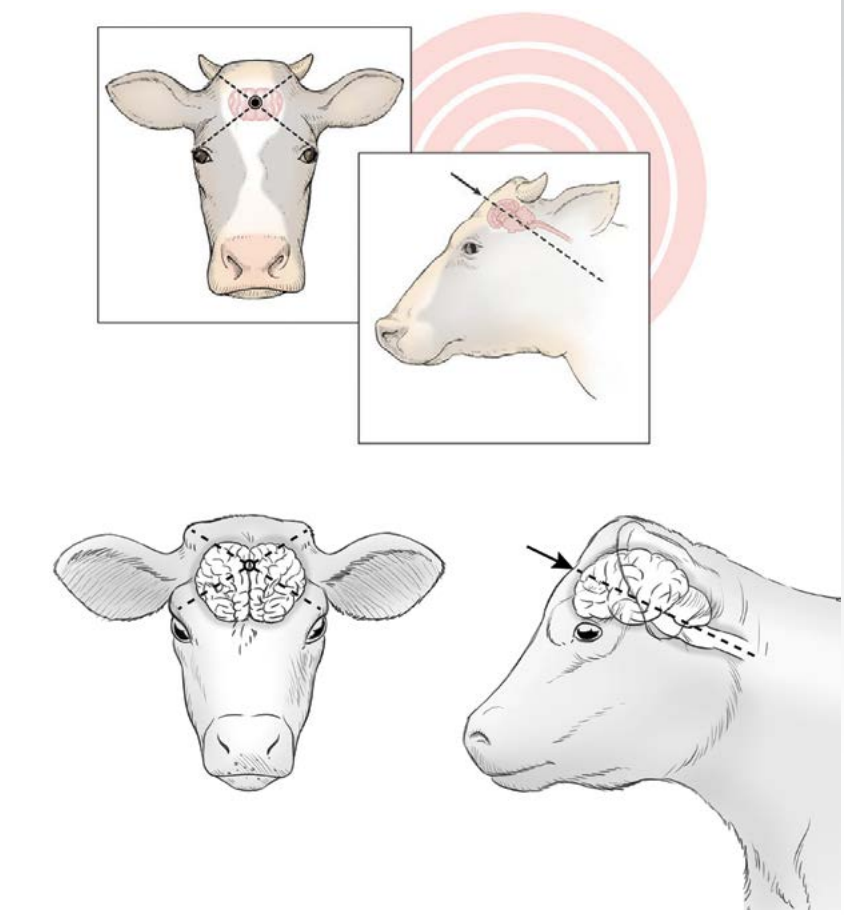
Euthanasia of veal cattle and dairy calves



Approved methods of euthanasia

- Captive bolt
- Gunshot
- Barbiturates

VEAL Farmers of Ontario

Euthanasia of veal cattle and dairy calves

Euthanasia, or the humane termination of an animal's life, is a reality of raising livestock. Euthanasia is necessary when an animal becomes ill or injured and treatments for pain or illness are ineffective or there is little hope the animal will recover. Under these circumstances, using an approved method for euthanasia is best to alleviate animal suffering.

To prepare for making euthanasia decisions, you and your herd veterinarian should develop a specific euthanasia Standard Operating Procedure (SOP) for your farm. The SOP should include who will be responsible for making the decision to euthanize, how euthanasia will be done, and who will perform the task. A decision tree can be developed with considerations to help you decide if or when an animal should be euthanized. A sample decision tree is included at the end of this booklet.

The euthanasia method to be used should be selected in consultation with your herd veterinarian, taking into consideration the age and size of your cattle, as well as proper cattle restraint methods and the comfort level and training of the person performing the procedure.

To minimize cattle distress during euthanasia, euthanasia must only be performed by trained personnel. If you are not comfortable performing euthanasia, ask your veterinarian for training or have your veterinarian perform the procedure. This booklet is not a replacement for hands-on training.

