

Moorepark Dairy Levy Research Update

Vaccination / Dosing Programme for Dairy Farms

Moorepark Animal & Grassland Research and Innovation Centre

January, 2015
Series 25



Vaccination/Dosing Programme for dairy farms

Please check with your veterinary practitioner that all vaccines, drenches, and pour-ons, intended for use on your farm, are authorised for use in dairy cattle.

This programme contains a list of products that are authorised for use on the Irish market as of January 1st 2015 for use in dairy cattle. All the products are listed on the Health Products Regulatory Authority (HPRA) website as having being authorised for use as of the 1st January 2015. In the case of each product, all data were sourced directly from data sheets listed on the HPRA website.

Authors: **Ríona Sayers, MVB, BSc, MAnSC, Dip PM, PhD**

Research Officer, Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Co. Cork.

Teri Acheson, BAgrSc

Teagasc Walsh Fellow

© Teagasc, 2015

The material in this publication cannot be reproduced without the express permission of Teagasc.

Contents

Introduction – Prevention is better than cure.....	5
Annual vaccination planner.....	6
Annual fluke and worm treatment planner.....	8
Best practice in vaccination handling, administration and storage.....	12
Key bio containment practices.....	14
Bovine Viral Diarrhoea (BVD)	
Information.....	16
Vaccines.....	18
Clostridial Diseases	
Information.....	20
Vaccines.....	21
Infectious Bovine Rhinotracheitis (IBR)	
Information.....	23
Vaccines.....	25
Leptospirosis	
Information.....	27
Vaccines.....	28
Calf Pneumonia Complex	
Information.....	29
Vaccines.....	30
Salmonella	
Information.....	32
Vaccines.....	34
Scour in calves	
Information.....	35
Vaccines.....	36
Fluke and worm treatment.....	37
Cryptosporidium parvum.....	39
Coccidiosis.....	40
Useful Links.....	41

Prevention is better than cure!

This programme sets out the main diseases affecting Irish herds at present. It outlines vaccines available on January 1st 2015 for each disease, and the correct method of use.

Before the use of any vaccines consultation with your vet is advised. Vaccination is one of the most cost-effective ways to reduce disease within your herd and it provides optimum protection when carried out correctly. Always ensure animals are in good health before vaccinating.

Vaccination is not the only method of disease control and should be supported by additional on-farm measures such as biosecurity and diagnostic testing.

The cornerstones of good disease control are:

- **Recording herd health status:** keep up to date disease records, complete annual disease screens using bulk milk, individual milk or individual blood tests, good stockmanship
- **Biosecurity/bio-containment:** best practice needed especially when buying/selling animals
- **Vaccination programme:** Document all vaccines administered and ensure correct timing and dose rate.

Additional biosecurity and disease documentation is available at **www.animalhealthireland.ie** or through your private veterinary practitioner (PVP).

Disease is a significant cost on Irish dairy farms. Farmers, their veterinarians, and advisors have a critical role to play in disease prevention and control. Good disease control will improve time and labour efficiency, lower overall farm costs, and, most importantly, improve animal performance through improved health and welfare.

All the products listed in this manual are subject to change. All veterinary medicines should be reviewed regularly (at least every 6 months) by either contact with your PVP or consulting the HPRA (regulatory authority for veterinary medicines in the Republic of Ireland) website (www.hpra.ie). This will prevent the use of unlicensed veterinary medicines in dairy livestock.

Annual vaccination planner - example

Disease	Product	Animal		Dose Rate	Where Given	Time of the Year	Primary Vaccine (tick when complete)	Booster Vaccine (tick when complete)
		Adult	Calf					
Example Only								
BVD	Bovidec	Cows/ Heifers	-	4ml	Subcutaneous	Example: If breeding start on 20th of April: vaccinate 20th of March (cows annual booster) and 20th of February and 20th of March for heifers (primary vaccination course).	✓	✓
Or								
BVD	Bovilis BVD	Cows/ Heifers	-	2ml	Intramuscular	Example: If breeding start on 20th of April: vaccinate 20th of March (cows annual booster) and 20th of February and 20th of March for heifers (primary vaccination course).	✓	✓

Annual vaccination planner

Disease	Product	Animal		Dose Rate	Where Given	Time of the Year	Primary Vaccine (tick when complete)	Booster Vaccine (tick when complete)
		Adult	Calf					

Annual dosing planner - adults

Worm Dose	Product	Date administered	Product	Date administered	Product	Date administered
ADULTS (cows and bulls)						
Fluke Dose	Product	Date administered	Product	Date administered	Product	Date administered
ADULTS (cows and bulls)						

