FOWL CHOLERA VACCINATION

Vaccination Technique and Troubleshooting

Pasteurella multocida
photomicrograph, 1125X.

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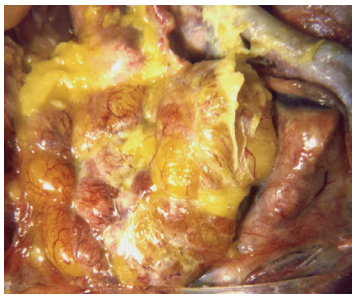
Animal Health

Fowl cholera is caused by Pasteurella multocida bacteria, and is most common in older birds.

Q What is fowl cholera?

A Fowl cholera is a bacterial disease of chickens caused by *Pasteurella multocida*. The disease affects birds as young as 6 weeks of age, but is most common in birds 15 weeks of age and older. It is characterized by sudden death in acute cases, and mortality may be high, while chronic cases result in low-grade mortality, lameness, and decreased production. Lesions include swollen wattles, facial swelling, pneumonia, swollen or spotted livers, and egg-yolk peritonitis. Sixteen serotypes of fowl cholera have been identified, with types 1 and 3 most common in chickens, and types 3 and 4 most common in turkeys.



Peritonitis

Swollen wattles

Prevention of fowl cholera requires a good vaccination program.

Q How can fowl cholera be prevented?

A FIRST, begin with good husbandry and management.

- Water sanitation — *P. multocida* can be found in unsanitized drinking water, so a water sanitation program is critical.
- Mortality removal — *P. multocida* can be spread from dead birds to live birds when pecked.
- Varmint control — Many mammals harbor *P. multocida* in their mouths and can transfer the bacteria to other birds by soiling feed and water.

NEXT, fowl cholera prevention requires a ***GOOD VACCINATION PROGRAM***. Two general types of cholera vaccines are available, live and inactivated.

■ *LIVE VACCINES*

Two live cholera vaccines are available for the vaccination of broiler breeders. Both contain attenuated serotype 3×4 strains. The 2 products and attenuated 3×4 strains are:

3×4 strain	Merck Animal Health product
• PM-1	PM-ONEVAX®-C
• M-9	M-NINEVAX®-C

M-9 strain is considered the milder of the 2 attenuated vaccines, but reactions are rarely seen with either strain.

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Both live vaccines have the ability to cross-protect against all serotypes of fowl cholera. Inoculation of live *P. multocida* is via the wing-web method. Following wing-web vaccination, live *P. multocida* bacteria multiply in the bird's body, stimulating the immune system. A fully immunized bird will be protected against most fowl cholera field challenges.

Good vaccination technique is essential for a successful live fowl cholera vaccination program. The attenuated vaccines will not spread bird-to-bird, making it critical to ensure all birds are vaccinated, otherwise unvaccinated birds will remain susceptible to cholera.

As with all live fowl cholera vaccines, there is a possibility of some post-vaccination reactivity which can produce lameness and low-grade cholera problems in susceptible birds. Males are considered most susceptible to possible excessive reactions due to their highly restrictive feeding program, so males typically receive the mildest vaccine to minimize issues.

Good technique is essential for a successful live fowl cholera vaccination program.

Important points about ***LIVE FOWL CHOLERA*** vaccination

- Vaccine must be applied via ***wing-web inoculation*** to provide adequate protection.
- Missed birds will ***NOT*** develop immunity. The vaccine does not spread bird-to-bird.
- Vaccine organisms are fragile, especially when reconstituted with diluent.
- An adequate number of vaccine organisms are needed for a good vaccination 'take.'
- Following proper wing-web vaccination, expect to see a 'take' about 7 days post-vaccination.
- A poor 'take' suggests improper application or a low, insufficient level of live organisms present in the vaccine.

Following proper wing-web vaccination, expect to see a 'take' about 7 days after vaccination.

INACTIVATED VACCINES (bacterins)

Inactivated or 'killed' vaccines (also called 'bacterins') are serotype specific, which means they can only protect against the serotypes in the vaccine. If the cholera challenges encountered the field are caused by a different serotype than that in the bacterin, the killed vaccine will not prevent the disease.

The advantage of using a bacterin is the vaccine cannot cause the disease, because the *Pasteurella* organisms are chemically inactivated. Bacterin-associated reactions are usually related to other components of the vaccine, such as the adjuvant or toxins produced by the *Pasteurella* bacteria prior to inactivation.

A good vaccination program yields 'take' rates of 95% to 100%.

Fowl cholera vaccines are sensitive to heat and must be kept cool during administration.

Q What is a post-vaccinal 'take' and where do I look for it?

