

# *Stenotrophomonas maltophilia*

**Actualización de los criterios de ensayo, interpretación e informe de las Pruebas de sensibilidad a los antimicrobianos en Bacilos Gram-Negativos No Fermentadores (BGNNF)**

Subcomisión de Antimicrobianos de SADEBAC- AAM  
22 de noviembre de 2019

# *S. maltophilia*

- Patógeno nosocomial oportunista
- BGN frecuentemente asociado a infecciones respiratorias en humanos, de alta prevalencia en pacientes FQ
- Bacteriemias asociadas a catéteres
- Infecciones de PPB

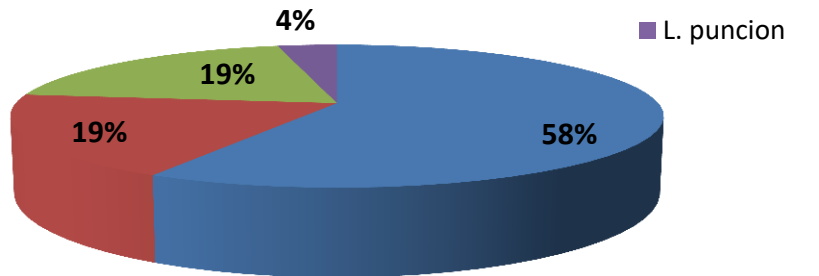


# *S. maltophilia*

## Tipo de muestra

n: 57

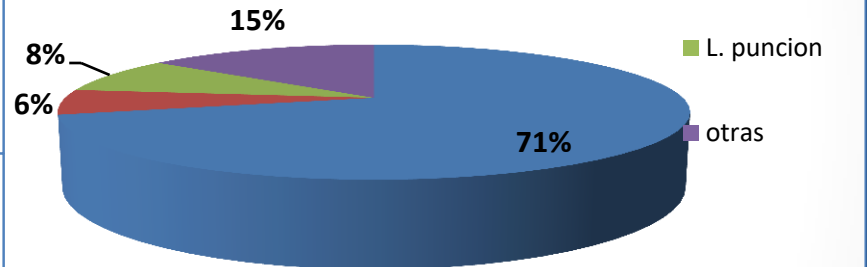
año 2017



## Tipo de muestra

año 2019

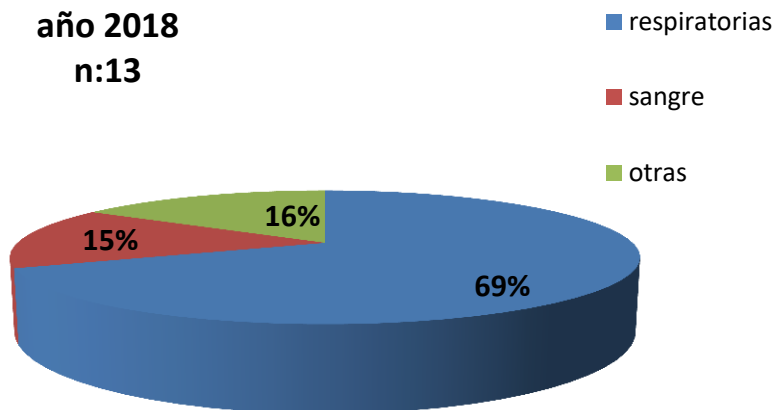
n: 35



## Tipo de muestra

año 2018

n:13



Hospital de Clínicas JSM

# *S. maltophilia*

## RESISTENCIAS NATURALES

- **EMA:** acetil transferasa AAC(6')  
**AKN R, GEN S**
- **BOMBAS DE EFLUJO:** SmeDEF, SmeABC, SmrA, SmeBC:  
**FQ, TET, CLO, ERY, BLM, GEN, AKN, TOB**
- **IMPERMEABILIDAD DE LA MEMBRANA EXTERNA:**  
**BNR BLM, FEP, TC, CAZ, PTZ**
- **qnrB:**  
**FQ**
- **BLMAsas INDUCIBLES:** L1 Y L2  
**BLM**

