

Chicken Intestinal Health



This poster is only a summary and not a completely inclusive list. Intestinal diseases and lesions may be caused by a multitude of factors, if a problem is suspected please contact your veterinarian.

ABNORMAL



Unhealed navel

The navel is swollen, inflamed and may have a scab. In the abdomen the yolk sac is not properly absorbed, is congested, may contain solid pieces and may be a lighter yellow or dark colour.

Possible causes: *E. coli*, Staphylococci, *Pseudomonas* species, *Proteus* species



Yolk Sacculitis



Air Sacculitis

Abdominal air sacs/peritonium are thickened and may be covered with thin film of fibrous material. Foamy white mucus may also be present in the internal space of the air sac or possibly accompanied by the heart and/or liver being covered with a thin film of white fibrous material.

Possible causes: *E. coli*, *Mycoplasma* species, *Chlamydomphila psittaci*, avian influenza, Newcastle disease



Drop (pendulus) Crop

The crop is swollen and filled with feed. The bird may continue to eat but feed transit is impacted.

Possible causes: *Candida albicans*, heat stress, genetics, engorge eating



Crop Mycosis

The walls of the crop are thickened and have focal raised, corrugated and white areas that cannot be easily removed. In severe cases there can be shallow ulcers and/or dying tissue that is easily removed.

Possible causes: *Candida* species, *Trichomonas* species



Gizzard Impaction

The gizzard may be swollen and "rock" hard. Usually, there would appear to be no feed in the intestine. The gizzard and the intestine may also be tinted green with bile from the gallbladder if the bird has not been eating feed.

Possible causes: Litter eating, foreign material, contaminated feed, electrolyte imbalance, mycotoxins (e.g. Fumonisin)



Enlarged Proventriculus

The proventriculus is swollen with thin muscle walls. This may also be accompanied by a small gizzard possibly with ulcers.

Possible causes: Excessive histamine amounts, finely ground diet, transmissible viral proventriculus, mycotoxins



Mycotoxins

Deep lesions may appear in the proventriculus, gizzard and intestine. Swelling and bleeding may be noted in more severe cases. The liver and kidneys may also be swollen and discoloured. In less severe cases, there may be general intestinal irritation.

Possible causes: Contaminated grains used as foodstuffs, high humidity and moisture in food storage area

UPPER INTESTINE



E. acervulina - LS 3 - Outside Gut

Transverse white to grey striations are visible on the intestinal walls from the outside and inside of the upper intestine. The intestinal walls may also be thickened. The transverse striations contain many of the microscopic *E. acervulina* parasites. *Eimeria mitis* may present similar lesions but this species is less common.

*LS = lesion score (Johnson and Reid, 1970)



E. acervulina - LS 3 - Inside Gut

MIDDLE INTESTINE



Worms

Flat worms (tape worms) or large round worms (Ascarids).



Necrotic Enteritis

The intestine is swollen with thin walls covered in brownish membranes. The intestinal contents are a mucus foul-smelling brown fluid.

Possible causes: *Clostridium perfringens*



Deep Ulcers

Ulcers are found on the intestinal surface and may be oval or round. In severe cases, the intestine may contain blood (mimic the look of coccidiosis) and/or the abdominal wall membrane may be swollen.

Possible causes: Ulcerative enteritis, mycotoxins
Note: Similar lesions can be found in the upper intestine with or without large gray to black spots. This is known as Focal Duodenal Necrosis.



E. necatrix - LS 4 - Outside Gut

Swelling and thickening of the intestinal wall with many white to yellow spots. There is also congestion, hemorrhage, blood and necrosis; there may be bloody feces. This species of *Eimeria* usually is seen in longer-lived chickens. The white to yellow spots contain many of the microscopic *E. necatrix* parasites.

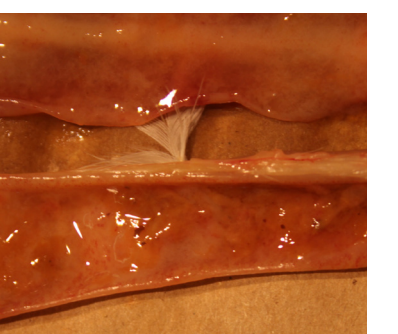


E. necatrix - LS 4 - Inside Gut



E. maxima - LS 4 - Outside Gut

Swelling and thickening of the intestinal wall with many small red spots. The intestinal content may have high mucus levels or be bloody in severe cases.



