Brain sampling for TSE exclusion

Brain samples required for the National TSE Surveillance Program include:

Sheep:

1. fresh dorsal cerebellum
2. fresh spinal cord, 2–3 cm in length
3. fix the rest of the brain and brainstem whole.
4. Optional: small section of 1 frontal lobe fresh sample

Cattle:

1. fresh spinal cord, 2–3 cm in length
2. fix the rest of the brain and brainstem whole.
3. Optional: small section of 1 frontal lobe fresh sample

Brain sampling do's:

- Take care not to damage key TSE brain sites when removing the brain and taking the fresh samples (see Figure 2).
- Use enough 10% buffered formalin and a sufficiently large histology pot so the brain does not fix in a distorted position:
  - sheep brain – use a 1 L pot filled to the top with formalin
  - cattle brain – use a 2 L pot filled to the top with formalin.
- Allow the brain to fix in the formalin pot at room temperature.

Check case meets TSE criteria (listed on TSE lab submission form). Eligible case must have two or more of the presenting clinical criteria, and fall within eligible age criteria:

- Cattle > 30 months, < 9 years.
- Sheep > 18 months, preferably < 5 years.

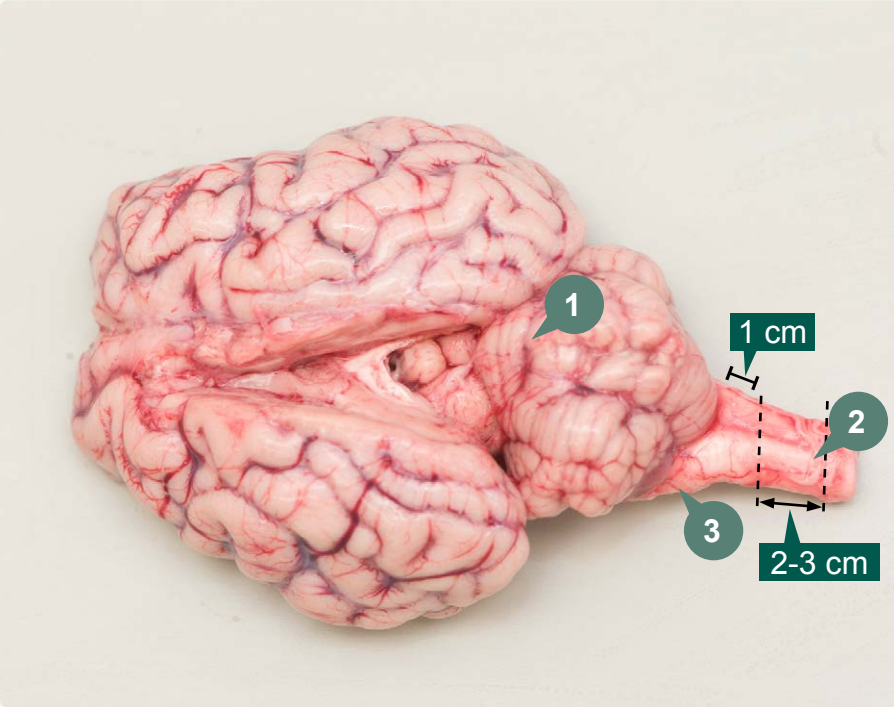


Figure 1 Collection of fresh brain TSE samples

1. Fresh dorsal cerebellum (no more than dorsal one-third of cerebellum) – sheep only
2. Fresh spinal cord, 2–3 cm in length – cattle and sheep
3. Take care not to damage the obex. Leave intact and fix with the whole brain and brainstem.

Brain sampling don'ts:

- Don't split the brain in half lengthways (longitudinally) as this damages TSE sites.
- Don't submit a half fixed/half fresh brain. To culture, use a swabbing technique that will keep the brain intact (see below).
- Don't remove the fresh spinal cord sample from too close to the cerebellum – imagine a perpendicular line behind the cerebellum and avoid sampling on the cranial side of the line.
- Don't remove more than one third of the dorsal cerebellum when removing the fresh cerebellum sample in sheep.
- Don't put pots containing tissue and formalin in the fridge or freezer.

