



Treatments and modalities for organic and alternative livestock

Continuing education series for veterinarians, veterinary technicians,
extension, and other animal health professionals

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Learning objectives

- Apply the concept of “treat with all means necessary” on organic farms
- Discuss the role of organic livestock agriculture in the fight against antimicrobial resistance
- Explain the three major ways alternatives to antibiotics impact animal health
- Explain how alternative therapies, in general, differ from traditional therapies

Introduction

The USDA lays out the active role of veterinarians on organic and alternative (O/A) farms, ranches, and livestock operations in the Guide for Organic Livestock Producers (Coffey & Baier, 2012). Despite its age (2012), the [USDA Guide for Organic Producers](#) provides timeless written guidance for organic livestock farmers, including information on the use of veterinarians on their farms. More information on the role veterinarians, veterinary technicians, and extension personnel can play on organic and alternative farms can be found in this continuing education series.

Considerations when treating livestock on O/A farms and ranches

Those working with organic and alternative livestock farms must remember some very important concepts, practices, and rules. Details of these considerations are discussed below. Regarding the various treatments discussed in this section, information on non-traditional Western medicine treatments, termed Complementary and Alternative Veterinary Medicine (CAVM) by the American Veterinary Medical Association, is given to provide background and knowledge of what veterinarians will encounter when visiting organic and alternative farms. We are not presenting this information on alternative treatments to necessarily encourage or discourage their use but to provide you with resources to meet O/A producers where they are and work with them in a way that respects their knowledge and practices and leads to optimum health and welfare of their animals. This might be your first introduction to some of these treatments, or you might use some for yourself and your family, as most of them are also included in the arsenal of human medicine. Some of these products and treatments work better than others, as is also the case with conventional medicine. The use of some of these products goes back hundreds of years (e.g., botanicals, homeopathy, acupuncture). As such, they might be the precursors of current pharmaceuticals used on conventional farms (especially botanicals). They have various levels of evidence-based scientific validation while also having ardent believers in their benefits (as do those using conventional FDA-approved medications). This chapter may also introduce you to treatment modalities you wish to further educate yourself on and permanently add to your toolbox.

Second, a very important thing to know about treatment on USDA-certified organic operations is the National Organics Program (NOP) requirement to [treat with all means necessary](#). The producer of an organic livestock operation must not withhold medical treatment from a sick animal to preserve its organic status. All appropriate medications must be used to restore an animal to health when methods acceptable to organic production fail. Livestock treated with a prohibited substance must then be clearly identified and cannot be sold, labeled, or

represented as organically produced” ([7 CFR 205.238\(c\)\(7\)](#)). This is where many of the challenges between veterinarians and O/A producers occur. The loss of organic status for an animal is very serious, with short and long-term financial losses and potential emotional and other considerations, and can lead to waiting too long to treat with conventional therapies. Animals that lose organic status because they have been given a prohibited substance must be recorded. The certifying agency is notified. The animal must be clearly marked, separated from the production string, and sold or removed once the withdrawal times have passed.

With the above information in mind, veterinarians should have an open-ended conversation with farmers about culling animals in general. Cows (and other livestock) are culled for reproductive issues, mastitis, lameness, and other concerns. Organic farmers must remember that an animal or two in a year may need to be culled due to using a prohibited substance like antibiotics to save their life.

“I like to remind farmers that it’s better to have a live animal than a dead organic animal.” The problem often revolves around the fact that most livestock veterinarians are not well-informed about alternative treatments. So when the vet immediately says that an antibiotic is needed, farmers, knowing there are alternatives, are suspicious. Occasionally an antibiotic is truly needed, just not as quickly as some vets would like to use them”.
(Hugh Karreman, DVM)

Another important consideration when working with dairies that ship Grade A milk is the federal Pasteurized Milk Ordinance, the PMO. (States also regulate Grade A milk and may have more stringent regulations than the PMO). Because herbal and other alternative treatments are often not FDA-approved and lack NADA numbers, milk inspectors may debit inspections when organic treatments are found. Farmers can risk losing their permit for shipping milk. Inspectors vary from region to region, some lenient, some more stringent. Most of the time, however, inspectors across the US respect properly completed veterinary labels.

Appropriate veterinary labeling and on-farm storage are spelled out in Section 15r of the PMO. Alternative and allowed conventional treatments must be labeled with the following:

- The name and address of the authorizing veterinarian (one who is personally familiar with the farm and has a veterinary client patient relationship (VCPR).
- The name of the active ingredients (this is met by displaying the drug’s common, generic, or scientific name, not the trade or brand name).
- Adequate directions for use.
- [Withholding times for meat and milk, even if zero.](#)
- Any necessary cautionary statements.

Note: Topical antiseptics and wound dressings, unless intended for direct injection into the teat, vaccines and other biologics, and dosage form vitamins and mineral products are exempt from labeling and storage requirements, except when stored in a way that might end up contaminating milk or milk products. The PMO will come up for a biennial review again in 2023. [Grade A Pasteurized Milk Ordinance page 56](#)



Source: Rossman Family Farms, Harlan, Iowa

1. Alternatives to antibiotics in animal agriculture

Antibiotics (as well as anti-parasiticides, GMOs, and hormones) are prohibited on organic livestock operations and may or may not be used on operations that consider themselves alternative. The debate on the use of antibiotics in livestock is a complicated mix of concerns related to food safety (e.g., appropriate use to prevent antibiotic residues and pathogens in food), food security (i.e., ensuring enough food for a growing population), and the growing global threat of antimicrobial resistance.