# *S. maltophilia*

## BLMasas CROMOSOMICAS INDUCIBLES

**L1**

CLASE B (MBL)  
HIDROLIZA PEN, CEFS  
Y CARBAP  
NO HIDROLIZA AZM  
RESISTENTE A INHIB

**L2**

CEFALOSPORINASA  
CLASE A  
HIDROLIZA AZM, TIC,  
CEE  
INHIBIBLE POR AMC Y  
AVI

# *S. maltophilia*

- **SENSIBILIDAD:**

- ✓ POLIMIXINAS

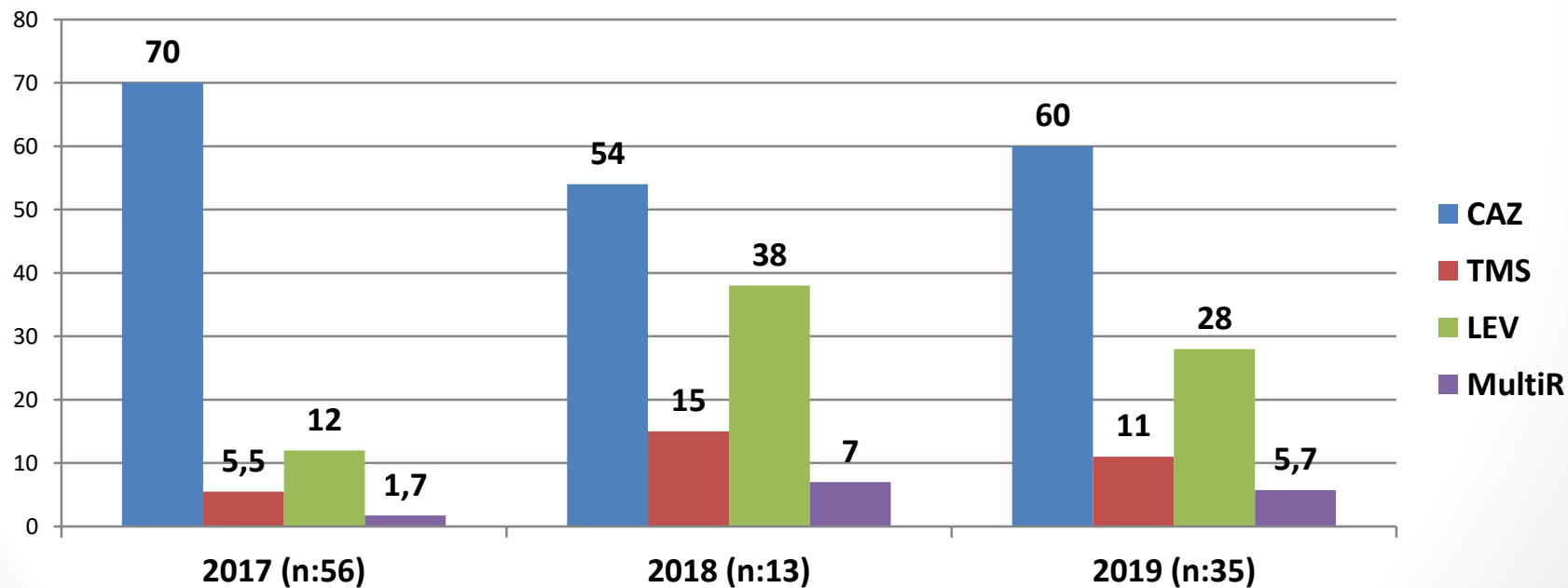
- ✓ TMS

- ✓ FQ

- ✓ MIN

- ✓ TIC/CLA

**% de Resistencia  
2017-2019**



# *S. maltophilia*

## ANTIBIOGRAMA

### EUCAST VS CLSI

#### *Stenotrophomonas maltophilia*

##### Expert Rules and Intrinsic Resistance Tables

EUCAST Clinical Breakpoint Tables v. 9.0, valid from 2019-01-01

Trimethoprim-sulfamethoxazole is the only agent for which EUCAST breakpoints are currently available. For further information, see guidance document on [www.eucast.org](http://www.eucast.org).

