

## Overview of three-year trends of antimicrobial consumption and resistance in Sicilian hospitals

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### Background:

Antimicrobial resistance (AMR) is one of the ten threats identified by the WHO in 2019. In order to face this issue and in the framework of the National Action Plan on Antimicrobial Resistance (PNCAR) 2017-2020, the Sicilian Health Authority has implemented a surveillance system of antibiotic consumption in the hospital sector and in the community and of antibiotic resistance in the Sicilian hospitals. The aim of the present work is to report the results of three-year surveillance.

### Methods:

From 2015 to 2017, data on antibiotic consumption have been collected from pharmacies of participating hospitals. AMR data on seven bacterial pathogens isolated in blood and cerebrospinal fluid have been collected from hospital laboratories, using routine clinical antimicrobial susceptibility tests. Antibiotic consumption was expressed as Defined Daily Dose (DDD) per 100 patient-days. Antibiotic resistance rates (RRs) were calculated as the number of non-susceptible isolates divided by the total number of isolates multiplied by 100.

### Results:

The most commonly consumed antibiotics in participating hospitals were fluoroquinolones in 2015, penicillins in 2016, and beta-lactams in 2017, respectively. RRs of *Klebsiella pneumoniae* significantly increased for all antimicrobial classes ( $p < 0.001$ ), but carbapenems. By contrast, RRs of *Escherichia coli* resistant to third-generation cephalosporins and carbapenems showed significant decreasing trends ( $p < 0.001$ ).

### Conclusions:

The implementation of the Sicilian surveillance system provides Sicilian reference data to monitor trends and target interventions and policies for reducing the threat of AMR. Recently, using toolkits of the ECDC-EAAD initiative adapted with regional surveillance data, an educational campaign "Obiettivo Antibiotico" - <https://www.obiettivoantibiotico.it/> - was designed and launched to raise awareness of prudent use of antibiotics in the general public and in healthcare professionals in Sicily.

### Key messages:

- Inappropriate antimicrobial consumption observed in Sicilian hospitals contributes to the emergence and selection of AMR.
- Surveillance system of antimicrobial consumption and AMR can help identify strategies for preventing spread of multi-drug resistant microorganisms.