General information

The general examination begins with an **observation of the animal** of the animal whilst gathering the **relevant details** and the **medical history is taken**.

The examiner then approaches the animal to measure the three **quantitative parameters**:

- **temperature**
- **pulse**
- **respiratory rate**

This examination is carried out **systematically** and enables us to **identify** the affected **organ**(s) **before** proceeding **to a** more **detailed** of the various systems.

A thorough inspection of a device must always be carried out in the following **order**
:

- **inspection**: this allows **macroscopic changes**
- and any **malfunction** of the affected apparatus

- **palpation and pressure**: this helps to identify **swelling**
- , **deformity**, an area of **warmth**, an **abnormality** in **consistency**...
- as well as the presence of any tenderness

- **percussion**: this is performed using a **hammer** and a **plessimeter** or with the **finger**, and enables the detection of a **change** in **sound quality** associated with a **change** in the **density** of **the** affected **organ**, as well as any **pain** felt during percussion

- **Auscultation**: this helps to detect abnormalities

- **Further investigations**: these help to refine the diagnosis

Anatomical position

This involves looking at:

the **position** of the **ears**

the **carriage** of the **head**

the **carriage** of the **neck**

the **position** of the **limbs**

the **position** of the **tail** in relation to the body

It is important not to forget to examine the **curvature** of the **spine** (scolios
lordosis, etc.) and to check the **tension** of the **abdominal wall**.

Examples of abnormal postures:

hunchbacked with head down

tail held high

head lowered and ears flattened

spread of the forelimbs

cow self-examining

calf in opisthotonos

Heifers w

Tail held high

Cow with a hunched back and head down

Cow self-examining

Calf in opisthotonos

Behaviour

This involves examining **the** animal's **sensory-motor activity**: does the animal exhibit **hyper-**reactions (**exaggerated** responses) or **hypo-reactions** (**diminished** responses)?

Does the cow display any **tics**?

Examples of hyper-reactions:

- irritability — Rabies, Aujeszky's disease
- anxiety — Pasture tetany
- hyperaesthesia — BSE

Examples of hypoactive reactions:

- drowsiness, apathy
- coma

Body condition

There are several ways to assess a cow's **body condition**; the EEC is a quick and simple method based on **observation** and **palpation** of the **base** of the **tail** and the **flank**

This provides information on the duration of the disease and its **cachectic nature**

Paratuberculosis, for example

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NEC

NEC 1

NEC 3

NEC 5

The assessment of body condition **varies** according to the **breed** of cow: a Charolais cow and a Prim' Holstein cow will not be assessed in the same way.
Similarly, the cow's **physiological stage** (lactation or gestation) and **the** animal's **age** must be taken into account

Charolais crossbreed cow with paratuberculosis: side view

Charolais crossbreed co with paratuberculosis: rear view

Habitus

This is the overall clinical impression gained during a general examination of the animal, characteristic of a momentary situation

It depends not only on the animal's health but also on its body conformation and condition

It provides the vet with clues as to the severity and duration of the illness. Taking into account:

Behavioural and attitudinal disturbances, the habitus of a slightly or seriously ill animal.

Changes in coat and nutritional status, the appearance of an animal suffering from an acute or chronic illness.

Example

A stiff, tired, very thin cow, whose bristly, dull and long coat gives the appearance of a severely and chronically ill animal.

Example

An animal still in good condition, with a smooth, glossy coat, a hunched back and a taut belly, remains motionless, keeping its head lowered and whimpering; judging by its appearance, it is suffering from an acute and serious illness.

Depending on the season, there are two types of coat:

A summer coat (smooth, clean fur, in good condition)

A winter habitus (coarse coat, soiled hindquarters, body condition linked to winter feeding)

Temperature

This refers to the **internal temperature** measured **rectally**.
It varies between **38°C** and **39°C** depending on: age
the physiological stage, activity...

An adult animal is considered to have **moderate hyperthermia** at around **39–40°C**; above **40°C**, it has **severe hyperthermia**.
Below **38°C**, it is **hypothermic**.
A calf is considered to have **hyperthermia** above **40°C**; it is **normothermic** at around **39°C**.

The thermometer must be placed firmly against the rectal lining to ensure the reading is as accurate as possible;

if the animal has just defecated, air may distort the reading; in this case, take the temperature again

Never let go of the thermometer to prevent it from slipping into the cow's rectum if she moves.

measurement of body temperature (internal) rectally using an electronic thermometer

taking a rectal body temperature using a thermometer
thermometer

Physiological variations

- **Time of day: often 0.5–1 °C higher in the evening.**
- **Environment: higher in summer in a closed barn**
- **Physical activity: an increase in body temperature due to increased metabolism.**
- **Sexual activity in cows:**

A gradual, slight rise in temperature during pro-oestrus or in the days before calving.

A fairly marked drop (0.5–1°C) in the 24 hours preceding ovulation or calving.

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Pathological variations

• Hyperthermia

Moderate hyperthermia around 39–40°C

Above 40°C, the calf has severe hyperthermia.

The calf is hyperthermic above 40°C.

• Hypothermia

Below 38°C

PULSE

Pulse rate is the number of beats per minute in a peripheral artery.

Technique

• The pulse is taken by palpating and applying pressure to a suitable peripheral artery, assessing its rate, strength and rhythm

• By placing the middle and ring fingers on the selected vessels for 15, 30 or 60 seconds.

- Any changes in **frequency**, **intensity** or **rhythm** should be noted.

Arteries used

- **Facial artery (not very easy to locate), which is palpated symmetrically by placing the fingertips**

flat on the animal's cheeks just in front of the masseter muscles.

