



LA NOSTRA
ESPERIENZA,
LA VOSTRA
SICUREZZA.

Scientific Opinions dell'EFSA su stordimento e macellazione dei conigli: principali conclusioni e raccomandazioni





SCIENTIFIC OPINION



ADOPTED: 21 November 2019

doi: 10.2903/efsa.2020.5927

Stunning methods and slaughter of rabbits for human consumption

EFSA Panel on Animal Health and Welfare (AHAW),
Søren Saxmose Nielsen, Julio Alvarez, Dominique Joseph Bicot, Paolo Calistri, Klaus Depner,
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Abstract

This opinion on the killing of rabbits for human consumption ('slaughtering') responds to two mandates: one from the European Parliament (EP) and the other from the European Commission. The opinion describes stunning methods for rabbits known to the experts in the EFSA working group, which can be used in commercial practice, and which are sufficiently described in scientific and technical literature for the development of an opinion. These are electrical stunning, mechanical stunning with a penetrative and non-penetrative captive bolt and gas stunning. The latter method is not allowed in the EU anymore following Council Regulation (EC) No 1099/2009, but may still be practiced elsewhere in the world. Related hazards and welfare consequences are also evaluated. To monitor stunning effectiveness as requested by the EP mandate, the opinion suggests the use of indicators for the state of consciousness, selected on the basis of their sensitivity, specificity and ease of use. Similarly, it suggests indicators to confirm animals are dead before dressing. For the European Commission mandate, slaughter processes were assessed from the arrival of rabbits in containers until their death, and grouped in three main phases: pre-stunning (including arrival, unloading of containers from the truck, lairage, handling/removing of rabbits from containers), stunning (including restraint) and bleeding (including bleeding following stunning and bleeding during slaughter without stunning). Ten welfare consequences resulting from the hazards that rabbits can be exposed to during slaughter are identified: consciousness, animal not dead, thermal stress (heat or cold stress), prolonged thirst, prolonged hunger, restriction of movements, pain, fear, distress and respiratory distress. Welfare consequences and relevant animal-based measures (indicators) are described. Outcome tables linking hazards, welfare consequences, indicators, origins, preventive and corrective measures are developed for each process. Mitigation measures to minimise welfare consequences are also proposed.

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Keywords: rabbit, slaughter, hazards, animal welfare consequences, welfare indicators, preventive/corrective measures

Requestor: European Parliament and European Commission

Question numbers: EFSA-Q-2018-00594 and EFSA-Q-2018-00909

Correspondence: alpha@efsa.europa.eu



SCIENTIFIC OPINION

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Scientific opinion concerning the killing of rabbits for purposes other than slaughter

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Abstract

Rabbits of different ages may have to be killed on-farm for purposes other than slaughter (where slaughter is defined as killing for human consumption) either individually or on a large scale (e.g. for production reasons or for disease control). The purpose of this opinion was to assess the risks associated to the on-farm killing of rabbits. The processes during on-farm killing that were assessed included handling, stunning and/or killing methods (including restraint). The latter were grouped into four categories: electrical methods, mechanical methods, controlled atmosphere method and lethal injection. In total, 14 hazards were identified and characterised, most of these related to stunning and/or killing. The staff was identified as the origin for all hazards, either due to lack of the appropriate skill sets needed to perform tasks or due to fatigue. Possible corrective and preventive measures were assessed: measures to correct hazards were identified for five hazards and the staff was shown to have a crucial role in prevention. Five welfare consequences of the welfare hazards to which rabbits can be exposed to during on-farm killing were identified: not being dead, consciousness, pain, fear and distress. Welfare consequences and relevant animal-based measures were described. Outcome tables linking hazards, welfare consequences, animal-based measures, origins, preventive and corrective measures were developed for each process. Mitigation measures to minimise welfare consequences are proposed.

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Keywords: rabbit, on-farm killing, hazards, animal welfare consequences, welfare indicators, preventive/corrective measures

Requestor: European Parliament and European Commission

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Abstract

This opinion on the killing of rabbits for human consumption updates:
one from the European Food Safety Authority (EFSA) in 2018. This opinion
describes the welfare consequences that can be associated with the
processes used for the slaughter of rabbits for human consumption and
more information on the current practices in the world.
The main welfare consequences identified as associated with the
slaughter of rabbits are: lack of consciousness, pain, fear, distress and
respiratory distress. In line with the European Commission mandate, slaughter processes
of rabbits in containers until their death, and grouped in three main
phases: transport (including arrival, unloading of containers from the truck, lairage, handling/
removing of rabbits from containers), stunning (including restraint) and bleeding (including bleeding
following stunning and bleeding during slaughter without stunning). Ten welfare consequences resulting
from the hazards that rabbits can be exposed to during slaughter are identified: consciousness, animal
not dead, thermal stress (heat or cold stress), prolonged thirst, prolonged hunger, restriction of
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ABBATTIMENTO
SCARTI