Annual dosing planner - yearlings / replacements

Worm Dose	Product	Date administered	Product	Date administered	Product	Date administered
YOUNGSTOCK (yearlings & replacements)						
Flukc Dose	Product	Date administered	Product	Date administered	Product	Date administered
YOUNGSTOCK (yearlings & replacements)						

Annual dosing planner - Weanlings

Worm Dose	Product	Date administered	Product	Date administered	Product	Date administered
YOUNGSTOCK (weanlings)						
Flukc Dose	Product	Date administered	Product	Date administered	Product	Date administered
YOUNGSTOCK (weanlings)						

Best practice in handling, administration and storage of vaccines

Handling and use:

- Always check with your vet prior to vaccine administration.
- Always read and understand the manufacturer's instructions before use.
- Colostral antibodies may interfere with the immunity stimulated by some vaccines when used in young cattle. Always check the appropriate age to administer each vaccine.
- Only vaccinate healthy animals.
- Record all vaccines given to animals e.g. date, animal number, type of vaccine used etc. using the template in this booklet or your own records.
- Never mix vaccines or administer within 14 days of each other unless the manufacturer's instructions state otherwise.
- Never use the same needle or syringe for different vaccines.

Storage:

- Vaccines should always be stored in a fridge at 2°C - 8°C.
- Always check the shelf-life of the product and never use expired vaccines. Once opened (*seal broken*), check the longevity of the product.

Needles:

- Always use appropriately sized needles for each animal and route of injection e.g. short needles (0.5 - 1.0 inches) for subcutaneous injections and longer (1.5 inches) for intramuscular injection. Short needles should be used on younger animals.
- A new needle per animal is preferable. Needle sterilisation

products are available should multiple animals be treated with the same needle.

- All needles should be sterile and sharp.



Disposals of vaccines

- Read manufacturers guidance sheet for proper disposal method.
- Always dispose of sharp needles in a dedicated container labelled 'SHARPS'.

Key bio-containment practices:

Bio-containment consists of measures such as boot washing, general hygiene, vaccination, minimising visitors to the farm and using disposable single-use syringes for administration of medicines.

Biosecurity consists of measures such as non-purchase of livestock, quarantining of purchased animals, not importing slurry and not using external contractors.

Good Hygiene:

- Yards: scrape/power wash yards.
- Annually disinfect housing following thorough power washing.
- Ensure pens for calving and calf housing is cleaned out and fresh bedding provided regularly.
- Equipment – disinfect after use.
- Ensure all vehicles are disinfected on entrance and exit.

Pest control – bait, traps, sealed areas where feed is stored.

Footbaths/mats – ensure disinfectant is topped up/changed regularly.

Quarantine:

- Used for animals that are purchased, contract reared, returned from marts, shows, etc.
- Ideally animals should be placed in quarantine for at least 4 weeks.
- This period can be used to complete any required diagnostic testing, dosing, and vaccination to prevent introduction of disease.
- The quarantine area must not be located near the main herd and no contact at any point should be allowed between animals and main herd.

Written vaccination programme – Contact your veterinary practitioner to identify diseases from which your farm is most at risk.

Isolate sick animals – Isolate immediately once identified and keep away from the main herd until recovered.

Restrict farm visitors – where visitors can't be restricted e.g. A.I. technicians, contractors etc. ensure disinfectant and a cleaning facility are available e.g. hand washing, boot washing.

Quickly remove dead animals.

Maintain stock proof boundaries

Minimise stock purchased – if buying stock ensure they are from herds with a high herd health status

Test animals – Test both the home herd (*bulk milk*) and new purchases for diseases such as IBR, Salmonella, Neospora as well as diseases under statutory control such as TB, Brucellosis and BVD. Individual blood or milk samples must be used for Johnes disease.

Loading areas – keep away from main herd and regularly disinfect

New needles for each animal when administering medication

Maintain **clean water** courses and troughs

Fence off waterways

Avoid importing slurry, organic manures or colostrum

Maintain **accurate disease records** including diseases identified, vaccines and treatments administered.

Devise a **herd health plan** incorporating bio-containment measures in conjunction with your PVP and farm advisor.

Disease control signs in place.



