<table>
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<th>Animal Group(s) Affected</th>
<th>Transmission</th>
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<td>Mammals, mostly ungulates</td>
<td>Fecal/oral mainly from grazing on contaminated pastures.</td>
<td>Weight loss, progressive weakness, anemia, diarrhea, failure to thrive, ventral edema.</td>
<td>Large range with some cases mild, but infection can be fatal in animals with concurrent debilitating conditions</td>
<td>Anthelmintic treatment based on parasite susceptibility, pasture rotation, use of mixed species exhibits</td>
<td>Routine fecal examination and deworming based on these findings, promote good general health of the animals</td>
<td>Yes, but, with proper precautions, risk is low.</td>
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**Fact Sheet compiled by:** Rebecca Bloch  
**Sheet completed on:** 9 June 2011; updated 30 October 2012  
**Fact Sheet Reviewed by:** Thomas Craig; Holly Haefele  
**Susceptible animal groups:** Ungulates, other mammals  
**Causative organism:** Trematodes, cestodes, nematodes, acanthocephalans  
**Zoonotic potential:** A risk of contracting *Trichinella* spp., *Spirometra* spp., or *Taenia* spp. is present from consumption of undercooked pork or beef, or eating watercress with *Fasciola* species attached. The public health significance is low and can be avoided with proper food safety.  
**Distribution:** Worldwide, though the particular parasite of concern in a given area will vary by location, temperature, and moisture conditions.  
**Incubation period:** Varies by parasite and environmental conditions and often larvae become dormant during unfavorable conditions both in the host and environment.  
**Clinical signs:** These presentations depend on the type of infection, and the age, previous experience with the parasite, and health status of the animal, and may be absent in an otherwise healthy animal. In more severely affected animals, clinical signs may include weight loss, progressive weakness, anemia, diarrhea, and hypoproteinemia with development of subcutaneous edema especially in the intermandibular space and ventral abdomen.  
**Post mortem, gross, or histologic findings:** Thin body condition with depletion of internal fat stores. Adult parasite presence in the organ it inhabits with possible associated inflammation of this tissue. Anemia and fluid in body cavities may also be seen.  
**Diagnosis:** Sample 5-10% of animals in a herd situation, and more may be necessary based on housing and predisposition to being affected. Fecal egg counts can be performed quantitatively with tests like the McMaster’s test for animals housed in larger groups or can be performed qualitatively with a simple float test for small numbers of animals. Quantitative fecal exams performed before and after deworming for a comparative fecal egg count reduction, fecal larval cultures, larval culture sensitivities, and pasture larval counts are recommended in areas facing large amounts of parasite resistance to anthelmintic medications.  
**Material required for laboratory analysis:** Fresh fecal samples are optimal, if they can be analyzed within 1-2 hours, but otherwise refrigerate at 4°C. Samples kept in anoxic conditions do not develop and are useful for prolonged periods of time if cool. Refrigerated samples can be shipped over a 24-48h period to an outside lab packed with ice or other coolant, but do not freeze samples.  
**Relevant diagnostic laboratories:** Most parasitology laboratories are capable of running larval cultures to speciate the parasite.
**Treatment:** Supportive care for animals that are debilitated by this infection. Anthelminthic administration based on parasite level and susceptibility is recommended. Anthelminthic resistance is a problem in some areas, an example being *Haemonchus contortus* in Texas. Drug alternatives such as copper oxide wire particles and bioactive condensed tannins can be used. The best time to make use of routine deworming (i.e., not clinically affected animals) is during the “off-season” when the parasites are in the host and not on the ground. Off season timing is determined by the specific parasites being targeted.

**Prevention and control:** Options for prevention include: pasture rotation; housing dead end hosts with definitive hosts (i.e., equids housed with ruminants); timely removal of feces to prevent eggs from developing into infective third stage larvae; use of elevated feeding stations or feed troughs to remove food sources from the ground; and reduction of numbers or elimination of intermediate hosts. Routine monitoring of fecal parasite levels through fecal exams during peak larval parasite times of spring and summer, comparative fecal egg count reduction, fecal larval cultures, larval culture sensitivities, and pasture larval counts are recommended in problem situations. Characterization of the abundance and type of parasites present at post-mortem examination should be performed. Additional monitoring and treatment for neonates, lactating females, and other animals under higher stress conditions should be considered. More recent avenues of control include the following. Creation of refugia by allowing for survival of some parasites through treatment of only the most affected animals to create a pool of parasites that are not resistant to the commonly used anthelmintics. These parasites can dilute the genetics from anthelminthic resistant parasites. Use of a nematode-trapping fungus, *Duddingtonia flagrans*, administered orally to reduce developing larvae numbers once they are deposited in feces. Work is being undertaken to create vaccines for specific parasites to reduce the impact of infection but these are not commercially available.

**Suggested disinfectant for housing facilities:** Remove fecal material promptly from enclosures. Appropriate sanitation and disinfection should be performed.

**Notification:** None

**Measures required under the Animal Disease Surveillance Plan:** None

**Measures required for introducing animals to infected animal:** To prevent introduction of a novel or resistant parasite to the resident population, quarantine with repeat fecal examinations is recommended. If possible the new animal should be housed on a dry lot or other surface that can be completely cleaned to prevent reinfection following anthelminthic treatment. Repeat fecal examination is recommended 7 days following treatment with at least two negative samples before the animal is introduced to pasture.

**Conditions for restoring disease-free status after an outbreak:** Re-establish a parasite control plan based on culture and parasite load. Remove as much fecal material from the environment as possible.

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**References:**