

UK Fundamentals of Herd Health: Vaccinations for the Cow-Calf Operation

What vaccines should be given every year to help keep the cow/calf herd healthy? The basic guidelines below are designed to help answer that question but the details of what products to use and when to administer them are best decided by the producer with his or her veterinarian. Every farm is different with regards to the disease risk and other challenges including labor and facilities needed to work the cattle. Your veterinarian is equipped with the knowledge and skills to determine what will work best for your unique situation.

Always consult your veterinarian before instituting or changing any health protocol.

Remember: “Vaccination” (drawing up the vaccine in a syringe and injecting it into the animal) is not the same as “immunization” (the animal mounts an immune response) and “vaccination + immunization” never adds up to 100% protection from infection, even in the best of circumstances. The vaccines must be handled correctly (proper mixing, right temperature) and cattle in good health (low stress environment, good plane of nutrition, trace mineral needs met, minimal parasites present) in order to get the most protection from vaccines.

The provided list of vaccines and dewormers is for example purposes only and should not be considered an endorsement of products by the University of Kentucky.

Adult Cows and Bulls

1. Viral respiratory vaccine (IBR, BVD, PI₃, BRSV) and 5-way Leptospirosis. If using bulls for breeding, include *Campylobacter fetus* (Vibriosis). Best given 4-6 weeks prior to breeding. **If the cow is open at the time of vaccination, select a modified live vaccine (List C1A or B). If the cow is pregnant at the time of vaccination or less than 30 days before breeding, select a killed vaccine (List C2A or B)** to reduce the risk of accidental abortion or interference with pregnancy. Certain modified live vaccines can be used in pregnant animals but only if used strictly according to label directions. Products with “FP” in the name stands for Fetal Protection from BVD virus.
2. 7 way or 8 way Clostridial (Blackleg)-necessary if under 2 years of age. Optional as the cow ages depending on the exposure risk of the herd. **(List D5 A-D)**
3. Deworm-perform at least once per year (spring and possibly fall) and twice a year if under 2 years of age or thin body condition. If only once is possible, deworm in Spring (May). ****Deworm at least 2 weeks prior to bull turn out or before estrus synchronization for artificial insemination (AI) due to temporary impact on hormone release in females.**** Deworming in the fall helps to reduce the number of worms that overwinter in the cow but is typically not as important as spring when larvae are active in the pasture. **(List D6 A and/or B)**
4. Tag cattle for identification and/or re-tag those that have lost tags.
5. Breeding Soundness Exams are highly recommended for herd bulls and should be conducted 60-75 days prior to turnout. Bulls need the same vaccinations and deworming as the cow herd.

Open Heifers at least 6 weeks Prior to Breeding

1. Viral respiratory vaccine (IBR, BVD, PI₃, BRSV) with 5-way Leptospirosis. If using bulls for breeding, include *Campylobacter fetus* (Vibriosis). Modified live vaccines are preferred (List C1A or B) for heifers. A Fetal Protection (FP) product is encouraged. Follow all label directions; some vaccines require a booster and some do not. **Timing is very important-if less than 6 weeks away from breeding, use a killed product (List C2A or B).**
2. 7 or 8- way Clostridial (Blackleg) (List D5 A-D)
3. Deworm. (List D6 A and/or B). A heifer has increased nutritional demands because she is still growing herself, trying to reproduce, and young animals do not have the immunity to parasites that adult cattle possess. A very effective combination is to use an oral (white) dewormer from list D6A and an injectable or pour-on dewormer from list D6B, given at the same time.

Calves 1-3 months of age:

1. Identify with tag
2. Vaccinate with 7 way Clostridial (Blackleg) vaccine-Although the calves are young, this dose of vaccine will initiate (“jump start”) the immune process, especially cell-mediated immunity. Do not give blackleg vaccine at birth. (List D5 A-D)
3. Dehorn
4. Castrate-the earlier this is completed, the better. Avoid the first 24 hours after birth.
5. Optional Practices:
 - a. Implant steers at the time of castration (unless you plan to sell calves in an organic or natural market)
 - b. Viral Respiratory Vaccine-Killed (List D2) or MLV (List D1 but follow label directions carefully regarding MLV usage in nursing calves). Intranasal vaccines are great for young calves.
 - c. Pinkeye vaccine (administer in late spring/summer just before fly season) (List D7)
 - d. Deworm-Begin deworming calves at 4-8 weeks old depending on time of year and expected level of pasture contamination with parasite larvae-consult a veterinarian. (List D6 A or B)
 - e. Test for BVD-PI (ear notch)-Consult your veterinarian if this is something to consider. If BVD has been diagnosed in an animal from your farm or there is a history of unexplained abortions, stillbirths, weak calves or other reproductive loss in the herd, testing all calves is the proven first step to find persistently infected (PI) animals. **Best to wait until the calf is at least 14 days of age to take an ear notch sample.**

