






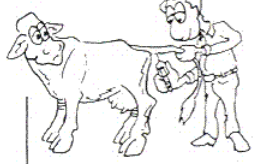

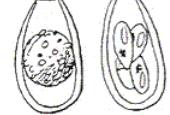
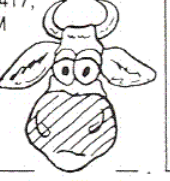


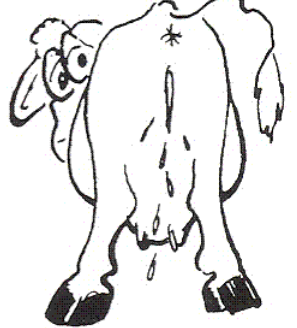
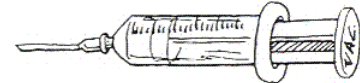
Bovine abortion agents

Guide to Bovine Clinics Pasquini & Pasquini, 4th ed.

Abortions

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REPRODUCTION

Condition	Facts/Cause	Presentation/CS	Diagnosis	Treatment
Abortion Mk 1142, BR 893; VC/T 343; C3T 787 *** 	<ul style="list-style-type: none"> • Expulsion of dead or nonviable fetus • Most undiagnosed, 25% diagnosed by labs from submitted fetuses • Causes same, no matter location, but % of each varies • Called infertility when unnoticed abortion (EED) • If fetus retained - autolyses (opaque cornea, soft mushy organs, gelatinous bloodtinged SQ & placenta) 	<ul style="list-style-type: none"> • Infertility • Abortion  <div> Causes of abortion (See pg 291) <ul style="list-style-type: none"> • IBR (p 118) • <i>A. pyogenes</i> (p 119) • Misc. bacteria (p 119) • <i>Campylobacter</i> (p 119) • <i>Salmonella</i> (p 259) • Mycotic • Anomalies/genetic • BVD (p 121) • <i>Brucella</i> (p 122) • <i>Listeria</i> (p 122) • <i>Leptospira</i> (p 121) • EBA (p 123) • Dystocia (p 115) • <i>Ureaplasma</i> (p 123) • Bovine protozoal (<i>Neospora</i>) (p 123) • <i>Toxoplasma</i> (p 123) • <i>Mycoplasma</i> (p 120) • <i>Sarcocystis</i> (p 120) • <i>Bluetongue</i> (p 120) • Trauma, AI, twins, poisonous plants, etc. </div>	Diagnose <ul style="list-style-type: none"> • Hx (vaccine history, herd problem, AI or natural, PM of fetus, placenta, etc.) • CS • Lab: m/b justified economically <ul style="list-style-type: none"> - Whole fresh fetuses - Placentas - Serology: paired sera best  	<ul style="list-style-type: none"> • Depends on cause   
Infectious bovine rhinotracheitis IBR, "Rednose" Mk 730; C3T 417; VC/T 348; IM 571, 908, 247; BR 1061; B&R 847; T 250 *** 	<ul style="list-style-type: none"> • Common cause of abortions • Bovine herpesvirus 1 (BHV 1) • Multiple system diz <ul style="list-style-type: none"> - No effect on future breedings • Older carriers - 1^o reservoir for younger animals (latent infection in neural tissue) <ul style="list-style-type: none"> - Contagious - aerosolization of viral particles - Found in semen, nasal secretion, resp. secr. • Recovery = long term immunity • IPV virus different from abortion virus 	<ol style="list-style-type: none"> 1) Upper resp. tract, calf > 6 mo. "Red nose" 2) 2^o bronchopneumonia (<i>Pasteurella</i>) 3) Enteric form (calves) - Intractable diarrhea 4) IPV - Infec. pustular vulvovaginitis <ul style="list-style-type: none"> • Abortions not a sequela • No permanent infertility 5) Abortion <ul style="list-style-type: none"> • Infertility if early infec. causing EED (early embryonic death) • Abortion storms (\$) 25-60% of herd • Initial infec. to dam 20-50 ds earlier • Seldom CS in dam • Rarely fetus to term, but stillborn or die in 1st wk of life • No effect on future breedings 6) Encephalitic - calves 	<ul style="list-style-type: none"> • Hx (previous infec. of dam) • Autolysis of fetus obscures gross lesions • Histopath: focal necrotizing lesions of tissue • Viral isolation from placenta or fetal lung (pos. in 1/3 cases) • Viral antigen in fetal tissue 	<ul style="list-style-type: none"> • IPV <ul style="list-style-type: none"> - Stop breeding until CS gone • Abortion <ul style="list-style-type: none"> - No lasting effect on fertility  <p>Vaccines:</p> <ul style="list-style-type: none"> • MLV - IM feedlot cattle <ul style="list-style-type: none"> - Can cause abortions - Ok for young & open females • MLV - IN (intranasal) - breeders <ul style="list-style-type: none"> - Will NOT cause abortions - Faster immunity? - Will not interfere w/ passive immunity
Feedlot/Resp. form; Breeders/Abortion, Carriers CS: Abortion storms - Weeks after Dam infec. Dx: Hx, CS, Histopath, Viral isolation or Antigens Tx: No effect on fertility • Vaccinate				











