

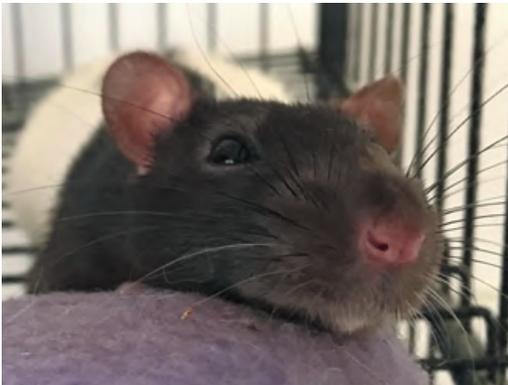
## Typical Treatment Regimes

The animal will need to be seen by a vet for assessment. Depending if the infection is new or a recurrence (chronic) different approaches will need to be made. There are four different strengths of antibiotics used in rat respiratory disease and the vet needs to determine the best one or combination.

**The first** time a respiratory disease presents the vet would usually prescribe 2-4 weeks of antibiotics. This aggressive approach is necessary to prevent the damage that occurs in chronic respiratory disease discussed in the other section of this pamphlet.

**Ongoing** respiratory infections may need a similar course of medication, however if the animal does not respond within 2-3 days of treatment the animal will need to go back to the vet as it is likely the microbes are now resistant to the prescribed antibiotic.

The vet may prescribe adjunctive medications (supportive medications) to address the other components of the disease such as a medication that helps break down mucous in the airway for easier expulsion or a medication that helps to open the airways. Pain relief is also important for the first few days of the infection as there will be some discomfort.



## Preventative Care

Elimination of Ammonia:

- Ammonia is present in the urine of rats, because they often urinate on their blankets and cushions these need to be washed regularly. It is recommended to change and clean the bedding every 2-3 days.



- Having a wire bar cage is essential, enclosures which have solid walls and poor ventilation will be a major contributor to the occurrence of respiratory disease.

Early intervention and treatment:

- The sooner that treatments are administered at first signs of respiratory disease are present the less likely that long term damage will occur. Making sure the full course of medications is administered is also essential.

Humidification:

- Water vapour or steam can help in chesty and crackly rats to help break down and eliminate mucous. The most effective way to achieve this is with a vapouriser.
- At PAWS we use a device called a Repti-Fogger, available online. Simply use a plastic container with a lid, place the rats inside and have the piped vapour directed into the container. At PAWS we do this for fifteen minutes twice daily while they are on medications for their respiratory disease.
- Alternatively, steam from a hot shower can be useful, simply have them in a small cage in the bathroom with the steam (not where they can get wet though).

# Rat Respiratory Disease

All you need to know



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**PAWS Rescue**  
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# What is Respiratory Disease?

Respiratory disease in rats comprises of an infection (usually bacterial) of the airways and lungs that causes inflammation, swelling, excessive mucous production and generalised un-wellness.

As much as 95% of rats seen in veterinary practice will have issues with respiratory disease as it is extremely common.

## Signs of a respiratory infection:

- Increased respiratory effort - utilising abdominal muscles.
- Persistent audible wheeze, sniffles and sneezing for more than 24 hours.
- Lethargy, decreased appetite, weight loss.
- A red secretion that is produced by a tear gland that is unique to rats called Porphyrins.

Respiratory infections are complicated and require aggressive treatment to prevent long term respiratory disease called Chronic Respiratory Disease (respiratory disease present for more than 2 weeks or that has recurred).



# Defenses and Initial Infection

The airways that lead to the lungs (Trachea and Bronchi) have natural defense mechanisms that when an infection is present can be interrupted or hindered.

## Ciliary Escalator:

This is a mechanism for eliminating debris, mucous and particles from the airways. The airways are lined with fine hairs called Cilia which sway in a single direction to drive any debris or particulate matter up towards the mouth.

## Mucous:

This is produced by secretory cells in the airway lining which form a layer of 'slime' over the Cilia which traps debris. The Ciliary Escalator then drives the combined mucous and debris out of the airway.

## Sneezing:

A rapid expulsion of air and debris initiated by irritation of the sensitive airways.

## Local immune system:

The airways have tissues nearby which are loaded with immune cells called macrophages primed ready for defense.

For the initial infection to occur these defense mechanisms need to be overwhelmed. A potent bacteria called Mycoplasma is capable of overcoming natural defenses. In other cases, the cause has multiple components involved that cause suppression of the airways defensive mechanisms:

- Build up of ammonia (urine).
- Overcrowding.
- Stress (surgery, heat stress, or inadequate nutrition).

# Chronic Respiratory Disease

Repeated infections has a long term affect on the airway's natural defenses and means that re-infection is more likely and more severe. Sadly, this is all too common in rats.

## Destruction of the Ciliary Escalator:

The small hairs that propel debris and mucous become damaged, sometimes irreparably so, meaning the airways are no longer able to effectively clear inhaled debris.

## Scarring of the lining of the airway:

Scar tissue that forms as a result of infections does not have the capacity to produce mucous, has no immune cells and no Cilia. The more scarring of the airway the more severe and likely respiratory infections become.

## Airway constriction:

Excessive and repeated scarring causes thickening of the lining of the airways making them narrower. This makes it harder to breathe, similar to asthmatics except that the swelling cannot be reduced.

## Medication resistant microbes:

Because chronic respiratory disease in rats often requires six to eight weeks of antibiotic treatment should the course be too short to eliminate the involved pathogens. This leads microbial resistance making these medications ineffective in the future.

## Mucous thickening and build up:

As mucous is not propelled out of the airway properly (scarring and Ciliary destruction) it becomes thicker and builds up. This further narrows the airway and is the cause of the crackly chest and wheezing.

## Emphysema:

Destruction of the air sacs in the lung (Alveoli) which causes shortness of breath.