A A fowl cholera vaccination 'take' presents as a *nodule or scabby swelling in the wing web at the inoculation site*. Look for 'takes' at 7 days post-vaccination. Vaccination 'takes' should be monitored on all vaccinated flocks. Proper fowl cholera wing-web vaccination requires attention to details. A hurried vaccination process or inexperienced crew members can result in a high number of poor vaccination 'takes' and potential fowl cholera breaks.

Q Are there differences in vaccine 'takes' from live vaccines?

A

- ***PM-1 strain vaccine:*** Check at 7 days post-vaccination.
- ***M-9 strain vaccine:*** 'Takes' are typically small and may only consist of a diffuse thickening or a small scab. Check at 7 days post-vaccination, as 10 days is often too late.

PM-1 strain 'take'
(PM-Onevax-C)

M-9 strain 'take'
(M-Ninevax-C)

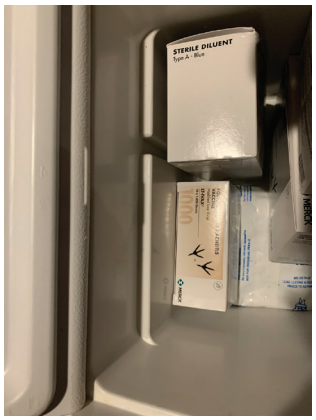
- **NOTE:** A good vaccination yields **95% to 100% 'takes'!**

Q What steps are needed for good vaccination technique?

A Follow these steps every time for proper fowl cholera vaccination:

1. Rehydrate only enough vaccine to last 30 minutes.
Only use freshly mixed vaccine. Do not re-hydrate vaccine until on the farm and ready to vaccinate. Mixing vaccine too early reduces available live antigen in the vaccine.

2. Keep vaccine cool during administration.
Fowl cholera vaccines are sensitive to heat, especially after rehydration. Keep vaccines in a cooler on the farm site during vaccination. Use of an insulated vaccine vial holder or a heavy glove is recommended to insulate the diluted vaccine from body heat.



Vaccine in cooler on farm.

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3. Correctly use wing-web needle applicator.

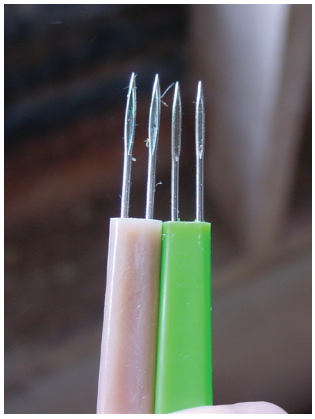
The wing-web needle applicator is designed to pick up the correct amount of vaccine and deliver the proper dose:

a. Dip needle applicator only deep enough to cover the grooves in the application needles.

b. DO NOT dip the plastic applicator handle in the vaccine.

c. Re-dip applicator into vaccine before each wing-web application.

d. Remove any excess vaccine adhering to applicator by touching applicator to the inside of the vial.



Wing-web needle applicators

Correct loading of a wing-web needle applicator.

WRONG! Handle is too deep, in the vaccine.

4. Vaccinate one wing (right or left) consistently.

Designate one wing (the right wing, for example) as the 'fowl cholera' wing for initial wing-web vaccination, and the opposite wing as the 'fowl pox' wing. This should be consistent for initial vaccination, so there is no confusion when checking 'takes'.

5. Vaccinate the opposite wing with AE/fowl pox.

Keep the AE/fowl pox vaccination separate from fowl cholera vaccination to ensure good immunity development to each vaccine.

6. Give second fowl cholera vaccination in the 'AE/fowl pox' wing.

AE/fowl pox do not typically make a prominent lesion and will resolve prior to the second cholera vaccination, providing a clean wing web for vaccination and allowing better visibility for monitoring of second vaccination 'takes'.

7. Avoid muscle or feather hits.

Fowl cholera vaccines are most effective if placed directly in the wing web without vaccine loss in surrounding feathers. Avoid muscle hits, which can result in excessive reactions and potential leg issues. Be aware of the thin muscle band leading out of the wing web and the muscle associated with the leading edge of the wing.

Use the wing-web needle applicator correctly, avoiding muscle or feather hits.

Monitoring of 'takes' is required to ensure good vaccinations are occurring in every flock.

8. Vaccinate at a pace which permits accuracy.

Hand-held vaccination method

Wheel vaccination method

9. Bird handling is critical!

- ***Bird welfare is important.*** Avoid twisting legs or dropping birds from the table to the floor.
- Present wings in a method which provides vaccinators an easy and consistent vaccination process.
- For the ***table method***, present no more than 4 to 6 birds to each vaccinator at once. Choose a number of birds which provides consistency of presentation and allows the vaccinator to keep count of vaccinated birds. The ***wheel method*** allows individual birds to be vaccinated with greater accuracy.

