Morganella spp (LTR62259)

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Organism

Morganella spp.

- *M. morganii*

Clinical

Morganella morganii infections are rare in healthy individuals. This organism is associated with urinary tract infections (UTI), usually in patients with recurrent UTIs or in patients who have received multiple antibiotics. It is also associated with asymptomatic bacteriuria often in institutionalized/catheterized elderly persons. Other infections associated with *M. morganii* include bacteremias, wound infections, pneumonia, peritonitis, gastroenteritis, septic arthritis, and meningitis.

Usual susceptibility pattern

These organisms produce an inducible chromosomal beta-lactamase (AmpC enzyme) and are resistant to penicillins and first/second generation cephalosporins (cefoxitin may appear susceptible). Although they often appear susceptible in vitro to cefoxitin and third generation cephalosporins, use of these agents clinically may result in selection of resistant strains. Unlike other AmpC cephalosporinase which are typically not inhibited by beta-lactamase inhibitors, the AmpC enzyme of *Morganella morganii* is inhibited by tazobactam (but not clavulanic acid).

Although extended spectrum beta-lactamase (ESBL) may be found in these organisms, testing for ESBL production is not routinely recommended in view of the intrinsic resistance from inducible beta-lactamase production.

Most strains are resistant to nitrofurantoin, tetracycline and colistin while usually susceptible to aminoglycosides, TMP-SMX, quinolones, and carbapenems. (Exception: May exhibit decreased susceptibility to imipenem (decreased affinity to PBP2) that does not affect other carbapenems.)

Susceptibility method

VITEK2. Additional tests (Disc diffusion and Etest) are performed using Mueller-Hinton agar incubated in ambient air at 35°C for 16-20 hours.

Note: For Etest use 0.5 McFarland suspension in saline.
For mucoid strains use 1.0 McFarland.

Morganella spp., Continued

Susceptibility reporting

	CSF/ Brain	Blood/ Sterile Body Site/ Endovascular Catheter	Urine	Other	Comments
Amikacin		3	3	3	3rd line if gent and tobra I/R Disc diffusion
Ampicillin	R	R	R	R	
Cefazolin		R	R	R	
Cefixime			R		
Ceftriaxone	R	R			
Ciprofloxacin		✓	✓	✓	Do not report in patients < 18 y
Ertapenem		✓	2	2	2nd line if cipro or TMP-SMX I/R If S do not report in patients < 3 months **See Special Considerations**
Gentamicin	*	✓**	✓	✓**	* Report only in neonates (< 1 month) ****See Special Considerations**
Meropenem	✓	✓	2*	2*	2nd line if cipro or TMP-SMX I/R * Report 1st line in neonates (< 1 month) **See Special Considerations**
Nitrofurantoin			R		Add comment: For uncomplicated lower UTI only #f1
Piperacillin/ tazobactam		✓		✓	**See Special Considerations**
TMP-SMX	*	✓	✓	✓	* Report only at physician request
Tobramycin		2*	2	2*	2nd line if gent I/R ***See Special Considerations**

Special considerations

Ertapenem / Meropenem:	If reporting ertapenem and meropenem add comment: "Imipenem has intrinsically low activity against this organism." #A375
Gentamicin/ Tobramycin:	Organisms testing at upper limit of susceptibility (4µg/mL) may not achieve optimal pharmacokinetics/pharmacodynamics. **For non-urine isolates:** If MIC 4.0 µg/mL add comment: "This isolate tests at the upper limit of susceptibility for gentamicin. Clinical failure may occur despite in vitro susceptibility".#A312 **or** "This isolate tests at the upper limit of susceptibility for tobramycin. Clinical failure may occur despite in vitro susceptibility".#A313 **or** "This isolate tests at the upper limit of susceptibility for both gentamicin and tobramycin. Clinical failure may occur despite in vitro susceptibility". #A314
Piperacillin/ tazobactam:	Do not report if ceftriaxone and /or ceftazidime I/R (>=2) as piperacillin/tazobactam is not recommended if either an extended spectrum beta-lactamase (ESBL) and/or a cephalosporinase is present. **Add the following comment when piperacillin/tazobactam is reported as susceptible:** Please note: Morganella morganii is one of the few AmpC positive bacteria for which Piperacillin-tazobactam can be reliably used if it has been reported as Susceptible. #tzp3

Interpretation

For Etest, report actual MIC result. For interpretation (S, I, and R) report according to nearest higher doubling dilution **(Appendix 1)**.

Use **CLSI** interpretive document for **Enterobacterales**

For Beta-lactam drugs – Refer to Beta-lactam Resistance Detection Charts.
For gentamicin and tobramycin – Refer to Special Considerations