23rd November 2019, persons with necrotic skin lesions consistent with cutaneous anthrax were reported following contact with and/or consumption of deceased cattle that had died from an undiagnosed disease in Sikongo and Luampa Districts of Western Province. We did an outbreak investigation to confirm the diagnosis, establish the extent of infections, and describe practices related to anthrax risks.

Methods: Sikongo and Luampa Districts were visited during 24-30 January 2020. A suspected case was defined as a resident of Sikongo or Luampa Districts with a characteristic necrotic skin lesion during November 2019-January 2020 while a confirmed case was a suspect case with laboratory confirmation of Bacillus anthracis. Persons treated for suspected anthrax were administered a standardized questionnaire. Human, cattle, and soil (from cattle disposal sites) samples were collected and analysed for B. anthracis with rapid antigen and PCR tests.

Results: A total of 93 (Sikongo: 43; Luampa: 50) human anthrax cases were reported during November 2019–January 2020, including two laboratory-confirmed cases. Median age was 16 years (interquartile range: 6-35) and 58% were male. Five (5%) people died in Luampa District. Fifty-five (55%) persons were interviewed; of the 26 who found dead cattle, 24 (92.3%) reported eating and 81% handling meat from deceased cattle. Twenty-eight (50%) persons reported rearing cattle, but none had their cattle vaccinated against anthrax. Four (57%) cattle hide samples tested positive for B. anthracis, but no soil samples were positive.

Conclusion: Consumption or handling of cattle which had died from suspected anthrax was the likely cause of this laboratory-confirmed anthrax outbreak in two districts in Western Province. Although an effective vaccine is available in Zambia, there is need to reclassify anthrax vaccination strategies to enable government offer vaccination free-of-charge in endemic prone areas.

Key words: Anthrax, Bacillus anthracis, Zoonoses, Zambia, Africa, Vaccines
Background: Malaria, while preventable and treatable, continues to have a devastating impact on the health people around the world. In the first half of 2018, Luanda registered an increase about 2000 hospitalizations for malaria, compared to the same period of the previous year. The non-cure after treatment represents a relevant problem for patients and a challenge for national malaria control programs. The aim of the study was to assess care and individual factors associated with non-cure after treatment of uncomplicated malaria.

Methods: An Analytical cross-sectional study was conducted in 17 Public Health Facilities (HF) in Luanda, from August to November 2018. HF were randomly selected, ensuring that each level of assistance was covered. 768 in control consultation, that previous consultation had been conducted at the same health facilities and prescribed an anti-malarial on an outpatient basis, in the last 10 days were eligible to participate. Was considered malaria case when participant presented positive test. Multivariate analysis were conducted and significance level was set at p<0.05.

Results: In total of participants, 64.97% (499) were compatible with malaria case definition, 90.36% (694) were tested before prescribing the antimalarial and 77.95% (541) had positive result. 20.57% (158) were prescribed antimalarial not recommended by the National Malaria Control Program for uncomplicated malaria treatment, with artemether IM being the most frequently prescribed with 71.52% (113). In the total of confirmed cases, 25.88% (140) were positive in microscopic control examination. There was statistically significant association between no cure and the incorrect treatment schedule (OR = 17.7; p <0.001); acquisition of antimalarials outside the HF (OR = 16.99; p <0.001) and incomplete treatment (OR = 4.40; p <0.001).

Conclusion: There was a statistical significance between non-cure after uncomplicated malaria treatment and care and individuals factors, namely incorrect treatment schedule, acquisition of antimalarials outside of HF and incomplete treatment. An urgent training of health workers on the updated guidelines for uncomplicated malaria case management and ensure the availability of adequate and safe antimalarials for treatment of uncomplicated form of disease in all HF was needed.

Keywords: uncomplicated malaria, therapeutic failure, treatment failure, assistance factors, individual factors
**Spatial Factors for COVID-19 Associated Community Deaths an Urban Area of Lusaka, Zambia—March 18 through July 31 2020**

Amos Hamukale¹,²* and Tadatsugu Imamura³,⁴, M. Kapina¹, O. Borkovska⁵, CA. Musuka⁶,⁷, E. Tembo², Y. Xie¹, PM. Zulu¹, P. Sakubita¹,², R. Hamoonga¹, MM. Liwewe¹, N. Kapata¹, N. Sinyange¹,²

¹Zambia National Institute of Public Health, Lusaka, Zambia; ²Zambia Field Epidemiology Training Program; ³Japan International Cooperation Agency, Tokyo, Japan; ⁴Center for Postgraduate Education and Training, National Center for Child Health and Development, Tokyo, Japan; ⁵Geo-Referenced Infrastructure and Demographic Data for Development, London, the United Kingdom; ⁶Zambia Data Hub, National Spatial Data Infrastructure (NSDI), Lusaka, Zambia; ⁷Ministry of Lands and Natural Resources, Lusaka, Zambia; ⁸Fraym, Washington, D.C., the United States

*Tel+260973576637; Email: hamukalea@yahoo.com

**Background:** In this study, we aim to reveal the spatial factors for COVID-19 associated community deaths referred to as brought-in-dead (BID) in an urban area of Lusaka, Zambia, by analyzing geospatial data collected from COVID-19 cases identified in a post-mortem surveillance.

**Methods:** We conducted a retrospective data analysis on COVID-19 cases who were identified in a post-mortem surveillance for BID cases associated with COVID-19 between March 18 and July 31, 2020. Patient information including geocoordinate data for houses of BID cases were collected. Number of BID cases and proportion of associated factors were calculated for each of

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<td>Demographic characteristics of occupational groups most affected by coronavirus disease 2019 in Mozambique, March-July 2020</td>
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the townships using QGIS.

Statistical analysis was conducted by using R ver.3.5.0. We used the Pearson correlation coefficient to calculate the correlation between continuous variables. Multiple linear regression analysis was conducted to calculate the association between numbers of BID cases and variables with significant correlations in univariate analysis. A p-value less than 0.05 was considered as statistically significant.

**Results:** A total of 127 COVID-19 positive BID cases were followed. Out of 94 townships in Lusaka, BID cases were identified in 42 townships (45%, 42/94). 63 cases (50%, 63/127) were identified in unplanned resident areas and 48 cases (38%, 48/127) were in squatter settlement areas. Population density was significantly higher for unplanned resident and squatter settlement areas compared to the rest of the areas (p<0.001). Proportion of individuals without education higher than primary level and those who share toilets with other houses or those who do not have toilets at home were independently associated with the number of BID cases per area AOR; 95% CI: 1.28; 1.09-1.50, and 1.06; 1.03-1.09, respectively).

**Conclusion:** Covid-19 community deaths were distinctly associated with unplanned and squatter settlement areas. Increased Covid-19 screening, Health education and water and sanitation improvement programs should be considered for people living in densely populated unplanned and squatter settlement areas.

**Key words:** COVID-19, spatial factors, community death, unplanned resident area, education level, risk communication, WASH

**COVID-19 Admissions and Outcomes in Three Selected Public Hospitals at Joe Gqabi Health District, Eastern Cape Province, April 2020- February 2021**

*Mirriam Matandela*, KG. Ravhuhalı, TBC Zwane, MH. Kgatla

1Department of Health, Joe Gqabi District, 2South African Field Epidemiology Training Programme, National Institute for Communicable Diseases

*Department of Health, Joe Gqabi District, South Africa, Email: mirriam.matandela@gmail.com, Tel: +27835454118

**Background:** Eastern Cape Province in South Africa reported the first confirmed COVID-19 case on 21st March 2020. Cases continued to spread with increased mortality. On 30 May 2021, a total of 197,759 confirmed cases with 11,657 deaths were reported. We assessed data quality and described demographic and clinical characteristics of hospitalised COVID-19 cases from three selected hospitals in Joe Gqabi Health District, Eastern Cape, South Africa.

**Methods:** We conducted a descriptive cross-sectional study using data from three district hospitals (Aliwal North, Empilisweni and Taylor Bequest) in Joe Gqabi District, Eastern Cape.
We extracted data from 1 April 2020 to 28 February 2021 from the national surveillance system for laboratory-confirmed COVID-19 hospital admissions (DATCOV). Frequencies, rates and percentages were used to summarize categorical variables. Continuous variables were described using the median with interquartile range (IQR). Statistical analyses were done using Microsoft Excel 2016.

**Results:** A total of 404 hospitalized patients were identified during the period under review. Of these, 135 (33%) were admitted to Aliwal North, 150 (37%) to Empilisweni and 119 (29%) to Taylor Bequest. Data completeness in the patient-level dataset was high for age (100%), sex (92%) and comorbidities (82%). The median age was 58 years (IQR=0–116). Sixty-eight percent (275/404) of patients were female and patients ≥50 years accounted for 77% of all COVID-19 admissions. The median length of hospitalization among those who died was 4 days (IQR=0–31). The overall case fatality rate (CFR) was 52% (210/404). The CFR was 35% (48/135) for Aliwal North, 53% (80/150) for Empilisweni and 69% (82/119) for Taylor Bequest. Common comorbidities among those who died included hypertension (49%), diabetes (28%), HIV (13%), obesity (9%) and cardiovascular disease (5%).

**Conclusion:** The overall quality of the data from DATCOV was good. In this study, the elderly population were the most affected group with hypertension and diabetes being the predominant comorbidities. COVID-19 vaccination rollout campaigns should prioritise the elderly in Joe Gqabi district

**Keywords:** COVID-19, Hospitalization, Comorbidities, Eastern Cape

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**Demographic characteristics of occupational groups most affected by coronavirus disease 2019 in Mozambique, March-July 2020**

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**Introduction:** The risk of a professional worker becoming ill due to coronavirus disease 2019 (COVID-19) is related to their exposure to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Due to the urgency of restoring work activities in Mozambique, the study aimed to identify occupational groups most affected by COVID-19 in the first four months that SARS-CoV-2 was detected in the country and to strengthen measures to prevent and control the transmission of SARS-CoV-2 in occupational settings.

