Calving Ease – Easier Said Than Done

Ask any mother if giving birth was “easy”. It’s likely this will not be her choice word to describe the experience. Difficult calvings, or dystocia, pose a particular problem not only in terms of pain, but also in terms of the future productivity of the dam and calf.

Economically, ease of calving is one of the most important factors for future profit, especially for first-calf heifers. A high incidence of difficult calvings can reduce herd profitability through increased direct and indirect costs. Direct costs are veterinary fees, cow or calf death and extra labor. Indirect costs aren’t as clear-cut, but could include decreased reproductive performance, milk yield and calf health as well as a reduced future productivity of the newborn.

More than half (51.2%) of calves born to first lactation heifers, compared with 29.4% of calves born to second lactation and greater cows, required assistance during calving (1).

In the US, it’s estimated that around 30% of first calf heifers and 20% of cows second lactation and greater require calving assistance. Rates have been known to be much higher in certain research due to the fact that the definitions of dystocia and calving ease scores vary among countries.

Effects of dystocia on the cow

Understandably, a difficult calving is hard a cow’s future performance. Research has shown that dystocia negatively impacts subsequent production, reproduction and productive life. Let’s take a look at just how much dystocia affects these performance parameters.

Culling and Productive Life (PL) (2):

- Calvings needing assistance or surgery increase culling risk by 18% when compared to unassisted calvings
- Cows with easy calvings experience 2.5 more Productive Life months than cows having difficult calvings ($54 opportunity cost)

Reproduction (3):

- A CE score of 4 versus a score of 1 means approximately 28 more days open ($160 opportunity cost), 0.7 more services to conception and 7.8 more days to first service. The table below outlines the subsequent reproductive performance for CE categories relative to

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<thead>
<tr>
<th>Trait</th>
<th>Calving Ease Category</th>
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<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Calving Interval (d)</td>
<td>0</td>
</tr>
<tr>
<td>Number of Services</td>
<td>0</td>
</tr>
<tr>
<td>Days to first service</td>
<td>0</td>
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*CE scale 1-4 as study was done in the UK
Upon examination of the table above, it’s clear the economic repercussions of dystocia on reproductive performance alone warrant increased focus on mitigating difficult calvings. However that’s not the end of the story. There are also effects on production, and we can’t forget about the baby calf herself!

**Production:**

- 305-d losses in cumulative **milk yield** after a difficult calving range from 300-700 kg (660-1540 lb) and occur mainly in the first half of lactation (4,5,6).
- Logically, a drop in milk yield is accompanied by a reduction in **component yield**. One study showed a loss approximately 24 kg F and 21 kg P ($94 and $123 opportunity cost, respectively) associated with a CE score of 5 versus a score of 1 (5).
- Cows experiencing dystocia have greater **SCS** in early lactation (7).

**Poor baby – Effects of dystocia on the calf**

In addition to being a difficult experience for the cow, hard calvings are traumatic for the calf. Immediate physiological effects of dystocia can include:

- Stillbirth – Approximately 50% of stillbirths are a direct result of a difficult calving (8).
- Hypoxia (deprived of adequate oxygen supply), acidosis, potential trauma.
- Impaired temperature regulation and reduced absorption of IgG from colostrum.

Dystocia calves that make it through the critical first few days of life are at increased risk for health issues throughout calfhood. Compared to heifer calves born to dams having no assistance, calves born to dams having dystocia experience increased:

- Treatment of respiratory disease.
- Treatment of digestive disease.
- Overall heifer mortality before weaning and before first service (9).

**The “hard-pull calf” becomes a cow**

Until recently, the impact of dystocia on the future productivity of the calf was unknown. New research has identified detrimental side effects for the “hard-pull calf” that grows up to become a member of the milking herd. Compared with non-assisted calves, those delivered with assistance:

- Experience a delay in reaching peak milk yield.
- Show a loss in milk production as adult heifers.

In fact, for each 1 CE unit increase, first lactation 305-d milk production decreases by around 280 kg (616 lb)! (10)
The genetic component

Both maternal and paternal genetics play a role in Calving Ease. Sire Calving Ease (SCE) measures the tendency of calves from a particular service sire to be born more or less easily. Industry average SCE is ~8%, meaning ~8% of calvings in first calf heifers are “Difficult” (score of 4 or 5 in the chart to the right) due to genetic influence from the service sire.

When breeding first calf heifers, SCE of the service sire should be emphasized to promote easy calvings. We recommend using FutureStars as all bulls in this program are proven for CE. If using a genomic sire without CE observations, we recommend using sires with SCE 6 or lower.

Alternatively, Daughter Calving Ease (DCE) measures the ability of a particular cow (daughter) to calve easily. With 8% of calvings recorded as ‘difficult’ in the industry, there is also a maternal genetic component creating a range around this number. Some cows have easier calves than others because of their own genetic makeup (who their sire is) regardless of the service sire.

For example, say you’re about to calve 200 heifers, all bred to the same average calving ease sire, but 100 of those heifers are daughters of AltaJENKINS (DCE=4) and 100 are daughters of AltaOLIVER (DCE=10). Based on the influence of the sires of these heifers, you can expect 4 of 100 AltaJENKINS daughters and 10 out of 100 AltaOLIVER daughters will have difficult calvings. 6 more difficult calvings simply because of who the sire of the cow calving was!

DCE should be of particular importance as, if used in a genetic plan over time, can lead to an easier calving herd. Imagine a herd of Holsteins that calves like a herd of Jerseys!

Calving ease is an important component of stillbirths, however, difficult calvings only explain around 50% of all stillbirths. A separate and related trait to DCE is daughter stillbirth (DSB), which has an objective measurement leading to more genetic variation (and thus larger range in sire proofs) than DCE. Easier calvings, resulting in more live calves, are largely controlled by management and environment around calving. But the genetic component is substantial and therefore has its place in genetic plans.

**We can do better**

Relatively simple interventions have the potential to significantly reduce the impact of dystocia on dam productivity and calf mortality, health, and future performance.

Since first calf heifers are most often affected, management should ensure heifers are inseminated around the proper age and body weight and CE should be emphasized in mating sire selection decisions.

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<th>Score</th>
<th>Definition</th>
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<tr>
<td>1</td>
<td>No problem (or unobserved)</td>
</tr>
<tr>
<td>2</td>
<td>Slight problem</td>
</tr>
<tr>
<td>3</td>
<td>Cow needed assistance</td>
</tr>
<tr>
<td>4</td>
<td>Considerable force used to deliver calf</td>
</tr>
<tr>
<td>5</td>
<td>Extreme difficult birth</td>
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Personnel should be trained in regards to the proper timing to intervene. In addition, personnel should be able to identify compromised calves and administer fluids, warm chilled calves, and deliver high quality colostrum immediately after birth. The Standard Operating Procedure should be to treat every calf exposed to dystocia as a compromised calf.

Dystocia hurts, literally for the cow and calf, and figuratively for your bottom line. The profound negative impact dystocia has on dam productivity, combined with the compromised immediate and future performance of the calf, should make all aspects of calving management a large priority on dairies.