Birds presented on a table

10. Checking 'takes' is critical to monitor vaccination.

Monitoring 'takes' is the method which ensures the 9 previous steps are occurring on every flock.

Companies which routinely monitor 'takes' at 7 days post-vaccination and report scores back to the vaccination crew consistently score in the ***95% range***. In contrast, companies which only monitor 'takes' occasionally or not at all tend to average only 70% to 85% good 'takes'.

This advantage for aggressive monitoring programs for 'takes' can result in a successful live fowl cholera program without cholera flare-ups or chronic problems.

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Q What is the procedure for checking 'takes'?

A Check 'takes' at ***7 days post-vaccination*** (not 5 or 9 days)

- Check 100 birds per house.
- Check birds on each end of the house (50 per end).
- *Assess and **RECORD** 'takes'. Be critical!*

Q How should 'takes' be scored?

A Record both quantity and severity of 'takes'. Examine both fowl cholera and AE/fowl pox 'takes'. Be sure to pay attention to:

- Acceptable 'takes' (pencil eraser size)
- Misses (cholera or pox) (no visible mark)
- Hit but no 'take' (dye visible, but no nodule or swelling)
- Muscle hit (dye in muscle)
- Excessive 'takes' (large nodule or infected)

An example of a ***Breeder Vaccination Check*** recording form is shown on page 7. Records should include vaccine serial number and expiration date, the crew, vaccination date, and flock identification and age. These forms should be kept on file until the flock is sold. If a flock develops problems later in production, the breeder supervisor can determine whether the problem is related to vaccination 'takes', the vaccine, or something else.

Check 'takes' 7 days after vaccination, recording both their quantity and severity.

Q What are some basic rules for setting up a live fowl cholera vaccination program in broiler breeders?

A

- Protective immunity requires 2 live vaccinations given 6 to 8 weeks apart.
- The first vaccination should occur between 10 to 12 weeks of age. The potential for lameness, low-grade mortality, and low-grade cholera increase if the first vaccination occurs later than 12 weeks, especially in males.
- The second vaccination commonly occurs at 18 to 20 weeks in association with bird handling.
- Avoid administering antibiotics effective against fowl cholera 5 days prior or 7 days post-vaccination. Medication may be administered if needed once the birds have developed 'takes'.

Protective immunity requires 2 live vaccinations given 6 to 8 weeks apart.

BREEDER VACCINATION CHECK

Date: _____

FRONT HALF OF HOUSE	GOOD TAKES (BOTH WINGS)	MISS CHOLERA	MISS POX	HIT NO TAKE	MUSCLE HIT	EXCESSIVE TAKE
Flock						
House						
Vacc. date						
Vacc. crew						
Serial no.						
Expiration date	Total	Total	Total	Total	Total	Total
	%	%	%	%	%	%
BACK HALF OF HOUSE						
Flock						
House						
Vacc. date						
Vacc. crew						
Serial no.						
Expiration date	Total	Total	Total	Total	Total	Total
	%	%	%	%	%	%

Signature _____

Crew Supervisor

Q What common vaccination programs are currently in use?

A Due to perceived reactivity of live fowl cholera vaccines, companies have devised different vaccination programs, especially as related to male breeder birds. Both M-9 and PM-1 are attenuated strains of the original 3×4 Clemson University (CU) strain. The M-9 strain is a temperature mutant, whereas the PM-1 strain is a chemical mutant of the CU strain. The M-9 strain is considered less reactive and is often given to males. The PM-1 strain is perceived to be more reactive and is typically used in hens. Titer levels of the attenuated vaccines can affect reactivity and are often more critical in the selection of which vaccine to use.

Another program incorporates the use an inactivated vaccine at the first handling followed by the live vaccine on the second handling. The premise of this program is to 'soften' the reactivity of the live vaccine. As more attention has been paid to titer levels of live vaccines, the use of an inactivated vaccine to lessen reactivity has fallen out of favor.

Common guidelines:

- PM-1 strain vaccines are commonly used for intermediate fowl cholera challenges.
- The M-9 strain vaccine is used where fowl cholera challenge is mild to moderate and post-vaccinal reactivity is a concern.

Troubleshooting Problems with Vaccination, Reaction, and Field Breaks

Q What if I see a lot of missed birds, both cholera and pox, when I check takes?

