

## Vaccination Practices on U.S. Sheep Operations, 2011

Vaccinations can reduce the prevalence or severity of infectious diseases and are an integral part of any flock management program. In addition, vaccinations can improve overall flock health, resulting in decreased death loss and improved productivity. Vaccinations can improve reproductive efficiency by reducing infertility, embryonic deaths, and abortions.

Vaccination protocols vary widely by production type, region, producer preference, disease exposure, previous disease problems, and other flock-specific aspects. Other factors, such as proper nutrition management and good health practices, can also influence vaccination efficacy. A veterinarian can help tailor vaccination protocols to fit the needs and goals of an operation.

For the Sheep 2011 study, the U.S. Department of Agriculture's National Animal Health Monitoring System (NAHMS) collected data on sheep health and management practices from a representative sample of operations in 22 of the Nation's major sheep-producing States, which were divided into three regions.<sup>1</sup> These operations collectively represented 85.5 percent of the ewe inventory and 70.1 percent of U.S. farms with ewes. Information on vaccination practices was collected on operations with 20 or more ewes.

### General vaccination practices

The majority of operations (81.6 percent) vaccinated at least one of their sheep or lambs in 2010. The percentage of operations that vaccinated at least one sheep or lamb was similar by flock size (table 1) and by region (table 2).

**Table 1. Percentage of operations that vaccinated any sheep or lambs during 2010, by flock size**

Percent Operations			
Flock Size (number of ewes)			
Small (20–99)	Medium (100–499)	Large (500 or more)	All operations
80.3	83.1	89.5	81.6

**Table 2. Percentage of operation that vaccinated any sheep or lambs during 2010, by region**

Percent Operations		
Region		
West	Central	East
87.6	76.9	82.7

For all sheep age groups, the most commonly used vaccines were clostridial C and D, and tetanus. Over half of operations vaccinated their nursing lambs for clostridium C and D (enterotoxemia) and tetanus (60.5 and 55.0 percent, respectively) [table 3]. Overall, 71.4 percent of operations vaccinated at least one of their sheep or lambs for clostridium C and D, and 64.5 percent vaccinated for tetanus.

<sup>1</sup> **Regions:**

**West:** California, Oregon, Washington

**Central:** Colorado, Idaho, Kansas, Montana, New Mexico, South Dakota, Texas, Utah, Wyoming

**East:** Iowa, Kentucky, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania, Virginia, Wisconsin

**Table 3. For operations with the specific sheep type, percentage of operations that vaccinated nursing lambs, weaned feeder (market) lambs, weaned replacement lambs, ewes, or rams against the following diseases during 2010**

Vaccine type	Percent Operations					
	Sheep Type					
	Nursing lambs	Weaned feeder (market) lambs	Weaned replacement lambs	Ewes	Rams	Any
<b>Clostridial</b>						
7- or 8-way, blackleg, malignant edema	19.2	12.7	15.3	20.5	14.8	29.5
Clostridial C & D (enterotoxemia)	60.5	39.8	37.9	38.8	28.8	71.4
Tetanus	55.0	32.9	33.0	34.0	25.3	64.5
<b>Respiratory</b>						
IBR-PI-3	1.9	0.6	0.6	0.0	NA	2.7
Pneumonia ( <i>Pasteurella/Mannheimia</i> )	0.8	0.6	0.8	1.5	0.5	2.1
<b>Digestive</b>						
Scours ( <i>E. coli</i> )	0.3	0.8	0.3	0.3	NA	0.9
Rotavirus	NA	NA	0.0	0.0	NA	0.0
<b>Reproductive</b>						
Ram epididymitis bacterin ( <i>Brucella</i> )	NA	NA	NA	NA	0.0	NA
EAE ( <i>Chlamydia</i> <i>abortus</i> )	NA	NA	5.7	7.6	NA	8.1
Leptospirosis	NA	NA	2.9	4.1	NA	4.2
<i>Campylobacter fetus/jejuni</i> (vibrio)	NA	NA	10.7	14.6	NA	15.2
<b>Other</b>						
Lumpy jaw (caseous lymphadenitis)	1.5	0.8	2.0	2.4	2.5	3.4
Footrot	0.3	0.1	1.1	3.4	2.0	3.5
Rabies	0.0	0.1	0.6	1.1	1.1	1.2
Sore mouth (contagious ecthyma)	8.1	2.7	4.3	1.5	0.9	11.0

Collectively, 11.0 percent of operations vaccinated for sore mouth. Because the sore mouth vaccine contains live virus, vaccinating for sore mouth is only recommended when a flock is already infected with the virus. Vaccinating an uninfected flock will introduce the infection to the flock. The highest percentage of operations that vaccinated for sore mouth (70.6 percent) used a commercially available sore mouth vaccine (table 4). An autogenous sore mouth vaccine from a veterinarian was used by 5.9 percent of operations, and only operations in the Central region used an autogenous sore mouth vaccine from a veterinarian.

When the autogenous sore mouth vaccine was used, it was typically administered by the owner/operator (86.2 percent of operations); farm workers administered the vaccine on less than one-third of operations (29.0 percent). Because sore mouth is a zoonotic pathogen and giving the live vaccine can induce infection in humans, glove use during vaccination is recommended. Nearly half of the owner/operators that administered the vaccine wore gloves (45.4 percent), compared with just 13.1 percent of farm workers that administered the vaccine.

**Table 4. For operations that vaccinated any sheep\* for sore mouth during 2010, percentage of operations by type of vaccine most recently used, and by region**

Vaccine	Percent Operations			All operations
	West	Central	East	
Colorado Serum Company	88.6	57.6	78.4	70.6
Autogenous vaccine from veterinarian	0.0	11.1	0.0	5.9
Other	10.4	24.3	0.0	16.0
Do not know	1.0	7.0	21.6	7.5
Total	100.0	100.0	100.0	100.0

\*Nursing lambs, weaned feeder (market) lambs, weaned replacement lambs, ewes, or rams.

## Summary

For all age groups, the vaccines used most commonly were clostridial C and D and tetanus: nearly three-fourths of operations vaccinated for clostridium C and D, and about two-thirds of operations vaccinated for tetanus. Compared with the clostridial and tetanus vaccines, the other vaccines available garner less industry-wide agreement as to their need or effectiveness.

Vaccination is an important tool for disease control, but it is not the only tool available for preventing disease and losses due to animal morbidity and mortality. Other tools include biosecurity, nutrition, and handling practices.

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