Animal Welfare and Non-stun Slaughter

Key facts

Authors: Professor the Lord Trees BVM&S, PhD, MRCVS, Hannah Jordan BSc (Hons), BVetMed (Hons), MRCVS and Anthony Ridge MA(Zoology) VetMB MRCVS

Declaration of interest: This document has been prepared by the above authors, who declare they would wish to see all animals stunned before slaughter.

Statement of intention: This document is intended for the public, politicians and professionals and aims to present an unbiased, factual and up-to-date account of the current information available on non-stun slaughter.

Contents

EC Regulation and UK Law ........................................................................................................................................... 2
Definitions & terminology .................................................................................................................................................. 4
Stun slaughter process ...................................................................................................................................................... 5
Stunning and bleeding out ................................................................................................................................................. 6
Non-stun slaughter processes .......................................................................................................................................... 7
Mis-stunning and mis-cutting ........................................................................................................................................... 9
Number of animals involved .......................................................................................................................................... 12
Basis of the religious proscription of stunning ........................................................................................................... 14
Time to unconsciousness or collapse ............................................................................................................................ 14
Evidence and opinion on pain and suffering at slaughter ............................................................................................ 15
Standpoints of animal welfare groups, assurance bodies and UK supermarkets on non-stun slaughter and labelling ........................................................................................................................................ 18
EC Regulation and UK Law

1. The law governing the protection of animals at the time of killing is set out in Council Regulation (EC) 1099/2009 the Protection of Animals at the Time of Killing (PATOK) and applies in all EU Member States since it came into effect on 1st January 2013.¹

2. The UK voted to leave the European Union (EU) during a referendum held on the 23rd June 2016. The process of leaving the UK is expected to take at least two years. In the meantime current legislation will continue to apply.

3. In Great Britain, the Welfare of Animals at the Time of Killing (WATOK) Regulations came into effect in Scotland in 2012, in both Wales and Northern Ireland in 2014 and in England in 2015.²

4. WATOK 2014 Regulations were due to come into force in England on 20th May 2014 but were revoked on 19th May 2014 before coming into force. After making the 2014 WATOK Regulations, the Government decided that the impact on some aspects of religious slaughter needed further consideration. The WATOK (England) 2015 Regulations differ from the 2014 WATOK Regulations in that they do not explicitly require animals which are stunned before killing in accordance with religious rites to be stunned in accordance with the parameters in Annex I of the EU Regulation (PATOK)²

5. PATOK requires that animals are stunned before slaughter. In Annex 1 of PATOK the accepted stunning methods are listed and parameters are specified for each method and species, an abridged version is shown in Table 1, page 5. Cutting of the throat is not listed as a recognised stunning method.

“Animals shall only be killed after stunning in accordance with the methods and specific requirements related to the application of those methods [...]. The loss of consciousness and sensibility shall be maintained until the death of the animal.

The [stunning] methods referred to in Annex 1 which do not result in instantaneous death [...] shall be followed as quickly as possible by a procedure ensuring death such as bleeding, pithing, electrocution or prolonged exposure to anoxia.”

Paragraph 1, Article 4, Chapter II of the EC Council Reg. No. 1099/2009


6. Recital 18 and Article 4 of the PATOK allows for Member States, should they choose, to provide an exemption from pre-slaughter stunning of animals for religious purposes:

“In the case of animals subject to particular methods of slaughter prescribed by religious rites, the requirements of Paragraph 1 [above] shall not apply provided the slaughter takes place in a slaughterhouse.”

Paragraph 4, Article 4, Chapter II of the EC Council Reg. No. 1099/2009

7. The UK currently offers such an exemption in Schedule 3 of WATOK 2015. This schedule also gives rules for humane restraint of bovines for non-stun slaughter, method of slaughter and uninterrupted bleed out times for different species.

“No person may kill an animal in accordance with religious rites without prior stunning unless it is a sheep, goat, bovine animal or bird killed in a slaughterhouse in accordance with this Schedule”


“[Any bovine killed without stunning must be] individually restrained in an upright position in a restraining pen which has been approved in writing by the competent authority ... [And to be approved it must be] of such a size and design, and is able to be operated, so as to protect an adult bovine animal from avoidable pain, suffering, agitation, injuries or contusions while confined in it”


“[For all non-stun slaughter an animal must be] killed by the severance of both its carotid arteries and jugular veins by rapid, uninterrupted movements of a hand-held knife ... [that is] undamaged and of sufficient size and sharpness”


“[Where a bovine, sheep or goat is killed without stunning it must not be] shackled, hoisted or moved in any way until it is unconscious and in any event not before the expiry of (a) in the case of a sheep or a goat, a period of not less than 20 seconds; and (b) in the case of a bovine animal, a period of not less than 30 seconds... [And where a bird is killed without prior stunning] no further dressing procedure or any electrical stimulation is performed on the bird if it presents any signs of life and in any event not before the expiry of (a) in the case of a turkey or goose, a period of not less than 2 minutes; and (b) in the case of any other bird, a period of not less than 90 seconds”


8. With reference to Paragraph 4 of this document, the following EU Member States do not allow any exemption from pre-slaughter stunning: Denmark, Lithuania, Malta, Poland, Slovenia and Sweden. Five other Member States have not practised non-stun slaughter since 2012: Cyprus, Estonia, Finland, Germany & Luxembourg. Please refer to Appendix 2 for comments from the DIALREL study.

