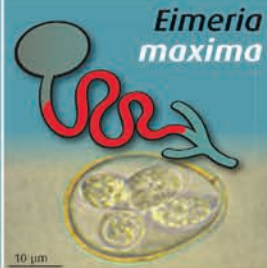
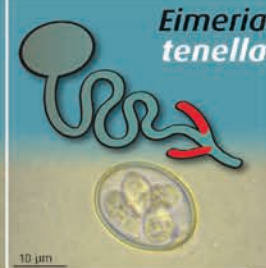
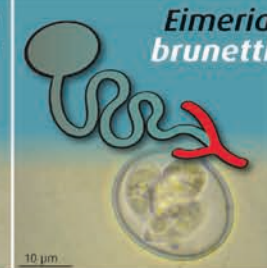








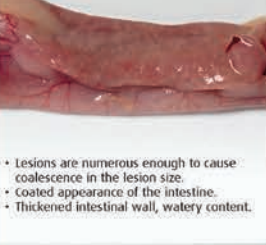

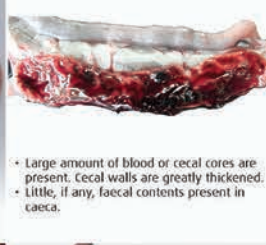
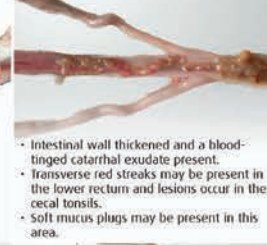



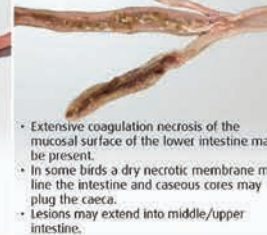
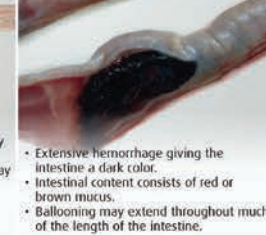


# Lesion scoring in practice

	<i>Eimeria acervulina</i>	<i>Eimeria maxima</i>	<i>Eimeria tenella</i>	<i>Eimeria brunetti</i>	<i>Eimeria necatrix</i>
<b>Score 1</b>	 10 µm	 10 µm	 10 µm	 10 µm	 10 µm
					
