RUM_001 Clinical Assessment in Cattle (Expiry: March 2029)

I. OBJECTIVE

To describe the expected standard of clinical assessment in cattle, when used for scientific purposes [PLEASE NOTE: operationally veterinary discretion may be required to help guide this assessment].

II. DEFINITIONS

Competent - "the consistent application of knowledge and skill to the standard of performance required regarding the care and use of animals. It embodies the ability to transfer and apply knowledge and skill to new situations and environments." (as per, Australian code for the care and use of animals for scientific purposes, 2013)

III. COMMENTS / RECOMMENDATIONS

- Relative to animal ethics applications, when using this SOP, the following must be described in the individual ethics application: expected duration and frequency of animal use, any invasive ancillary assessment modalities (e.g. abdominocentesis, transrectal palpation or internal ultrasonography), and any variation to this SOP.
- Many of the common ancillary assessment modalities in cattle have separate SOPs which may be used.
- Clinical assessment in cattle should be considered a quick and non-invasive procedure not including rectal palpation (assuming a relatively compliant animal temperament).
- When using animals for scientific purposes all personnel must be trained in the procedures they perform and/or be under the direct supervision of a person who is competent to perform the procedure.

IV. SAFETY AND COMPLIANCE

- The person undertaking this task must ensure all relevant approvals are in place, training has been undertaken and risk assessments (including those for working with cattle in a crush) have been performed. If unsure, consult your supervisor.
- Operators should be advised about protection against Q fever or tested for immunity and vaccinated if not immune.
- Facility protocols should be followed.
- Possible risks could include blunt force injury, musculoskeletal injury and psychosocial harm.

V. TRAINING CONSIDERATIONS

- All unsupervised procedures must be performed by appropriately trained personnel who have been deemed to be competent in the procedure.
- Students must receive prior instruction on the relevant aspects of cattle anatomy and physiology. If possible, they should practice techniques with abattoir-derived organs and/or appropriate models before using live animals.
- An acceptable level of competence in trainees can only be achieved by providing supervised training with live animals.
- Animal temperament should be assessed as suitable prior to commencement.

VI. EQUIPMENT

- Relevant Personal Protective Equipment (PPE); appropriate clothing (e.g. overalls), closed-in shoes (preferably steel cap boots, gumboots), disposable gloves.
- Equipment for appropriate animal restraint (e.g. cattle crush and halter)
- Stethoscope
- Digital thermometer
- Obstetric lubricant
- Sample container for the collection of urine

VII. PREPARATION

1. Ensure AEC approvals cover all procedures, personnel, and animal details for the planned work.
2. If working with students, teachers must ensure that students have had the opportunity to discuss the ethical and social issues, and legal responsibilities, involved in the care and use of animals for scientific purposes, at a level appropriate to their learning ability and comprehension. This must occur before the use of animals commences.
3. Ensure good hygiene practices. This includes washing hands before and between cattle of different epidemiological origins.

VIII. PROCEDURE

1. **Distance exam** - Begin by observing the animal's environment, as well as the animal's appearance and general behaviour in its environment. From this, broad assessments can be made relative to environment and husbandry (e.g. weed *spp*. exposure, environmental temperatures), as well as the animal itself (e.g. the animal's demeanour, responsiveness, respiratory rate and effort, gait, body contour, symmetry, body condition, coat condition etc.)
2. **Restraint** – Mustering and yarding must be performed as per RUM_006 Mustering, Yarding and Restraint of Cattle for Husbandry and Veterinary Procedures. The animal should be moved through the yards and race into an appropriate cattle/vet crush or stanchion with a head bail. Once the animal is appropriately restrained, proceed with the clinical assessment. The animal need not always be caught within the head bail or crush depending on the demeanour of the animal and component of the clinical assessment being completed.
3. **Forelimb and hindlimbs** – Forelimbs and hindlimbs should be observed for evidence of pain, swelling or redness. Hoof confirmation and any required trimming should also be visualised.
4. **Respiratory rate sounds and effort** - Visually observe respiratory rate (recorded in breaths per minute), effort and pattern while the animal is at rest. With the stethoscope, auscultate the various lung fields for abnormal acoustic findings. Withers pinch should be completed to assess thoracic or cranial abdominal pain.
5. **Cardiovascular** – Using a stethoscope, auscultate the heart to obtain a heart rate while the animal is at rest (record in beats per minute). While auscultating with the stethoscope, consider any abnormal acoustic findings. Coccygeal pulses should also be palpated to assess their rate and strength.
6. **Mucosal membranes** – Vulval mucosal membranes should be assessed for colour, moisture, as well as capillary refill time. In recent post-partum cows, vuval mucosal membranes should be assessed for mucosal tears, grazing and bruising associated with parturition. Ocular mucosal membranes should be assessed for colour.
7. **Urine collection** – Urine sample collection is achieved by stimulating (titillating) the skin directly below the vulva (the escutcheon). Using gloved fingers gently rub using up and down or small circular motions. Assessment of posture during and post urination should be noted. Collected free catch urine samples should be tested for ketones in mature cows, plus any additional testing that may be indicated (e.g. pH, urine specific gravity).