---

7 Council Regulation (EC) 1099/2009
9. Globally, non-stun slaughter is not permitted in Switzerland, Norway and Iceland. New Zealand requires all animals to be stunned before slaughter, but offers an exemption for a small fixed number of poultry and sheep for local Jewish consumption only.

Definitions & terminology
10. It is recommended to use 'non-stun' slaughter rather than 'ritual' or 'religious' slaughter.

11. Stunning: any intentionally induced process which causes loss of consciousness and sensibility without pain, including any process resulting in instantaneous death.

12. Pre-cut stun: A stun prior to the throat cut.

13. Post-cut stun: A stun immediately after cutting the throat.

14. Reversible/simple stun: ‘any intentionally induced process which causes loss of consciousness and sensibility without pain’ that does not cause instantaneous death. Head-only electronarcosis is an accepted form of reversible stunning.

15. Porging: applicable to kosher production, is the process of removing portions of the animal that are not kosher: the blood, certain fats (chailev) & the sciatic nerve (the gid hanasheh).

16. Unconsciousness: an abnormal state of lack of response to sensory stimuli, resulting from injury, illness, shock or some other bodily disorder.

17. Insensibility: not perceptible to the senses.

18. False aneurysm: When a severed artery end retracts within its connective tissue sheath and the artery end becomes blocked or sealed.

19. Mis-stunning: When a stun is not carried out correctly and the animal is not rendered immediately unconscious and insensitive to pain.

References:
20. Sticking: To cut the throat and sever both carotid arteries and jugular veins of an animal to allow exsanguination.\(^{20}\)

21. Mis-cutting: When one or both of the major blood vessels of an animal remains intact or is incompletely cut\(^{21}\) and there follows delayed exsanguination, and a non-stunned animal is not rendered immediately unconsciousness and insensitive to pain.

Stun slaughter process
22. Figure 1 shows the standard stun slaughter process.

23. Different methods of stun are used for different species, as listed in Annex 1 of PATOK, to provide the most rapid and humane stun possible, and account for anatomical differences (see Table 1). In no regulations is cutting the throat listed as a stun method.\(^{22}\) Table 2 describes the most common method of stun by species.

<table>
<thead>
<tr>
<th>Table 1: An abridged list of stunning methods listed in PATOK.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical methods</strong></td>
</tr>
<tr>
<td>Penetrative captive bolt device</td>
</tr>
<tr>
<td>Non-penetrative captive bolt device</td>
</tr>
<tr>
<td>Firearm with free projectile</td>
</tr>
<tr>
<td>Maceration</td>
</tr>
<tr>
<td>Cervical dislocation</td>
</tr>
<tr>
<td>Percussive blow to the head</td>
</tr>
<tr>
<td><strong>Electrical methods</strong></td>
</tr>
<tr>
<td>Head-only electrical stunning</td>
</tr>
<tr>
<td>Head to Body electrical stunning</td>
</tr>
<tr>
<td>Electrical waterbath</td>
</tr>
<tr>
<td><strong>Gas methods</strong></td>
</tr>
<tr>
<td>Carbon dioxide at high concentration</td>
</tr>
<tr>
<td>Carbon dioxide in two phases</td>
</tr>
<tr>
<td>Carbon dioxide associated with inert gases</td>
</tr>
<tr>
<td>Inert gases</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2: Most common method of stun by species</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Most common stun (adult animals)</strong></td>
</tr>
<tr>
<td>Penetrative captive bolt</td>
</tr>
<tr>
<td>Electronarcosis (Head only or Head to back)</td>
</tr>
<tr>
<td>Gas stun until dead (thus listed under kill methods)</td>
</tr>
<tr>
<td>Gas stun until dead (thus listed under kill methods)</td>
</tr>
</tbody>
</table>


\(^{22}\) Council Regulation (EC) 1099/2009 - Annex 1 (as referred to in Article 4), Chapter 1, Tables 1,2,3 & 4.
24. In the UK, WATOK Regulations (Schedule I, Part 5) allow for stunning by captive bolt (penetrative and non-penetrative), electrical stunning (including by waterbath for poultry) and by exposure to gas (pigs and poultry). Specific provisions are given to ensure stunning methods are effective. It is not permitted to stun animals by a non-mechanical percussive blow to the head with the exception of rabbits.

25. The electrical parameters for different forms of electrical stunning are laid out in Annex I of the PATOK (EU) regulations. This states that poultry should be stunned for at least 4 seconds according to the electrical parameters presented in Table 3. Parameters for other forms of electrical stunning as well as gas killing are also included. These parameters have been based on a scientific review performed by the European Food Safety Authority.