The only approved euthanasia methods for calves are:

- **An overdose of barbiturates (can only be administered by a veterinarian)**
- **Gunshot appropriate to calf/cattle size:**
  - **calves less than 180 kg – .410 shotgun with #4 or #6 shot or 1/5 oz. slug**
  - **cattle over 180 kg – 20 or 12 gauge shotgun with #4 or #6 shot**
- **Stunning with a captive bolt (must be followed by a secondary step to ensure death, such as bleeding out or pithing)**

These methods are approved because, when done properly, they cause minimal pain and distress, render the animal immediately unconscious, and are irreversible. **All other methods are NOT approved for euthanasia of cattle because they cause unnecessary pain and distress**.

Approved euthanasia methods

Overdose of barbiturates

Euthanasia by lethal injection of barbiturates can only be performed by a licensed veterinarian, and once performed, requires proper carcass disposal. This ensures wildlife cannot access the carcass and the euthanasia chemicals do not leak into the environment. Animals euthanized with barbiturates cannot be consumed by humans or animals.

Gunshot

When euthanizing via gunshot, the gun should be aimed perpendicular to the intersection of two imaginary lines, each drawn from the outside corner of the eye to the center of the base of the opposite horn (figure 1 and figure 2) – **not right between the eyes**. The target site and angle are important to ensure immediate unconsciousness of the animal is achieved to minimize pain and distress. The gun should be approximately 30 to 60 centimeters away from the head. Never hold a gun flush against the head. This could cause the barrel to explode, harming the operator. Proper restraint is necessary to ensure you hit the target site the first time.

Firearm safety is extremely important when euthanizing by gunshot to avoid issues such as pass through and ricochet, and to ensure the safety of the operator and other people or animals in the vicinity. All persons handling firearms should have safety training and be licensed. A .22 caliber rifle can be used for young calves, but should not be used on older calves or adult cattle. A .22 magnum or larger calibre firearm is much more reliable. A .410 shotgun can be used for young calves, and a 12 or 20 gauge shotgun can be used for older calves or adult cattle. With shotguns a slug, birdshot No. 2, 4, 6 or buckshot can be used.

Captive bolt

There are two types of captive bolts: penetrating and non-penetrating. Penetrating captive bolts go through the skull to physically damage the brain. Non-penetrating captive bolts do not enter the brain, but cause unconsciousness due to the force of the bolt against the head. Penetrating captive bolts (with appropriately sized bolts) can be used on cattle of all sizes; however, non-penetrating captive bolts are less reliable on larger animals, so can only be used for young calves.

The target site for captive bolts is the same as the target site for gunshot. Unlike guns, captive bolts need to be held flush against the head and perpendicular (90° angle) to the head when discharged. Therefore, proper restraint of the head is very important. The animal can be standing or lying in any position that allows you to hold the captive bolt against the head in the correct position.

Once stunning with a captive bolt has been performed, ensure that the animal is unconscious before applying a secondary step – see page 4 and 5 for appropriate secondary steps.

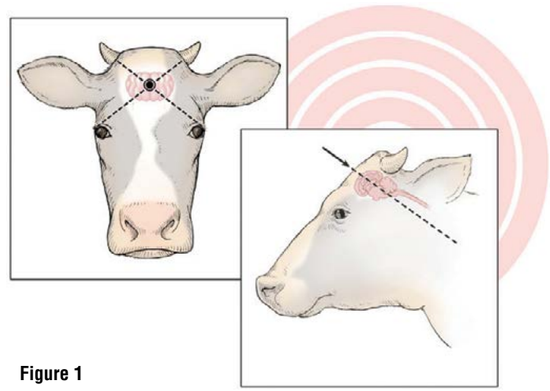


Figure 1

Placement of gunshot or captive bolt for adult cattle.

