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Quality milk and reproductive performance are part of a successful dairy operation's foundation. Understanding how they are related can lead to implementation of management tasks designed to maximize both factors and improve dairy profitability. This article discusses their relationship and its effect on profitability.

How does poor milk quality or mastitis affect reproduction?

The following studies have shown there are many biological possibilities.

- Moore (1991) revealed a negative correlation between clinical mastitis caused by Gram-negative mastitis pathogens (generally environmental) and reproduction due to altered inter-estrous intervals and decreased luteal phase length. Irregular cycles would cause increased variability in hormones essential for establishing a pregnancy.
- Cullor (1990) suggested endotoxins might induce luteolysis and negatively influence conception and early embryonic survival by release of inflammatory mediators.
- Moore and O'Connor (1993) hypothesized Gram-negative mastitis pathogens may stimulate production of prostaglandin F₂, which subsequently would cause luteal regression potentially causing loss of an established pregnancy.
- Oliver (2000 NMC regional meeting) summarized mastitis reduced reproductive performance through variation in hormonal patterns, follicular development, embryonic development, and/or uterine environment.

Mastitis affects reproduction, but how much will it impact a dairy's reproductive performance?

Three studies (Frago (2004), Shrick (2001), and Kelton (2001)) examined the correlation between clinical mastitis cases and a decrease in reproductive performance in early lactation cows (Figure 1).

The results show 8-15% higher conception rates for uninfected animals as compared to those experiencing clinical cases of mastitis. Uninfected animals became pregnant faster with approx. 19-25 less days open.

Animals experiencing mastitis can have decreased conception rates,

MASTITIS IMPAIRS

FIGURE 1

The Effect of Mastitis on Reproductive Performance in Early Lactation Cows

Study	Parameter	Mastitis	Uninfected
Kelton, et. al. 2001*	Conception Rate†	38%	46%
Shrick, et. al. 2001**	Days to First Service	77.3 ± 2.7	67.8 ± 2.2
	Days Open	110 ± 6.9	85.4 ± 5.8
	Services per Conception	2.1 ± 0.2	1.6 ± 0.2
	Conception Rate†	48%	63%
Frago, et. al. 2004***	Days Open	107 ± 5	88 ± 2
	Services per Conception	2.1 ± 0.1	1.6 ± 0.1
	Conception Rate†	48%	63%

* Based on clinical mastitis event within 30 days post insemination

** Based on clinical mastitis before first service

*** Based on clinical mastitis cases

† Conception Rate = Pregnancies/Services (Inverse of Services/Conception from trial data)

but once the animals become pregnant, does mastitis impact pregnancy loss?

(See Ask the Expert for more information on pregnancy loss). Santos et al. (2004) studied the effect of timing of first clinical mastitis on milk production and reproduction. Figure 2 focuses on the results for abortion incidences (%).

Uninfected animals had significantly less abortions than those animals with reported clinical mastitis. There was also a difference in median days open (MDOPN - point at which 50% of the group is pregnant). Uninfected animals conceived approx. 20 days earlier (MDOPN =114) than animals with mastitis (MDOPN =134).

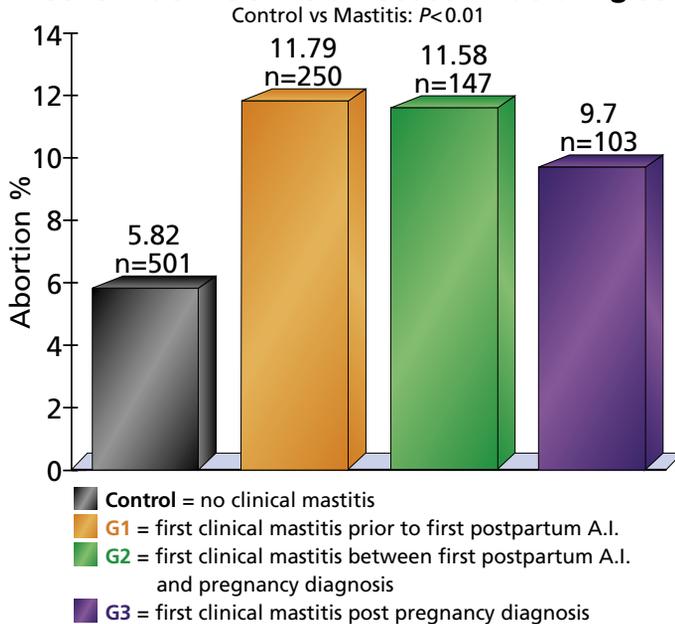
Mastitis can significantly impact conception rates and pregnancy loss, but what is the economic loss associated with the decreased reproductive performance?

Consider the value of a pregnancy to be \$350 and a day open \$2.50. Based on

REPRODUCTIVE PERFORMANCE

FIGURE 2

Effect of Mastitis on Fetal Losses in Lactating Cows



the above research results, mastitis can cause an estimated potential loss of \$50 per animal (approx. 20 more days open x \$2.50) and/or estimated dollar value loss of \$38 (11% abortion incidence or pregnancies lost x \$350). The economic benefits of good udder health extend beyond quality milk and milk production.

What can be done to avoid a drop in reproductive performance and economic loss associated with mastitis?

Good management practices can help prevent mastitis and improve not only udder health and milk quality, but also reproductive efficiency. It is important to focus on close-up heifers, dry cows, close-up cows, fresh cows and early lactation cows. Maintaining clean, dry, comfortable maternity pens and loafing areas are crucial as many of the early lactation infec-

tions occur in the periparturient period, three weeks pre- and post-calving. Good milking hygiene, dry treatments with use of approved udder health products, and machine maintenance all play a role in mastitis prevention. Good nutrition is also crucial; well balanced rations are important in preventing mastitis by keeping the immune system healthy and helping to prevent metabolic disease.

For more information on mastitis prevention talk with your veterinarian or visit the NMC website at www.nmconline.org.

To learn more about ABS Quality Milk System® or Reproductive Management Systems® talk with your ABS Representative, contact ABS Technical Services (absconsulting@absglobal.com), or see our website at www.absglobal.com. 

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