Euthanasia: Humane and Human Considerations
Sheilah Robertson
Senior Medical Director
Lap of Love Veterinary Hospice

"a life is a story, and the way a story ends is one of the most important parts"

Dr. Mary Gardner
Co-founder LOL
Euthanasia is not a failure, but we can fail at euthanasia

Who are the stakeholders?
Why do we euthanize animals?
Technical aspects
Controversies
Emotional impact
Human and humane considerations
Euthanasia

*Eu* – good
*Thanos* – death

Ending the life of an animal in a way that minimizes or eliminates pain and distress

How does terminology affect how we feel about things?

UF Maddie’s Shelter Program
Why?

Day 1  Veterinary Skills

Where is euthanasia?
Pre-requisites for suffering

SENTIENCE
Awareness of:
Sensations
Emotions
Feelings

CONSCIOUSNESS
Awake
Anesthetized
Unconscious
Unconsciousness nullifies perception

Mellor and Diesch 2006

COMMENTARY
Sara White JAVMA 2012

Prevention of fetal suffering during Ovariohysterectomy of pregnant animals
WHERE?

AT HOME | COMFORT ROOM | EXAM ROOM

WHERE?

EUTHANASIA ROOM
WHERE?

Rosebud Indian Reservation, South Dakota

Rules, Regulations & Guidelines

Drug Enforcement Administration
State, and State board rules
Standards of care
AVMA Euthanasia Guidelines
Classification of techniques

- ACCEPTABLE
- ACCEPTABLE WITH CONDITIONS
- UNACCEPTABLE
Mechanisms of euthanasia

1. Direct depression of neurons necessary for life functions
2. Hypoxia
3. Physical disruption of brain activity

TO SEDATE OR NOT
Pre-euthanasia sedation

- Reliable
- Predictable onset time
- Versatile
- Minimal side effects

IM, SC, ORAL OTM
Sedation

Minimal restraint needed for euthanasia
Increases choice of techniques
Safety

Relaxed, peaceful, sleeping
Pre-euthanasia sedation

Additional drugs and record keeping
Can be unpredictable
Side-effects
Added expense
Takes longer

Pre-euthanasia sedation

IM  SC  ORAL

OTM
Pre-Euthanasia Sedation Protocols

- 2.5 mls ACEPROMAZINE
- 2.5 mls KETAMINE

≤ 4.5 kg  0.2 mls
≥ 4.5 kg 0.3 mls

Does it sting?

01 pH
02 Size of needle
03 Speed of injection
04 Route and site of injection
Does it sting?

<table>
<thead>
<tr>
<th>DRUG</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acepromazine</td>
<td>4.0-5.5</td>
</tr>
<tr>
<td>Butorphanol</td>
<td>3.5-5.0</td>
</tr>
<tr>
<td>Ketamine</td>
<td>3.5-5.5</td>
</tr>
<tr>
<td>Tiletamine - zolazepam</td>
<td>2.0-3.5</td>
</tr>
</tbody>
</table>

Sedation IM or SC
Pre-Euthanasia Sedation - Dogs

- Ketamine: 0.1ml
- Acepromazine: 0.1ml
- Xylazine (100 mg/ml): 0.05ml
- Butorphanol: 0.05ml

Per 4.5 kg

```
| 10ml Ketamine | 10ml Ace | 5ml Butorphanol | 5ml Xylazine | 30ml Dose @ 0.3ml/4.5 kg |
```

“PRE-MIX” - Dogs
Oral sedation

Acepromazine
Trazodone
Gabapentin
Pentobarbital

Tiletamine-zolazepam

Gabapentin
Cage trapped community cats

Prakrantz et al 2018
Ora-Plus / Ora-Sweet mix
Prakrantz et al 2018

100 mg gabapentin
Oral Transmucosal Sedation [OTM]

Acepromazine
Ketamine
Tiletamine-zolazepam
Alpha₂ - agonists

OTM

Acepromazine
Tiletamine-zolazepam
Ketamine
5.0 - 7.5 mg/kg
Salivation ~ 50%
No retching or vomiting
Onset time ~ 15 mins
- Posture
- Response to clippers
- Response to restraint

Difficult dogs
3 ml syringe, 7.6 mg/ml

RESEARCH STUDY

Pharmacokinetic of detomidine following intravenous or oral-transmucosal administration and sedative effects of the oral transmucosal treatment in dogs

