

## DIY Autopsy

By Jane Sandstrom

Autopsies—the very heart of a forensic pathologist’s work; intriguing, somewhat gruesome, maybe a little scary for adolescents, yet captivating and important for forensic science students to understand. There are many television programs that air limited scenes of an autopsy, though most of them don’t show actual autopsy procedures, so the viewer is left to use their imagination. I developed this lesson/laboratory activity to introduce students to the autopsy process and have them take part in an autopsy to replace imagination with knowledge. It has become a standard lesson for the pathology unit in my forensic science course, with over 600 students over the past eight years.

This lesson can be taught in a 75-minute period. If you have a 50-minute class, you might divide the lesson into two parts over a two-day period. I start the lesson by showing students a 14-minute segment of “Autopsy” with Dr. Michael Baden to help them understand the autopsy process. The original video, aired on HBO, is an hour-long production, with segments of actual autopsy footage dispersed between famous cases Dr. Baden has solved. While the entire video is quite good, I’ve condensed the autopsy segments together so students can see the autopsy footage from start to finish without breaks. While the video is graphic, it is meant to educate rather than horrify. I tell my students to disregard the dirge music and blue light the video is filmed in; these are only production gimmicks that are not part of a real autopsy. In all these years of viewing, I’ve not had a student leave the room or become sick afterwards. [Note: A quick search on Amazon for “Autopsy” will yield numerous videos on the subject; just be sure you purchase a real autopsy video, not a fictitious movie.]

The next step of the lesson is to have students perform the autopsy using a cadaver. In this case, it should be called a “necropsy” because students use a rodent as their autopsy subject. For many years, my rodent subjects came from friends and neighbors whose cats caught voles throughout the Alaskan summers. We have an abundant vole population, so finding lab supplies has been easy. Dead voles are placed into Ziploc bags and stored in the freezer until ready to use. An overnight thaw in the refrigerator is the only preparation needed for this lab. At parent/teacher conferences, a forensic science student’s parent introduced himself as the head veterinarian for the local university and asked if I ever needed frozen rodents for experiments. These laboratory mice were part of a breeding program whose population had exploded. Now I have numerous bags of frozen mice in my freezer ready to use as necropsy subjects. I’m not sure where other teachers can find enough dead small rodents to meet their classroom requirements, but a call to an exterminator, pet shop, university, or biological supply company may yield unexpected results. In the many years I have done this activity, only one student opted out because they strongly opposed the use of animals in any experimentation. No parent has raised concern about this laboratory activity.

For the autopsy, students work together in small groups (2 to 4), since there is usually one student who is really interested in getting involved, another who is quite content to assist, and a third who can barely watch. Students wear goggles, disposable gloves, chemical splash aprons, and use standard dissecting trays and tools. Using the laboratory worksheet as a guide, the group note-taker sketches all bodily injuries seen on the exterior of the body (as is done during an autopsy). Another student then cuts a Y incision to look inside the body and begins to remove organs. Students weigh the heart,

lungs, and kidneys. They check the stomach for the last meal, and determine the cause of death. As a conclusion, the group writes up a summary paragraph outlining the injuries noted and final analysis of cause of death. (For voles, the cause of death is usually a sharp-force injury to the neck due to a cat's tooth puncture. For laboratory mice, the cause of death is undetermined, yet students realize the lack of injuries to the neck or ribs along with noticeable singed hair on the nose suggest poisoning/gassing).

At the end of the laboratory activity, rodents are put into plastic bags and disposed of in the garbage. Tools and dissecting pans are soaked in a mild Lysol solution for 10 minutes to disinfect, and laboratory tables are wiped down with a Lysol solution, even with using a newspaper layer on their workspace. Students wash their hands with soap and water.

Students are really excited about performing this lab activity, especially after viewing the autopsy video. They feel this is much more than a simple dissection activity—they are forensic pathologists examining the body for injuries and cause of death. Now when they see a television program with a limited autopsy scene, their experience paints an accurate picture of the steps and process used to document a unknown death.

Names \_\_\_\_\_

## Medicolegal Autopsy

The autopsy provides the forensic pathologist with an opportunity to examine the body externally and internally to determine what wounds and injuries were sustained and to determine the cause of death. While normally performed, you will not be taking toxicology samples or removing the brain.

1. Draw an outline of the body. Examine the outside of the body and record the location of any markings, discolorations, injuries, artifacts, or unusual aspects of the body on your diagram.
  
2. Determine the weight and height of the body.  
Weight \_\_\_\_\_ g                      Height \_\_\_\_\_ cm
  
3. Put the body on its back and make a “Y” incision on the body from the collarbone to (almost) the anus.
  
4. Examine the internal sections of the body:
  - a. Are there any broken ribs? \_\_\_\_\_
  - b. Remove the heart and weigh = \_\_\_\_\_g
  - c. Remove the lungs and weigh= \_\_\_\_\_g
  - d. Remove the stomach and note the contents along with amount:  
Weight of stomach = \_\_\_\_\_g  
Contents:
  
  - e. Open the neck section. Look for bruising, blood clots, and ligature markings at the windpipe. Record your observations.
  
  - f. Weigh each kidney:  
Left kidney \_\_\_\_\_g    right kidney \_\_\_\_\_g
  
5. After examining the internal organs, put them all back in the chest cavity. Normally, samples would be taken of each organ and the incision would be sewn up with needle and thread.
  
6. Write an opinion as to the cause of death for this body on the back of this sheet. For example, “It is my opinion that John Smith, a 30-year old male, died as a result of a gunshot wound to the chest. The bullet, a 38-caliber which was recovered from the body, passed through the right lung and heart causing massive internal hemorrhage. No other injuries or significant natural disease process was found at the time of autopsy”.