



# Canadian Public Health Laboratory Network (CPHLN) Voluntary Reporting of Carbapenemase-Producing Enterobacteriaceae (CPE)

PROTECTING AND EMPOWERING CANADIANS  
TO IMPROVE THEIR HEALTH



# Overview of NML CPE Activities

- Reference services for hospital/provincial laboratories in Canada as well as other countries requesting assistance
  - » Confirmation using both susceptibility testing and genetic testing
  - » Outbreak investigations using molecular typing methods for strains and plasmids
  - » Whole genome/plasmid sequence analysis for specific cases or research projects
- Laboratory support and leadership for CPHLN, the Canadian Nosocomial Infection Surveillance Program (CNISP), the Canadian Integrated Program on Antimicrobial Resistance Surveillance (CIPARS), and CAN-WARD hospital surveillance
- Information dissemination to other federal departments and the research community in Canada and abroad

# Data Acquisition

- Data or isolates were submitted by members of the Canadian Public Health Laboratory Network (CPHLN) on a voluntary basis
- CPE was identified at the provincial/NML level using in-house screening assays
- Numbers of CPE were submitted by provincial public health laboratories (ON, QC, or BC), while NML generated numbers for other provinces
- Some data from BC and QC were generated by NML
- Limitations
  - The numbers could involve duplicate samples on the same patient although efforts to reduce this have been made
  - As CPE is not reportable in all provinces, the numbers most likely represent an underestimate of CPE cases reported to the CPHLN
  - This data represents patient infections and colonizations, and it is believed that no environmental samples were included
  - Increased numbers of CPE could be a reflection of increased screening at healthcare facilities
  - The SME reports from Ontario represents data from 2013 onwards
  - Quebec data represents isolates from 2010 to present

