

# **Title** : Use of broad spectrum antibacterial agents in French EDs : different trends for 3rd generation cephalosporins and fluoroquinolones

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## **ABSTRACT**

**Background** : Third-generation cephalosporins and fluoroquinolones are particularly prone to promote bacterial resistance. Their use in Emergency Departments (ED) is poorly known and should be monitored in order to guide antibiotic stewardship programs.

**Objectives**: To assess the use of antibacterial agents in French Emergency Departments (ED).

**Methods** : Retrospective study of antibiotics delivered to the adult units of 11 EDs of French academic centres between 2009 and 2012.

**Results**: The total antibiotic use was 66.4 Defined Daily Doses (DDD) /1000 ED visits in 2012, and increased between 2009 and 2012 (yearly estimate,  $+1.8 \pm 0.9$  DDD/1000 ED visits,  $P=0.048$ ). The broad spectrum agents class, that grouped 3rd-generation cephalosporins and fluoroquinolones, accounted for 39.2% of total antibiotic use, and was highly variable among EDs (range, 31.6% to 49.5% of total antibiotic use). The aminopenicillin and beta-lactamase inhibitor / broad spectrum agents ratio varied among EDs (median [range], 0.91 [0.52 – 1.25]). Between 2009 and 2012, there was a significant decrease for broad spectrum agents (yearly estimate,  $-0.8\% \pm 0.4\%$  of total antibiotic use), antipneumococcal fluoroquinolones ( $-0.8\% \pm 0.3\%$ ) and other fluoroquinolones ( $-0.9\% \pm 0.3\%$ ), and a significant increase for 3rd-generation cephalosporins ( $+0.7\% \pm 0.3\%$ ), aminoglycosides ( $+0.4\% \pm 0.1\%$ ), imidazole derivatives ( $+0.4\% \pm 0.1\%$ ) and lincosamides ( $+0.1\% \pm 0.0\%$ ).

**Conclusion**: Fluoroquinolones and 3rd generation cephalosporins are widely used in French EDs. Their use is highly variable among EDs. Antibiotics as a whole, and 3rd generation cephalosporins have been increasingly used between 2009 and 2012, while the use of fluoroquinolones has decreased. Reduced ED use of cephalosporins, without increasing fluoroquinolones, should be aimed through antibiotic stewardship programs.