Pasteurella spp (LTR79354)

Edit Approved By: Dragan, Tatiana (07/25/2023) **Revision: 4.00**

Organism **Pasteurella spp.**

Clinical

Pasteurella spp. are found in both healthy and diseased animals (wild and domestic). Animals are the reservoir for most human infections. The genus Pasteurella is undergoing numerous taxonomic changes.

- ***P. multocida*** – This organism is a commensal in the oral flora of dogs and cats, other mammals, and fowl. It is associated with bite wound infections and may cause osteomyelitis, bacteremia, endocarditis, meningitis, brain abscesses, ophthalmic infections, peritonitis, pneumonia, lung abscess, UTI, empyema and septicemia (cirrhosis of liver particular risk factor).
- ***P. canis*** – This organism is found in the oral cavity of dogs. It has been associated with bite wounds.
- ***P. stomatis*** – This organism is found in the respiratory tract of dogs and cats. It has been associated with bite wounds.
- ***P. dagmatis*** – This organism is found in the oral cavity of dogs and cats. It has been associated with wounds following bites or animal contact. It has also been associated with endocarditis and septicemia, pneumoniae, peritonitis and bronchiectasis in COPD patients.
- ***P. aerogenes**** – This organism is part of the oropharyngeal and gastrointestinal flora of pigs, hamsters, dogs and rabbits. Rare human infections, usually following traumatic/occupational exposure, include wound infection and perinatal infection.
- ***P. bettyae**** – The reservoir for this organism is not known. It has been found in newborn infections and male and female genital tract infections as well as postpartum bacteremia and salpingitis.
- ***P. caballi**** – This organism has rarely been associated with infections following exposure to horses.
- ***P. pneumotropica**** – This organism is part of the upper respiratory tract of dogs, cats, mice and rats. Humans are usually infected by traumatic exposure. Infections include wound infections, cellulitis, bacteremia, upper respiratory tract infections, and peritonitis.

* These organisms may soon be reclassified to other genera.

Pasteurella spp., Continued

Usual susceptibility pattern

These organisms are usually resistant to first generation cephalosporins, erythromycin, clindamycin, and aminoglycosides. Rare penicillin resistant strains have been reported due to beta-lactamase production. These organisms are usually susceptible to quinolones, amoxicillin-clavulanate, tetracyclines, azithromycin and TMP-SMX.

Susceptibility method

Modified Kirby-Bauer method using Mueller-Hinton agar with 5% sheep blood incubated in ambient air at 35°C for 16-18 hours, or Etest method using Mueller-Hinton blood with 5% sheep blood incubated in 5% CO_2 at 35°C for 48 hours.

Note: If organism requires 5% CO_2 for growth, only use Etest method.
For Etest method – use 1.0 McFarland suspension in broth.

Susceptibility reporting

	CSF	Blood/ Sterile Body Site	Other (See note)	Comments
β-lactamase	*	*	*	Test but do not report
Amox-Clav			2	2nd line if β-lactamase positive
Ampicillin	✓	✓	2	2nd line if β-lactamase positive If β-lactamase positive - report amp R
Ceftriaxone	✓	✓	2	Etest method 2nd line if β-lactamase positive
Levofloxacin		✓	2	2nd line if β-lactamase positive Do not report in patients < 18 y
Tetracycline			2	2nd line if β-lactamase positive Do not report in patients < 8 y
TMP-SMX		✓	2	2nd line if β-lactamase positive

Note

Bite wound specimens

IF …	THEN …
β-lactamase negative	Add comment: *Pasteurella* species are usually susceptible to penicillin, ampicillin, amoxicillin/clavulanate, TMP-SMX, quinolones and tetracyclines. They are resistant to first generation cephalosporins (cephalexin). The treatment of choice for bite wounds is amoxicillin/clavulanate. &A261 &2132
β-lactamase positive	• Perform susceptibility testing according to reporting chart. • Report ampicillin as R • Add comment: "These organisms are resistant to first generation cephalosporins". &cep1

Respiratory or Non-bite related wound specimens

IF …	THEN …
β-lactamase negative	Add comment: *Pasteurella* species are usually susceptible to penicillin, ampicillin, amoxicillin/clavulanate, TMP-SMX, quinolones and tetracyclines. They are resistant to first generation cephalosporins (cephalexin). &A261
β-lactamase positive	• Perform susceptibility testing according to reporting chart. • Report ampicillin as R • Add comment: "These organisms are resistant to first generation cephalosporins". &cep1
Immuno-suppressed patient	• Perform susceptibility testing according to reporting chart. • If β-lactamase positive report ampicillin as R • Add comment: "These organisms are resistant to first generation cephalosporins". &cep1

Interpretation

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

Use **CLSI** interpretive document for **Pasteurella spp.**