Minimizing antibiotic use to prevent residues in the food chain or save important antimicrobials for serious infections in humans means stopping inappropriate use and preventing infections of all kinds, in all species, through other means (Talkington et al., 2017).

General considerations when using alternatives to antibiotics

Using alternative treatments is not just swapping out a natural product for an antibiotic or pesticide. Below are some important considerations when using alternative products. Alternatives to antibiotics are promising, especially ones that prevent infection while enhancing productivity. This is something that appeals to livestock producers. Many alternative products are already available or under development.

These alternative products act in three general ways, often overlapping and difficult to tease out. They can:

- **Improve performance** (e.g., growth rates, egg production, etc.)
- **Prevent infection** (sometimes simultaneously with growth promotion), and
- **Act as treatments** (Pew Trust 2017).

More on-farm research is urgently needed to test use and efficacy while gathering data on cost-effectiveness and potential side effects. Outcomes and lessons learned must be shared through extension and veterinarians for alternatives already being used successfully. The mechanisms of action for many alternative products are not well known. In the past, natural substances significantly contributed to developing treatments for cancer and infectious diseases. New technologies are revitalizing the investigation of these medications, especially for antimicrobial resistance. (Atanasov 2021). It will be important for these studies to collect and report on the same outcomes to make comparisons between studies straightforward.

Explore each of the sections below to learn about how alternatives to antibiotics are different from traditional antibiotics.

Spectrum of action

Alternative products may have a narrower spectrum of action, killing fewer organisms with possibly fewer side effects.

Efficacy against AMR

Alternative products are not usually affected by antimicrobial resistance and may be effective against multidrug-resistant pathogens.

Timing of administration

Alternatives differ in when they are used. Vaccines must be given before exposure; others, like bacteriophages, only work when bacteria are present, so they must be given at the time of infection.

Specific pathogen targeting

Some alternatives target specific pathogens, e.g., bacteriophages and antibacterial peptides.

Mechanisms of action

Prebiotics and probiotics indirectly inhibit pathogens by favoring beneficial bacteria resulting in the pathogens being outcompeted. Vaccines and immune modulators have different strategies by priming the animal's immune system to better control the infection.

Compatibility between products

Compatibility between alternative products is an important consideration. For example, probiotics modulate the immune system and enhance the efficacy of certain vaccines. On the other hand, probiotics can also compete with bacterial vaccine strains and be antagonistic to them.

Some alternatives to antibiotics are being successfully used in commercial food animal production in the beef, dairy, and poultry industries. Data from the 2011 USDA NAHMS study shows that probiotics were used on up to 30 percent of US feedlots to increase production efficacy. Probiotics are also used more on dairy farms to prevent disease in cows and calves. Probiotics are also used in poultry to enhance performance and reduce the need for antibiotics (Hume, 2011).

When it comes to livestock, "Alternative products play a crucial role in allowing farmers and veterinarians to reduce the use of antibiotics" (Talkington et al., 2017).

2. Alternatives for growth promotion, disease prevention and treatment

The antimicrobial alternatives discussed in this section are in alphabetical order. Some specific natural and alternative treatments, commonly used on O/A livestock farms will be provided as a handout at the end of this chapter.

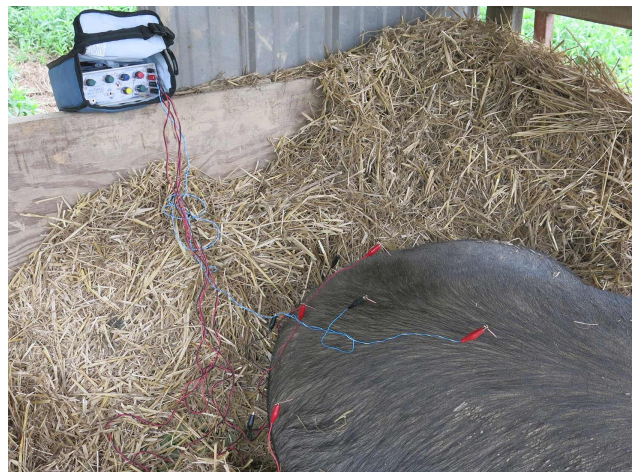
Acupuncture

Acupuncture is an ancient medicine that encourages the body to heal itself. Fine, sterile needles are inserted through the skin and underlying tissues at specific locations called points. Acupuncture stimulates the body to release neurochemicals. Microtrauma occurs when the needle is placed into the tissue in a specific spot, stimulating a healing cascade through vessels and nerves. This activates cells that travel through the spinal cord, releasing healing factors and activating pain-blocking mechanisms. It also releases endorphins and hormonal chemicals.

