In order to have a meaningful surveillance program for chronic wasting disease (CWD), it is essential that the brain be removed and that the proper area(s) of the brain be submitted for testing. While whole brain specimens are preferred from animals showing clinical signs suggestive of CWD, collection of brain stem including the obex area (Fig.1), is a valid alternative, especially when whole brain collection is not practical. Any of several different instruments or “tools” can be used to collect the brain stem without opening the cranium. A “Downsized” version of a special tool designed in Great Britain for collection of brain specimens from cattle, a bent spatula, a bent plastic picnic knife, and other tools have facilitated removal of the brain stem from the cranial vault cavity via the foramen magnum without having to open the calvarium. This tool or other bent instrument is used in conjunction with other instruments to perform this brain stem removal technique. Other instruments used in this technique include a double-edged “brain” knife, scissors, forceps, and a postmortem knife.

The initial step is to disarticulate the head from the carcass at the atlanto-occipital joint using the postmortem knife. Place the disarticulated head on the table with the foramen magnum facing you. With scissors and forceps, remove as much of the dura mater as is necessary to expose the medulla and cerebellum. The cerebellum is severed from its attachment to the brain stem by inserting the blade of the brain knife rostrally into the cranial cavity through the foramen magnum, parallel with the dorsal surface of the brain stem but ventral to the cerebellum, until the tip of the knife contacts bone. Using a side-to-side slicing motion the cerebellum is freed from its attachment to the medulla and then pushed aside with the knife blade. The next step is to cut the caudal cranial nerves (CN 5-12) and then the knife is removed.

The head can be placed either “right side up” or “upside down” depending on individual preference. Next, the brain stem segment can be removed by carefully inserting the spatula blade (turned laterally) through the foramen magnum and pushing the blade rostrally to the point just at the level of the pontine-mesencephalic junction. The shaft of the tool will be roughly one half to two-thirds inside the cranial cavity. Next the blade is rotated ventrally down one side of the cavity, laterally across the floor of the cavity and then dorsally up the opposite side of the cavity resulting in a severing action. The severed brain stem can now be removed from the cranial cavity by gently pulling caudally with the tool or spatula, assisted by gentle traction on the caudal end of the medulla using forceps.

The cerebellum can be removed by reinserting the tool or spatula into the cranial cavity and then extracting the specimen with the spatula blade. Brain stem specimens, centered at the obex, should be placed in 10% formalin for histopathology and fresh specimens for western blotting should be placed in plastic specimen bags. Specimens are now ready to package and ship to the laboratory.
Figure 1