8 SURVEILLANCE FOR ANTIMICROBIAL RESISTANCE

a Detection of carbapenem-resistant *Klebsiella pneumoniae* at a regional hospital in KwaZulu-Natal Province

Over a three-week period in April 2016, carbapenem-resistant *Klebsiella pneumoniae* (CRKP) was isolated from nine infants at in the neonatal intensive care unit (NICU) of a regional hospital in KwaZulu-Natal. All babies were in the NICU for medical conditions that required urgent intervention and intensive monitoring. One of the babies was seriously ill on admission to the unit, and required transfer to a tertiary centre, where the baby subsequently died 10 days later. Isolates from seven of the nine patients were available for further analysis. During the outbreak investigation, CRKP was isolated from six specimens collected from equipment and surfaces in the NICU. Additionally, the on-site laboratory retrieved five stored CRKP isolates from the freezers. The latter were collected from patients admitted to another section of the hospital between January and April 2016. All 18 CRKP isolates tested were susceptible to colistin and tigecycline. Further analysis of the patient and environmental isolates revealed that all possessed the bla_{NDM} gene for carbapenamase production. To determine relatedness, pulsed-field gel electrophoresis (PFGE) was performed on all 18 isolates (Figure 5). All strains were related according to Tenover criteria (a cluster was defined as PFGE patterns differing by three or less bands) but two sub-clusters were identified. Sub-cluster A comprised 14 isolates which were indistinguishable. Sub-cluster B comprised four isolates and differed from sub-cluster A by one band. Within sub-cluster B, three isolates were indistinguishable, while one differed by one band. Three of the five retrieved isolates belonged to sub-cluster A and two to sub-cluster B. Of the seven isolates from patients within the NICU, six belonged to sub-cluster A and to sub-cluster B. One of the isolates from the environmental sampling belonged to sub-cluster B , whilst the rest belonged to sub-cluster A.

Isolates belonging to both sub-clusters appear to be circulating in different parts of this hospital. A possible reservoir facilitating transmission within different sections of this hospital needs to be investigated. It is also plausible that the outbreak might have been going on undetected for some time creating the two sub-clusters that differed by one band. Infection prevention measures were reinforced, and ongoing surveillance has not revealed further cases of CRKP over the past four weeks.

Surveillance results over the past years have revealed that CRKP is present in many South African facilities, both private and public, and may also be found circulating in the community. This is especially the case amongst persons who are in frequent contact with healthcare establishments. This outbreak illustrates the importance of adherence to appropriate infection control procedures.

Source: NHLS-Business Unit, KwaZulu-Natal**;** University of KwaZulu-Natal Province; Antimicrobial Reference Laboratory, Centre for Opportunistic, Tropical and Hospital Infections, NICD-NHLS;

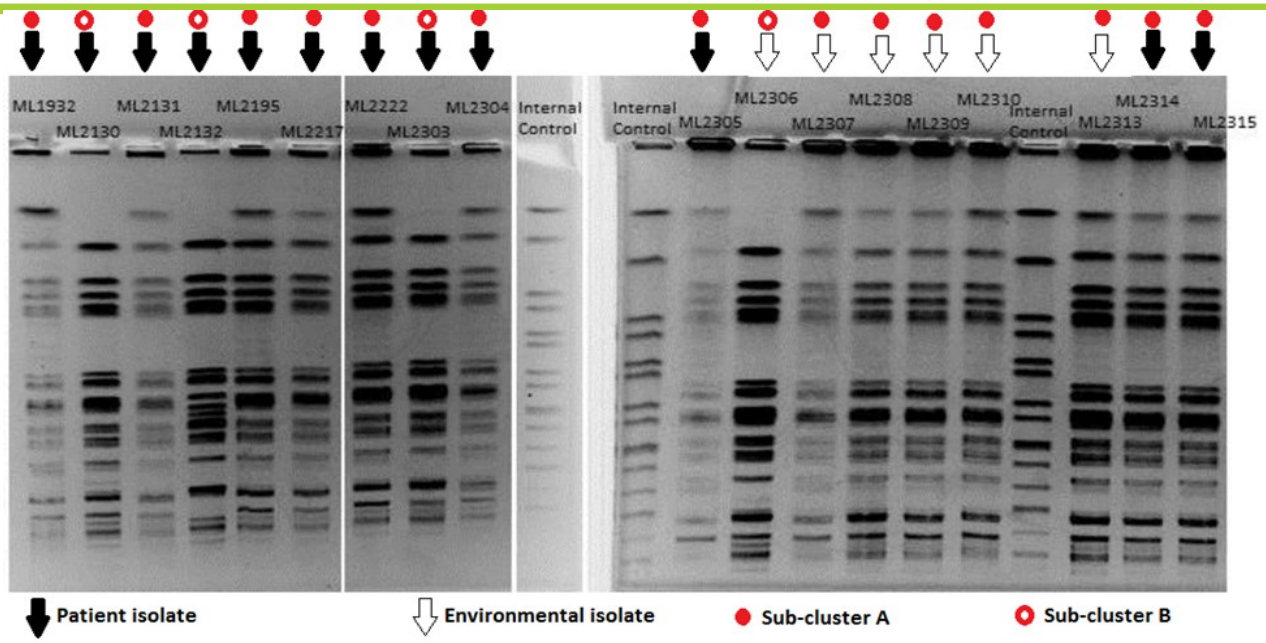

Figure 5. Pulsed-field gel electrophoresis of 18 strains (12 patient and 6 environmental isolates) of carbapenem-resistant *Klebsiella pneumoniae*, isolated from patients in the neonatal intensive care unit of a regional hospital in Kwa-Zulu-Natal Province