**Methods:** A descriptive analysis of all professional workers confirmed for COVID-19 was conducted using secondary data of positive cases from the National Institute of Health between
22 March to 29 July 2020. Using the procedures of the Mozambican occupation’s classification manual, all positive cases ≥18 years of age were categorized, and a professional worker was considered as any natural person providing services for a salary.

**Results:** In the first four months of the COVID-19 pandemic in Mozambique, there was a total of 1,127 confirmed cases among professional workers. Nampula province had the most confirmed cases at 25.0% (277/1,127). The proportion of confirmed cases was highest among domestic workers at 16.8% (189/1,127) with 79.4% (150/189) being females, defense and security at 14.2% (160/1,127) with 91.3% (146/160) being male, students at 13.0% (147/1,127) with 51.0% (75/147) being male, and health workers at 13.0% (147/1,127) with 53.7% (79/147) being female. Among health workers, the highest proportion of cases was reported among nurses at 25.9% (38/147) and in June at 58.5% (86/147).

**Conclusion:** The occupational groups most affected by COVID-19 in the assessment period are those performing activities that require physical presence at the workplace. It is recommended that higher-risk professionals such as domestic, defense and security personnel, students and healthcare workers strengthen prevention measures in their workplaces to prevent and control SARS-CoV-2 transmission.

**Keywords:** COVID-19, Occupational Groups, Public Health Surveillance, Mozambique

**Characteristics of Cases and Deaths Arising from SARS COV-2 Infection in Zambia-March 2020 through 2021**


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**Background:** Since March 2020, Zambia has been experiencing a SARS-CoV-2 epidemic. Little data has been reported on cases and deaths arising from COVID-19 in Africa. We described the demographic characteristics of these cases and deaths in Zambia.

**Methods:** We analyzed data on all persons testing positive for SARS-CoV-2 from 3/18/2020-4/25/2021 in Zambia. COVID-19 cases were identified in Zambia through port-of-entry surveillance, contact-tracing, health-care-worker testing, health-facility-based and community-based screenings and community-death screening. All diagnoses were confirmed using real-time polymerase chain reaction and rapid-antigen test kits of nasopharyngeal specimens. We analyzed age, sex, and date of reporting according to whether the cases or deaths occurred during the first wave (7/1/2020-9/15/2020) or the second wave (12/15/2020-4/10/2021). We computed Mann-Whitney U test to compare medians of continuous variables and chi-square tests to compare differences between proportions using R.
**Results:** A total 823 (0.9%) deaths were recorded among 91,378 confirmed cases during March 2020-January 2021 in Zambia. Persons who died were older than those who did not (median age 50 years versus 32.0 years, p< 0.001). Although only 4.7% of cases were among persons aged 60 years and over, most deaths (31.6%) occurred in this age group (p<0.001). More deaths (83.5%) occurred in the community than in health facilities (p<0.001). The case fatality proportion was higher in the first wave than the second wave (2.4% versus 0.6%, p<0.001).

**Conclusion:** During the SARS-CoV-2 epidemic in Zambia, most deaths occurred in the community, indicating potential gaps in accessing hospital care among COVID-19 patients. Further studies are required to identify barriers in accessing health care among COVID-19 patients in Zambia. As the group most impacted by COVID-19 mortality, older persons might need enhanced outreach and linkage to care.

**Key words:** COVID-19, Deaths, Cases, Characteristics

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**CONCURRENT POSTER SESSIONS 2- HIV/TUBERCULOSIS/MALARIA**

| Tuberculosis deaths in Bulawayo City, 2016-2019: a secondary data analysis | Tshebukani Moyo |
| Evaluation of malaria data quality analysis system, Zambezia province, Mozambique, 2019 | Gerson Alfai |
| TB-HIV Co-Infection in Omusati Region, Namibia, 2014-2018 A Retrospective Study | Petrus Haita |

**Tuberculosis deaths in Bulawayo City, 2016-2019: a secondary data analysis**

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**Background:** Tuberculosis is a preventable disease and a leading cause of death globally. Death from any cause following a diagnosis of tuberculosis is classified as a tuberculosis death. Bulawayo city reported high tuberculosis death rates from 15.3% in 2016 to 14.2% in 2019 against a threshold of 5%. We described the tuberculosis death trends in Bulawayo city to characterize
patients dying, and determined the reasons for the high death rates to make recommendations for improving treatment outcomes for susceptible tuberculosis cases.

**Methods:** We conducted a descriptive cross-sectional study using data collected from the Bulawayo city tuberculosis program. Electronic tuberculosis deaths audit forms were reviewed. We analyzed all (N=469) records of tuberculosis deaths from 19/1/16 to 31 December 2019. Microsoft Excel 2007 was used to generate graphs and for simple linear regression.

**Results:** We analyzed 469 death records, and males accounted for 278/469 (59.3%) of the deaths. The median age of death was 40 years (Q₁=33; Q₃=51). The proportion of TB deaths increased from 63/114 (55%) in 2016 to 57/90 (63%) in 2019 for males (R²=0.966, p=0.017). The majority of deaths 278/469 (59.3%) occurred in the intensive phase of treatment. Only 44/469 (9.4%) of the tuberculosis deaths had anemia as a co-morbid condition. Testing for anemia was not routinely done, and laboratory reagents were out-of-stock.

**Conclusion:** High death rate particularly in the intensive phase, attributed to the sub-optimal clinical care. Tuberculosis programs should work towards adopting differentiated care models (patient centered treatment models) for tuberculosis patients particularly during the intensive phase of treatment and for male patients. Countries should also develop algorithms to identify tuberculosis patients at high risk of death and adequate resources should be availed for the procurement of laboratory reagents to support routine tests for co-morbid conditions.

**Key words:** Tuberculosis death, Bulawayo City, Zimbabwe

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Evaluation of malaria data quality analysis system, Zambezia province, Mozambique, 2019

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**Introduction:** The Mozambique National Malaria Control Program (NMCP) launched a routine malaria data quality analysis (DQA) system in 2019, to be operated by the health facilities, and reported to NMCP in 30 days. This study aims to evaluate the Malaria DQA information system, its usefulness, and possible weaknesses in order to propose improvements.

**Methods:** The analysis included 17 routine NMCP data reports and sheets from ten districts in Zambézia province from May to November 2019. Attributes (simplicity, data quality, acceptability, representativeness, timeliness, and the usefulness of the system) were evaluated using the
Updated Guidelines for Evaluating Public Health Surveillance Systems. Descriptive analysis was performed, and the ranking of attributes was based on the score achieved in each parameter.

**Results:** The system was described as complex as it was implemented by one trained health professional in each health facility, had eight forms with 103 variables, and 483 fields. The data quality was regular with 79%(134/170) completeness for the variable “location”, and 100% of variable “health conditions”. The acceptability was low as 30%(3/10) of the evaluated districts had a DQA planned in the last six months for health facilities. About 45%(10/22) districts reported to the system; hence the system had low representativeness. It took 180 days for the province to report to the NMCP, hence the system was described as not timely. The system was useful as it met its objectives of monitoring the malaria data quality from the health facilities logbooks to the central level.

**Conclusions:** The DQA system was useful and aligned with its objective, as it could detect inconsistency in the malaria data and provided the NMCP with critical and systematic insights into data quality. To improve the system, it is recommended to reduce the number of variables, define mandatory fields for completion, and establish the time for sending the report.

**Keywords:** Malaria, Health Information System, Quality Control, Mozambique

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**Retrospective study on TB-HIV co-infection in Omusati region, Namibia, 2014-2018**

*P. Haita, T. Jonas, D. Awaga, EE Ndeveatela, M. Iyaloo*

**Introduction:** TB and HIV are communicable diseases of major public health concern in Sub-Saharan African. According to WHO TB-HIV report (2016) Namibia is among the top 30 high TB burden countries with a TB-HIV incidence rate of 35% in 2017. In this study, we aimed to describe the characteristics of TB-HIV patients in Omusati region and to determine the trend of TB-HIV co-infection from 2014 to 2018.

**Method:** We defined TB-HIV as any who contracted TB while he/she was HIV positive. We reviewed the records of TB-HIV patients who were registered from 2014 to 2018 in Omusati region. Data were electronically retrieved from the ETR and exported into Microsoft excel for cleaning and verification. The data was then imported into SPSS version 25, for further analysis. We generated the frequencies and proportions.

**Result:** A total of 3,489 patients were diagnosed with TB in the Omusati region from 2014 to 2018, of which 1,461 (42 %) were TB/HIV co-infection patients. Among 1,461 TB/HIV patients, 794 (54%) were male. Of the TB –HIV patients. The median age was 40 and the age range was from 2- 94 years. The most affected age group was 35-44 years with 386 cases (32.10%), while 65+ years was the least affected group with 82 cases (5.82%). Among the TB-HIV patients, 162 (11%) died while on treatment, of which 130 (80%) had pulmonary TB. Of the cumulative TB-HIV patients, 1,069 (73.2 %) were not initiated on isoniazid preventative therapy (IPT) before developing tuberculosis. The trend rate of TB-HIV co-infection declined from 47% in 2014 to 35%
2018. In 2015 the trend rate was 41%, however it increased to 45% in 2016. In 2017 the trend rate was 40% and it gradual declined to 35% in 2018.

**Conclusion:** More HIV positive patients were not initiated on isoniazid preventative therapy before developing Tuberculosis. Therefore, we recommended to Omusati Directorate of Special Programme to strengthen the initiation of IPT to all HIV positive clients who meet the eligibility criteria at all health facilities. We also recommend that the directorate to further conduct a detailed study to associate the factors or causation related to why more males and middle age group (35-44 years) being co-infected by TB-HIV in the region.

