Roadside Emergencies Involving Livestock

Chris Clark

WCVM

- 100,000s of animals are transported by road
- Fortunately accidents are rare
- When they do happen it is possible that a veterinarian will be called to the scene

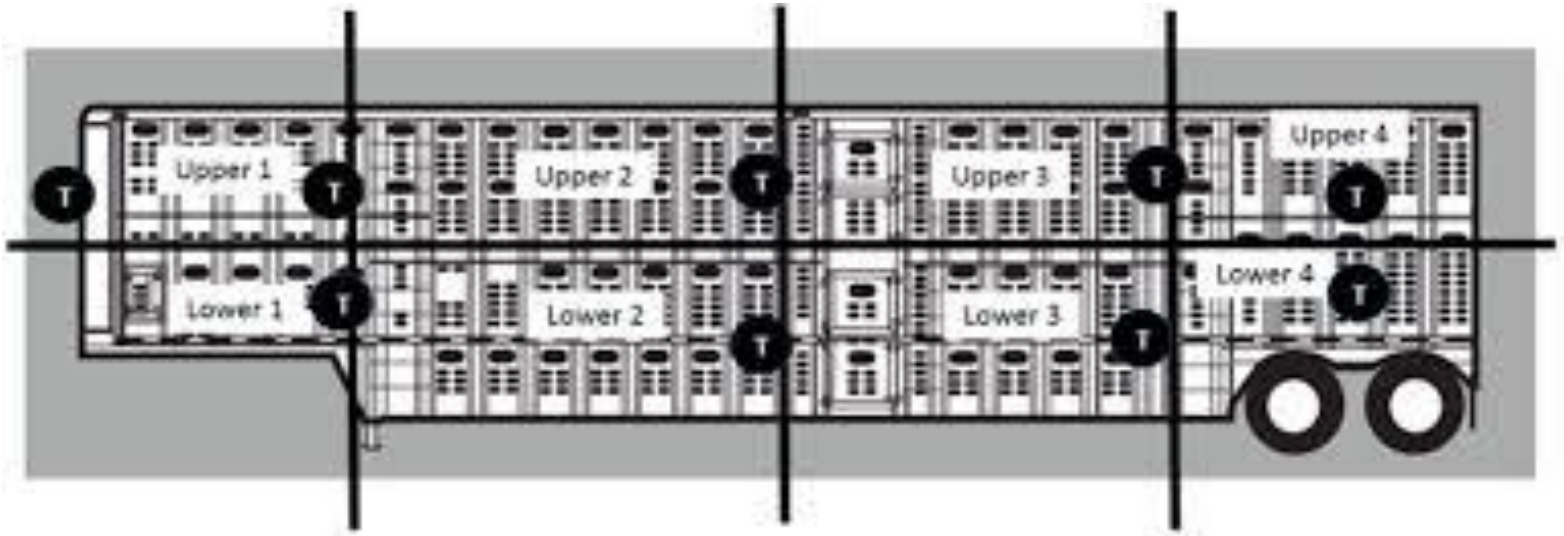
- What do you do?

Why me?

- Community service
- Police and Fire Departments aren’t specifically trained for this
- Veterinarians bring a unique skill set and knowledge base

