Euthanasia and Mass Depopulation During Animal Health Emergencies

Overview and Considerations

Definitions

- Euthanasia
  - "Good death"
  - As painless and stress free as possible
- Mass depopulation
  - Large numbers of animals
  - Safely, quickly and efficiently destroyed
- Moral obligation to ensure welfare

Goals of Euthanasia

- Humane treatment at all times
- Acceptable method
  - Quick, efficient and humane
- Minimize negative psychological impact
  - Animal owners and caretakers, responders, public
- Prevent disease spread
- Prevent adulterated animal products from entering food chain

CONSIDERATIONS

- Guidelines
  - American Veterinary Medical Association
  - FAD PReP/NAHEMS Guidelines: Mass Depopulation and Euthanasia
  - World Organization for Animal Health (OIE)
    - Terrestrial Animal Health Code (Ch. 7.6)
      - Killing Animals for Disease Control Purposes

Euthanasia Guidelines

Method Selection

- Species
- Number of animals
- Handling and restraint
- Technical skill
- Cost
- Residues
- Personnel safety
- Regulations
**Procedure Considerations**

- Humane treatment
  - Quickly rendered unconscious
  - Minimize pain and stress
- Skilled personnel
- Confirmation of death
  - Back-up method
- Site selection

**Animal Welfare**

- Calm, gentle handling
- Non-slip surfaces
- Indoors – consider access for removal and disposal
- Non-ambulatory animals euthanized where they are
- JIT Guidelines for handling/restraint

**Public Perception**

- Conduct indoors or away from public view
- Treat animals humanely at all times
- Media may help convey information
  - Necessity of depopulation
  - Updates
- Public Information Officer (PIO) should coordinate to treat the situation proactively

**EUTHANASIA METHODS**

- Physical
- Chemical

**Physical Euthanasia Methods**

- Captive bolt
- Gunshot
- Special circumstance
  - Electrocution (swine)
  - Cervical dislocation, decapitation (poultry)
- Adjunct physical methods
  - Exsanguination and pithing

**Chemical Euthanasia Methods**

- Injectable drugs
  - Barbiturates/barbituric acid derivatives
  - Documentation of controlled substances
- Gas
  - Anesthetic gases
  - Carbon monoxide
  - Carbon dioxide
- Adjunct injectable chemical methods
Methods of Euthanasia

- Physical methods
  - Quick, painless, humane, practical
  - Require technical skill, highly trained personnel

- Chemical methods
  - Pet livestock, companion animals
  - Impractical for mass depopulation of livestock
    - Chemical residues
    - Large volume of drugs required
    - Increased handling to inject drugs
    - Cost of chemicals

Unacceptable Methods of Euthanasia

- Manually applied blunt trauma
- Injection of any chemical not labeled for use as a euthanasia agent
- Injection of air into blood vessel
- Electrocution with a 120 or 220 volt electrical cord

EUTHANASIA METHODS BY SPECIES

Bovine, Sheep, Goat Euthanasia

- Primary methods
  - Sedation then barbiturate
  - Captive bolt
  - Gunshot
- Adjunct methods
  - KCL, Magnesium salts
  - Exsanguination, pithing
- Companion livestock
  - Injectable drugs
  - Barbiturates

Equine Euthanasia

- Primary methods
  - Sedation then barbiturate
  - Captive bolt
  - Gunshot
- Adjunct method
- Safety issues

Swine Euthanasia

- Primary methods
  - Captive bolt
  - Gunshot
  - Gas: Carbon dioxide (CO₂)
    - Only for smaller swine
- Adjunct methods
  - Companion livestock
    - Injectable drugs
Just-In-Time Training for Animal Disease Emergencies

Poultry Euthanasia

- Methods
  - Inhaled anesthetics
    - Carbon dioxide (CO2)
    - Water-based foam
  - Injectable anesthetics
  - Cervical dislocation for smaller birds
  - Decapitation NOT recommended if other means available

Confirmation of Death

- Death must be confirmed on each individual animal
- Parameters
  - Lack of heartbeat
  - Lack of respiration
  - Lack of corneal reflex
    - The eyelid is not closed when the cornea/eyeball surface is touched
  - Presence of rigor mortis

PERSONNEL

- Training
- Safety
- Psychological Impact

Safety

- Specific considerations
  - Size, weight,
  - Temperament
    - Dangerous animals
    - Animal familiarity humans
  - Restraint methods available
  - Euthanasia method and/or equipment available

Psychological Impact:

Responders

- Compassion fatigue
- Post-traumatic stress disorder (PTSD)
- Recognition in self and others
- Psychological first aid
- Counselors and mental health experts should be available

Personnel Training

- Animal handling
- Approved euthanasia method to be used
- Safety issues
- PPE
- Biosecurity
- Cleaning and disinfection procedures

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Psychological Considerations: Owners and Stakeholders

- Owners should not be present
- If present, brief owners on
  - Chosen euthanasia method
  - Safety
  - Counseling services
- Public Information Office in charge of communications

References and Resources

- AVMA Guidelines for the Euthanasia of Animals
- FAD Prep/NAHEMS Guidelines
  - Mass Depopulation and Euthanasia
- Procedures for Humane Euthanasia, Iowa State University College of Veterinary Medicine
  - Killing of Animals for Disease Control Purposes

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