DEPOPOLAMENTO

where
there
for
associated
that were assessed included
restraint). The latter were grouped into four
methods, controlled atmosphere method and lethal injection.
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to perform tasks or due to fatigue. Possible corrective and preventive measures were
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role in prevention. Five welfare consequences of the welfare consequences identified
during on-farm killing were identified.
consequences and
are
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are
of

Key
prev
sequences, welfare indicators,

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ALLEVAMENTI FAMIGLIARI

Codice Penale
Art. 544-ter. -
(Maltrattame
nto di animali)

ALLEVAMENTI INDUSTRIALI

METODI
STORDIMENTO
ALLEGATO

FORNITURA DIRETTA PICCOLI QUANTITATIVI

<50UBE =
<6250
CONIGLI

ART.3
PAR.1

METODI
STORDIMENTO
ALLEGATO

>50UBE =
>6250
CONIGLI

REGOLAMENTO

CERTIFICATO
IDONEITÀ

MACELLO INDUSTRIALE

REGOLAMENTO

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IDONEITÀ



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MACROALGAE
ABBATTIMENTO
RISIKO
ASSESSMENT
EUROPEAN PARLIAMENT



**CORE
BUSINESS**

**SCIENZA
«SU
MANDATO»**

**VALUTAZIONE
DEL RISCHIO**



SCIENZA

POLITICA



Terms of reference - Mandati



1. Identificazione **pericoli** per il BA (benessere animale)
2. Identificare **indicatori**:
 - a. **ABMS**
 - b. **INDICATORI DI INCOSCENZA**
3. Fornire **misure preventive e correttive** per i pericoli individuati
4. Specificare i **rischi specifici per le diverse specie e categorie** animali
5. Identificare i **metodi** di stordimento e abbattimento
 - a. **Più idonei**
 - b. **Inaccettabili**



Modalità



1. Identificazione **pericoli** per il BA (benessere animale)
2. Identificare indicatori:
 - a. **ABMS**
 - b. **INDICATORI DI INCOSCENZA**
3. Fornire **misure preventive e correttive** per i pericoli individuati
4. Specificare i **rischi specifici per le diverse specie e categorie animali**
5. Identificare i **metodi** di stordimento e abbattimento
 - a. **Più idonei**
 - b. **Inaccettabili**

1.



2.





Modalità



1. Identificazione **pericoli** per il BA (pericoli generali e specifici)
2. Identificare indicatori:
 - a. **ABMS**
 - b. **INDICATORI PER IL BENESSERE ANIMALE**
3. Fornire **misure preventive** per i pericoli individuati
4. Specificare i **rischi specifici** per le diverse specie e categorie animali
5. Identificare i **metodi** di stordimento e abbattimento
 - a. **Più idonei**
 - b. **Inaccettabili**



1.



2.





**PERICOLI PER IL
BENESSERE
ANIMALE**

CONSEGUENZE PER IL
BENESSERE ANIMALE

ABMs



PERICOLI PER IL BENESSERE ANIMALE

ORIGINE (CATEGORIE E
SPECIFICHE)

MISURE E AZIONI
CORRETTIVE



PERICOLI PER IL BENESSERE ANIMALE

ORIGINE (CATEGORIE E SPECIFICHE)

CONSEGUENZE PER IL BENESSERE ANIMALE

MISURE E AZIONI CORRETTIVE

ABMs



1 PRE-STORDIMENTO

SCARICO

STABULAZIONE

MOVIMENTAZIONE

2 STORDIMENTO

STORDIMENTO

3 DISSANGUAMENTO

DISSANGUAMENTO

**1**

PRE-STORDIMENTO



PERICOLO	ARRIVO	SCARICO DEI CONTENITORI	STABILIZZAZIONE	MANIPOLAZIONE E RIMOZIONE DEI CONIGLI DALLE GABBIE O DAI CONTENITORI
TEMPERATURA TROPPO ALTA	X		X	
TEMPERATURA TROPPO BASSA	X		X	
SPAZIO INSUFFICIENTE	X		X	
DEPRIVAZIONE CIBO TROPPO LUNGA	X		X	
DEPRIVAZIONE ACQUA TROPPO LUNGA	X		X	
RUMORI INASPETTATI			X	X
MANIPOLAZIONE SCORRETTA CONTENITORI		X		
MANIPOLAZIONE SCORRETTA CONIGLI NELLA RIMOZIONE DAI CONTENITORI				X
N. TOTALE DI PERICOLI	5	1	6	2



Termodispersione



Allunga la pinna auricolare
(Shunt arterovenosi): $>25-30^{\circ}\text{C}$



Aumento frequenza respiratoria:
inefficace quando $> 30^{\circ}\text{C}$



Comportamento: $>25-30^{\circ}$

	T °C	Umidità relativa (%)
Femmine adulte	16-21	60-70
Maschi adulti	12-16	60
Ingrasso	15-20	60-70
Appena svezzati	20-22	60-70



