



BVDV Case Study

Adapted from:

Bovine viral diarrhoea in a dairy herd

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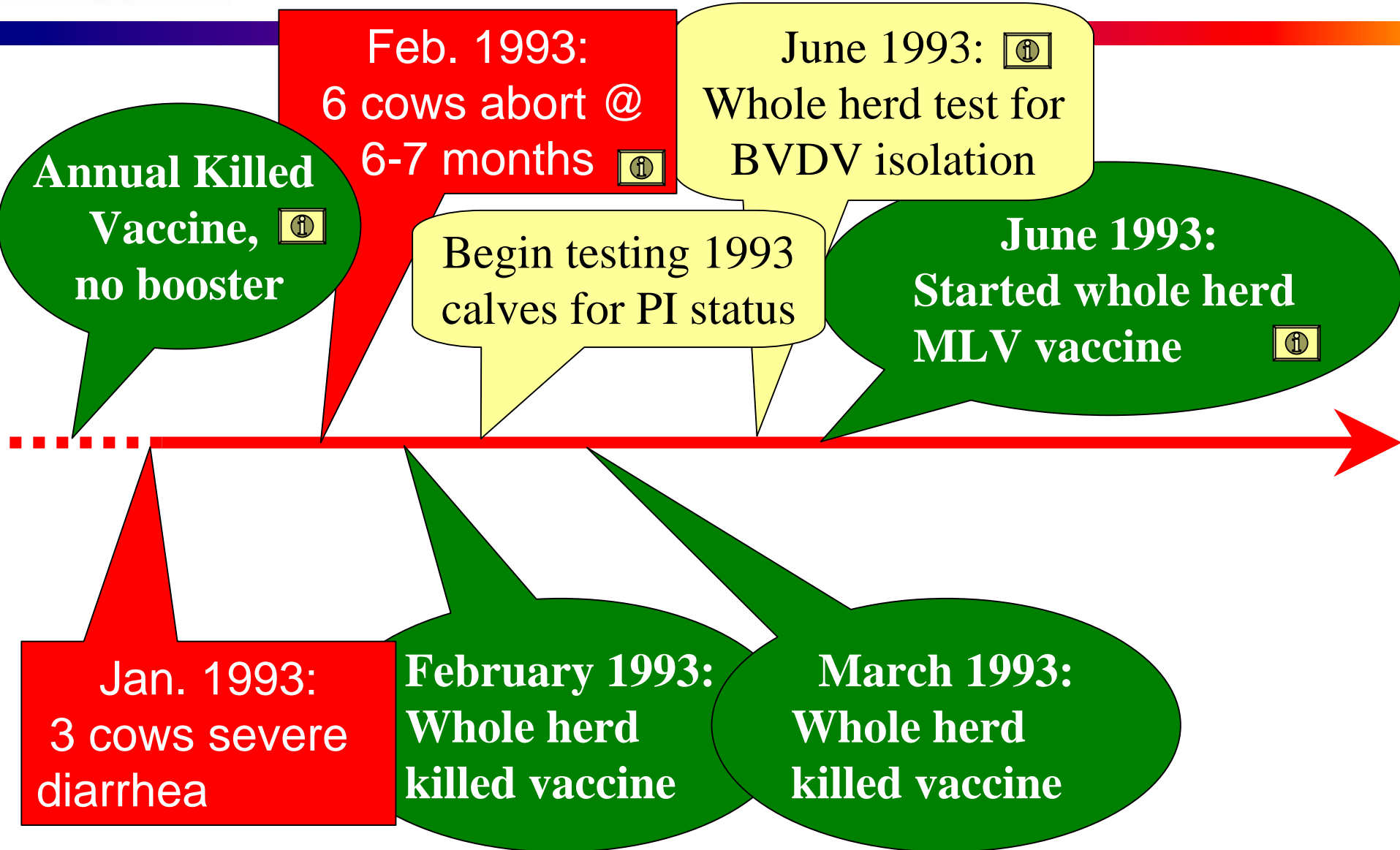
Dairy Farm



