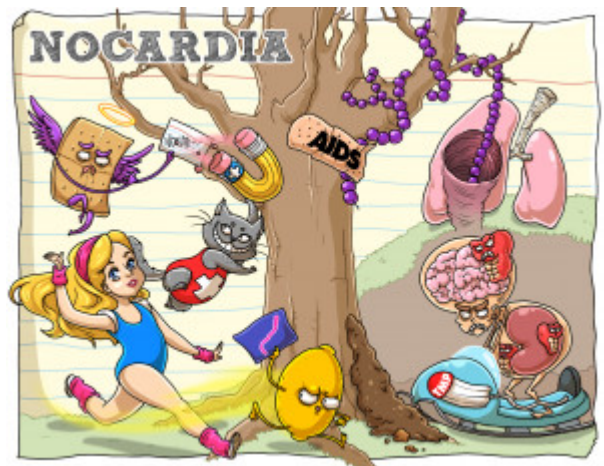


## Nocardia

Nocardia is a gram positive rod which forms beaded branching filaments that resemble fungi. It is weakly acid fast and classically presents in immunocompromised patients as lung cavitations or brain and kidney infections. It is an aerobic bacteria that typically lives in the soil. The treatment for patients found to have the infection is TMP-SMX antibiotic.



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### Characteristics

#### Aerobic

##### Aerobic-outfit

This bacteria requires oxygen to live and is incapable of living in environments with minimal oxygen content.

#### Gram-Positive

##### Graham-cracker Positive-angel

Nocardia stains positive under gram staining due to high peptidoglycan levels in the cell wall.

#### Catalase-Positive

##### Positive Cat

Nocardia is catalase positive, meaning it produces the enzyme catalase. This enzyme allows the bacteria to convert hydrogen peroxide, which is toxic, to oxygen and water.

#### Urease-Positive

##### Positive U-eraser

This bacterium has the ability to produce urease, which hydrolyzes urea in the body to ammonia. In a urinary tract infection, this means that the urine becomes more alkaline. In a lab setting, urease positive bacteria are characterized by their production of a distinct, fishy odor.

#### Acid Fast

##### Acidic-lemon Running Fast

An acid fast stain refers to the ability of acid to be washed off a bacterial prep often due to high mycolic acid content. Nocardia is weakly acid fast when stained. This property helps distinguish nocardia from actinomyces which has no acid fast properties.

#### Branching

##### Branches

Nocardia and actinomyces have long branching filaments, which help with their identification.

#### Beaded Filament

##### Beaded Rope

Nocardia is commonly described as a beaded filament, much like actinomyces.

## **AIDS/Immunocompromised**

### [Band-AIDS](#)

Nocardial infections are classically found as pulmonary infections in immunocompromised patients.

### **Soil**

#### [Soil](#)

Nocardia often originates from the soil where it is abundant.

## **Signs and Symptoms**

### **Lung Cavitation**

#### [Lung cavity](#)

Lung cavitation is a classic presentation of Nocardia infection in immunocompromised patients. This could present as chronic cough or hemoptysis.

### **Brain Abscess**

#### [Brain Abscess-guy](#)

Nocardia is known to cause brain abscesses in immunocompromised patients.

### **Kidney Abscess**

#### [Kidney and Abscess-guy](#)

Nocardia infections can also present as a kidney abscess.

## **Treatment**

### **TMP-SMX**

#### [Tampon on SMX-snowmobile](#)

The treatment for patients with nocardia infection is trimethoprim-sulfamethoxazole, an antibiotic that alters bacterial folate metabolism.