Indice di calore humidex



< 27.8°C	NO STRESS
27.8-28.9°C	STRESS MODERATO
28.9-30°C	STRESS GRAVE
>30°C	STRESS MOLTO GRAVE



Temperatura: Misure di mitigazione

- ✓ Scarico immediato
- ✓ Riparo dal sole
- ✓ Temperatura
- ✓ Umidità
- ✓ Velocità dell'aria



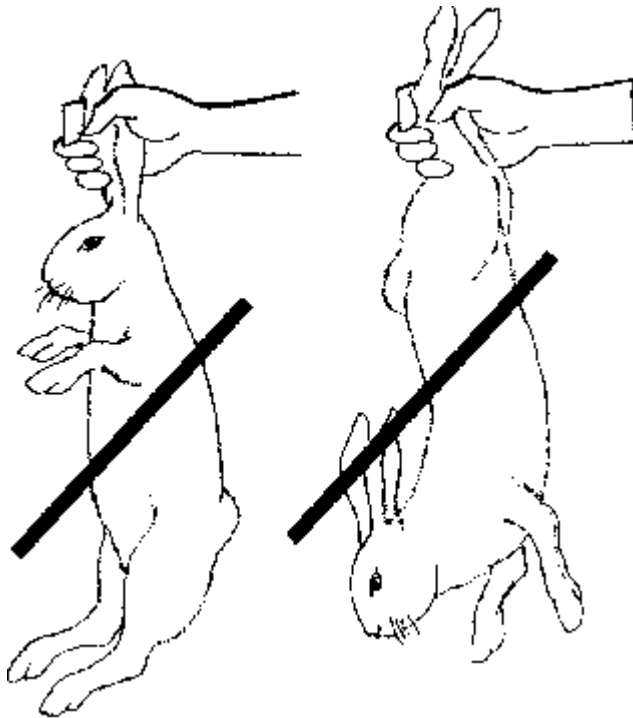
* Spaziature



Manipolazione



SCORRETTA



CORRETTA

Leggero



Pesante



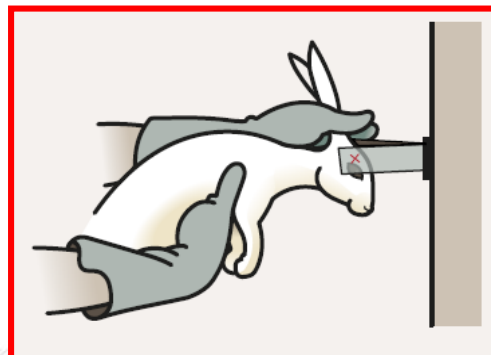
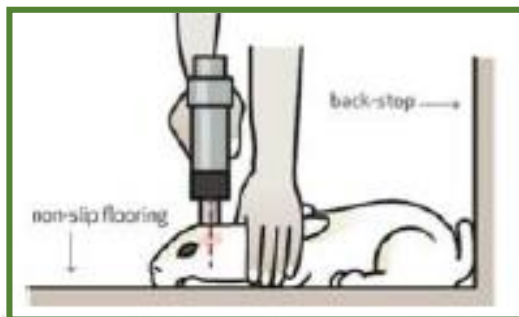


Metodi ammessi nei conigli

Metodo	Categorie di conigli
Dispositivo a proiettile captivo penetrante (s)	Tutte ALLEVAMENTO
Dispositivo a proiettile captivo non penetrante (s)	Tutte
Arma a proiettile libero (a)	Tutte
Colpo da percussione alla testa (a)	Fino a 5 kg ALLEVAMENTO
Elettronarcosi con applicazione limitatamente alla testa (s)	Tutte MACELLO
Elettronarcosi con applicazione di corrente testa e corpo (a)	Tutte
Iniezione letale	Tutte

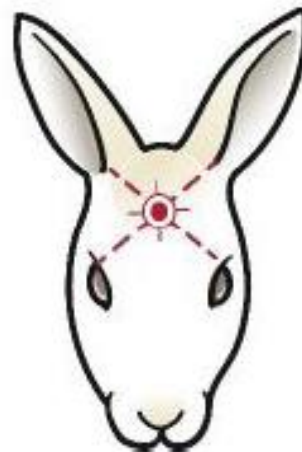
(a): abbattimento

(s): stordimento semplice

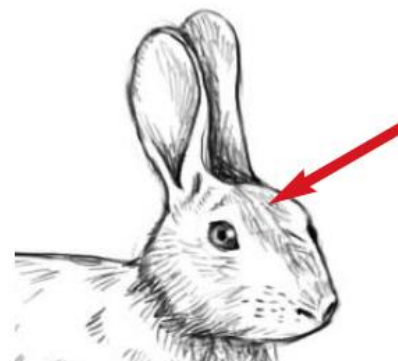




Stordimento con pistola a proiettile captivo penetrante/non penetrante



- Stilo:
 - 6 mm diametro
 - Penetrante: 27 mm lunghezza
 - Non penetrante (aria compressa, 70 PSI*): 20 mm lunghezza