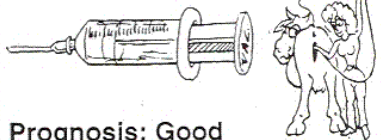
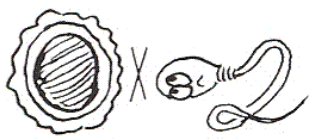
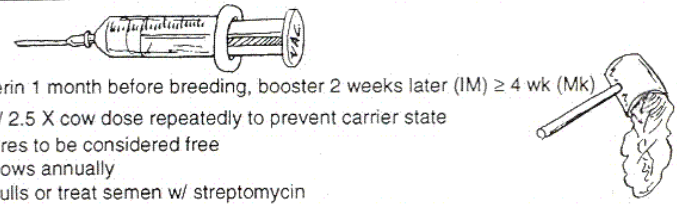
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Bovine abortion agents


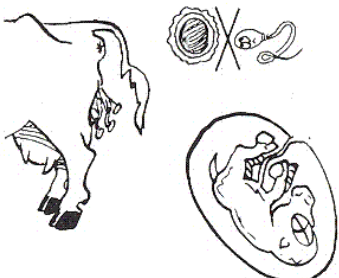



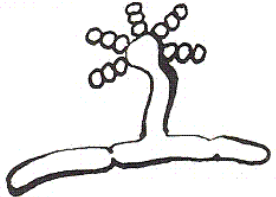


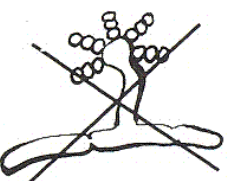
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Condition	Facts/Cause	Presentation/CS	Diagnosis	Treatment
Actinomyces pyogenes VC/T 357 *** 	<ul style="list-style-type: none"> Common cause of abortions Maternal bacteremia presumed cause 	<ul style="list-style-type: none"> Abortion at any stage of gestation Most in late gestation ± Retained placenta 	<ul style="list-style-type: none"> Isolate in nearly pure culture from abomasal contents of fetus R/O other causes Placentitis & bronchopneumonia most common lesions 	<ul style="list-style-type: none"> Control measures impractical because of sporadic nature of abortions
Misc. bacterial abortion *** IM 1558, 1560; Br 471; VC/T 357	<ul style="list-style-type: none"> Miscellaneous bacteria together cause a high percentage of abortions; <i>Salmonella</i> spp., <i>C. fetus</i>, <i>E. coli</i>, <i>Pasteurella</i> spp., <i>Pseudomonas</i> spp., <i>Haemophilus</i> spp., <i>Serratia marcescens</i>, <i>Staph.</i> spp., <i>Strep</i> spp., <i>Yersinia pseudotuberculosis</i>. Maternal bacteremia presumed cause CS, Dx & control similar to <i>A. pyogenes</i> 			
Bovine Campylobacteriosis, Vibriosis Mk 660; VC/T 354; C3T 512; 784; C2T 789; IM 1556; BR-hb 349; BR 822; Br 462, 471; DC 337; R-M 263, 296 *** 	<ul style="list-style-type: none"> Campylobacter fetus, sp. <i>venerealis</i> <ul style="list-style-type: none"> Obligate parasite of bovine genital tract, doesn't affect other species Gr. neg. curved or spiral rod, motile (polar flagellum) Infertility (EED - early embryonic death) <ul style="list-style-type: none"> Sporadic abortions at 5-6 mo Transm. - coitus Subclinical carrier bulls (crypts of prepuce) <ul style="list-style-type: none"> Pregnant carriers Pathophysiology <ul style="list-style-type: none"> Vaginal infec. (mucopurulent endometritis), also cervix, uterus & uterine tube Persists for 2-3 mo Prevents conception or EED (early embryonic