Accidents will happen

Livestock trailers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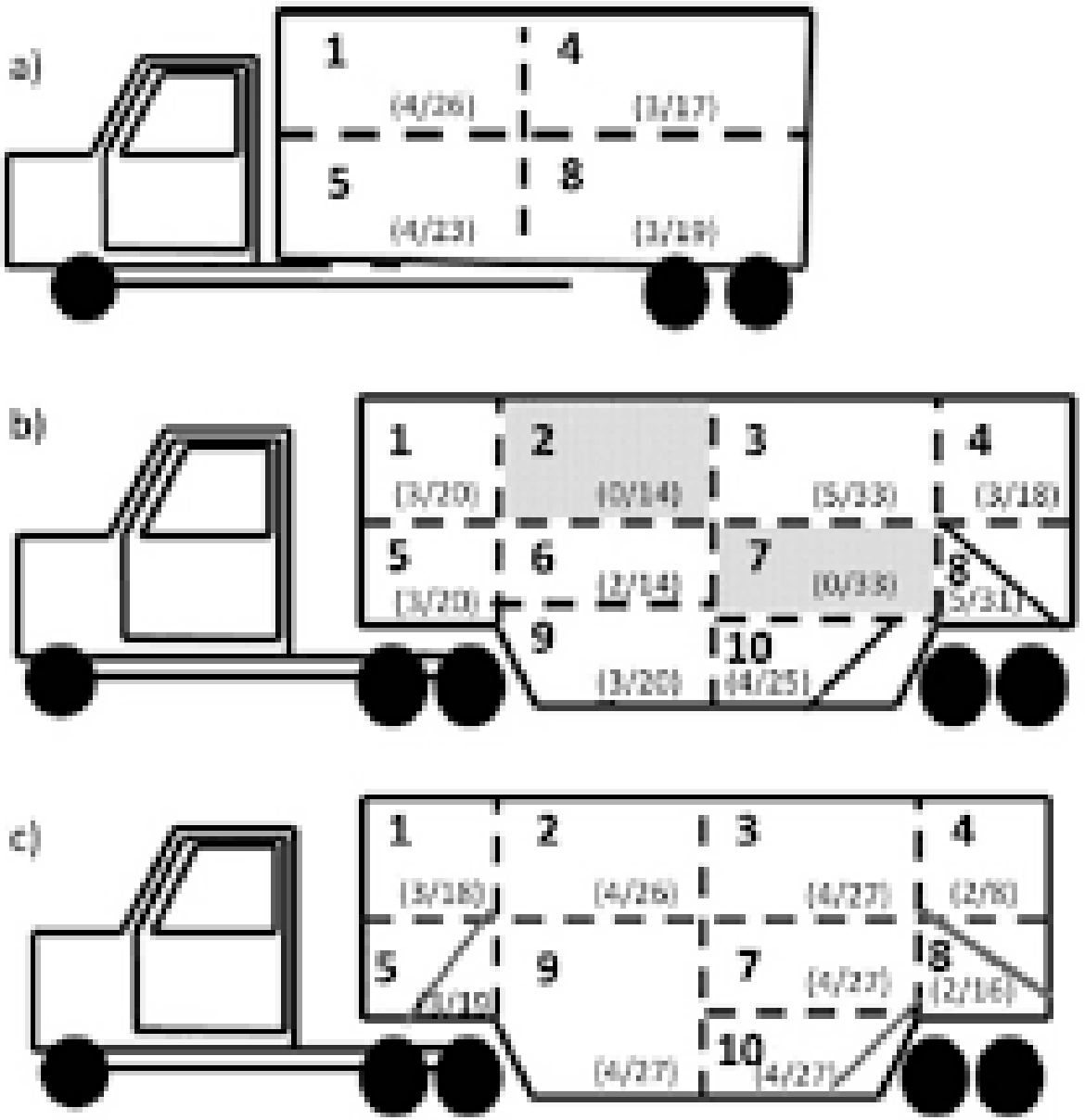
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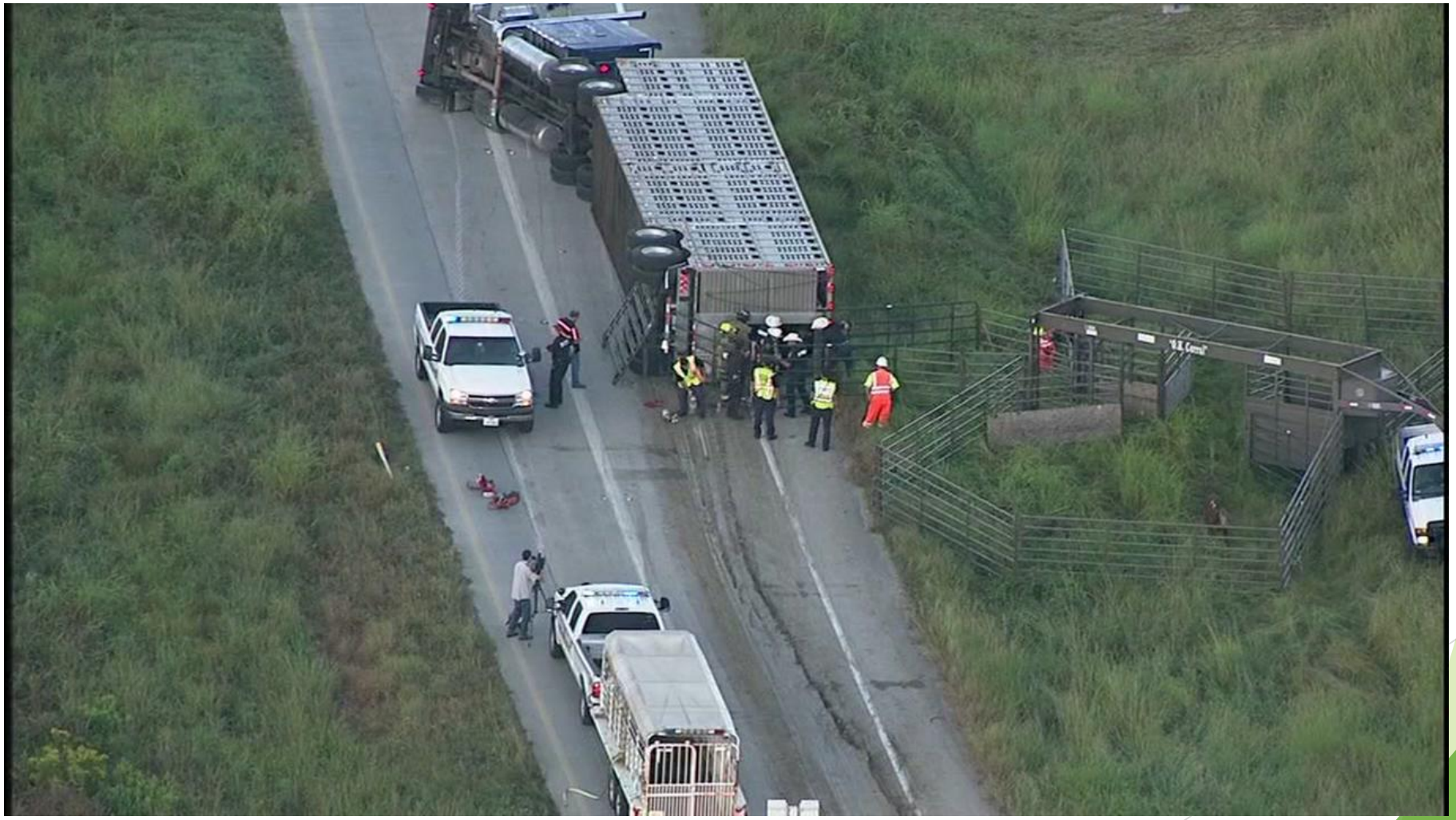
Animal access

The realities of animal accidents

- The right sided role over
- Door is inaccessible
- Flooring collapses
  - Animals are crushed



From a veterinary standpoint 2 main issues

- Animals are being crushed and are dying
- How do you get them out?
- Not everyone shares our priorities!

Authority at the scene

- Emergency responders know what they are doing
- You can offer advice and expertise as appropriate