Acupuncture has been used in beef cattle for reproductive issues (poor libido, decreased sperm production), infertility, and prolapse. Injuries, lameness, and wound healing are also common treatments. [Veterinary acupuncture can be a helpful tool for beef producers.](#) Acupuncture often requires several visits to see an effect. Acupressure can also be used by applying digital pressure to an acupuncture point. Certification courses take months to complete; short day courses can introduce veterinarians and veterinary technicians to specific points and treatments to get them started (Shoen 2001). Acupuncture can also be used with electrical stimulation to the needles for increased effect with some conditions. See the photobiomodulation section for more information on laser acupuncture.



Acupuncture treatment in a dairy cow. Source: H. Karreman



Pig getting electro acupuncture for hind end lameness. Source: H. Karreman

Antimicrobial peptides

These are short molecules with antibacterial properties that are toxic to certain bacteria. They act like prebiotics and probiotics by supporting beneficial bacteria. Studies in poultry, pigs, and cattle show potentially promising results. There may be ways to combine antimicrobial peptides with probiotics for a synergistic effect (Hancock & Sahl, 2006).

Bacteriophages, endolysins, and lysozymes

Several viruses produce enzymes that could be used as alternatives for antibiotics for disease prevention and potential treatment. **Bacteriophages** are viruses that infect and kill bacteria and are highly specific to the bacteria present. They have few unintended consequences but must be given during a narrow window when the bacterium is already present. So, accurate and early diagnostics are important. Bacteriophages are naturally occurring and common in the environment (Labrie 2010). They have been used for disease prevention and treatment with good results, especially in poultry. Promising results have also been seen in piglets and calves, reducing the prevalence of diarrhea.

Endolysins and lysozymes

These hydrolases (i.e., enzymes) kill bacteria by breaking down their cell walls.

Hydrolases come from different sources, including bacteriophages, animals, plants, bacteria, and insects. They have shown promise with a broad range of gram-positive bacteria. Eukaryotic organisms and bacteria make Lysozymes and autolysins. They can be effective against viruses and other pathogens.

Botanicals (and their bioactive phytochemicals)

Botanicals are one of the oldest known medicines. Botanicals are the actual plant that can be ingested orally, used in a poultice, or brewed as tea. They can be prepared as tinctures, essential oils, glycerites, syrups, decoctions, and dried extracts. New uses of botanicals are being constantly developed for use (Padgham 2006). Below are some examples of botanicals used in veterinary medicine.

Aloe Products

Aloe vera is the juice of a desert plant. Aloe vera has great healing effects on skin and epidural tissue. It can override the cortisol effect by stimulating increased immune function even when cortisol is present. Aloe vera comes in pellets for feeding, liquified for drenching, gel, liniment, and sprays for topical use. Safe and natural, this is one of the best bargains for organic dairy management. It must be certified organic, not diluted, and contain 4000 to 5000 mucopolysaccharides per liter (Padgham 2006).



Tinctures

Tinctures are alcohol or glycerin-based extracts of plants or minerals. The alcohol or glycerin absorbs beneficial molecules with medicinal properties in a concentrated form. Garlic tincture is commonly used as an antibacterial. Goldenseal and Barberry (known better for its antibacterial effects with their berberines) and St. John's Wort act as analgesics, comfrey heals bones, and arnica is used for bruising (Padgham 2006).

Essential oils

Plant-derived compounds include essential oils or tannins with antibacterial and growth-promoting effects. Since the Middle Ages, essential oils have been used for their antiseptic (i.e., bactericidal, virucidal, fungicidal, antiparasitic, insecticidal), medicinal, analgesic, sedative, anti-inflammatory, spasmolytic, and local anesthetic effects. They have also been used for embalment and preservation of foods. Most essential oils are extracted by distillation from aromatic plants.

The characteristics of essentials have not changed since then, but now more is known about some of their mechanisms of action. In nature, essential oils protect plants from bacteria, viruses, etc., and protect them from herbivores by making them less palatable. They also attract insects that help disperse pollen and seeds and repel others that might be undesirable. Different essential oils have different modes of action. Much remains unknown. They have been used on commercial poultry operations for growth promotion and prevention. Efficacy seems to depend on the part of the plant used. Some studies have shown the efficacy of phytochemicals in preventing diarrhea in cattle and improving digestive health, but more studies are needed (Pew 2017).