**Key words:** Tuberculosis, Human Immunodeficiency Virus, Electronic Tuberculosis Register, Cotrimoxazole, Isoniazid Preventative Therapy

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**An Evaluation of the Adverse Events following Voluntary Medical Male Circumcision Surveillance System in Zvimba District, Zimbabwe, 2020.**

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**Background:** The Adverse Events following Voluntary Medical Male Circumcision Surveillance System (VMMC AESS) serves to identify adverse events (AEs) for safe provision of VMMC as part of combination HIV prevention interventions. In 2019, Zvimba District reported 2/542 (0.4%) AEs only against an acceptable threshold rate of 2%. We evaluated the system to verify existence of underreporting of AEs, assess data quality, system usefulness and attributes.

**Methods:** A descriptive cross-sectional study was conducted using the updated CDC guidelines for surveillance system evaluation from 01 January 2019 to 31 December 2020. We proportionately sampled VMMC client intake records and purposively sampled health facilities and health care workers (HCWs) involved in the VMMC program. An interviewer-administered questionnaire was used to collect data on knowledge of the VMMC AESS, system usefulness and attributes. We checked for underreporting and data quality from VMMC records using a checklist. We analysed data using Epi Info 7 which calculated medians and proportions.

**Results:** Of the 31 participants, 21(68%) had fair knowledge of the VMMC AESS classified on a 3-point Likert scale. Out of 384 records reviewed, 104(27%) had missing data on AEs monitoring days 14 and 42. There were no unreported AEs identified from the reviewed records. Although some private facilities were offering VMMC services, there was no evidence of participation in the system. Sixteen (52%) of participants regarded filling AEs reporting forms as difficult and the reporting process as time consuming.

**Conclusion:** No unreported AEs were noted from the available records however, under-reporting could not be ruled out due to poor data quality and inadequate reporting tools. The system was
useful though unstable, not representative and not simple. We strengthened data quality audits in the district. We recommended re-training of HCWs on the VMMC AESS and in- cooperation of private health facilities into the surveillance system.

**Keywords:** surveillance, adverse events, circumcision, evaluation

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**DAY 2**

**ORAL SESSION 2- MATERNAL AND CHILD HEALTH**

|---|---|

Factors associated with viral suppression in children aged 0-14 years, Mozambique, January to December 2019. | Neusa Fataha |

Neonatal Tetanus investigation in Rundu Hospital, Rundu District, Namibia, January 2020. | Roswitha M. Ndjengwa |

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An analysis of Maternal Mortality in Intermediate Hospital Oshakati, Oshakati District, Namibia, January 2013 - December 2017

**Background:** Globally, approximately 830 women died daily due to complications of pregnancy or childbirth in 2015. Maternal deaths remain a global public health concern. Namibia reported a Maternal Mortality Ratio (MMR) of 265/100 000 births in 2015. In July 2018, we reviewed maternal
death files in Oshakati Hospital to determine the causes of deaths and to develop recommendations for the prevention of avoidable deaths in future

Methods: We conducted a cross sectional study with a retrospective review of all maternal death records for the period 2013-2017 in Oshakati Hospital. We documented the number of livebirths and calculated the MMR as the number of deaths per 100 000 livebirths. A structured questionnaire was used to collect information from death records. We line listed the death cases and cause of death in Microsoft Excel. We used Epi info 7 to generate frequencies, proportions, means and standard deviations and presented them in tables and graphs

Results: We recorded a total of 78 maternal deaths, with 32 618 live births during the five-year period, giving us a MMR of 239/100 000 live births. The ages of study participants ranged between 16 and 49 years with an average of 31.8 (±2.5 SD). About 60.25% of cases represented women aged 30 â€“ 39. The mean parity was 2.92 (± 2.4 SD). A total of 44 (56%) deaths were from direct causes while indirect causes accounted to 44%. Sepsis was the leading cause of mortality accounting to 24%, followed by hemorrhage and hypertensive disorders with 21% and 8% respectively.

Conclusion: Sepsis, Hemorrhage, and Hypertensive Disorders were the main causes of maternal deaths at Oshakati Hospital. About 52.56% of deaths were avoidable. We recommend health education to pregnant women on the importance of seeking health services early. A multidisciplinary team effort is necessary for the reduction of avoidable maternal deaths.

Key words: Maternal Mortality, Maternal Mortality Ratio, Oshakati Hospital

Factors associated with viral suppression among HIV infected children aged 0-14 years, Mozambique, January to December 2019

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Introduction: In 2019, the human immunodeficiency virus (HIV) infected 143,000 children in Mozambique, of these 95,080 were on antiretroviral therapy (ART). Since 2019, Mozambique has been implementing new treatment guidelines designed to transition children to more effective ART regimens and achieve greater rates of viral suppression. The objective of this study was to identify factors associated with viral suppression in children.
Methods: A cross-sectional study was carried out among children 0-14 years old, enrolled on ART and underwent viral load tests from January to December of 2019 in Mozambique with test results available in the Data Intensive Systems and Applications laboratory information. Viral suppression was defined as <1,000 copies/ml of blood. We used multivariate analysis to determine the factors associated with viral suppression.

Results: Of 33,559 children registered, 53% (17,794/33,559) were female with the mean age of 8 (SD ± 4) years. About 44% (14,888/33,559) of the children had suppressed the virus, with 78% (11,557/14,888) in 6-14 years agegroup. Factors associated with viral suppression were agegroup of 2-5 years [AOR= 1.34; 95% CI 1.17-1.53; p <0.001] and 6-14 years old [AOR=2.02; 95% CI 1.76-2.31; p <0.001] versus <2 years. Living in Maputo City [AOR=1.58; 95% CI 1.24-2.03; p <0.001], and Maputo Province [AOR=1.47; 95% CI 1.16-1.88; p <0.002] versus Tete Province were also associated with viral suppression. Male sex [AOR=0.83; 95% CI 0.80-0.87; p <0.0001], living in Cabo Delgado province [AOR=0.76; 95% CI 0.59-0.98; p <0.036] versus Tete Province, or with ART duration of 6-10 years [AOR=0.82 (95% CI 0.69-0.98, p<0.030)] versus 11-14 years were associated with non-suppression.

Conclusion: More than half of children did not have viral suppression. The chance for viral suppression increased with age and in children living in Maputo city. Research is needed to better understand the challenges for viral suppression in children.

Keyword: HIV, viral suppression, children, viral load, Mozambique

Neonatal Tetanus investigation in Rundu Hospital, Rundu District, Namibia, January 2020

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Background: Neonatal Tetanus (NNT) remains an important public health concern globally, specifically in low-income countries especially in districts with low immunization coverage. In 2019, Rundu District recorded a Tetanus Toxoid (TT) immunization coverage of 38.04% among pregnant women. On 22 January 2020, the District Surveillance Officer was notified of one suspected NNT case. We investigated to verify the case, determine the source of infection and provide recommendations for prevention of future cases.

Methods: We investigated a case of NNT in paediatric ward at Rundu Hospital. We used the WHO’s standard case definition of NNT as “an illness occurring in an infant who has the normal ability to suck and cry in the first 2 days of life, but who loses this ability between days 3 and 28 of life and becomes rigid or has spasms” plus the clinician’s confirmation through clinical features.
We interviewed the infant’s mother to ascertain the delivery events, cord care practices as well as her TT immunization status. We reviewed admission records to confirm the diagnosis.

**Results:** NNT was confirmed through clinical features. A six-day old male infant presented with high fever, excessive crying, muscle spasm/fits, inability to suck and body stiffness. The infant was born at home and the umbilical cord was cut with an unsterile blade. The umbilical stump was treated with ash and cow dung. The infant’s mothers did not complete her TT immunizations. The neonate survived the infection.

**Conclusion:** Home delivery, use of unsterile blade for cutting the umbilical cord, unclean care of the umbilical stump and incomplete TT immunization status of the mother were the predisposing factors for the infant to acquire the infection. Educating women on importance of hospital deliveries and completion of TT immunization schedule is crucial. Supplementary activities to improve the district’s TT immunization coverage is thus recommended.

**Key words:** Neonatal Tetanus, Tetanus Toxoid, Rundu District

**CONCURRENT POSTER SESSIONS 3 - OUTBREAK INVESTIGATION**

| Investigation of a confirmed human rabies case at a regional hospital in Limpopo Province, South Africa July 2020 | Mokgadi Monwa |
| Measles outbreak investigation in Saurimo municipally, Lunda-sul, May 2019 | Luzala Garcia |
| Typhoid fever in Neno District, Malawi: A cross-sectional study investigating outbreak source, November 2020 | Mtisunge Baluwa |
| Hepatitis E Outbreak investigation in Omaruru District, Erongo Region, Namibia, Jan - Dec 2018 | Carenn I. M. Shekudja |
| Completeness of the Road-to-Health Booklet in children aged 6 weeks - 2 years at Buffalo City Metro, Eastern Cape Province. | Nothembelani Jongisa |
| Evaluation of the Measles Case-Based Surveillance System in Kwekwe City, Zimbabwe, 2017 - 2020 | Tendai Hlabangana |

**Investigation of a confirmed human rabies case at a regional hospital in Limpopo Province, South Africa — July 2020**

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**Background:** Rabies is a deadly zoonotic disease responsible for an estimated 59,000 human deaths in Africa and Asia annually, with nearly all cases resulting from dog bites. In South Africa, one rabies case is an outbreak. Limpopo Province (LP) reports an average of three rabies cases annually. On 13 July 2020, a confirmed case of rabies in a five-year-old boy was reported to the LP Department of Health. We investigated the rabies case to determine the circumstances that led to the death, identify gaps and make recommendations.