Police

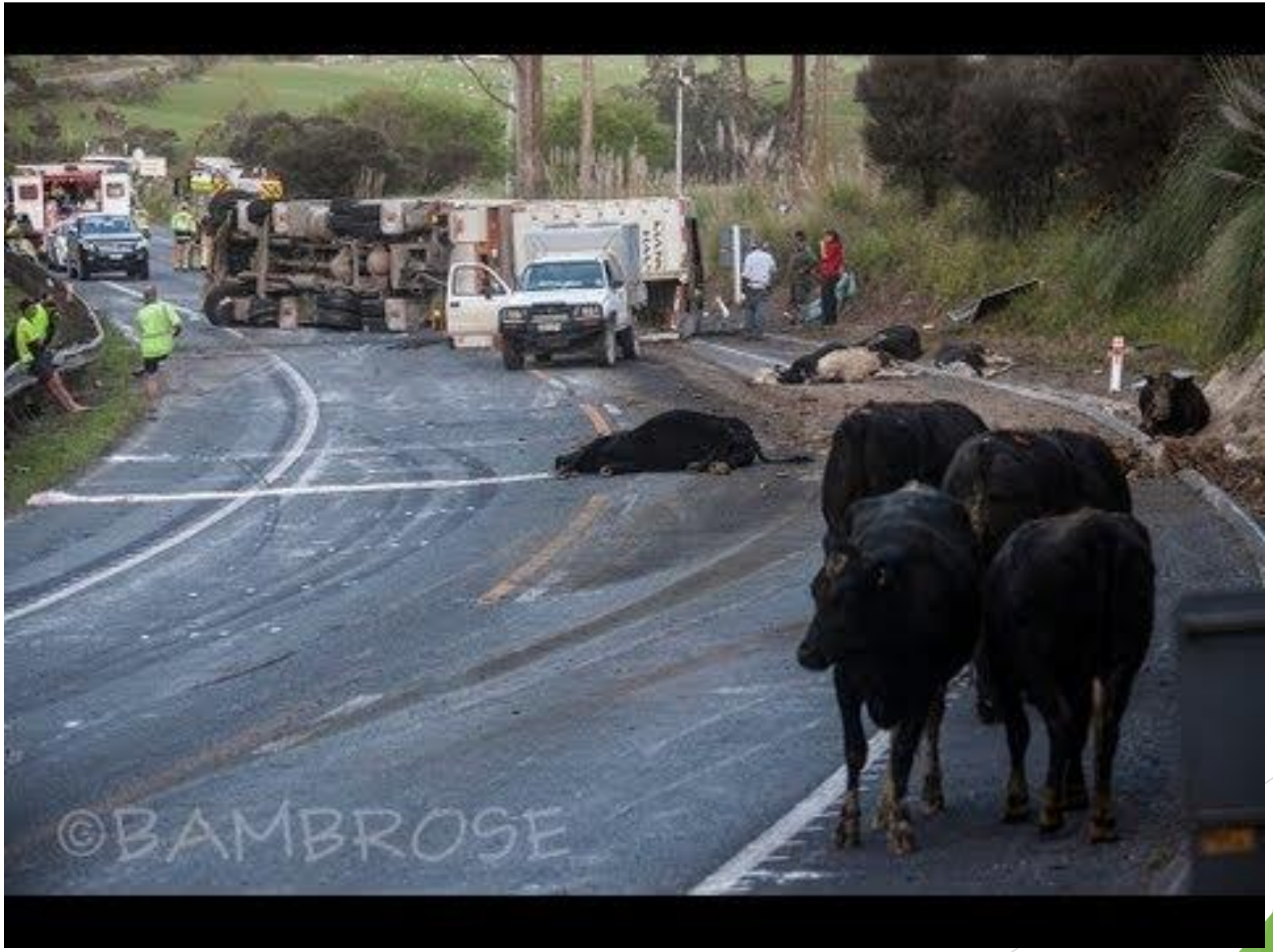
- Have the authority to control the scene
- Primary focus is protecting human life
  - Preventing further accidents
  - Loose livestock are a huge risk to other vehicles
- They can remove people from the scene

Fire department

- In charge of the rescue
- Have the know how and the tools to get the animals out of the trailer when appropriate

The number one concern is to preserve human life

- Animals stay in the trailer until there is somewhere safe to put them!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So what can a vet do?

1. Expert in animal behavior
2. Assist with unloading and corralling animals
3. Triage of injured animals
4. Euthanasia of injured animals

Getting the animals off the trailer

- Need somewhere to put them – vets know
  - New trailer
  - Temporary corrals
  - Move them to a field
- Supplies
  - Temporary panels
  - Snow fence
  - Fencing pliers

Getting animals out

- In most rollovers you will have to cut a hole in the roof
  - Rear doors may be accessible
- Pigs – size dependent
  - Carry
  - Push
  - Buckets for big pigs
- Cattle – ply wood ramp, careful with lights

Triage

- Vital veterinary role at accident scene
- Veterinarians tend to over think it
- The question is “can the animal be transported”?

Triage

Note: The Compromised Animals Policy on the CFIA website provides a list of conditions which render animals unfit for transport.

An animal must not be transported if it:

- is unable to get up or stand without assistance or move without being dragged or carried
- has a broken limb or pelvis
- has a rupture of the pre-pubic tendon (splitting)
- is likely to give birth or has given birth within the last 48 hours
- is suffering from exhaustion and/or dehydration
- is in shock or dying
- has a uterine prolapse
- has an injury and is hobbled to aid in treatment;
- is lame on one or more limbs Footnote 1 as shown by:
    - an obvious limp with uneven weight bearing, and the inability to bear any weight on one leg is immediately identifiable (unable to use a foot to walk); or
    - obvious shortened strides, halted movement and a reluctance to move
- has a hernia that:

Special provisions

Animals with conditions such as those listed below may only be transported with special provisions.

- imperfect movement, or a slight limp
- acute frostbite
- acute penis injury
- a rectal or vaginal prolapse
- bloat (if not weak or already down)
- laboured breathing
- an amputated limb
- partial or total blindness
- a large udder due to heavy lactation (requiring milking every 12 hours)
- an open wound or laceration (depending on the severity of the wound, the animal may be unfit for transport); or
- squamous cell carcinoma (cancer eye stage 2 or 3, as defined in the CFIA's Compromised Animals Policy)

Animals that are unfit for transport must be euthanized

- When possible you need owners consent
  - Livestock manifest
- Legality of emergency euthanasia is tricky
  - Generally needs the order of Police of Animal Protection Officer

Euthanasia options

- Given the legal situation be prepared to instruct police officers in the use of firearms
- See later