Bovine Viral Diarrhoea (BVD):

See also AHI information leaflets: www.animalhealthireland.ie

Cause:

- Viral disease caused by bovine viral diarrhoea virus (BVDV)

Transmitted:

- Two forms of infection
- Persistently infected (PI) – only affects animals which have been exposed to the virus during gestation i.e. unborn calves between 2 and 4 months of gestation. This animal will shed the virus for its whole life – no cure! Movement is restricted under National BVD Eradication scheme. These animals should be euthanised or slaughtered immediately on confirmed identification.
- Transiently infected (TI) – animals become a TI when exposed to the virus after birth but in the majority of cases show no clinical signs. After BVD infection, a TI animal typically recovers and becomes BVD virus negative within 3 weeks. Repeat testing at a 3-4 week interval distinguishes a TI from a PI.
- Carriers of virus shed BVDV in all bodily secretions e.g. milk, semen, nasal
- BVD virus can also be transmitted through contaminated equipment, housing, vehicles etc.

Clinical signs:

- Poor fertility
- Reduced calf health
- Weak new-born calves
- Increased number of abortions, deformities, stillbirths
- Can lead to mucosal disease (PI animals only)

Control:

- Ear notch testing (*mandatory in new born calves at registration*)/ blood testing

- Vaccinating
- Implement bio-containment practices e.g.
 - Quarantine and test all animals coming onto the farm
 - Removal of PI's off the farm (euthanasia/slaughter) as soon as identified to prevent further contamination/spread of virus
 - Improve boundary fences (3m gap from neighbouring farms)



Bovine Viral Diarrhoea (BVD) - Youngstock

Directions	*Bovidec	*Bovilis BVD	**Rispoval 3 BRSV Pi3 BVD
Dose rate	4ml	2ml	4ml
Where given	Subcutaneous (under the skin) High side of neck.	Intramuscular	Intramuscular
Time of the year	From 4 months of age to any time up to 2 months prior to insemination/service to allow for two primary vaccination shots	From 8 months of age to any time up to 2 months prior to insemination/service to allow for two primary vaccination shots	3 weeks prior to a period of stress or high infection risk (e.g. regrouping, transport of animals or start of autumn season)
Storage	Fridge 2°C-8°C	*Fridge 2°C-8°C	Fridge 2°C-8°C
Primary Vaccine	First shot: from 4 months of age Second shot: 3 weeks later	First shot: at least 8 weeks prior to breeding start date. Second shot: 4 weeks later	First shot: from 12 weeks of age. Second shot: 3-4 weeks later
Booster Vaccine	Every 12 months	One vaccination 4 weeks prior to mating start date or for herds where breeding season is year round re-vaccination can be completed every 6 months.	Every 6 months

*Before use allow vaccine to reach room temperature (15°C-25°C)

** Primary purpose is as a pneumonia vaccine

Bovine Viral Diarrhoea (BVD) - Cows

Directions	*Bovidec	*Bovilis BVD 	***Risposal 3 BRSV PI3 BVD 
Dose rate	4ml	2ml	4ml
Where given	Subcutaneous (under the skin) High side of neck.	Intramuscular	Intramuscular
Time of the year	Not less than 7 days prior to service	4 weeks prior to mating start date	****3 weeks before periods of stress or high infection (e.g. regrouping, transport of animals or start of autumn season)
Storage	Fridge 2°C-8°C	**Fridge 2°C-8°C	Fridge 2°C-8°C
Primary Vaccine	First shot: at least 4 weeks prior to service. Second shot: 3 weeks later	First shot: at least 8 weeks prior to breeding start date. Second shot: 4 weeks later	First shot: from 12 weeks of age. Second shot: 3-4 weeks later
Booster Vaccine	Single annual booster no less than 7 days prior to service	One vaccination 4 weeks prior to mating start date or for herds with year-round calving, booster vaccinations can be completed every 6 months.**	Every 6 months

* Before use allow vaccine to reach room temperature (15°C-25°C)

** For the 6-monthly revaccination, the vaccine may be used for reconstitution of Bovilis IBR marker live for use in cattle from 15 months of age

***N.B. Risposal 3 does not protect a foetus against BVD. Its primary purpose is as a pneumonia vaccine.
**** Don't use during pregnancy or lactation

Clostridial Diseases

Cause: Bacteria including *Clostridium chauvoei* (Blackleg), *Clostridium tetani* (Tetanus), *Clostridium septicum* (Malignant Oedema), *Clostridium haemolyticum* (Bacillary haemoglobinuria), *Clostridium perfringens* type C (enterotoxaemia – usually seen in young calves less than 30 days old), *Clostridium novyi* (Blacks disease), *Clostridium perfringens* type D (Overeating disease – affects calves less than 2 years), *Clostridium botulinum* (Botulism)

Transmitted: The Clostridia are soil borne bacteria that can survive in the soil for long periods. It is not a contagious disease, so is not spread from animal to animal. It is picked up during grazing through wounds on the animal.

Symptoms: Highly dependent on type of clostridial disease.

