

scale on perception was used to collect information from respondents. Knowledge score of  $\geq 5$ , attitude score of  $\geq 5$ , Practice score of  $\geq 3$ , and perception score of  $\geq 5$  was considered as good respectively. Data analysis was done using descriptive analysis, chi-square and logistic regression at a significance level of 0.05.

#### Results

Mean age of respondents was  $29.61 \pm 7.51$  years, 51.8% females, 43% dependents and retirees. 97.3% were aware of Ebola, media (81.7%) was their first source of information on EVD and the most trusted (80.4%). Majority (82.1%) of the respondents interviewed had good knowledge of Ebola. Eighty-three percent (83.3%) of respondents showed poor attitude to survivors of Ebola while thirty-eight percent (38%) of respondents had poor practice towards EVD prevention. About 96.3% of respondents had a high perception score.

#### Conclusion

Although Knowledge towards Ebola was high, media campaigns needs to be targeted in areas of attitude so as to avoid stigmatization and its attendant consequences by host communities towards this vulnerable person. Improved behavioral practices like regular washing of hands with soap and water should be encouraged towards Ebola virus disease prevention.

#### A8

##### **Ebola Virus Disease outbreak: epidemiologic profiles and outcomes among health workers and non-health workers, a retrospective study - Nigeria 2015**

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#### Introduction

Ebola Virus Disease (EVD) is a highly infectious viral hemorrhagic disease, with significant potential for nosocomial spread. Between July and September 2014, an outbreak of EVD occurred in two densely populated urban cities in Nigeria. We described epidemiologic profiles and outcomes of cases in this outbreak.

#### Methods

A retrospective review of clinical data on EVD cases managed in Lagos and Port-Harcourt, Nigeria was conducted. A case of EVD was defined as laboratory confirmation of Ebola virus infection in persons with fever  $> 38^\circ\text{C}$  or EVD compatible symptoms, or history of contact with a confirmed EVD case 21 days prior to diagnosis. The cases were categorized into two: health-workers and non-health workers. Risk factors for contracting infection identified and compared between the categories using chi-square tests.

#### Results

There were 20 cases, 11 (55%) were health workers. Compared to non-health workers, a higher proportion of health workers were aged 25 - 34 years (58% vs 42%), were females (64% vs 36%), were married (64% vs 36%), had physical contact with index case (53% vs 47%), had contact with body fluids of index case (60% vs 40%) and had greater than five days' mean interval between onset of fever and isolation (67% vs 37%). Compared to health workers, non-health workers had a shorter hospitalization period as well as a shorter recovery period (Odds ratio (OR) = 0.08, 95% Confidence Interval (CI): 0.01- 0.95). Case Fatality Rate was higher in health workers (45%), than Non-health-workers (33%); however, there was no marked difference in Survival, which was similar in both categories, based on their occupation (O.R: - 0.6, C.I: - 0.10- 3.72).

#### Conclusions

Health workers are at higher risk of morbidity compared with non-Health workers during outbreaks of infectious diseases. Observance of standard precaution, adherence to stringent infection, prevention and control practices and timely case management will limit spread of nosocomial infections in health workers.

Keywords: Nosocomial transmission, Survival, Ebola Virus Disease, Outbreak, Nigeria

#### A9

##### **Ebola Virus Disease in healthcare settings; implications for infection control - Nigeria 2014**

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#### Introduction

In July 2014, an outbreak of Ebola Virus Disease occurred in Nigeria following its importation by an air traveler. Probable risk factors for EVD were assessed in the health facility where the index case was managed; in order to guide infection control practices in future outbreaks.

#### Methods

A health facility EVD case was any clinical staff that cared for, or had close contact with the index case and subsequently developed the disease. We conducted a retrospective review of clinical history, sociodemographic characteristics, job cadre, and type of contact with index case, of infected health workers. We tested association between potential risk factors and developing EVD in these persons, to obtain risk ratios.