Calves 2-3 weeks pre-weaning (best) or shortly after Weaning:

Consult your veterinarian and check your marketing plan since many programs (for example: CPH45) specify what vaccines must be administered and when in order to participate.

Administer vaccines 2-3 weeks pre-weaning for best protection. If calves cannot be processed pre-weaning, then begin this protocol after weaning when the stress is essentially over (calves are eating, drinking, and the majority have stopped walking and bawling). Booster vaccines if required by label. If castrations and dehorning were not done earlier, these practices need to be completed as soon as possible. Tetanus vaccination is strongly recommended when performing “late” castration of older,

heavier bulls; especially if banding. Consult your veterinarian regarding whether to use a tetanus toxoid or antitoxin.

1. Viral respiratory vaccine (IBR, BVD, PI₃, BRSV)-Killed (List D2) or MLV (List D1) but follow label directions regarding MLV usage in nursing calves if vaccinating before weaning. **If using killed, a booster is required.** A majority of buyers prefer calves that have received 2 doses of MLV. See point #3a below for an additional viral respiratory vaccine option.
2. For Heifers to be kept as Replacements: Viral respiratory (as above) with *Campylobacter fetus* (Vibriosis) and 5-way Leptospirosis vaccine included. Booster according to label directions-MLV is strongly recommended for females to be kept in the herd. (List C1B)
3. Vaccinate with *Mannheimia haemolytica* toxoid. This vaccine, commonly known as a “Pasteurella shot” or “Pneumonia shot” is given pre-weaning in anticipation of the stress associated with weaning. (List C3)
 - a. Many combination *Mannheimia haemolytica* toxoid and MLV Respiratory Virus Vaccines are available (List C4). Some of the combination products listed are actually two separate products with one administered in the nose (intranasal) and the other product is injected.
4. Deworm with an endectocide (List D6A) for internal and external parasites. A “drench” or “white” dewormer given by mouth (List D6B) may also be used but a second product is required for external parasite (lice/flyes/ticks) control. The best option is to administer an injectable (or pour-on) dewormer (List D6A) and a drench dewormer (List D6B) at the same time.
5. 7- or 8- way Clostridial vaccine (Blackleg). Clostridial vaccines may be purchased alone or in combination with pinkeye, “somnus” and other antigens. Follow label directions regarding the need for a booster. (List D5 A-D)
6. Optional:
 - a. Implant-Follow label directions if re-implanting. Do not implant females to be used for breeding purposes. Do not implant if planning to sell on the natural or organic markets.
 - b. *Pasteurella multocida* and/or *Histophilus somni* (formerly known as *Haemophilus somnus*) vaccines-consult your veterinarian for recommendations.

Cows after calves are weaned:

1. Check cows for pregnancy by palpation, ultrasound, or blood test. If open, strongly consider culling her.
2. Check for other problems: Eyes, teeth, udder, feet and legs, body condition, disposition.
3. Scours Vaccine (List C8) –Administer to pregnant cows 1-3 months prior to calving. Initially this is a two-shot series then it is given annually. Products vary on when to administer them so follow label directions carefully. Scours vaccines may be given to newborn calves (List D8).
4. If leptospirosis is a persistent problem, cows may need a booster of 5-way Leptospirosis vaccine such as Spirovac (Zoetis) for continued strong protection throughout pregnancy.