Blackleg: some animals die quickly without any clinical signs. Others may have a fever, loss of appetite or swelling/necrosis of infected muscle.

Tetanus: Muscle tremors, difficulty chewing food, stiff tail, and enlarged nostrils.

Oedema: swelling of infected area, high fever, loss of appetite

Bacillary haemoglobinuria: red coloured urine as bacteria attacks blood cells and destroys them.

Enterotoxaemia: bloody diarrhoea, discomfort, convulsions.

Botulism: paralysis or death.

Control: Vaccination in most cases is the only form of control.

Clostridial Diseases - Adults

Directions	Covexin 10	**Covexin 8	Tribovax 10	Tribovax T	*****Blackleg Vaccine
Dose rate	2ml	5ml	2ml	*2ml	2ml
Where given	Subcutaneous (under the skin)	Subcutaneous (under the skin)	Subcutaneous (under the skin)	Subcutaneous (under the skin)	Subcutaneous (under the skin)
Time of the year	Cows/heifers: 2-8 weeks before calving. Cattle: every 6-12 months	2 weeks before maximum immunity is required (e.g. before calving, before period of risk)	Cows/heifers: 2-8 weeks before calving. Cattle: every 6-12 months	*Cows/heifers: 2-8 weeks before calving. Cattle: Not less than one year intervals between shots	2-3 weeks before period of risk
Storage	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C
Primary Vaccine	First shot: 2 weeks+. Second shot: 4-6 weeks later	First shot: 2 weeks+. Second shot: 6 weeks later	First shot: 2 weeks+. Second shot: 4-6 weeks later	First shot: 2 weeks+. Second shot: 6 weeks later	First shot: 3 weeks +. Second shot: 4-6 weeks later
Booster Vaccine	Every 6-12 months	Every 12 months	Every 6-12 months	Every 12 months (2-4ml depending on risk of infection)	Every 12 months

*In areas of high risk of infection from C. haemolyticum a primary vaccination course of 2 doses of 4 ml is recommended

**Does not cover all Clostridial diseases in calves. Consult vet on disease most prevalent to your own farm first prior to administration

***Seek veterinary advice for most common period of risk
****Don't use during lactation
*****Do not administer to pregnant cows

Clostridial Diseases - Calves

Directions	Covexin 10	Covexin 8	Tribovax 10	Tribovax T	Blackleg Vaccine
Dose rate	2ml	5ml	2ml	**2ml	2ml
Where given	Subcutaneous (under the skin): Loose skin on side of the neck	Subcutaneous (under the skin): Loose skin on side of the neck	Subcutaneous (under the skin): Loose skin on side of the neck	Subcutaneous (under the skin): Loose skin on side of the neck	Subcutaneous (under the skin)
***Time of the year	From 2 weeks old (e.g. Feb./Mar.)	2 weeks before risk period	2 weeks+ old followed by single dose every 6-12 months	12 month interval	2-3 weeks before period of risk
Storage	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C
Primary Vaccine	First shot: 2 weeks+. Second shot: 4-6 weeks later	*First shot: 2 weeks+. Second shot: 6 weeks later	First shot: 2 weeks+. Second shot: 4-6 weeks later	*First shot: 2 weeks+. Second shot: 6 weeks later	First shot: 4 weeks+. Second shot: 4-6 weeks later.
Booster Vaccine	Every 6-12 months	Every 12 months	Every 6-12 months	Every 12 months	Every 12 months

***Seek veterinary advice for most common period of risk

**In areas of high risk 2 doses of 4ml are recommended for the primary vaccination course

*If calves are from cows already vaccinated with Covexin 8, Covexin 10, Tribovax T, or Tribovax 10, it is advisable to wait until 8-12 weeks of age before beginning primary vaccination course

Infectious Bovine Rhinotracheitis (IBR)

See also AHI information leaflets: www.animalhealthireland.ie

Cause:

- Highly contagious respiratory disease caused by Bovine herpesvirus-1 (BHV-1).
- Affects all age groups.
- Primarily affects the upper respiratory tract.

Transmitted:

- Close contact with infected animals mainly through nasal discharge
- Semen and equipment used on infected animals and not properly disinfected
- Virus is airborne, and therefore distances of up to 5 m between infected and non-infected animals are needed to prevent cross contamination.

