

# How to safely collect pus samples from buboes of patients suspected to be infected with bubonic plague

September 2016

## Step 1: Before entering patient room, assemble all equipment

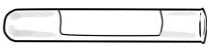






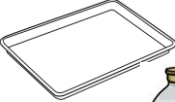
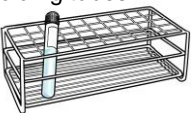


This document will focus only on the collection of pus from buboes. Note, that ALL suspected plague patients should have the following samples collected:

- Pus from buboes
- Serum

### Step 1a: Assemble equipment for collecting pus from buboes

- Collection kit (if available) 
- Plague Rapid Diagnostic Test (RDT) (if available)

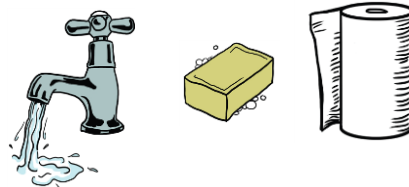
If a collection kit is not available:

- Laboratory sampling tube to be used for RDT (plastic or glass tube) 
- Single-use sampling device (18 gauge needle and syringe) 
- Cary-Blair transport medium tube 
- Swab 
- Skin antiseptic solution: 70% isopropyl alcohol 
- Gauze pads 
- Adhesive bandage 
- Tray for assembling buboes pus collection tools 
- Rack for holding tubes 
- Saline solution or PBS solution (if available) 
- Durable marker for writing on laboratory samples 



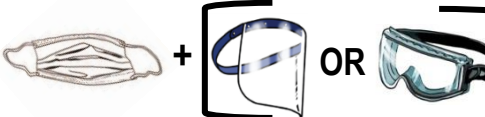
### Step 1b: Assemble equipment for preventing infections

For hand hygiene use

- Alcohol-based handrub **OR**
- Clean running water, soap and disposable (paper) towel



Personal Protective Equipment (PPE)

- Several pairs of disposable gloves (non-sterile, ambidextrous, single layer)
  - One pair for pus collection
  - Additional pairs as a replacement if they become damaged or contaminated
- Long-sleeved, cuffed gowns 
- Footwear: closed-toe shoes with puncture resistant soles
- Face protection: face mask + [face shield **OR** goggles] 

Waste management

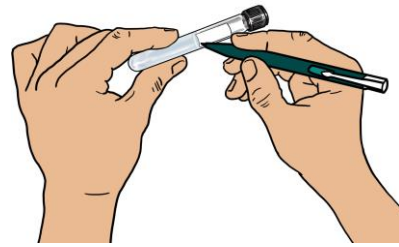
- Leak-proof and puncture resistant sharps container
- Two leak-proof infectious waste bags
  - one for disposable material (destruction)
  - one for reusable materials (disinfection)



## Step 1: Before entering patient room, assemble all equipment

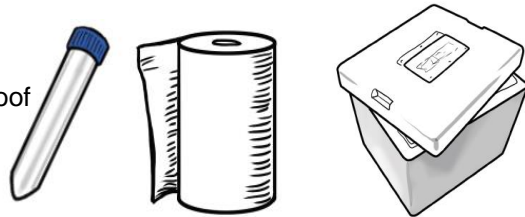
### Step 1c: Fill out patient documentation

- Label Cary-Blair transport medium tubes with date of collection, patient name, and his/her identifier number.
- Complete the necessary laboratory form and epidemiological questionnaire.
- If several patients have to be sampled in the same place or during the same investigation, create a line list. One patient per line. The list should include: patient name, identifier number, sex, age (birth date), clinical information: symptoms, date of onset, date sample was collected, type of sample taken.