A Examine bird handling technique:

- Are wing-webs difficult to see or reach?
- Are vaccinators being presented with too many birds at once to be sure they hit each one?
- Is the crew composed of several new members? Are they rushed or shorthanded? Are they unaware of the importance of even a handful of missed birds? Are they careless?

Vaccination crews often see their job as piece-work. If they are not taught that the work they perform is extremely critical to the performance of the flocks, they may not worry about missing a bird or two. They need to understand that a missed bird has a very good chance of becoming a dead bird. Once a crew understands the importance of their job, they need feedback from the monitoring of 'takes' to improve their performance.

Q What if I have nearly 100% takes from AE/fowl pox, but my cholera takes are only 75%?

A This can occur because the fowl cholera vaccine is more fragile and negatively impacted by technique errors. Companies which use automatic injectors to administer fowl cholera and AE/ fowl pox may often find that they can achieve nearly 100% good AE/fowl pox 'takes' but the same technique yields far fewer good fowl cholera 'takes', demonstrating the difficulty of live cholera vaccine administration.

Vaccination crews must understand that their work is extremely critical to the performance of the flocks.

Due to the fragile nature of live fowl cholera vaccines, wing-web sticks without observed 'takes' is not uncommon.

Look closely at the wing. Have the birds been hit with vaccine (blue dye under the skin) but no 'take' developed at the site? Or have they been missed completely?

Missed birds:

Review the bird presentation process. One wing may be more difficult to hit compared to the other wing. For example, a company suffered reduced good 'takes' because a vaccination crew member was left-handed and couldn't properly hit the wing web as right-handed crew members due to bird presentation.

Evidence of wing-web stick, but no 'takes' observed:

This issue is not uncommon due to the fragile nature of live fowl cholera vaccines. If this problem is observed, these areas need to be checked:

1. Examine vaccine and bird handling.

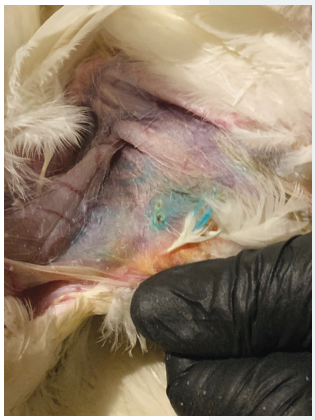
- Is vaccine kept in a cooler?
- Are vaccination crews only rehydrating enough vaccine to last 30 minutes?
- Are vaccinating crews refilling the same vial as vaccine levels get low?
- Is the correct diluent used for each specific fowl cholera vaccine?
- Is the vaccine wing-web applicator being used correctly?
- Is an automatic injector being used?
- Is vaccine coming off on the surrounding feathers?
- Are vaccinators using dull needles? Dull needles make it harder to punch through the wing web and may result in loss of vaccine.
- Is the vaccine being injected into the muscle?

2. Check vaccine titer.

Biologic companies keep a record of the titers (bacterial organisms per dose) of all fowl cholera vaccines. All approved serials have passed USDA requirements, but the level of titers may vary. The biologic companies can help you determine the titer level of the fowl cholera vaccines used. This information may be helpful if there is excessive reactivity, or 'takes' are not at acceptable levels.

Hit with no take

Vaccines on feathers at leading edge



Vaccine coming off on feathers

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If corrective actions with the vaccinating crews fail to solve the problem, submit several vials to the manufacturer for retesting.

Turnover is often high in pullet vaccination crews. New crew members may not be aware that proper vaccination techniques are critical. The importance of routine 'takes' monitoring is critical to achieving a good vaccination program and preventing inconsistency in vaccination technique.

Q. What if I see a lot of muscle hits in my flock?

A This is a big problem because vaccine administered in the muscle is more prone to cause adverse reactions such as lameness or low-grade cholera. The bird will still be protected against a field cholera break, but the reaction can cause the bird to be culled anyway.

If lots of muscle hits are occurring, watch bird presentation and vaccine administration. It may be difficult to see and aim the vaccine applicator. Adjust bird presentation to make it easier to see where the needles are going. Slow the crew down enough to allow them time to aim the vaccine applicator properly.

Muscle hit

Watch for small muscle

Muscle hits are a big problem because they are prone to cause adverse reactions.

Q What if I see very large, excessive 'takes' or draining 'takes'?

A This type of problem may reflect contamination of the vaccine in the field. Several wing-web needle applicators have been included with the vaccine. Applicators should be changed frequently. Additional applicators are available from the vaccine company.

Very large 'takes' may indicate a vaccine with too many organisms (high titer) was used. Check vaccine titer and the applicator used to determine if birds are receiving too much vaccine. Flocks receiving a high dose of vaccine will be protected against field challenge, but may be prone to more reaction problems such as lameness or low-grade mortality.