**Methods:** A descriptive study was conducted. Data were collected using an interviewer-administered questionnaire. Information was collected from the hospital infection control nurse, mother of the deceased, and general practitioner. The patient’s demographic information, clinical and exposure history were obtained from the interviews. An ante-mortem saliva specimen and post-mortem brain sample were collected from the boy and submitted for testing at the National Institute for Communicable Diseases, Centre for Emerging Zoonotic and Parasitic Diseases reference laboratory.

**Results:** The boy was bitten by a dog on 27 May 2020. He presented to a general practitioner the following day with a minor dog bite wound and scratches on the neck. The doctor prescribed tetanus toxoid and analgesics. Rabies post-exposure prophylaxis (PEP) was not given. On 05 July 2020, he was admitted to the hospital with hypersalivation, breathing difficulties and loss of appetite and demised the following day. The dog was found dead on 28 May 2020. The ante-mortem saliva specimen tested negative for rabies by RT-PCR, but a post-mortem brain sample tested positive for rabies virus antigen by direct immunofluorescence.

**Conclusion:** The findings highlight gaps in the clinical management of animal bites in LP. To eliminate rabies successfully, we recommend in-service training on the clinical management of animal bites among healthcare workers, continued rabies awareness campaigns and mass dog vaccinations in communities.

**Keywords:** Rabies, Zoonoses, Dogs, Animal bite, Post-Exposure Prophylaxis

**Measles outbreak investigation in Saurimo Municipally, Lunda-sul, May 2019**

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Background: On January 2019, Lunda sul provincial department of health, reported two suspected cases of measles in Saurimo municipality, whose samples were sent to reference laboratory and the result divulgated on March 27th, being one measles confirmed case. Due the progressive increase of case along the time, on May, a national team went to the town, to investigate the outbreak source.

Methods: A descriptive cross-sectional study was conducted in the Saurimo municipality, from 8 to 23 May 2019 in the reference hospital. A total of 480 patients (children and adults) and responsible of the children that visited the reference hospital during the investigation that responded the suspected case definition of measles, (people with fever and exanthema, cough, coriza or conjunctivitis, or people whose doctor suspects having measles) were included in study. The data were obtained with interview using a semi structured formulary previously elaborated and tested. An informed verbal acceptance was obtained from the participants.

Results: In general, 51.67% (248) of participant were female, 69.79% (335) were in the age group from 9 to 59 months and 75% of interviewees didn’t had any education level. Of the 22 neighborhood existed, Candembe, Txizainga 1, Txizainga 2 and Luavur, were the highest proportion of cases with 20.63%, 14.58%, 12.71% and 12.29% respectively, making up 60.21% of the cases of the municipality. The epidemic chart shows a progressive increase of cases along the time suggesting transmission from person to person. Overall, 94.79% of cases didn’t vaccination card and 81.87% had a history of contact with confirmed cases.

Conclusion: Low vaccination coverage was the basis for the outbreak and the delay in the dissemination of the results of the first two cases notified may have influenced the late implementation of control measures and, consequently, the spread of the disease. Mass immunization actions, IEC, adequate case management were implemented to control the event

Key words: Measles, Vaccination, Prevention.

Typhoid fever in Neno District, Malawi: A cross-sectional study investigating outbreak source, November 2020

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Background: Typhoid fever remains an endemic disease in Malawi, with 8 000 to 11 000 cases estimated per year. The risk of disease transmission is associated with poor sanitation, unsafe water, and unsafe food production and handling processes. Neno District reported an increased number of typhoid fever cases from November 2020. We investigated the increased typhoid cases to determine the source of the outbreak and describe the characteristics of the cases.

Methods: To collect epidemiological data of the cases, we conducted a retrospective review of surveillance data. Three-tier case definitions were used to classify the cases. Blood culture samples were collected from the suspected cases, and cases were confirmed if Salmonella typhi was isolated in blood culture. Symptomatic individuals without laboratory confirmation
were classified as suspected cases. We collected water samples and conducted an environmental assessment to assess water and sanitation services in the affected villages. Both environmental and clinical samples were sent to the National Microbiology Reference Laboratory for testing to detect the Salmonella species. Data were analysed using STATA version 15.

**Results:** From November 2020 to January 2021, we identified 123 suspected cases, 72 were confirmed cases and 5 fatalities. The most affected villages were Chakulembera (40%, 29/72) and Mwingitsa (14%, 10/72). Females were mostly affected, 56% (40/72) as compared to males (44%, 32/72). The clinical samples received tested positive for Salmonella typhi, and antimicrobial resistance testing showed resistance to Ciprofloxacin, Amoxicillin, Chloramphenicol, Gentamicin and Nalidixic acid. The water samples also tested positive for Salmonella typhi. The environmental assessment revealed low latrine coverage in the most affected villages and limited access to safe water (69% for Chakulembera and 76% for Mwingitsa).

**Conclusion:** The findings suggested that the consumption of contaminated water was the most probable cause of the outbreak. Pot to pot water chlorination was implemented, and community awareness campaigns conducted.

**Keywords:** Typhoid fever, Sanitation, Water, Outbreak, Salmonella

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**Hepatitis E Outbreak investigation in Omaruru District, Erongo Region, Namibia, Jan – Dec 2018**

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**Introduction:** Hepatitis E is a liver disease caused by the hepatitis E virus (HEV). HEV is transmitted through the fecal-oral route with an incubation period of seven to twenty-one days. Namibia reported an outbreak in October 2017 after reporting a number of five cases. The index case in Omaruru district was recorded on 12 February 2018 and the district declared an outbreak in October 2018 after a surge of HEV cases. We investigated this outbreak to establish the existence of an outbreak, describe cases by person, place and time and identify the possible source of infection.

**Methods:** We conducted a descriptive cross-sectional study using line-list generated from the surveillance data of Omaruru district, during the period of January to December 2018. We conducted an active case search by reviewing clinical records. We defined a Hepatitis E case as any person with acute jaundice and with laboratory confirmation of IgM in serum. We further define probable case as any suspected case, with Jaundice and with history of contact with a confirmed case who did not have laboratory confirmation. We analysed the data using Microsoft excel and
epi-info version 7.2. We computed median, frequencies and proportions to describe the outbreak. We further conducted environmental assessment and tested water samples from the taps in the informal settlements.

**Results:** Out of forty (40) cases reported, 14 (%) were confirmed and 26 (%) were probable cases. Median age was 30; ranging from 2 to 58 years, 67% (27/40) were males. The first detected case (index case) was a 20-year-old learner who travelled from Windhoek city, the epicenter of Hepatitis E outbreak. One death was recorded, with case fatality rate of 2.5%. The age group of 20 to 39 years accounted for 65% (26/40) of all cases and 58% (23/40) of cases were located in Hakahana informal settlement. Additionally, 28% (11/40) of cases were reported in October 2018. Environmental assessment revealed lack of ablution facilities as well as lack of portable water in the affected informal settlements. The chlorine level in the water samples tested was between 0.2 – 1.0 mg/L.

**Conclusion:** This outbreak of hepatitis E in Omaruru district was linked to the outbreak in Windhoek due to traveling history of index case. Furthermore, environmental findings indicate that the poor sanitation conditions may have contributed to the spread of hepatitis E infection in the affected settlements. Setting up of ablution facilities, water tanks in the informal settlement and community mobilization were some of the public health actions taken by the local authority in collaboration with the ministry of health to address the outbreak.

**Key words:** hepatitis E, Outbreak, Omaruru, Namibia

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Completeness of the Road-to-Health Booklet in children aged 6 weeks – 2 years at Buffalo City Metro, Eastern Cape Province, 2021

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**Introduction:** Poor growth monitoring of children continues to be a major source of early death for children under five worldwide. In 2019, an estimated 195 million children under five years old are stunted and 129 million are underweight. Accurate record-keeping is important for continuity and quality of care in children. This study aimed to assess the completeness of road to health booklets (RTHB) with a focus on growth charts and nutritional assessment sections in Buffalo City Metro health facilities.

**Methods:** A cross-sectional, quantitative record review was conducted. As part of the FETP Frontline learning activity, 3 facilities were conveniently selected and visited. RTHBs were
conveniently selected from all children visiting the clinic on the day of the visit. Data were extracted from RTHBs of children aged 6 weeks – 2 years attending a child health clinic into MS excel spreadsheet. Microsoft Excel was used to summarize the completeness of the RTHBs.

**Results:** Forty RTHBs were assessed. Of the assessed RTHBs, gender distribution was 37.5% (n=15/40) females 62.5% (n=25/40) males, the age ranged from 1.4 - 23 months. Compliance of anthropometric assessment to children 6 weeks - 2 years was 0%. Only 10% (n=4/40) of RTHBs had weight for age documented, and 3% had mid-upper circumference (MUAC) recorded. No RTHB, 0/40 (0%) had weight for height recorded or plotted. Infant feeding decision was not documented in all RTHBs, and nutritional assessment was not classified in 90% (n= 36/40) of RTHBs

**Conclusion:** This study provides evidence of incomplete documentation of health information in RTHBs, resulting in missed opportunities. This study was conducted only in three facilities. Therefore, the findings for this study do not represent the whole Buffalo City Metro. We recommended in-service training on the use of the RTHB and assessment of the availability of anthropometric instruments to HCW.

**Keywords:** Completeness, Road to Health Booklet, FETP Frontline

**Evaluation of the Measles Case-Based Surveillance System in Kwekwe City, Zimbabwe, 2017 - 2020**

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**Background:** The main objective of measles surveillance is to detect the presence of circulating measles virus. Kwekwe City with an estimated population of 117,116 detected only one case of suspected measles in 2020 for the period 2017-2020 against a target of 2 cases per year. We evaluated the system to establish why it was failing to detect the targeted suspected cases.

**Methods:** A descriptive cross-sectional study was done. Four of the five municipal clinics were purposively selected. Fifteen of the nineteen private health facilities were randomly selected and fifty-seven health workers were randomly recruited. An interviewer administered questionnaire and key informant interview guide were used to collect data. Quantitative data was analysed using Epi info.