26. The WATOK (England) 2015 do not explicitly require animals which are stunned before killing in accordance with religious rites to be stunned in accordance with the parameters in Annex I of the EU Regulation (PATOK).

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Electrical parameters for stunning of poultry in a waterbath</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (Hz)</td>
<td>Chickens</td>
</tr>
<tr>
<td>&lt; 200 Hz</td>
<td>100 mA</td>
</tr>
<tr>
<td>From 200 to 400 Hz</td>
<td>150 mA</td>
</tr>
<tr>
<td>From 400 to 1500 Hz</td>
<td>200 mA</td>
</tr>
</tbody>
</table>

Stunning and bleeding out

27. The effect of stunning on bleeding out has been raised in the discussion of stun vs. non-stun slaughter. Anil et al. investigated this in two separate peer-reviewed studies in 2004 and 2006. The first study compared the exsanguination of sheep that had been electrically or captive bolt stunned before the throat cut with sheep that were not stunned and were slaughtered by a Muslim method; there was no significant difference between the three groups.

28. An older review paper by Warriss in 1984 concluded that there was no evidence that the residual blood content of lean meat was affected by different slaughter methods and the


amount of blood lost was an approximately constant fraction of the total blood volume.\textsuperscript{27} This is further supported by work done by Griffiths et al. in 1985, which found no difference when comparing the blood loss from poultry carcasses following different methods of slaughter.\textsuperscript{28}

### Non-stun slaughter processes

29. Figure 2 shows the basic non-stun slaughter process.

![Figure 2: Non-stun slaughter process](image)

30. Non-stun slaughter does not use any of the stun methods listed in Table 1 prior to the sticking of an animal to allow exsanguination.

31. Non-stun slaughter must be carried out in accordance with WATOK Regulations. Animals must be slaughtered one at a time and in an approved restraint; for example, a bovine in an upright restraining pen that will take the weight of the animal and effectively restrain the head. Any blade used must be examined for size and sharpness before rapid, uninterrupted severance of both carotid arteries and jugular veins.

32. WATOK 2015 regulations also state that when non-stun slaughter is carried out in cattle, sheep or goats “appropriate back-up stunning equipment is kept close to the restraining equipment for use in case of emergency”.\textsuperscript{29}

### Shechita slaughter

33. The method of non-stun slaughter used by the Jewish community is called Shechita. Only meat that passes the Shechita process fully is labelled kosher.

34. All Shechita slaughter is non-stun.\textsuperscript{30} A surgically sharp immaculate blade (the chalaf) is passed in one rapid and uninterrupted action across the trachea, oesophagus, carotid arteries and jugular veins. And exsanguination follows. There are five Halachic requirements which must be followed: (a) the incision must be uninterrupted (Shehiya); (b) the chalaf must not be pressed against the neck (Derasa); (c) the chalaf must be of an adequate size that it is not covered by hide cattle, wool of sheep or feathers of birds (Chalada); (d) the incision must be at the appropriate site (Hagrama); and (e) there must be no tearing of the vessels before or during Shechita (Ikkur).

Shechita is performed only by trained Shochetim. They must serve an apprenticeship with an experienced Shochet prior to becoming fully qualified. A UK Shochet must hold two licences, one issued by Meat Hygiene Service and the other by the Rabbinical Commission for the Licensing of Shochetim. Shochetim must apply for renewal of his license every 12

months and undergo annual examination by this Commission. The Shochet is responsible for examining the chalaf for imperfections, visual and tactile examination of the organs and vessels of the animal immediately after severance to ascertain proper Shechita and examination of the internal organs and lungs to ascertain if abnormalities or defects are present.\textsuperscript{31}

35. Not all meat produced by Shechita slaughter remains in the kosher food chain.
   a. Approximately 60 out of every 100 animals slaughtered are accepted into the kosher food chain.\textsuperscript{32}
   b. In the UK, only the forequarters of an animal (approx. $\frac{1}{3}$ of the carcass weight) is eaten because it is uneconomical to porge the hindquarters.\textsuperscript{33}
   c. Zivotofsky estimated that for the reasons above, approximately 70\% of meat produced by Shechita slaughter is sold on the general market.\textsuperscript{34} Our estimate is closer to 80\%.

36. A Brazilian study of 88 cattle slaughtered by the Shechita method was published in 2016. It found response to nostril stimulation and tongue pinch, spontaneous blinking and rhythmic breathing in 7, 4, 10 and 100\% of cattle, respectively, 20 seconds after throat cut but none of these responses in animals that had been stunned. The study concluded that slaughter without previous stunning may result in greater risk of cattle experiencing suffering, pain and distress at slaughter.\textsuperscript{35}

Dhabihah (Halal) slaughter

37. The method of non-stun slaughter used by the Muslim community is called Dhabihah, but is commonly referred to as halal slaughter. Meat produced by this method is labelled halal.

