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Conflicts of interest

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Standardization of cumulative antimicrobial susceptibility reports: A need

Estandarización de los informes de sensibilidad antibiótica acumulada: una necesidad

Dear Editor,

The Executive Committee of the European Committee on Antimicrobial Susceptibility Testing (EUCAST)[1] decided in 2019 to redefine the clinical categories Susceptible (S) and Intermediate (I) used in the interpretation of susceptibility results, but maintaining the abbreviations, such that "susceptible" becomes "Susceptible, standard dosing regimen" (S) and "intermediate" becomes "Susceptible, Increased exposure" (I).

This change directly affects the preparation of the cumulative antimicrobial susceptibility testing (CAST) reports that we periodically produce in microbiology departments/units; it is no longer appropriate to combine the categories "Resistant" and "Intermediate" as "non-susceptible". Instead, the Comité Español del Antibiograma (COESANT) [Spanish Antibiogram Committee] advises presenting the three categories separately, and if necessary, combining S and I, but indicating at the bottom of the table those cases in which there are two dosage regimens.[2] However, it does not establish recommendations regarding the threshold percentage of susceptible strains for the empirical use of an antibiotic.

Although there is no universally recognised susceptibility threshold for the empirical use of an antibiotic, it is common in CAST reports to consider 80%, based on expert recommendations for certain infections (higher thresholds in severe infections).[3] Thus, in CAST reports which only show the percentage of susceptibility, colour coding is often assigned to guide the clinician, using green or red depending on whether the percentage is above or below 80% (in other reports, 85% or 90%). Some CAST reports add a third colour to highlight percentages between 50% and 80%–85%, a range which does not correspond to any category of prescription and which does not provide information that is not conveyed by the percentage itself.[4]

As a consequence of the change in clinical categories, it seems particularly important to differentiate the combinations of antibiotic/microorganism that reach the threshold for empirical use from strains that require increased exposure. We therefore consider it necessary to assign a new colour to said category. If we have accepted green and red to differentiate the antibiotics that we should or should not use, it is logical that we assign yellow for the new category; just as we interpret traffic lights, clinicians will understand that they can use an antibiotic, as long as exposure to it is increased (Fig. 1).

Due to the great heterogeneity that exists in the preparation and presentation of the CAST report, which does not always provide all the information that the clinician may need, and considering that its main objective is to be a guide to choosing the most appropriate empirical antibiotic treatment, in our opinion, standardisation is a priority. We therefore propose the following:

- Unifying the percentage threshold of susceptible strains for recommending the empirical use of an antibiotic. Due to the extent of their use, to preserve the most powerful antibiotics and until a consensus is reached, we suggest 80% (reflecting in the CAST that in serious infections, options with greater susceptibility should be considered).
- Unifying colour coding: green for percentages of strains meeting the empirical use threshold; yellow for those that reach it with an increase in exposure; and red for the percentages that are below the threshold. A simplified presentation model is shown in Fig. 1 (all cells express the sum of S+I; at the bottom of the table, S and I are detailed separately for those marked in yellow).

TOTAL HOSPITAL isolates (except urine)
GRAM-NEGATIVE BACILLI
% Susceptibility corresponds to S+I

	Escherichia coli (320)[a]	*ESBL-producing Escherichia coli (34)*	*Klebsiella pne.spp pneumoniae (60)*[b,c]	*ESBL-producing Klebsiella pneumoniae (24)*	*Proteus mirabilis (52)*	*Klebsiella oxytoca (51)*	*Enterobacter cloacae (37)*	*Pseudomonas aeruginosa (130)*	*Stenotrophomonas maltophilia (24)*	*Haemophilus influenzae (31)*
Ampicillin	41%				48%					87%
AmoxClav	63%	35%	45%	4%	73%	90%				94%
PiperaciTazoba	93%	79%	58%	13%	100%	90%	76%	74%		
Cefotaxime	91%	12%	69%	0%	97%	97%				100%
Ceftazidime	97%	71%	62%	8%	100%	100%		83%[d]		
Cefepime							97%	87%[e]		
Aztreonam								84%[f]		
Ertapenem	100%	100%	70%	33%	100%	100%	86%			
Imipenem	100%	100%	87%	60%	93%[g]	100%	100%	78%		
Meropenem								89%[h]		
Ciprofloxacin	78%	26%	57%	4%	58%	94%	89%	77%		90%
Levofloxacin									100%	90%
Gentamicin	96%	88%	70%	29%	88%	100%	97%	86%		
Tobramycin								89%		
Amikacin	100%	100%	77%	42%	100%	100%	100%			
TrimethopSulfa	73%	56%	65%	25%	46%	92%	89%		100%[i]	
Tigecycline	98%	93%	34%	0%	0%	77%	23%			
Colistin								100%		
Azithromycin										100%

[a] ESBL E. coli: 10.6%. [b] ESBL K. pneumoniae: 40%. [c] Carbapenemase-producing K. pneumoniae: 13%.
In all cases, OXA 48;

Separate percentages S/I: 1%/82%; [e] 0%/82%; [g] 0%/93%; [h] 77%/12%; [i] 8%/92%.

S+I ≥80% (S≥80%) | S+I ≥80% (S<80%) | S+I <80%

Fig. 1. Simplified presentation model of a cumulative antimicrobial susceptibility report.

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