**Results:** Of the 57 respondents, 42 (73.7%) had at least good knowledge on the measles surveillance system. Ten (17.5%) knew the number of notification forms to be completed. Fourteen (73.7%) of the nineteen respondents who had ever completed case investigation forms took between 10-20 minutes to complete. None of the health facilities had used the system to
inform decision making. Ten (17.5%) of the participants had received training in the measles surveillance system. Case investigation forms were inadequate with two (10.5%) of the nineteen facilities having them. The detected case was reported 8 days after the onset of rash, results were not received and the form was incompletely filled.

**Conclusion:** The system was found to be simple, not useful, not acceptable, not timely, unstable and not sensitive. Integration with the private sector was poor and resources were inadequate. Advocacy, communication and social mobilization on measles surveillance and private sector involvement might improve the performance of the system in Kwekwe City. We photocopied and distributed measles case investigation forms to five private health facilities.

**Key words:** Measles, Surveillance, Kwekwe City, Zimbabwe

**CONCURRENT POSTER SESSIONS 4-COVID 19 INVESTIGATIONS**

| Investigation of Covid-19 notified cases, in the Sambizanga Urban District, from September to December 2020 | Josefa. G |
| Contact tracing of coronavirus disease 2019 cases in a multinational company in Mozambique, April 2020 | Auria Ribeiro Banze |
| SARS-CoV-2 Infection Among Students at a High School in Zimbabwe, December 2020 | Godwell Nhidza |
| Testing rates for coronavirus disease in 10 provinces of Zambia, October 2020 to February 2021 | Cheepa Haabeenzu |

**Investigation of Covid-19 notified cases, in the Sambizanga Urban District, from September to December 2020**

*Josefa D. A. Guimarães¹,², Dilunvuidi D. N. Pode², Júlio F. L. Costa²*

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Background: On August 6th, 2020, the rapid response teams coordination notified 2 confirmed cases of Covid-19 to the Health Department of Sambizanga Urban District (SzUD). Covid-19 is a Public Health Emergency which international importance, with capacity to spread rapidly. In November 2020, Angola had registered 11,577 cases, with 291 deaths, 5,230 recoopered and 6,056 active. To investigate the notified cases of the disease, in the aforementioned district, was the aim of the study.

Methods: Analytical cross-sectional study was conducted out on 261 residents of the SzDU, who were notified as suspected cases of Covid-19 and who responded to the standardized case definition, from September to December 2020. Comparative groups were considered, all notified case tested positive to covid-19 and other group tested negative, and multivariate analysis was performed to identify factors associated with covid-19 infection, considering statistical significance when OR>1, CI 95% and p value <0.05.

Results: Of the total number of reported cases, 50% (130/261) were covid-19 confirmed case. Of the total number of confirmed, the average age was 36.7 (Â± 2.3) years, 64% were male and 60% lived in the worker’s neighborhood commune. The epidemic curve revealed a sudden increase in cases after mass testing start. Multivariate analysis revealed a statistically significant association between having Covid-19 and attending public places, as well as making the incorrect use of the facial mask with OR = 4.1 and 2.1 respectively, in a 95% CI, p <0.001. The lethality and recovery rates were 5% and 96% respectively.

Conclusion: It was concluded that attending public places and the incorrect use of the facial mask were the factors associated with covid-19 infection, epidemiological measures were implemented to cut the transmission chain. It was recommended to intensify the IEC in order to raise awareness among the population about the importance of observing the recommended preventive measures.

Key words: Covid-19, notified cases, case investigation, confirmed cases

Contact tracing of 2019 Coronavirus Disease cases in a multinational company, Mozambique- April 2020.

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Introduction: Contact tracing is one of the main response actions to control the transmission of SARS-CoV-2 in a community. On April 1, 2020, a case of 2019 Coronavirus Disease (COVID-19) was confirmed in a camp by a multinational company with close links to a community. The purpose of this study was to describe the contact tracing of COVID-19 cases at a multinational company in Mozambique.

Methods: Contacts tracing was conducted according to the World Health Organization guidelines for COVID-19. After confirming the first positive case, all contacts were identified and tracked between April 1-8 and then were monitored for 14 days. Additionally, an epidemiological investigation was conducted and oropharyngeal and nasopharyngeal samples were taken to diagnose COVID-19 infection using the RT-PCR test. In the investigation, the contacts were also instructed to alert their contacts about the possibility of infection and to strengthen the preventive measures in order to break the chain of transmission.

Results: The confirmation of the first case of COVID-19 in an employee at the multinational company occurred on April 1. The epidemiological investigation did not identify the probable source of infection in the case. 60 contacts were identified and tracked, of which 2 were family members, 56 were from work and 2 were members of the community in the district where the company is located. 83% (50/60) were male, 8% (5/60) developed symptoms such as fever, nasal congestion, headache, sore throat and joint pain within 14 days since the last exposure to the case. 83% (50/60) of the contacts were tested, 54% (27/50) were aged between 31 and 64 years (median 39 years). The positivity rate of the contacts tested for COVID-19 was 16% (8/50).

Conclusion: The importance of systematic and immediate contact screening was a lesson learned for new cluster investigations in Mozambique. Improved and timely surveillance is essential for quickly detecting clusters and reducing the potential risk of widespread transmission in the community and new transmission chains.

Key-words: COVID-19, epidemiological surveillance, outbreak, contact tracing, Mozambique.


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Introduction: Namibia reported its first novel coronavirus disease (COVID-19) cases on 13th March 2020 and a state of emergency was declared from 17th March 2020 to 22nd September 2021. As of 23rd September, 2020, there have been 26 640 247 confirmed cases worldwide including 874 963 deaths. During the same period, Namibia has recorded a total of 10663 confirmed cases of COVID 19 with a CFR of 1.1 % (n= 117 deaths) and Omusati region has recorded 45 cases and 1 death. Local transmission of SARS-20-CoV-2 was established in Khomas and Erongo regions at this point in time. We conducted a descriptive study of the COVID-19
outbreak in Omusati region in northern Namibia to describe the outbreak by person, place and time.

**Methods:** We reviewed all the case investigation forms and generated line list for COVID-19 confirmed cases during the period under review in Omusati region. Data was entered, cleaned and analysed using Microsoft Excel. Descriptive statistics, frequency counts and percentages were computed to describe participants’ sociodemographic characteristics and clinical information. The Rapid Response Teams collected Nasopharyngeal and oral pharyngeal swabs and sent them to Namibia institute of pathology for Confirmation of COVID-19.

**Results:** We found that a total of 1,099 swabs were collected from people who were suspected to have COVID-19 and who were contacts of confirmed cases in Omusati region. Among the specimen (swabs) collected 45 had tested positive for COVID-19, with a positivity rate of 4.1%. Median age was 33 with range between 4-69 years. More cases 26 (57.7%) were detected among the age group of 20-39. Males comprised of 31 (68.9%) of confirmed cases in the region. Majority of cases 38 (84%) were detected in Epidemiological week 33 to week 37, with 10 cases (22%) being detected in week 35 only. During the investigation all the four health districts detected positive cases, however, Outapi district confirmed 24 cases (53.3%) compared to Tsandi district with the least cases of 2 (4.4%). Among the 45 detected cases, 19 (40%) were contacts of confirmed cases, 17 (37.8%) were tested as travellers from high risk areas and they were either put in quarantine or presented with signs and symptoms related to COVID-19 while 9 (22.2%) were suspected cases of COVID-19. More than half of these cases, 26 (57.8 %) were symptomatic, 14 (53.8 %) and 11 (43.3 %) cases had cough and loss of smell respectively.

**Conclusion:** Our analysis found that males and those between the age group of 20-39 years comprised of majority of COVID-19 cases. We also concluded that the 35th epidemiological week was highest peak of COVID-19 cases in the region. We therefore, recommended the regional surveillance pillars to analytical study the factors associated to this findings and to strengthening contact tracing in the region to identify more than 85% of the contacts. We also recommend the Risk communication and community engagement pillar to strengthen social mobilization and focusing more on this age group.

**Key words:** COVID-19, Case Fatality Rate, local transmission, Khomas, Erongo, Omusati

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**Acceptability of Vaccination against COVID-19 among Health Care Workers in Zambia—March 2021: A National Cross-Sectional Survey.**

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Introduction: COVID-19 vaccination is an essential part of Zambia’s response. The first vaccination phase aims to vaccinate all healthcare workers (HCWs) in Zambia. We sought to assess COVID-19 vaccine acceptability by HCWs, which is unknown, in Zambia.

Methods: We conducted a cross-sectional survey among HCWs in Zambia from 23rd March to 2nd April 2021. We deployed an online self-administered questionnaire for consenting participants which included questions about experience with COVID-19 and perceptions about COVID-19 and the vaccine. HCWs of all cadres and from all health facilities were eligible. Low vaccine acceptability was defined as being not likely or somewhat likely to get vaccinated at no cost. We reported frequencies, percentages and the median and Interquartile range for non-normal data. Multivariable logistic regression to calculate adjusted odds ratios (aORs) for vaccine acceptability was conducted in R.

Results: Out of 428 HCWs who opened the questionnaire, 385 (90%) completed it. The median age was 34 years (IQR=13) and 58% were males. A majority (51%) of HCWs expressed low acceptability of the vaccine. Concerns about vaccine safety [aOR: 0.01 (0, 0.31) p=0.011] and doubts about efficacy [aOR: 0.02 (0.00, 0.93) p=0.045] were associated with low vaccine acceptability. HCWs who reported prior COVID-19 were associated with vaccine acceptability [aOR: 2.93 (1.03, 8.31) p=0.044].