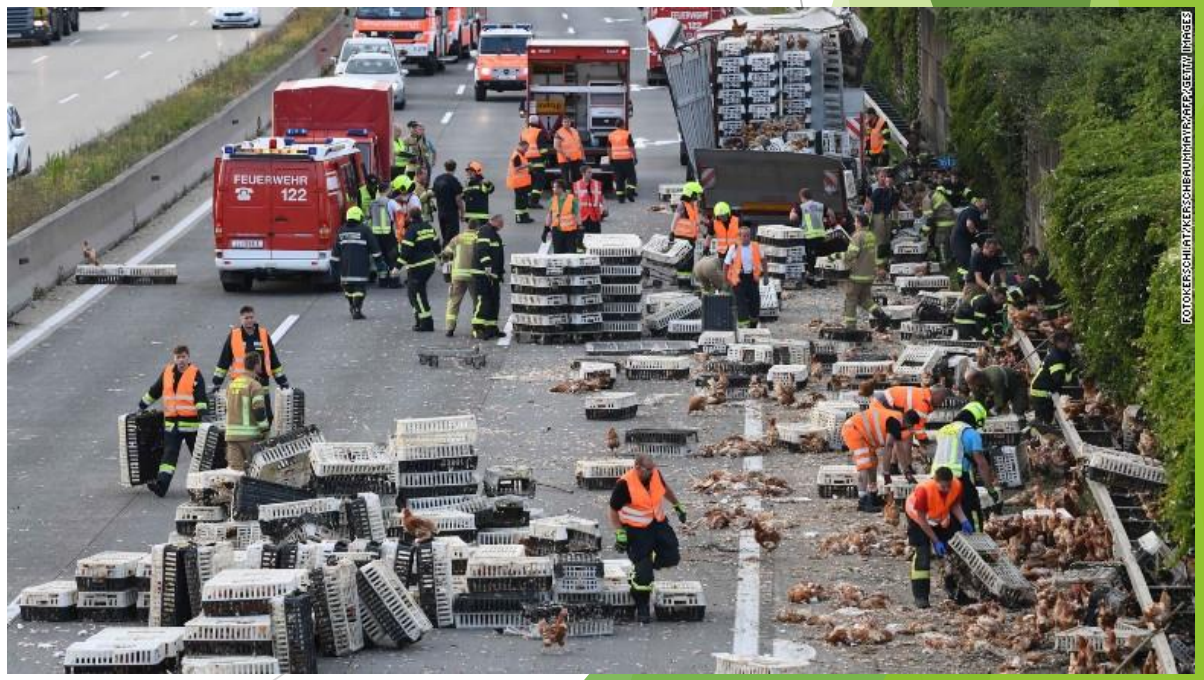
Horses

- Typically only a few animals
- Remove the owner!
- Calm the horse
  - Sedate only if absolutely necessary
- Animals can be transported injured to a veterinarian

Chickens

- Generally carried in small groups in crates

- If the crates break open you need a crew of people who know how to catch chickens!



Take homes

- This could happen to you
- A plan is the best option

- Understand your role in the process
  - Human safety trumps animal issues

- Be prepared to triage and euthanize

Equipment

- Camera
- Means of euthanasia
- Pigs – buckets, snares
- Cattle – halters
- Snow fence
- Fencing tool

- Phone number list
  - Truckers, mobile pens etc

Euthanasia
2 specific considerations to start

- Routine

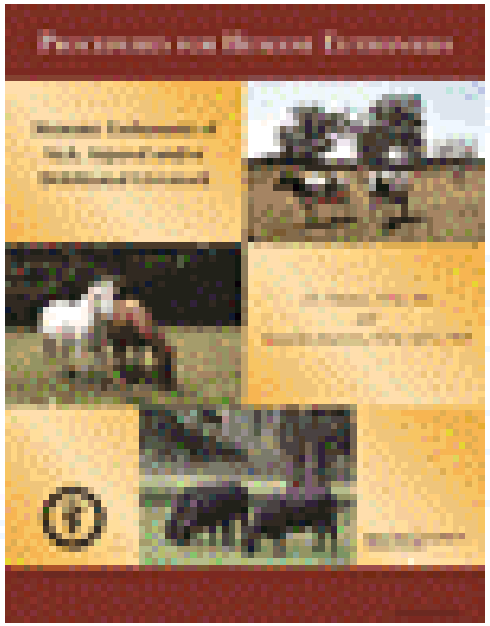
- Emergency situations

Euthanasia primary considerations

- Good (peaceful) Death
  - Loose consciousness immediately
  - Guarantee death

Resources:

- https://vetmed.iastate.edu/sites/default/files/vdpam/Extension/Dairy/Programs/Humane%20Euthanasia/Download%20Files/EuthanasiaBrochure20130128.pdf



Brochure

Wall Chart

Resources 2:

- https://www.avma.org/KB/Policies/Pages/Euthanasia-Guidelines.aspx

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5946141/

Resources 3:

- Research:
- Am J Vet Res. 2013 Nov;74(11):1385-91. doi: 10.2460/ajvr.74.11.1385.
- **Computed tomographic evaluation to determine efficacy of euthanasia of yearling feedlot cattle by use of various firearm-ammunition combinations.**
- Thomson DU[1], Wileman BW, Rezac DJ, Miesner MD, Johnson-Neitman JL, Biller DS.

Methods

1. Pharmaceuticals
2. Captive bolt
3. Firearms
    a) Pistols
    b) Rifles
    c) Shotguns

Not acceptable

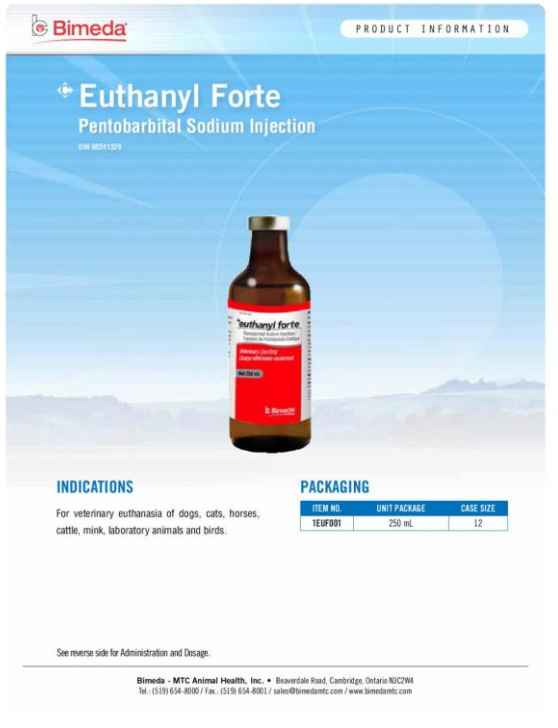
- Manual blunt force trauma
- Injectable agents other than anesthetics
- Air injection
- Electrocution with 120V
- Drowning
- Exsanguination
- Deep sedation

Pharmaceuticals

- Barbiturates

- Pros
  - Effective
  - Seen as cosmetically peaceful
  - Safe

- Cons
  - Expensive
  - Controlled drug
  - Requires IV access
  - High volume/viscous
  - Difficult when circulation compromised
  - Carcass disposal issues
  - Requires good restraint



Pharmaceuticals (2)

- Alpha 2s
  - Don’t work for this purpose!
  - 10x the dose does not produce anesthesia

