

E.coli - Myths and Misunderstandings

Many of us are using pathology to get a diagnosis of problems in our birds. We do this so that we can make informed decisions on the way to treat disease or how to prevent disease getting into our aviaries. Our intentions are good. What is causing alarm to me is the amount of misinformation and outright garbage being fed to the birdkeeper by people (including veterinarians) who should know better!

The classic example is the rubbish that is being peddled as "fact" about the bacteria E.coli. Lets look at this bacteria and try and get some things straight. For the sake of accuracy, the facts presented here have been checked and verified by a senior veterinary pathologist with a large Government laboratory.

What is an E.coli and where does it live?

E.coli. (*Escherichia coli*) is a member of a group of bacteria that live in the gut of most animals. Mammals have E.coli. in their intestines as part of their normal bacteria, this is why the Water Board measures E.coli. levels in drinking water. The number of E.coli. present give a guide as to the amount of faeces (of various animals) entering the water supply. The presence of the E.coli. itself is not a major concern, it is simply an indicator of contamination.

In birds this bacteria may or may not be a normal part of their gut. For example Psittacines (parrots) do not normally carry E.coli., whereas pigeons and poultry have it as a normal inhabitant of the intestine.

There are many strains of this bacteria, some can move themselves (motile) others cannot. Some have capsules around them, others do not. It is very difficult to know which of the many types of E.coli. that are found by simple cultures in the laboratory are a problem in birds.

The strains of E.coli that affect man and other mammals may not be a problem in birds! They seem to have a different set of E.coli. that act differently in their intestines.

Even the presence of a nasty form of the bacteria in the gut of a parrot does not automatically mean

it will get sick. There are many factors that determine if disease will occur. The lab test can only determine the presence of the organism - not its effect on the bird.

What does an E.coli infection look like in my birds?

It depends on how the bird got the infection. Most cases involve the bird swallowing the bacteria from contaminated food or water. Then if it is a nasty strain the bird may get an enteritis (infection in the gut) with diarrhoea as the common sign. However the symptoms vary widely with some of these infections leading to sudden death.

Septicaemia (bacteria in the blood) caused by E.coli can lead to kidney damage, infection in the joints and liver damage.

Hens may get E.coli. infections of their uterus, which will lead to chronic infertility. Chicks with an E.coli infection in the navel will often get a yolk sac infection that is fatal. Typically a bird with an E.coli. infection will look fluffed, become lethargic, stop eating,, lose weight and may have diarrhoea.

The vast majority of E.coli that get into a bird are passed uneventfully. In a survey done by a Dr Flammer (*Avian Diseases 32: 79 - 83, 1988*) it was found that from population of clinically normal birds (mostly cockatoos), up to 84% of the birds could have E.coli. detected in swabs taken from their cloaca - these were normal birds not sick birds. What is the value of a flock screen from healthy birds that shows the presence of an E.coli? - the answer is nil.

It is important to realise that the bacteria are in the environment all the time and that only a small percentage of them are capable of causing disease and that the birds own defence mechanisms can take care of most cases of infection.

How do I find E.coli. in my birds?

You cannot look down a microscope at a dropping sample and say that the bird has E.coli. Even if the slide is stained, you cannot know that the bacteria you are looking at is an E.coli.

You cannot send dropping samples to the lab (unless specially preserved) and know that what they grow is actually what is in the bird. E.coli. can

multiply quite happily in the unpreserved specimen.

If proper transport swabs are used, the lab may be able to grow bugs that were actually in the bird - but are they significant? As we have discussed, all E.coli. are not the same, it takes a specialist laboratory to type these bacteria into those known to produce disease and those that are just passing through.

OK then, how do I get a proper diagnosis of E.coli?

If birds are ill and a transport swab is used to collect a fresh, uncontaminated dropping sample, and the lab grows predominantly E.coli. and other underlying causes have been excluded, then you can be satisfied that it is the cause of your problem.

The most accurate way of diagnosis is to get a series of swabs collected at a post mortem examination that grow pure (or predominantly) cultures of E.coli.

This coupled with the changes in the tissues and the symptoms in the aviary gives you the best diagnosis. This is not a "two minute" diagnosis. Some of our best pathologists have spent years working with these bacteria and they still do not have an easy way of getting a diagnosis - how can you expect to get the correct answer by sending a lump of pigeon poop, wrapped in plastic, via the mail to a laboratory that hasn't the ability to sort the dangerous from the innocuous.

I just want to clean out my birds to prevent problems.

Lets get real. You are talking about a bacteria that exists in all mammals and many birds as a normal organism - how do you expect to rid your birds of it! In a vain attempt you could use large amounts of antibiotic continuously. But even then you would suppress not eliminate the organism, and you would create antibiotic resistance problems as well as yeast and fungal overgrowth (not to mention the possible long term toxicity problems from the antibiotic).

If an individual bird is ill and it appears to have an infection then by all means treat with antibiotics. If there is illness sweeping through your aviary then of course you should begin medication to stop the spread of the disease. But do not for a minute think that if you treat your flock in May with the wonder drug for E.coli that they cannot get a outbreak of E.coli. enteritis in June! If only the world was that simple.

If you want to promote good health in birds you need:

- good hygiene
- good nutrition
- good water supply
- good aviary management
- good quarantine
- ventilation.

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