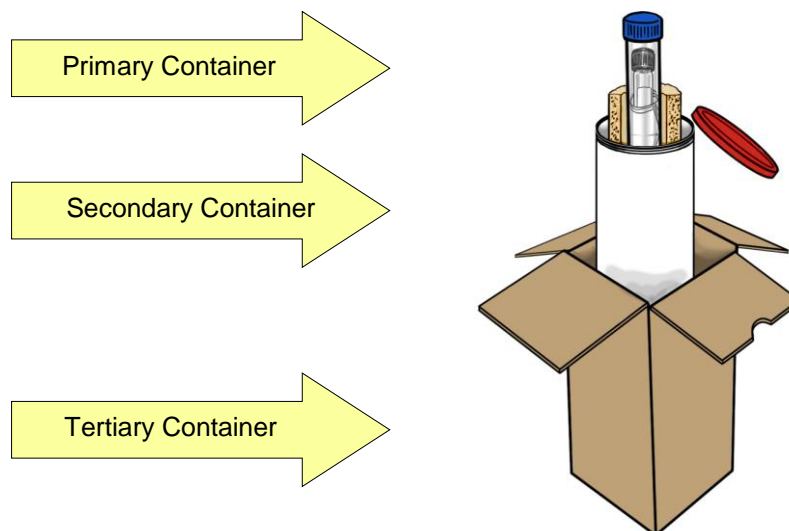


### Step 1d: Assemble equipment for packaging of samples

- Plastic leak-proof packaging container
- Disposable (paper) towels
- 0.5% Chlorine solution for disinfecting plastic leak-proof packaging container
- Cooler or cold box, if sample requires refrigeration



**For the shipment of samples to the National Reference Laboratory follow sample shipment packaging requirements** (Follow WHO documents about how to safely ship human samples from patients suspected to be infected with highly infectious pathogens)



**Important:** A designated assistant wearing gloves should be available to help you. This person should stand outside the patient room. He/She will help you prepare the sample for transport and will provide any additional equipment you may need. He/She will monitor you while you remove the personal protective equipment.

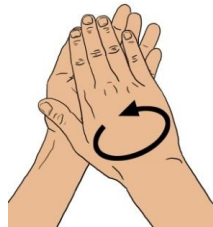
## Step 2: Put on all personal protective equipment (PPE)

**DO NOT ENTER THE PATIENT AREA IF YOU DO NOT HAVE ALL PROTECTIVE GEAR ON  
REMOVE ALL PERSONAL ITEMS (jewellery, watches, mobile phones, pens, etc.)**

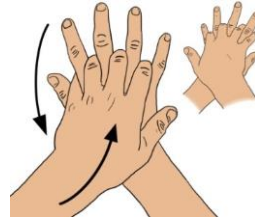
**Step 2a: Perform hand hygiene.** Duration of the entire procedure: **40-60 sec** if handwashing with soap and water; **20-30 sec** if handrubbing with an alcohol-based solution.



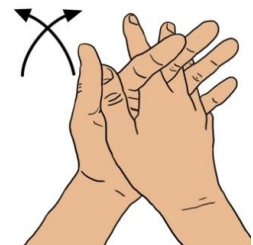
**Wet hands with water and enough soap to cover all hand surfaces**



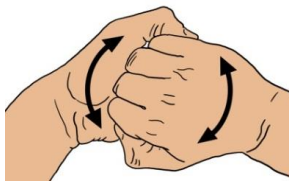
**Rub hands, palm to palm**



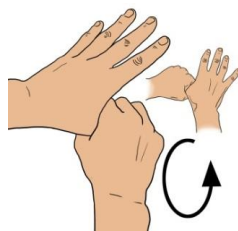
**Right palm over left dorsum with interlaced fingers and vice versa**



**Palm to palm with fingers interlaced**



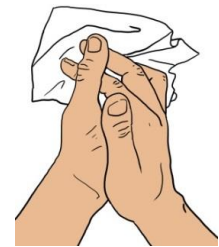
**Back of fingers to opposing palms with fingers interlocked**



