IN SHEEP in the United States, the only known important cause of infectious abortion is infection with *Vibrio fetus*. The situation differs from that of cattle in that brucellosis has not been found in sheep in this country. Vibriosis occurs in sheep in many States.

The occurrence of the disease is sporadic. The total incidence in any one area or flock over a period of years is not great, but in some years and in individual flocks the losses may be serious. In some seasons the lamb loss in several of the western range States has run into many thousands. The percentage of the flock which aborts varies from 5 percent to 70 percent. A loss of 10 to 20 percent is common. There is also considerable mortality in the infected ewes in some outbreaks, but the death loss in the ewes generally is slight.

The characteristic symptom of vibriosis in sheep is abortion, usually starting about 30 to 40 days before the band is due to begin lambing. At first, in a band of 1,000 ewes, there may be 1 or 2 abortions a day, and the number gradually increases until as many as 10 may be aborting in a day.

Some of the infected ewes will carry their lambs to full term, but the lambs may be born weak and may not survive. In the aborted fetus there is often some subcutaneous edema, and the body cavities contain a bloodstained fluid. The liver in some of the fetuses shows a number of gray spots, but this lesion usually is absent.

Usually no symptoms are noticed before abortion, but close observation may reveal vaginal discharge several days before abortion, and the ewe may appear sick. After abortion there is usually a brown vaginal discharge for several days. *Vibrio fetus* can be recovered from the vagina for about a week after abortion. Usually the ewes recover rapidly. In a few instances the disease is fatal to the ewe.

After abortion the ewes lose the infection within a few weeks. Reports from the field and records of ewes in large experimental flocks show that lamb production is usually normal in the season following an outbreak of abortion and that the previously infected ewes do not act as carriers. The lapse of 7 months between lambing and the next breeding helps prevent a carryover of infection.

The source of the infection and the principal means of transmission have not been finally determined for the disease as it occurs in sheep. In vibriosis in cattle, cows become infected by being bred to infected bulls, and the bulls may be carriers of the infection indefinitely. In the sheep disease, the evidence available indicates that probably the ram is not the chief source of the infection in ewes. It has not been possible to identify specific infected rams as responsible for infecting ewes by serving them.

In two large experimental flocks where extensive outbreaks of vibrionic abortion occurred, the numbers of abortions were distributed quite equally through almost all of the breeding lots. In one of the flocks, in which 644 abortions occurred in 2,513 ewes bred in 116 breeding lots, the abortions were distributed throughout 112 of the lots. If the rams were responsible for the infection, one must conclude that all of the rams were carriers of the infection, but that seems quite unlikely.

A few experimental infections of rams have not resulted in infection of the ewes bred to them. Further negative evidence as to the role of the ram
is the experimental finding that it is difficult to infect a ewe at breeding time by any method of inoculation. The susceptibility of the ewe appears to be relatively low until she has been pregnant more than a month.

Nevertheless, research workers at three experiment stations have started studies of the possible role of the ram as a carrier and transmitter of the infection.

Although experimental infection of the ewe by any means except inoculation directly into the blood stream of the pregnant ewe is rather difficult, research workers have established that the disease can be produced by feed or water carrying Vibrio fetus. Perhaps that is an important source of the infection—in the range States, outbreaks of vibrionic abortion seldom if ever occur in flocks that are grazed on the range throughout the year, as compared with flocks that are fed during the winter.

The diagnosis of vibriosis in sheep is made most satisfactorily by isolating Vibrio fetus from an aborted fetus. If the fetus is submitted to a laboratory in good condition, the organism can be quite readily obtained in cultures from the stomach, liver, or heart blood.

The blood from ewes in the acute stages of the infection will show reaction to the agglutination test, but this test is of little practical value because the agglutinins in the blood decrease rather rapidly after abortion occurs and because there is seldom occasion to make a diagnosis except when abortions are occurring. It is possible therefore to base the diagnosis on laboratory examination of the aborted lamb. As the ewes are not carriers of the infection, blood tests on individual ewes are of little value except as an aid to diagnosis in an outbreak of the disease. Although artificially infected rams react to the blood test, it is not known whether the test would be of value in identifying a carrier ram, because the existence of carrier rams has not yet been demonstrated.

Treatment of infected ewes seems to offer little hope, because the affected ewe is not recognized until it is too late to save the lamb and because a high proportion of the ewes recover quickly after abortion without treatment.

Of the small number of ewes that do not recover, it might be possible to save some by treatment with antibiotics.

Definite recommendations for prevention and control cannot be made with the information now available. We know that there is no advantage in disposing of ewes that have been through an outbreak of abortion, as they will lamb normally in the next breeding season and will not infect other ewes or rams.

If further investigation shows that infected rams transmit the disease, such rams should be identified and eliminated as breeders. Because pregnant ewes can become infected by feed or water contaminated with the discharges of aborting ewes, aborting ewes should be isolated immediately and the fetuses and discharges destroyed.

We have some evidence that standing surface water or contaminated shallow wells may be reservoirs of infection. Pregnant ewes therefore should have access only to clean running water.

No vaccine or other immunizing agent has been developed.

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For further reading:
J. F. Ryff and Ralph F. Honess: Internal Parasites of Sheep, Wyoming Agricultural Experiment Station Circular 42, 16 pages. 1951.