death), resorption Irregular returns to estrus Less common abortion up to 8 mo of gestation Problem in replacement heifers 	<ul style="list-style-type: none"> 1° temporary infertility (esp. replacement heifers) due to EED <ul style="list-style-type: none"> Repeat breeders Irregular estrus cycles Hi % returning to estrus Prolonged interestrus periods Calving late (bec. repeat breeders) Thin, overworked bull Unobserved herd: 1st clue different stages of pregnancy 2° abortion, low incidence (< 5% of herd) anytime (between 4-6 months) <div> DDx (impossible w/o lab): <ul style="list-style-type: none"> Trichomoniasis (p 220) </div> 	<ul style="list-style-type: none"> History, CS Demonstrate or isolate org. <ul style="list-style-type: none"> Darkfield microscope Curved rod w/ darting corkscrew motility Culture from placenta or fetal abomasal content Inoculate Clark's media (immediately) 72 hr for results No contamination or overwhelmed Mucus agglutination test Survey herd for infection Swab & culture penis & preputial mucosa <ul style="list-style-type: none"> Difficult bec. org. slow growing & often overwhelmed by saprophytes 	<ul style="list-style-type: none"> Recover spontan. w/in 5 mo <ul style="list-style-type: none"> Resist reinfection then Intrauterine infusion hastens recovery Vaccinate infec. cow, booster in 6-8 weeks, booster 1 mo before breeding (dramatically improves fertility) Bull: dihydrostreptomycin in oil base & massage up into prepuce  <p>Prognosis: Good</p> <ul style="list-style-type: none"> Spontaneous recovery & resist reinfection Severe endometritis or salpingitis infertility m/b permanent
Herd infertility (EED), Carrier bulls CS: Repeat breeders, Low % abortion Dx: Isolate Tx: Recover in 5 mos. • AI, Vaccinate		<div> Prevention • Vaccination <ul style="list-style-type: none"> Heifer - killed bacterin 1 month before breeding, booster 2 weeks later (IM) ≥ 4 wk (Mk) Bull vaccinate w/ 2.5 X cow dose repeatedly to prevent carrier state <ul style="list-style-type: none"> Need 6 negilar cultures to be considered free Revaccinate bulls & cows annually AI from noninfected bulls or treat semen w/ streptomycin </div> <div> • AI (artificial insemination) exclusively controls diz by preventing transm. </div> 		

