

October 8, 2019

Clinical Specimen Collection and Shipment Guidance for Lung Injury Associated with E-Cigarettes, or Vaping

Clinicians are urged to collect and submit a variety of clinical specimen matrices to the Wisconsin State Laboratory of Hygiene (WSLH) for subsequent testing. This testing may be performed in-house or by other qualified laboratories, e.g. the Centers for Disease Control & Prevention. The following instructions for collection, storage, and shipment of collected samples will assure optimal specimen integrity.

Collection and Storage

Blood-based Matrices

- Please note that plasma is the preferred sample matrix for testing.
- Collect a total volume of 8 mL blood using EDTA (lavender top) tubes. Mark the tubes by collection order, i.e. 1, 2, 3 etc.
- Store whole blood under refrigeration (1-10°C) prior to shipment. Do not freeze the whole blood.
- Plasma samples are also acceptable when present. Plasma stored frozen, -20° C or lower.
- Serum is not a preferred matrix. However, if collected, serum cannot be collected using serum separator tubes; the gel can interfere with analysis. Serum specimens should also be stored frozen.

Urine

- Please collect at least 50 mL of urine, using a screw-top container.
- Freeze the urine specimens as soon as possible.
 - If possible, -70° C or storage in dry ice is optimal.
- Store the urine frozen prior to shipment.
- Note if the specimen collection deviates from “clean catch,” e.g. via catheterization.

Bronchoalveolar Lavage (BAL)

- Please collect at least 5 mL of sample, if possible.
- Sterile containers are preferred.
- Specimens should then be stored at 20° C or lower.

Tissue, including fresh lung tissue, formalin-fixed (wet) tissue, and Formalin-fixed Paraffin-embedded (FFPE) lung tissue blocks

- When possible, submission of formalin-fixed wet lung tissue is encouraged.
 - Important lipid testing can be performed on tissue that has been fixed in formalin but cannot be performed following FFPE processing (paraffin blocks).
 - Store these specimens at room temperature.
 - Record the date and time the specimen was placed in formalin.
- Fresh-frozen unprocessed lung tissue will also be accepted. Freeze specimens and store at -20° C or lower.
- FFPE samples, in cassettes, are also accepted and should be stored at room temperature.
- Residual ThinPrep vials (methanol fixation) will also be accepted.
- Glass slides that were used for clinical diagnosis from any submitted cases are requested for microscopic examination. These slides will not be destroyed or consumed.

Autopsy tissue

- Because the pathology of acute lung injury is often systemic, the samples from the following organs may be informative:
 - Lung parenchyma, trachea, and bronchi
 - Respiratory tissues should be well-sampled
 - Lung parenchyma should be sampled from multiple locations, including multiple lobes and central and peripheral sections
 - Liver
 - Kidney



- Heart
- Any other major organ sampled, especially any organs with gross or microscopic pathology
- Wet tissue in formalin is preferred for respiratory tissues
- Wet tissue or FFPE tissue blocks may be submitted
- Record the date and time the specimen was placed in formalin.
- Glass slides that were used for clinical diagnosis from any submitted cases are requested for microscopic examination. These slides will not be destroyed or consumed.

Packaging

Blood-based Matrices, urine, and BAL specimens

- Individual specimens should be placed separately in leak-proof secondary containers, typically zip-lock type bags, with adequate absorbent material to absorb the complete volume of liquid in the sample.
- Multiple samples can then be placed in a sturdy outside container, typically an insulated cardboard shipper.
- **With the exception of whole blood**, all samples in this category should be shipped frozen.
 - Dry ice is preferable, but adequate cold packs will suffice.
- Include one WSLH clinical vaping sample request form for each patient. If multiple sample matrices are submitted, just check multiple boxes on the form.
 - If multiple containers of a specific matrix are shipped, please note that.
- If **whole blood** is being submitted, it should be shipped cold but not frozen. All other shipment instructions in this section apply.

Formalin-fixed and FFPE specimens

- Individual specimens should be placed separately secondary containers, typically zip-lock type bags.
- Secondary containers for wet samples should contain adequate absorbent material and must be leak-proof.
- Multiple samples can then be placed in a sturdy outside container, typically an insulated cardboard shipper.
- Include one WSLH clinical vaping sample request form for each patient. If multiple sample types are submitted, just check multiple boxes on the form.
- Samples may be shipped at room temperature. If exposure to elevated temperatures during shipment is a concern, cold packs may be added.

Frozen, unprocessed lung tissue

- Individual specimens should be placed separately secondary containers, typically zip-lock type bags.
- Specimens can then be placed in a sturdy outside container, typically an insulated cardboard shipper.
- Samples should be shipped frozen. Dry ice is preferable, but adequate cold packs will suffice.
- Include one WSLH clinical vaping sample request form for each patient.

Specimen Shipment

- Specimens should be shipped to the following address:

Wisconsin State Lab of Hygiene
 Attn: Noel Stanton / Meshel Lange
 Chemical Emergency Response Dept.
 2601 Agriculture Dr.
 Madison WI 53718

- If your facility has an established process for send-outs to WSLH, that may be utilized for these specimens.
- Similarly, if you regularly use a courier for WSLH transport, e.g. Gold Cross, they may be utilized.
- If you have no established mechanism for transport to WSLH, you may choose the commercial carrier of your choice.
- Please note that if you ship specimens by air, additional packaging and labeling requirements apply.

For questions on tissue sampling, including autopsy tissue, please contact:

Joshua Faulkes or Dr. Kaitlin Sundling
 (608)-219-8226
Joshua.Faulkes@slh.wisc.edu ksundling@wisc.edu

For all other questions please contact:

Noel Stanton
 (608)-224-6251
Noel.Stanton@slh.wisc.edu

Meshel Lange
 (608)-263-6428
Meshel.lange@slh.wisc.edu