**Rotational rubbing of left thumb clasped in right palm and vice versa**

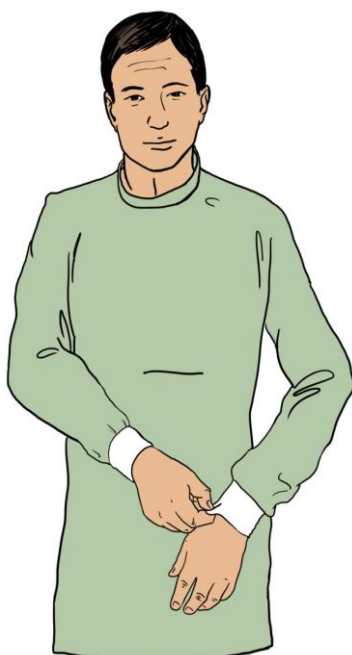


**Rinse hands with water**



**Dry hands thoroughly with single use towel**

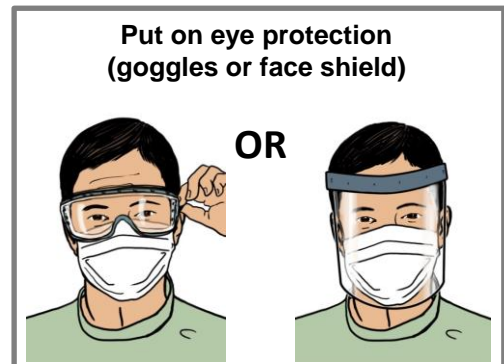
### Step 2b: Put on a gown



### Step 2c: Put on face protection



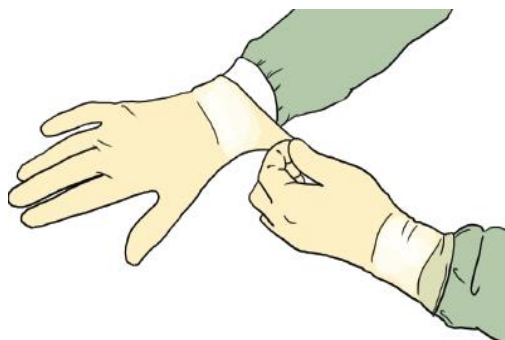
**Put on a medical mask**



**Put on eye protection (goggles or face shield)**

**OR**

### Step 2d: Put on gloves (over gown cuffs)



**Step 2e: You are ready to enter the patient room**



## Step 3: Collect the pus sample from the buboes of the patient

### Step 3a: Prepare room

- ✓ Bring all equipment for pus collection and waste management into the patient room as you enter
- ✓ Set up infectious waste bags and leak-proof and puncture resistant sharps container for use
- ✓ Set up pus collection equipment in a place that is easy to access



Destruction

Disinfection

### Step 3b: Identify and prepare the patient

- ✓ Introduce yourself to the patient and explain what you will do, and why the pus collection is necessary
- ✓ Make sure that this is the correct patient from whom you wish to take the pus sample



### Step 3c: Locate the bubo and disinfect the skin over and around the bubo with the alcohol pad



### Step 3d: Aspirate the PBS solution (from collection kit) or saline solution into syringe

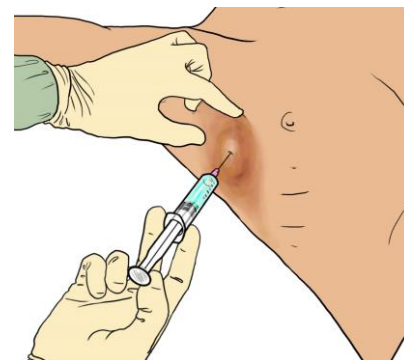
- ✓ This will help make aspiration of the bubo pus easier.



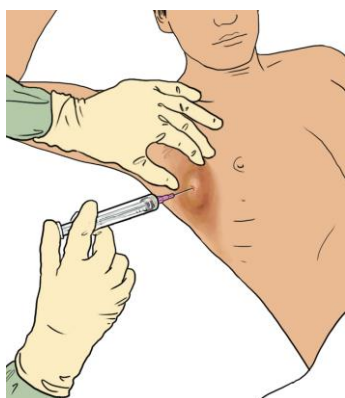
### Step 3e: Immobilize the bubo with your gloved hand



### Step 3f: Put the needle into the bubo at a perpendicular angle

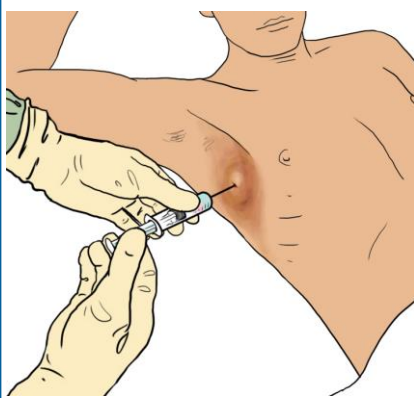


### Step 3g: Inject a few millilitres of saline solution or PBS solution into bubo

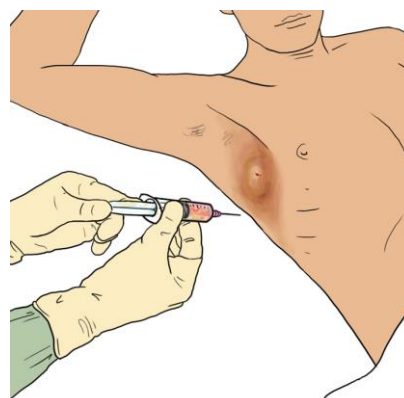


### Step 3h: Aspirate the pus

- ✓ Collect a minimum of 2 millilitres of bubo pus.