Additional Considerations:

1. *Modified Live Vaccines (MLV) provide fast, broad immunity and are excellent stimulators of cell-mediated immunity. They are preferred in weaned calves and usually required by most preconditioned sales. However, only use modified live vaccines ***in pregnant cows and in nursing calves*** if the cows were vaccinated with MLV, usually within the last 12 months (check label for specific requirements; some are less than 12). If this requirement is not met, a killed vaccine must be used until the cow is open and the calf is weaned.
2. Killed respiratory virus vaccines must be given twice (usually 2-3 weeks apart) if it is the first time the vaccine is administered. Annual boosters are required after the initial two-shot sequence. Killed vaccines are safer than MLV vaccines but they do not protect as well nor last as long.
3. If heifers have been allowed to stay with the herd bull until weaning, most likely some are pregnant. A prostaglandin injection (for example: Lutalyse®) can be given to the heifers once they have been away from the bull a minimum of 10 days. These injections work best in early pregnancy (<75 days) so do not delay administration if needed.
4. Try to minimize the number of injections given at one time as much as possible. Multiple vaccinations cause neck soreness. Multiple Gram negative vaccines (for example, leptospirosis, vibriosis, pinkeye) may cause cattle to spike a fever and go off feed for a short period of time.
5. Keep good vaccination records. Record date, vaccine name, serial numbers and expiration dates at a minimum.
6. Utilize effective fly control and pinkeye vaccine beginning in late spring. Follow label directions regarding booster vaccines. If using feed/mineral additives for fly control, make sure to start them 30 days before fly season and keep it in until 30 days after fly season is over.
7. Anaplasmosis- Kentucky is among the list of states approved by the USDA for sale of the anaplasmosis vaccine marketed by University Products LLC of Baton Rouge, La. The vaccine is used in cows in all stages of pregnancy with no problems being reported. The recommendation is a 2 dose regimen given 4 weeks apart with annual revaccination required. Protective immunity should develop within 7-10 days according to the manufacturer. The primary or initial dose is typically given to bred heifers and young bulls. Consult your veterinarian for options.
8. Letters in a vaccine name mean:
 - a. IBR, BVD, BRSV and PI₃: Diseases included in a viral respiratory vaccine.
 - b. An "FP" in the vaccine name stands for "fetal protection" and means protection against fetal persistent infection and abortion due to the BVD virus.
 - c. An "HB" in the vaccine name stands for the strain of *Leptospira* known as "Hardjo bovis" that is a common cause of reproductive failure in cattle.
 - d. "HS" stands for "*Histophilus somni*" (formerly known as *Haemophilus somnus*)
 - e. "L₅" stands for the 5 strains of Leptospirosis.
 - f. "V" stands for "Vibriosis"

Vaccination programs must be designed around the specific needs of your cattle. Talk to your vet!

Examples of Respiratory and Reproductive Vaccines[£]

for Adult Cows, Bulls, & Replacement Heifers

C1A Modified Live Virus Vaccines with Leptospirosis

- *Pyramid 10 - Boehringer Ingelheim
- *Vista 5 L5 —Merck
- *Express FP10 —Boehringer Ingelheim
- *Bovishield Gold FP5 L5 HB — Zoetis
- *Titanium 5 L5 HB — Elanco
- *Labeled for use in pregnant cattle and nursing calves but follow label directions carefully

C1B Modified Live Virus Vaccines + Lepto and Vibrio

- *Express FP 5 VL5— Boehringer Ingelheim
- *Bovi-Shield Gold FP5 VL5 HB-Zoetis
- *PregGuard Gold FP 10 (No BRSV)- Zoetis
- *Vista 5 VL5 SQ-Merck

C2A Killed Virus Vaccines with Lepto

- Triangle 10 HB—Boehringer Ingelheim
- Cattlemaster Gold FP5 L5— Zoetis
- Vira Shield 6 + L5 HB— Elanco
- Master Guard 10 HB-contains killed IBR and BVD-Elanco

C2B Killed Virus Vaccines + Lepto and Vibrio

- Cattlemaster 4 +VL5-Zoetis
- Vira Shield 6 + VL5 (HB)— Elanco

Examples of “Pneumonia” Vaccines

C3 Mannheimia (Pasteurella) Vaccines

- Presponse HM—Boehringer Ingelheim
- Presponse SQ—Boehringer Ingelheim
- One Shot—Zoetis
- Pulmoguard PHM –1– Huvepharma
- Nuplura PH—Elanco
- Once PMH—SQ or Intranasal—Merck

C3a Mannheimia (Pasteurella) Vaccines+Other Resp

- Nuplura PH + BVD (Mannheimia and BVD)-Elanco
- Nuplura PH + 3 (Mannheimia, BVD, IBR)-Elanco

for Nursing Calves and Weaned/Feeders

D1A Modified Live Virus Vaccines (Often called “Live Virus”)