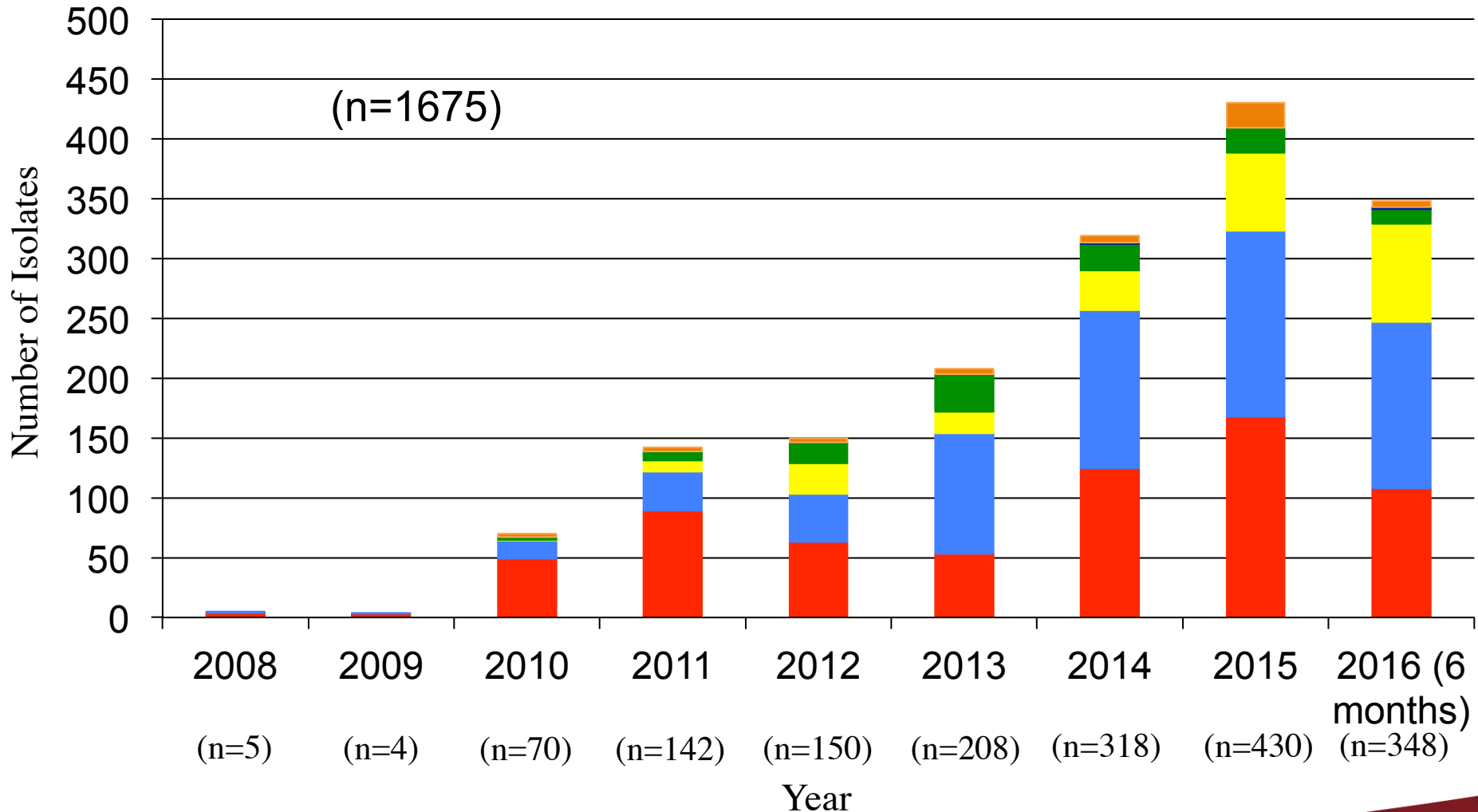
# Notable Observations from this Report

- The number of CPEs submitted to provincial labs continues to be on pace to double every 2 years
- There were more OXA-48-like isolates in the first six months of 2016 (n=82) than identified in all of 2015 (n=65)
- Quebec and Ontario have observed 1.7 times as many OXA-48-like isolates in the first six months of 2016 (n=55) as identified in all of 2015 (n=31)
- The eastern provinces continue to report very few cases of CPE with Prince Edward Island the only province that has not observed CPE
- Although only selected CPE are screened for mobile colistin resistance (*mcr*), one *mcr-1* positive *E. coli* harbouring an OXA-48 has been identified from a patient in Ontario in 2011

Mulvey *et al.* 2016. Lancet ID, **16**:289-90.

