Managing Infectious Subfertility in Expanding Dairy herds

John Mee
Teagasc, Moorepark Dairy Production Research Centre
The Four Pillars of Dairy Herd Fertility

- Management
- Nutrition
- Genetics
- HERD HEALTH
Herd Health - Infectious Diseases

“The Big Six”

- **BVD** - Bovine virus diarrhoea virus
- **IBR/IPV** - Bovine herpes viruses (BHV-1,4)
- **Johne’s** - *Mycobacterium avium* subsp. *paratuberculosis*
- **Leptospirosis** - *Leptospira interrogans* serovar *hardjo*
- **Neosporosis** - *Neospora caninum*
- **Salmonellosis** - *Salmonella dublin, typhimurium*…
Infectious Causes of Abortion

- BVD: 6.4%
- Salmonella: 6.1%
- Leptospira: 4.7%
- Neospora: 5.8%

DAFF (2007)
Infectious Causes of Respiratory Disease

- BVD (35%)
- RSV (63%)
- IBR (33%)

DAFF (2007)
1. Bovine Viral Diarrhoea

*Signs depend on stage of pregnancy/age*

- Mucosal disease - Persistent infection (PI)
- Repeat breeders
- Abortions/IUGR/Mummification
- Reduced yield, increased SCC
- Deformed calves - neurological/ocular
- Immunosuppression
- Scour/pneumonia/illthrift in calves/weanlings
- Haemorrhagic syndrome
Risk factors for entry of BVD into a dairy herd

Open herd
- PI animal
- ‘Trojan cow’
- Large herds
- Transiently acutely infected animal

Other animals - sheep, biting flies

Equipment - nose tongs, gloves, needles
2. IBR/IPV

*Infected cattle become latent carriers and can relapse*

**Calves/Weanlings**
- High temperature
- Oculonasal discharge
- Coughing
- Pneumonia

**Cows**
- Milk drop
- High temperature, Conjunctivitis
- Infertility – repeat breeders
- Pneumonia
Risk factors for entry of IBR into a dairy herd

- Added females
- Bull (semen)
- Contiguous animals
- Aerosol (4m)
- Multi-shot injection devices
3. Johne’s Disease

Signs generally only seen in older cattle

• Loss of body condition
• Poor milk yield
• Reduced fertility
• Diarrhoea
• Increased culling
Risk factors for entry of JD into a dairy herd

Acquisition of an infected animal
• Purchase/non-purchase
• Added from multiple sources
• Herd depopulation (complete/partial)
• Large herd size
• Expanding herd
• Pregnant heifer/cow and foetus
• Bull
• Imported animals/progeny of imports
‘Borrowed’ colostrum
4. Leptospirosis

- Abortion - underestimated diagnosis rate
- Milk drop syndrome - also poor yield, SCC
- Perinatal mortality - also weak calves
- Infertility - repeat breeders
- Zoonosis - Safety, Health & Welfare at Work Regulations (1993)
Risk factors for entry of Leptospira into a dairy herd

Transmission rates are highest in summer
Carriers can spread lepto. in urine for over a year
Lepto survive up to 6 mths. in wet conditions.

• **Water course access** - unfenced (eightfold)
• **Co-grazing with sheep** - regional (sixfold)
• **Stock bulls** - 70% of dairy farms (fourfold)
• **Open herd** - most herds (twofold)
• **Large herds** - > 60 cows
5. Neosporosis

Stage of pregnancy at infection determines outcome

- Infertility - embryo mortality (repeat breeders)
- Abortion - 3-7 mths., re-abortion
- Stillbirths - myocarditis, encephalomyelitis
- Deformed calves - encephalitis, no suck, recumbent
- Healthy PI calves
- Mummified fetuses
- Milk drop
- Neonatal paralysis in dogs.
**Risk factors for entry of Neospora into a dairy herd**

- Parasite found in ruminants & carnivores
- Sources of infection: transplacental infection
  - canid faeces
  - purchased female cattle
- Infected for life - persistent infection
- Cattle do not shed the organism
- Reactivation of infection causes disease
6. Salmonellosis

Abortion
- Large herd
- Mid to late term
- October - December
- Multiple cases
- Older cows
- Retained placenta
- Decomposed, rotten foetus
Risk factors for entry of Salmonella into a dairy herd

- Region
- Carrier animals (S.d)
- Around calving
- Brought-in slurry
- Purchased feed
- Wild birds access to stored feed & water (S.t)
- Cats, Vermin
Biosecurity
(“When Buying in think Buy-o-Security”)

- Bioexclusion
- Biocontainment

- Global/EU
- National
- Farm-specific “Fortress farming”
- Risk-based management
Bioexclusion

Risk factor analysis
• Added animals
• Contiguous animals
• Water sources
• Wildlife
• Slurry, etc…

Risk reduction
Control measures to prevent infectious agents entering your herd.
1. Added Animals

• Select source *herd*
  Limit number of herds & buy direct
• Select source *animals*
  Young, non-pregnant & home-bred
• *Test* and sample source animals
  Mandatory and voluntary testing
• *Quarantine* and medicate
  Within one month of purchase
Pre-movement Test Options

- *Tuberculosis*
- *Brucellosis*

- Bovine virus diarrhoea (antibody/virus)
- Johne’s disease (dam)

- IBR (virus)
- Neospororosis
- Salmonellosis
- Leptospirosis
- Mycoplasmosis
Post-movement (<30d)

- Quarantine
- Test/ Re-test
- Medicate
Quarantine

• Pre-movement, if feasible
• For 4 weeks
• Until brucellosis results clear
• By individual source herd
• In dedicated isolation unit
• On vacant out-farm
• If pregnant, until calved
• Regular inspections
Post-movement Testing

- *Brucellosis*
- Tests not conducted premovement: BVD, JD
- Pregnancy
- Offspring testing –BVDV, Neospora.
Medication

To home herd status

- Antimicrobial
- Anthelmintic
- Antiseptic
- Ectoparasiticide
- Vaccination
2. Contiguous Animals

Stock-proof boundary fencing

- Home and out-farms
- Secure natural boundaries
- Double fencing
- 3m separation
Human Health - Zoonoses

- Brucellosis
- (Johne’s)
- Salmonellosis
- Leptospirosis

- Abortions
- Retained placenta
- Scouring calves/cows
- Urine
- Raw milk
Take Home Messages

Biosecurity = Bioexclusion + Biocontainment

Primary Risks
• Added animals
• Sick/aborted animals
• Carrier animals

Control Measures
• Closed herd
• Pre/post-purchase screening
• Active surveillance

In the Future?
• Voluntary Disease Accreditation
Conclusions

• **Herd expansion** increases the risk of infectious infertility

• **Assess the risks** for your herd with your veterinary practitioner

• **Manage these risks** in conjunction with your local veterinary practitioner
When buying in Think Buy-O-Security