

<b>DATE:</b>	2022 April 18
<b>TO:</b>	All Health Care Providers
<b>FROM:</b>	Alberta Precision Laboratories (APL) – Public Health Laboratory
<b>RE:</b>	<b>Specimen collection for diagnosis of AE (alveolar echinococcosis)</b>

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### Key Message

- Alveolar echinococcosis (AE) presents as a continuously growing tumour-like liver mass, with local or metastatic spread to distant organs. If untreated/inadequately treated, mortality rate approaches 90% within 10-15 years of diagnosis.
- Treatment success depends on early detection and correct laboratory diagnosis
- Definitive diagnosis depends on quality of the sample which is essential for treatment outcomes. The standardized protocol for specimen collection (below) will assure all are aware of necessary requirements.

### Background

- Alveolar echinococcosis (AE) is a life-threatening zoonosis caused by *Echinococcus multilocularis*, an intestinal tapeworm of carnivorous animals (foxes, coyotes and dogs). Humans are infected by accidental ingestion of eggs excreted in animal feces, directly or through contaminated soil.
- Only one case of human AE has previously been described in Canada (1928), but 21 cases were diagnosed in Alberta alone 2013 – 2022 (highest in the country). This is due to the emergence of a novel mutant strain indigenous to our province, similar to virulent E4 strain from Europe
- AE is clinically similar to cancer, and requires stage-based multidisciplinary management, as it exists for cancer. The disease is treatable by surgery and chemotherapy. Specific laboratory tests in combination with high performance imaging techniques promise substantial improvements in early diagnosis, essential for curative treatment, as well as in staging and follow-up. Definitive diagnosis is obtained by histopathology and detection of *E. multilocularis* nucleic acid sequences in tissue samples. The disease is treatable by surgery and chemotherapy but early and correct lab diagnosis is essential for good patient outcomes See [Alveolar Echinococcosis \(E. multilocularis\) - ProvLab \(albertahealthservices.ca\)](https://www.albertahealthservices.ca/ae), and [Alberta Precision Laboratories | Lab Services \(albertahealthservices.ca\)](https://www.albertahealthservices.ca/lab-services) for more information.

### Collection protocol:

**ALL *E. MULTILOCULARIS* PCR REQUESTS MUST BE APPROVED BY MICROBIOLOGIST ON CALL (PAGE VIA 780 407 8822) UNLESS PREVIOUSLY ARRANGED VIA CONSULTATION**

Optimal specimen requirements: collect TWO separate samples

1. Formalin preserved specimen and
2. Fresh (unpreserved) tissue

### **For CNBs (Core needle biopsies):**

Biopsy should be performed transhepatically through a healthy margin of liver tissue, preferably 2 cm, before approaching the parasitic tissue. This is to minimize the risk of contamination of abdominal cavity  
All specimens should be collected from the lesion edge while avoiding clearly necrotic area - or making sure that the biopsy material includes only a small portion of necrotic area



- **Formalin** preserved specimen:
  - Send material to pathology as per usual protocol
  - Clinical history on requisition must state “*Echinococcus multilocularis* investigation – Anatomical Pathology”
- **Fresh** (unpreserved) tissue
  - Collect a separate sample in small amount of saline (enough to cover the sample with room to spare).
  - Send directly to microbiology lab immediately. Note – specimen must be marked “*Echinococcus multilocularis* investigation-PCR”

**For resection material (wedge resection, lobectomy etc.) - this includes autopsy specimens as well**

- Submit **Formalin** preserved specimen
  - Send material to pathology as per usual protocol
    - specimen has to be clearly identified as “*Echinococcus multilocularis* investigation - Anatomical Pathology”
- Send **Fresh** (unpreserved) tissue
  - Collect a small (0.5x0.5 cm if possible) portion of the affected tissue in a clean container with small amount of saline
  - Send tissue directly to microbiology lab as soon as possible.
    - Specimen must be labelled “*Echinococcus multilocularis* investigation-PCR”

**Actions required**

- Refer to the above protocol whenever clinical diagnosis of AE is considered and share the information with relevant stakeholders when necessary
- Keep open lines of communications with Provincial Laboratory of Public Health and Pathology department– this will ensure the integrity of the sample is protected throughout the process
- *For urgent queries regarding PCR page Microbiologist on Call (780-4078822)*

**Inquiries and feedback may be directed to**

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