#### Results

A total of 11 health workers were infected and five died (CFR 45.5%). Of those infected, 6 (54.5%) were females, and 4 (36.4%), were nurses. Also 8 health workers (72.8%) had direct physical contact and 3 health workers (27.2%) had contact with body fluid of index case. Of 5 deaths, 3 (60%) were females and 3 (60%) were doctors. The associated risk factor for contracting EVD in this outbreak was age  $>40$  years (RR: 4.2 95% CI: 1.14-58.22). There was no association with other potential risk factors considered (p values  $>0.05$ ). The study showed that exposed health workers contracted EVD irrespective of sex, marital status, job cadre and type of contact with index case - either direct physical contact or contact with body fluids.

#### Conclusions

Failure to adhere to strict infection control practices is associated with transmission of EVD among health workers. Adherence to strict infection control practices is mandatory to prevent nosocomial transmission of EVD in health care settings.

Keywords: Infection control, Health workers, Ebola Virus Disease, Outbreak, Nigeria

#### A10

##### **Carbapenem resistance expressed by Gram-negative bacilli isolated from a cohort of Libyan patients**

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#### Background and objectives

Carbapenem-resistant *Enterobacteriaceae* (CRE) and other Gram-negative bacteria are among the most common pathogens responsible for both community and hospital acquired infection. The global spread of cephalosporinases in *Enterobacteriaceae* has led to the increased use of carbapenems resulting in the emergence and rapid spread of CRE. This has become an alarming public health concern, yet the condition in Libya remains unclear. The aim of this study was to obtain a better understanding of CRE strains prevalent in Libyan patients by investigating their phenotypic characteristics and antibiograms.

#### Methods

Gram-negative bacterial species were collected from Misrata Central Hospital, Misrata Cancer Centre and Privet Pathology Laboratories. Clinical samples and swabs were obtained from hospitalised and non-hospitalised patients and from mechanical ventilation and

suction machines. Patients who had received antibiotic therapy for at least three days prior to the study were excluded. The identification and characterization of the isolated species were achieved using the growth characteristics on MacConkey and blood agar, spot tests and API 20E or API 20NE biochemical testing systems. Screening for carbapenem resistance was performed using the disk diffusion method with carbapenem 10 µg and cephalosporin 30 µg disks and minimum inhibitory concentrations (MIC) determined using the Sensititre Gram-negative Xtra plate format (GNX2F). All strains demonstrating resistance or reduced susceptibility to one of the four carbapenems were subjected to carbapenemase activity detection using the RAPIDEC CARBA NP test, Modified Hodge test and carbapenem inactivation methods.

#### Results

A total of one hundred and forty isolates representing fourteen bacterial species were isolated from 140 non-duplicated specimens. Clinical specimens included urine samples (96/140, 68.57%), sputum (15/140, 10.71%), surgical wound swabs (18/140, 12.85%), foot swabs from diabetes mellitus (DM) patients (6/140, 4.29%), ear swabs (3/140, 2.14%) and wound swabs (2/140, 1.43%). Thirty-four (24.29%) isolates demonstrated resistance to at least one of the four carbapenems with *Klebsiella pneumoniae* representing 73.53% (25 isolates) of all carbapenem resistant species, followed by 8.82% for *Pseudomonas aeruginosa* (3 isolates), 5.88% for both *Proteus mirabilis* (2 isolates) and *Escherichia coli* (2 isolates) and 2.94% for both *Citrobacter koseri* (1 isolate) and *Rahnella aquatilis* (1 isolate). The other isolates were either susceptible or cephalosporinase producers.

#### Conclusion

This study has revealed the high rate of carbapenem resistance amongst Libyan patients and emphasizes the crucial need for accurate screening, identification and susceptibility testing to prevent further spread of nosocomial and community acquired resistance. This may be achieved through the establishment of antibiotic stewardship programmes along with firm infection control practices.