Stordimento elettrico



CARATTERISTICHE DELLA CORRENTE		
A	V (Hz)	DURATA
140-400 mA	100 (50)	2-3s



Dislocazione cervicale (non ammessa)





Pericoli allo stordimento



PERICOLO	ELETTRICO SOLO TESTA	PISTOLA A PROIETTILE CAPTIVO	COLPO PERCUSSIVO
CONTENIMENTO MANUALE	x	x	x
INVERSIONE	x		x
APPENDIMENTO	x	x	
CONTATTO ELETTRICO SCADENTE	x		
APPENDIMENTO INADEGUATO	x	x	
TEMPO DI ESPOSIZIONE TROPPO BREVE	x		
PARAMETRI ELETTRICI INAPPROPRIATI	x		
POSIZIONE DELLO SPARO SCORRETTA		x	
PARAMETRI DELLO STILO SCORRETTI		x	
APPLICAZIONE SCORRETTA DEL COLPO			x
N° TOTALE DI PERICOLI	6	3	3



COSCIENZA

Capacità di percepire emozioni

Controllare movimenti volontari



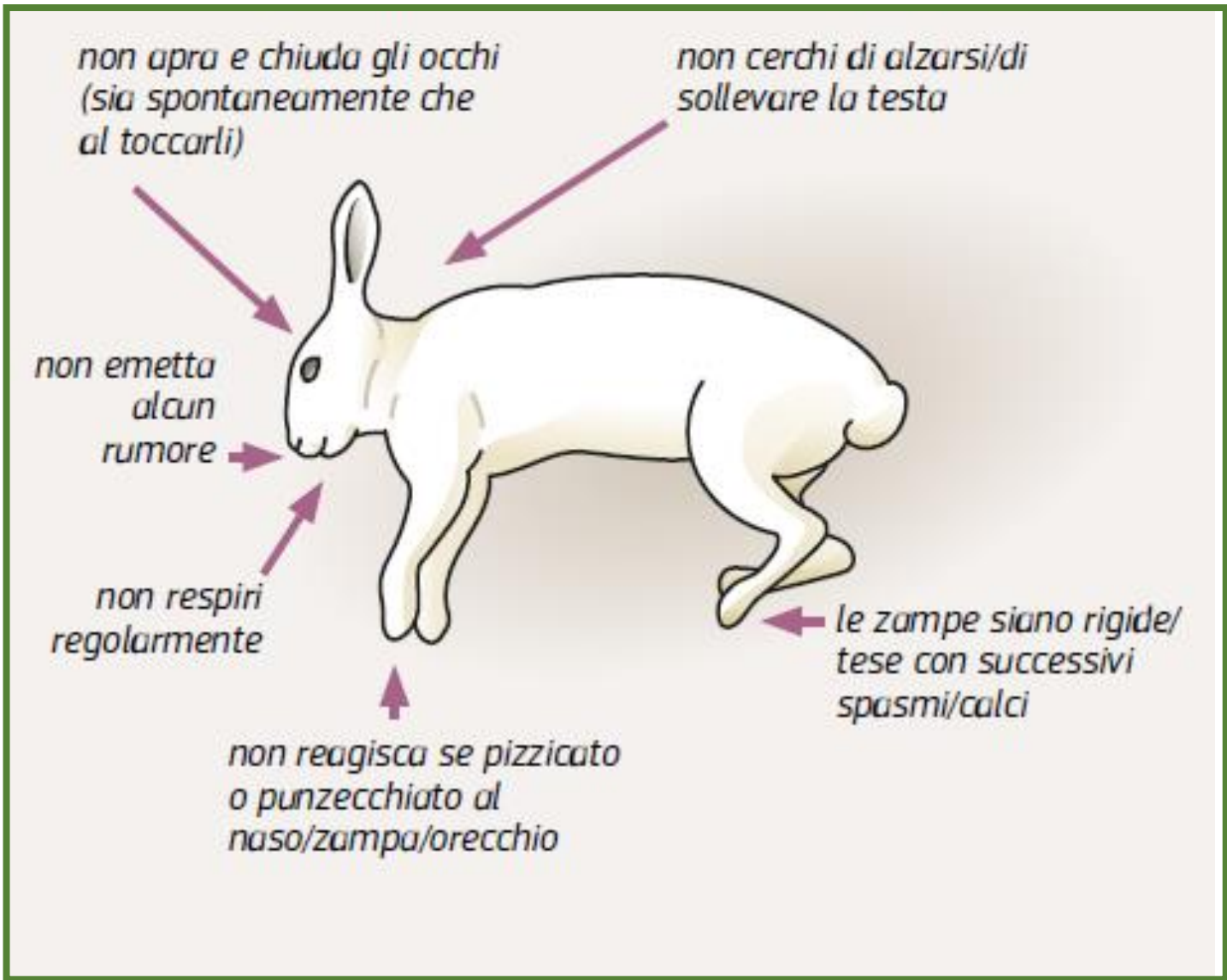
- Perde la naturale posizione eretta
- Non è in stato di veglia
- Non mostra segni di emozioni positive o negative quali paura e dolore

