The CTX-M beta-lactamases in the nosocomial setting: can we still using classical control measures?

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Traditional infection control measures for nosocomial resistant pathogens include avoiding cross-transmission by hand hygiene promotion and contact precautions, and active surveillance of colonized patients for pathogens for which colonized patients are their main reservoir, and control of environmental reservoirs for environmental microorganisms. These measures have proof useful for the control of clonally-related ESBL-producing *Klebsiella pneumoniae*. The epidemiology of CTX-M-producing *Escherichia coli* is somehow more complex. In areas where these enzymes are endemic, 5-15% of the population are carriers of CTX-M-producing *E. coli*, making it unfeasible to try to detect all potential colonized patients at hospital admission; moreover, in many areas, most of the isolates causing nosocomial infections are clonally unrelated, although small clonal outbreaks may also occur. Nosocomial spread of plasmids harbouring CTX-M is a concern, but active surveillance and isolation precautions of patients colonized or infected by these predominantly non-clonal isolates are probably not effective nor efficient. Hand hygiene and avoiding overuse of antibiotics that may select for these pathogens, such as cephalosporins and fluoroquinolones, should be tried. More recently, the emergence of clonally-related isolates of *E. coli* producing CTX-M-15 is worrisome. These strains may affect patients admitted to long term care facilities, who might also originate nosocomial transmission of the isolates or the plasmids harbouring CTX-M-15 (and usually other resistant determinants) when admitted to acute care hospitals. There is still scarce data on the impact of these strains in the hospital epidemiology, and the best way to control them is unknown. Active surveillance and contact precautions should be useful in situations in which cross-transmission within certain hospital units is suspected, but again avoiding overuse of selecting antibiotics is important. Whether these measures might be implemented to avoid the spread of CTX-M enzymes to other enterobacteria, such as *Klebsiella* or *Enterobacter,* is subject of debate. It is clear that the main tools aiding hospital epidemiologists in making decisions will still be close-field clinical and molecular epidemiology.