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Secondary steps

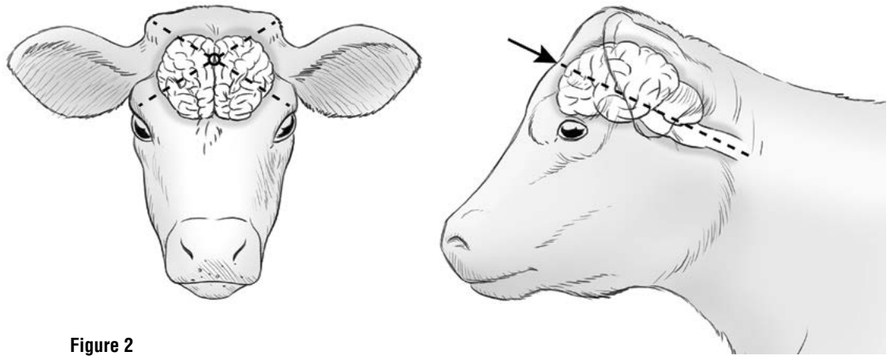

Figure 2

Placement of gunshot or captive bolt for calves.

Signs of unconsciousness

Once you have applied a method of euthanasia, immediately check for signs of unconsciousness.

Signs that indicate that the animal is **unconscious** include:

- Lack of natural rhythmic breathing.
- If the animal was standing, it collapses and does not attempt to right itself. If the animal was already laying down, its muscles will relax and its body will go limp;
- Muscles become rigid immediately after the shot, followed by uncoordinated movements, such as involuntary muscle contractions (no coordinated movement);
- Lack of jaw tone, which can be tested by opening the side of the animal's mouth. There should be little to no resistance.
- Eyelids remain open with eyeballs facing straight ahead.
- Lack of corneal reflex or 'blinking response' which can be tested by touching the surface of the animal's eye. If the animal does not blink that means there is no corneal reflex.

If the animal begins vocalizing, attempts to right itself, lifts its head, or has a corneal reflex, it is conscious. If this occurs, immediately reapply the method of euthanasia, or use a backup method.

Secondary step (for captive bolts only)

1. Pithing: Pithing involves placing a rod or pithing tool into the hole created by the penetrating captive bolt and moving it around to further destroy the brain. A disposable pithing rod is best for biosecurity, but a reusable tool (such as a screwdriver dedicated to this purpose) or artificial insemination (AI) rod can also be used. The rod or tool must be long enough to reach the brain where it connects to the spinal cord at the base of the skull. Be sure reusable instruments are thoroughly cleaned after each use (clean the rod as you do the bolt of a captive bolt) and disposable instruments are properly disposed of. Disposable pithing rods are available from www.hantover.com. At first, pithing will cause a lot of involuntary muscle contractions such as kicking, but the muscles will gradually relax and become still. Be sure to stand well away from the legs while pithing so you are not injured by this reflexive movement. **This movement is not a sign of consciousness and the animal is not in pain**.

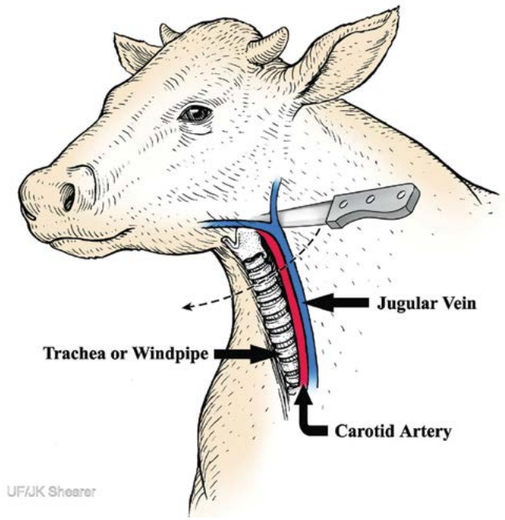

Figure 3

Bleeding out of cattle.

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2. Bleeding out: Once the animal has been rendered unconscious by the captive bolt, bleed out can occur by severing the carotid arteries and jugular veins located on either side of the neck (figure 3). The windpipe should also be severed at this time. When the animal is being bled out, you must ensure that all the blood is carefully collected so that it does not contaminate the environment. Once the blood is collected, it must be properly disposed of as the blood of an infected animal can spread disease throughout the herd.

3. IV injection: Potassium chloride or magnesium sulfate is injected into a vein to ensure the heart stops beating immediately. This can be challenging, especially in young or dehydrated cattle. Do not inject any other substances unless directed by your herd veterinarian.