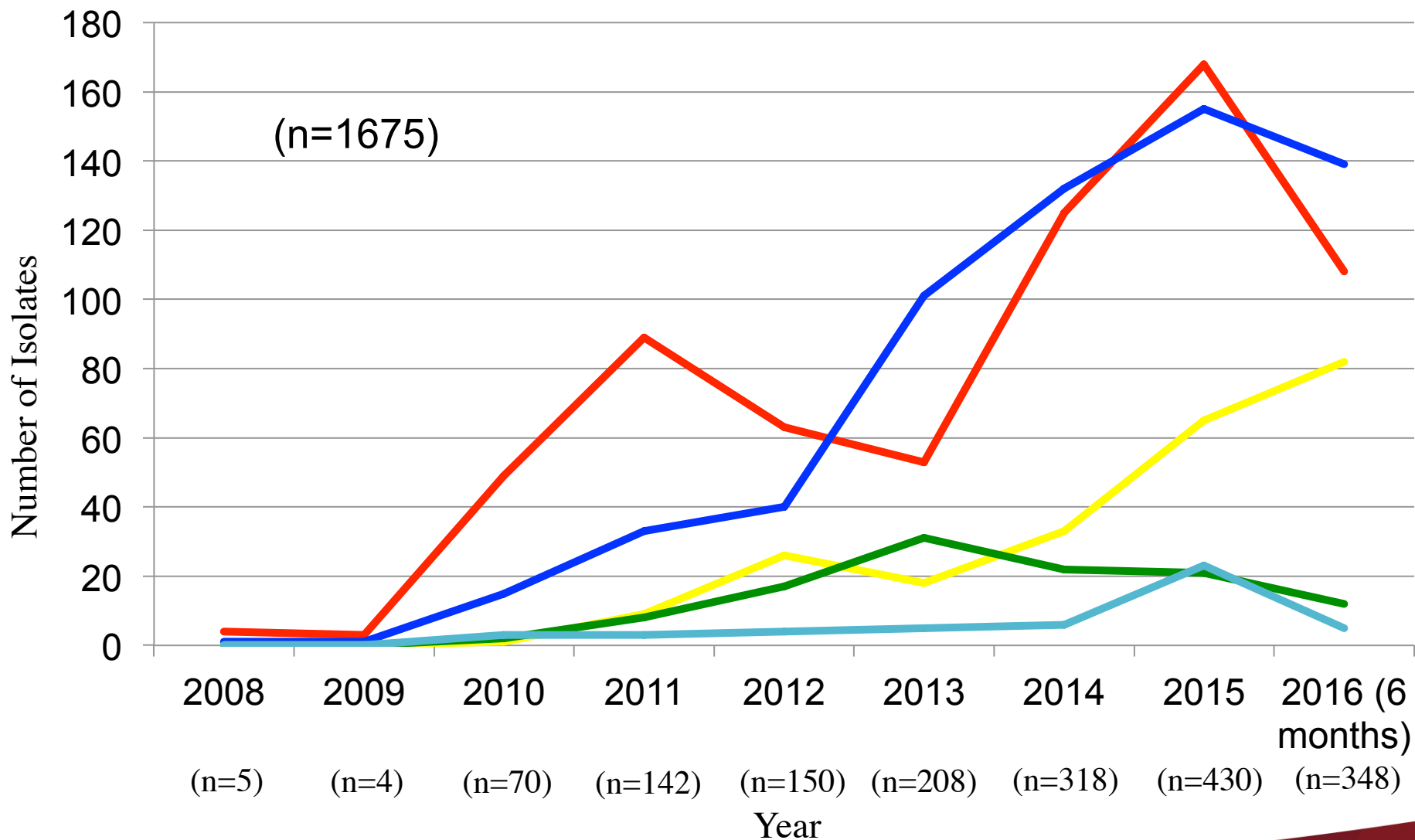
# CPE in Canada: CPHLN Data

■ KPC
 ■ NDM
 ■ OXA-48-like
 ■ SME