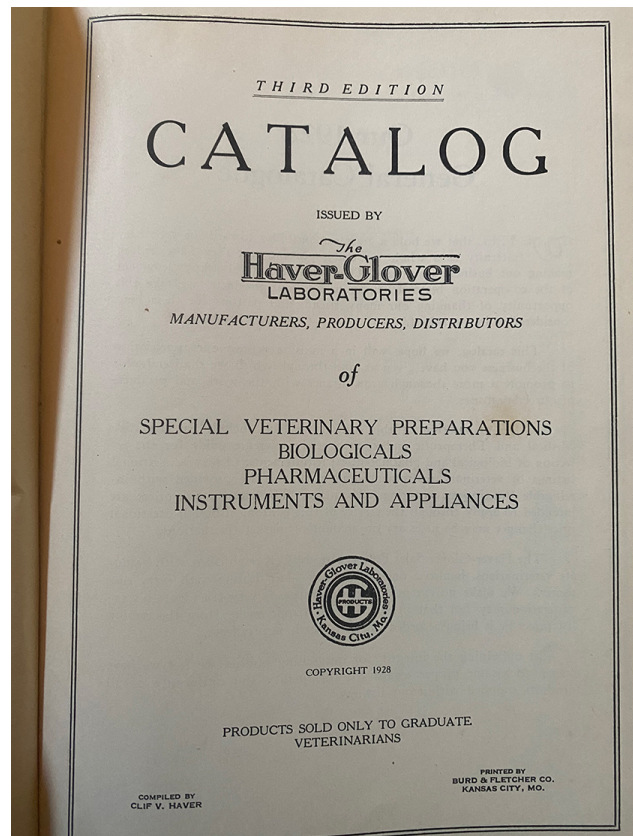
When combined, botanicals can have synergistic effects and are usually applied topically (Bakkali, Averbeck, et al. 2008). In animals, essential oils are often used as liniments for treating foot problems. (Padgham 2006) and fly spray. Some commonly used oils (with their indications) include Peppermint (anti-inflammatory, antibacterial, antifungal, and analgesic), Lavender (antiseptic, antifungal, anti-inflammatory, and analgesic), Geranium (antibacterial, anti-inflammatory, antifungal, and ideal for the skin), Pine (antiseptic and has cortisone-like properties). These oils can be used at full strength or applied topically in a very small amount mixed with any organic vegetable oil. Essential oils are complex mixtures of molecules.

It's important to use 100% therapeutic-grade essential oils. Quality and purity vary greatly between companies that produce essential oils.

Though not readily available, there is a wealth of scientific knowledge about the use of botanicals in mainstream veterinary medicine in textbooks used before 1940. For more information and to learn more about the historical and current use of botanicals in veterinary medicine, consult the following resources:

- Karreman, Chapter 11, Documented Historical use of Medicinal Plants in Veterinary Medicine, in *Treating Cows Naturally, Thoughts and Strategies*, Acres USA, Austin, Texas, 2007, p.139-176.
- [Veterinary Botanical Medicine Association](#) – to learn more about veterinary botanical medicine and to find a veterinary herbalist in your area.
- Textbook: [Veterinary Herbal medicine](#)

For an in-depth look at the properties of botanicals, review [Dr. James Duke's Phytochemical and Ethnobotanical Database \(USDA\)](#).



Inner page of "A Manual of Veterinary Therapeutics" from 1928 with biologics and botanicals commonly used by veterinarians.

Chiropractic

Chiropractic care is a complementary approach to treatment and healing to assist the body in healing itself. Chiropractic modalities have this in common with acupuncture and many other complementary treatments used for centuries. Hippocrates practiced spinal manipulation and is often quoted by chiropractors as saying, "Look well to the spine for causes of disease" (Wardwell 1996). Chiropractic is one of the most commonly used forms of alternative treatment in humans and has gained popularity in animals since the early 20th century (Shoen and Wynn 1998). The focus of chiropractic care is on the relationship of the spinal column to the nervous system and the role of the spinal column in biomechanics and movement. The basis of chiropractic is subluxation which can be described as the decreased motion of the joints by slight changes in the position of the articulating facets that result in abnormal biomechanical and neurological function (Homewood 1979), (A.C.B. 1986). The pathophysiology of subluxations includes compression of spinal nerve roots or the spinal cord, vertebrobasilar arterial insufficiency, somato-visceral dysfunction, and decreased mobility (Shoen 2001). Chiropractic treatments attempt to restore normal position and movement of joints. Veterinary chiropractic research is limited. However, chiropractic care for animals has commonly been used for athletes (horses, dogs) as well as trauma, postoperative complications, excess weight, and conformation issues (all species, including livestock) (Shoen 2001). Equine practitioners are likely to be consulted for chiropractic help in other species, including livestock.



Dr. Scholz providing chiropractic care to a bull. Source: Dr. Lainie Kringen Scholz)

Homeopathy

Homeopathy is a medical system based on the premise that the body can heal itself. Tiny amounts of natural substances, like plants or minerals, stimulate healing. Homeopathy was developed in Germany in the 1700s and is more common in Europe than in the U.S.

The premise behind it is that like cures like. Thus, something that brings on symptoms in its crude form in a healthy animal or person can treat an illness with similar systems when used in very small doses, in which only the essence of the starting material is present. It does this by triggering the body's natural defenses. This is the same principle behind vaccines

and allergy shots; however, homeopathy, if used to prevent a specific morbidity (i.e., *Neospora caninum*), will not result in quantifiable antibodies, as a vaccine would do. Homeopathic remedies are often used for allergies, migraines,



Chiropractic adjustment on a beef cow. Source: H. Karreman

depression, irritable bowel syndrome, rheumatoid arthritis, allergic skin conditions, arthritis, and high blood pressure in humans. The risks are few as the remedies are very diluted (Shoen and Wynn 1998). The starting materials for remedies are herbs, roots, minerals, fungi, and animal products cut, ground, or crushed into small particles and placed in a solvent. (Dettloff and Dettloff 2019).

