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Information technology systems to support antimicrobial stewardship programs

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Problem:

Inappropriate antibiotic use contributes to the emergence and spread of multidrug-resistant organisms that are responsible for life-threatening infections. Furthermore, overprescription of antibiotics is associated with an increased risk of adverse effects and higher costs.

Description of the problem:

Careggi is a tertiary care teaching hospital in Italy, with nearly 1,200-bed units, involved since 2015 in antimicrobial stewardship (AMS) programs. Despite implementation programs, carbapenems (CAR) consumption rates remained higher than the national average; for this reason, the AMS hospital team started a project aimed at improving the appropriateness of this type of drug.

Results:

The project started in October 2021 and involved 10 hospital Units selected as the major prescribers of CAR. The strategies were planned by a multi-professional and multi-disciplinary

team of experts in AMS and were set in place by a multimodal approach focused on information technology (IT) functions implemented in the electronic medical record such as:

- time-out alerts at 72 hours inviting physicians to evaluate if the prescribed antimicrobial is still warranted or effective against the identified organism(s);
- interactive and customizable prescribing algorithms to support physicians in empirical and targeted therapies;
- electronic dashboards viewable by physicians and the AMS team to daily monitor and review CAR prescriptions.

These functions were complemented by a series of training sessions for prescribing physicians aimed to promote a more rational and appropriate antimicrobials use. Six months after the project began, an overall reduction in the prescription of CAR was observed: from 6.2 DDD/100 patient-days to 4.9 DDD/100 patient-days.

Lessons:

AMS programs use different interventions to influence the behavior of prescribers toward more appropriate use of antimicrobials. IT functions represent complementary and useful tools to promote antimicrobial stewardship programs.

Key messages:

- Antimicrobial stewardship programs aim at optimizing antibiotic use and reducing inappropriate antibiotic prescriptions.
- Information technology systems represent useful tools within AMS programs.