#### MIC determination (broth microdilution according to ISO standard 20776-1)

Medium: Mueller-Hinton broth

Inoculum:  $5 \times 10^5$  CFU/mL

Incubation: Sealed panels, air,  $35 \pm 1^\circ\text{C}$ ,  $18 \pm 2$ h

Reading: For trimethoprim-sulfamethoxazole, the MIC should be read at the lowest concentration that inhibits approximately 80% of growth as compared with the growth control well.

Quality control: *Escherichia coli* ATCC 25922

#### Disk diffusion (EUCAST standardised disk diffusion method)

Medium: Mueller-Hinton agar

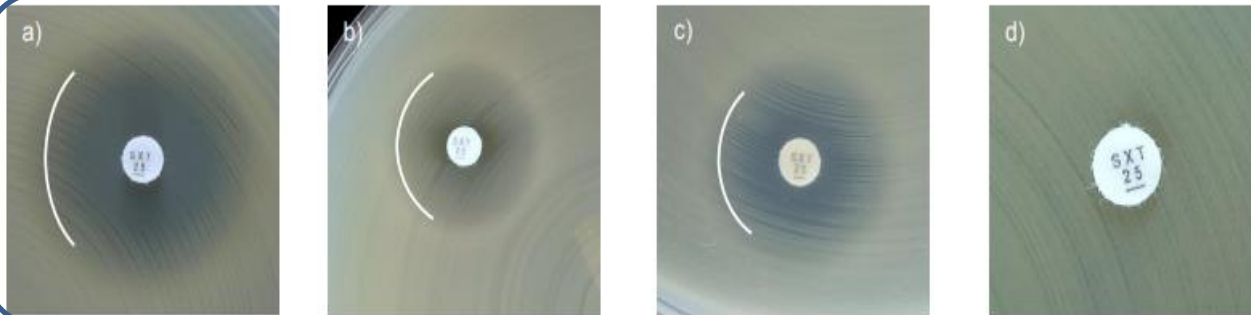
Inoculum: McFarland 0.5

Incubation: Air,  $35 \pm 1^\circ\text{C}$ ,  $18 \pm 2$ h

Reading: Read zone edges from the back of the plate against a dark background illuminated with reflected light (see below for specific instructions).

Quality control: *Escherichia coli* ATCC 25922

Miscellaneous agents	MIC breakpoints (mg/L)			Disk content ( $\mu\text{g}$ )	Zone diameter breakpoints (mm)			Notes
	S $\leq$	R >	ATU		S $\geq$	R <	ATU	
Trimethoprim-sulfamethoxazole <sup>THE</sup>	4	4		1.25-23.75	16 <sup>A</sup>	16 <sup>A</sup>		<p>1. Trimethoprim-sulfamethoxazole in the ratio 1:19. Breakpoints are expressed as the trimethoprim concentration.</p> <p>2. Breakpoints are based on high dose therapy, see table of dosages.</p> <p>3. Isolates showing any sign of inhibition zone <math>\geq 16</math> mm should be reported susceptible and growth within the inhibition zone should be ignored. The density of growth within the zone may vary from a fine haze to substantial growth (see pictures below).</p>



Examples of inhibition zones for *Stenotrophomonas maltophilia* with trimethoprim-sulfamethoxazole.

a-c) An outer zone can be seen. Report susceptible if the zone diameter  $\geq 16$  mm.

# *S. maltophilia*

CLSI 2019

Table 2B-4. *Stenotrophomonas maltophilia* (Continued)

