

Health Examination of a Bull

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THERE ARE MANY DISEASES INCLUDING THOSE affecting only reproduction that can be spread by the bull when used for artificial insemination or for natural service. The bull is one half of the herd, therefore great precautions should be exercised in assuring the owner that the bull he adds to his herd is disease free. When artificial insemination is used, equal precautions must be followed to provide disease free semen.

The veterinarians conducting these tests must be prepared to use laboratory facilities to aid their clinical examinations. These tests are time consuming and may be costly, yet the prevalence of diseases spread by the bull has forced breeding establishments and herd owners to insist that an accurate and thorough examination should be conducted.

The following is a brief outline of the procedures and tests used in examining a bull prior to his movement to a new herd and in quarantine after his arrival on the farm.

I. HERD HISTORY:

The breeding efficiency of the bull is ascertained in the herd he has been serv-

icing by breeding records, number of calves dropped and examination of the reproductive tracts of cows serviced during the last six months by the bull in question. Cervical mucus is obtained from all animals bred during the last six months to be tested for vibriosis.

II. HEALTH HISTORY and GENERAL PHYSICAL EXAMINATION of BULL:

History of previous illness is obtained. The body temperature, skin and hair coat, lymphatic and circulatory systems are carefully examined. The respiratory, digestive and urinary systems are then checked.

The limbs and hooves are examined for evidence of lameness and the bull is exercised for evidence of gonitis.

III. SPECIAL EXAMINATION OF REPRODUCTIVE TRACT

A. Pelvic Examination

The accessory glands, vas deferens, bladder, ureters, internal inguinal rings and related structures are palpated for size and abnormalities.

B. External Genitalia Examination

1. The testes, scrotum and sheath are palpated for abnormalities.

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2. With the aid of pudendal block, or an electro-ejaculator, the penis is examined.

C. Semen Examination and Collection

Bulls usually are not placed into service until they are 12 to 15 months of age. Semen is collected from a bull once every 5 to 6 days.

Semen is collected in a sterile artificial vagina designed to imitate the pressure and temperature of the vagina of a cow. The innerpart is surrounded by a jacket with space between which is filled with water kept at 110° F. to 115° F. when the vagina is in use. The vagina is used only once and must be resterilized before using it on another bull.

The bull is prepared for collection by teasing him with a cow, another bull, pony or dummy and restraining his jump for a few minutes. Before the jump the prepuce is wiped off with a clean towel. If properly prepared and stimulated, the bull's first ejaculate should be of as high quality as any succeeding ejaculates. The semen should be protected from rapid changes in temperature. If the collection room is below 70° F., the collection vial should be protected with a warm insulated jacket.

As soon as the semen is collected it should be carefully protected from changes in temperature and from sunlight. The vial of semen should be corked when removed from the director cone of the artificial vagina.

Normal ejaculates will be dense, creamy in appearance and around 5 to 6 cubic centimeters in amount. Motility and density of the semen is observed by placing a small amount (one or two drops) on a slide, warmed to 100° F. and placed on a microscope. A warm stage is used on the microscope to keep the glass and semen from chilling. Semen is graded for motility and density using the figures from 1 to 5 for graduation with 4.5 to 5 considered superior. This is a subjective test and is by no means absolutely indicative of expected conception rate from the semen sample. The remainder of the semen is saved for bacteriological study.

IV. EXAMINATION OF BULL FOR INFECTIOUS DISEASES

A. Tuberculosis

1. Intradermal test
2. Herd history

B. Brucellosis

1. Agglutination test
2. Semen agglutination test
3. Herd history — this should be one of the first diseases to think of in a herd problem.

C. Vibriosis

1. Serological test
2. Herd history — *Vibrio fetus* has been found to produce abortions and temporary infertility in cattle. It is a self-limiting disease and its mode of transmission not definitely known. The bull has been suspected of being a carrier. Diagnosis is accomplished by isolating the organism from uterine contents, aborted fetus, semen, or preputial smegma. Recently an agglutination test has been used to determine the extent of infection in a herd. This disease is one to suspect when abortions are observed in a "brucella free" herd. Caution should be exercised in using a bull from an infected herd on a clean herd.

