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Definitions

- **Lactation**: Period of time milk is produced
- **Dry Period**: Period between end of lactation and calving
- **Transition Period**: 30 days before calving to 30 days after calving
- **DIM**: Days in milk
- **DMI**: Dry matter Intake
- **Heat**: Estrus
- **AI**: Artificial Insemination
- **Services**: Matings (usually AI events)
- **Days Open**: Days not Pregnant
- **ADG**: Average Daily Gain
- **Fresh Cow**: Recently calved cow
- **TMR**: Total Mixed Ration
General Introduction
Beef vs Dairy

[Images of a cow and a dairy cow]
It’s a Dairy Cow’s Life

Birth → Milk Feeding 6 – 8 weeks → Group Housing → Heat Detection → Al 13-15 months → Transition 23 months

Transition 60 day Dry period

Dry-Off 305 days Post calving

PD 30 – 50 days Post-AI

Heat Detection and Al 50 – 70 days Post-calving

Milking Transition

Calving 1st -24 mo Ideal- 365 d
Critical Control Points

- **Risk of Death**
- **Risk of Culling**
- **Interventions**

**Birth** → **Milk Feeding** (6–8 weeks) → **Group Housing** → **Heat Detection** → 
**AI** (13-15 months) → **Transition** (23 months)

**Transition** (60 day Dry period)

- **Dry-Off** (305 days Post calving)
- **PD** (30–50 days Post-AI)
- **Heat Detection and AI** (50–70 days Post-calving)
- **Milking Transition**
- **Calving** (1st -24 mo Ideal- 365 d)

**Risk of Death**

**Risk of Culling**

**Interventions**
Birth

- Dystocia (difficult birth)
- Especially first calf heifers
- Fetal oversize (genetics)
- Fetal malpositions (next slide)
- Uterine inertia (Ca$^{2+}$ deficiency)
- Obstructive dystocia (fat/dilation/torsion)
- Dystocia impacts milk yield/ days open/services per conception/cow deaths
- Direct Cost up to $380/case

(Dematawena and Berger, JDS, 1996)

http://www.cvmbs.colostate.edu/ilm/outreach/calving/_notes/whatisdystocia.htm
Critical Control Points

- **Prevention:**
  - GENETICS:
    - Calving ease sire for heifers
  - NUTRITION:
    - Heifers 60% of mature BW @ AI
    - Fat cows @ calving = milk fever
    - Fat cows = obstructive dystocia

- **Intervention (Education):**
  - Lack of progress
  - Fetal Malpositions
  - Distress: fetal/ maternal
  - Work Cleanly/ Use lube/ disinfectant
  - Know your limits
Birth to Weaning

- 8 – 10% calves die before weaning (Goal < 5%)
  - Diarrhea = 60% of deaths
  - 25 – 30% Incidence
- Infection/ Nutrition/ Stress
- Rota Virus: 3 – 21 days
- Corona Virus: 5 – 21 days
- E. coli: < 5 days old
- Cryptosporidium: 1 – 3 weeks
- Cl. perfringens type C: < 2 weeks
- Salmonella: > 10 days
- Respiratory disease from poor ventilation
Critical Control Points

- **Colostrum Feeding (65%)**
  - 1 gallon within first 6 hours
  - Pooled Colostrum (colostrumeter)
  - Older vaccinated cows
  - Pasteurized
  - Johnes/ Mycoplasma/ EBL
  - Serum TP > 5.2 mg/dl OR ZST test
  - FPT = 2X Mortality Rate

- **Hygiene (30%)**
  - Clean and Dry
  - Good Ventilation

- **Vaccination (5%)**
  - Respiratory Dx: IBR/ BRSV/ PI3
  - Intranasal- Maternal Ab/ Immature
  - DOES NOT SUBSTITUTE FPT
Weaning to Breeding

- Only 1-2% expected deaths after weaning
- 50% of deaths due to respiratory disease
- Calves achieve 50% of adult height by 6 months of age
- Must ensure adequate rumen development: Roughage!
- Must ensure adequate growth rate: 1.8 lbs/day
- Breed at 55–60% mature BW
- Calve @ 85% mature BW

http://pubs.caes.uga.edu/caespubs/pubcd/b831-w.htm
### Critical Control Points

**Management Practices for Dairy Replacement Heifers**

<table>
<thead>
<tr>
<th>Practice</th>
<th>Age</th>
<th>Booster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehorning</td>
<td>4-10 days</td>
<td></td>
</tr>
<tr>
<td>Removing extra teats</td>
<td>2-6 weeks</td>
<td></td>
</tr>
<tr>
<td>Disinfect navel</td>
<td>immediately after birth</td>
<td></td>
</tr>
<tr>
<td>Freeze brand</td>
<td>4-6 months</td>
<td></td>
</tr>
</tbody>
</table>