38. The majority (63\%) of red meat slaughter by Dhabihah is reversibly pre-stunned, but the remainder of halal meat is non-stun.\textsuperscript{36}

39. The reversible pre-stun used in red meat is usually performed using a non-penetrative captive bolt device that applies a concussive blow to the brain without penetrating the skull.

40. There is no universal agreement on a system for approval of halal slaughter, although previous attempts have been made to issue rulings (fatwas). General guidelines are outlined in the DIALREL Report: Religious rules and requirements – Halal slaughter.

At the time of slaughter, the slaughterer must say 'Bismillah Wallahuakbar' over each carcass or group of animals being slaughtered continuously. A blade with a sharp edge of not less than 12cm must sever the neck of the animal just below the glottis, incising the trachea, oesophagus, both carotid arteries and jugular veins. A ‘sawing’ action is permitted provided the blade is not lifted from the neck of the animal.

\begin{footnotesize}
\begin{enumerate}
\item Shechita UK. (2009). \textit{A Guide to Shechita}. Shechita UK.
\end{enumerate}
\end{footnotesize}
The slaughterer must be a Muslim of sound mind and understand the rules and conditions related to the slaughter of animals. He must have a certificate of halal slaughter issued by a competent authority.37

**Mis-stunning and mis-cutting**

41. The frequency of mis-stunning incidents in UK abattoirs has been raised in argument against the practise of stunning. Attempting to stun an animal carries a risk of a mis-stunning incident occurring. Immediate and appropriate action is required to be taken to rectify such an incident; the Food Standards Agency Manual for Official Controls makes the following statements clarifying the Food Business Operator responsibility for a Standard Operating Procedure for mis-stun incidents and the role of the Official Veterinarian in periodically monitoring stunning efficacy:

"As regards stunning, the Standard Operating Procedure shall: [...] (c) specify the measures to be taken when checks indicate that an animal is not properly stunned or in the case of animals slaughtered or in the case of animals slaughtered in accordance with Article 4(4) (religious slaughter), that the animal still presents signs of life."38

Page 2-2, Chapter 2.3, Manual for Official Controls

"The OV should carry out checks: [...] to monitor stunning."39

Page 3-2, Chapter 2.3, Manual for Official Controls

42. There is some controversy about the frequency of mis-stunning. The European Food Safety Authority (EFSA) reported that when using captive bolt stun in cattle, between 4-6.6% cattle needed a second stun.40 This would equate to approximately 87,500-144,000 mis-stun incidents for the approximately 2.1 million cattle killed over a 50 week period in 2011.41

43. There is a marked contrast between these figures and recent figures supplied in a UK Government answer to a Parliamentary Written Question on 24/03/14, which suggest only 9 cattle (0.0004%) and 3 sheep (0.00002%) were mis-stunned in UK abattoirs in 2013.42,43 These figures are disputed44,45 and it is probably true to say that we do not accurately know the frequency of mis-stunning.

---

44. In a Brazilian study of 346 cattle stunned by penetrative captive bolt (279) and non-penetrative captive bolt (67) the proportion of cattle mis-stunned was much higher when stunning prior to Halal slaughter (2% for penetrative captive bolt stunning (used in secular slaughter) and 46% for non-penetrative captive bolt stunning (used in Halal slaughter))

45. Cutting the throat of non-stunned animals, as in Shechita or Dhabihah, also carries a risk of a mis-cutting incident. Mis-cutting the throat of a non-stunned animal usually involves one or both of the carotid arteries remaining intact or being incompletely cut; there follows delayed exsanguination, and the animal is not rendered immediately unconscious and insensitive to pain.

46. The UK legislation requires that for non-stun slaughter, each animal is slaughtered by the severance, by rapid, uninterrupted movements of a hand-held knife, of both its carotid arteries and both its jugular veins. Gregory et al. remark that this could be interpreted to allow for changes of direction in cut, provided they were uninterrupted, nevertheless the more cuts that are made, the higher the risk of pain sensation in the animal.

47. Data from Gregory et al. in 2008 in cattle recorded 3.2 ±0.1 (mean & se, n=231) cuts for shechita slaughter and 5.2 ±0.2 (n=116) cuts for halal slaughter to sever both carotid arteries and jugular veins (where one cut represents a movement of the blade in one direction without withdrawal of the knife). In the same study, it was determined that the prevalence of failure to cut a carotid artery was 6% during shechita slaughter and 1% during halal slaughter. This suggests that several cuts are required for non-stun slaughter methods to ensure severance of both carotid arteries and jugular veins, increasing the risk of stimulation of free nerve endings in the skin and pain sensation in the animal.

48. The Food Standards Agency Manual for Official Controls makes the following statement with regard to intervention to address mis-cutting:

“In establishments where killing by a religious method takes place, there should be checks by the business operator that animals are unconscious before being released from restraint and

---

checks that the animal does not present any sign of life before undergoing dressing or scalding.\textsuperscript{53, 54}


\textsuperscript{54}Council Regulation (EC) 1099/2009 - Chapter II, Article 4, 4; Article 5, 2 and 3; Chapter III Article 15, 2.
Number of animals involved

49. Defra runs a monthly survey of registered England and Wales slaughterhouses\(^55,56\). It is a statutory survey that collects information on number of livestock slaughtered and carcass weights. All major slaughterhouses participate in the survey and the response rate is typically 100%. It does not currently collect data on stunning methodology, frequency of mis-stunning or frequency of mis-cutting. The survey data can be used to determine total numbers of animals slaughtered in the UK and the results for 2011 and 2013 are presented in table 4.