SENSIBILITÀ

Capacità di percepire il dolore



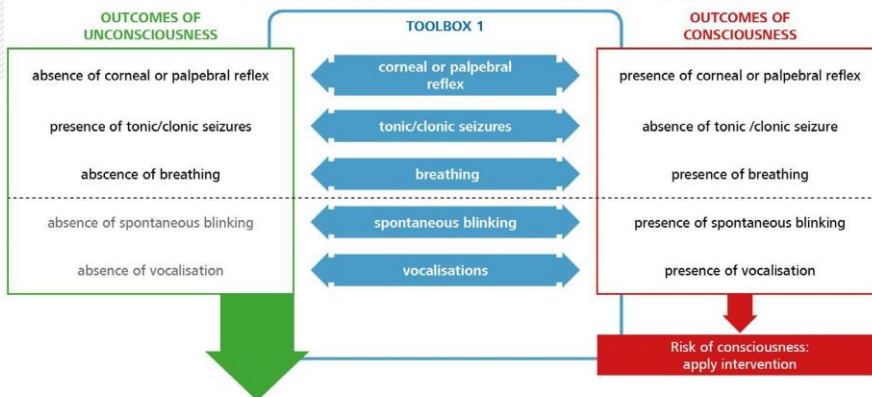
- Non mostra riflessi o reazioni a stimoli quali:
- suoni
 - luci
 - odori
 - contatto fisico



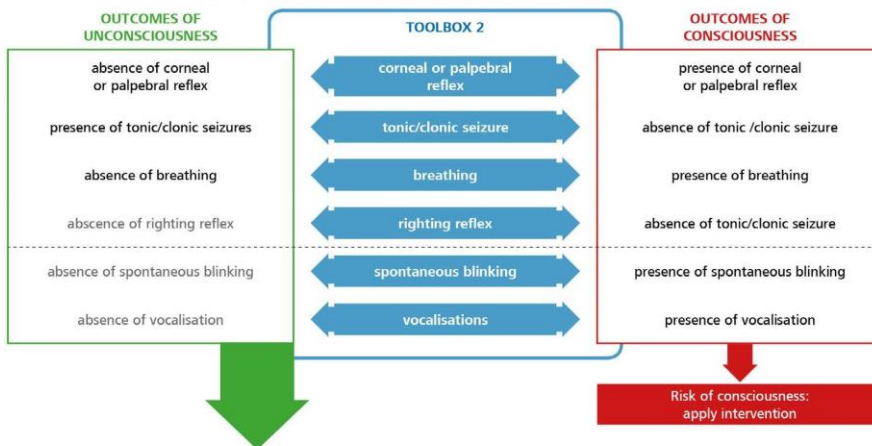


RABBIT SLAUGHTER WITH STUNNING (HEAD-ONLY ELECTRICAL METHOD)

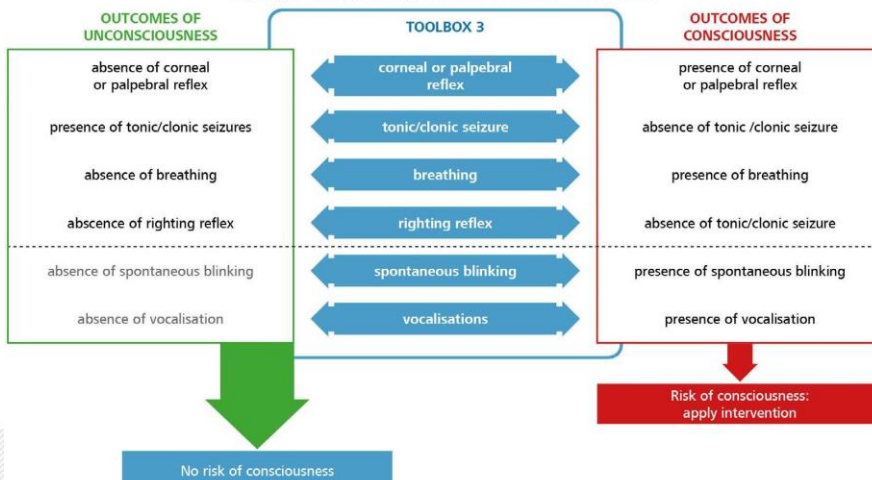
Key Stage 1 (immediately after stunning): check for outcomes of consciousness