Excessive 'take'

Applicators should be changed frequently to help avoid contamination.

Q How should I handle low-grade cholera problems or occasional fowl cholera breaks in breeder flocks?

A Use the following steps to troubleshoot problems:

Consider using a stronger vaccine if 'takes' are good but protection is less than ideal.

1. Culture affected flocks.

Submit thigh bones and cultures of swollen wattles or peritoneal cavity to a diagnostic laboratory for culture, identification, and serotype. Despite some 3×4 serotype field strains, most 3×4 isolates from vaccinated flocks may indicate an issue related to the live vaccine used. Other serotypes indicate field challenges, which require better vaccination coverage. Be aware, *Escherichia coli* or *Staphylococcus* infection can sometimes mimic fowl cholera infections.

2. Check 'takes' record.

If no records of 'takes' exist, begin a routine 'takes' monitoring program. Missed birds are susceptible to field strain challenges present in the house. Make corrective actions to improve vaccination techniques. If vaccine 'takes' are good but protection is less than ideal, consider using a stronger vaccine or add an inactivated vaccine for the specific challenge serotype.

3. If the challenge serotype is 3×4 and 'takes' are present in 95% to 100% of the birds, the birds may be susceptible to the vaccine strain.

- Check vaccination timing
  Remember, flocks should not be given their first cholera vaccination later than 12 weeks of age. This is critical for males.
- Check the vaccine titer
  High-titer serials may be associated with excessive reactions in some flocks. This reactivity can vary depending on breed type and administration technique. Field challenges and differences between vaccination crews mean each complex must keep a log of which vaccination program works well for their complex.

Switching to the milder M-9 strain may be warranted if excessive reactions persist.

- Use a milder-strain vaccine (M-9)
  Different breeds, sexes, and breeder complexes have different tolerance levels for live fowl cholera vaccines. Most companies are able to use the attenuated PM-1 vaccine without issue, but switching to the milder M-9 strain may be warranted if excessive reactions persist.

4. Poor quality 'takes' (muscle hits, hit with no take, etc.)

Focus on corrective actions regarding vaccination techniques.

5. Immunosuppression

Severe immunosuppression from chicken anemia agent (CAA), mycotoxins, etc., may result in fowl cholera and AE/fowl pox breaks despite following good vaccination technique and observing good post-vaccination 'takes'.

SUMMARY

Proper administration of live fowl cholera vaccines and selection of the appropriate vaccine strain for the field challenge should provide adequate protection while minimizing undue reactions. Routine monitoring of vaccine 'takes' to maintain proper vaccination techniques is essential to any successful fowl cholera program.

PM-ONEVAX®-C

Pasteurella multocida Vaccine

(Avirulent Live Culture, Avian Isolate)

For Animal Use Only.

Description

PM-Onevax®-C vaccine is a live bacterial vaccine containing the mild avirulent PM-1 strain of *Pasteurella multocida* in a freeze-dried preparation sealed under vacuum. The vaccine strain has been shown to offer protection as an aid in the prevention of fowl cholera in chickens and turkeys. The seed culture used to make this vaccine has been laboratory tested for protection in chickens against challenge with the X-73 (type 1) strain of *P. multocida* and in turkeys against challenge with the P1059 (type 3) strain of *P. multocida*.

When to Vaccinate

CHICKENS: Use by wing-web stab to vaccinate chickens 10-12 weeks of age and again at 18-20 weeks of age as an aid in the prevention of pasteurellosis (fowl cholera) due to *P. multocida* type 1. There should be at least 6 weeks and not more than 10 weeks between vaccinations.

TURKEYS: Use by wing-web stab to vaccinate turkey breeders 15 weeks of age or older as an aid in the prevention of pasteurellosis (fowl cholera) due to *P. multocida* type 3. Birds should initially be wing-web vaccinated at 15-18 weeks of age and again 8 weeks later. Turkey breeders must be vaccinated at least twice with live fowl cholera vaccine via oral route prior to wing-web vaccination. The interval between the last oral vaccination and the first wing-web vaccination should not exceed 6 weeks. Additional wing-web vaccination every 6-8 weeks throughout the life of the bird may be required in areas of endemic exposure to fowl cholera.

Your Vaccination Program

The development of a durable, strong protection to this disease depends upon the use of an effective vaccination program as well as many circumstances such as administration techniques, environment and flock health at the time of vaccination. Also, the immune response to 1 vaccination under field conditions is seldom complete for all animals within a given flock. Even when vaccination is successful, the protection stimulated in individual animals against different diseases may not be lifelong. Therefore, a program of periodic revaccination may be necessary.

