ANALYSIS OF ANTIBIOTICS CONSUMPTION AT AN ITALIAN CARDIOLOGY CENTER: PHARMACOUSE PROFILE ACCORDING TO THE AWARE CLASSIFICATION

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Background and importance: Resistant bacteria and multidrug-resistant bacteria (MDRO) represent a problem for public health, both for the epidemiological impact and clinical manifestations and for the associated economic consequences.

Aim and objectives: Antimicrobial stewardship includes the use of the AwaRe classification which divides antibiotics into Access, Watch and Reserve categories. An analysis of the DDD (defined daily dose) consumption of antibiotics (ATC code: J01- ANTIBACTERIALS FOR SYSTEMIC USE) distributed by the Hospital Pharmacy to the departments between 2018 and 2021 was conducted in order to implement the use of antibiotic drugs as suggested by the World Health Organization Healthcare (WHO).

ACCESS ANTIBIOTICS
AMOXICIL/AC. CLAVULANICO
AMPICILLINA + SULBACTAM
SULFAMETOXAZOLO/TRIMETOPRIM
OXACILLINA
AMIKACINA
GENTAMICINA
AMOXICILLINA
METRONIDAZOLO
AMPICILLINA SODICA
DOXICICLINA
CLINDAMICINA

WATCH ANTIBIOTICS	
TEICOPLANINA	CEFEPIME
RIFAMICINA	CLARITROMICINA
CEFTAZIDIME	FOSFOMICINA
IMIPENEM/ CILASTATINA	VANOMICINA
PIPERACILLINA + TAZOBACTAM	RIFAMPICINA
CIPROFLOXACINA	CEFTRIAXONE
LEVOFLOXACINA	ACIDO PIPEMIDICO
AZITROMICINA	CEFTIBUTEN
MEROPENEM	NORFLOXACINA
ERTAPENEM	CEFIXIMA
PIPERACILLINA	MOXIFLOXACINA
CEFOTAXIMA	CEFDITOREN

RESERVE ANTIBIOTICS
LINEZOLID
TIGECICLINA
DAPTOMICINA
CEFTAROLINA FOSAMIL
FOSFOMICINA
DALBAVANCINA
CEFTAZIDIMA + AVIBACTAM
COLISTIMETATO DI SODIO

UNIT OF MEASURE = DDD / 100/DAYS OF HOSPITALIZATION

Figure 1. AwaRe classification

Materials and Methods: In order to monitor the use of drugs, the hospital pharmacy extracted the consumption into dosage units using the SAP software and then converting them into DDD. To compare the consumption data with the literature reports, it was necessary to relate the DDDs to the days of hospitalization. Finally, the drugs were divided into AwaRe categories and the trend in consumption of each molecule in the period considered was calculated.

Results: the analysis revealed that the most used category is Watch, whose consumption decreased in 2019 compared to the previous year by -6.31%, and then increased in 2020 by +21.49%.

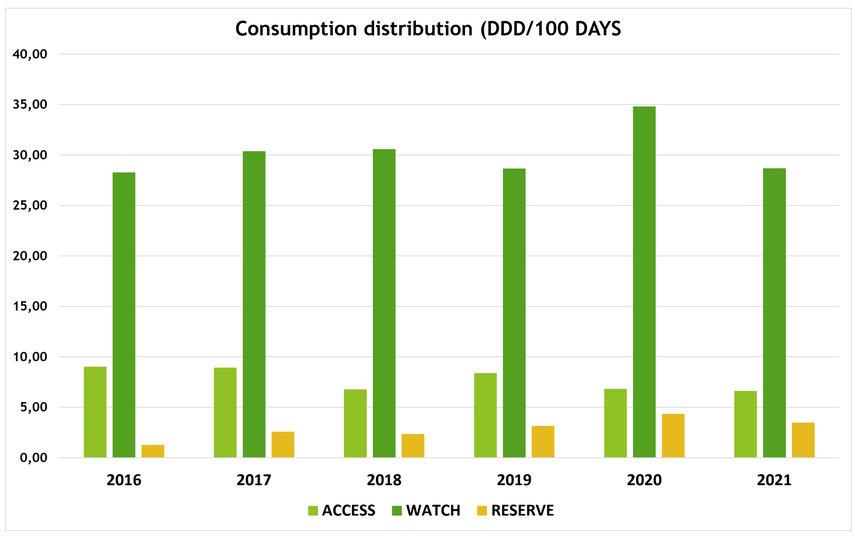

Figure 2. Distribution of consumption of AwaRe categories expressed in DDD/100 days of hospitalization

Watch consumption in 2021 is comparable to that of 2019. Access consumption underwent a slight increase in 2019 compared to 2018 of +24.77%, while it decreased in the following two years (-21.19% in 2021 vs 2019). The Reserves showed a growth trend between 2018 and 2020 (+83.90%). Compared to 2020, in 2021 the data relating to the use of these antibiotics decreased slightly (-24.36%).

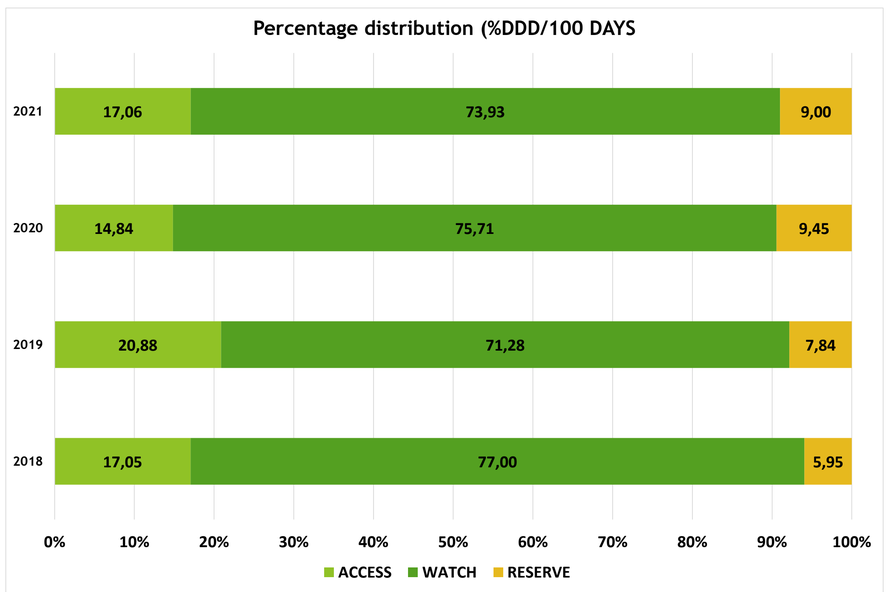

Figure 3. Percentage distribution of AwaRe categories in 2018 (% DDD/100 DAYS)

Finally, the Access to Watch indicator was calculated to evaluate the appropriateness of antibiotic consumption. The results emerging from this report does not match to the ideal value recommended by the WHO (1).

60% Access
Access / Watch = 1,5

ACCESS TO WATCH			
2018	2019	2020	2021
0,22	0,29	0,20	0,23

Figure 4. Access to Watch Index of the years between 2018 and 2021

Conclusion and relevance: The consumption of antibiotics in the Watch and Reserve categories should decrease in favor of those belonging to the Access category. The use of latest generation antibiotics belonging to the Reserve category should be limited to cases in which antibiotics from other classes are inappropriate.

1. WHO Regional Office for Europe, «Antimicrobial Medicines Consumption (AMC) Network. AMC data 2019.,» WHO.Regional Office for Europe, Copenhagen, 2022.