8. **Gastrointestinal sounds and faeces** - Using a stethoscope, auscultate various abdominal fields for gut and rumen sounds. The paralumbar fossa and left abdomen should be auscultated, balloted and palpated for rumen motility and fill. Using the percussion and succussion techniques the abdominal cavity can be examined.
9. **Lymph nodes** – Prefemoral, submandibular, retropharyngeal, supramammary and prescapular lymph nodes should be palpated for size and consistency.
10. **Rectal temperature** – after application of lubricant, gently insert the thermometer ~5cm into the rectum of the animal and hold it diagonally against the mucosa. Most digital thermometers will beep and stop flashing once the temperature is measured – these thermometers are preferred. Observe faecal contents and consistency
11. **Head and oral cavity** - the animal should be restrained in a head bail. The carriage of the head should be assessed for symmetry including the ears and eyelids; eye movements and facial expressions are noted. Nostrils are evaluated for presence of discharge either unilaterally or bilaterally including character of the discharge (serous, mucoid, mucopurulent, epistaxis) if present. Evaluation of the eyes includes position of the globe in orbit, eye movement, presence of ocular discharge and menace and palpebral responses. Using manual restraint, the oral cavity and teeth of the animal may be examined.
12. **Jugular vein and brisket** – visualise both left and right jugular veins, noting any distension or jugular pulsing. The brisket should be observed for signs of oedema.
13. **Mammary glands (non-lactating)** - the udder and teats should be observed and palpated.
14. **Mammary glands (lactating)** - For the assessment of subclinical/clinical mastitis the four quarters of the udder of the lactating cow can be expressed onto the ground or into the wells of the rapid mastitis test. Expressing milk or stripping is completed by grasp the teat at its base using the thumb and forefinger to close off the teat canal and then curling the remaining fingers downward to gently express milk. Once the examination is done, the teats need to be dipped / disinfected to prevent mastitis. The subcutaneous abdominal vein is palpated, noting signs of heat and pain on palpation.
15. **Umbilical region and ventral abdomen** – Observe and palpate (where safe to do so) the umbilical region for signs of body wall defects/herniation, heat swelling and oedema. In male bovines' visual assessment of the penis and prepuce should be included. Inspection and palpation of the scrotum may also be added to the clinical examination if indicated.

IX. REFERENCE INFORMATION

Table 1. Reference ranges for the basic vital signs in cattle

Note: The normal vital signs for cattle will vary according to the circumstances (e.g. transport, exercise and mental status) both external and internal factors may influence them, and due note should always be made of the circumstances under which they are obtained. There are some circumstances when abnormalities can be masked by temporary or intermittent physiological alterations in vital signs. There are physiological/natural variations that are the result of breed and age.

	Pulse rate (b/min)	Respiration rate (b/min)	Temperature (rectal) (°C)	Capillary refill time (seconds)
Beef Cattle	60–80	10–30	37.5–39.5	< 2
Dairy cattle	50–70	10–30	38.0–39.2	< 2
Calf	80–100	10–30	37.5–38.0	< 2

Table 2. Reference ranges for urinalysis in cattle

Urinalysis Parameter	**Normal Values**
Specific Gravity	1.020 – 1.050
pH	7 – 9
Protein	Negative
Glucose	Negative
Ketones	Negative

Reference: Smith BP, Van Metre DC, Pusterla N. Large animal internal medicine. Sixth edition ed. St. Louis, Missouri: Elsevier; 2020

This SOP deserves notable reference and acknowledgement of authorship by Associate Professor Ben Wood – School of Veterinary Science, with review by Courtney Stewart –Animal Facility Manager UQ.

Version #	Reviewing AEC (note: all other relevant AECs ratify the approval)	AEC Review Date	Outcome
1.0	Production and Companion Animals AEC	05/03/2026	Approved to 05/03/2029