Bovine abortion agents

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Abortion		REPRODUCTION		
Condition	Facts/Cause	Presentation/CS	Diagnosis	Treatment
Trichomoniasis Mk 662; C3T 608, 785; C2T 790; IM 1565; BR 796; Br 472; DC 338; R-M 275, 298; VC/T 358 *** 	<ul style="list-style-type: none"> • <i>Trichomonas foetus</i> (protozoan) • Transmissions venereal <ul style="list-style-type: none"> - Colonizes vagina, cervix, uterus & oviduct - Bulls are mechanical carriers • Pathophysiology <ul style="list-style-type: none"> - Doesn't interfere w/ conception - EED (early embryonic death) freq. w/in 1st 2 months of infection - 2-6 mos period of immunity to reinfection - Clearance in 3 mo., rarely past 6 months - Resistance not permanent, 1-1.5 yrs susceptible again - Infections in bulls over 4 year-old permanent - Young bull resistant to infec. 	<ul style="list-style-type: none"> • Infertility (EED) <ul style="list-style-type: none"> - Hi nonpregnancy rate - ↑ calving interval to 100 days • Occasional pyometra (uncommon sequela to early embryonic death) • Early occasional abortion (3-4 months gestation) between 5-30% <ul style="list-style-type: none"> - Placenta retained or expelled • Infection after 4 months of gestation usually deliver live calf 	<ul style="list-style-type: none"> • Hx (bull breed cows) • Clinical signs • ID & culture trichomonads <ul style="list-style-type: none"> - Preputial smegma cultured from fornix of prepuce - bulls - Cervicovaginal mucus, uterine exudate, placental fluids or fetal abomasal contents - Diamond's media - Transport at ambient temp., out of sunlight, not refrigerated & promptly to lab - Microscope (size 10 X 15 µm) <ul style="list-style-type: none"> • 3 anterior flagella & undulating membrane • Jerky, rolling motion 	<ul style="list-style-type: none"> • Cull infected cows or give 3 months sexual rest • Bull <ul style="list-style-type: none"> - Imidazole (ipronidazole), Dimetridazole, Metronidazole (Flagyl®), not officially approved  <p>Prevention:</p> <ul style="list-style-type: none"> • AI reduces, but doesn't eliminate chance of infection • Young bulls in natural breeding helps reduce incidence <ul style="list-style-type: none"> - Divide herd into groups old & new, different bull for each - Test old bulls repeatedly • Quit breeding for 3 months 
"VD", Bulls/Permanent infection CS: Infertility (100 d calving interval) Dx: ID (Diamond's media) Tx: Cull or Rest • Prevention: AI			DDx: <ul style="list-style-type: none"> • Campylobacter (p 119) - No pyometra, ID organism 	
Mycotic abortions VC/T 361; C3T 525; IM 1563; BR 1160; Br 472, 764; R-M 298 *** 	<ul style="list-style-type: none"> • <i>Aspergillus fumigatus</i> <ul style="list-style-type: none"> - #1 fungal abortion in mare & cow (Mucor, Allescheria, Coccidioides, Histoplasma, Candida, Cryptococcus) • Sporadic <ul style="list-style-type: none"> - Winter more common • 1-10% of abortions - regional • Predisposing factors <ul style="list-style-type: none"> - Stable confinement - Fungal contaminated feed - Steroid or AB feeds • Ingestion or inhalation <ul style="list-style-type: none"> - Granulomas in lungs or stomach - Hematogenous spread to placenta 	<ul style="list-style-type: none"> • Abortion 3rd trimester (often near term) <ul style="list-style-type: none"> - 1 or 2 animals in herd • Dam no clinical signs • Sequela: <ul style="list-style-type: none"> - Retained placenta 	<ul style="list-style-type: none"> • History, CS + fungus (from specific lesions) • Postmortem <ul style="list-style-type: none"> - Thick, leathery placenta (placentitis), esp. chorioallantois (maternal side) - Fetal bronchopneumonia - Ringworm-like lesions (2-25%) • Fungal culture of placenta, abomasal fluid or lungs • Histopath., KOH wet mount from skin scrapings 	<ul style="list-style-type: none"> • Fertility not affected  <p>Control:</p> <ul style="list-style-type: none"> • Reduce exposure to fungus
		Sporadic, Fungal CS: Last trimester; RP Dx: Leathery placentitis, Culture Tx: Fertility OK		












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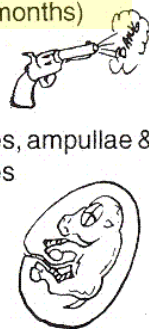