Husbandry, farm management, and disease prevention

Good husbandry, management, feed hygiene, and disease prevention practices are widely accepted tools for improved animal health. This applies to all species, production systems, and pathogens. A “comprehensive approach that includes alternative products and improved management is likely more effective than relying on a single alternative” (Dahiya et al., 2006, Sternberg et al., 2015). For more information, see our Prevention Chapter. To reiterate, fresh air, species-appropriate diets, clean water, dry bedding, and sunshine may be the best prevention.

Immune modulators

Immune modulators stimulate the immune system and can work against a wide range of pathogens. Immune modulators being studied include cytokines, lipopolysaccharides, short segments of DNA that stimulate innate immune responses (i.e., Unmethylated cytosine–guanine dinucleotide, or CPGs), antibodies derived from egg yolk, and certain plant materials. Cytokines are stable to digestion and absorbable, some are labeled for oral use, and some are given parenterally. Immune modulators are considered promising alternatives for disease prevention and treatment. Immune modulators shown to be safe, effective, and approved for use in cattle include a cytokine-based product for dairy cows to prevent udder infections after calving, and a biologic based on CpGs approved for use in cattle affected by respiratory disease (Bayer 2015). Another approved immune modulator, AmpliMune, raised beta- and gamma-interferon levels within hours and is approved for calves experiencing neonatal diarrhea due to E.coli K99. It can also be used extra-label for immune stimulation of older animals to address high somatic cell count as well as when there is a viral and bacterial disease challenge, i.e., early pneumonia.

Magnetic therapy – Pulsed Electromagnetic Field Therapy (PEMF)

Electromagnetic devices used for therapeutic purposes have existed for over a century. PEMF is electrotherapy that uses an active electromagnetic waveform to treat an area of tissue. Many different types of machines were developed over the years with varying levels of scientific evidence or validation. Research on their use and refinement of devices has grown since the 1980s and continues. The US Food and Drug Administration (FDA) has approved PEMF to treat non-union fractures, postoperative pain and edema, osteoarthritis, and human plantar fasciitis. Its use has been growing in veterinary medicine, where it has been used for bone healing, osteoarthritis, inflammation, pain, edema, and soft tissue wound healing. Animals tolerate non-invasive treatments well, with no evidence of significant side effects. Magnetic devices are available for large animals, including leg wraps, hock wraps, knee and foot wraps, and blankets. Shoen and Wynn 1998, Gaynor 2018).



Magnetic therapy blanket applied to jersey cow by Dr. Linda Hanson (chiropractor) at a farmer workshop.

Organic acids

Organic acids (e.g., citric or acetic acids (vinegar)) are added to feed and water for growth promotion and disease

prevention. It is believed that the acid's ability to kill bacteria may also favor the growth of certain acid-loving good bacteria in the gut and increases the functioning of the gut by increasing acidity level. Cranberry extracts have been used in poultry for quite some time. More data is needed, but studies of organic acids in swine and cattle have shown promise. (Huyghebaert 2011)

Photobiomodulation therapy (PBMT)

PBMT is the non-thermal interaction of monochromatic radiation with a target site. It uses red/near-infrared light to modulate cellular functions. It upregulates APT, nitric oxide, and reactive oxygen species. It also alters gene transcription and increases cell proliferation, cellular motility, and the production of growth factors. (Anders 2017)

Photobiomodulation is known as laser, cold laser, low-level light therapy (LLLT), and low-intensity laser therapy (LILT). The laser penetrates the skin and deeper tissues. LED therapy is another type of PBMT that works on skin surfaces. PBMT is a non-invasive method to stimulate tissue healing and treat acute and chronic conditions, including pain, inflammation, muscle and tendon injury, and osteoarthritis, with no significant side effects. (Alves 2020)

Laser acupuncture is a method where a laser is used to stimulate acupuncture points. It has been used to treat digestion issues, gastroenteritis, constipation, diarrhea in young animals, conjunctivitis, nerve paralysis, infertility, and mastitis. (Shoen 2001)



Cold laser treatment for mastitis/high somatic cell count. Source: H. Karreman



Lasert treatment in sheep for hind limb lameness. Source: H. Karreman

Probiotics and prebiotics

The normal microscopic bacteria in the G.I. tract make up the gut microbiome. A healthy microbiome supplies nutrients to the host and aids in digestion. Antibiotic use is not the only thing affecting gut microbes' health. Illness, injury, and stress can alter the normal bacterial population, pH, and digestive processes, contributing to further ill health and delayed healing.

Probiotics

Probiotics are living microbes (e.g., yeast, fungi, and bacteria) that improve the gut microbiome's balance when added to the diet. (Pew Chauchyras-Durand 2009) Probiotics are divided into defined (a single strain or mixture of fully described microorganisms) and undefined (mixtures that are not completely described and tend to have better efficacy). Undefined probiotics include "competitive exclusion products," which are special undefined probiotics that are given shortly after birth or hatching that have shown good efficacy in helping young animals establish beneficial bacteria in the gut before pathogens can colonize (Callaway 2008) Callaway). Probiotics are used in the US in poultry, pigs, dairy, beef cattle, and companion animals. Storage and administration can be a potential challenge.

