

## Health Advisory:

### Human Paragonimiasis Following Ingestion of Raw Crayfish from Rivers in Missouri

April 30, 2010

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**Health Alerts** convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

**Health Advisories** provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

**Health Guidances** contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

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**FROM: MARGARET T. DONNELLY  
DIRECTOR**

**SUBJECT: Human Paragonimiasis Following Ingestion of Raw Crayfish from Rivers in Missouri**

The Missouri Department of Health and Senior Services (DHSS) is alerting medical providers about the occurrence of six confirmed and probable human paragonimiasis cases in Missouri. Three of these cases have been reported since October 2009. The most recent case was reported in early April 2010. Since human paragonimiasis is considered to be very rare in North America, six cases reported to Missouri DHSS in the past three years are alarming. All of these patients had ingested raw crayfish from rivers in Missouri.

#### Background:

Human paragonimiasis is a food-borne parasitic infection caused by the trematode *Paragonimus* (the lung fluke). Infection in humans mainly occurs by ingestion of raw or undercooked freshwater crabs or crayfishes. Paragonimiasis caused by *Paragonimus westermani* is common in East Asia where it is associated with ingestion of raw or marinated crabmeat. Rare cases of paragonimiasis have been reported in North America. North American cases are caused by *P. kellicotti*, a parasite that is common in crayfish in the central USA including Missouri.

#### Clinical presentation:

Paragonimiasis typically presents with fever, cough, and eosinophilia. Some patients have hemoptysis, and the clinical presentation can mimic tuberculosis. Pulmonary symptoms and fevers typically develop one or more months after ingestion of raw crabs or crayfish. The parasites sometimes migrate to ectopic locations such as subcutaneous tissue (presenting as migratory nodules) or even the central nervous system (with headache, seizures, or visual symptoms).

Patients with paragonimiasis often have abnormal chest exams with rales, rhonchi, or signs of pleural effusion. Eosinophilia is common (>5% eosinophils or absolute count >500). Most also have abnormal chest radiographic findings with focal infiltrates and/or pleural effusions. Bronchoalveolar lavage (BAL) and pleural fluid from patients with pulmonary paragonimiasis typically show increased eosinophils.

#### Diagnosis:

Clinical diagnosis requires awareness of the illness and a high index of suspicion. Patients with the triad of fever, cough, and eosinophilia should be asked about raw crayfish ingestion. In patients with consistent history and fever, cough, eosinophilia, and/or hemoptysis, diagnosis of paragonimiasis should be considered. Chest X-rays in such patients may show focal infiltrates and/or pleural effusions. The parasite can migrate to the CNS, and suspected cases with headaches, seizures, or visual symptoms should have CNS imaging studies performed. Parasitological diagnosis by detection of parasite eggs in sputum or stool is specific but insensitive. Serology can be useful to confirm a clinical diagnosis of paragonimiasis. The Centers for Disease Control and Prevention (CDC) performs an immunoblot assay that is highly sensitive (96%) and specific (99%) for *P. westermani*, the species native to Asia. However, the sensitivity of this test in patients with *P. kellicotti* has not been established due to rarity of this illness in North America.

**Treatment:**

Paragonimiasis is treated with praziquantel (25 mg/kg orally three times daily for two days). Although all of the Missouri patients required hospitalization, they all had excellent clinical responses to praziquantel with improved symptoms within days and resolution of eosinophilia over a period of weeks to months.

DHSS urges persons who develop fever, cough, or hemoptysis after ingestion of raw crabs or crayfish to seek medical care. Medical Providers who know of other proven or suspect cases are encouraged to report these cases to their local public health agency (LPHA), or to DHSS at 866-628-9891 or by fax at 573 526-0235. Dr. Philip Lo at DHSS, ([Philip.Lo@dhss.mo.gov](mailto:Philip.Lo@dhss.mo.gov); (573) 526-1369) is available for consultation.

DHSS advises that crabs and crayfish should be thoroughly cooked prior to consumption to avoid the risk of paragonimiasis. DHSS has distributed posters to campgrounds and canoe rental businesses to warn the public about the danger of eating raw crayfish. Questions can be directed to the LPHA, or to DHSS' Bureau of Communicable Disease Control and Prevention at (573) 751-6113, or 866-628-9891.

**Additional information at:**

1. <http://www.journals.uchicago.edu/doi/full/10.1086/605534>
2. <http://www.dpd.cdc.gov/dpdx/HTML/Paragonimiasis.htm>
3. <http://cmr.asm.org/cgi/content/abstract/22/3/415>