Key Stage 2 (at the time of neck cutting): check for outcomes of consciousness



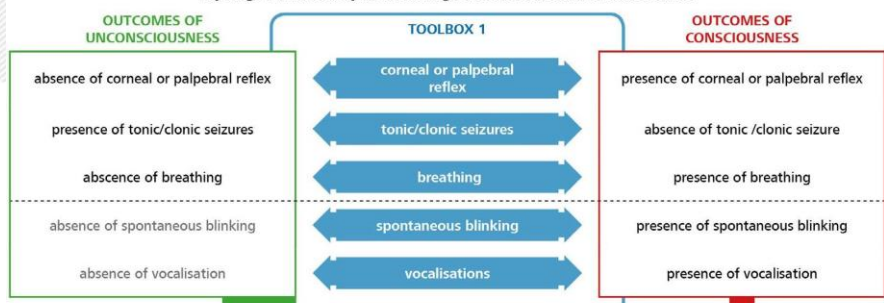
Key Stage 3 (during bleeding): check for outcomes of consciousness





RABBIT SLAUGHTER WITH STUNNING (HEAD-ONLY ELECTRICAL METHOD)

Key Stage 1 (immediately after stunning): check for outcomes of consciousness



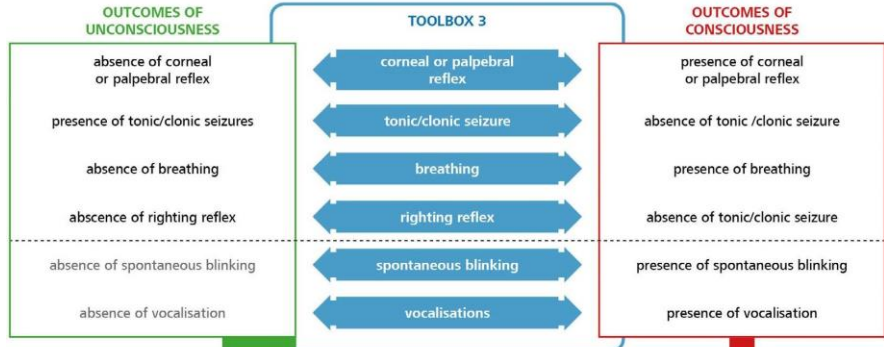
Risk of consciousness: apply intervention

Key Stage 2 (at the time of neck cutting): check for outcomes of consciousness



Risk of consciousness: apply intervention

Key Stage 3 (during bleeding): check for outcomes of consciousness



Risk of consciousness: apply intervention

No risk of consciousness

ALMENO 2
INDICATORI



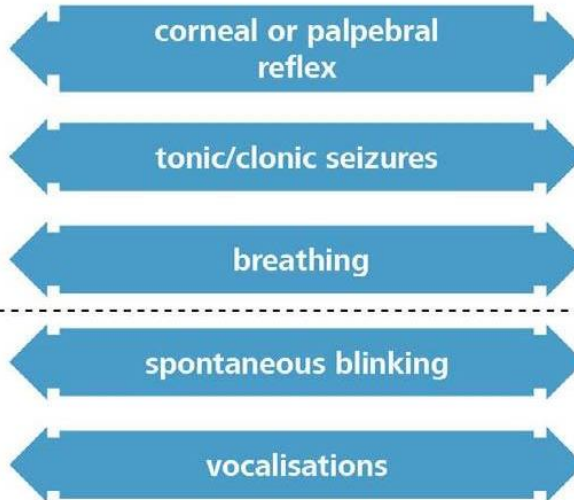
STORDIMENTO



OUTCOMES OF UNCONSCIOUSNESS

- absence of corneal or palpebral reflex
- presence of tonic/clonic seizures
- absence of breathing
- absence of spontaneous blinking
- absence of vocalisation

TOOLBOX 1



OUTCOMES OF CONSCIOUSNESS

- presence of corneal or palpebral reflex
- absence of tonic /clonic seizure
- presence of breathing
- presence of spontaneous blinking
- presence of vocalisation

