

Table 1. Classification of carbapenemases.

| Carbapenemase | Ambler class | Comments | Susceptibility pattern |
|---|--------------|--|--|
| KPC Klebsiella pneumoniae carbapenemase | Class A | KPC enzymes, transported in plasmids, most common CRE in the U.S.A. | R: AMX, TZP, CTX, CAZ ATM I/R: ETP S/I/R: IMP MER |
| IMP-carbapenemases (metallo- β -lactamase) | Class B | Described in Japan in 1990s in <i>Enterobacteriaceae</i> , <i>Pseudomonas</i> and <i>Acinetobacter spp.</i> | R: AMX, AMC, CTX, I/R: TZP, CAZ, ETP S/I/R: IMP, MER S: ATM |
| VIM (Verona integron- encoded metallo- β -lactamase) | Class B | Members evenly distributed in Europe, North and South-America and Far East. Mainly in <i>P. aeruginosa</i> and rarely <i>Enterobacteriaceae</i> | R: AMX, AMC, CTX, I/R: TZP, CAZ, ETP S/I/R: IMP, MER S: ATM |
| NDM-1 (New Delhi metallo- β - lactamase) | Class B | Described in New Delhi in 2009 | R: AMX, AMC, CTX, I/R: TZP, CAZ, ETP S/I/R: IMP, MER S: ATM |
| OXA (oxacillinase) | Class D | Occur mainly in <i>Acinetobacter spp.</i> | R: AMX,AMC S/I: CTX,IMP, ETP, MER S: CAZ, ATM |

R: Resistant; S: Susceptible; I: Intermediate; AMX: amoxicillin; AMC: amoxicillin–clavulanic acid; TZP: piperacillin–tazobactam;
CTX: cefotaxime; CAZ: ceftazidime; IMP: imipenem; ETP: ertapenem; MER: meropenem; ATM: Aztreonam (Nordmann,
Gniadkowski, Giske , & Po, 2012)