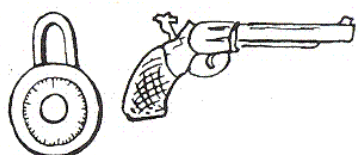




Bovine abortion agents

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Condition	Facts/Cause	Presentation/CS	Diagnosis	Treatment
Bovine viral diarrhea abortion Mk 166, C3T 432; IM 1552; Br 492; R-M 254, 298 *** 	<ul style="list-style-type: none"> Multisystem viral diz, GI, Resp., Abortion, Mucosal disease Togavirus <ul style="list-style-type: none"> Cytopathic & noncytopathic biotypes Immunosuppressive m/ predispose to other diseases Transmission: <ul style="list-style-type: none"> Direct contact w/ sick or carriers Indirect from contaminated material Transplacentally Worldwide 1° yearlings, up to 2-3 years Pathophys. of repro. infections <ul style="list-style-type: none"> Prevents conception if infec. at breeding 1st 4 months = fetal death & abortion (usually) 	<ol style="list-style-type: none"> Majority - usually unobserved systemic infect. Classical BVD - Gastroenteritis Diarrhea, oral erosions, recover in 10 ds Respiratory signs w/ fever, recovery in 10 ds 4. Transplacental infection <ul style="list-style-type: none"> Abortion - any stage (1-4 months) History of repeat breeding (no conception, fetal absorption) "Weak calf" syndrome Dysplastic lesions <ul style="list-style-type: none"> Teratogenic effects (cerebellar hypoplasia, ocular defects) or Persistently infected & develop mucosal diz later if infection w/ cytopathic BVD virus Mucosal disease (chronic BVD) <ul style="list-style-type: none"> 100% fatality, Oral erosions, lameness Cerebellar hypoplasia (see pg 124) 	<ul style="list-style-type: none"> Difficult to Dx Mummified or Dysplastic lesions (cerebellar hypoplasia or dysplasia, hydrocephalus, microencephaly, retinal dysplasia, spinal dysmyelination, brachygnathia, alopecia, bronchiolar dysplasia, arthrogryposis, cataracts, optic neuritis) Mild nonsuppurative placentitis (histo) Viral isolation from fetal tissue seldom successful FA, ELIZA 	<p>Prevention & control</p> <ul style="list-style-type: none"> Vaccination - good for dairy herds & beef cow/calf operations, questionable for feedlots Screening & elimination of persistent infected cattle (see box)  <p>Prognosis: Breeding back: good to excellent</p>
Multisystem diz CS: Repro (Abortion, Repeat breeders, Weak calf) Dx: Mummy, Dysplastic Control: Vac. , Screen & Eliminate •Px: Fertility OK	<p>Screening to eliminate persistent infections</p> <ul style="list-style-type: none"> & clean up a herd Vac. all over 6 mo twice (KV) Serum neutralization titers on all 1 wk after 2nd vaccine Seronegative or low titer cattle (naive or persistent shedders) - virus isolation If virus present, but no antibodies, they are persistent shedders - cull Repeat in calves less than 6 mos when they reach 6 mos old Test calves born 7 to 8 mos after screening program 			
Leptospirosis abortion Mk 353, 356, 1085; VC/T 352; C3T 541; IM 1558; R-M 267, 296; VC/T 352; T 267; Br 471 *** 	<ul style="list-style-type: none"> Leptospira harjo #1 (<i>L. pomona</i>, <i>L. canicola</i>, <i>L. icterohemorrhagiae</i>, etc.) Abortion weeks-mos after infection Abortion < 10% Ubiquitous, persistent infections Shed in urine & pass through abraded skin Public health - infective to man, caution 	<ul style="list-style-type: none"> Calves - fever, anorexia & dyspnea Older cattle <ul style="list-style-type: none"> Drop in milk production for 10 ds Infertility Abortion (4 mos to term, esp 3rd trimester) Birth of weak or dead calf Icterus, hemoglobinuria, agalactia, fever Frequent abort w/o CS 	<ul style="list-style-type: none"> Difficult FA of fetal kidney Maternal serology Bacterial isolation impractical  <p>DDx:</p> <ul style="list-style-type: none"> Brucellosis (p 122) Campylobacteriosis (p 119) Trichomoniasis (p 120) 	<ul style="list-style-type: none"> Abortion outbreak <ul style="list-style-type: none"> Vac. herd w/ killed bacterin Oxytetracycline (m/b limited to sick cows in dairy herd) Isolate aborting cows & Tx w/ streptomycin if not destined for slaughter Remove aborted fetuses & placentas from premise <p>Vaccine:</p>  <ul style="list-style-type: none"> 6-12 month intervals or more frequent in bad areas
Infertility, Abortion outbreaks Tx: Vac (MKV) in outbreak, Oxytetracycline Vaccine 2-12 mos	<p style="text-align: center;">121</p>			