Symptoms:

- High fever
- Nasal discharge
- Heavy deep breathing
- Dullness with reduced appetite
- Pneumonia
- Abortions

Control:

- Blood test herd to identify carriers
- Cull positively identified animals or isolate and treat if showing clinical signs (*consult veterinary practitioner*)
- Vaccination with a live or inactivated marker vaccine for routine control
- Implement bio-containment practices
 - *When buying in, contract rearing, return of stock from shows etc. always quarantine and test animals before mixing with the main herd*
 - *Keep positive animals away from main herd*
 - *Maintain good boundary fences*



Infectious Bovine Rhinotracheitis (IBR) - Youngstock

Directions	Bovilis IBR Marker Live 	Bovilis IBR – Marker Inactivated 	Rispoval IBR – Marker Inactivated 	Rispoval IBR – Marker Live 
Dose rate	2ml	2ml	2ml	2ml
Where given	Intranasal – first shot Intramuscular - second shot	Intramuscular	Subcutaneous (under the skin)	Intranasal – first shot Intramuscular – second shot.
Time of the year	From 2 weeks of age and ideally prior to winter housing	From 3 months of age and ideally prior to winter housing	From 3 months of age and ideally prior to winter housing	From 2 weeks of age and ideally prior to winter housing
Storage	Fridge 2°C-8°C	*Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C
Primary Vaccine	First shot: from 2 weeks of age Second shot: 3-4 months old	First shot: from 3 months of age. Second shot: 4 weeks later	**First shot: from 3 months of age. Second shot: 3-5 weeks later	First shot: From 2-3 weeks of age Second shot: 3 months old
Booster Vaccine	Every 6 months	Every 6 months	***Every 6 months	***Every 6 months

*Before use allow vaccine to reach room temperature (15°C-25°C)

**If under 3 months when vaccinating, calves must be re-vaccinated again when over 3 months

*** The same booster vaccine course applies to calves as cattle (see next page)
**** Seek veterinary advice for most common period of risk

Infectious Bovine Rhinotracheitis (IBR) - Cows

Directions	Bovilis IBR Marker Live	Bovilis IBR – Marker Inactivated	Risporal IBR – Marker Inactivated	Risporal IBR – Marker Live
				
Dose rate	2ml	2ml	2ml	2ml
Where given	Intramuscular from 3 months old	Intramuscular from 3 months old	Subcutaneous (under the skin)	Intramuscular If cattle are at immediate risk, administer intra-nasally
Time of the year	Prior to winter housing	Prior to winter housing	Prior to winter housing	Prior to housing or when mixed with new groups
Storage	Fridge 2°C-8°C	*Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C
Primary Vaccine	Single shot from 3 months old	First shot: from 3 months of age Second shot: 4 weeks later	First shot: from 3 months of age Second shot: 3-5 weeks later	First shot: from 3 months (To prevent abortions, female cattle require 2 shots 3-5 weeks apart)
Booster Vaccine	**Every 6 months	Every 6 months	***Every 6 months	***Every 6 months

*Before use allow vaccine to reach room temperature (15°C-25°C)

**This vaccine may be reconstituted using Bovilis BVD vaccine to achieve vaccination against BVD and IBR in animals greater than 15 months of age.

***If using Risporal vaccines there are 3 methods are available for administration:

1. Risporal Live followed by a booster shot of Live vaccine every 6 months.
2. Risporal Live followed by a booster shot of Inactivated Risporal 6 months later. All

following boosters can be given every 12 months using Risporal Inactivated.

3. Risporal Inactivated followed by a booster shot of Inactivated vaccine every 6 months.

Leptospirosis

Cause:

- Bacterial disease caused by *Leptospira interrogans* serovar *hardjo* and *Leptospira borgpetersenii* serovar *hardjo*

Transmitted:

- Direct contact to another animal via urine/water, milk, placental fluids
- The bacteria is stored in the kidneys and shed irregularly by infected animals. Also can be spread by rodents (*e.g. rats*) in their urine which is difficult to avoid

Symptoms:

- Higher herd infertility
- Lower milk production
- Abortion with afterbirth retained in some cases
- Stillbirths/weak calves
- Septicaemia (*blood poisoning*)

Control:

- Vaccinate the main herd. Vaccinate calves born off vaccinated cows from 6 months onwards. All bovines in Ireland should be vaccinated against Leptospirosis.
- Blood testing to identify infected animals, if deemed necessary by your veterinary practitioner
- Quarantine affected animals and treat appropriately (*consult veterinary practitioner*)
- Vermin control
- Keep housing, water courses and equipment clean and disinfect regularly
- Implement bio-containment practices

Leptospirosis

Directions	Cattle		Calves	
	Leptavoid-H*	Spirovac	Leptavoid-H	Spirovac
Dose rate	2ml	2ml	2ml	2ml
Where given	Subcutaneous (under the skin)	Subcutaneous (under the skin) - preferably in the neck	Subcutaneous (under the skin)	Subcutaneous (under the skin) - preferably in the neck
***Time of the year	Annually in spring (4 weeks prior to breeding)	Annually	Spring	Annually
Storage	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C
Primary Vaccine	First shot: from 1 month of age. Second shot: 4 - 6 weeks later (not more than 6 weeks)	First shot: from 4 weeks of age. Second shot: 4-6 weeks later	***First shot: from 1 month of age. Second shot: 4 weeks later	First shot: from 4 weeks of age. Second shot: 4-6 weeks later
Booster Vaccine	Every 12 months	Every 12 months	Every 12 months	Every 12 months

* The vaccine should not be administered within two weeks of breeding as this may reduce conception rates.