	<ul style="list-style-type: none"> <li>Scattered white plaque-like lesions.</li> <li>Can be seen on serosal or mucosal intestinal surfaces.</li> <li>Maximum 5 lesions per square centimeter.</li> </ul>	<ul style="list-style-type: none"> <li>Small red petechiae may appear on the serosal side of the midintestine.</li> <li>No ballooning or thickening of the intestine; small amounts of orange mucus may be present.</li> </ul>	<ul style="list-style-type: none"> <li>Very few scattered petechiae on cecal wall.</li> <li>No thickening of the cecal wall.</li> <li>Normal cecal contents.</li> </ul>	<ul style="list-style-type: none"> <li>No gross lesions but parasite is present in scrapings.</li> </ul>	<ul style="list-style-type: none"> <li>Small scattered petechiae and white spots are easily seen from the serosal side.</li> <li>Little, if any, damage is apparent on the mucosal surface.</li> </ul>
<b>Score 2</b>					
	<ul style="list-style-type: none"> <li>Lesions are much closer together, but not coalescent.</li> <li>No thickening of the intestinal wall.</li> <li>Normal content.</li> </ul>	<ul style="list-style-type: none"> <li>The serosal surface may be speckled with numerous red petechiae and the intestine may be filled with orange mucus.</li> <li>Little or no ballooning of the intestine.</li> <li>Thickened intestinal wall.</li> </ul>	<ul style="list-style-type: none"> <li>Numerous petechiae. Noticeable blood in the cecal contents.</li> <li>Somewhat thickened cecal wall.</li> <li>Normal cecal contents.</li> </ul>	<ul style="list-style-type: none"> <li>Intestinal wall may appear greyish.</li> <li>The lower portion may be thickened.</li> <li>Salmon colored flecks, sloughed from the intestine are present.</li> </ul>	<ul style="list-style-type: none"> <li>Numerous petechiae and white spots are visible on the serosal surface.</li> <li>Slight ballooning confined to the mid gut area may be present.</li> </ul>
<b>Score 3</b>					
	<ul style="list-style-type: none"> <li>Lesions are numerous enough to cause coalescence in the lesion size.</li> <li>Coated appearance of the intestine.</li> <li>Thickened intestinal wall, watery content.</li> </ul>	<ul style="list-style-type: none"> <li>Intestinal wall is ballooned and thickened. Roughened mucosal surface.</li> <li>Intestinal contents are filled with pinpoint blood clots and mucus.</li> </ul>	<ul style="list-style-type: none"> <li>Large amount of blood or cecal cores are present. Cecal walls are greatly thickened.</li> <li>Little, if any, faecal contents present in caeca.</li> </ul>	<ul style="list-style-type: none"> <li>Intestinal wall thickened and a blood-tinged catarrhal exudate present.</li> <li>Transverse red streaks may be present in the lower rectum and lesions occur in the cecal tonsils.</li> <li>Soft mucus plugs may be present in this area.</li> </ul>	<ul style="list-style-type: none"> <li>Extensive hemorrhages into lumen of intestine.</li> <li>The serosal surface is covered with red petechiae and/or white plaques.</li> <li>The serosa is rough and thickened with many pinpoint hemorrhages.</li> <li>No normal intestinal contents.</li> <li>Ballooning extends over lower half of the small intestine.</li> </ul>
<b>Score 4</b>					
	<ul style="list-style-type: none"> <li>Coalescing of the lesions is complete and no distinctive lesions may appear in the duodenum.</li> <li>Thickened &amp; roughened intestinal wall.</li> </ul>	<ul style="list-style-type: none"> <li>Numerous petechiae.</li> <li>Bloody intestinal contents.</li> </ul>	<ul style="list-style-type: none"> <li>Severe bleeding &amp; thickened cecal wall.</li> <li>Unopened caeca is distended with blood at the distal end. The caeca might be contracted and shortened.</li> </ul>	<ul style="list-style-type: none"> <li>Extensive coagulation necrosis of the mucosal surface of the lower intestine may be present.</li> <li>In some birds a dry necrotic membrane may line the intestine and caseous cores may plug the caeca.</li> <li>Lesions may extend into middle/upper intestine.</li> </ul>	<ul style="list-style-type: none"> <li>Extensive hemorrhage giving the intestine a dark color.</li> <li>Intestinal content consists of red or brown mucus.</li> <li>Ballooning may extend throughout much of the length of the intestine.</li> </ul>

Lesionscoring according to Johnson and Reid (1970, Exp. Parasitology)  
Pictures kindly provided by Poulpharm and Jean-Michel Reperant

## Total Mean Lesion Score (TMLS)

- Total of scores for *E. acervulina*, *E. maxima* and *E. tenella* per chicken
- Sum of totals divided by number of chickens analysed (minimum 5)
- As a practical example:

However, many influencing factors should be taken into account:

- Importance of respective species
- Severity of the lesions
- Season
- Others

If TMLS > 1,5 = problem

If TMLS > 1,0 = take species into consideration for further actions

Example calculation of Total Mean Lesion Score (TMLS)				
Birds	Lesion Scores			Total
	<i>Eimeria acervulina</i>	<i>Eimeria maxima</i>	<i>Eimeria tenella</i>	
1	0	0	1	1
2	1	1	0	2
3	0	1	2	3
4	0	0	3	3
5	0	1	1	2
<b>Total</b>	<b>1/5</b>	<b>3/5</b>	<b>7/5</b>	<b>11</b>
	0.2	0.6	1.4	11/5
TMLS = Total / number of animals				2,2