- ⇒ 70 cow herd
- ⇒ Registered Holsteins
- ⇒ Located in Ontario, Canada
- ⇒ Tie Stall
- ⇒ Closed Herd (no purchases, but external contacts present, e.g. shows)
- ⇒ Cleanliness very good
- ⇒ Colostrum management adequate



Case Timeline



Feb. 1993:
6 cows abort @
6-7 months

June 1993:
Whole herd test for
BVDV isolation

**Annual Killed
Vaccine,
no booster**

**Begin testing 1993
calves for PI status**

**June 1993:
Started whole herd
MLV vaccine**

Jan. 1993:
3 cows severe
diarrhea

**February 1993:
Whole herd
killed vaccine**

**March 1993:
Whole herd
killed vaccine**



Case Timeline (continued)

June 1993:
PI calf born,
euthanized

Feb. to March 1994:
7 calves from vaccinated
heifers stillborn; 1 PI calf
born

July 1993:
7 PI calves born
all euthanized

August 1993:
5 two month-old
calves die





Disease History - initial

- ➔ Jan, 1993 - 3 cows develop severe diarrhea
- ➔ 2 weeks later
 - 6 cows abort @ 6-7 months in calf
 - noncytopathic BVDV isolated from 2/4 fetuses
 - Acute serum samples BVDV SN titers ranged from 1:768 to 1:6144
 - Convalescent titers ranged from 1:384 - 1:8192
- ➔ no heifers aborted



Vaccination History

- ⇒ Herd vaccinated once annually with killed vaccine (no booster follow-up)
- ⇒ No testing strategy for PI animals
- ⇒ No record keeping of vaccination
- ⇒ Veterinarian vaccinates



Herd Testing after outbreak

- ➔ March, 1993 - screen all calves born for BVDV PI
- ➔ June 1993 - entire herd tested for BVDV
 - all were negative



Herd vaccination after outbreak

- ➔ February - herd vaccinated with killed vaccine
- ➔ March - herd vaccinated with booster killed vaccine
- ➔ June - MLV to heifers and cows 40 days postpartum
 - MLV to BVDV negative calves @ 4-6 wks, 4 mo. and 6 mo. of age



Disease History II

- ⇒ June 29, 1993 - first PI calf born
- ⇒ July 7, 1993 - more PI's born
- ⇒ August - 2 month old calves with enteritis - BVDV
- ⇒ Feb-March, 1994
 - 7 stillborn calves from first calf heifers
 - 1 PI born to first calf heifer



Total Herd Losses

- ⇒ 15 abortions
- ⇒ 16 calf deaths out of 83 births
- ⇒ 9 calves identified as PI
 - umbilical infection common
 - umbilical hernias in 7




Discussion

- ➔ Source of infection - from outside herd?
 - Bull, uncertified semen
 - purchased cows, heifers, or fetus
 - contact at exhibition
 - other livestock
 - fomites?
- ➔ From within herd - PI's



Questions

1. Construct a time line of protection and exposure in the herd. 
2. Risk profile of the herd.
 - Identify weak points in management using the Risk Assessment guide.
3. What strategies would you employ
 - a. during outbreak
 - b. after outbreak



Questions

4. Formulate a herd plan to prevent further disasters. Include:
 - Risk factors management
 - Vaccination strategy
 - Testing protocol
5. Discuss how to monitor adequacy of the program.

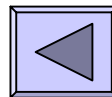




New Vaccination Program

➔ Breed Back 9/Somnugen

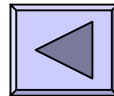
- Heifers and cows >40 days postpartum
- BVDV negative calves at 4-6 weeks, 4 months and 6 months of age





Diagnostic Results

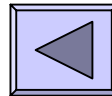
- ⇒ 2 of 4 fetuses positive for non-cytopathic BVDV
- ⇒ Acute serum titers: 1/768 to 1/6144
- ⇒ Convalescent titers: 1/384 to 1/8192





Diagnostic Results II

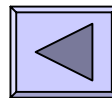
➡ Whole herd BVDV isolation - Negative!





Vaccination Program

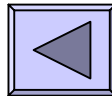
➔ Sentry 3/Somnugen, killed BVD Vaccine





Dead Calves

- ⇒ One had bowel lesions suggestive of BVD
- ⇒ One sick calf, treated symptomatically, recovered





Timeline