Messenger et al 2016 AJVR
Oral Transmucosal @ 0.5-1.0 mg/m²
Body weight = 24 ± 4.5 kg
1.0 mg/m² = 35.3 ± 2.5 µg/kg
~ 0.11 ± 0.02 mls

Results

<table>
<thead>
<tr>
<th>Route</th>
<th>Time (mins)</th>
<th>GLOBAL SEDATION SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEXMEDETOMIDINE</td>
<td>5</td>
<td>*</td>
</tr>
<tr>
<td>DETOMIDINE</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

* Significant difference
Oral Pentobarbital
Hiding Capsules

Oral Euthanasia Solution

Dose 1g/10 kg

Three possible results

1. Relaxed enough to give more drugs
2. Sedate enough to euthanize
3. Euthanasia
Mechanisms of euthanasia

1. Direct depression of neurons necessary for life functions
2. Hypoxia
3. Physical disruption of brain activity

PENTOBARBITAL ± PHENYTOIN
Logistics

Catheters?
Drawing up drugs

NEW

ONCE THROUGH RUBBER STOPPER

ORIGINAL STUDY

Bullock et al 2019 JVECC

Comparison of pentobarbital-phenytoin alone vs propofol prior to pentobarbital-phenytoin for euthanasia in 436 client owned dogs
5-30 seconds

30-60 seconds

**Bullock et al 2019 JVECC**

Breed, age, weight, clinician
Drug doses used
7 predetermined adverse events recorded
Euthanasia score = sum of all adverse events
   Possible score = 0-7
## Adverse events recorded

<table>
<thead>
<tr>
<th>Number of adverse events</th>
<th>Propofol group N=200</th>
<th>PP group N=236</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 1</td>
<td>53</td>
<td>83</td>
</tr>
<tr>
<td>0</td>
<td>147</td>
<td>153</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td><strong>26.5</strong></td>
<td><strong>35.2</strong></td>
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## Adverse events

<table>
<thead>
<tr>
<th>EVENT</th>
<th>Propofol group %</th>
<th>PP group %</th>
<th>Odds ratio</th>
<th>95% CI</th>
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<tbody>
<tr>
<td>Any event except muscle activity</td>
<td>22.0</td>
<td>26.3</td>
<td>0.79</td>
<td>0.51-1.23</td>
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<tr>
<td>Agonal breaths</td>
<td>9.5</td>
<td>9.7</td>
<td>0.97</td>
<td>0.51-1.84</td>
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<tr>
<td>Urination</td>
<td>8.0</td>
<td>8.5</td>
<td>0.94</td>
<td>0.47-1.87</td>
</tr>
<tr>
<td>Defecation</td>
<td>2.0</td>
<td>1.7</td>
<td>1.18</td>
<td>0.29-4.79</td>
</tr>
<tr>
<td>Vocalization</td>
<td>2.5</td>
<td>5.1</td>
<td>0.48</td>
<td>0.17-1.38</td>
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<tr>
<td>Muscle activity</td>
<td>6.0</td>
<td>14.0</td>
<td>0.39</td>
<td>0.20-0.78</td>
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**Conclusions:** There was no difference in the likelihood of the studied adverse events during client elected euthanasia in dogs when propofol was used prior to PP. There was a significant reduction in perimortem muscle activity if propofol was given prior to PP.
Which veins

MEDIAL BRANCH

EAR

Dorsal Pedal Vein
Other routes

- Intra-renal
- Intra-hepatic
- Intra-cardiac
- Intra-peritoneal
Emotional effects on observers and operators
People judge an experience based on its peak, and its end, rather than on the average of every moment of the experience.

Daniel Kahneman

The Peak
End Rule

The end is remembered just as much as the worst moment

71

72
Body disposal

THE DEBRIEF
What if euthanasia was prohibited?

Italy

Stray dogs may only be euthanized if “seriously or incurably ill or proven to be dangerous”

The Ministry Circular underlines the fact that “euthanasia of dogs is prohibited except in special justified cases”

Remain as strays ± neutered
Placed in shelters for the rest of their lives
Resources

LapofLove.com/Resources
Password: DVMSUPPORT

www.drsheilahrobertson.com