** Seek veterinary advice for most common period of risk.

***if calves are vaccinated at less than 5 months age, the primary vaccination should be repeated at five months to allow for subsequent annual boosting

Pneumonic Pasteurellosis (part of calf pneumonia complex)

Cause:

- Bacterial infection mainly caused by *Mannheimia haemolytica* or *Pasteurella multocida*. Viral components of the calf pneumonia complex include parainfluenza III virus (PI3), bovine respiratory syncytial virus (BRSV), bovine viral diarrhoea (BVD) and bovine herpesvirus-1 (BoHV-1/IBR). Additional bacterial components can include *Mycoplasma* or *Haemophilus somnus*.

Risk factors:

- Poor calf environment e.g.
 - » *Insufficient or wet bedding*
 - » *Poor ventilation, draughts etc.*
- Housing calves and cows in the same air space (*most risk for dairy calves as they are not reared with their dams but may share the same air space*)
- Inclement weather for outdoor calves

Symptoms:

- Dullness
- Lower feed intake
- Quiet and slow ('off form')
- Fever
- Increased or heavy breathing and coughing
- Discharge from nose and mouth

Control:

- Good housing and bedding – well ventilated, clean, dry
- Ensure good calf care and nutrition
- Good shelter if outdoors
- Minimise stress
- Vaccination

Calf Pneumonia Complex

Directions	*Hiprabovis Pneumos	Pastobov	Bovilis Bovipast RSP
Dose rate	2ml	2ml	5ml
Where given	Subcutaneous (under the skin) **Between neck and shoulder	Intramuscular or subcutaneous	Subcutaneous (under the skin). On the side of the neck
****Time of the year	3 weeks before stress period (e.g. shipping, allotments)	Before risk period	2 weeks before risk period (e.g. before housing, introduction to the herd, transport)
Storage	Fridge 2°C-8°C	Fridge 2°C-8°C	***Fridge 2°C-8°C
Primary Vaccine	First shot: from 2 months of age. Second shot: 21 days later	First shot: from 4 weeks of age. Second shot: 21-28 days later	First shot: from two weeks of age. Second shot: 4 weeks later
Booster Vaccine	Every 12 months (3 weeks before risk period)	Before each risk period no more than 1 year after previous vaccination	2 weeks before each risk period

Note: Not all products listed above cover all infectious agents of pneumonia in calves. Consult your vet to identify which infectious agent is most prominent on your farm.

*Don't use during lactation or pregnancy
**Administer second shot preferably on opposite side to first shot
***Before use allow vaccine to reach room temperature (15°C-25°C)
****Seek veterinary advice for most common period of risk

Calf Pneumonia Complex (continued)

Directions	 Rispoval RS	***Risposal RS +PI3 Intranasal 	****Risposal 3 BRSV Pi3 BVD 
Dose rate	2ml	2ml	4ml
Where given	*Intramuscular	Intranasal	Intramuscular
*****Time of the year	During autumn, at housing or period of greatest risk	10 days before period of stress or high infection (e.g. re-grouping, transport, start of autumn)	3 weeks before periods of stress or high infection(e.g. regrouping, transport of animals or start of autumn season)
Storage	Fridge 2°C-8°C	Fridge 2°C-8°C	Fridge 2°C-8°C
Primary Vaccine	**First shot: from 4 months of age Second shot: 3-4 weeks later	First intranasal shot: from 9 days of age Protects for 12 weeks.	First shot:from 12 weeks of age Second shot: 3-4 weeks later
Booster Vaccine	Prior to the period of a greatest risk	Revaccinate before periods of stress or high infection risk.	Every 6 months

Note: Not all products listed above cover all infectious agents of pneumonia in calves. Consult your vet to identify which infectious agent is most prominent on your farm.