Discussion: A substantial portion of HCWs are hesitant about taking the COVID-19 vaccine in Zambia. Concerns of HCWs include uncertainty about vaccine efficacy and safety. The Ministry of Health can utilize the ECHO virtual learning platform to reach HCW with messaging about the excellent safety profile and high efficacy demonstrated in clinical trials and real-world experience. Vaccinate and enlist HCWs with prior personal experience with COVID-19 to encourage other HCWs to become vaccinated. Subsequent vaccine acceptability surveys can be used to assess if messaging is helping alleviate these concerns.

Key words: Healthcare workers, COVID-19, Vaccination, Acceptability

SARS-CoV-2 Infection Among Students at a High School in Zimbabwe, December 2020

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Introduction: On December 1, 2020, nine students at a High School tested positive for SARS-CoV-2 on Reverse Transcriptase -Polymerase Chain Reaction (RT-PCR) test. The attack rate increased from 2.6% to 29.8% between 1 and 8 December 2020. We determined factors associated with contracting SARS-CoV-2 at the school and the relationship between student density and attack rates.
**Methods:** We conducted a retrospective cohort study among students and staff members at the high school. We recruited a student or staff member who had undergone RT-PCR for SARS-CoV-2 testing. Data were collected using a pretested questionnaire and checklists. Epi Info 7 was used to calculate means, Risk Ratios (RR), adjusted RR and 95% CI. We calculated classrooms student and dormitories student densities and determined the relationship between dormitory student density and attack rates.

**Results:** We recruited 340 participants with an overall attack rate of 31.8%. Sharing utensils (spoons, forks, plates) with a confirmed case \([aRR=6.47 (CI=2.97-14.10)]\), contact with a positive case within 1m in the past 7 days \([aRR=17.23, (CI=7.42-39.99)]\), owning and using a personal hand sanitizer \([aRR=0.04, (CI=0.02-0.10)]\) and consistency in hand washing \([aRR=0.16, (CI=0.07-0.33)]\) were independent factors for contracting SARS-CoV-2. The mean student density was 2.8m\(^2\) in classrooms and 3.1m\(^2\) in dormitories. There was a positive linear relationship between dormitory student density and attack rate. The wearing of facemasks properly was a protective factor although it was not statistically significant \([RR=0.72, (CI,0.56-0.93), p>0.05]\).

**Conclusion:** Sharing of utensils and being in contact with a case were risk factors for the outbreak. We prohibited sharing of utensils, increased handwashing facilities with soap and reduction of number of new intakes of form 1 and 5 students for 2021. Bed spacing in the dormitories was adjusted such that each student occupies the recommended 3.75m\(^2\).

**Analysis of Testing Rates for Coronavirus Disease in 10 Provinces of Zambia—October 2020 through February 2021**

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**Background:** The surge in Coronavirus disease of 2019 (Covid-19) cases in the second wave resulted in increased disease burden with widespread health impact. Surveillance is key to developing measures to control the epidemic. Routine surveillance through testing was heightened across the country. However, adding percent positivity to the existing system would help better understand different transmission patterns and to facilitate adequate and timely response. The study aims at determining Covid-19 positivity in the ten provinces of Zambia in the second wave between October 2020 and February 2021.

**Methods:** A cross-sectional study where secondary data from testing laboratories were analyzed. Testing rates and positivity rates were compared across each province, and between rural and urban provinces. Pearson correlation was used to show relation between number tested and positive to determine strength, direction and association.
Results: Of the 876,531 tests conducted from October to February 2021 (range 23,161 tests in Muchinga to 404,635 tests in Lusaka), 16,324 (7%) were positive for SARS-CoV2 (range: 5% in Lusaka and 12% in Muchinga). A visual trend analysis of positivity in the provinces showed three patterns: a downward trend in Copperbelt, Southern and Western provinces, plateau in Eastern, Lusaka, Northern and Northwestern provinces, and an increase in Central, Luapula and Muchinga provinces respectively. Pearson’s correlation showed a statistically significant strong positive correlation with a coefficient of 0.9 (p-value 0.0001). There were more positives in the urban provinces than the rural

Conclusion: Increase in testing was associated with increased positive results. High positivity rates in urban could indicate higher transmission compared to rural provinces. Positivity rates varied widely across the ten provinces suggestive of different Covid-19 transmission pattern throughout Zambia. This could be attributed to the existence of unique factors in each province that facilitate transmission. We recommend implementing routine percent positivity as an addition to the surveillance.

Key words: Coronavirus, transmission, Zambia
**DAY 3**

**ORAL SESSION 3- COVID-19 INVESTIGATIONS**

| Outbreak Investigation: Case series of SARS-CoV-2 Variant B.1.1.7 on a Vessel at an Anchorage in Walvis Bay, Namibia, May 2021 | Lahya Ipinge |
| Outbreak investigation into six superspreading COVID-19 clusters in Lusaka December 2020 to January 2021 | John Simwanza |
| Linkage Rate among confirmed COVID-19 cases in the Notifiable Medical Conditions Surveillance System, South Africa, March-June 2020 | Ephordia Thabane |
| An Outbreak Investigation of SARS-COV2 in Bikita District, Zimbabwe, 2021 | Hellen Kabaya |
| Factors Associated with Coronavirus Disease 2019 (COVID-19) among Health Care Workers - Nakonde District, Zambia, May 2020 | Chikama Mukwangole |

**Outbreak Investigation: Case series of SARS-CoV-2 Variant B.1.1.7 on a Vessel at an Anchorage in Walvis Bay, Namibia**

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**Background:** On 8th May 2021, severe acute respiratory syndrome 2 (SARS-CoV-2) cases of vessel crewmen with travel histories from India and Poland were reported to be admitted at a local
hospital in Walvis Bay. With the emergence of various viral variants of concern around the globe and Walvis bay being the biggest harbour town in Namibia with 2 international points of entries, we conducted an investigation to determine the variants among the crewmen, control the outbreak and propose preventive measures.

**Methods:** We defined a suspected case of SARS-CoV-2 as the occurrence of fever, sore throat, cough, myalgia, diarrhoea, headache and/or shortness of breath. We conducted an active case search, reviewed reports of all crewmen who were on board since 1st May 2021 and performed SARS-CoV-2 nasopharyngeal swab on each of them. Confirmed cases were crewmen with a positive SARS-CoV-2 PCR result. We interviewed confirmed positive cases whom we re-swabbed and sent their specimens to University of Namibia Laboratory for identification of SARS-CoV-2 RNA variants.

**Results:** Four (14%) of the 29 crewmen tested positive to SARS-CoV-2. Their mean age was 34 ± years. A crewman who travelled from India on 1st May 2021, complained of fever and myalgia three days after arrival in Namibia and tested positive to SARS-CoV-2 on 8th May 2021 (index case). This crewman had presented a 48 hour negative COVID-19 PCR result that granted him entry into Namibia. A second crewman who worked closely with index case since arrival on the vessel complained of COVID-19 like symptoms and also tested positive one day later. The two cases were disembarked from vessel and admitted in hospital for oxygen therapy. After contact tracing and active case search, two more crewmen from the same vessel were confirmed. They worked in the same station as the index case. They were disembarked and isolated at a hotel that served as an isolation facility. The variant identified was the B.1.1.7 variant, first for Namibia. No crewman from the same vessel reported prior COVID-19 infection.

**Conclusion:** The investigation confirmed the first discovery of the B.1.1.7 variant in Namibia. We recommended strict enforcement of national public health regulations and reporting of all COVID-19 cases of people with travel history from countries where emerging SARS-CoV-2 variants of concern are reported.

**Keywords:** Walvis Bay, B.1.1.7 Variant, Nasopharyngeal Swab, University of Namibia Laboratory
Methods: We did a cross-sectional data analysis of six SSEs that occurred from December 2020 to January 2021. Data were obtained from the database maintained by the Zambia National Public Health Institute. We describe observations from the investigation that could have contributed to SSEs. We analysed the percent test positivity according to the age and sex of the respondents using R to perform chi-square test and student t tests.

Results: In total, 806 persons were tested at the six workplace SSEs (range 71-251), with 387 (48%) testing positive (range 27-97%). Infections occurred from 31-12-2020 to 14-01-2021. The median age of persons tested was 39 years (interquartile range [IQR], 16) and 62% were male. There were no significant differences in test positivity by age or sex. Persons with COVID-19 cases from two of the institutions attended the same meeting on 29/12/2020. No other epidemiological links were identified between other institutions where SSEs occurred. However, all institutions had common office space where multiple employees worked. Even though mandatory masking was ensured at the entrance, most of the workers did not mask up properly and some not at all when in the offices.

Conclusion: During the height of the second wave in Lusaka, common office space in workplaces and in-person meeting attendance might have contributed to occurrence of several SSEs. Recommendations on working arrangements were made to the management teams and compliance checks to these measures were done to reduce COVID-19 risk in workplaces. Furthermore, the Zambian government instituted modified work arrangements (flexible hours, teleworking, etc.) that might help avert additional SSEs in workplaces.

Key words: Super-spreader, COVID-19, Clusters, work places

Linkage Rate among confirmed COVID-19 cases in the Notifiable Medical Conditions Surveillance System, South Africa, March–June 2020

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Background: In South Africa, COVID-19 is a category-1 notifiable medical condition reportable to the Notifiable Medical Conditions Surveillance System (NMCSS) within 24 hours of diagnosis as a clinical or laboratory notification. National COVID-19 data are reported electronically from all private and public sector laboratories separately through an integrated system and stored on a different surveillance platform. NMCSS cases can be reported using paper or an electronic application (App). The App does not allow report submission without completion of mandatory fields. NMCSS clinical and laboratory notifications for the same case are automatically linked to
create merged confirmed cases. We evaluated the NMCSS automated linkage process to determine the case linkage rate and identify reasons behind failed automated linkages.