Prebiotics

Prebiotics are not living organisms but food for those gut microbes and help them multiply. Prebiotics are organic compounds, such as sugars, that, when added to the diet, are not digestible by the animal but are broken down by beneficial microorganisms in the gut and selectively stimulate their growth and ability to outcompete other harmful microorganisms. Some say that prebiotics positively affect the interior "terrain" of an animal. They also have effects such as modulating the immune system, though how they do this is not completely understood. Prebiotics are used in poultry for growth, disease prevention, and to improve overall gut health. They have been used in pigs, and their use in cattle seems limited to young calves. Prebiotics are quickly digested in the fully formed rumen, making them ineffective.

Trace and macro elements

Calcium, phosphorus, and other macro elements are vital to life. Kelp is high in trace minerals and is a tool for supplying deficient elements (Padgham, 2006).

Vaccines

Vaccines are widely used to prevent disease by some viruses and bacteria. Decreasing viral infections results in fewer secondary bacterial infections requiring antibiotics. At the same time, the cost of vaccines and increased handling/labor/animal handling stress must be weighed for cost-effectiveness. In organic/alternative livestock husbandry, selective use of vaccines is based on a diagnosed need for intervention rather than a blanket vaccine schedule.

Zinc, copper, and other heavy metals

These are naturally occurring and necessary elements that can be added to the diet for growth promotion and treatment. Concerns over potentially harmful residues in meat have to be considered. (USDA 2015)

Other approaches ripe for more research include clay minerals (e.g., bentonites and zeolites) and rare earth elements (e.g., scandium, lanthanum). (Wales 2015), as well as biofilm inhibitors, predatory bacteria, and certain metals such as silver.

Example of healing progression using mixed modalities



Cow "Shelby" showing sloughed muscle group. She survived Blackleg with timely antibiotic and alternative treatments. Source: H Karreman



Shelby getting PEMF to aid in healing. Source: H. Karreman



Shelby receiving acupuncture with electro-stimulation. Source: H. Karreman



Shelby as a bred heifer with much receded lesion.
Source: H. Karreman

3. Organic farm case scenario - pneumonia

To better understand the treatments highlighted in this scenario, we highly recommended completing the Rules and Regulations Chapter beforehand and referencing the handout, [Guidance for treating organic and alternative animals](#).

You are called out to an organic dairy farm in Wisconsin in late March for an acute death in a 3-month-old heifer. Another calf is lethargic, didn't finish its milk this morning, and is coughing. The weather has been severe, with a warm period followed by cold temperatures and wet, slushy snow.

Jay Snyder owns Pine Bluff Farm. His farm has been certified organic for the past four years. The farm has 60 milking cows, six milk-fed calves, and 20 heifers.

This time of year, the cows are in a tie-stall barn with a concrete loafing area used for turn-out. The heifers are in a bedded pack pen built as an addition to the main tie-stall barn and share air space with it. The milk-fed calves are in box stalls at the end of the barn closest to the milk house to be checked on and fed easily.

Day 1:

On examination, you find a 2-month-old heifer calf in good body condition with slight nasal discharge and mildly depressed. The calf is alert and gives you a bit of a run to catch and examine it. The temperature is 104.5F. The respiratory rate is 60 bpm, and the lungs are a little harsh ventrally. The calf coughs a few times during the exam.

Knowledge Review 1



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://cardinal.cfsph.iastate.edu/treatments-organic-alternative-animal-health/?p=92#h5p-1>

Next, you perform a postmortem exam on the dead heifer calf. Jay's son (who feeds the calves) didn't notice anything unusual about the calf yesterday and was surprised to find it dead this morning.

On examination, you find a 3-month-old calf in good body condition with slight purulent nasal discharge. Internally you find severely congested, darkened lung tissue in the cranioventral lobes. A piece of lung tissue from the consolidated area sinks when placed in your wash bucket. Tissue from the more normal-looking dorsal lobes floats. There is an increased amount of pleural fluid in the chest cavity. Purulent discharge is present in the upper respiratory system. All else is normal.

You explain to Jay that the dead calf had an acute case of pneumonia, and the sick calf also has a respiratory infection that needs treatment. Jay thanks you for the diagnosis but declines to give antibiotics to the sick calf and treats her orally with an herbal, garlic-containing tincture.

Knowledge Review 2



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://cardinal.cfsph.iastate.edu/treatments-organic-alternative-animal-health/?p=92#h5p-2>

You administer a dose of Flunixin IV to the sick calf. You also give the calf an injection of Amplimune® and bovine

antiserum for immune support. Since the herd has not been vaccinated for respiratory viruses, you recommend vaccination of the herd with a live intranasal vaccine, but Jay declines.

Day 2:

Joe calls back to report another sick calf and two coughing cows near the milk-fed calf stalls that didn't finish their feed this morning. The heifer calf treated yesterday has improved and drank its milk well.