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Best poster prize: Gold ICAN medal

#### A11

##### High risk occupational groups and covariates for tuberculosis treatment outcomes in Lesotho

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#### Background and objectives

Tuberculosis (TB) is a serious global public health problem. To reduce the incidence of TB, particularly in high TB burden settings in Africa, the WHO, in 2010, launched the Three I's programme comprising intensified case finding, isoniazid preventive therapy, and infection control (Kranzer et al., 2010). Lesotho, a sub-Saharan developing country with the second highest HIV burden (GoL, 2015), and the fourth highest TB prevalence (WHO, 2014), globally, launched the Three I's programme in 2013 (GoL, 2013). However, data on TB treatment outcomes and the associated covariates are scarce in the country. Therefore, this study assessed the TB treatment outcomes and the associated covariates, and identified high risk groups that need infection prevention and control (IPC) interventions in Lesotho.

#### Methods

This was a retrospective cohort review of patient records across the baseline period (2010-2012) and after the launch of the Three I's intervention programme (2013-2015). Patients' records at Senkatana, the largest HIV and TB clinic in Maseru, Lesotho, were reviewed

between March and April 2016 based on systematic random sampling. Variables associated with unsuccessful TB treatment outcomes were determined using logistic regression.

#### Results

In total, 812 (38.1%) out of 2,132 patients' records were included in the final analysis. About 55.2% (n = 812) were males, 83.0% were HIV-positive and 84.7% were new TB cases. Notably, factory workers (28.4%, n = 197), miners/ ex-miners (23.4%), taxi drivers (14.7%), security services personnel (8.1%) and health workers (4.6%) were the most predominant occupations among the study participants, while the least common occupations included teachers (3.0%), funeral parlor attendants (0.51%) and dry cleaning attendants (0.51%). Overall, 28.9% (n = 812) cases comprising 89 (11.0%, n = 235) defaults, 83 (10.2%) treatment failures, 49 (6.0%) deaths and 13 (1.6%) transfer-out cases, had unsuccessful treatment outcomes. Male gender (Odds ratio (OR): 1.4; 95% Confidence Interval (C.I.): 1.0-1.8; P = .046), extrapulmonary TB (OR: 3.5; 95% C.I.: 2.7-4.6; P = .002) and treatment observation by a community health worker (OR: 6.2; 95% C.I.: 4.0-10.0; P = .001) were significant covariates associated with unsuccessful treatment outcomes in multivariate analysis. Overall, treatment outcomes did not differ significantly (P = .636) before and after the launch of the Three I's programme.

#### Conclusion

The implementation of the Three I's programme in Lesotho needs to be strengthened. The covariates identified in this study are useful for policy review, while the high risk groups identified in this study highlights the need to unravel contextual underpinnings affecting IPC efforts in Lesotho.

#### A12

##### Large focus of community acquired Extended Spectrum Beta Lactamase (ESBL) producing *Escherichia coli* in North Central Nigeria and associated risk factors

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#### Background and objectives

We determined the prevalence of community acquired Extended Spectrum Beta Lactamase (ESBL) *Escherichia coli* and associated risk factors in North Central, Nigeria to create awareness and prevent further emergence.

#### Methods

This was a cross sectional study carried out in Jos University Teaching Hospital. A total of 220 consenting patients with clinical isolates of *E. coli* were evaluated. The *E. coli* isolates were tested for production of ESBL by the double disc synergy test. Control strains were used as appropriate. Data were collated and analyzed using Epi Info version 3.5.2.

#### Results

Of the 220 *E. coli* isolates, 123 (56%) were from outpatients (community acquired) out of which 16 (13%) were ESBL positive. Twenty-five (25.8%) of the 97 *E. coli* isolates from inpatients (either community or hospital acquired) were also ESBL positive. Female patients were 122 (55.5%). Mean age was 36.7 ± 21.6 years. Most of the isolates were from urine (179 (81.4%)). Sixteen (7.3%) were from blood cultures, 14 (6.4%) from swabs and 11 (5.0%) from various aspirates. Multiple logistic regression analyses of the risk factors showed that only prior use of a third generation cephalosporin was statistically significant by both odds ratio (17.6) and P value (0.045).

#### Conclusion

There is a large proportion of community acquired ESBL producing *E. coli* in Northern Nigeria and prior use of a third generation cephalosporin independently contribute to emergence of this resistant phenotype. Government policies restricting antibiotic availability and use and institutional antibiotic stewardship programs are highly recommended.