E. maxima - LS 3 - Inside Gut

LOWER INTESTINE, CECA, BURSA OF FABRICIOUS



E. brunetti - LS 3 - Outside Gut

Swelling in the lower intestine. The outside of the lower intestine looks like it has vertical folds. In severe cases there may be ladder-like hemorrhages in the lower intestine as well as cheesy-like debris.



E. brunetti - LS 4 - Inside Gut



Cecal Worms

Small, thread-like worms that are not considered a major threat on their own but may be a vector for the parasite *Histomonas meleagridis*.



White Cecal Core

Small to large cheesy looking cecal cores (usually filled with fibrin) that are usually white but can be slightly yellow, gray or green looking. The cecal walls are usually swollen.

Possible causes: *Histomonas meleagridis*, *E. tenella*, *Salmonella pullorum*.

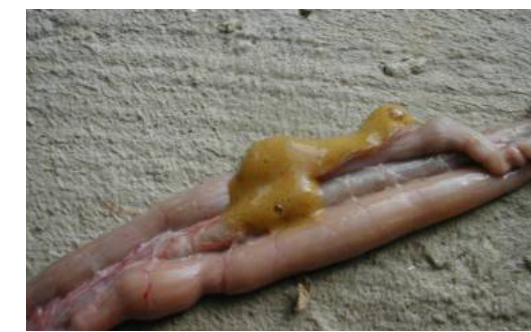


E. tenella - LS 4 - Outside Ceca

White cecal cores are often seen in addition to hemorrhaging during the early stages of infection. The cecal core would be filled with the parasites.



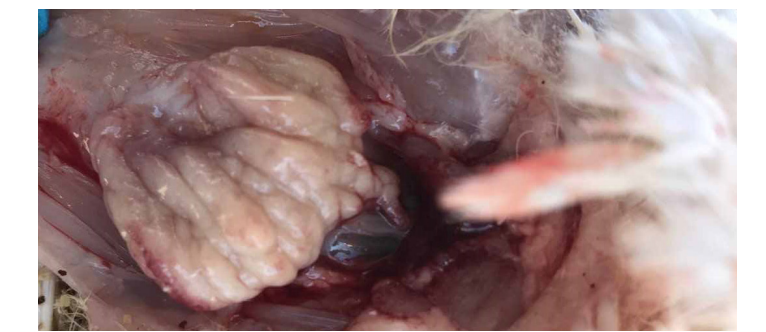
E. tenella - LS 4 - Inside Ceca



Caramel Tinged Mucus in Ceca

Ceca looks normal from the outside, but when the ceca is opened it has light brown/orange droppings with bubbles.

Possible causes: Improper protein digestion early in the intestinal tract, a high level of fat in the diet, microbial challenge



Swollen Bursa

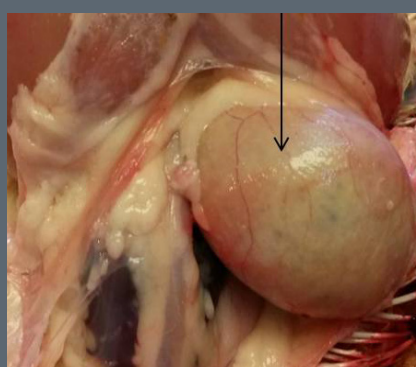
The bursa is swollen with fluid within the membranes and there may be some small hemorrhages. During a severe infection cheese-like material may be found inside the bursa, sometimes accompanied by increased mucus in other parts of the intestine.