D. Johne's Disease

1. Intradermal test
2. Herd history

E. Trichomoniasis

1. Preputial smegma microscopic examination which should be repeated 4 times at weekly intervals. A plastic pipette has been designed for sampling the contents of the bulls prepuce.
2. Microscopic examination of the vaginal douche from 3 virgin heifers. This is accomplished by using Ringer-Lockes or physiological saline solutions as a douche. Recover the solution from the vagina, allowing it to settle in a flask for 12 to 20 hours, decanting off the supernatant fluid and with a transfer loop place some precipitate on a slide and examine it for the organisms.
3. Herd history — The protozoan *Trichomonad fetus* is not commonly found in cattle but bears watching when abortions

and severe discharges are observed in a herd. It is a venereal disease of cattle that is spread by the bull. It is thought that once a bull is infected, he is always infected. Trichomoniasis can also be spread by artificial insemination. The Europeans report successful treatment with a solution called Bovoflavine that is applied to the penis by massage.

There is no known treatment for Trichomoniasis in the female, however a hygienic breeding program can be set up which will prevent the spread of the disease.

F. Leptospirosis

1. Serological test
2. Herd history — abortions have been found to occur in herds affected with *Leptospira pomona*. Records from a number of herds show that usually 5 to 15 per cent of the cows abort in an infected herd.

G. Contagious vaginitis

1. Examination of female's genital tract.
2. Herd history — there is evidence that the bull is a spreader of this disease. Repeat services are usually the only clinical symptoms except for the lesions found in the vestibular-vaginal area. Preputial irrigation with antibiotics has been found to be of value for treatment in the bull.

H. Other Diseases

History of the existence of internal and external parasitism and other diseases such as black leg, anthrax and anaplasmosis is obtained.

I. Bacteriological Examination of Semen.

Semen samples are sent to a laboratory for culture. Infrequently bulls are not put into service because of an abundant growth of some specific organism.

V. ROUTINE PERIODIC EXAMINATIONS

The bull is kept in isolation for 30 days after entrance to the herd and again is checked for tuberculosis, brucellosis and leptospirosis before he is put to service.

As an added precaution 1000 units of streptomycin and 500 units of penicillin are added to each cubic centimeter of semen if the bull is to be used artificially.

VI. DISEASE CONTROL WITHIN THE HERD

Only disease-free animals are added to the herd. Once the bull enters service, he serves no females but those in the herd. If used for artificial service he should only serve a sterile artificial vagina.

These tests sometimes are costly and time consuming but are done to assure the cattle owner that disease-free semen is used in inseminating his cows or that the bull brought on the farm has been given a thorough examination. The veterinarian again can be of great service to the livestock industry in conducting these tests.

CROSS AGGLUTINATION BETWEEN VIBRIO FETUS AND BRUCELLA ABORTUS.

Brucella abortus antigen was not agglutinated by any of the 16 *V. fetus* antisera. Antigens of only three of 16 cultures of *V. fetus* were agglutinated by *Br. abortus* antiserum in titers of from 1:100 to 1:200. Heated portions of these three *V. fetus* antigens were also agglutinated by *Br. abortus* antiserum to a titer of 1:50.

In agglutinin absorption tests, *Brucella* antigen removed both *V. fetus* and *Br. abortus* agglutinins from *Br. abortus* antiserum, whereas the *Vibrio* antigens absorbed all of the *V. fetus* antibodies from *Br. abortus* antiserum but did not reduce the titer from *Br. abortus* appreciably.

The results presented indicate that (1) *V. fetus* infection does not interfere with the agglutination test for brucellosis, and (2) that *Br. abortus* infections may interfere with the agglutination test for listeriosis if the *V. fetus* antigen is made from strains which possess antigenic components shared by *Br. abortus*.

In testing, *V. fetus* antigens for agglutinability by heterologous antisera, the possibility that the antigen may be agglutinable by sera from normal cattle must be considered.

[Kiggins, E. M., M.S.; Plastring, W. N., Ph.D.; Williams, L. F., MS; Easterbrooks, H.L., D.V.M., M.S. Cross agglutination between *Vibrio fetus* and *Brucella abortus*. American Journal of Veterinary Research 16: 291-294. (April) 1955.]