You examine the two cows (Emma and Mocha) and find temperatures of 104-105F, increased respiration rates, and mild to moderate lung sounds indicating early pneumonia. You recommend antibiotic treatment, but Joe declines as he wishes to treat the cows with herbal tincture and supportive care. In addition to ay's treatment, you give the cows IV flunixin and vitamin C. The cows also get a dose of bovine antiserum (Bovi-Sera, or Multi-Serum), SQ.

The five-month-old bull calf exhibits moderate respiratory signs on examination, similar to the cows. Jay explains he recently bought the bull calf from a neighboring organic dairy ten days ago and plans to raise him as the herd bull.

You treat the bull calf with a broad-spectrum antibiotic and flunixin. Jay doesn't hesitate to use antibiotics in this animal since a herd bull doesn't need to be certified organic. The bull will lose its organic status as a meat animal but can still be used as a breeding animal after treatment. The bull will need to be sold to a conventional market in the end.

You have another discussion with Jay regarding vaccination and ask him about his concerns. Joe has not vaccinated his livestock since going organic and has not had any problems until now, but they have experienced greater weather challenges this year. You agree that it has been an especially rough winter and mention that another organic farm you work with used the respiratory vaccine and has not had issues with respiratory disease this year. Joe agrees this might be a good year to vaccinate the herd.

You and Jay vaccinate the cows in tie stalls with an intranasal vaccine. You dispense additional doses of intranasal vaccine for the heifers and calves—Jay and his son will vaccinate them later that day.

Day 3:

You return the following morning to assess the situation and address the herd's needs. The original sick cow, Mocha, and the bull calf are all doing better. Joe will continue herbal treatment and supportive care for these individuals for another 2 or 3 days. Emma (the second cow) is no better and has gotten slightly worse—mostly off feed, respiration rate, effort, and lung sounds have all increased, but she still nibbles at her feed and isn't in severe respiratory distress.

There are no new cases today, but Jay is very concerned about Emma. He tells you he has previously waited too long to use antibiotics and regretted it. You tell Jay that you believe antibiotics are necessary at this point with this cow, and he agrees. You treat Emma with antibiotics since she didn't respond to organic treatment. You use an antibiotic with a relatively short withdrawal time (Ceftiofur) and advise Jay that he will need to report the use of a prohibited substance to his certifier, segregate Emma, and dump her milk until the withdrawal time has passed. When practical, he can market her through a conventional channel to another farm or for conventional processing.

Knowledge Review 3



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://cardinal.cfsph.iastate.edu/treatments-organic-alternative-animal-health/?p=92#h5p-3>

Day 4:

Jay calls your office the next morning and speaks with the receptionist. Jay reports Emma has responded well to antibiotic treatment. The other cattle are improving, and Jay doesn't feel you need to recheck them. Jay requests flunixin and vitamin C prescriptions through an online livestock supplier he buys from. The receptionist relays the message from Jay to you.

You return Jay's call between farm calls. "I'm really glad to hear that your cows are doing well! I see you are requesting some prescription medications. To fill those prescriptions, I would need to be your veterinarian of record. What that comes down to is that we would have to establish a veterinary-client-patient relationship, a VCPR. It would entail regular visits to your farm to make sure I am up on all your animal care practices and review of your animal health records. We would agree to open communication on the health needs of your animals, and I would also be available to follow up on issues you experience with your livestock. I would be happy to discuss the details if you are interested". Jay says he is interested, and you set up a farm visit to discuss the details and establish the VCPR.

Knowledge Review 4



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://cardinal.cfsph.iastate.edu/treatments-organic-alternative-animal-health/?p=92#h5p-4>

Knowledge Review 5



An interactive H5P element has been excluded from this version of the text. You can view it online here:

<https://cardinal.cfsph.iastate.edu/treatments-organic-alternative-animal-health/?p=92#h5p-5>

4. Getting started with O/A clients

"Most organic farms experience fewer health problems under organic management than when they were conventional." Bradley J. Heins, Ph.D., West Central Research and Outreach Center Morris, MN, where they have operated an organic herd of 120 cows and a conventional herd of 180 cows side by side for over ten years.

Listen and learn from farmers and other veterinarians

- Find an alternative veterinary livestock practitioner in your area, spend time with them, and ride along on farm calls.
- Talk to O/A farmers about the products they use, how they use them, and when.

Attend meetings

- Seek out alternative medicine learning opportunities at local Veterinary Medical Association meetings.
- Attend national meetings, like the American Holistic Veterinary Medical Annual conference, which will probably provide the broadest introduction to the various modalities, networking opportunities, and vendors to learn more about available products. [AHVMA](#).
- Attend webinars from the College of Integrative Veterinary Therapies. [CIVI](#).

Practice due diligence

- research new products and practices for current information. Read and talk with other veterinarians and O/A farmers on products, their uses, successes, and failures. Veterinarians are lifelong learners and alternative medicine is a deep and interesting well of new information to add to your toolbox.