Methods: We reviewed COVID-19 clinical and laboratory notifications eligible for linkage reported to the NMCSS during 5 March–10 June 2020. We described the epidemiology of cases, compared the proportion of cases linked automatically and manually, and described cases that missed automated linkage. Data received through the NMCSS was compared to national COVID-19 data.

Results: A total of 66,364 COVID-19 notifications were reported to the NMCSS during March–June 2020 with the majority, 59.9% (n=39,770), reported from the public sector. Confirmed cases were 90.0% (n=59,774) and 12.9% (n=8,610) were eligible for linkage. Of these, 92.2% (n=7,941) were automatically and 7.8% (n=669) were manually linked. Confirmed NMCSS cases represented 86.2% (n=59,774) of total confirmed cases in South Africa.

Conclusions and interpretation: The majority of cases with both clinical and laboratory notifications were linked automatically. Cases with incomplete clinical data failed automated linkage. A high proportion of national data was captured by the NMCSS. Better integration of NMCSS with all private laboratory systems will improve case capturing and automated linkage. We recommend App use for NMCSS reporting to increase data completeness.

An Outbreak Investigation of SARS-COV2 in Bikita District, Zimbabwe, 2021

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Background: COVID-19 is an infectious respiratory illness caused by the Severe Acute Respiratory Syndrome–Corona Virus2 (SARS-CoV2). As of 8 January 2021, Zimbabwe had 19660 confirmed cases. Bikita district recorded the first community acquired COVID-19 case on 18 December 2020, a daughter to an imported case from South Africa. By 30 January 2021, cases had risen to 221. We determined factors associated with contracting SARS-COV2 among residents of Bikita district.

Methods: We conducted an unmatched 1:1 case-control study. A case was defined as a person with a confirmed positive SARS-COV2 antigen test in Bikita district from 18 December 2020 to 30 January 2021 and a control was a person with a negative SARS-COV2 result in the same period. Participants were randomly selected from line lists of residents tested for SARS-COV2. Data were collected using interviewer administered questionnaires. Univariate, bivariate and multivariate analysis was done using Epi-Info 7.
Results: We recruited 90 case-control pairs. The independent factors associated with contracting SARS-COV2 in Bikita district were attending a gathering (aOR=2.03;95%CI:1.07-5.34), sharing a sleeping space (aOR=1.68;95%CI:1.05-4.87) and social distancing (aOR=0.09;95%CI:0.03-0.48). There were significant differences in the practice of hand washing (p value=0.02), social distancing and attending gatherings (p values=<0.01) among cases and controls. Isolation facility was still under construction and there was no transport to conduct contact tracing.

Conclusion: Independent risk factors for contracting SARS-COV2 in Bikita district were attending a gathering and sharing a sleeping space. Social distancing was independently protective. More controls practiced hand washing and social distancing compared to cases. We recommended supervised community meetings and awareness on the COVID 19 vaccine. Active case finding and health education to the community was done. Bikita district was not well prepared for the outbreak.

Key words: Outbreak investigation, SARS-COV2, Bikita, Zimbabwe

Factors Associated with Coronavirus Disease 2019 (COVID-19) among Health Care Workers - Nakonde District, Zambia, May 2020

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Background: Health care workers (HCWs) play a critical role in the clinical management of COVID-19. However, research on their infection risk and clinical characteristics, is emerging. We investigated factors associated with COVID-19 infection among HCWs; and assessed adherence to infection prevention and control (IPC) guidelines in Nakonde District, Zambia.

Methods: We conducted a case-control study among HCWs at two health facilities in Nakonde district from 15 – 25 May 2020. A case was a HCW with a positive COVID-19 PCR test and controls were HCWs with negative or pending test results. A standardized questionnaire covering demographic information; exposure to persons with COVID-19; adherence to IPC measures was administered to HCWs. Exposures included: caring for a patient with COVID-19, encounter with a COVID-19 confirmed case for ≥15 minutes and involved in invasive procedures. Logistic regression was used to determine the predictors.

Results: A total of 197 HCWs were deployed in the two facilities. Overall, 138 responded with 75 (54%) completing interviews. Of the 75 respondents, 72% were female and the median age was 30 years (IQR 26–33). Thirty-seven (49%) were laboratory-confirmed COVID-19 cases; common symptoms include: cough (49 %), headache (43%), runny nose (32%), fatigue (18%) and fever
(8%). Cough was associated with being a case of COVID-19 (OR 4.2; 95% CI: 1.5-11.9). Fifty-nine percent adhered to recommended hand hygiene practices (HHPs) while 70% reported non-availability of personal protective equipment (PPE) in facilities.

**Conclusion:** During a COVID-19 outbreak in Nakonde District, HCWs reported gaps in IPC practices, such as non-adherence to HHPs and poor access to PPE. HCWs with COVID-19 did not display symptoms, and classic symptoms like fever were rare. Given the role HCWs play ensuring access to adequate health services; IPC training, PPE, and continued surveillance should be a national priority.

**Key words:** Health care workers, COVID-19, Infection Prevention and Control, surveillance

**CONCURRENT POSTER SESSIONS 5- SURVEILLANCE**

| Implementation of a mass gathering surveillance system during a Mozambican cultural ceremony in 2020 | Gerson Alfai |
| Covid-19 surveillance through the Malaria Rapid Reporting System, Zambia | Martha Malasa |
| Evaluation of the Malaria Case-based Surveillance System (CBSS) in Zvimba District, Mashonaland West Province, 2020 | Amanda Thakathaka |
| Profile of patients at health posts during the papal visit in Mozambique, June 4-6, 2019 | H. Elias |

**Implementation of a mass gathering surveillance system during a Mozambican cultural ceremony in 2020**

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**Introduction:** Cultural festivals are events that bring together a large number of people, who stay in close contact for a long period of time, and can cause public health events such as outbreak diseases. Every year in Maputo province, the Gwaza-Muthini ceremony is celebrated between 2nd and 3rd February, in which about 5,000 people participate. This study aimed to describe the conditions at the venue and monitor the occurrence of public health events.
**Methodology:** This was a cross-sectional descriptive evaluation, on 1 to 3 February 2020, at the place of the cultural event. A direct observation of the hygiene, safety conditions of food preservation in all stalls was conducted. Clinical data was collected from the patients assisted at the event place and in the logbooks of the local health facility. Data collection was in real time through a structured questionnaire using Open Data Kit, and the descriptive data analysis was through Microsoft Excel. The diagnosis of the people assisted was divided into traumatic and non-traumatic.

**Results:** The site of the event remained clean and wastebaskets were available. There were public toilets, with water available for hand hygiene. Forty patients were assisted, of whom 72.5% (29/40) were men, 57.5% (23/40) with traumatic injuries, 40.0% (16/40) with non-traumatic diagnosis, and 3.0% (1/40) with alcoholic coma. Of those with traumatic injuries, 47.8% (11/23) of physical aggression, 34.8% (8/23) of road traffic accidents and 17.4% (4/23) of falls. Of those who had non-traumatic diagnoses, 50.0% (8/16) were hypertensive.

**Conclusions:** The annual traditional Gwaza-Muthini ceremony occurred without significant health events, and the patients assisted had no serious illnesses or injuries. For future events, it is recommended that the safety of the participants be better controlled in order to avoid the occurrence of traumatic injuries, possibly due to alcohol consumption.

**Keywords:** Public Health Surveillance, Crowding, Behavioral Risk Factor Surveillance System, Risk Assessment, Mozambique

**Covid-19 Surveillance through the Malaria Rapid Reporting System, Zambia.**

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**Background:** Since March 2020, Zambia has been experiencing a coronavirus disease 2019 (Covid-19) epidemic, with cases peaking in August 2020. However, scale-up of Covid-19-specific surveillance systems has been uneven in terms of geographic reach. We assessed whether routine data collected through the malaria rapid reporting (MRR) surveillance system could supplement Covid-19 surveillance by tracking indicators related to Covid-19 activity.

**Methods:** MRR indicators relevant to Covid-19 from January to August 2020 were compared against average historical trends from 2015-2019 in Southern, Western and Lusaka Provinces where MRR has been implemented for ≥5 years. Selected data elements were: malaria rapid diagnostic tests (RDTs) performed; number of negative RDTs; and outpatient department (OPD) attendances. The difference between the indicators in 2020 and mean for historic numbers were plotted each week in Excel. A signal was defined as a 2020 indicator deviating below the lower
5% or above the upper 95% confidence limit (CL) of the historic number. Deviations lasting ≥2 weeks were considered significant.

**Results:** In 2020, OPD attendances in Southern, Western provinces moved within or below the 5% CL of the historical trends for 2015 to 2019. In Lusaka province, a sharp increase above the 95% CL in OPD attendances occurred in February 2020 but thereafter moved along or below the 5% CL. The RDT tests and RDT negative test trends for the three provinces fell within or below the 5% CL of historical trends throughout 2020

**Conclusion:** MRR data did not show increases in indicators relevant to Covid-19 in three provinces in Zambia in 2020. The selected indicators fell below the lower CL, possibly reflecting decreased health seeking behavior during the Covid-19 epidemic. Hence MRR surveillance system may not be very useful to monitor the Covid-19 epidemic. However, further analysis may still be useful to monitor as the epidemic unfolds in Zambia.

**Key words:** Malaria, rapid reporting, surveillance, Rapid test
data quality was poor with 16/18 (89%) having duplicated cases, only 2/18 (11%) achieving the case investigation target, and none met timely case notifications. Data was used to monitor for outbreaks and all facilities had threshold graphs. Reasons for underperformance were resource constraints with only 2/26 (8%) of motorcycles and 7/26 (27%) android gadgets functional and system downtimes 45/50 (90%).

**Conclusion:** The malaria CBSS had poor data quality, was not timely and was unstable with frequent system downtimes and resource constraints. The system was simple, acceptable, representative, flexible, useful and health workers were knowledgeable. We recommended that strict data management be a regular process and continuous resource maintenance and capacitation of the resource-intense CBSS. Health worker reorientation and distribution of 23 new android gadgets were done.