**Vaccinations: Decline in maternal Ab and maturing immune system**

<table>
<thead>
<tr>
<th>Vaccination</th>
<th>Age</th>
<th>Booster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brucellosis</td>
<td>2-6 months</td>
<td>no</td>
</tr>
<tr>
<td>Clostridial Diseases</td>
<td>2-6 months</td>
<td>yes</td>
</tr>
<tr>
<td>Leptospirosis (5 strain)</td>
<td>9-12 months</td>
<td>annually</td>
</tr>
<tr>
<td>IBR</td>
<td>8-14 months</td>
<td>annually</td>
</tr>
<tr>
<td>PI-3</td>
<td>8-14 months</td>
<td>annually</td>
</tr>
<tr>
<td>BVD</td>
<td>8-14 months</td>
<td>annually</td>
</tr>
<tr>
<td>Breeding</td>
<td>13-15 months</td>
<td></td>
</tr>
</tbody>
</table>

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Heat Detection

**Behavior:** Alert, restless/ bawling/ shortened feeding time/ aggressive: - butting/ withholding milk/ increased urination/ **mounting other cows**/ chin pressing on other cows sniffing/ licking of vulva/ lip curling

**External Genitalia:** Swollen, reddened vulva/ mucus discharge
Critical Control Points

- Visual detection: 20 min
- 1x/day observation 60% heats
- 2x/day observation 80% heats
- 3x/day observation 90% heats
- 4x/day observation 100% heats

- Pedometers
  - Cows in estrus more active
- Tail Paint
- KAMAR® Heat detector
- Bovine Beacon®
- Teaser Bulls (Gomer Bull)
Estrus Synchronization

MGA-PGF System:
- Feed MGA 0.5mg/head/day
- PGF Injection
- Heat detect & breed

1. Pronestaglandin Injection
2. Estrus detection & AI
3. Turn in Bulls

Day of Schedule:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Artificial insemination
Artificial insemination
Critical Control Points

- Cow in estrus
- Reproductive Health
- Disease Free
- Optimal body weight

- Fertile Bull
- Calving Ease
- High Genetic Merit
- Disease Free

- Semen Storage
- Liquid Nitrogen (-196°C)
- Semen Identification
- Correct Handling

- Clean Equipment

- Training and practice!!
- Be Gentle: Avoid force
- 2-step process
- Deposit semen just through cervix

- Adequate restraint
- Work cleanly
- Work Gently
- Take your time

- Thaw Semen
- 33°C to 35°C (95°F)
- 45 – 60 s
- Avoid Cold Shock

10 – 15 minutes
### Pregnancy Diagnosis

<table>
<thead>
<tr>
<th>Days Post AI</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 21-24</td>
<td><em>Milk Progesterone</em></td>
</tr>
<tr>
<td>Day 26-30</td>
<td><em>Ultrasound</em></td>
</tr>
<tr>
<td>Day 40-60</td>
<td><em>Rectal Palpation</em></td>
</tr>
<tr>
<td>&gt; Day 72</td>
<td><em>Estrone Sulfate blood test</em></td>
</tr>
</tbody>
</table>
Pregnancy Diagnosis

Day 37

Day 45

Day 50

Day 70

http://www.wisc.edu/ansci_repro/lab/lab12_03/cow1001.html
Transition

- Good transition essential for cow to reach potential
- **Crucial**: Minerals AND Intake (Energy)
- Impact disease prevention
  - Newborn calf
  - Fresh cow
- Vaccinations/ Foot Trimming/ Diet changes/ Udder Protection
Critical Control Point: Newborn Calf Health

- Vaccinate pregnant cows
- 2 injections 2 weeks apart at least 2-3 weeks before calving
- Rota/ Corona/ *Cl. perfringens*/ *E. coli*
- Ensure calves receive 1 gallon colostrum in first 6 hours
- Passive transfer of colostral antibodies and local gut protection
- Hygiene at calving:
  - Prevent Johnes Disease
Recap

Risk of Death

Risk of Culling

Interventions

Birth → Milk Feeding 6 – 8 weeks → Group Housing → Heat Detection → AI 13-15 months → Transition 23 months

Transition 60 day Dry period

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Milking Transition

Calving 1st - 24 mo Ideal- 365 d
“Wendell ... I’m not content.”

TAKE A BREAK