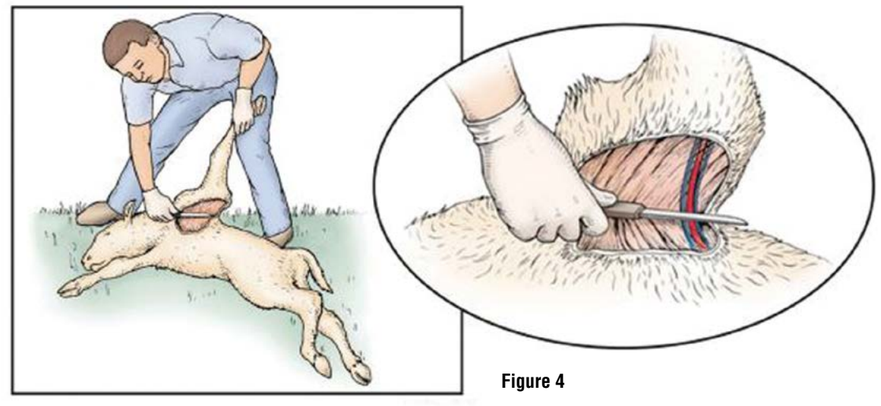

Figure 4

Alternate site for bleeding out of calves.

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Confirming death

Death

Confirm the animal is dead **before attempting to move it**. Indicators that can be used to assess whether the animal is **dead** are:

1. Lack of corneal reflex or 'blinking response' which can be tested by touching the surface of the eye. If the animal does not blink that means there is no corneal reflex;
2. Lack of a heartbeat (using a stethoscope placed under the left elbow) and signs of respiration for at least five minutes.

Both these signs should be present to confirm death. The carcass of the animal, regardless of the method of euthanasia, must be properly disposed of using an approved method.

Involuntary muscle spasms and kicking or paddling of the legs will occur when using a euthanasia method that destroys the brain, such as captive bolt or gunshot. **These movements do not mean the animal is conscious or in pain**, but can be distressing and dangerous for bystanders and can last up to ten minutes after death. Be sure all bystanders understand this is a normal part of the dying process and everyone is well away from the animal so they are not injured.

Having your herd veterinarian observe euthanasia to confirm success and assist you in learning the difference between normal involuntary muscle contractions and consciousness will be invaluable in building your skills and confidence in this important but difficult task.

Although reluctance to euthanize cattle is understandable, it is important to note that euthanizing a week too early is better than a day too late. Timely euthanasia prevents the animal from experiencing unnecessary pain and distress. By recognizing that cattle need to be euthanized and ensuring the veterinarian-developed SOP is performed by trained personnel, the overall welfare of the animal can be maintained during their entire time on your farm.

Euthanizing a week too early is better than a day too late.

Dealing with deadstock

Ontario Regulation 106/09: Disposal of Dead Farm Animals under the Nutrient Management Act, 2002, requires farm owners or managers to follow specific laws when disposing of deadstock, including disposal via an approved method and keeping deadstock records.

Storing deadstock

Deadstock should be immediately removed from animal housing areas. Dispose of the carcass within 48 hours of the animal's death, or sooner if it begins to decay or rot. The carcass may be held longer, for up to seven days, for post-mortem or insurance purposes. All deadstock need to be stored out of view of the public, and in a way that will prevent any liquids from seeping into the ground or nearby water. Alternatively, deadstock can be stored in cold storage (up to 14 days) or frozen storage (up to 240 days). Prevent livestock, pets, and wildlife from accessing the carcass.

Transportation of dead cattle

If transporting dead cattle, contact the Canadian Food Inspection Agency (CFIA) for applicable specific conditions and requirements.
www.inspection.gc.ca
tel: 1-800-442-2342

Disposal options

Deadstock collection

A licenced deadstock collector can pick up mortalities from the farm. The collector will likely charge a fee for this service. Precautions must be taken to avoid transmitting disease between farms by the deadstock collectors.