Bovine abortion agents

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Condition	Facts/Cause	Presentation/CS	Diagnosis	Treatment
Brucellosis, Bang's disease, Contagious abortion, <i>Brucella abortus</i> Mk 667; C3T 551; C2T 791; IM 1555; BR 787; Br 471, 476; DC 482; L 117; R-M 271, 296 ★★ 	<ul style="list-style-type: none">• <i>Brucella abortus</i>, gram negative coccobacilli• Contagious diz (spreads rapidly in unvaccinated herd w/ many abortions)<ul style="list-style-type: none">- Cows only abort once• Cattle >>> sheep, goats, pig & dogs• Incidence in USA 0.2% in 1989; 2/3rds of USA <i>Brucella</i> free• Transmission<ul style="list-style-type: none">- 1° Ingestion- Organism shed in milk & uterine discharges- Venereal trans. rare- <i>Brucella</i> m/ enter body through mucous membranes, conjunctiva, wounds or even intact skin- Mechanical vectors (including man)• Public health - undulant fever	<ul style="list-style-type: none">• Abortion (after 5th months)<ul style="list-style-type: none">- Stillborn calves- Reduced milk yield- Healthy cow- Bulls: seminal vesicles, ampullae & epididymides & testes- Sequelae<ul style="list-style-type: none">- Retained placenta- Mastitis- Lameness 	<ul style="list-style-type: none">• Culture of <i>B. abortus</i> from fetal lung, abomasum, or placenta, uterine or mammary secretions• Standard plate or tube serum agglutination test<ul style="list-style-type: none">- 1:100 agglutination - unvac.- 1:200 for vaccinated animals 	<ul style="list-style-type: none">• Report to State & Feds• Quarantine & slaughter all reactors in herd diagnosed positive to brucellosis 
Contagious abortions, ingestion • Reportable Dx: Culture, Agglutination test Tx: Screening, Quarantine & Slaughter Prevention: B free, Strain 19 vac., Rt ear tag		<ul style="list-style-type: none">• Screening tests:<ul style="list-style-type: none">- BRT (Brucella milk ring test) every 3-4 mo to ID infec. dairy herds<ul style="list-style-type: none">- Pool milk of herd & test- Positive herds - individual blood tested on all- Reactors - slaughtered- MCT (market cattle testing): for nondairy herds<ul style="list-style-type: none">- Collect sera from cattle for slaughter at markets- Reactors are traced to herd of origin & all animal tested- Reactors slaughtered• Brucella free herds maintained by BRT (dairy) & MCT (nondairy) & slaughter<ul style="list-style-type: none">- 2-3 successive neg. tests given at regular intervals	Protect herd: <ul style="list-style-type: none">• Replacement - vaccinated calves or nonpregnant heifers• If must, have pregnant & fresh cows from brucellosis-free areas (seronegative)• Isolate replacement for ≥ 30 d & retest before adding to herd Vaccination: <ul style="list-style-type: none">• <i>B. abortus</i> Strain 19 to calves 4-12 mos old<ul style="list-style-type: none">incr. resistance to infec. (not complete)- Small % develop antibodies that m/ persist for yrs. (confuses Dx tests)- USDA tattoo in rt. ear of vaccinated animals 	
Listeriosis abortion C3T 580; IM 1559; BR 660; Br 471; R-M 296; VC/T 356 ★★ Spoiled silage Culture	<ul style="list-style-type: none">• <i>Listeria monocytogenes</i><ul style="list-style-type: none">- Gram pos. pleomorphic coccobacilli• Placentitis & septicemia kill fetus (often retained several ds before expulsion)• Sporadic < 15%• Winter• Spoiled silage (elev. pH enhances growth of org.)• Public health - aborted tissues infect people (handle w/ care)	<ul style="list-style-type: none">• Encephalitis or abortion - adults• Septicemia - fetuses & neonates• Late abortions in last 2 mo of gestation• Fever• Depression• RP (retained placenta)• Endometritis• Often dam shows no signs 	<ul style="list-style-type: none">• Hx (history), CS• Culture readily from aborted fetus (serovars 1 & 4b)• Impression smears (Gram pos. pleomorphic coccobacilli) 	<ul style="list-style-type: none">• Transient, tends to resist reinfection• Tetracyclines (m/b in rest of pregnant animals in herd)• Segregate aborting animals• Remove fetuses & placentas from premises Prevention: <ul style="list-style-type: none">• Avoid spoiled silage feeding 
		PH • Infectious to man	<ul style="list-style-type: none">• Postmortem:<ul style="list-style-type: none">- Autolyzed fetus- Gray-white hepatic foci (0.5-1 mm)- Placentitis & endometritis (histo.)	