Contraindications

CHICKENS: Initial vaccination in chickens over 12 weeks of age may be undesirable because larger granulomas may develop at the site of inoculation and this may result in downgrading of carcasses at slaughter.

TURKEYS: Use of this vaccine in turkeys which have not been orally prevaccinated may cause severe post vaccination reactions, including lameness and death.

Preparation of the Vaccine

1. Do not open and mix the vaccine until ready for use.
2. Mix only 1 vial at a time and use entire contents within 2 hours.
3. Remove the tear-off aluminum seal and stopper from vial containing the dried vaccine.
4. Remove the tear-off aluminum seal and stopper from the bottle containing the diluent.
5. Hold the diluent bottle firmly in an upright position and insert the shorter end of the transfer tube. Still holding the diluent bottle in an upright position, insert the neck of the vaccine vial over the longer end of the transfer tube. The vaccine vial should snap into position, connecting the 2 vials securely.
6. Invert the 2 containers so that the vaccine vial is on the bottom and allow the diluent to flow into the vaccine vial. If the diluent does not flow freely, squeeze the diluent bottle gently and the diluent will flow into the vaccine vial. The vaccine vial should be completely filled with diluent to prevent excess foaming.
7. Hold the joined containers by the ends; shake vigorously until the vaccine plug is completely dissolved.
8. Return the joined containers to their original position (diluent bottle on the bottom). Allow the vaccine to flow into the diluent bottle. If the vaccine does not flow into the diluent bottle, tap or squeeze the diluent bottle gently and release to draw the vaccine into the diluent bottle. Be sure all the product is removed from the vaccine vial.
9. Remove the vaccine vial and transfer tube from the neck of the diluent bottle.
10. The vaccine is now ready to use.
11. Wash hands thoroughly after mixing the vaccine.

How to Vaccinate

Vaccination is accomplished by dipping the needle applicator into the mixed vaccine and piercing the webbed portion of the underside of the wing. Avoid piercing through feathers which may wipe off the vaccine, and avoid hitting the wing muscle or bone to minimize reaction. The applicator is designed to pick up the proper amount of vaccine on the needles, which is deposited in the tissues when the wing is pierced. Redip the applicator in the vaccine before each application. Excess vaccine adhering to the applicator should be removed by touching the applicator to the inside of the vial.

Reactions: Examination for Takes

Normally, no overall clinical reaction is observed. At 5 to 10 days following vaccination, a swelling of the skin (subcutaneous granuloma) will develop on the wing-web at the point of inoculation. The absence of this local reaction may mean that improper vaccination methods were used. Examination for these "takes" at 7 days post-vaccination may be used to assure that proper vaccination has been conducted. Protection will normally develop within 14 days after vaccination.

Caution

1. Vaccinate only healthy birds. Although disease may not be evident, disease conditions may cause serious complications or reduce protection.
2. Avoid vaccinating birds during weather-induced stress periods and 7 days prior to and 7 days after moving and handling. To avoid interference with development of protection, birds to be vaccinated should not be given any antibiotic and/or sulfonamide medication used in the prevention or treatment of fowl cholera for 3 days before and 5 days after vaccination.
3. All birds within a flock should be vaccinated on the same day. Isolate other susceptible birds on the premises from the birds being vaccinated.
4. In outbreak situations, vaccinate healthy birds first, progressing toward outbreak areas in order to vaccinate affected birds last.
5. Do not spill or spatter the vaccine. Use entire contents of vial when first opened. Burn empty bottles, caps and all unused vaccine and accessories.
6. Avoid contact of open wounds or inoculation of vaccinating personnel with the vaccine since this might cause a bacterial infection. If this occurs, consult a physician immediately to obtain proper treatment. The vaccine organism, as with any *Pasteurella multocida* strain, may accidentally act as a human pathogen and precaution should be taken to avoid exposure.
7. Wash hands thoroughly after using the vaccine.
8. Do not dilute the vaccine or otherwise stretch the dosage.
9. Store at 2° to 7° C (35° to 45° F).
10. Do not vaccinate within 21 days before slaughter.

Notice

This product is not hazardous when used according to directions supplied. A safety data sheet (SDS) is available upon request. This and any other consumer information can be obtained by calling Merck Animal Health Customer Service at 1-800-211-3573.

Records

Keep a record of vaccine type, quantity, serial number, expiration date, and place of purchase; the date and time of vaccination; the number, age, breed, and location of the birds; names of operators performing the vaccination and any observed reactions.

Contact our sales or technical services representatives to help design a custom vaccination program.

M-NINEVAX®-C

Pasteurella multocida Vaccine

(Avian Isolate, Avirulent Live Culture)

For Animal Use Only.

