



# Indicators for assessing unconsciousness and death during slaughter without stunning

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- EFSA opinions of 2004 and 2006 on the stunning and killing of the main and the minor commercial species.
- DIALREL Project <<http://www.dialrel.eu>>.
  - Report on „Animal welfare concerns in relation to slaughter practices from the viewpoint of veterinary sciences“ (Von Holleben et al., 2010)  
[www.dialrel.eu/images/veterinary-concerns.pdf](http://www.dialrel.eu/images/veterinary-concerns.pdf)
  - Report reThe report ‘Improving animal welfare during religious slaughter: recommendation for good practice’ (Velarde et al., 2010).

1. Introduction
2. Time to loss consciousness and die
3. Indicators of unconsciousness
4. Indicators of death

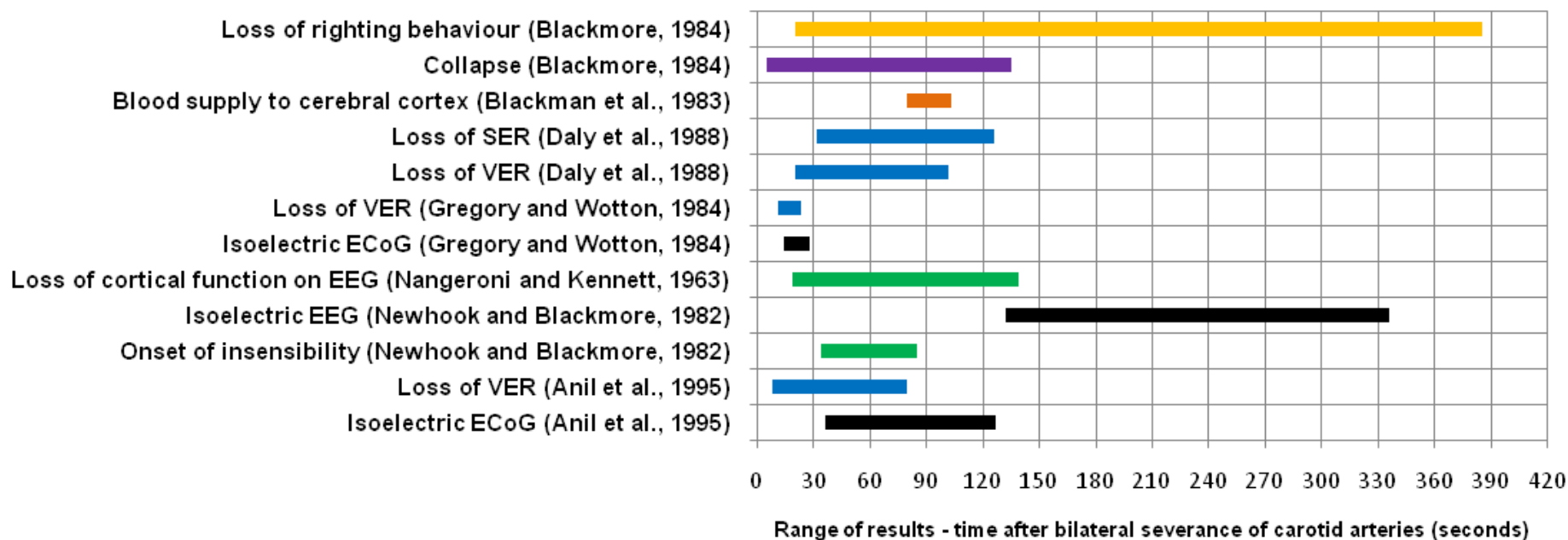
- **Unconsciousness:** State of unawareness in which there is temporary or permanent damage to normal brain function and the individual is unable to perceive and respond to external stimuli, including pain.
- **Death:** a physiological state of an animal, where respiration and blood circulation have ceased as the respiratory and circulatory centers in the Medulla Oblongata are irreversibly inactive. Due to the permanent absence of nutrients and oxygen in the brain consciousness is irreversibly lost.