 ■ NDM/OXA-48-like
 ■ Other

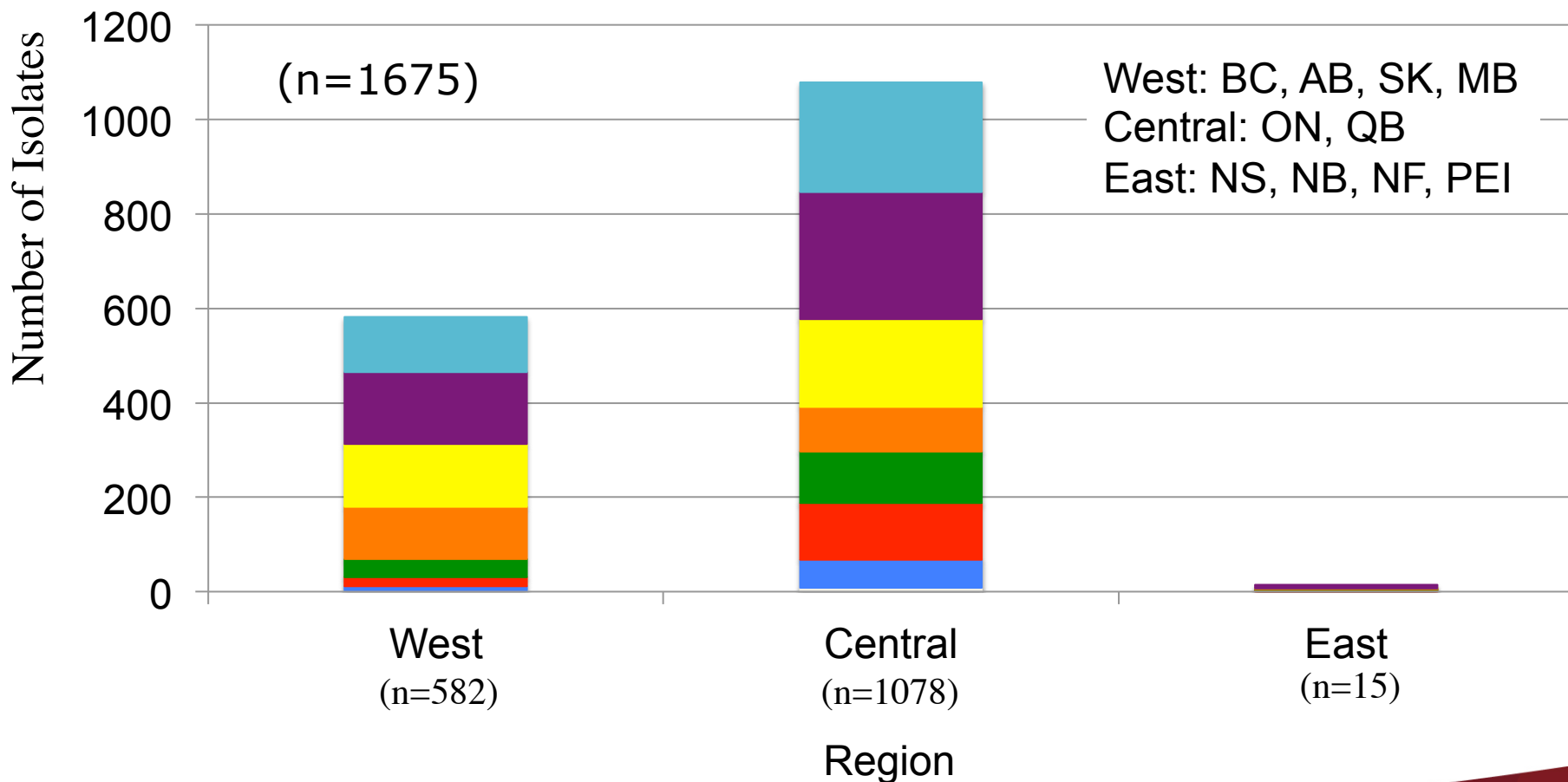
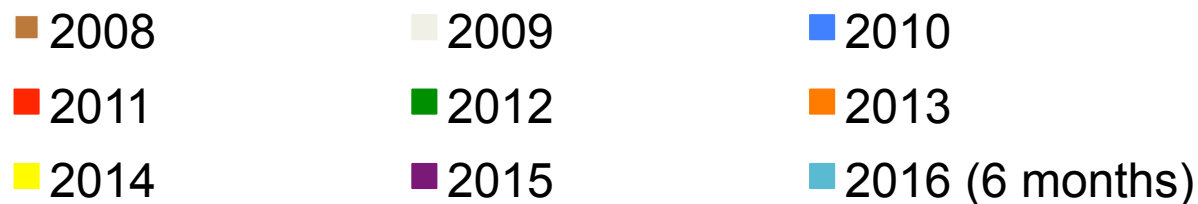