- *Pyramid 5 - Boehringer Ingelheim
- *Vista 5 —Merck
- *Inforce 3 (Intranasal) + Bovishield BVD —Zoetis
- *Express 5 —Boehringer Ingelheim
- *Bovishield Gold 5 — Zoetis
- *Titanium 5 — Elanco
- *Bovilis Vista BVD + Bovilis Nasalgen 3 (Intranasal)—Merck
- *Labeled for use in calves nursing pregnant cows but follow label directions carefully

D1B Modified Live Virus Vaccines + Somnus

- *Express 5-HS— Boehringer Ingelheim
- Resvac 4/Somubac-Zoetis

D2A Killed Virus Vaccines

- Triangle 5—Boehringer Ingelheim
- Cattlemaster Gold FP5 — Zoetis
- Vira Shield 6 — Elanco
- Master Guard 5-contains killed IBR and BVD-Elanco

D2B Killed Virus Vaccines + Somnus

- Elite 4-HS—Boehringer Ingelheim
- Vira Shield 6 Somnus— Elanco

Examples of Combination Vaccines

C4 Modified Live Respiratory Viruses + Mannheimia

- *Pyramid 5 + Presponse SQ —Boehringer Ingelheim
- *Vista Once SQ — Merck
- *Bovi-Shield Gold One Shot—Zoetis
- *Titanium 5 + PHM—Elanco
- *Inforce 3 (intranasal) + One Shot BVD-Zoetis
- *Bovilis Vista BVD CFP + Bovilis Nasalgen 3-PMH (intranasal)-Merck
- *Labeled for use in pregnant cattle and nursingcalves
—follow directions carefully

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Examples of Blackleg, Pinkeye and Scours Vaccines and Dewormers

D5A Clostridial (Blackleg) 7 or 8 Way Vaccines

Ultrabac 7 or Ultrachoice 7-Zoetis
Caliber 7—Boehringer Ingelheim
Alpha 7-Single dose -No booster-Boehringer Ingelheim
Vision 7 or 8 with SPUR—Merck
Calvary 9 or Covexin 8—Contains tetanus-Merck

D5B Clostridial (Blackleg) + Pinkeye

Alpha 7/MB1— No booster-Boehringer Ingelheim
20/20 Vision 7 with SPUR-Merck
Piliguard Pinkeye + 7—Merck

D5C Clostridial (Blackleg) + Somnus

Ultrabac 7/Somubac—Zoetis
Bar Vac 7 Somnus-Boehringer Ingelheim
Vision 7 or 8 Somnus with SPUR—Merck

D5D Clostridial (Blackleg) + Pasteurella

One shot Ultra 7 or 8—Zoetis

D7 Pinkeye Vaccines

Maxi/Guard-Addison Labs
Vision 20/20—Merck
i-site XP—AgriLabs
Pinkeye Shield XT4—Elanco
Piliguard Pinkeye-1 Trivalent or Triview—
Merck
SolidBac Pinkeye IR/PR—Zoetis
Ocu-guard MB-1—Boehringer Ingelheim

D6A Dewormers (Injectables and Pour-ons)

Cydectin— Bayer
Dectomax — Zoetis
Ivomec or Ivomec + - Boehringer Ingelheim
Eprinex—Boehringer Ingelheim
Noromectin—Norbrook
LongRange - (extended duration) - Boehringer Ingelheim

D6B Drench Dewormers

Valbazen + (Pour on) - Zoetis
Safeguard + (Pour on) - Merck
Synanthic + (Pour on) - Boehringer Ingelheim
("Pour on" for external parasite control—lice, flies)

D8 Scours Vaccines Administered to Calf

Bovilis Coronavirus (Intranasal, Coronavirus Only)- Merck
Bar-Guard-99 (Oral, E. Coli K99 Only) - Boehringer Ingelheim
Calf-Guard (Oral, Rota- and Coronavirus)— Zoetis
First Defense (Oral, E.coli K99, Corona)-Immucell Corp
First Defense TriShield(Oral, E.Coli K99 + Rota- +Coronavirus)
Bovine Ecolizer (Oral, E. coli K99, C. perfringens)-Elanco

C8 Scours Vaccines Administered to Pregnant Cow

Guardian-Merck
ScourGuard 4KC-Zoetis
Scour Bos 9 and 4— Elanco