- Consciousness is gradually lost when brain perfusion becomes insufficient.
- The time taken for unconsciousness to supervene is variable between animals.
- Depends on:
  - The method of restraint
  - The sticking method applied (how many of the major blood vessels supplying oxygenated blood to the brain are severed)
  - The animal species

- Consciousness is gradually lost when brain perfusion becomes insufficient.
- The time taken for unconsciousness to supervene is variable between animals.
- Regulation (EC) No 1099/2009 requires operators, to carry out systematic checks to ensure that the animals do not present **any signs of consciousness** or sensibility before being released from restraint and do not present **any sign of** life before undergoing dressing or scalding.

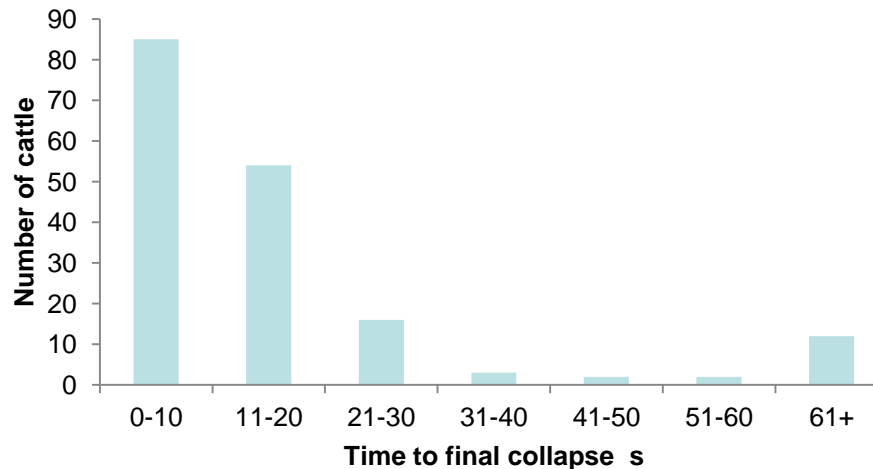
## Cattle

Figure 1: minimum and maximum values obtained in studies on loss of cortical function in slaughter without stunning



(Fielding, 2009)

## Cattle



Gregory et al., 2010 Meat Science 85, 66-69

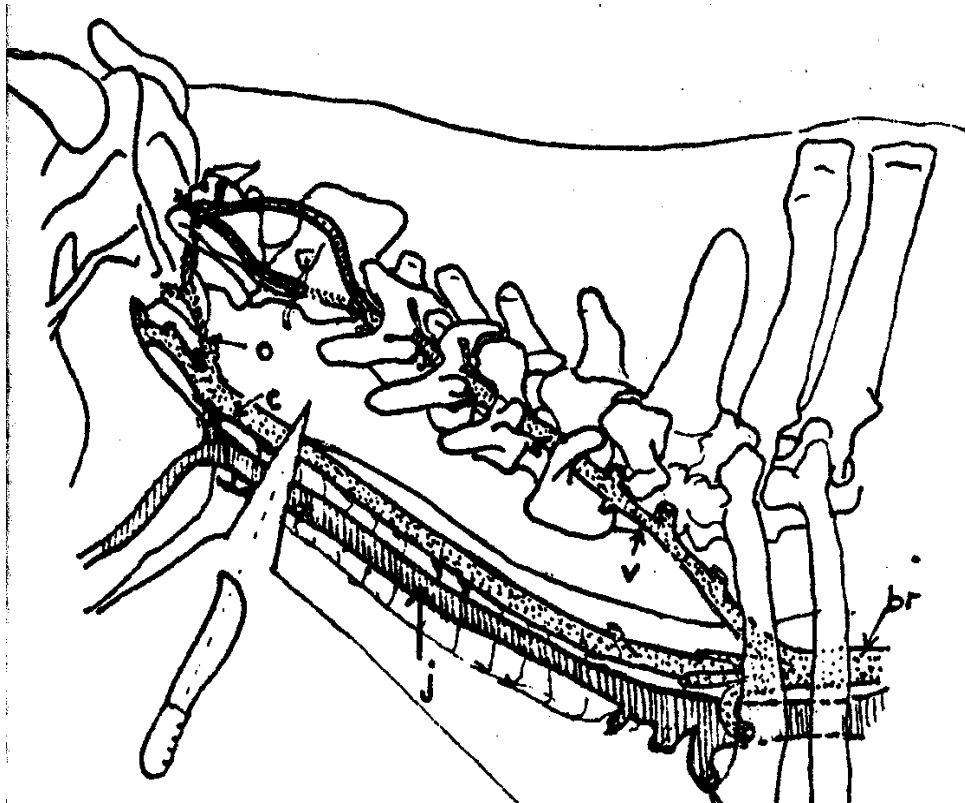
### Time to loss posture:

- 20s ( $\pm$  33)
- 14% loss posture and stood up again (mean time to final collapse: 49 s)
- 8% of cattle took longer than 60 s to collapse
- 2 /174 took more than 4 minutes to collapse



# Time to loss consciousness

## Cattle



# Time to loss consciousness

## Sheep

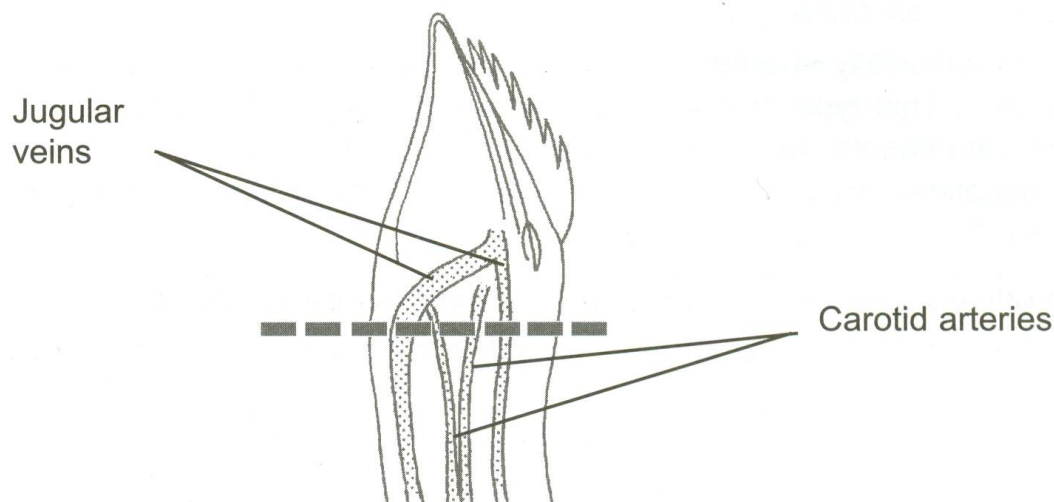
Sticking method	Number of sheep	Time to loss of brain responsiveness (sec)	SD
Both carotid & both jugular veins	20	14	1
One carotid artery & both jugular veins	8	70	7
No carotid arteries both jugular veins	8	298	34

Gregory and Wotton (1984)

## Poultry

Cutting both the common carotid arteries in the neck and jugular:

- 12-15 s.
- Up to 26s.



According to Article 16(2), a monitoring procedure shall include

- Indicators designed to detect **signs of unconsciousness** and consciousness or sensibility in the animals (before death or release from restrain)
- Indicators designed to detect the **absence of signs of life** in the animals slaughtered without stunning (before undergoing dressing or scalding)

- Complete and permanent loss of posture
- No righting reflex
- No attempt to raise the head
- Loss of muscle tone in ears/jaws
- Absence of rhythmic breathing
- Absence of palpebral reflex (=no blinking)
- Absence of corneal reflex
- No responses to a nose (muzzle) prick or ear pinch

- No reactions (e.g. retraction) to mechanical impacts on the wound.
- Absence of tracking by the eye of movements in the vicinity often accompanied by spontaneous closure of the eyelid.
- Absence of response to threatening movements (e.g. the rushing the hand towards the eyes leading to closing of the eyes or moving the head backwards does not occur).

## **poultry**

- No wing flapping in poultry
- Cessation of bleeding
- No responses to a comb or toe pinching

- End of bleeding
- Permanent collapse
- Dilated pupils
- Loss of muscle tone
- Cessation of spontaneous movement
- Cessation of wing flapping



- **Permanent absence of:**

- Cardiac activity (e.g. pulse or heart beat) when bleeding has ceased.
- Breathing
- Gagging-gasping
- Response to nose prick
- Corneal reflex
- Pupillary light reflex



Thank you