Possible causes: Infectious bursal disease, *Cryptosporidium baileyi*

NORMAL



Air Sac



Crop



Proventriculus



Gizzard



Small Intestine and Meckel's Diverticulum



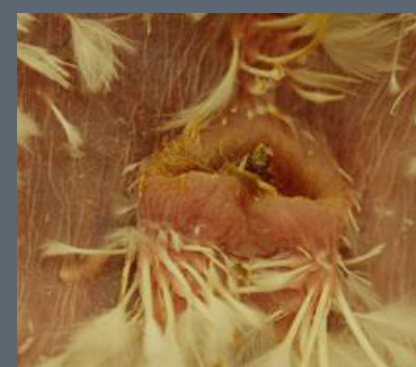
Lower Intestine and Ceca



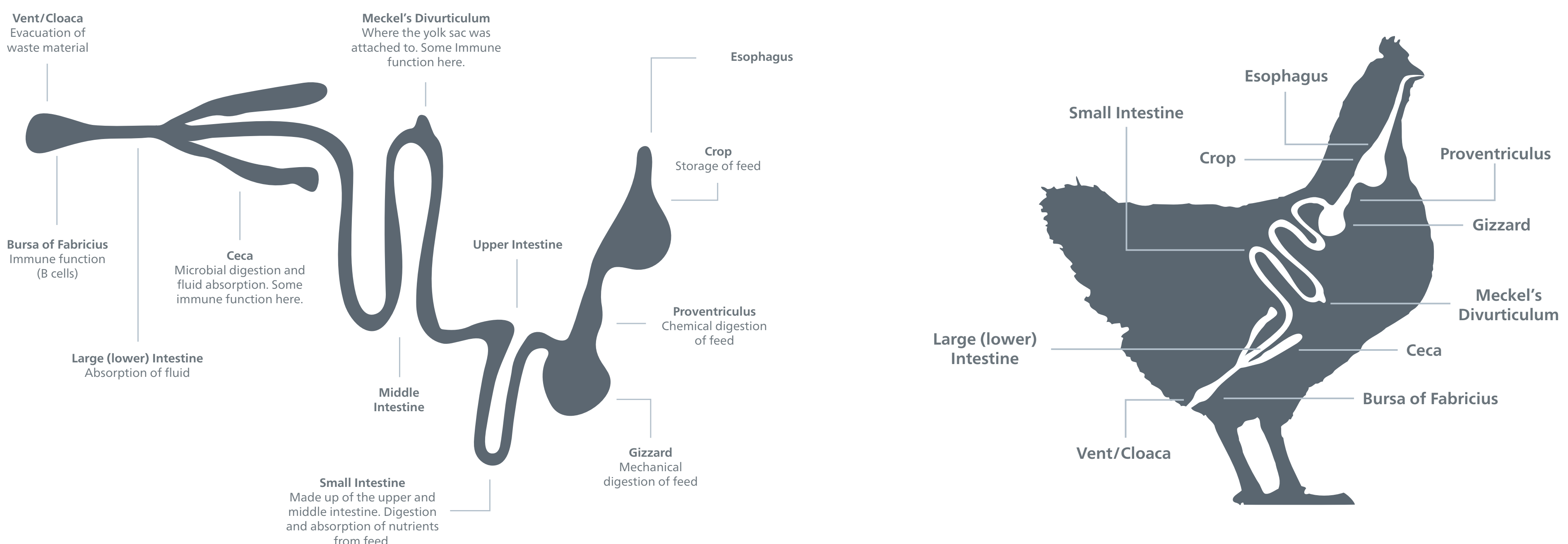
Healthy Bursa Inside



Yolk Sac (should disappear by ~ 3 days old)



Vent



References used:
1. Avian Disease Manual, 7th edition. American Association of Avian Pathologists. Edited by: M. Boulianne with M.L. Brash, B.R. Charlton, S.H. Fitz-Coy, R.M. Fulton, R.J. Julian, M.W. Jackwood, D. Ojick, L.J. Newman, J.E. Sander, H.L. Shivaprasad, E. Wallner-Pendleton, P.R. Woolcock.
2. The Merck veterinary manual.
3. Atlas of Avian Diseases. E. Bucles, J. Ruiz, A. Torres, A. Banda, S. Mondal and B. Lucio-Martinez.
4. Pannom Poultry Services (*E. acervulina* and *E. maxima* pictures).
5. Drs. Marina Brash, Mike Joyce, Dulmelis Sandu, Kayla Price personal pictures.
6. Johnson, J. and Reid, W.M. Anticoccidial drugs: Lesion scoring techniques in battery and floor-pen experiments with chickens. Exp Parasitol. 28: 30-36.