Description

M-Ninevax®-C vaccine is a live bacterial vaccine containing the mild avirulent M-9 strain of *Pasteurella multocida*, Heddleston type 3-4 cross, in a freeze dried preparation sealed under vacuum. This vaccine strain has been shown to offer protection as an aid in the prevention of fowl cholera in chickens and turkeys. The seed culture used to make this vaccine has been laboratory tested for protection in chickens against challenge with the X-73 (type 1) strain of *P. multocida* and in turkeys against challenge with the P1059 (type 3) strain of *P. multocida*.

When to Vaccinate

BY WING-WEB

Chickens: Use by wing-web stab to vaccinate chickens 10-12 weeks of age and again at 18-20 weeks of age as an aid in the prevention of pasteurellosis (fowl cholera) due to *P. multocida* type 1. There should be at least 6 weeks and not more than 10 weeks between vaccinations.
Turkeys: Use by wing-web stab to vaccinate turkey breeders 15 weeks of age or older as an aid in the prevention of pasteurellosis (fowl cholera) due to *P. multocida* type 3. Birds should initially be wing-web vaccinated at 15-18 weeks of age and again 8 weeks later. Turkey breeders must be vaccinated at least twice with live fowl cholera vaccine via oral route prior to wing-web vaccination. The interval between the last oral vaccination and the first wing-web vaccination should not exceed 6 weeks. Additional wing-web vaccination every 6-8 weeks throughout the life of the bird may be required in areas of endemic exposure to fowl cholera.

BY DRINKING WATER

Turkeys: Best results are obtained when vaccine is administered initially to turkeys 6 to 8 weeks of age, followed by a booster dose 3 weeks later, and repeated every 4 to 6 weeks thereafter as necessary according to exposure conditions.

Your Vaccination Program

The development of a durable, strong protection to this disease depends upon the use of an effective vaccination program as well as many circumstances such as administration techniques, environment and flock health at the time of vaccination. Also, the immune response to 1 vaccination under field conditions is seldom complete for all animals within a given flock. Even when vaccination is successful, the protection stimulated in individual animals against different diseases may not be lifelong. Therefore, a program of periodic revaccination may be necessary.

Contraindications

FOR WING-WEB VACCINATION

Chickens: Initial vaccination in chickens over 12 weeks of age may be undesirable because larger granulomas may develop at the site of inoculation and this may result in downgrading of carcasses at slaughter.
Turkeys: Use of this vaccine in turkeys which have not been orally revaccinated may cause severe post-vaccination reactions, including lameness and death.

FOR DRINKING WATER VACCINATION

Turkeys: Must be healthy and free of environmental or physical stress at the time of vaccination. Initial vaccination with this vaccine should not be conducted in turkeys older than 12 weeks of age. Do not use this vaccine within 2 weeks before or 2 weeks after vaccinating turkeys with live virus Newcastle vaccine.

Preparation of Vaccine

FOR WING-WEB ROUTE OF ADMINISTRATION

1. Do not open and mix the vaccine until ready for use.
2. Mix only 1 vial at a time and use entire contents within 2 hours.
3. Remove the tear-off aluminum seal and stopper from vial containing the dried vaccine.
4. Remove the tear-off aluminum seal and stopper from the bottle containing the diluent.
5. Hold the diluent bottle firmly in an upright position and insert the shorter end of the transfer tube. Still holding the diluent bottle in an upright position, insert the neck of the vaccine vial over the longer end of the transfer tube. The vaccine vial should snap into position, connecting the 2 vials securely.
6. Invert the 2 containers so that the vaccine vial is on the bottom and allow the diluent to flow into the vaccine vial. If the diluent does not flow freely, squeeze the diluent bottle gently and the diluent will flow into the vaccine vial. The vaccine vial should be completely filled with diluent to prevent excess foaming.
7. Hold the joined containers by the ends; shake vigorously until the vaccine plug is completely dissolved.
8. Return the joined containers to their original position (diluent bottle on the bottom). Allow the vaccine to flow into the diluent bottle. If the vaccine does not flow into the diluent bottle, tap or squeeze the diluent bottle gently and release to draw the vaccine into the diluent bottle. Be sure all the product is removed from the vaccine vial.
9. Remove the vaccine vial and transfer tube from the neck of the diluent bottle.
10. The vaccine is now ready to use.
11. Wash hands thoroughly after mixing the vaccine.