Risk of consciousness:
apply intervention

**ALMENO 2
INDICATORI**



TAGLIO



OUTCOMES OF UNCONSCIOUSNESS

absence of corneal or palpebral reflex

presence of tonic/clonic seizures

absence of breathing

absence of righting reflex

absence of spontaneous blinking

absence of vocalisation

TOOLBOX 2

corneal or palpebral reflex

tonic/clonic seizure

breathing

righting reflex

spontaneous blinking

vocalisations

OUTCOMES OF CONSCIOUSNESS

presence of corneal or palpebral reflex

absence of tonic /clonic seizure

presence of breathing

absence of tonic/clonic seizure

presence of spontaneous blinking

presence of vocalisation

Risk of consciousness:
apply intervention

**ALMENO 2
INDICATORI**



DISSANGUAMENTO



OUTCOMES OF UNCONSCIOUSNESS

TOOLBOX 3

OUTCOMES OF CONSCIOUSNESS

absence of corneal or palpebral reflex

corneal or palpebral reflex

presence of corneal or palpebral reflex

presence of tonic/clonic seizures

tonic/clonic seizure

absence of tonic /clonic seizure

absence of breathing

breathing

presence of breathing

absence of righting reflex

righting reflex

absence of tonic/clonic seizure

absence of spontaneous blinking

spontaneous blinking

presence of spontaneous blinking

absence of vocalisation

vocalisations

presence of vocalisation

No risk of consciousness

Risk of consciousness:
apply intervention

**ALMENO 2
INDICATORI**



STORDIMENTO	INDICATORE	FASE	SENSIBILITÀ			SPECIFICITÀ			FACILITÀ DI APPLICAZIONE		
			Risultati								
			Mediana	P5	P95	Mediana	P5	P95	FASE 1 (stord)	FASE 2 (jugul)	FASE 3 (dissang)
			[%]	[%]	[%]	[%]	[%]	[%]	Media della categoria		
ELETRICO	Tonico Clonico	FASE 1	92.9%	78.2%	98.9%	95.9%	86.7%	99.4%	1.1		
C CAPTIVO			85.5%	57.4%	98.0%	93.1%	73.5%	99.5%	1.0		
ELETRICO		FASE 2	92.6%	73.1%	99.3%	95.5%	81.9%	99.7%		1.8	
C CAPTIVO			88.7%	62.0%	98.9%	85.5%	57.7%	98.0%		1.9	
ELETRICO		FASE 3	90.9%	66.1%	99.3%	87.3%	55.7%	99.0%			2.3
C CAPTIVO			87.7%	56.8%	99.0%	73.3%	32.4%	96.4%			2.1
ELETRICO	Riflesso corneale e palpebrale		94.1%	76.8%	99.5%	97.4%	89.1%	99.8%	2.3	2.0	2.1
C CAPTIVO			96.4%	85.4%	99.7%	97.7%	90.6%	99.8%	1.9	1.9	2.1
ELETRICO	Ammiccamento spontaneo		69.5%	20.8%	97.3%	98.8%	95.8%	99.9%	1.5	1.4	1.4
C CAPTIVO			69.4%	20.7%	97.3%	98.8%	96.1%	99.8%	1.4	1.1	1.4
ELETRICO	Respirazione ritmica		92.1%	70.0%	99.4%	97.0%	87.7%	99.8%	2.6	2.6	2.5
C CAPTIVO			91.6%	68.3%	99.3%	97.0%	87.7%	99.8%	2.6	2.6	2.5
ELETRICO	Riflesso di raddrizzamento		76.8%	34.9%	97.6%	98.2%	92.6%	99.9%	1.7	2.1	2.2
C CAPTIVO			76.8%	34.9%	97.6%	98.2%	92.6%	99.9%	1.7	2.1	2.2
ELETRICO	Collasso Immediato		76.8%	32.0%	98.1%	95.0%	80.0%	99.6%	2.1	3.0	3.0
C CAPTIVO			76.8%	32.0%	98.1%	96.6%	86.2%	99.7%	1.9	3.0	3.0
ELETRICO	Vocalizzazione		56.7%	8.6%	95.9%	97.8%	90.9%	99.8%	1.0	1.1	1.1
C CAPTIVO			71.0%	37.0%	93.3%	98.1%	92.0%	99.9%	1.0	1.2	1.2

- Facile ($1.0 \leq x \leq 1.66$)
- Normale ($1.66 < x \leq 2.33$)
- Difficile ($2.33 < x \leq 3,0$)



MORTE

Stato fisiologico dell' animale in cui la respirazione e la circolazione del sangue sono cessate. **I centri respiratorio e circolatorio nel midollo allungato sono irreversibilmente inattivi a causa della permanente assenza di sostanze nutritive e ossigeno nel cervello.** La coscienza è irreversibilmente persa.



CESSAZIONE DISSANGUAMENTO



PERDITA TONO MUSCOLARE



ASSENZA BATTITO CARDIACO



PUPILLE DILATATE



On farm killing



PERICOLO	MANIPOLAZIONE	ELETTRICO SOLO TESTA	PISTOLA CAPTIVA	COLPO PERCUSSIVO	INIEZIONE LETALE
Persone che entrano nei locali	X				
Manipolazione errata	X				
Rumori forti improvvisi	X				
Inversione				X	
Contenimento manuale	X	X	X	X	X
Scarso contatto elettrico		X			
Parametri elettrici inappropriati		X			
Intervallo stordimento-dissanguamento prolungato		X			
Tempo di esposizione troppo breve		X			
Posizione dello sparo scorretta			X		
Parametri della pistola scorretta			X		
Applicazione scorretta del colpo alla testa				X	
Via di somministrazione inappropriata					X
Dose subletale					X
Totale dei pericoli	4	5	3	3	3