Chemical

- Chemicals with cardiac toxicity
  - KCl
  - $MgSO_4$

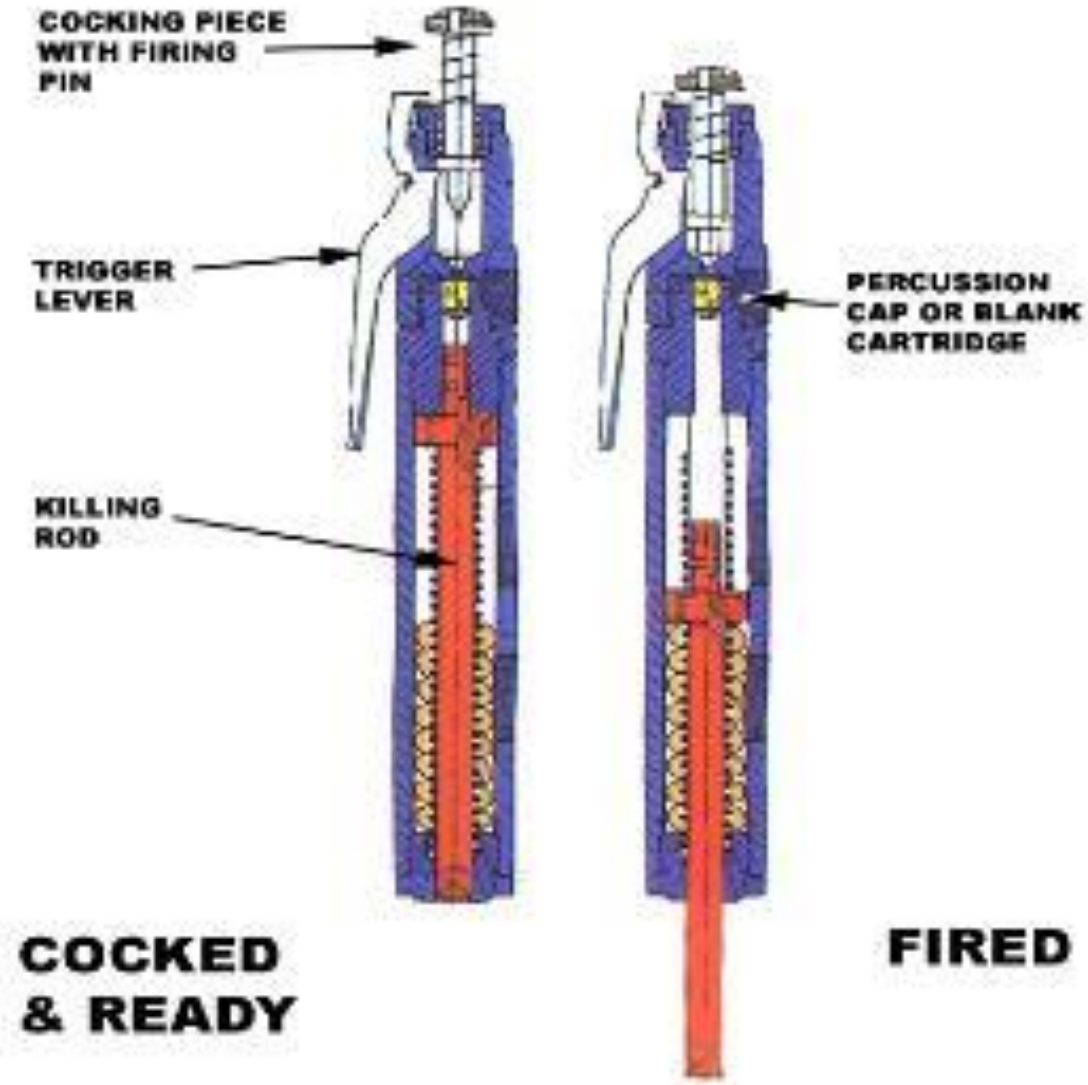
  - Unacceptable as a primary measure as no loss of consciousness

Pharmaceutical (3)

- Rompun/ketamine
- Acceptable as a primary method of inducing anesthesia
  - Would require a secondary method to ensure death

Captive Bolt

- What is it?
  - Uses a blank firearms shell to drive a rod through the skull
  - Rod is “captive” within the device
  - Provides:
  - Concussive blow to the skull
  - Variable brain trauma
  - Hole in forehead



Captive bolts - Types

Blitz

Cash

Captive Bolt (2)

- Pros
  - Inexpensive
  - No legislation
  - Optics are fairly good
  - Good for emergency situations
  - Carcass disposal fairly easy
  - Safe
- Cons
  - Requires training
  - Precise placement
  - Need to use correct charge
  - Requires a secondary method to confirm death (mostly)
  - Requires some restraint
  - Noise (?)
  - Maintenance