### Step 3i: Withdraw the needle gently



## Step 4: Prepare sample for Rapid Diagnostic Test Kit (RDT) analysis or transportation to the National Reference Laboratory

**Step 4a: If plague RDT kit is available, perform diagnostic analysis as per RDT manufacturer's instructions and proceed to step 4d**

✓ If no RDT kit is available, continue to step 4b and prepare sample for shipment.

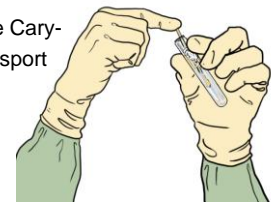


**Step 4b: Transfer pus from the syringe to the swab using the syringe and needle. DO NOT remove the needle**

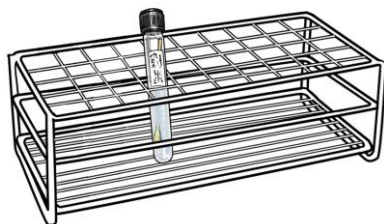


**Step 4c: Once bubo pus is on the swab, push the swab into the Cary-Blair transport medium tube. Be sure to transfer remaining pus from syringe into the same Cary-Blair transport medium tube.**

- ✓ Leave swab in the Cary-Blair medium.
- ✓ Cut or break off the remaining swab that extends from the Cary-Blair medium tube
- ✓ Tightly close the top of the Cary-Blair transport medium tube



**Step 4d: Place Cary-Blair transport medium tube on rack**



**Step 4e: Put needle into leak-proof and puncture resistant sharps container**

**If the sharps container DOES NOT HAVE a needle remover:**

- ✓ Put the needle and holder into a sharps container
- ✓ Do not remove the needle from the holder
- ✓ **Do not reuse the needle**
- ✓ **Do not recap the needle**

**If the sharps container DOES HAVE a needle remover:**

- ✓ Remove the needle following instructions on the sharps container
- ✓ Put the holder into the infectious waste bag for disinfection

\* Follow health facility procedures on waste destruction



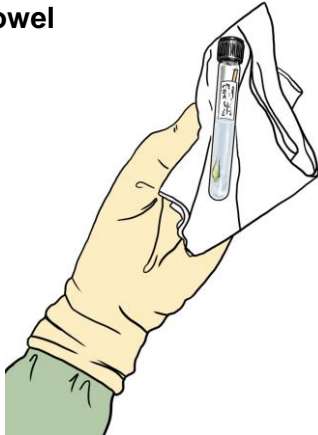
## Step 5: Return to patient to bandage puncture site

**Step 5a: Put adhesive bandage over the puncture site**



## Step 6: Prepare sample for transportation to the National Reference Laboratory

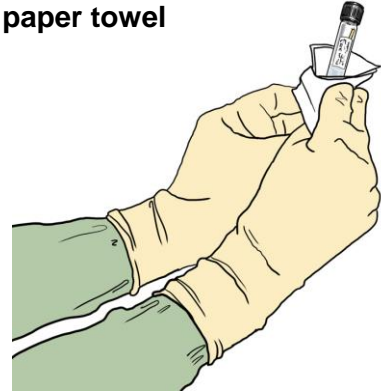
**Step 6a: Take the Cary-Blair transport medium tube from the tray and wipe the tube with a disposable paper towel**



**Step 6b: Place all items that came into contact with patient and bubo pus into the infectious waste bag for destruction**



**Step 6c: Protect the sample from breaking or leaking during transport by wrapping the Cary-Blair transport medium tube in a paper towel**



**Step 6d: Ask the designated assistant to approach the patient room, without entering**

- ✓ This person should have gloves on
- ✓ This person should come close to you holding the open plastic leak-proof packaging container.
- ✓ This person should **not** enter the patient room



**Step 6e: The person who has collected the pus sample should put the wrapped tube of pus into the plastic leak-proof packaging container**

- ✓ Be careful not to touch the leak-proof plastic tube with your gloves while transferring the wrapped tube of pus to the leak-proof plastic tube



**Step 6f: Have the gloved assistant tightly close the top of the plastic leak-proof packaging container**

- ✓ Disinfect the outer side of the plastic leak-proof packaging container 0.5% chlorine solution