<table>
<thead>
<tr>
<th>TABLE 4:</th>
<th>Total number of animals slaughtered in UK abattoirs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
</tr>
<tr>
<td>Cattle</td>
<td>2.76 million</td>
</tr>
<tr>
<td>Sheep</td>
<td>14.5 million</td>
</tr>
<tr>
<td>Poultry</td>
<td>916 million</td>
</tr>
</tbody>
</table>

50. The Food Standards Agency (FSA) conducted a survey in 2013 to determine the number of animals subject to non-stun and stun slaughter during one week at 232 red meat and 69 white meat slaughterhouses\(^57\). A similar survey was carried out in 2011 during one week at 248 red meat and 75 white meat slaughterhouses\(^58\). The results of these surveys can be used to estimate the proportion of animals that are not stunned before slaughter as well as the proportion of animals that are slaughtered by Halal and Shechita methods (Table 4 and 5).

51. All animals killed by Jewish (Shechita) methods are not stunned before slaughter.

52. Key Points from Tables 5-7:

- There has been an increase in non-stun slaughter of sheep and goats (10% in 2011 to 15% in 2013) (Table 5).
- This is associated with an increase in non-stun Halal slaughter of sheep and goats (Table 6).
- There has been an increase in the proportion of non-stun Halal slaughter across all sectors but particularly in the sheep and goat sector (Table 7).


### TABLE 5: Non-stun slaughter

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>3.6% (99 thousand)</td>
<td>1.9% (48 thousand)</td>
</tr>
<tr>
<td>Sheep and goat</td>
<td>10.2% (1.5 million)</td>
<td>15.4% (2.2 million)</td>
</tr>
<tr>
<td>Poultry</td>
<td>4.0% (37 million)</td>
<td>3.5% (34 million)</td>
</tr>
</tbody>
</table>

All percentages are given as a percentage of total slaughter in the survey for each taxonomic group. Estimated number of animals slaughtered per year are shown in brackets and have been calculated by extrapolation from national figures in Table 4.

### TABLE 6: Shechita (Jewish) slaughter (all non-stun slaughter) | Halal (Muslim) slaughter (including both stun and non-stun slaughter) | Non-stun Halal slaughter

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>3%</td>
<td>1.1%</td>
<td>4%</td>
<td>3%</td>
<td>0.6%</td>
<td>0.8%</td>
</tr>
<tr>
<td></td>
<td>(83 thousand)</td>
<td>(28 thousand)</td>
<td>(107 thousand)</td>
<td>(81 thousand)</td>
<td>(17 thousand)</td>
<td>(20 thousand)</td>
</tr>
<tr>
<td>Sheep and goat</td>
<td>0.6%</td>
<td>0.2%</td>
<td>50%</td>
<td>41%</td>
<td>9.6%</td>
<td>15.2%</td>
</tr>
<tr>
<td></td>
<td>(87 thousand)</td>
<td>(29 thousand)</td>
<td>(7.3 million)</td>
<td>(5.9 million)</td>
<td>(1.4 million)</td>
<td>(2.2 million)</td>
</tr>
<tr>
<td>Poultry</td>
<td>0.4%</td>
<td>0.1%</td>
<td>30%</td>
<td>21%</td>
<td>3.6%</td>
<td>3.4%</td>
</tr>
<tr>
<td></td>
<td>(3.7 million)</td>
<td>(960 thousand)</td>
<td>(270 million)</td>
<td>(210 million)</td>
<td>(33 million)</td>
<td>(33 million)</td>
</tr>
</tbody>
</table>

All percentages are given as a percentage of total slaughter in the survey for each taxonomic group. Estimated number of animals slaughtered per year are shown in brackets and have been calculated by extrapolation from national figures in Table 4.

### TABLE 7: Non-stun Halal slaughter as % of Halal slaughter

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>16%</td>
<td>25%</td>
</tr>
<tr>
<td>Sheep and goat</td>
<td>19%</td>
<td>37%</td>
</tr>
<tr>
<td>Poultry</td>
<td>12%</td>
<td>16%</td>
</tr>
</tbody>
</table>
Basis of the religious proscription of stunning

53. The religious requirements for slaughter were written prior to the current methods of stun being developed. Furthermore, there was no access to the information available nowadays on the health and welfare of the animals presented for slaughter or ante-mortem inspection to ensure animals are in good health and welfare before slaughter for human consumption.

