Session: P028 Healthcare-associated infections

Category: 8d. Nosocomial infection surveillance & epidemiology

23 April 2017, 12:30 - 13:30
P0636

Quantifying the risk of nosocomial infection within Ebola holding units: a retrospective cohort study of negative patients discharged from five Ebola holding units in the western area of Sierra Leone

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Background: A central pillar in the response to the 2014-2016 Ebola Virus Disease (EVD) epidemic in Sierra Leone was the role of Ebola Holding Units (EHUs). These units isolated patients meeting a suspect case definition, tested them for EVD, initiated appropriate early treatment, and discharged negative patients to onward inpatient care or home. Positive patients were referred to Ebola Treatment Centres. We aimed to estimate the risk of nosocomial transmission within these EHUs.

Material/methods: We followed up a cohort of 543 patients discharged with a negative EVD-test from five EHUs in the Western Area, Sierra Leone, and examined all line-listed subsequent EVD-tests from

any facility in the Western Area to see if the patient was re-tested within 30 days, matching by name, age (within one year) and address. We defined possible readmissions as having the same name and age but uncertain address, and confirmed readmissions where name, age and address matched.

Results: We found a positive readmission rate of 3.3% (18 cases), which included 1.5% confirmed readmissions (8 cases) and 1.8% possible readmissions (10 cases).This is lower than rates previously reported. We cannot ascertain if EVD was acquired within the EHUs or from re-exposure in the community on discharge.

Table I	Positive readmissions (n=18)	Patients with no follow-up positive test result (n=525)	p value
Demographics: - Median age in years (IQR) - Child (%) - Male (%)	25 (22-35) 2 (11) 10 (56)	30 (22-44) 57 (11) 318 (62)	0.235 0.973 0.629
Median time from discharge to re-testing positive (days, IQR)	9 (5 - 16)	-	-
Risk factors for nosocomial transmission: - Median duration of admission to EHU (days, IQR) - EVD positivity inside EHU at discharge - Bed occupancy of EHU at discharge	2 (2-3) 0.39 1.29	2 (2-3) 0.38 1.15	0.915 0.962 0.396

Table I describes the cohort and compares positive readmissions with those who did not have positive EVD test within 30 days of discharge. No demographic or clinical variables were identified as risk factors for positive readmission, likely due to our small sample size.

Conclusions: These findings support the EHU model as a safe method for isolation of suspect EVD patients and their role in limiting the spread of EVD. Strict adherence to infection prevention and control measures between episodes of patient care is likely to be essential in protecting individuals from nosocomial transmission.