Secondary methods

- Exsanguination
- IV injection of KCl or MgSO4

- Pithing

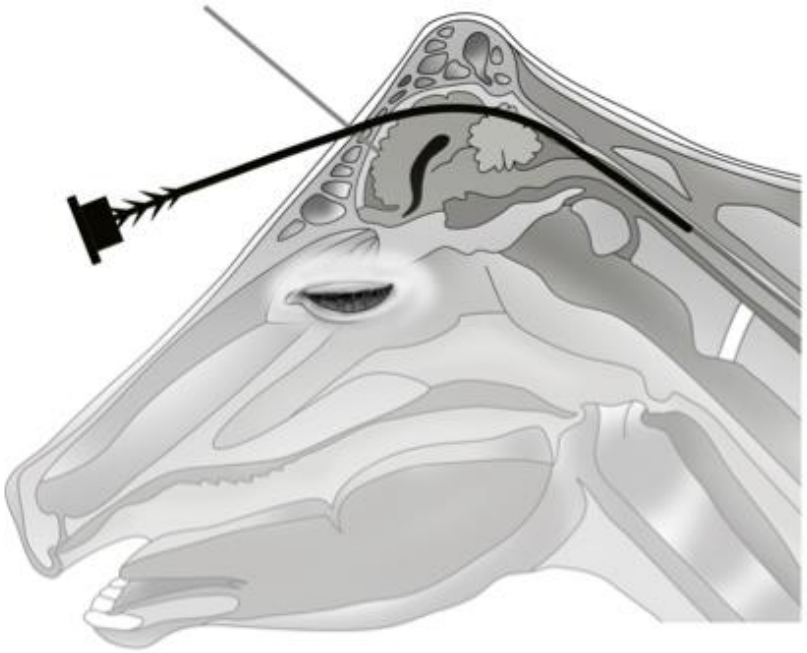


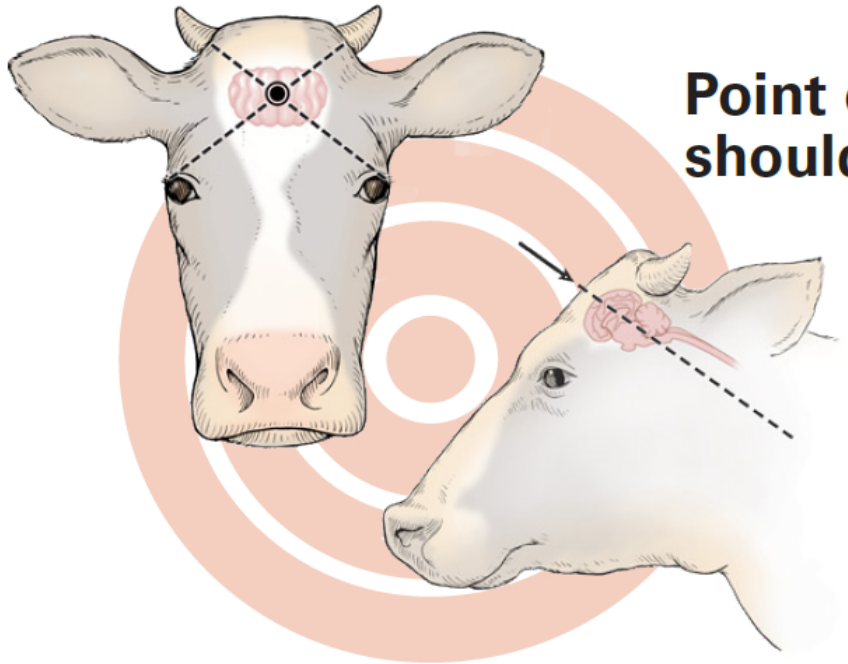
Figure K.3

Technique – Captive bolt

- Use the right size charge
- Secure head
- Place unit on skull perpendicular to forehead

From the Iowa website

Humane Euthanasia Procedures For Sick, Injured, and/or Debilitated Cattle

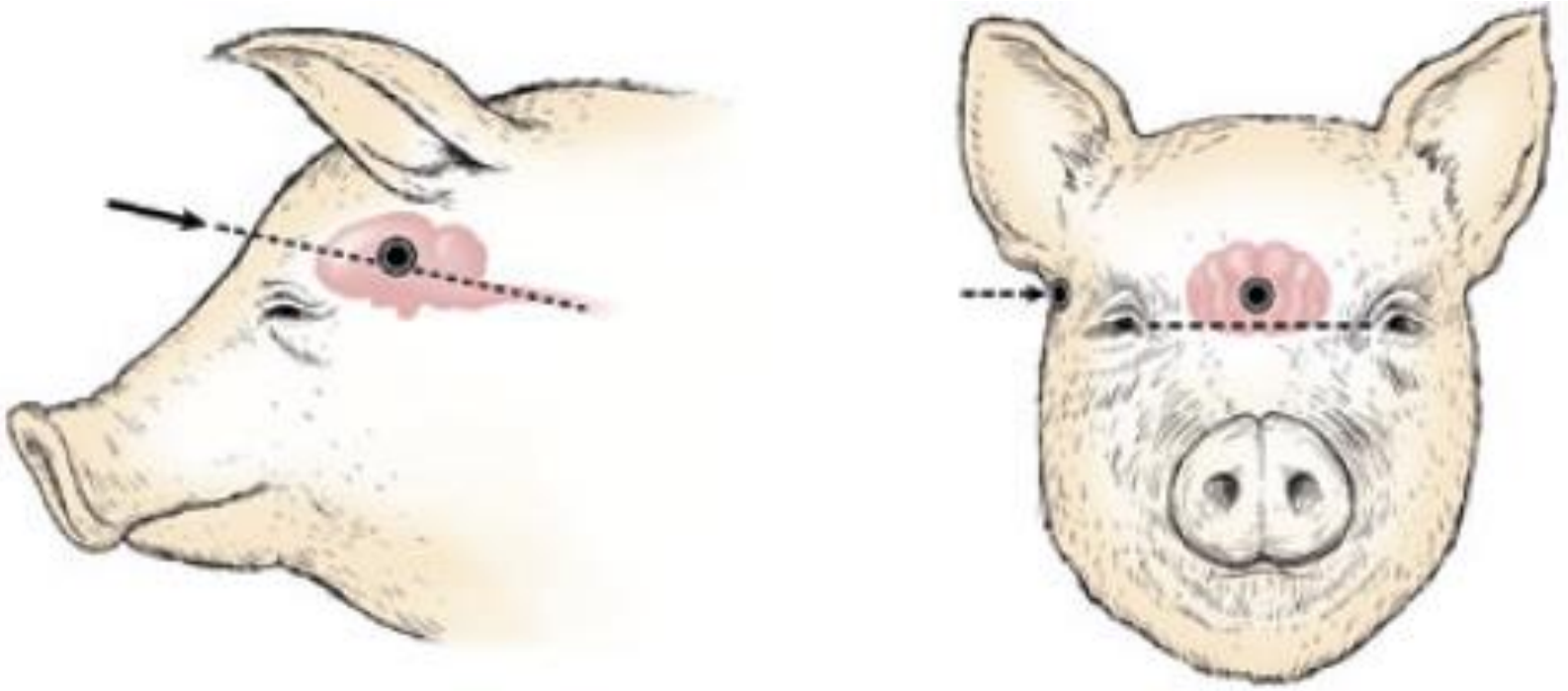


Point of Entry of projectile in cattle should be at the intersection of two imaginary lines, each drawn from the outside corner of the eye to the base of the opposite horn. High in the center of the forehead, but