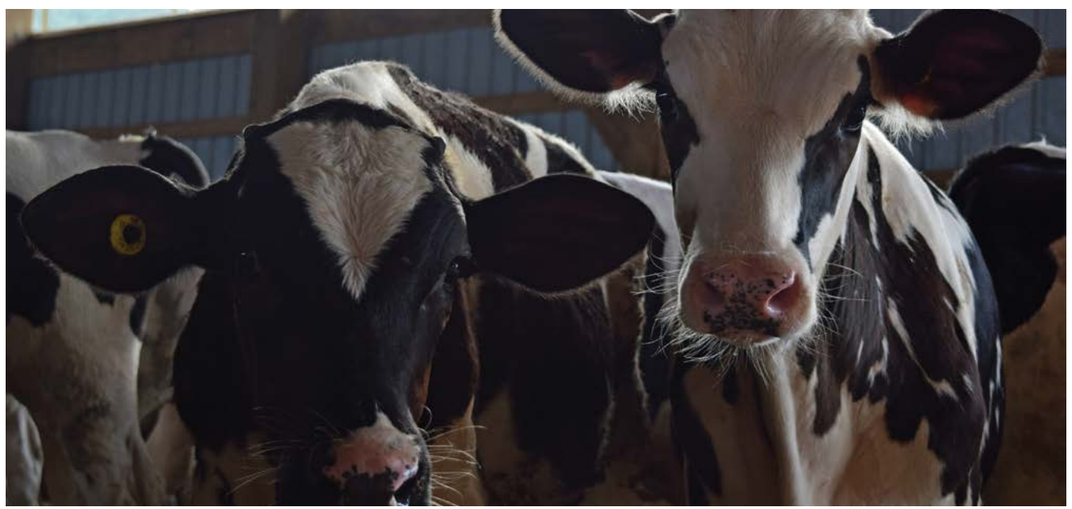
A list of licenced deadstock collectors can be found here: http://www.omafra.gov.on.ca/english/food/inspection/ahw/deadstockoperators.htm

On-farm burial

Burial is a useful disposal method, but have an alternative disposal method to use when the ground is frozen. Selecting a burial site must follow specific guidelines. See http://www.omafra.gov.on.ca/english/engineer/facts/09-029.htm for detailed information.

On-farm composting

There are regulations on composting sites, containers, materials, and maintenance of the compost pile. Be sure your system is in compliance with all regulations before using it to dispose of deadstock. Refer to http://www.omafra.gov.on.ca/english/engineer/facts/09-031.htm for information regarding on-farm bin composting of deadstock.



Dealing with deadstock

Other options

Incineration, disposal vessels, anaerobic digesters, delivery to a waste disposal site, and delivery to a veterinarian for post-mortem are other options for handling deadstock. More information on these can be found here: http://www.omafra.gov.on.ca/english/engineer/facts/09-025.htm#3

On-farm mortality records

Anyone disposing of dead farm animals must keep specific records. This applies even if you are using the services of a deadstock collector. The record must contain: the species and age of the animal; animal weight (at time of disposal); date, time, and cause of death (if known); date, time, method, and place of disposal; and date on which the record was made. If the animal is incinerated, a record of incineration temperatures must also be included.