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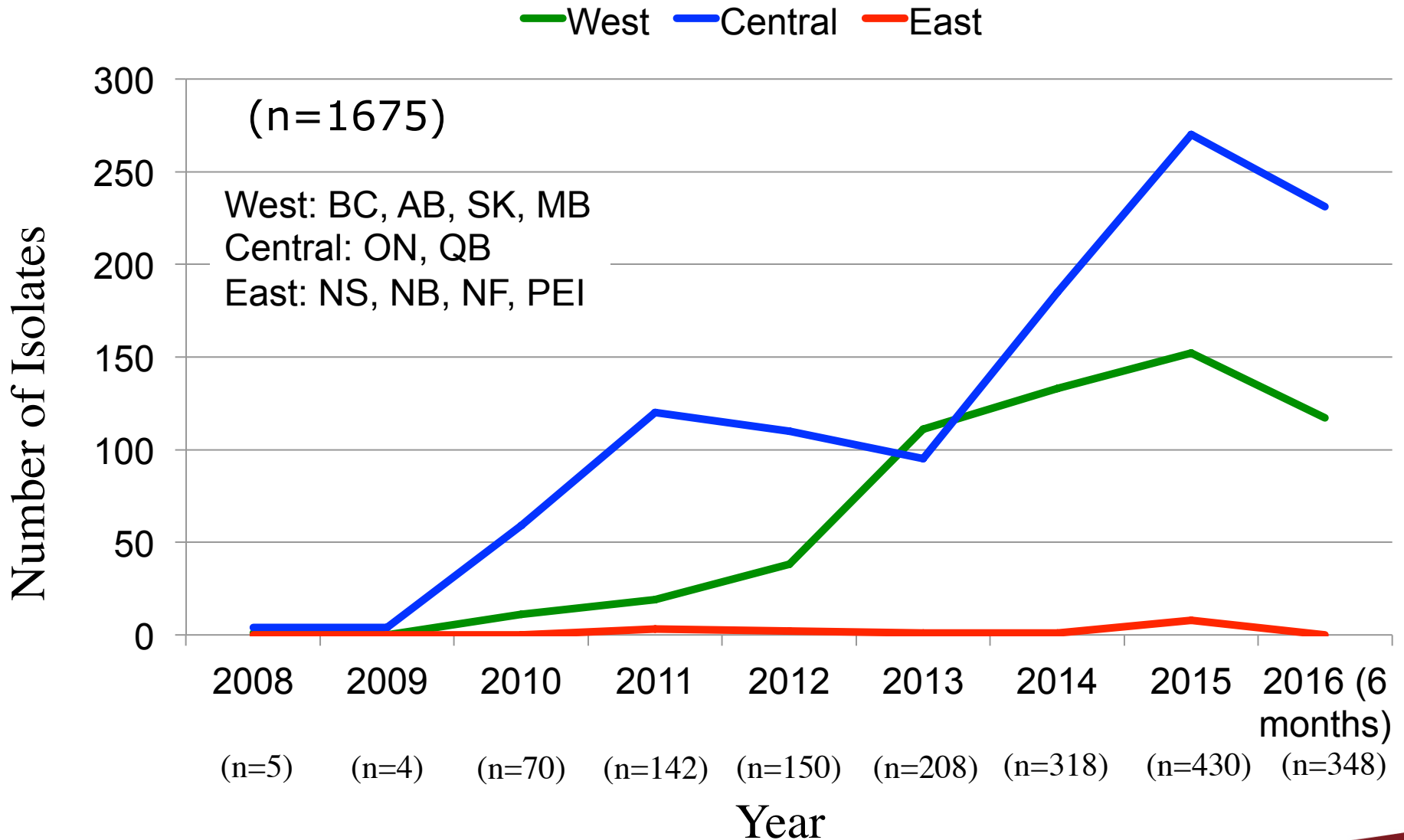
— KPC — NDM — OXA-48-like — SME — Other