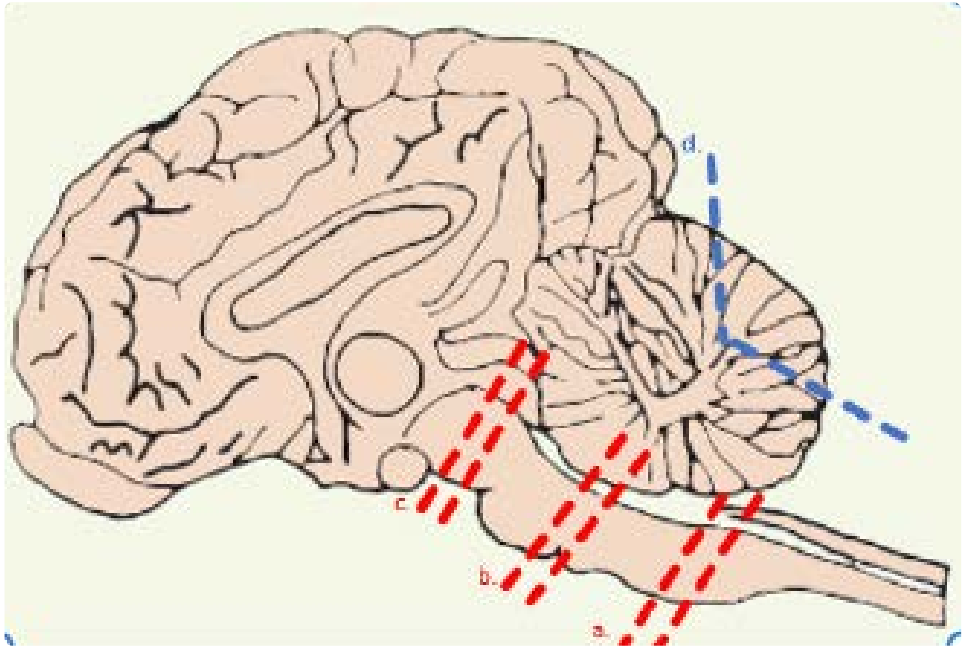
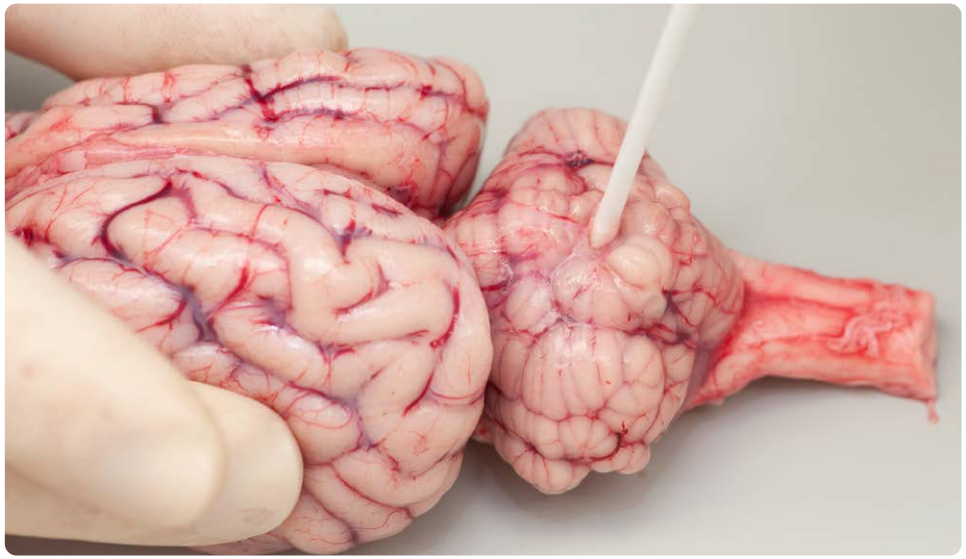


Figure 2 Key regions for TSE exclusion.

a. Obex region
b. Caudal cerebellar peduncles
c. Midbrain through rostral colliculi
d. Dorsal cerebellum, **sheep only**.

Brain swabbing methods that keep the brain intact

Method 1: For most meningitis cases it is suitable to swab the base of the brain.



Method 2: *Listeria* can be recovered by stabbing a swab through the dorsal cerebellum into the brainstem. The swab must be inserted vertically to minimize damage to the TSE sites.