



## Uroliths ('Urinary Stones') and Urinary Sludge

*A common health problem seen in guinea pigs and rabbits*

Guinea pigs and rabbits are often prone to developing urinary problems including the development of uroliths ('urinary stones') and urinary sludge. These conditions often develop when there is a collection of excess calcium which builds up in the urinary tract.

Sludge (dense calcium crystals) has a toothpaste-like consistency and is often difficult to remove entirely with normal urination. The sludge generally settles at the bottom of the bladder with normal urine on top, and it is usually only in the last part of urination that this gritty grey paste is passed.

Uroliths (small stones or grit) are hard 'stone like' build ups that can occur anywhere from the kidneys to the urethra. These can cause localised pain and inflammation as well as lead to a urinary blockage in some cases.

### Signs that your rabbit or guinea pig may have a urinary problem:

- Loss of litter tray habits
- Blood present in their urine
- Straining to urinate
- Hopping in and out of the litter tray excessively
- Dripping urine
- Producing lots of small amounts of urine
- Wetness around the genital area
- Urine scalding on the skin
- Sludgy urine or white urine
- Urine colour change



### What are some risk factors for these conditions?

#### Insufficient water intake

If the guinea pig or rabbit isn't taking in enough water, then the urine becomes more concentrated, which can lead to an increased risk of problems over time.

#### Inactivity

An animal that sits all day may not drink as often or urinate as frequently. An active guinea pig or rabbit will consume more water and urinate more often, which helps to flush the bladder. In the wild, both guinea pigs and rabbits live in large open areas and are constantly





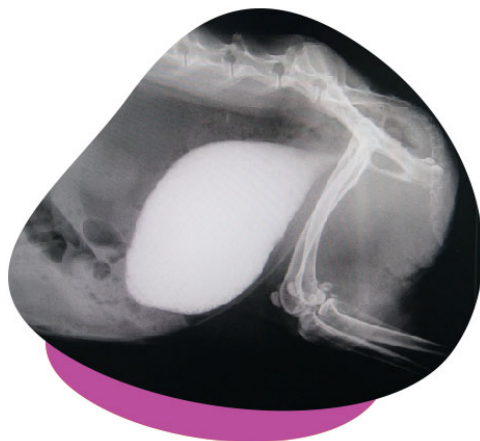
urinating to mark their territory. This helps to excrete urine and prevents the settling of calcium, ultimately minimizing the risk of sludge and stone formation. The larger area you can provide for your pet the better.

#### Lack of appropriate toilet areas

If rabbits and guinea pigs are confined in small spaces and the toileting area or cage is not kept clean, they may tend to hold urine in longer and thus urinate less frequently.

#### Kidney disease

Kidney disease can cause a change in the way calcium is excreted.



#### Bladder disease

Bladder disease can cause a change in the lining of the bladder. Infections, tumours, uroliths or sludge build up can cause inflammation of the bladder wall.

#### Diets excessively high in calcium

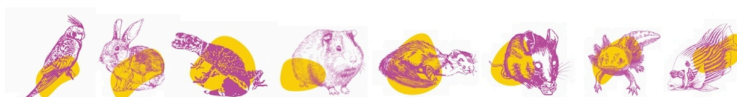
The body absorbs what calcium it needs from the diet and then excretes the excess through the gastrointestinal tract and urinary system. If excessive amounts are provided in the diet then this can lead to more calcium being excreted by the urinary system. If this is sustained for a long period of time it can predispose your pet to sludge and urolith formation in some cases.

#### Inadequate access to sunshine

The Vitamin D absorbed from natural sunlight helps to regulate the calcium metabolism in your rabbit or guinea pig.

#### Pain

Pain from other medical conditions can lead to improper posture when urinating, which can prevent urine from being appropriately voided.





### How do you treat uroliths and sludge build up?

In most cases uroliths need to be surgically removed as they do not respond well to medical treatments. Sludge build up can often be managed with a combination of medications as well as address the underlying cause of the problem. Bladder flushes are often performed to remove the initial build up.



### How do you prevent bladder stones, sludge and grit from developing?

A few tips to prevent uroliths or sludge developing are provided below:

#### Weight management

Overweight pets are often unable to assume the correct stance to urinate so it is best to keep your pet in a healthy weight range.

#### Feed a healthy level of calcium in the diet

**Decrease or eliminate** the amount of pellets, muesli and grain mixes in the diet. This will help with weight loss (essential in an overweight patient) and reduce excessive calcium intake.

**Increase** the amount of low calcium fresh green leafy veggies fed to your pet.

- Limit vegetables high in calcium
- Feed oaten or timothy hay. Avoid feeding lucerne hay (which is higher in calcium)

Below is a small list of vegetables that are higher and lower in calcium (measured per 100g). Feeding a variety of fresh foods daily from the list is advisable but try to avoid feeding foods from only one end of the scale.

5 Highest Vegetables	5 Lowest Vegetables
210 mg — Spinach, Mustard	9 mg – Green Capsicum
190 mg — Turnip Greens	9 mg— Red Capsicum
187 mg — Dandelion Greens	14 mg— Cucumber
138 mg — Parsley	19 mg— Endive
135 mg — Kale	23 mg – Dutch Carrots





Encourage your pet to drink more:

- Wetting down the vegetables or grass offered
- Frequently changing the water so that it is fresh
- Presenting water in various means: bowl, dripper, water fountain
- Providing multiple water bowls
- Changing the taste of the water with natural, unsweetened fruit juice (apple, pear, banana, pineapple, cranberry juice and give just enough for the rabbit to taste it)



Increase the number of litter trays in the exercise area

The more litter trays around, the more this encourages your rabbit (and to a less extent your guinea pig) to urinate. Increased urination promotes frequent emptying of the bladder and prevents 'settling' of the urine.

Encourage more exercise

Increase the area and time in which your pet can exercise. This gentle exercise will help weight loss, tone muscles and prevent mobility issues. Exercise will also encourage your rabbit or guinea pig to urinate more often. Four hours of free-ranging exercise is recommended daily.

If you are concerned about your rabbit or guinea pig's urinary health, or you would like more information on this topic, please don't hesitate to contact us.