# CPE by Region: CPHLN Data



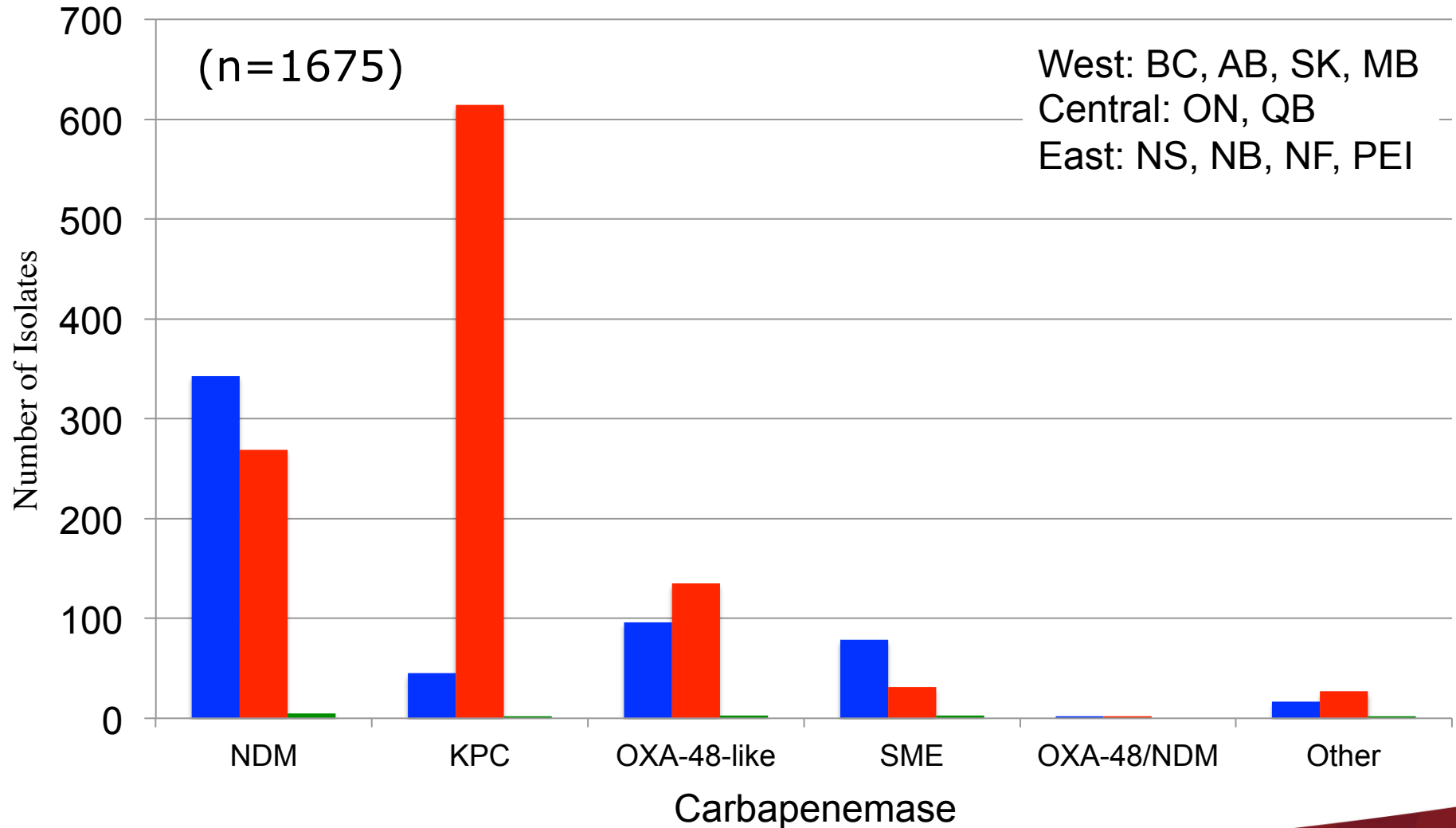
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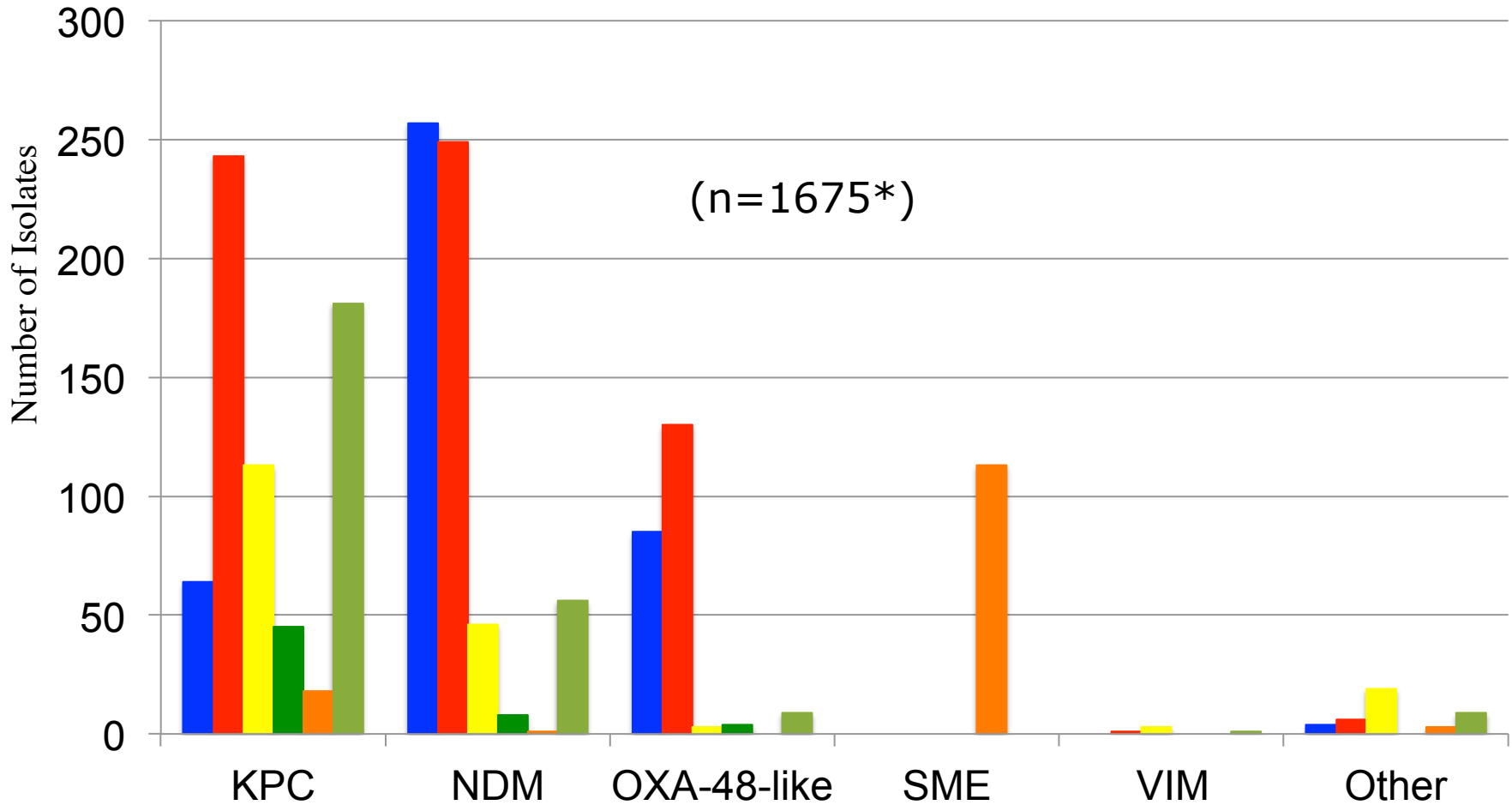
# Carbapenemases by Region

■ West ■ Central ■ East



# CPE by Species: CPHLN Data

- *E. coli*
- *K. pneumoniae*
- *Enterobacter spp.*
- *K. oxytoca*
- *Serratia spp.*
- *Other*



\* 4 *E. coli* contained both NDM/OXA-48-like Carbapenemase