Bovine Tuberculosis Eradication Program

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As some of you know, we have been in the business of eradicating bovine tuberculosis since December 23, 1917. We have come a long way from a five percent reactor rate in CY 1918 to .08 percent in FY 1976. We must remember, however, that the early years of any program are the years that progress is more apparent. As the incidence of a disease declines, it becomes more and more difficult to locate and eliminate foci of infection. This is the situation at present in the tuberculosis eradication program. It has become difficult and very time-consuming to locate tuberculous cattle herds.

We, as regulatory veterinarians, enlist your continued aid and support as practitioners in finding tuberculosis. For the past several years we have asked you to classify cattle as reactors, suspects, deviators, or negative when tuberculin-testing. This sometimes created a strained relationship between you and your client when you branded an animal as a tuberculin reactor only to have that animal not reveal lesions of tuberculosis when it was slaughtered. A procedure termed the comparative-cervical test was implemented on a limited scale three years ago. The test consists of intradermal injections of two biologically balanced tuberculins in the cervical region. These are purified protein-derivative tuberculins made from bovine and avian mycobacteria. A comparison of the responses elicited by each tuberculin is then made to determine the most probable cause of the caudal fold response. The test is, therefore, an additional tool to differentiate between responses to a caudal fold test and should be applied within 10 days of the caudal fold injection. If the test is not applied within this 10-day period, at least 60 days must elapse before the test can be applied. All comparative-cervical tests are now applied and interpreted by state or federal regulatory veterinarians who have been specially trained in its use.

Over the past three years, the test has found increasing use and has proven very effective in differentiating on a herd basis between *M. bovis* and other sensitizing agents. The United States Animal Health Association in its annual meeting in Miami, Florida, November 8 to 12, 1976, accepted the comparative-cervical test as the only test to be used for the retesting of suspects. In FY 1976, 12 *M. bovis* herds were located by using this test.

What we hope will happen is that you, as a bovine practitioner, will report *all* responses that you observe on routine caudal fold tests to your local sectional veterinarian, the state veterinarian, or the federal district veterinarian. These individuals will, in turn, arrange for a retest of the responding animals using the comparative-cervical test. This practice would remove the onus from the practitioner of classifying reactors that kill with no gross lesions (NGL).

In regard to routine caudal fold tests, it would be appropriate to mention at this point that the Cooperative State-Federal Tuberculosis Eradication Program anticipates discontinuing the use of Heat Concentrated Synthetic Media (HCSM) old tuberculin (OT) January 1, 1978. The tuberculin used in program activities after that date will be a purified protein-derivative tuberculin produced from *M. bovis* strain AN 5. This product will be similar to the tuberculins used in most of the other countries of the world and will have the advantage of greater specificity when compared with the OT we are presently using.

There were 52 tuberculous herds found nationwide in fiscal year 1976. Of these 52 herds, seven were known to have been previously infected with *M. bovis* and 45 were newly discovered this year. Indiana led the country with nine *M. bovis* herds this year, followed closely by Illinois with eight; Kentucky with seven; Puerto Rico with six; Tennessee with four; Massachusetts and Nebraska with three each; California, Kansas, Missouri, and Florida with two each; and Texas, Louisiana, Oklahoma, and Wisconsin with one each.

How can an *M. bovis* herd be handled once it has been discovered? A provision is made in the Uniform Methods and Rules–Bovine Tuberculosis Eradication for quarantine of such herds with the quarantine to be released after the herd passes two tuberculin tests at intervals of at least 60 days and one additional test after six months. Following release from quarantine, such herds are required to be tested annually for five years and again at 8 and 12 years following release. This sounds like, and is, a very strict regimen of testing. It does not, however, preclude the release from quarantine of a herd in which infection still persists. In FY 1976, two infected herds which had been released from quarantine five years earlier, after the prescribed regimen of testing, were found to be infected. The possibility exists, of course, that these herds had become reinfected, but the chances are that the infection was never eliminated from these herds. Each of these herds had made numerous sales over this five-year span. It now becomes necessary to attempt to trace and tuberculin-test all of these sale cattle.

There is an alternative to a test-and-slaughter program in known infected herds. This alternative is depopulation of all cattle in such herds, as well as all other susceptible species. The federal government will pay up to $100 indemnity for each grade bovine so depopulated and up to $200 indemnity on each purebred bovine. In addition, many states pay varying amounts of indemnity on this class of cattle.

Thirty-seven of the 52 infected herds found in FY 1976 were depopulated. Depopulation is at the option of the herd owner and is not mandatory. It, therefore, becomes an economic decision for the infected-herd owner, which does not always lend itself to the best disease eradication procedures. Depopulation of all exposed cattle in an *M. bovis*-infected herd is the only way we can be sure we won't leave infection behind to serve as a reservoir to perpetuate bovine tuberculosis. Program records show that for the past three years, 30% of the herds depopulated contained one or more nonreacting cattle with lesions of tuberculosis on post-mortem.

It is interesting to note that Illinois, long a leader in tuberculosis eradication, has depopulated every known infected herd in the state for the past 10 years. Illinois regulations are such that an infected-herd owner has the choice between permanent quarantine of his herd or depopulation. More states should adopt this posture.

The majority of infected herds are either dairy herds or are registered beef herds (involve accredited herds). We depend on slaughter surveillance and private testing by practicing veterinarians to point us to infected herds.

Again, we in regulatory veterinary medicine ask your continued support in the endeavor to eradicate bovine tuberculosis.

Update of National Brucellosis and Tuberculosis Eradication Programs

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The brucellosis eradication program was making progress towards reducing the number of infected herds until about 1972. A number of problems, including a reduction in funds and manpower due to the detailing of personnel to the VEE eradication program, the exotic Newcastle disease eradication efforts, and the hog cholera eradication campaign, resulted in an increase in the incidence of brucellosis throughout the country. This increase was observed in both the high-risk and the predominantly clean populations.

A review of the nature of the disease and program activities at that time provided favorable support to the premise that brucellosis remained a disease that could be eliminated within a reasonably limited time frame. The livestock industry voiced their concern that the program gains acquired must be preserved and that efforts to detect and eliminate the numerous foci of infection, primarily in southern states, must be intensified.

Since 1975, major efforts have been taken to strengthen the program to achieve eradication within the earliest acceptable time frame. These efforts include:

1. *Research.* Because progress was being made toward eradication, brucellosis research had nearly ceased. Renewed emphasis is now being placed on improving brucellosis diagnosis and immunity. Projects underway include studies on *Brucella melitensis* H-38 bacterin at the University of California, Davis, California, *Brucella abortus* Strain 45/20 bacterin in selected herds in Mississippi and Texas, adult vaccination trials with *Brucella abortus* Strain 19 in several large dairies in Florida, nonspecific stimulation of resistance to brucellosis at Michigan State University, and studies to improve diagnostic capabilities at three separate locations.

2. *Vaccination.* Just as was the case with research, calfhood vaccination had been de-emphasized. Because of the increased incidence of the disease, calf vaccination with *Brucella abortus* Strain 19 vaccine is encouraged for areas where the prevalence of the disease is high and in low-prevalence areas that provide replacement animals to high-incidence areas.

3. *Resources.* Increases in federal funding were received in FY 1975, 1976, and 1977. Additional manpower ceilings are desperately needed in order to support eradication efforts in high-incidence areas.

4. *Program Reviews.* Internal reviews of individual state programs and external reviews by scientists and legislative bodies.

The increase in funding has provided the means to increase eradication activities in most states. There has been a significant increase in the number of animals being tested, both on farms and through marketing channels. There were 22 million animals