Test/Report Group	Antimicrobial Agent	Disk Content	Interpretive Categories and Zone Diameter Breakpoints, nearest whole mm			Interpretive Categories and MIC Breakpoints, µg/mL			Comments
			S	I	R	S	I	R	
<b>β-LACTAM COMBINATION AGENTS</b>									
O	Ticarcillin-clavulanate	—	—	—	—	≤ 16/2	32/2–64/2	≥ 128/2	
<b>CEPHEMS (PARENTERAL) (Including cephalosporins I, II, III and IV. Please refer to Glossary I)</b>									
B	Ceftazidime	—	—	—	—	≤ 8	16	≥ 32	
Inv.	Cefiderocol	—	—	—	—	≤ 4	8	≥ 16	(2) Breakpoints are based on a dosage regimen of 2 g every 8 h administered over 2 h.  (3) Testing cefiderocol requires iron-depleted CAMHB. Chelation is used for iron depletion, which also removes other cations (i.e., calcium, magnesium, and zinc). Following this process, cations are added back to concentrations of calcium 20–25 mg/L, magnesium 10–12.5 mg/L, and zinc 0.5–1.0 mg/L.
<b>TETRACYCLINES</b>									
B	Minocycline	30 µg	≥ 19	15–18	≤ 14	≤ 4	8	≥ 16	
<b>FLUOROQUINOLONES</b>									
B	Levofloxacin	5 µg	≥ 17	14–16	≤ 13	≤ 2	4	≥ 8	
<b>FOLATE PATHWAY ANTAGONISTS</b>									
A	Trimethoprim-sulfamethoxazole	1.25/23.75 µg	≥ 16	11–15	≤ 10	≤ 2/38	—	≥ 476	
<b>PHENICOLS</b>									
C	Chloramphenicol	—	—	—	—	≤ 8	16	≥ 32	(4) Not routinely reported on isolates from the urinary tract.

Abbreviations: ATCC<sup>®</sup>, American Type Culture Collection; CAMHB, cation-adjusted Mueller-Hinton broth; I, intermediate; MHA, Mueller-Hinton agar; MIC, minimal inhibitory concentration; QC, quality control; R, resistant; S, susceptible.

**QUE ENSAYAR?**

**TIC-CLAV, CAZ, MIN, LEV, TMS, CLO, CEFIDEROCOL**



# *S. maltophilia*

## DROGAS DE ELECCION

**TMS**

**CAZ, LEV, MOX**

**COL (sangre, IR), TIG, MIN (IIA, IPPB, osteom)**

**NUEVOS ATB Y ASOCIACIONES: cefiderocol,  
AZM-AV**

# *S. maltophilia*

## RESISTENCIA A COLISTINA

**Table 1**

Evolution of resistance to colistin (COL) in *Stenotrophomonas maltophilia* and its relation to COL consumption in a university hospital in Buenos Aires city, Argentina.

Year	n	Resistance to COL (%)	COL consumption (no. of vials) <sup>a</sup>	DDD COL/1000 patients
1996–2000	42	8	N/D	N/D
2001–2002	71	22.3	N/D	N/D
2003	62	37	500	5
2004	61	39	1400	16
2005	50	48	2300	24
2006	53	49	2700	25
2007	55	54	2100	31
2008	51	51	3900	N/D
2009	43	57	4600	N/D
2010	37	60	4600	21
2011	35	53	4100	19
2012	40	50	4800	21
2013	41	45	5700	N/D

N/D, not determined; DDD, defined daily doses.

<sup>a</sup> Vials containing 100mg of colistin methanesulfonate.

- ✓ 1996-2013
- ✓ N: 641
- ✓ Tto previo con COL en 80% ptes con aislam COL R

### In vitro activity of colistin against *Stenotrophomonas maltophilia*

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# *S. maltophilia*

## ACTIVIDAD IN VITRO DE CEFTAZIDIMA-AVIBACTAM

- n: 11
- 8 aislam R CZA (CIM > 128 µg/ml)
- 3 aislam S CZA (CIM: 2 µg/m)
- Se observó disminución de la CIM solo en aislam S a CAZ
- La combinación AZM/AVI fue sinérgica en 100% aislam.

CIM AZM > 64 µg/ml  CIM AZM + AV ≤ 0.125-8 µg/ml

Hosp de Clínicas JSM, 2019

### MECANISMO: INHIBICION DE L2 POR AVI

Avibactam Restores the Susceptibility of Clinical Isolates of *Stenotrophomonas maltophilia* to Aztreonam. Mojica y col. Antimicrob A Chemother 2017 Sep 22;61(10).

# *S. maltophilia.. ¿ que ensayar y que informar?*

ATM	que ensayar e informar?
CAZ	X
TC	X
MIN	X
TMS	X
LEV	X

En caso de aislamientos multi-R : COL, TIG, CZA-AVI/ AZM, cefiderocol?