*In a clean environment add the correct amount of diluent to the powder e.g. for 5 doses transfer 10ml of diluent to the vial and shake well.
Administer immediately after mixing.
**Younger calves (from 7 days to 4 months of age) give 2 doses 3-4 weeks apart with

a third dose at 4 months of age
***Do not use during pregnancy
****Before use allow vaccine to reach room temperature (15°C-25°C)
*****Seek veterinary advice for most common period of risk

Salmonellellosis

Cause:

- Bacterial disease of cattle mainly caused by *Salmonella* dublin and *Salmonella* typhimurium.

Transmitted:

- Main source is from infected dung. Ingestion of this infected dung causes spread of the disease within the herd.
- Infection can also be spread by apparently healthy animals, as apparently healthy carrier animals store *Salmonella* in their gall bladders. These carriers shed bacteria intermittently especially during time of stress.
- Spread also by pests e.g. birds etc.

Symptoms:

Adults

- Fever, no appetite, sick animal
- Septicaemia (*blood poisoning*)
- Diarrhoea (*can be bloody*)
- Weight loss
- Abortion
- Dehydration

Calves

- Fever, no appetite, sick animal
- Septicaemia (*blood poisoning*)
- Dehydration
- Scour
- Bone lesions

Control:

- Vaccination
- Isolate sick animals immediately
- Clean, disinfect housing and equipment after use
- Keep clean water troughs and stores for feed
- Implement bio-containment practices



Salmonella

	Cattle (<i>over 6 months of age</i>)	Calves (<i>less than 6 months of age</i>)
Directions	Bovivac S	Bovivac S
Dose rate	5ml	2ml
Where given	Subcutaneous (<i>under the skin</i>): Loose skin on side of neck	Subcutaneous (<i>under the skin</i>): Loose skin on side of neck
**Time of the year	2 weeks before risk period (<i>generally between late August and November for abortion prevention</i>) A second dose 3-4 weeks before calving may be warranted if calf health is poor.	From 3 weeks old
Storage	Fridge 2 - 8°C	Fridge 2 - 8°C
Primary Vaccine	First shot: from 6 months of age. *Second shot: 21 days later	First shot: from 3 weeks old to 6 months of age. Second shot: 14-21 days later
Booster Vaccine	Every 12 months 2 weeks before risk period (<i>generally between late August and November for abortion prevention</i>) A second dose 3-4 weeks before calving may be warranted if calf health is poor.	Every 12 months

*If not calved within 8 weeks of the second shot of vaccine, give an additional 5ml 3-4 weeks pre-calving if passive protection of calves is required.

** Seek veterinary advice for most common period of risk.

Scour in Calves

Cause:

Different causes of scours in calves.

- Viruses including rotavirus, coronavirus, and bovine viral diarrhoea (BVD)
- Bacteria including *Escherichia coli*, *Salmonella* species and *Clostridium perfringens*
- Parasites such as *Cryptosporidium parvum* and coccidia.

Transmitted:

- Overcrowding and poor, unhygienic housing are major factors in the occurrence of scour in calves (*assuming adequate volumes of colostrum have been received by the calf*).
- Shed in faecal matter by both animals that look sick and those that look perfectly healthy.

Symptoms:

- Diarrhoea that might be green, yellow or grey in colour. Bloody diarrhoea may also occur.
- Weak animals
- Very likely to become dehydrated (*especially when very young*) causing sunken-eyes
- Death can occur in severe cases

Control:

- Ensure proper new-born calf care
 - » *Colostrum feeding and hygiene most important*
- Vaccinate cows before calving
- Isolate sick calves
 - » *Extremely important to rehydrate and also continue feeding milk*
- Segregate calves by age to prevent passing infectious agents from older calves to younger more vulnerable calves
- Maintain clean, dry housing with good ventilation.

Scour

Directions	Imocolibov	Lactovac	Rotavec Corona	Trivacton 6
Dose rate	5ml	5ml	2ml	5ml
Where given	Subcutaneous (under the skin)	Subcutaneous (under the skin) Side of the neck	Intramuscular Side of the neck	Subcutaneous (under the skin)
Time of the year	2-6 weeks before calving	2-6 weeks before expected calving date	3-12 weeks before expected calving date	2 – 6 weeks before calving
Storage	Fridge 2 - 8°C	Fridge 2 - 8°C	Fridge 2 - 8°C	Fridge 2 - 8°C
Primary Vaccine	First shot: 2-6 weeks before calving Second shot: only administered to cows not receiving the first shot less than 6 weeks before calving.	First shot: 8 weeks before calving Second shot: 4-5 weeks later (2-3 weeks before calving)	Single shot: 3-12 weeks before expected calving date	First shot: 2-6 weeks before calving ***Second shot: 2 weeks later
Booster Vaccine	2-6 weeks prior to calving	2-6 weeks prior to calving	3-12 weeks before each calving	2 weeks before each calving