54. The Jewish faith requires animals or birds to be alive, healthy and unhurt (unblemished to the naked eye) prior to Shechita. Thus, stunning and unconsciousness are not consistent with their requirements.59

55. The Muslim faith requires animals to be “alive and healthy” at slaughter. This is interpreted by the various Muslim authorities in one of two ways- (a) meat that has been reversibly stunned by a demonstrably recoverable method such as electric head-only stunning is acceptable as Halal60 or (b) meat that has been stunned in any form is not acceptable as Halal.61

56. In New Zealand it is illegal to export meat from animals slaughtered without pre-stun. Halal meat may only be derived from animals that have undergone a reversible pre-cut stun. Substantial quantities of this pre-stun Halal meat are exported to countries including those in the Middle East.62,63

Time to unconsciousness or collapse

57. Gregory et al. studied the time to collapse in 174 cattle undergoing Halal slaughter. Figure 3 shows frequency distribution of those cattle according to time to collapse and Table 8


summarises the results of the study. Prolonged consciousness of cattle post-cut was associated with false aneurysm.64

<table>
<thead>
<tr>
<th>Table 8: Time to collapse in 174 cattle subject to non-stun Halal slaughter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average time to collapse</td>
</tr>
<tr>
<td>Median time to collapse</td>
</tr>
<tr>
<td>Maximum time to collapse</td>
</tr>
<tr>
<td>Number of cattle ≥60s to collapse</td>
</tr>
<tr>
<td>Number of cattle that collapsed and stood again before final collapse.</td>
</tr>
</tbody>
</table>

58. The Farm Animal Welfare Council (FAWC) took evidence in 2003 to assess the welfare of animals at slaughter or killing. They presented the data in Table 9 on species differences in time to loss of consciousness from the evidence presented to them.65

<table>
<thead>
<tr>
<th>Table 9: Species differences in time to loss of brain responsiveness.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
</tr>
<tr>
<td>Adult cattle</td>
</tr>
<tr>
<td>Calves</td>
</tr>
<tr>
<td>Sheep</td>
</tr>
<tr>
<td>Calves</td>
</tr>
</tbody>
</table>

59. Cattle are unique in possessing an alternative blood supply to the brain – the vertebral-basilar plexus. If exsanguination is incomplete because blood flow from the carotid arteries is arrested due to false aneurysm, blood can continue to flow to the brain via this plexus and consciousness is maintained.66

**Evidence and opinion on pain and suffering at slaughter**

60. Evidence for pain and suffering at the time of slaughter is contentious. It is important to note that objective measurements of pain and distress are hard to take during the slaughter process and subjective indicators may be limited by restraint methods.

61. In their 2003 report on the Welfare of Animals at the time of Killing, the Farm Animal Welfare Council (FAWC; the Government advisory committee on animal welfare) made the following statements:

“When a very large transverse incision is made across the neck a number of vital tissues are transected including: skin, muscle, trachea, oesophagus, carotid arteries, jugular veins, major nerve trunks (e.g. vagus and phrenic nerves) plus numerous minor nerves. Such a drastic cut will inevitably trigger a barrage of sensory information to the brain in a sensible (conscious) animal. We are persuaded that such a massive injury would result in very significant pain and distress in the period before insensibility supervenes.”


“Given that the exemption from pre-stunning is subject to the requirement that unnecessary suffering is not inflicted, we consider that the Government should take steps to repeal this exemption.”

62. The European Commission funded the DIALREL Project from 2006 to 2010, entitled ‘Religious slaughter, improving knowledge and expertise through dialogue and debate on issues of welfare, legislation and socio-economic aspects’. The project addressed five work packages (1) religion, legislation and animal welfare: conflicting standards; (2) religious slaughter: evaluation of current practices; (3) halal consumer and consumption issues; (4) concerns, knowledge and information in the general public; and (5) promotion of the debate and dissemination.

The following conclusions were made in Deliverable 1.3, ‘Report on good and adverse practices – Animal welfare concerns in relation to slaughter practices from the viewpoint of the veterinary sciences’:

‘[There is a] high probability that animals feel pain during and after the throat cut without prior stunning. This applies even to a good cut performed by a skilled operator, because substantial tissue damage is inflicted to areas well supplied with nociceptors and subsequent perception of pain is not exclusively related to the quality of the cut.’

63. Gibson et al., published two peer-reviewed research papers in the New Zealand Veterinary Journal in 2009. They examined the pain-associated electroencephalographic (EEG) responses of halothane-anaesthetised calves to non-stun slaughter. In summary, following a cut to the neck, pain-like responses were recorded in the brain and use of a stun removed these pain-like responses:

‘[The first study] demonstrated that there is a period following slaughter where ventral neck incision represents a noxious stimulus.’

‘[In the second study] non-penetrative captive bolt stunning after ventral neck incision resulted in the cessation of functional cortical activity in the majority of calves. This procedure prevented the development of cerebrocortical responses to ventral neck incision, demonstrated elsewhere, which would be painful in conscious animals subjected to this procedure.’