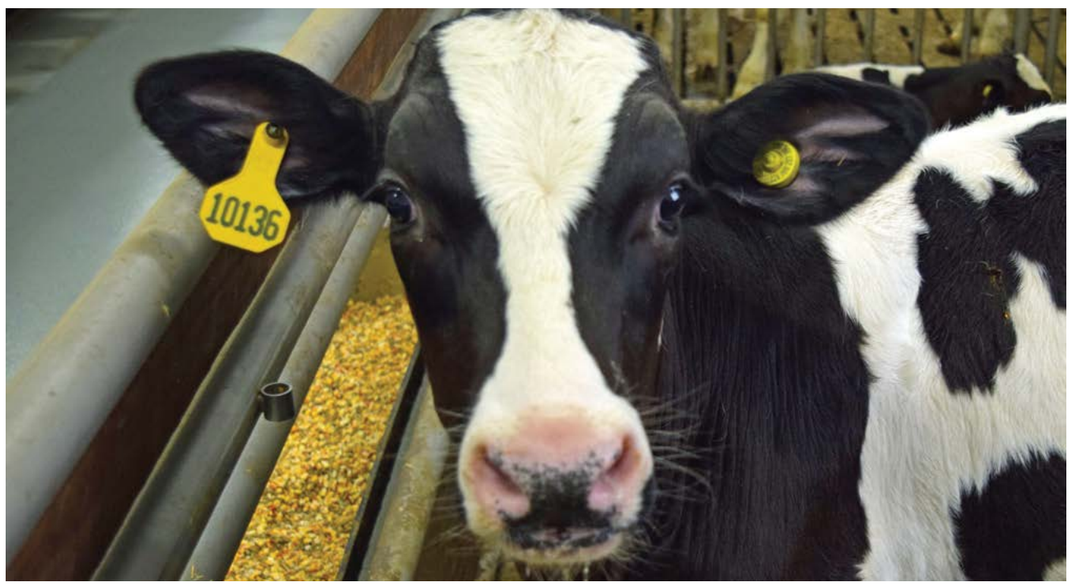
Be sure to also record the Canadian Cattle Identification Agency (CCIA) ear tag number and management tag number (if applicable) of all dead veal cattle in your head health records. The record can be electronic or paper, must be kept for at least two years from the date it was made, and must be stored on the farm on which the animal died, or a location that can be easily accessed when needed.

Download a veal mortality record template from http://ontarioveal.on.ca/.

For more information on deadstock disposal, call the Agricultural Information Contact Centre at 1-877-424-1300, email ag.info.omafra@ontario.ca or visit www.ontario.ca/omafra. O. Reg. 106/09: Disposal of dead farm animals can be found at https://www.ontario.ca/laws/regulation/090106#BK35

Summary

Deciding on the best way to handle deadstock depends on a variety of factors. Every farm should have and follow a standard operating procedure (SOP) for handling deadstock to ensure deadstock management protects human and animal health and the environment.



Farm name: _____

Veal mortality record

Date of record (YY/MM/DD)	Veal ID CCIA / Management	Age	Weight in Kg (at time of disposal)	Date and time of death (YY/MM/DD)	Cause of death (if known)	Date and time of disposal (YY/MM/DD)	Method of disposal	Place of disposal	Incineration temperature (if applicable)	Initials
17/08/10	124 000 299 999 999 / 458	60 days	87	17/08/9 4:30 pm	S.dublin	17/08/10 12:00 pm	On farm burial	456 Baseline rd. Erin, ON	n/a	RK
17/12/12	985 120 000 819 159 / 681	7 days	46	17/12/12 8:45 am	Pneumonia	17/12/13 10:30 am	Jones' rendering	n/a	n/a	RK

Retain mortality records for at least two years from the date made. Store records on farm on which the animal died, or a location that can be easily accessed when needed.

Sample euthanasia plan

Date: _____

Farm name: _____

If anyone on this farm is concerned about an animal's condition, immediately bring it to the attention of the person trained and authorized to approve euthanasia or the herd veterinarian. If the decision to euthanize is made, the procedure must be performed immediately.

Name of person(s) trained and authorized to approve euthanasia:

Name: _____ Phone: _____

Name of person(s) trained and authorized to perform euthanasia:

Name: _____ Phone: _____

Herd veterinarian
Name: _____ Phone: _____

Collection service:
Name: _____ Phone: _____

On-farm disposal plan (within 48 hours of death):