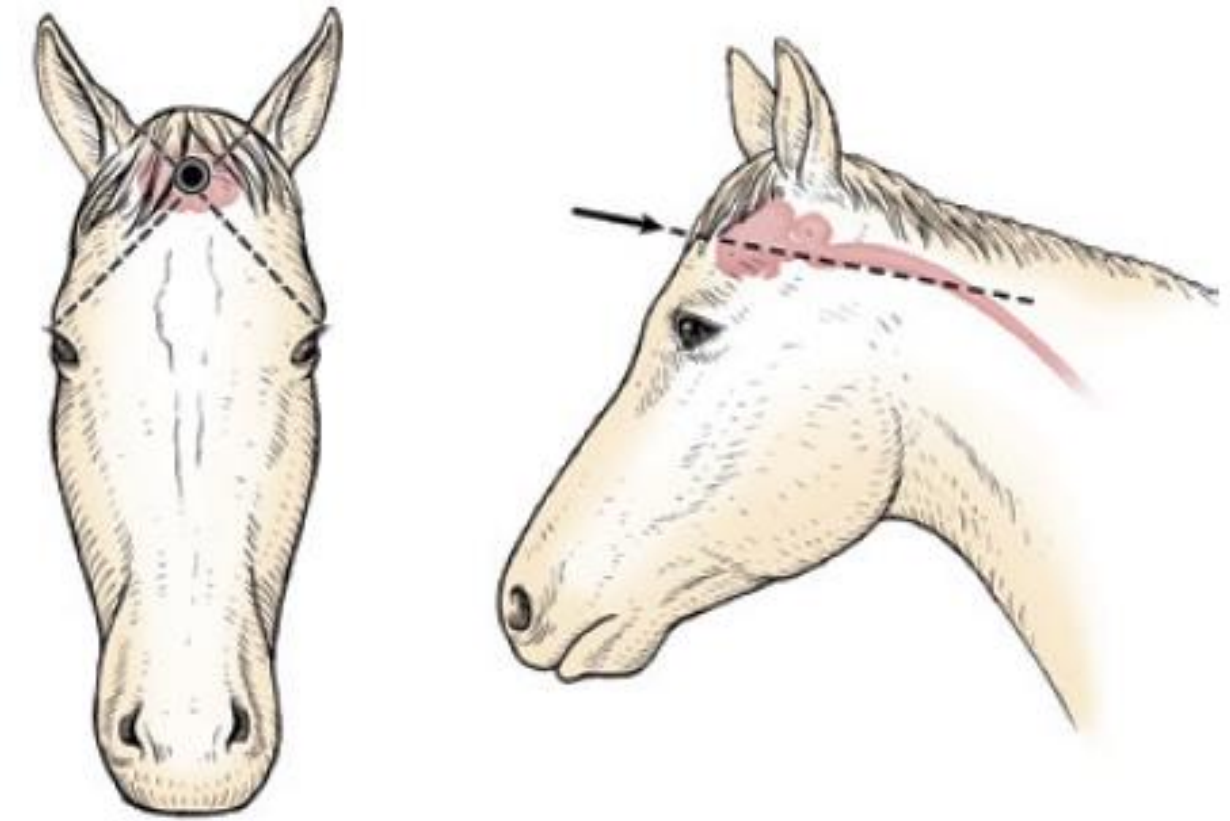
Not Between the Eyes!

NOT BETWEEN THE EYES!

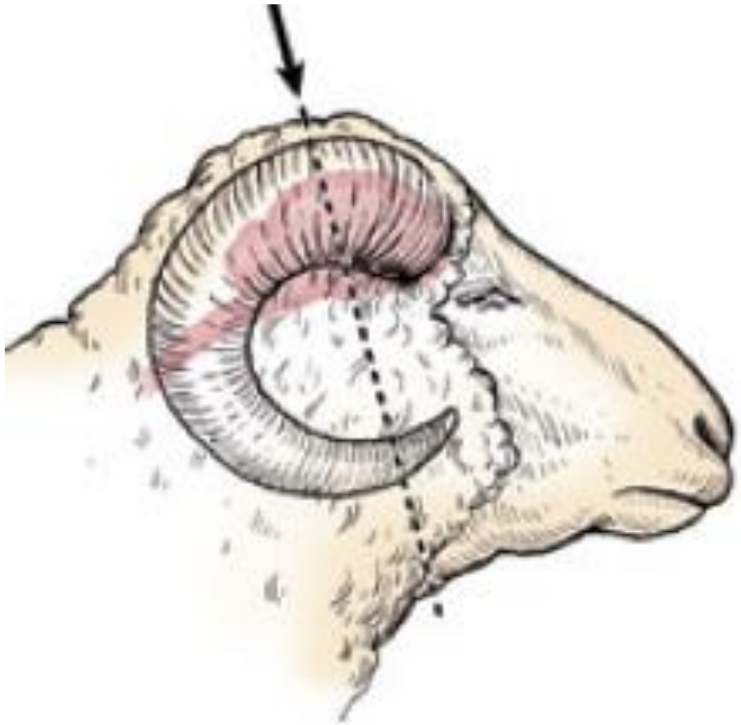
Pigs

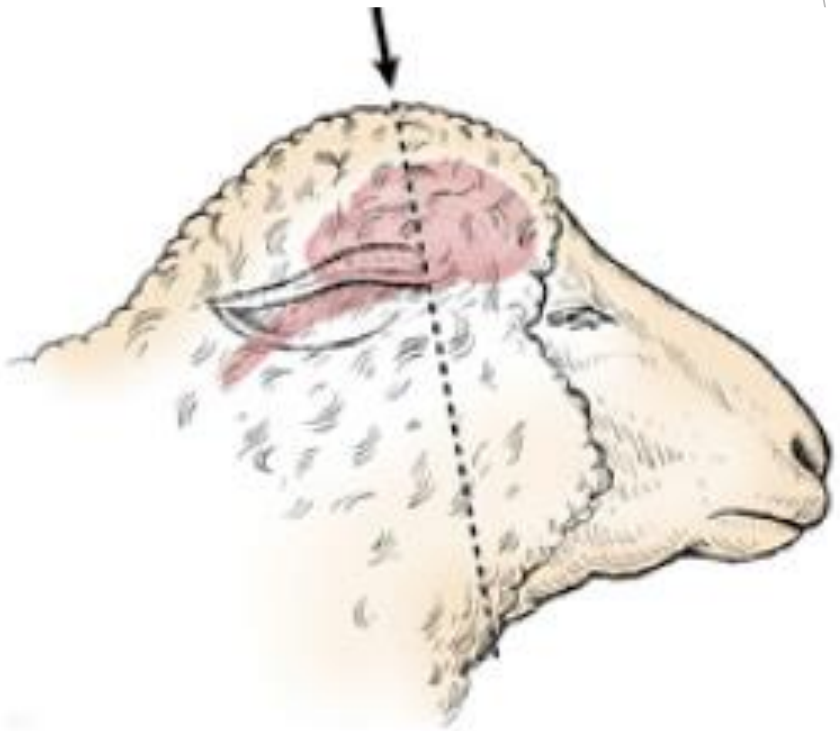


Horses



Small Ruminants





Maintenance

- Absolute necessity
  - Captive bolts develop severe carbon deposits fast
- Need
  - Wire brushes
  - Nitro solvent
  - Rags/paper towel
  - Old tooth brush!
  - Q tips
- Need to completely disassemble and clean after use