Start small

- Dr. Hugh Karreman, who has been an alternative veterinary medicine practitioner and livestock farmer for many years, offers some wise advice:

"...individuals learning alternative medicine from scratch may find it easier to start with only a couple of alternative modes rather than the many that exist. Though the strictest adherents of each modality usually cringe when therapeutic recipes are given in a "cookbook" format, it is exactly the cookbook approach that can help others to try out new therapies." Then once gaining some confidence through small victories in the real world, most students of natural medicine will be stimulated to inquire further and delve into particular philosophies and fine-tune the new avenues of therapy to their liking." Karreman, *The Barn Guide to Treating Dairy Cows Naturally*, 2007.

5. Key take-aways and resources

Key takeaways

- Veterinarians have an important role to play on organic and alternative farms and ranches
- Alternatives to antibiotics play an important role in reducing the use of antibiotics in livestock, which positively impact global antimicrobial resistance (AMR) concerns.
- Alternatives to antibiotics can be used for growth promotion, disease prevention, and disease treatment.

Helpful resources

Courses

For in-depth information on prevention measures, communication tips, veterinary medicine practices, and management tools used in organic and alternative production, continue reading the following chapters:

- Prevention and organic/alternative animal health
- Practice management considerations for working with organic and alternative livestock clients
- Communication considerations for working with organic and alternative livestock clients
- Rules and regulations associated with organic and alternative livestock

Alternative Medicine Training Courses

- [International Veterinary Acupuncture Society](#)
- [The Academy of Veterinary Homeopathy](#)
- [The American Academy of Veterinary Acupuncture](#)
- [The American Association of Rehabilitation Veterinarians](#)
- [The American College of Veterinary Botanical Medicine](#)
- [The American Veterinary Chiropractic Association](#)
- [The College of Integrative Veterinary Therapies \(webinars on integrating veterinary acupuncture , holistic approaches to farm animal health, etc.\)](#)
- [The Veterinary Medical Aromatherapy Association](#)

Handouts

[Common Products and Treatments for Organic and Alternative Livestock](#)

Websites

- [ATTRA NCAT – Livestock](#)
- [ATTRA Tipsheet: Organic management of internal and external livestock parasites](#)
- [Dr. Duke's Phytochemical and Ethnobotanical Databases \(USDA\)](#)
- [Dr. Karreman's Veterinary Solutions](#)
- [Farm Animal Concerns Trust \(FACT\)](#)
- [Golden yellow powder for wound healing](#)
- [Unique Therapies for Difficult Wounds](#)
- [USDA Guide for Organic Livestock Producers](#)
- [Wound care with traditional, contemporary, and alternative medicine](#)

Thank you!

Remember to return to the course home page to complete this chapter's quiz. After successfully passing the 5-question multiple-choice quiz, you can collect your Certificate of Completion to earn 1.0 RACE-approved CE credit.

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Glossary

ACA

Accredited Certification Agency

AGA

American Grassfed Association

alternative

when a non-mainstream approach is used in place of conventional medicine

AMDUCA

Animal Medicinal Drug Use Clarification Act of 1994

APHIS

Animal and Plant Health Inspection Service

ATTRA

Appropriate Technology Transfer for Rural Areas

AVMA

American Veterinary Medicine Association

CAVM

Complementary and Alternative Veterinary Medicine

CE

continuing education

CFSPH

Center for Food Security and Public Health

complementary

when a non-mainstream approach is used together with conventional medicine

CRP

Conservation Reserve Program

DMI

Dry Matter Intake

EPA

Environmental Protection Agency

EU

European Union

FAD

Foreign Animal Disease

FAMACHA

a system for estimating the level of barber's pole worm among small ruminants

FDA

Food and Drug Administration

G.I.

Gastrointestinal

GAP

Global Animal Partnership

GMO

Genetically Modified Organism

GMOs**integrative**

when conventional and complementary approaches are used together to care for the whole individual in a coordinated way

IOIA

International Organic Inspectors Association

Materials List

A list included in the Organic System Plan of each substance that might be used as a production input (e.g., fertilizers, health care products, feed).

NCAT

National Center for Appropriate Technology

NCCIH

National Center for Complementary and Integrative Health

NIH

National Institute of Health

NOP

United State Department of Agriculture's National Organic Program

NOSB

National Organic Standards Board

O/A

Organic and/or Alternative

OFPA

Organic Foods Production Act

OMRI

Organic Materials Review Institute

Organic Livestock

Certified by the USDA to carry the organic label

OSP

Organic System Plan

Permaculture

A system that develops agricultural systems modeled from natural ecosystems (per USDA).

plain community

Amish and conservative Mennonites

PMO

Pasteurized Milk Order

Regenerative agriculture

An alternative decision-making framework that offers a set of principles and practices to grow food in harmony with nature and heal the land from degradation (per NRDC).

Split operation

An operation that produces or handles both organic and nonorganic agricultural products (per USDA).

split operations

An operation that produces or handles both organic and nonorganic agricultural products (per USDA).

Sustainable agriculture

An integrated system of plant and animal production practices having a site-specific application that will, over the long-term satisfy human needs, enhance environmental quality, make the most efficient use of nonrenewable resources, sustain the economic viability of farm operations, and enhance the quality of life for farmers and society as a whole (abbreviated per USDA).

USDA

United States Department of Agriculture

VCPR

Veterinarian-Client-Patient Relationship