are the major problems associated with strain 19 vaccination since they prevent easy differentiation of vaccinated from infected cattle.

iii. Calfhood vaccine is infective if proper protective measures are not taken while vaccinating the animals. Accidental injection/ inoculation/conjunctival splashing while adjusting vaccine volumes in syringes or contact of vaccine on abraded skin results in humans infection.

Source of calfhood vaccine

1. Bruvax (Indian Immunologicals Limited, Hyderabad) available as live freeze dried S19 for female cattle and buffalo calves of age 4 to 8 months given 2.0ml subcutaneously.

2. Brucella vaccine (Intervet India Pvt. Ltd., Pune) for cattle and buffalo calves of age 4 to 8 months given 5.0ml subcutaneously.

Survveillance approaches for brucellosis:

Surveillance consists of the systematic collection, collation, analysis, interpretation and prompt dissemination of data to planners and administrators to implement control measures or to initiate relevant action to be taken.

a. Data can be obtained by conducting systematic testing of all animal herds or flocks within a geographical area (Area tests or Census tests);

b. By screening randomly selected herds to determine the initial prevalence in an area (Survey tests);

c. By testing animal populations considered to be higher risk: e.g. herds adjacent or commingled with infected herds (Selected herd tests);

d. By tracing sources of animals which have been added to or sold from infected herds including human cases (Epidemiological investigations);

e. Testing of animals at slaughter or markets or abortion investigations;

f. Bulk milk ring tests - widely used to determine the prevalence of brucellosis in dairy cattle herds and to locate possible additional infected herds.

g. Monitoring the males periodically in bull stations.

Role of PD-ADMAS in National Control Program on Brucellosis

- The institute is entrusted to provide diagnostic ELISA kits to the states and union territories in the program.

- To train officers of states and union territories for effective implementation of the programme.

- To provides logistic support for the verification of suspected and doubtful samples.

- Brucellosis research facilities and NADRES software for easy updating of brucellosis disease profile state and district-wise will be provided as and when required in the program.
Introduction:

- Brucellosis is a disease of animals with humans as an accidental host.
- Eradicated from the livestock populations of most European countries, Japan, Canada and USA.
- Widely prevalent throughout India causing economic losses to the tune of Rs. 350 million.
- The potential risk factors are breed, herd size, management practices, mating methods and sources of replacement stock.
- Brucella is a Gram-negative facultative intracellular bacteria and bovine brucellosis is caused by B. abortus, less frequently by B. melitensis and rarely by B. suis.
- Cattle and buffaloes harbor predominantly B. abortus biotype-1; followed by biotype-3; rarely biotypes-2, 4, 5, 6 and 9.
- Four of the six Brucella species B. melitensis, B. suis, B. abortus and B. canis cause infection and clinical symptoms in man in the descending order of pathogenicity.

Constraints in the control of brucellosis

1. Disease confirmation is leading to distress sale and spread of infection.
2. Increased trade movement of animals and commercial dairy farming is spreading the disease across the states easily.
3. There is no policy for slaughter of infected animals or compensations.
4. Lack of public awareness on economic importance of the disease, management of infected animals, zoonotic implications and lack of access to timely diagnosis are other factors precipitating the survival and spread of the disease.
5. Calf hood vaccination is not practiced.

National control programme on brucellosis (NCBP): A National policy

- The aim of an animal control programme is to reduce the impact of a disease on human health and to reduce the economic losses.
- NCPB is a time bound 5-year intensive location targeted control programme which is a simple, feasible and achievable approach.
- It does not recognize individual infected animal rather it recognizes village as a herd and intends to involve village milk co-operatives in diagnosis and control through vaccination.
- It suggests periodical surveillance using milk ring test for pooled milk and ELISA for random or herd screening (Area or Survey tests).
- Targets B. abortus S19 vaccination for all the female calves of 4 to 8 months in infected villages.
- The programs assures very high and sustained cost benefit ratio to the farmer and dairy industry and helps to establish accredited herds/villages.
- Human infection from bovines is greatly reduced and awareness is enhanced.

Vaccines for bovine brucelloses:

In brucellosis free countries, test and slaughter of positive animals is proved effective. However, in India “test and segregation” in conjunction with vaccination is perhaps the only method which is practical and feasible in our country.

B. abortus strain 19 (calfhood vaccine):

The first effective Brucella vaccine was based on live B. abortus strain 19, this induces reasonable protection against B. abortus. The effectiveness of this vaccine varies based on age of vaccination, dose, route and prevalence of brucellosis in vaccinated herds.

Note: Bulls/male calves should not be vaccinated.

Advantages of calfhood vaccination

i. It prevents abortions in the herds.
ii. It produces short lived antibody response upto 6 to 8 months after vaccination.
iii. No repeat or booster vaccination required.
iv. Builds up herd immunity in 3-5 years period.
v. Anamnestic response helps animals to act as indicator system and prevents abortions.

Disadvantages of calfhood vaccine

i. Vaccination of pregnant animals results in abortions and strain 19 vaccination results in the development of an arthropathy in few cases.
ii. The antibodies are detected in the serological assays used for the diagnosis of brucellosis and