_____

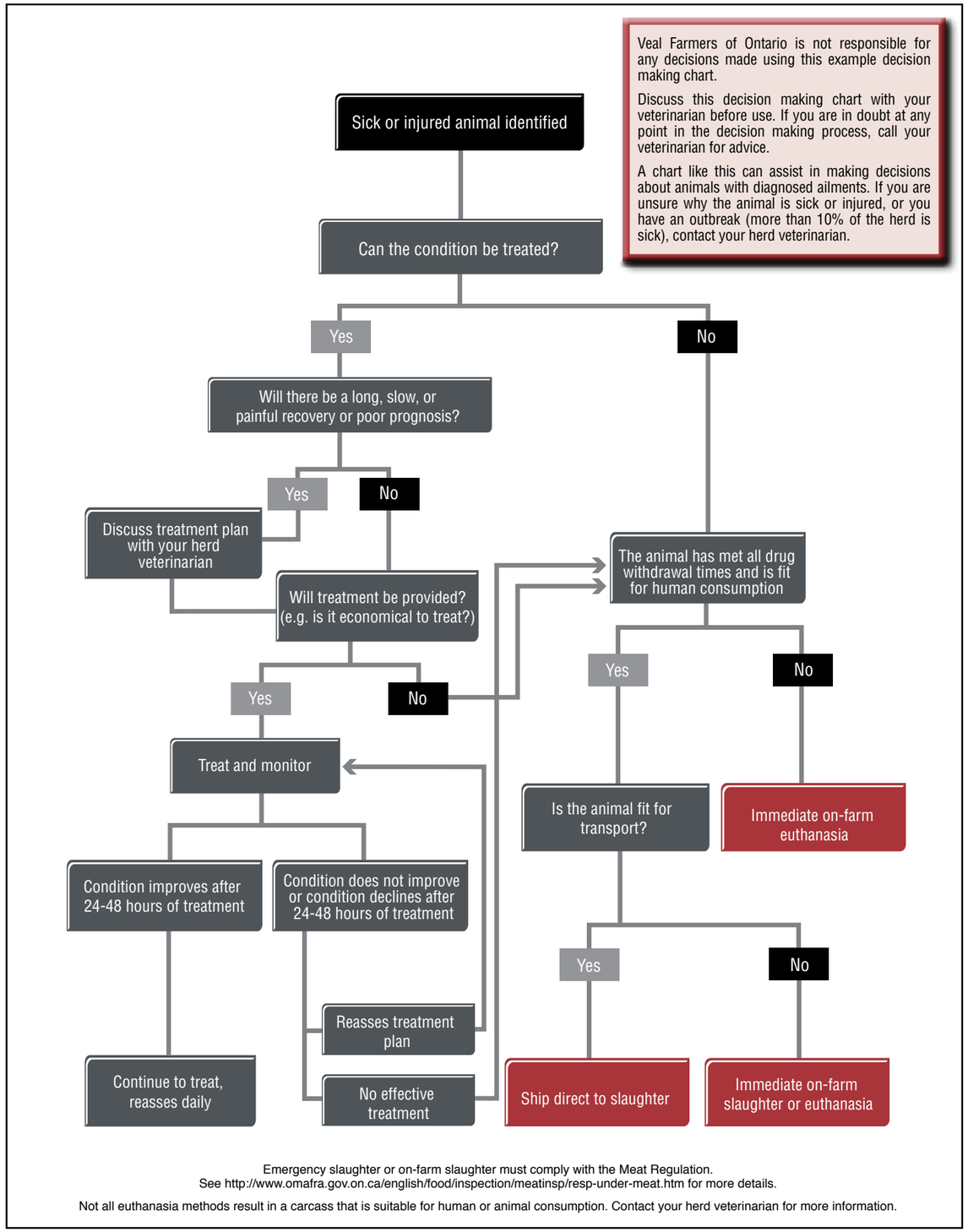
_____

_____

_____

Animal weight	Primary euthanasia method	Secondary step (if using captive bolt)	Alternate euthanasia method
Calves less than 180 kg (397 lbs)			
Cattle over 180 kg (397 lbs)			

Sample euthanasia decision tree



Emergency slaughter or on-farm slaughter must comply with the Meat Regulation.
See http://www.omafra.gov.on.ca/english/food/inspection/meatinsp/resp-under-meat.htm for more details.

Not all euthanasia methods result in a carcass that is suitable for human or animal consumption. Contact your herd veterinarian for more information.