Firearms

- Pistols
  - .22, 9mm, .45 (plus lots of others)
    - Illegal to carry or use in this way (Canada) unless you are a police officer
- Rifles
  - Huge variety, common in agricultural areas. (Potentially carried by police)
- Shotguns
  - Mainly 12g and 20g. Common in agricultural areas (potentially carried by police)

Pistols

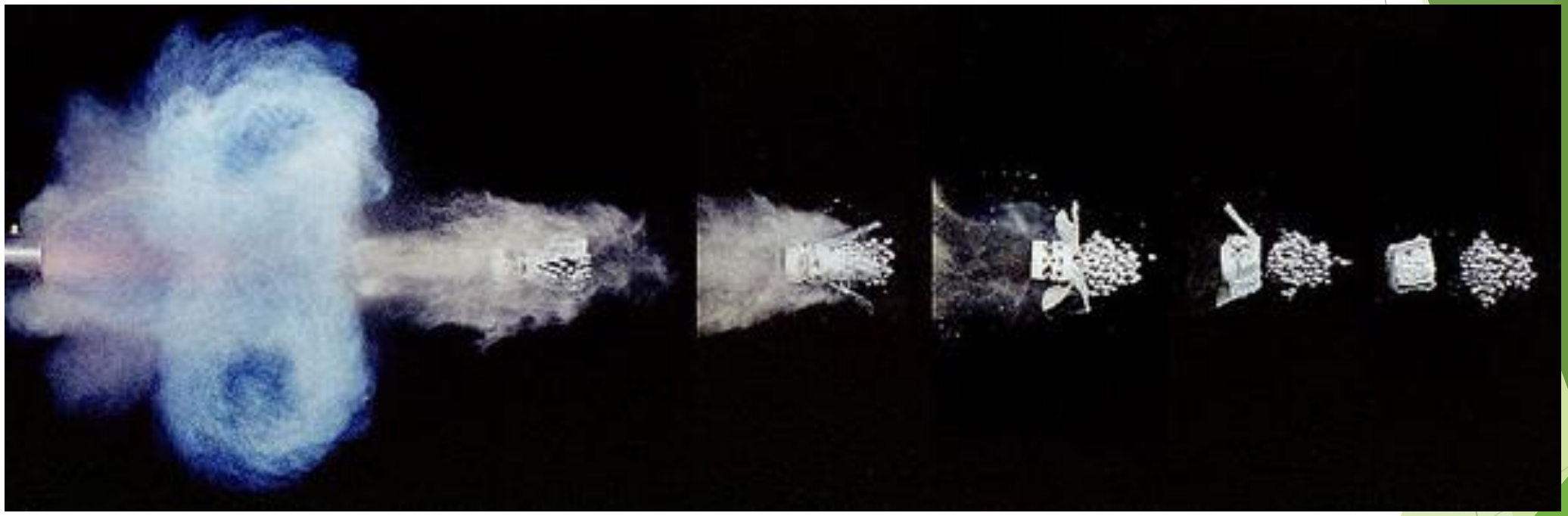
- Do not work for cattle
- Can only legally be carried and used by the police

Shotguns

- Consider;
  - Gauge only 12G or 20G should be considered
  - Shot size
  - Distance to target

Interrelated issues

The basics of how a shotgun works



Shotgun – shot size

Lead shot sizes:	12	9	8½	8	7½	6	5	4	2	BB
Pellet diameter (inches)	.05	.080	.085	.090	.095	.110	.120	.130	.150	.180
(mm)	1.27	2.30	2.16	2.29	2.41	2.79	3.05	3.30	3.81	4.57

Buckshot sizes:	No. 4	No. 3	No. 2	No. 1	No. 0	No. 00	No. 000
Pellet diameter (inches)	.24	.25	.27	.30	.32	.33	36
(mm)	6.10	6.35	6.86	7.62	8.13	8.38	9.14

Steel shot sizes:	6	5	4	3	2	1	Air Rifle	BB	BBB	T	F
Pellet diameter (in.)	.11	.12	.13	.14	.15	.16	.177	.18	.19	.20	.22
(mm)	2.79	3.05	3.30	3.56	3.81	4.06	4.49	4.57	4.83	5.08	5.59

Note: the size of shot. wether lead or steel. is based on American Standard shot sizes. Thus: a steel No. 4 pellet and a lead No. 4 pellet are both .13 inches (3.3mm) in diameter.

Practical considerations

- As long as you are within 3 ft of the skull it makes no difference
  - Tie the head
- Shooting beyond 3ft is not euthanasia it is hunting.
  - It requires precise knowledge of shot size and the ability to accurately aim

Shotgun

- Pros
  - Cheap
  - Effective
  - Does not require precise shot placement
  - Carcass disposal easy
  - Generally available
  - Does not require a secondary technique
  - Ricochet effect minimal
- Cons
  - Loud
  - Legislation
  - Requires training
  - Safety issues
  - Public perception
  - Brain is destroyed
  - Can be awkward to position

Rifles

- .22LR very common but not sufficient for adult cattle
- Any other high powered rifle will work

Rifles

- Pros
  - Cheap
  - Effective
  - Carcass disposal easy
  - Generally available
  - Does not require a secondary technique
- Cons
  - Require precise shot placement
  - Legislation
  - Requires training
  - Safety issues
  - Public perception
  - Can be awkward to position
  - The target and beyond
  - Ricochet issues

Rifles

- Landmarks as previously discussed
- Brain can still be used for BSE testing
- When the landmarks are used the animal's neck and body will absorb the shot

Unrestrained animals

- This is not euthanasia it is hunting
- Requires accuracy and precise shot placement
- High powered rifle
- Issues of the shot passing through the target
- Head shots are unrealistic
- Aim for heart (above point of elbow)

Video resources

- https://humanelivestockeuthanasia.com/

Questions and Comments