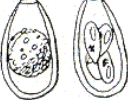
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Bovine abortion agents

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Epizootic bovine abortion (EBA), Foothill abortion Mk 654; C3T 455; IM 1554; BR 794; DC 339; R-M 260, 298; VC/T 363 	<ul style="list-style-type: none"> • Late abortn. in foothills of Calif. • Cause: ? Not <i>Chlamydia psittaci</i> - Tick (<i>Ornithodoros coriaceus</i>) vector - Calif, Nevada, Oregon, N. Mex. • Pathophysiology - Transformation & proliferation of fetal lymphocytes & macrophages - IgG & IgM elevated - 90 days for fetal lesions (so no abortion if infection after 6 months) 	<ul style="list-style-type: none"> • Late abortion (6-7 months) or • Weak calves (especially from heifers) • Cows show no CS 	<ul style="list-style-type: none"> • Hx (tick), CS • Postmortem: - Enlarged spleen • Pathologic exam of fetus - ↑ IgG in fetal blood • No serologic test because agent unknown 	<ul style="list-style-type: none"> • Chlortetracycline reduces rate of abortion Chlortetracycline Prevention & control: • Seldom abort in subsequent pregnancies • No vaccine • Expose heifers to tick before breeding • Change from spring to fall calving (reduces exposure to tick only during last trimester) 
Ureaplasma IM 1562; BR 908; R-M 282, 298; VC/T 357; T 282 	<ul style="list-style-type: none"> • Infection common, abortion - rare: Small bacterium w/o cell walls, ability to hydrolyze urea differentiates it from mycoplasma, Assoc. w/ granular vulvitis & abortion in cattle • CS: Reddish nodules in vulvar mucosa, mucopurulent discharge, not systemically ill, abortions • Dx: Isolate organism from genital mucosa, placenta or fetal stomach or lung • Tx: Tetracycline infusions of uterus 			
Sarcocystis IM 1563; BR 1191; VC/T 361 	<ul style="list-style-type: none"> • See Gen 261; <i>Sarcocystis cruzi</i> (protozoan); carnivore - cattle life cycle, ingestion of carnivore feces, protozoa usually encysts in muscle w/ no CS • CS: most cattle infec. w/ sarcocystis, but show no CS of infection; depression, anorexia, wt. loss, lameness, hair loss, death; abortions in late gestation • Dx: FA of protozoa in cotyledon or caruncle • Tx: none developed • Control: keep canine or feline feces away from cows, & don't let carnivores eat placenta, aborted feces or ruminant carcasses 			
Toxoplasmosis (IM 1568; BR-hb 461, BR 1201; Br 246) • <i>Toxoplasma gondii</i> (protozoan) Abortion not well documented in cattle, not important cause, but a rule out				
Mycoplasma IM 1560; DC 336; R-M 288; T 288 ★★	<ul style="list-style-type: none"> • <i>Mycoplasma bovis</i>, <i>Mycoplasma bovigenitalium</i> common in genital tract. Transmission m/b venereal • CS: Infertility more common than abortion, Abortion, Granular vulvovaginitis, endometritis • Dx: Placentitis & fetal pneumonia, Isolate Mycoplasma from genital tract, milk, placenta or fetus (not diagnostic), Eliminate other causes • Tx: Tetracycline or Tylosin 			
Chlamydial (VC/T 364; R-M 279) • Experimental abortion, not sure if natural				
Bluetongue (IM 1552; R-M 258, 298; VC/T 351) • Infection common, but fetal infection rare, if fetus infection - CNS teratogenic (hydroencephaly), fetal death, mummification or abortion				
Bovine protozoal (Neospora) abortion IM 1565; DC 339; VC/T 359 	<ul style="list-style-type: none"> • Newly recognized, <i>Neospora</i> (protozoa similar to <i>T. gondii</i>), Major problem in California, 4-6 mo (3-9) of gestation, Transmission unknown • CS: Sporadic, multiple or storms of abortions, Only clinical sign, Year round abortions, Occasional live calves w/ protozoal encephalomyelitis, CNS: dysfunction, limb paresis, unable to stand, BAR, m/ live several wks w/ supportive Tx • Dx: Hx, CS, PM: Fetuses - autolyzed, Histopath of fetal brain • Tx: No effective Tx • Control: Difficult bec. life cycle & mode of transmission unknown 			