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Effects of sequential injections of GnRH at 17 and 24 d after AI on progesterone concentration and pregnancy losses.

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Objectives of the current study were to determine whether sequential injections of GnRH at 17±3 and 24±3 d after pre-enrollment artificial insemination (AI), would reduce pregnancy losses between 31±3 and 66±3 d after AI by increasing progesterone concentrations (P4) at 24±3 and 31±3 d after AI. Lactating cows from two dairies (MN-Jersey cows and TX-Holstein cows) were enrolled in the study at 17±3 d after pre-enrollment AI. At enrollment cows were grouped by parity and number of AI and assigned to 1 of 3 treatments in a ratio of 1:2:1. Cows assigned to the 2GnRH treatment received 100 µg of GnRH at 17±3 and 24±3 d after pre-enrollment AI; cows assigned to the 1GnRH treatment received 100 µg of GnRH at 24±3 d after pre-enrollment AI; and, control cows received no GnRH. All cows were examined by ultrasound at 31±3 d after pre-enrollment AI and those diagnosed pregnant were re-examined 66±3 d after pre-enrollment AI. Blood samples were collected from a subgroup of cows at 24±3 (MN-123 cows and TX-160 cows) and 31±3 (MN-142 cows) d after pre-enrollment AI for determination of P4. There were 514 2GnRH, 1099 1GnRH, and 648 control cows pregnant at 31 d after pre-enrollment AI and re-examined at 66 d. At 24 d after pre-enrollment AI P4 was not (P=0.7) affected by treatment (7.5±0.2ng/mL). At 31 d after pre-enrollment AI P4 was greatest ($P \leq 0.01$) for 2GnRH cows (8.5±0.4ng/mL), but was not (P=0.16) different between 1GnRH (6.2±0.4 ng/mL) and control (7.0±0.5ng/mL) cows. Treatment (P=0.99) and site (P=0.81) did not affect pregnancy loss, but the interaction between treatment and site affected (P=0.04) pregnancy loss. In the MN-dairy 2GnRH (7.5%) cows had the smaller pregnancy loss than 1GnRH (11.8%) and control (10.4%) cows and in the TX-dairy 2GnRH (11.9%) had the greater pregnancy loss than 1GnRH (7.9%) and control (8.8%) cows. There was a quadratic correlation between P4 at 31 d after AI and pregnancy loss [pregnancy loss=87.4-(26.5xP4)+(2.1x$P4^2$); r^2=99.7%]. Jersey cows treated with GnRH at 17 and 24 d after AI had greater P4 at 31 d after AI which reduced pregnancy losses, but Holstein cows did not benefit from GnRH treatment after AI.