

# Bacterial Tracheitis

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# Question 1

A 4 y/o M with no significant PMH presents to the ED with fever, stridor and cough. Mom reports being seen by PCP 1 week ago for runny nose and cough and diagnosed with viral URI. No improvement noted with nebulized epinephrine or steroids. The attending physician suspects bacterial tracheitis. Which of the following provides a definitive diagnosis of bacterial tracheitis?

# Answer Choices

- A. Radiographic imaging
- B. Serum studies including CBC, CMP, inflammatory markers
- C. Endoscopy
- D. Induced sputum gram stain and culture

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# A. Radiographic Imaging

- Steeple sign on lateral or anteroposterior neck x-rays and pulmonary infiltrates, pulmonary edema, or irregular margins of tracheal lumen on chest x-rays are common, but not universal and can lead to misdiagnosis and improper treatment.

## B. Serum studies

- Labs such as WBC, diff, electrolytes, or inflammatory markers are not adequate for diagnosis of bacterial tracheitis. Leukopenia or leukocytosis are equally common. ESR and RP are elevated in up to 70% of patients but are nonspecific.

## C. Endoscopy

- Definitive diagnosis of bacterial tracheitis requires direct visualization by direct laryngoscopy or bronchoscopy. Common findings are inflamed, exudative trachea.



## D. Induced sputum gram stain and culture

- Gram stain of exudates show non specific neutrophilia and can show multiple bacterial pathogens including contaminants. Most bacterial etiology of bacterial tracheitis is Staph aureus.



## Question 2

The same patient begins to decompensate clinically. He appears cyanotic and recheck of vital signs shows T 39.0, HR 144, BP 90/60, RR 48, O<sub>2</sub> sat 88% on non-rebreather. Which of the following answer choices is the next best step in management?

# Answer Choices

- A. Broad spectrum IV antibiotics
- B. Intubation
- C. Combined nebulized epinephrine and IV steroids
- D. Nebulized antibiotic therapy
- E. Heliox

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## A. IV antibiotics

- Although antibiotic therapy is the final treatment, stabilization of the airway is the primary initial goal in treatment, primarily in this patient that is going into respiratory failure

## B. Intubation

- Secure the airway! THEN treat the infection. In a minority of children, presentation is fulminant respiratory failure less than 24 hrs after initial symptoms and signs. Often times large exudates and/or pseudomembranes obstruct the airway requiring intubation.

## C. Combined nebulized epi and systemic steroids

- Little to no benefit in these treatments. Obstruction may be due to necrotic debris and purulent secretions as opposed to airway edema.

## D. Nebulized antibiotics

- Treatment of bacteria may halt progression but will not treat causes of obstruction, be it airway edema or sloughing exudates

## E. Heliox

- Heliox may be of some benefit but at this point the patient requires definitive management and securing of the airway.



# Sources

- Woods, C. Bacterial Tracheitis in Children: Clinical Features and Diagnosis. October 2012. [www.UpToDate.com](http://www.UpToDate.com)
- Miranda, A; Valdez, T; Pereira, K. Bacterial Tracheitis: A Varied Entity. *Pediatric Emergency Care*. 27(10):950-953, October 2011.