**Keywords:** Surveillance, system attributes, malaria elimination, performance, Zimbabwe

**Profile of patients at health posts during the papal visit in Mozambique, September 4-6, 2019**

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**Background:** From September 4-6, Mozambique witnessed a mass gathering in the city of Maputo on the occasion of Pope Francis’ visit. During the visit, a real-time surveillance system was implemented for monitoring and early detection of possible events and outbreaks of public health importance. The objective was to describe the health conditions of people detected by the surveillance system at the mobile service stations during the event.

**Methods:** A cross-sectional, descriptive study was conducted using a daily syndromic surveillance system from September 4-6, 2019 period in which the daily syndromic surveillance system was implemented. Data on age, provenance, symptoms, and diagnosis were collected using Open Data Kit (ODK) at health posts. The surveillance system was implemented at all four event sites. Spss was used for data analysis.

**Results:** Of the universe of people who attended the event, 150 individuals sought medical care at the health posts, of which 85 (56.7%) were women, (74.7%) of the individuals sought medical care on the third day at the Zimpeto National Stadium. The most frequently recorded age group were ≥15 years of age (90.7%); (8.0%) were from South Africa and (92.0%) Mozambicans. The most common diagnoses were hypertension (20.7%), hypothermia (15.3%), headaches (11.3%),
gastroenteritis (7.3%), and 14 cases (9.3%) of other diseases not classified in these groups. As for the outcome of the patients, 143 (95.3%) were discharged and 6 cases were transferred to Hospital Geral José Macamo, a referral unit located in Maputo City. One death occurred on the way to the health center. The surveillance team was unable to obtain the cause of death, however, the medical team noted that the patient did not have any symptoms of infectious disease.

**Conclusion:** The real-time surveillance system implemented during Pope Francis' visit frequently detected adults and females; the most frequently recorded diagnoses were hypertension, hypothermia, and headaches.

**Key words:** Mozambique, Epidemics, Public Health Surveillance, Disease Outbreaks,

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**Investigation of a Fatal Food Poisoning Following Consumption of Tainted Traditionally Brewed Drink in Nyimba District – Eastern Province, Zambia, October 2020**

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**Background:** In Zambia, cases of poisoning, sometimes fatal arising from intake of a locally brewed traditional drink “munkoyo” are frequently reported in the news. There is no known established cause of the poisoning in the drink, and it’s often attributed to “bad root.” On 8 October 2020, Eastern Provincial Health Office was alerted of cases of gastrointestinal illness and deaths in Nyimba District, following consumption of munkoyo. We investigated the cases and deaths in the district.

**Methods:** We conducted an outbreak investigation on 9-11 October, 2020. Affected persons were asked about symptoms, duration and food history. We analysed stool, urine, and blood specimens for culture, as well as munkoyo drink/ingredients (roots and maize-meal), gastric contents, and liver biopsies from deceased persons for toxins. Demographic characteristics, symptoms, laboratory findings and outcomes of affected persons were reported.

**Results:** Fourteen people were affected; six (43%) were children (aged <18 years) and five (36%) were males. All were from the same village and had consumed Munkoyo brewed two days prior to symptom onset. The attack rate was 100%, 13 (93%) were hospitalized, and two (14%) persons (aged 6 and 54 years) died. Affected persons reported diarrhoea (100%), vomiting (86%), abdominal-pains (86%), fatigue (64%), and feeling feverish/flushed (43%). Food history revealed a typical staple diet of nshima and vegetables. *Escherichia coli* was isolated from stool samples. Toxicological analysis found monochrotophos in munkoyo drink and ingredients, urine and blood samples and metamidophos in gastric contents and liver biopsy specimens.

**Conclusion:** A fatal gastrointestinal illness followed the consumption of munkoyo. Multiple specimens contained two locally used organophosphate insecticides, yet the clinical syndrome was atypical organophosphate-poisoning. *E. coli* is unlikely to account for the rapidity and severity of symptoms seen during the outbreak. Active case search and health education were conducted. The cause of munkoyo poisonings in Zambia remains unknown.

**Key words:** Poisoning, Outbreak, Investigation, symptoms, gastrointestinal

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**Health Information System Assessment of Maternal Deaths - Maputo city – Mozambique, 2017-2019**

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Background: Maternal death is an indicator of enormous importance to public health worldwide, almost 99% of which occur in developing countries. Despite advances in information systems, underreporting of these remains a challenge. For this reason, a study was carried out with the purpose of evaluating the health information system for monitoring and evaluating maternal deaths in Maputo City.

Methods: We carried out a descriptive, cross-sectional study which analysed data from January 2017 to June 2019 of the information system for deaths occurring among residents of Maputo. The assessment included seven attributes defined in the CDC Surveillance Systems Assessment guidelines. Maternal death from direct and indirect causes was determined, including infection by the Human Immunodeficiency Virus (HIV).

Results: There were 134 maternal deaths, 46 in 2017, 44 in 2018 and 44 in the first half of 2019. The proportion of maternal deaths in residents of the Kampfumo District was 66.0%(88/134), 18.0%(24/134) for Nhamakulo and Kamavota 12.0%(16/134). The mortality rate in Kampfumo was 89.9/100,000, in Nhamakulo 24.5/100,000 and Kamavota was 16.3/100,000. Maternal deaths associated with HIV accounted for 19.6%(9/46) in 2017, 15.9%(7/44) in 2018 and 2.3%(1/44) in the first half of 2019. As for the attributes, the system features 3 instruments, 12 variables, 4 levels of submission. Flexibility, the system has adapted to changes. Acceptability, there is no completion of all mandatory variables. Represents 100% of the maternities that reported maternal deaths, but, does not capture some important variables, such as age, date and time of death, moment of death, gestational age and number of gestation and, access to the system depending on the availability of the internet.

Conclusion: Maternal mortality in Maputo City remains high. The system is useful for the purposes for which it was created. However, there are aspects to be improved, such as inclusion of relevant variables for better investigation.

Key words: Maternal Death, Health Information Systems, Mozambique.

The prevalence of comorbidities among outpatient diabetic patients attending Buffalo City Hospitals, Eastern Cape Province, South Africa—December 2020 to March 2021

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**Introduction:** The prevalence of diabetes mellitus is rising rapidly in Sub-Saharan Africa. In South Africa, diabetes is among the top five prevalent non-communicable diseases, with a significant proportion of natural deaths attributed to the condition. The management of diabetes mellitus is complicated by other comorbidities, increasing the burden of disease and risk of mortality. This study aimed to determine the prevalence of comorbidities among diabetes mellitus patients accessing treatment at 3 hospitals in Buffalo City municipality.

**Methods:** We conducted a descriptive cross-sectional study by reviewing medical registers of diabetic outpatients aged 14 to 90 years during December 2020 – March 2021. We systematically sampled every 10th record of a diabetic patient. Descriptive statistics were used to describe patients' demographic and medical characteristics. Percentages and frequencies were used for the categorical variables, while median and range were calculated for the continuous variables. Microsoft Excel 2016 was used to clean and analyse the data. Permission to conduct the study was obtained from EC Department of Health.

**Results:** A total of 152 diabetic patients were included in the study, and 82% (125/152) were aged between 46 and 75 years. The median age was 55 (range 14 to 88 years). More than half of the participants were female, 61% (93/152), and 5% (7/152) had missing data on gender. The majority, 81% (123/152), of patients had comorbidities — 79% (120/152) had hypertension (HTN) and 2% (3/152) had heart disease. HTN was more prevalent among females at 62% (74/120). More than half, 64% (77/120) of hypertensive patients resided in urban areas.

**Conclusion:** Our results show a high prevalence of hypertension in patients with diabetes attending urban outpatient health care facilities. HTN was most prevalent among those aged 46–75 years residing in urban areas. Healthcare providers should work to prevent HTN by designing preventive strategies especially for those at higher risk of developing HTN. Early identification of normotensive diabetics consuming sodium-rich diets should be a priority.

**Key words:** Comorbidity, Diabetes, Hypertension

**Evaluation of the suicide registration system in Maputo City and Matola, Mozambique, 2016-2018**

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**Background:** Suicide is a public health problem worldwide, responsible for about 800,000 deaths annually, and the World Health Organization recognizes this as a public health priority. The study aims to evaluate the suicide registration system in the cities of Maputo and Matola, abbreviated as SRSMM, which functions as a surveillance system that contains information about people who died by suicide.

**Methods:** Data were extracted from the death registry for “external cause,” as defined according to the 10th International Classification of Diseases, for Maputo and Matola from 2016 to 2018. The evaluation was based on recommended guidelines by the Centers for Disease Control and Prevention for the evaluation of public health surveillance systems. Simplicity was assessed by the number of institutions involved in collecting and reporting the data, data quality by completeness and validity, representativeness by territorial coverage, stability by the number of times the system stopped reporting, and usefulness by the cause of death determination.

**Results:** From 2016 to 2018, 289 suicide cases were reported. Of the 289 cases, 219 (75.8%) were male and 149 (51.6%) were between the ages of 20 and 39 years. The most common method of suicide was hanging with 249 (86.2%) cases. SRSMM is constituted of data from multiple sources, including the community, Criminal Investigation Service, and Legal Medicine. Data quality had 96.2% integrity. Representativeness was 87.5%. SRSMM remained stable during the period evaluated, except for four months in 2017 when no reports were submitted despite availability of data from the sources. Last of all, SRSMM was useful in identifying the cause of death.

**Conclusion:** SRSMM is complex, however, it has good data quality, is representative, and is useful for improving vital statistics and identifying risk groups. The findings can be used to develop suicide prevention programs and strategies in Maputo City and Matola.

**Keywords:** Health Information Systems; Suicide; Public Health Surveillance; Mozambique