FOR DRINKING WATER ROUTE OF ADMINISTRATION

1. Assemble the vaccine and equipment needed to vaccinate the entire flock at one time.
2. Do not open and rehydrate the vaccine until ready for use.
3. Remove the tear-off aluminum seal and stopper from vial containing the dried vaccine.
4 Use cool, clean, non-chlorinated tap water to which powdered milk has been added as directed under HOW TO VACCINATE.
5. Remove the rubber stopper from the vaccine vial and rehydrate the vaccine by filling the vial about half-full with tap water (milk added).
6. Reseat the stopper and shake to thoroughly dissolve the vaccine.

How to Vaccinate

BY WING-WEB METHOD

Vaccination is accomplished by dipping the needle applicator into the mixed vaccine and piercing the webbed portion of the underside of the wing. Avoid piercing through feathers which may wipe off the vaccine, and avoid hitting the wing muscle or bone to minimize reaction. The applicator is designed to pick up the proper amount of vaccine on the needles, which is deposited in the tissues when the wing is pierced. Re-dip the applicator in the vaccine before each application. Excess vaccine adhering to the applicator should be removed by touching the applicator to the inside of the vial.

BY DRINKING WATER METHOD

Do not mix the vaccine into the drinking water until ready for use. Drinking water for vaccination should be mixed with powdered milk to prevent inactivation from chlorine or other water additives and also to stabilize the vaccine bacteria. The powdered milk should be added to the water at the rate of 3 grams per 11 liters (1 heaped teaspoon per 3 U.S. gallons); or 87 grams per 190 liters (1 heaped cupful per 50 U.S. gallons). Use only clean waterers and equipment free of disinfectants or sanitizers. All water must be withheld for at least 2 hours prior to vaccination to assure that all turkeys drink.

Mix the rehydrated vaccine in the quantity of drinking water (milk added) which will be consumed by thirsty turkeys in approximately 2 hours. The following schedule is a general guideline for the amount of water to use with the vaccine. These amounts will vary depending upon the individual management conditions, climate, age and sex of the birds.

Amount of Water for Each 1000 Doses

Age	Sex	Climate	Liters	US gal
6-8 wks.	Toms	Hot	95	25
6-8 wks.	Hens	Hot	76	20
6-8 wks.	Toms	Cold	49	13
6-8 wks.	Hens	Cold	38	10
10-14 wks.	Toms	Hot	133	35
10-14 wks.	Hens	Hot	103	27
10-14 wks.	Toms	Cold	68	18
10-14 wks.	Hens	Cold	53	14

Reactions: Examination for Takes

FOR WING-WEB VACCINATION

Normally, no overall clinical reaction is observed. At 5 to 10 days following vaccination, a swelling of the skin (subcutaneous granuloma) will develop on the wing-web at the point of inoculation. The absence of this local reaction may mean that improper vaccination methods were used. Examination for these "takes" at 7 days post-vaccination may be used to assure that proper vaccination has been conducted. Protection will normally develop within 14 days after vaccination.

Caution

1. For use in chickens and turkeys only.
2. Vaccinate only healthy birds. Although disease may not be evident, disease conditions may cause serious complications or reduce protection.
3. Avoid vaccinating birds during weather-induced stress periods and 7 days prior to and 7 days after moving and handling. To avoid interference with development of protection, birds to be vaccinated should not be given any antibiotic and/or sulfonamide medication used in the prevention or treatment of fowl cholera for 3 days before and 5 days after vaccination.
4. All birds within a flock should be vaccinated on the same day. Isolate other susceptible birds on the premises from the birds being vaccinated.
5. In outbreak situations, vaccinate healthy birds first, progressing toward outbreak areas in order to vaccinate diseased birds last.
6. Do not spill or spatter the vaccine. Use entire contents of vial when first opened. Burn empty bottles, caps and all unused vaccine and accessories.
7. Avoid contact of open wounds or inoculation of vaccinating personnel with the vaccine since this might cause a bacterial infection. If this occurs, consult a physician immediately to obtain proper treatment. The vaccine organism, as with any *Pasteurella multocida* strain, may accidentally act as a human pathogen and precaution should be taken to avoid exposure.
8. Wash hands thoroughly after using the vaccine.
9. Do not dilute the vaccine or otherwise stretch the dosage.
10. Store at 2° to 7° C (35° to 45° F).
11. Do not vaccinate within 21 days before slaughter.

Notice

This product is not hazardous when used according to directions supplied. A safety data sheet (SDS) is available upon request. This and any other consumer information can be obtained by calling Merck Animal Health Customer Service at 1-800-211-3573.

Records

Keep a record of vaccine type, quantity, serial number, expiration date, and place of purchase; the date and time of vaccination; the number, age, breed, and location of the birds; names of operators performing the vaccination and any observed reactions.

Contact our sales or technical services representatives to help design a custom vaccination program.

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