---


64. In his review article in the Veterinary Record, ‘Physiological insights into Shechita’, Rosen refers to work by Levinger in 1961 and 1976 when talking about cerebral perfusion, loss of consciousness and consequent insensibility:

“In summary, the collapse in arterial blood pressure that follows on from severance of the carotid arteries at Shechita causes a dramatic fall in cerebral perfusion [...] Consciousness is lost rapidly (within approximately two seconds) and irreversibly.”

He concludes, “After a review of the physiological issues involved and the experimental data, it is submitted that Shechita is a painless and effective method by which to stun and dispatch an animal in one rapid act.”

65. The position of stakeholder groups on pain and suffering at the time of slaughter is also divided.

a. Shechita UK is a community-wide campaign that unites representatives from the Board of Deputies of British Jews, the National Council of Shechita Boards, the Union of Orthodox Hebrew Congregations and the Campaign for the Protection of Shechita. It incorporates representatives from all the Kashrus Authorities in the UK. They state:

“The legal definition of “stunning” in the UK is to “render an animal unconscious until death”. The process of Shechita conforms to this legal definition”.

“With Shechita there is no delay because the slaughter method incorporates an immediate stun. Shechita both stuns and slaughters in one action, thereby making it the most humane and efficient method.”

b. The Halal Food Authority (HFA) group, is a widely recognised Halal certifier that estimates that it certifies of 70% of UK Halal meat, states:

“...animal welfare as well as human safety at slaughterhouse would be jeopardised if slaughter without stunning was performed for large-scale production. HFA argues that kosher meat can be produced with slaughter without stunning because, contrary to Halal meat, it is produced in low quantities, manually even in the case of chickens, at low speed and high costs, supplying a small percentage of the population.”

A survey of 66 Islamic scholars, funded by the Halal Food Foundation (parent company of the HFA), found that 95% of scholars agreed it was permissible for Halal slaughter to include pre-stunning provided that the stun did not cause death, physical injury or obstruct bleed-out and that slaughter was carried out by a Muslim. However, many scholars would still not recommend the use of stunning as they regarded it as a cruel

---

and inhumane practice that adversely affects the volume of blood loss during exsanguination and produces meat of inferior quality.\textsuperscript{76}

c. The Halal Monitoring Committee (HMC) is a Halal certifier with a different view. Their certification criteria require that:

“[A swift and humane incision is made,] rendering the animal insensible to pain (hand slaughter).”

They go on to state that: “Stunning prevents the drainage of blood, and deprives animals of the benefits of Tasmiyah [the Islamic prayer] as it is unconscious. It is seen as inhumane to animals and causes pain and suffering.”\textsuperscript{77}

d. The Halal Authority Board (HAB) is one of the newest certification bodies and is part of a bigger global group and brand, Al Hijaz. Their standard does not include specifics on animal welfare, but their spokesperson gave this statement:

“The government regulations on animal welfare in this country are very good and where we feel there are gaps it is our duty to inform the government and improve those standards for animal welfare purposes. But because those regulations exist, we do not have to repeat those regulations in our standard – there is no point ... If the government was not doing it then we would put it into our own standard.”\textsuperscript{78}

**Standpoints of animal welfare groups, assurance bodies and UK supermarkets on non-stun slaughter and labelling**

66. A number of animal welfare organisations have considered the evidence available and taken positions as follows:

a. The British Veterinary Association (BVA),

“The BVA view is that all animals should be stunned before slaughter, and if slaughter without stunning is still to be permitted then any meat or fish from this source must be clearly labelled.”\textsuperscript{79}

b. The Farm Animal Welfare Council,

“Council considers that slaughter without pre-stunning is unacceptable and that the Government should repeal the current exemption.”\textsuperscript{80}

c. The Federation of Veterinarians in Europe (FVE),

“FVE is of the opinion that the practice of slaughtering animals without prior stunning is unacceptable under any circumstances and that animals should be effectively stunned before


slaughter. FVE calls on policy makers to stop the excessive use of slaughter without stunning as a priority.\textsuperscript{81}

d. The Humane Slaughter Association (HSA), "Whilst respecting differing religious beliefs, the HSA's position on the pre-slaughter stunning of animals has always been unequivocal, all animals should be effectively stunned prior to being bled. Recent advances in the electrical stunning of cattle now make reversible stunning a practical option for all. This overcomes one of the main obstacles preventing a full uptake of pre-slaughter stunning. As long as meat from animals slaughtered without pre-stunning is available in the UK (whether slaughtered in the UK or imported), we believe it should be clearly and accurately labelled as such. The aim of the HSA remains that all animals should be effectively stunned prior to being bled, because this precludes the possibility of suffering."\textsuperscript{82}

e. The RSPCA, "We are opposed to the slaughter of any animal without first ensuring it is rendered insensible to pain and distress. We recognise that religious beliefs and practices should be respected. However, we also believe animals should be slaughtered under the most humane conditions possible. Evidence clearly indicates that slaughter without pre-stunning can cause unnecessary suffering."\textsuperscript{83}

67. Several Food Assurance bodies including Assured Food Standards (Red Tractor)\textsuperscript{84}, Soil Association Organic\textsuperscript{85} and Freedom Food\textsuperscript{86} do not allow non-stun slaughter meat to be accredited.

