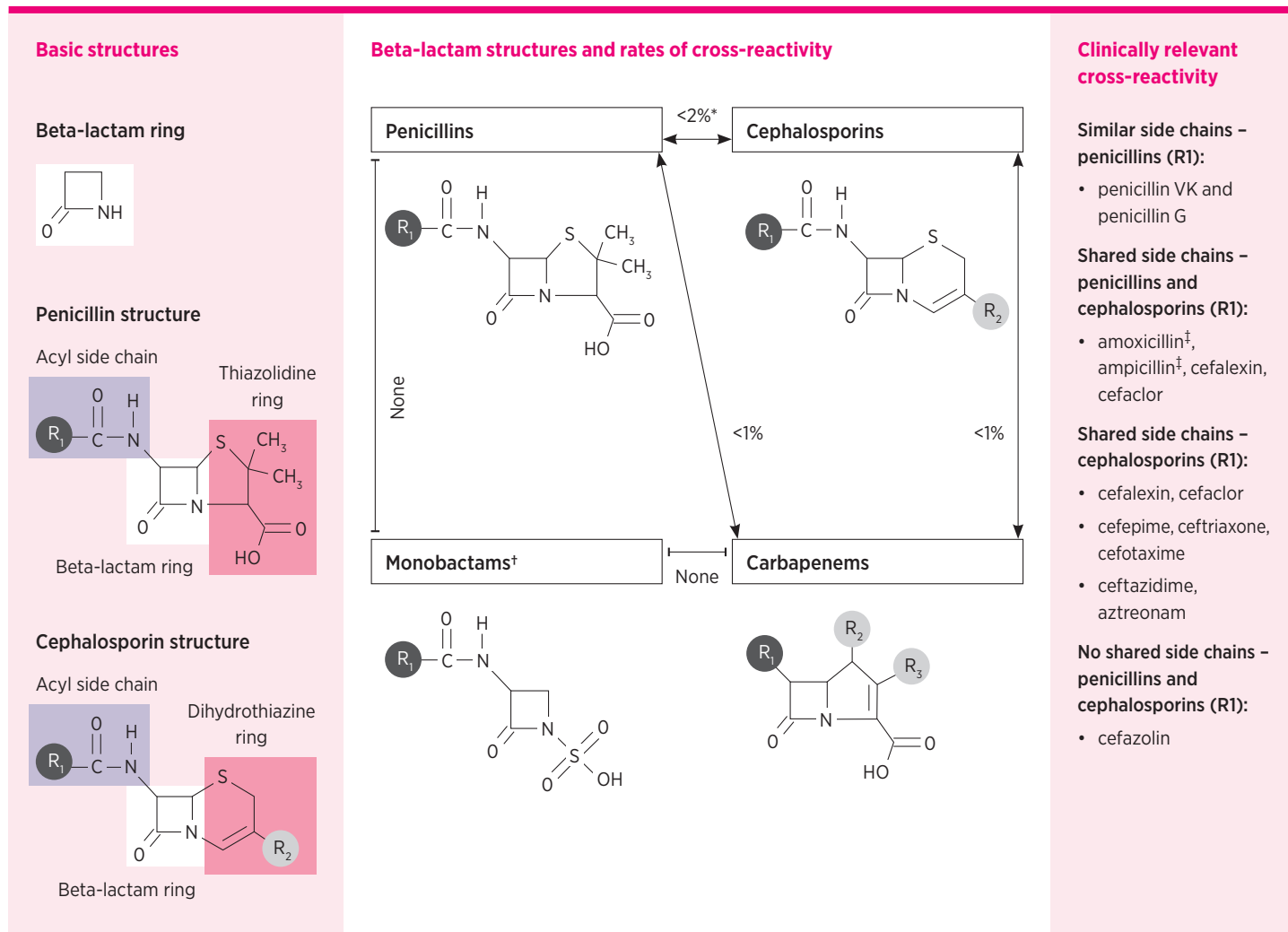


Fig. 1 Rates of cross-reactivity between beta-lactam antibiotics



Beta-lactam antibiotics include penicillins, cephalosporins, carbapenems and monobactams.

The left panel shows basic structures of beta-lactam antibiotics. Cross-reactivity is possible through the core beta-lactam ring, adjacent thiazolidine (penicillin) or dihydrothiazine (cephalosporin) ring, and also from a side chain (R1 or R2). Cephalosporins have both R1 and R2 side chains while penicillins only have R1. Despite varied mechanisms, true cross-reactivity is largely based on R1 side chains. Identical side chains in patients with IgE-mediated allergy pose the highest risk. However, cross-reactivity from side chains that are similar, but not identical, and from R2 side chain similarity, is possible and reported.

The centre panel demonstrates the structure and rates of cross-reactivity between penicillins, cephalosporins, carbapenems and monobactams. The right panel details the most clinically important cross-reactivity considerations.

* Except for shared group aminopenicillins and cephalosporins.

[†] Monobactams have no shared cross-reactivity with other beta-lactams, with the exception for aztreonam and ceftazidime, which share an identical R1.

[‡] Amoxicillin and ampicillin are structurally similar aminopenicillins and should be considered clinically cross-reactive with each other and the respective cephalosporins with shared R1 side chains in the figure. Similar considerations exist for the aminocephalosporins.