Two consecutive outbreaks of carbapenemase-producing





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Objective:

Carbapenemase-producing enterobacteriaceae (CPE) can cause hospital outbreaks with considerable health and economic implications. Intensive infection control measures are implemented to identify CPE carriers and contain outbreaks.

Aim:

We describe a CPE-NDM (New Delhi Metallo-beta-lactamase) hospital-wide outbreak, in a tertiary care pediatric hospital, which evolved into a CPE-KPC (Klebsiella Pneumoniae Carbapenemase) outbreak before subsiding.

Results:

At 10/20/21 rectal screening for CPE was performed in patients in the NICU (neonatal intensive care unit) because of known CPE carriers hospitalized there. Multiple CPE carriers were discovered, and a hospital-wide outbreak of CPE-NDM was identified.

All patients who were potential contacts of CPE carriers throughout the hospital were isolated and screened twice a week, as part of intensive infection control measures. Between 10/20/21 and 12/07/21 46 patients carrying CPE-NDM were discovered.

Continued screening between 12/15/21 and 04/18/22 identified 81 additional patients carrying CPE, however the carbapenemases identified in 78 of them were KPC. No known CPE-KPC carrier was hospitalized at the beginning of the KPC outbreak.

Surprisingly, in 6 of the patients carrying CPE-NDM, repeat screening done months later found the carriage shifted from CPE-NDM to CPE-KPC.

The results were validated and analyzed at the reference National Infection Control laboratory. No significant morbidity or mortality was observed due to CPE carriage.

Discussion:

We report an unusual sequence of two CPE outbreaks. We found no previous reports of consecutive outbreaks of CPE.

Control of outbreaks requires intensification of infection control measures and collaboration and cooperation of hospital staff and administration.

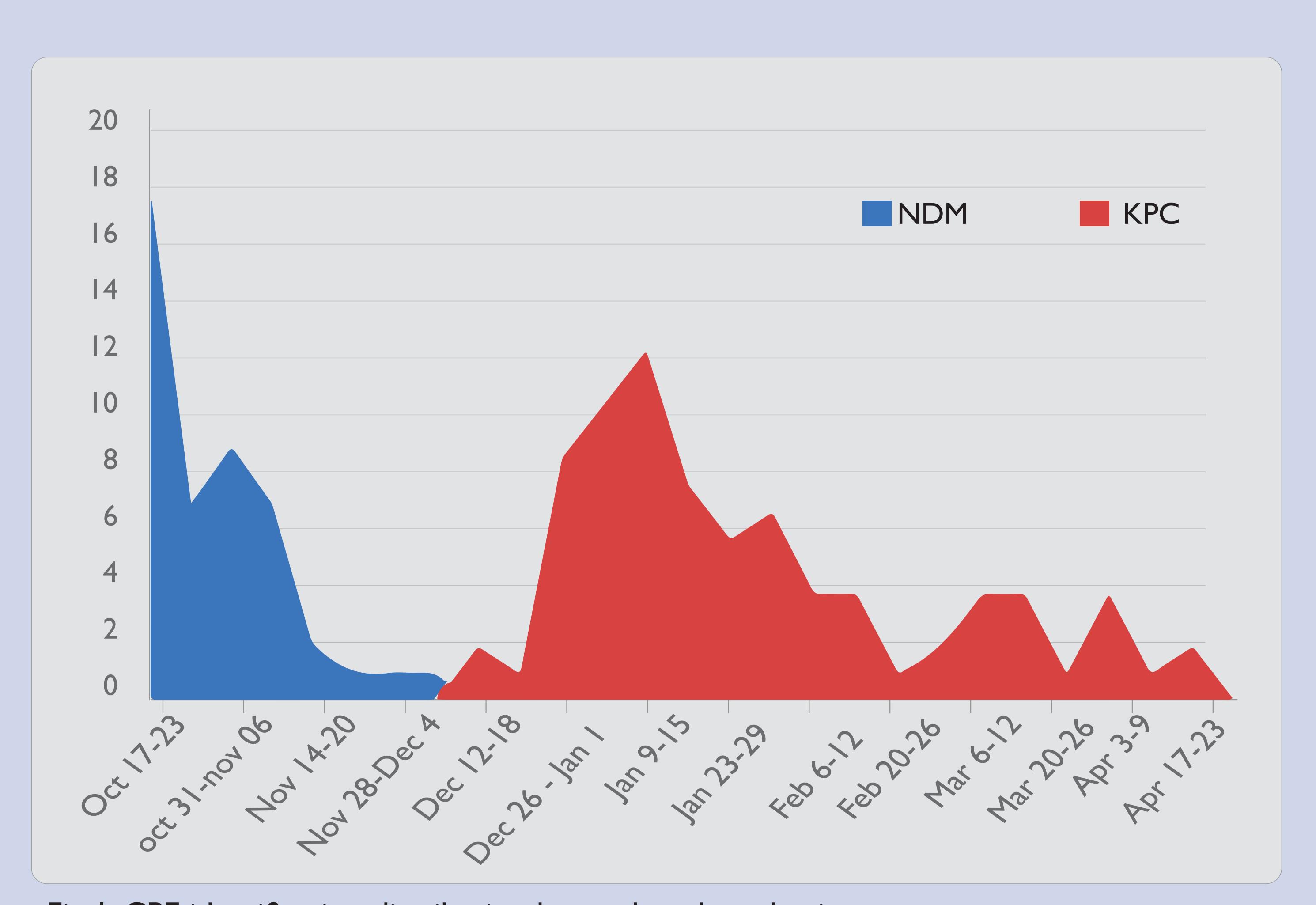


Fig 1. CPE identification distribution by week and mechanism