- **Median artery, palpable below and in front of the tip of the elbow, in the bony depression between the radius and ulna.**
- **Saphenous artery (difficult and dangerous), which runs in front of the hock tendon in the middle of the leg.**
- **Coccygeal artery, which is easily palpated in the ventral groove of the**

, one or two hand-breadths from the base of the tail.

- **The pulse can also be assessed during transrectal palpation of the aorta and iliac arteries in adults. In calves, palpation of the pulse on the femoral arteries on the medial aspect of the hind limbs is straightforward.**

- **The coccygeal artery, which can be easily palpated in the ventral groove of the caudal vertebrae, one or two hand-breadths from the base of the tail.**
- **The pulse can also be assessed during transrectal palpation of the aorta and iliac arteries in adults. In calves, palpation of the pulse on the femoral arteries on the medial aspect of the hind limbs is evident**

R1:A pulse is described as thready when it is of low intensity.
R2: If the cow is eating or ruminating, the pulse cannot be taken at the facial artery.

Heart rate varies with age, gender and weight.
Physiological

- **Milk-fed calf: 90–110 beats per minute.**
- **Young cattle: 70–90 beats per minute.**
- **Non-pregnant cow or cow in early pregnancy: 60–80 beats per minute.**
- **Cow in late pregnancy: 70–80 beats per minute.**
- **Bull: 60–70 beats per minute.**

Physiological variations

• Tachycardia

Physical exertion.

Psychological arousal.

Environment (ambient temperature, humidity).

• Bradycardia

Obesity.

Old age.

Pathological variations

• Tachycardia: Rates exceeding 90 beats per minute in adult cattle, 100 beats per minute in young cattle, 120 beats per minute in calves.

Fever-inducing and cardiac diseases.

• Bradycardia: Cardiac problems. Fatigue associated with serious systemic diseases.

Respiratory rate

Respiratory rate is measured **by viewing** the animal from **three-quarters behind** observing the
movements of the **flank** and the **last ribs**.
One can also observe the movements of the nostrils
Breathing in cattle is **costal-abdominal,** and the movements must be **synchronised**. When the thoracic and abdominal movements are not in sync, the are said to be **out of sync**.
The **normal** respiratory rate in
an **adult**bovine is **15** to **25** breaths per minute
.
Young: **20–50** breaths/min
It is important to note **changes** in the frequency and rhythm of respiratory movements

Respiratory rate

Respiratory rate is the number of respiratory cycles per minute (one respiratory cycle = inhalation + exhalation).

Techniques

It can be measured in various ways:

Ideally, stand three-quarters to the rear right (on the left, rumen movements can interfere), to observe the movements of the ribs and the flank.

Auscultation using a stethoscope placed on the thorax or trachea. By placing a hand over the nostrils.

• The vet takes into account not only the respiratory rate, but also the type, rhythm and amplitude of breathing.

Results

Normal: Adult cattle: 15–25 breaths/min (average 18 breaths/min). Young cattle: (20–35 breaths/min) up to 50 breaths/min. Young cattle: 18–35 breaths/min.

Physiological variations

tachypnoea

Ambient temperature: sometimes higher in summer than in winter.

Physiological state of the female: it increases towards the end of pregnancy;

Increases after exercise.

Bradypnoea Obesity.

Pathological variations

Tachypnoea

Reduction in pulmonary gas exchange surface area: lung conditions. Forward displacement of the diaphragm: rumen overload, ascites,

Inability to oxygenate the blood: anaemia. Hyperthermic conditions.

Bradypnoea Dying, comatose animals. Severe acetonemia. Necrosis of the cerebral cortex.

Examination of the mucous membranes

The **normal** colour of the mucous membranes is **pale pink** in animals whose mucous membranes are not naturally coloured (e.g. the black oral mucous membranes of Prim' Holstein cows).

The examination focuses on the **ocular** and **vulvar mucous membranes**.

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Mucous membranes examined
Ocular mucosa: the hand placed behind the eye presses down on the eyeball by applying pressure to the upper eyelid whilst pulling down the lower eyelid.

Nasal mucosa: the examination is carried out by spreading the side of the nose with the index finger to widen the field of view inside the nasal cavity. Good lighting is essential.

Vulvar mucosa: with the tail held to one side by the elbow, the labia are parted using the thumb and index finger of one hand, or with both hands between the thumb and index finger of each hand.

Pathological changes in colour

• Cyanosis:
A bluish-purple discolouration of the mucous membranes.
Due to circulatory disorders resulting from: Heart failure. Acute respiratory tract infection.
• Pallor
In cases of anaemia.
Haemorrhages.
Insufficient production of red blood cells.
• Jaundice
Yellow discolouration due to the accumulation of bile pigments in the body.
Orange-yellow = hepatic jaundice.
Pale yellow = haemolytic jaundice.
Yellow-green = cholangitic jaundice.

Oral mucosa of an anaemic calf

Petechiae on the vulvar mucosa

Skin and coat

It is **important** to note the **condition** of the coat. It may be a sign of a chronic illness, a nutritional or immune deficiency, etc.

You should look for:

areas of hair loss, warts

skin conditions such as ringworm

wounds and skin lesions

the quality of the coat: dull, brittle, bristly, prickly, etc.

the colour of the coat (any areas of discolouration).

Calf with alopecia

Cow with stunted growth and a dull, shaggy coat

Calf with ringworm

Cow with warts

Degree of dehydration

A skin fold in the middle of the neck, which should be checked horizontally.

A **persistent skin fold** and **sunken eyes** are signs of dehydration, the severity of which depends on the prominence of these signs. However, care must be taken when assessing dehydration in thin animals: there is less fat behind the eye, so it appears sunken and the skin fold persists slightly.

Dehydrated calf with enophthalmos

Calf with exophthalmos