Extending the interval from presynch to initiation of ovsynch in a presynch-ovsynch protocol did not reduce fertility of lactating dairy cows not detected in estrus that received timed artificial insemination

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Introduction

The Presynch-Ovsynch protocol (Presynch: PGF-14 d-PGF; Ovsynch: GnRH-7 d-PGF-56 h-GnRH-16 to 20 h-TAI; Moreira et al, 2001) is the most widely used protocol to synchronize estrus and ovulation for first AI service postpartum in lactating dairy cows (Caraviello et al., 2006). Based on the expected pattern of estrus expression and ovulation after the second PGF injection of Presynch it has been proposed that the ideal time to initiate Ovsynch after Presynch to maximize the fertility of timed artificial insemination (TAI) services is at least 10 and no more than 12 d. In this regard Galvao et al (2007) demonstrated that extending the interval from Presynch to Ovsynch from 11 to 14 d reduced fertility of TAI services by 7-percentage points. In this study the Ovsynch portion of the protocol was modified by replacing the second GnRH injection with an injection of estradiol cypionate to induce ovulation (Heatsynch) and all cows enrolled received a TAI service after synchronization of ovulation. Remarkably, no large scale field study has been conducted to evaluate the reproductive performance of cows synchronized with Presynch-Ovsynch with a 12 versus a 14 d interval from Presynch to the beginning of Ovsynch when cows are inseminated in estrus after Presynch. Thus, the specific objective of this study was to determine if increasing the interval between the Presynch and Ovsynch portion of the Presynch-Ovsynch protocol from 12 to 14 d would reduce the fertility of lactating dairy cows not detected in estrus after Presynch and receiving TAI after completing the Ovsynch protocol.

Materials and Methods

Lactating dairy cows (n=1,817) from 4 commercial farms in New York (Farm A=218, B=1,031, C=258, and D=310) were enrolled in the Presynch-Ovsynch protocol to receive TAI at 73 ± 3 DIM. Cows were blocked by parity and randomly assigned to 2 groups: PS12 (n=909; PGF-14d-PGF-12d-Ovsynch-56) or PS14 (n=908; PGF-14d-PGF-14d-Ovsynch-56). Timed AI was performed approximately 16 h after GnRH. Cows detected in estrus at any time from the second PGF injection of Presynch until the day before TAI were inseminated. Pregnancy was assessed at 39±3 d after AI using transrectal ultrasound.

Results

The percentage of cows receiving TAI was greater (P<0.001) for PS14 than PS12 (55.2 vs 48.5% respectively), was greater (P<0.001) for farm D (70.7%) than A (60.1%) and C (57.8%), whereas farm B (43.0%) had the lowest percentage of cows receiving TAI. More (P<0.001) multiparous (58.4%; 661/1131) than primiparous (41.0%; 281/686) cows received TAI. There was no treatment by farm interaction (P=0.74) or treatment by parity interaction (P=0.96) for the percentage of cows receiving TAI. Pregnancies per AI for cows receiving AI after detection of estrus was similar (P=0.41) for PS12 and PS14 (34.6 vs 37.4% respectively), was not affected (P=0.44) by farm, and was similar (P=0.36) for primiparous and multiparous cows (37.5 vs 34.5% respectively). Pregnancies per AI for cows receiving TAI after completing the Presynch-Ovsynch protocol were similar (P=0.98) for PS12 and PS14 (35.4% (156/441) vs 35.5% (178/501), respectively), tended to differ by farm (P=0.10), and were similar (P=0.50) for primiparous and multiparous cows (37.1 vs 34.8% respectively). Also, there was no treatment by farm (P=0.91) or treatment by parity interaction (P=0.34) for P/AI after TAI.

Significance

Extending the interval from the second PGF injection of Presynch to the initiation of the Ovsynch protocol by 2 d (from 12 to 14 d) did not reduce fertility of lactating dairy cows that were not detected in estrus and completed Presynch-Ovsynch to receive TAI.