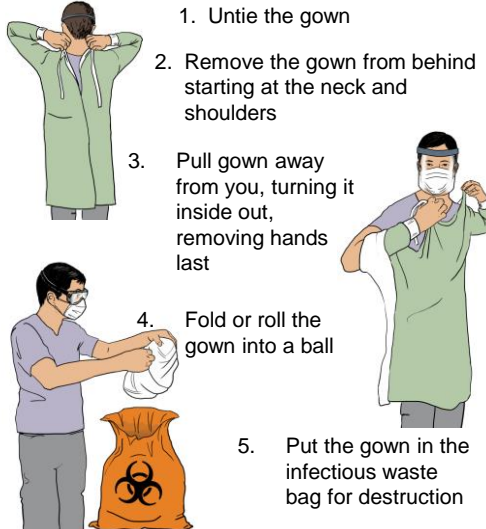





**Step 6g: The assistant removes gloves and performs hand hygiene**

**Note: The sample is now ready for shipment to the National Reference Laboratory. Follow sample shipment packaging requirements for infectious substances.**

- Store samples at room temperature for up to 24 hours. If you need to store the sample for longer periods before shipping, store between 4-8° Celsius.
- Do not freeze pus samples.
- Pus samples and serum samples can be shipped in the same package.

**Quick Tip:** Ensure that patient is undergoing prompt treatment without waiting for lab results and that clinical management is appropriate according to plague guidelines

## Step 7: Remove Personal Protective Equipment (PPE)

<p><b>Step 7a: Remove the gloves</b></p> <ol style="list-style-type: none"> <li>1. Hold the outer edge of the first glove and peel it off</li> <li>2. Hold the first glove in the gloved hand and drag a bare finger under the second glove</li> <li>3. Remove second glove from the inside, creating a "bag" for both gloves and put in the infectious waste bag for disposal</li> </ol> 	<p><b>Step 7b: Perform hand hygiene</b></p> <ul style="list-style-type: none"> <li>✓ Alcohol-based handrub solution (20-30 sec) <b>OR</b></li> <li>✓ Soap and water (40-60 sec)</li> </ul> 	<p><b>Step 7c: Remove the gown</b></p> <ol style="list-style-type: none"> <li>1. Untie the gown</li> <li>2. Remove the gown from behind starting at the neck and shoulders</li> <li>3. Pull gown away from you, turning it inside out, removing hands last</li> <li>4. Fold or roll the gown into a ball</li> <li>5. Put the gown in the infectious waste bag for destruction</li> </ol> 
<p><b>Step 7d: Perform hand hygiene</b></p> <ul style="list-style-type: none"> <li>✓ Alcohol-based handrub solution (20-30 sec) <b>OR</b></li> <li>✓ Soap and water (40-60 sec)</li> </ul> 	<p><b>Step 7e: Remove face protection</b></p> <p>When wearing a face shield    When wearing goggles</p> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>✓ Remove face shield from behind</li> <li>✓ If face shield is reusable, place it in an infectious waste bag for disinfection</li> <li>✓ If face shield is disposable, place it in an infectious waste bag for destruction</li> <li>✓ Remove goggles from behind</li> <li>✓ If reusable goggles, place it in an infectious waste bag for disinfection</li> <li>✓ If disposable goggles, place it in an infectious waste bag for destruction</li> </ul> 	<p><b>Step 7f: Perform hand hygiene</b></p> <ul style="list-style-type: none"> <li>✓ Alcohol-based handrub solution (20-30 sec) <b>OR</b></li> <li>✓ Soap and water (40-60 sec)</li> </ul> 
<p><b>Step 7g: Remove medical mask</b></p> <ul style="list-style-type: none"> <li>✓ Remove the mask from behind, starting with the bottom strap</li> <li>✓ Place it in an infectious waste bag for destruction</li> </ul> 	<p><b>Step 7h: Perform hand hygiene</b></p> <ul style="list-style-type: none"> <li>✓ Alcohol-based handrub solution (20-30 sec) <b>OR</b></li> <li>✓ Soap and water (40-60 sec).</li> </ul> 	<p><b>Quick Tips</b></p> <ul style="list-style-type: none"> <li>▪ Place all reusable equipment into a separate infectious waste bag for disinfection</li> <li>▪ Dispose of hazardous waste according to facility protocols</li> </ul> <p><b>When collecting bubo pus samples from multiple patients</b></p> <ul style="list-style-type: none"> <li>▪ Change gloves between each patient</li> <li>▪ Wash hands between each patient</li> <li>▪ <b>DO NOT WASH GLOVED HANDS</b></li> <li>▪ <b>DO NOT REUSE GLOVES</b></li> </ul>

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