*Only for use on pregnant cows

**Cows and Heifers in advanced pregnancy

***At least 14 days before calving

Fluke and worm treatment

- All active ingredients listed on the next page can be used in dairy animals.
- It should be noted, however, that not all products containing these active ingredients are licensed for use in animals intended to produce milk for human consumption.
- Additionally, some products are licensed for use during the dry period only with adherence to strict withdrawals.
- Consultation with your veterinary practitioner is strongly advised prior to use.
- Fluke and worm treatments should be administered in a strategic manner based on test results.
- Bulk milk analysis can be used to test for gut-worm, liver fluke and lungworm.
- Dung samples can also be used to detect eggs shed by adult gut-worm, liver fluke and rumen fluke. Lungworm larvae may also be detected in faecal samples.
- Faecal samples are most useful for detecting and quantifying gut-worm eggs. A negative result in a faecal sample for liver fluke and lungworm should not be used to definitively rule out infection and additional testing should be undertaken if clinical signs are suggestive of infection.



Fluke and worm treatment

Additional information is available in AHI parasite technical leaflets (www.animalhealthIreland.ie) and from your veterinary practitioner.

	Active Ingredient	Dose form	Ostertagia		Additional worms	Liver Fluke		
			Type 1	Type 2		Early	Immature	Adult
Wormers	Abamectin	Pour-on	✓	✓	✓	-	-	-
	Ivermectin	Pour-on/ injection	✓	✓	✓	-	-	-
	Doramectin	Pour-on/ injection	✓	✓	✓	-	-	-
	Eprinomectin	Pour-on	✓	✓	✓	-	-	-
	Moxidectin	Pour-on/ injection	✓	✓	✓	-	-	-
Imidazothiazole derivative	Levamisole	Injection/ Drench	✓	-	✓	-	-	-
	Fenbendazole	Drench	✓	✓	✓	-	-	-
Benzimidazole	Albendazole	Drench	✓	✓	✓	-	-	✓**
	Oxfendazole	Drench/Bolus	✓	✓	✓	-	-	-
	Triclabendazole	Drench	-	-	-	✓	✓	✓
Salicylanide	Oxyclozanide*	Drench	-	-	-	-	-	✓**

* Also active against mature rumen fluke

** To achieve optimal liver fluke control, doses active against mature liver fluke only, should be

administered following housing, on 2 occasions separated by an interval of 6-12 weeks.

Cryptosporidium parvum



Halocur

Calf pen hygiene is critical to the prevention of cryptosporidiosis

- For oral use in calves after feeding.
- Do not dose calves on an empty stomach.
- **Calves 35 kg to 45 kg:** 8 ml Halocur once a day for 7 consecutive days.
- **Calves 45 kg to 60 kg:** 12 ml Halocur once a day for 7 consecutive days.
- For smaller or higher weights, a precise calculation should be performed (2 ml/10 kg).
- **For prevention:** start treatment within 24-48 hrs of birth.
- **For reduction:** start treatment within 24 hrs of onset of diarrhoea. Consecutive treatments should be administered at 24 hr intervals.
- Once the first calf has been treated, all other newborn calves in the herd must be treated as long as the risk of diarrhoea due to *Cryptosporidium parvum*.

Eimeria bovis or Eimeria zuernii (Coccidiosis)

Coccidiosis is an indicator of insufficient hygiene in a pen

Bovicox

- For the prevention of clinical signs of coccidiosis and reduction of oocyst shedding in housed calves
- For environmental reasons:
 - Do not use in calves weighing more than 80 kg body weight.
 - Do not use in fattening units such as veal or beef calves.
- Administer a single oral dose of 3.0 ml/10 kg body weight
- Animals should be treated before the expected onset of clinical signs

Vecoxan

- Administer a single oral dose of 1.0 ml/2.5 kg body weight
- Animals should be treated before the expected onset of clinical signs
- Treatment with Vecoxan causes interruption of the coccidial life cycle and of excretion of oocysts for approximately 2 weeks. This allows the animal to bridge the period of decrease of maternal immunity (*observed at approximately 4 weeks of age*)



Bovicox



Vecoxan

Useful Links

Animal Health Ireland: www.animalhealthireland.ie

Health Products Regulatory Authority: www.hpra.ie

Teagasc: www.teagasc.ie



Notes

Contact Details

Moorepark Animal & Grassland Research and Innovation Centre,
Teagasc,
Moorepark,
Fermoy,
Co. Cork

Tel : 353 (0)25 42222

Fax : 353 (0)25 42340

Email: Moorepark_dairy@teagasc.ie

www.teagasc.ie