Molecular serotyping of *Klebsiella pneumoniae* capsular types, sequencing of positives and its epidemiology in the Eastern Cape Province, South Africa

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**Background:** The bacterial capsule is considered a major virulence factor of *K. pneumoniae*, with serotype-related variation in severity of infection being observed. Recently, methods for the molecular typing of *K. pneumoniae* have been developed to supplement the existing serotyping method. Serotypes K1–K6 are more associated with severe respiratory infection and septicemia in humans than the higher numbered serotypes.

**Methods & Materials:** A prospective, descriptive study based on laboratory investigations at the Microbiology laboratories from Eastern Cape Province in South Africa. Non-duplicate, randomly selected 112 *Klebsiella* isolates were collected from three areas representing Eastern Cape from August 2011 to July 2014. Real-time PCR detection of *Klebsiella* K1, K2 and K5 serotypes cps clusters using LightCycler 2.0 was performed. Genome sequencing of positive isolates was performed and compared with published NCBI database.

**Results:** Specimen distribution: Mthatha 71 (63.4%), East London 23 (20.5%), Port Elizabeth 18 (16.1%). Mean age of our patients in this study was 23.9 years with SD 23.9659, with a slight male predominance 58 (51.8%) in the group and 103 (92%) of black population. All K1, K2, K5 positive: 22 (19.6%) with distribution of K1 positive 9 (8%), K2 positive 13 (11.6%), K5 positive 0 and Non K1/K2/K5: 90 (81.25%). ESBL forming *Klebsiella* species were 45.9%. MDR *Klebsiella* were found in 19 (17%). The concordance between our K1 internal positive control with published NTUHK2044 and K2 with KP1158 was 100%.

**Conclusion:** This is believed to be the first report to demonstrate the seroepidemiology of *K. pneumoniae* in the Eastern Cape province of South Africa. Serotype K1/K2 comprised 19.6% of the *K. pneumoniae* strains in this study. We did not detect any K5 serotype in this study. K1 serotype was found in exclusively in respiratory specimens. High antibiotic resistance with ESBLs and MDR in ECP. There was significant difference in the prevalence of K1/K2 isolates among Port Elizabeth and Mthatha.