VEAL Farmers of Ontario

Your calf care partners

Providing leadership to promote growth and viability for Ontario's veal industry

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Project contributors:
Veal Farmers of Ontario staff

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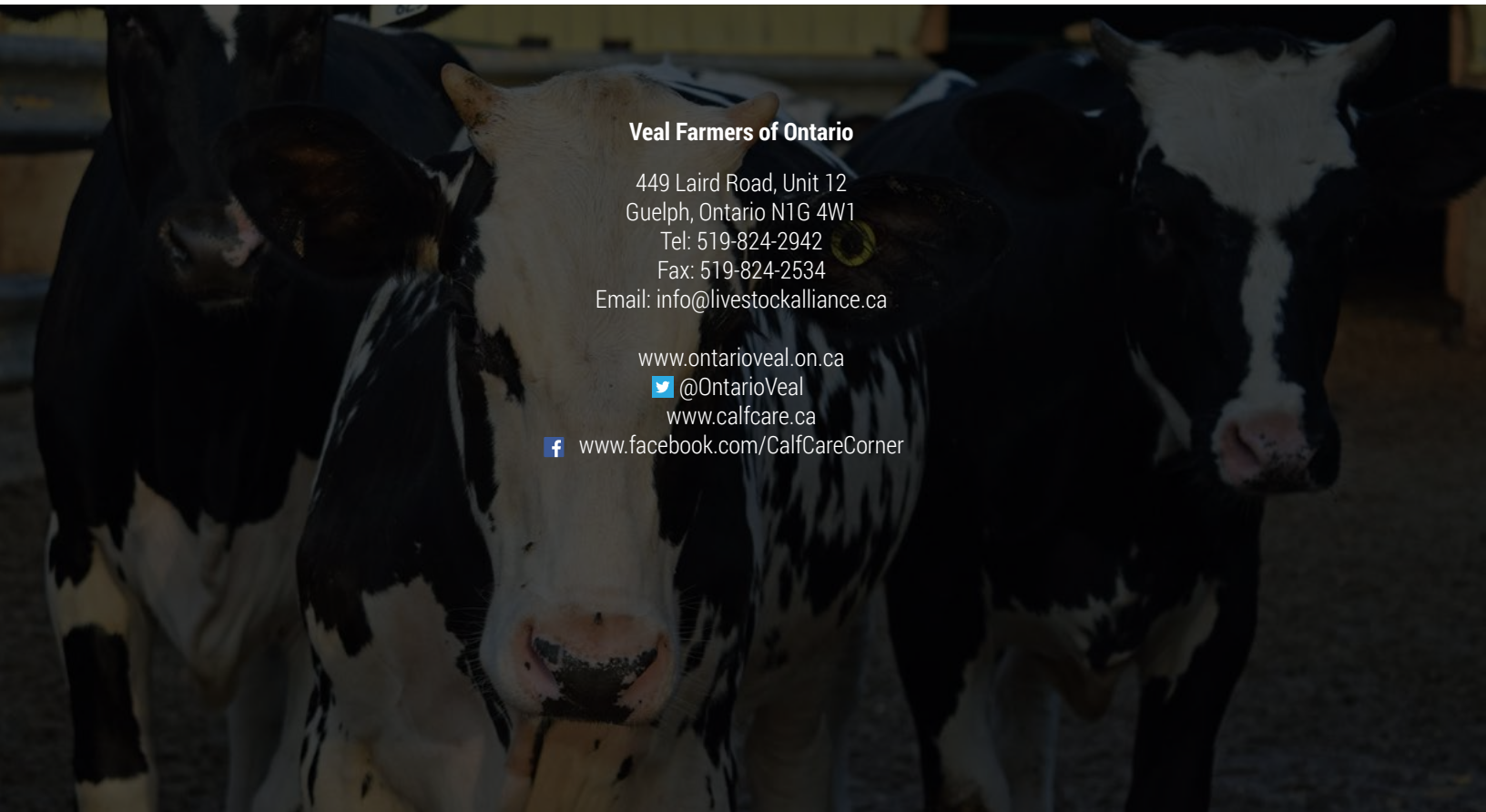

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