68. In response to letters of enquiry from the VPRF, the following supermarkets have responded as follows:

a. Marks and Spencer PLC,
“Animal welfare is at the heart of our livestock procurement policies and therefore all M&S foods have a requirement for pre-stunning prior to slaughter.”

“We take a pro-active stance on labelling, trying to always ensure that where we have a policy or procedure that our customers would expect to know about, we ensure our labelling reflects this. [...] as we don’t source non-stunned livestock, we have no experience of labelling in this area.”

Marks & Spencer Head of Agriculture and Fisheries

b. **Waitrose Ltd.**
“We place the highest importance on animal welfare in our business and require that all livestock supplying our own label meat is stunned before slaughter.”

“We would support labelling by exception; that is the labelling of all meat from animals not stunned before kill.”

Waitrose Senior Manager of Agri-food Communications

c. **Tesco Ltd.**
“We require all slaughter processes for Tesco branded products to meet our stringent animal welfare requirements, without exception. In every case, the animal is stunned before slaughter. We do however, in some stores, sell branded meat or host concessions that sell un-stunned halal and kosher meat. This is to serve customers who specifically wish to purchase un-stunned meat. This meat is clearly labelled Halal or Kosher, so that our customers are able to make informed choices.”

“Regarding labelling should the Government choose to look at this area it will be important that any guidance offered delivers a consistent approach across the food industry and enables us to provide even greater transparency for our customers.”

Tesco Director of Agriculture

d. Replies were not received from ASDA and J Sainsbury PLC.

---

## Animal Welfare during Non-stun Slaughter

### Appendix 1

### EU Member State positions on non-stun slaughter

<table>
<thead>
<tr>
<th>Country</th>
<th>Exemption from stunning</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republic of Cyprus</td>
<td>No</td>
<td>No legal rules exist. However, the competent religious authorities must apply to the Veterinary Services for a special derogation for non-stun slaughter.89</td>
</tr>
<tr>
<td>Estonia</td>
<td>Yes</td>
<td>Allows non-stun slaughter provided that a written note is sent ten days before slaughter is carried out to inform the Veterinary and Food Board, and that post-cut stunning is performed.90</td>
</tr>
<tr>
<td>Finland</td>
<td>Yes (No - Province of Aland)</td>
<td>Slaughter and stunning must be simultaneous. It is reported that in practice slaughter takes place after stunning for Halal. Kosher products are imported.91</td>
</tr>
<tr>
<td>Germany</td>
<td>Yes</td>
<td>In exceptional circumstance permission is granted. A number of conditions are in place to protect the animal from pain and suffering.92</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>Yes</td>
<td>Applications can (and have) been made to the competent authority, but a ‘Gentleman’s agreement’ exists that none shall be granted.93</td>
</tr>
<tr>
<td>Denmark</td>
<td>No</td>
<td>A recent change of position.94</td>
</tr>
<tr>
<td>Lithuania</td>
<td>Yes</td>
<td>State Food and Veterinary service must have issued a license beforehand. In reality, most Halal and Kosher meat is imported.95</td>
</tr>
<tr>
<td>Malta</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>Yes</td>
<td>Only for approved, non-commercial slaughter.96</td>
</tr>
<tr>
<td>Sweden</td>
<td>No</td>
<td>The Animal Welfare Agency may grant an exemption in individual cases only for poultry.</td>
</tr>
</tbody>
</table>

89 Ferrari, S., Bottoni, R., (2010). EC DIALREL Project, Deliverable 1.4, Legislation regarding religious slaughter in the EU member, candidate and associated countries.
and rabbits. No applications have been sent in the last 15 years. 97

### Non-EU Member State positions on non-stun slaughter

<table>
<thead>
<tr>
<th>Country</th>
<th>Exemption from stunning</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Yes</td>
<td>Reversible stunning (concussion or electronarcosis) is regulated for Halal slaughter under the Australian Govt. Authorised Halal programme. Other non-stun slaughter is only allowed by ‘approved arrangement’. Under this arrangement, sheep have no stun and cattle are stunned immediately post cut. 98</td>
</tr>
<tr>
<td>Iceland</td>
<td>No100</td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td>No101</td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
<td>Yes</td>
<td>A fixed number of poultry only to be consumed by religious communities each year.101</td>
</tr>
<tr>
<td>Switzerland</td>
<td>No102</td>
<td></td>
</tr>
</tbody>
</table>

Contact details
Anthony Ridge
Parliamentary Veterinary Intern
1 Millbank
Room 4-04
London
SW1A OPW

http://vprf.wordpress.com
ridgea@parliament.uk

The Veterinary Policy Research Foundation was set up as a not-for-profit limited company in 2013. It receives donations from a number of different veterinary bodies and organisations (see website) with the principal aim of employing the Parliamentary Veterinary Intern (currently Anthony Ridge) to carry out research to assist Lord Trees, as one of only two veterinary scientists in the House of Lords.