On farm killing



PERICOLO	MANIPOLAZIONE	ELETTRICO SOLO TESTA	PISTOLA CAPTIVA	COLPO PERCUSSIVO	INIEZIONE LETALE
Persone che entrano nei locali	X				
Manipolazione errata	X				
Rumori forti improvvisi	X				
Inversione					
Contenimento manuale					X
Scarso contatto e					
Parametri elettrici					
Intervallo stordimento					
dissanguamento prolungato					
Tempo di esposizione breve					
Posizione dello sparatore					
Parametri della pistola					
Applicazione scorretta alla testa				X	
Via di somministrazione inappropriata					X
Dose subletale					X
Totale dei pericoli	4	5	3	3	3

STAFF



FORMAZIONE

SCIENTIFIC OPINION



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Stunning methods and slaughter of rabbits for human consumption

EFSA Panel on Animal Health and Welfare (AHAW),
Søren Saemøse Nielsen, Julio Alvarez, Dominique Joseph Brocū, Paolo Callari, Klaus Depner,
Julian Ashley Drewes, Bruno Garin-Bastuz, Jose Luis Gonzalez Rojas,
Christian Gortázar Schmidt, Virginie Michel, Miguel Ángel Miranda Chuaco,
Helen Clara Roberts, Lisa Helena Silvenoinen, Karl Stahl, Antonio Velasco Calvo, Arno Vilrop,
Christoph Winckler, Denise Cardiani, Chiara Fabris, Olaf Moustach-Schütz, Yves Van der Stede
and Hans Spoolder

Abstract

This opinion on the killing of rabbits for human consumption ('slaughtering') responds to two mandates: one from the European Parliament (EP) and the other from the European Commission. The opinion describes stunning methods for rabbits known to the experts in the EFSA working group, which can be used in commercial practice, and which are sufficiently described in scientific and technical literature for the development of an opinion. These are electrical stunning, mechanical stunning with a penetrative and non-penetrative captive bolt and gas stunning. The latter method is not allowed in the EU anymore following Council Regulation (EC) No 1099/2009, but may still be practiced elsewhere in the world. Related hazards and welfare consequences are also evaluated. To monitor during effectiveness as requested by the EP mandate, the opinion suggests the use of indicators for the state of consciousness, selected on the basis of their sensitivity, specificity and ease of use. Similarly, it suggests indicators to confirm animals are dead before dressing. For the European Commission mandate, slaughter processes were assessed from the arrival of rabbits in containers until their death, and grouped in three main phases: pre-stunning (including arrival, unloading of containers from the truck, handling, handling/removal of rabbits from containers), stunning (including restraint) and bleeding (including bleeding following stunning and bleeding during slaughter without stunning). Ten welfare consequences resulting from the hazards that rabbits can be exposed to during slaughter are identified: consciousness, animal not dead, thermal stress (heat or cold stress), prolonged thirst, prolonged hunger, restriction of movements, pain, fear, distress and respiratory distress. Welfare consequences and relevant animal-based measures (indicators) are described. Outcome tables linking hazards, welfare consequences, indicators, origins, preventive and corrective measure are developed for each process. Mitigation measures to minimise welfare consequences are also proposed.

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Keywords: rabbit, slaughter, hazards, animal welfare consequences, welfare indicators, preventive/corrective measures

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www.efsa.europa.eu/efsaopinion

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SCIENTIFIC OPINION



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Scientific opinion concerning the killing of rabbits for purposes other than slaughter

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and Hans Spoolder

Abstract

Rabbits of different ages may have to be killed on-farm for purposes other than slaughter (where slaughter is defined as killing for human consumption) either individually or on a large scale (e.g. for production reasons or for disease control). The purpose of this opinion was to assess the risks associated to the on-farm killing of rabbits. The processes during on-farm killing that were assessed included handling, stunning and/or killing methods (including restraint). The latter were grouped into four categories: electrical methods, mechanical methods, controlled atmosphere method and lethal injection. In total, 14 hazards were identified and characterised, most of these related to stunning and/or killing. The staff was identified as the origin for all hazards, either due to lack of the appropriate skills/needs to perform tasks or due to fatigue. Possible corrective and preventive measures were assessed: measures to correct hazards were identified for five hazards and the staff was shown to have a crucial role in prevention. Five welfare consequences of the welfare hazards to which rabbits can be exposed to during on-farm killing were identified: not being dead, consciousness, pain, fear and distress. Welfare consequences and relevant animal-based measures were described. Outcome tables linking hazards, welfare consequences, animal-based measures, origins, preventive and corrective measures were developed for each process. Mitigation measures to minimise welfare consequences are proposed.

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