

on their practical experience with this new instrument for at least 1 year. The data analysis (SPSS Version 22; IBM) compared the veterinarians' experiences by gender, age, and frequency of dystocia interventions.

### Results

The majority (n=30, 56.6%) of the respondents were female veterinarians. Mean year of graduation was 2003 (female = 2007; male =1990). The age of the practitioners was evenly distributed (51 % under 40 years; 45 % are older). Seventy-three percent of females and 22% of males were less than 40 years of age. Most of the practitioners (64%) stated that GYNstick was recommended to them by another colleague. Twenty-six percent were informed by advertising and 20% by scientific literature. Females recommended the tool more often than males (70% vs. 57%,  $p=0.23$ ;  $\chi^2$  test). The geometrical mean of dystocia cases per week was 1.52 (female, 1.44 vs male, 1.63;  $p=0.206$ ; t-test). For 83% of the responders, the correction of a twisted uterus was the most frequent indication for using the instrument. This was independent of sex ( $p=0.46$ ,  $\chi^2$  test). Correction of malpositionings was the second most frequent indication (65%). Females used the GYNstick more frequently for malpositioned calves than males ( $p=0.04$ ,  $\chi^2$  test). The third most common indication was displaced extremities (69%). Lastly, 95% of users reported the avoidance of fetotomy as the 4th most important indication for using the GYNstick. The numbers of dystocia/week did not influence these results. Most veterinarians (92.5 %) thought that the instrument reduced the duration of dystocia, without differences between males and females ( $p=0.9$ ,  $\chi^2$ -). **Forty-three percent of respondents estimated a 30% time reduction. Forty-four percent estimated a 30-**

**50% time reduction.** The perceived reduction in duration of dystocia was independent of sex ( $p=0.9$ ,  $\chi^2$  test. Sixty-five percent of the vets felt that the instrument did not impact the number of live calves born. For the remaining veterinarians, 24% thought that number of calves born alive was 30% greater after implementing this tool. Nine percent of veterinarians estimated an increase in live calves of 50% (no gender differences;  $p=0.1$ ,  $\chi^2$ -), while 84% of the practitioners were convinced that the instrument is a more effective life-saver than traditional obstetrical instruments. Forty-five percent of the practitioners replied that up to 30% and more stillborns can be avoided by using the tool. The numbers of dystocias/week do not influence these results. "Making life easier" is a very important aspect for practitioners. All users were convinced that it is less exhausting to use in comparison to other tools or manual interventions. In addition, 21% said that muscle efforts are reduced by 50 to 80%. Interestingly, this outcome was not impacted by sex of the veterinarian ( $p=0.1$ ;  $\chi^2$ -). All respondents replied that they would recommend (81% full agreement, 19%, recommend if asked) the tool to their colleagues. Interestingly, females recommended it more often than male veterinarians (96% vs 70%;  $p=0.01$ ,  $\chi^2$ -).

### Significance

A new obstetrical instrument, the GYNstick, was well accepted among veterinary practitioners in Germany and Austria. Most users were female and graduated in the last 14 years. All respondents would recommend it to their colleagues. Veterinarians should consider using this tool to reduce the physical impact of difficult calvings on themselves as well as newborn calves.

## Utilization of muscle tissue in periparturient dairy cattle as assessed by ultrasonographic measurement of muscle thickness and plasma creatinine concentration

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### Introduction

High producing dairy cattle experience a state of negative energy balance in early lactation. Dairy cattle address this metabolic challenge by increasing the rate of fat and protein mobilization. Previous studies have emphasized the

rate of fat mobilization and consequently the rate of protein mobilization has not been fully investigated. The primary objective of this study was therefore to characterize the change in muscle mass during early lactation using ultrasonography and plasma creatinine concentration (creatinine).

## Materials and Methods

The maximum thickness of the longissimus dorsi and gluteus medius muscles of 106 late periparturient Holstein-Friesian cattle (34 primiparous and 72 multiparous) were determined ultrasonographically at -3, 0, 3, 7, 14, 21, 28 days relative to day of parturition. Plasma creatinine was measured on the same days as ultrasonography. Mixed models analysis was used to explore changes over time using repeated measures and the linear association between variables of interest.  $P < 0.05$  was declared significant.

## Results

Mean longissimus dorsi muscle thickness at the loin area in primiparous and multiparous cattle at 28 days postpartum decreased by 3.7 and 7.7mm, respectively, compared to values 3 days prepartum ( $40.3 \pm 5.1$ ,  $37.8 \pm 4.9$ mm). Mean longissimus dorsi muscle thickness at the thoracic area declined by 6.6 and 8.5mm, respectively, compared to values

3 days prepartum ( $45.2 \pm 5.3$ ,  $45.0 \pm 5.2$ mm). Mean gluteus medius muscle thickness was also decreased at 28 days postpartum, but to a smaller extent. Plasma creatinine in primiparous and multiparous cattle at 28 days postpartum decreased by 0.24 and 0.29 mg/dL respectively, compared to values 3 days prepartum ( $0.97 \pm 0.16$ ,  $1.02 \pm 0.12$ mg/dL). Mean maximal longissimus dorsi muscle thickness at the thoracic area in mm was positively and linearly associated with plasma creatinine in mg/dL, such that  $\text{thickness} = 23.9 + 19.2 \times (\text{creatinine})$ .

## Significance

Ultrasonographic measurement of maximum longissimus dorsi muscle thickness provides a promising practical and clinically useful on-farm method for monitoring the rate of protein mobilization in periparturient dairy cattle. Ultrasonographic measurement of muscle thickness complements ultrasonographic measurement of backfat thickness as a measure of the rate of fat mobilization.

# Evaluation of a new portable blood cow side test for calcium monitoring in cows

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## Introduction

Cows around calving are very vulnerable and susceptible for any metabolic disturbances. To identify cows at risk for hypocalcemia, a new portable on farm photometer was developed to enable the veterinarian to make on farm cow side decisions. The aim of this study was to evaluate this cow-side test for calcium measurements of dairy cows.

## Materials and Methods

A new hand held photometer (Vetphotometer, Quidee.com) was designed for farm evaluations on cows at risk for the major problem areas of dairy cows (fat mobilization, hypocalcemia, and hypomagnesemia) or to serve as a prognostic parameter for successful surgical interventions (I-lactate). Two studies have been conducted to prove the accuracy of this new tool for calcium measurements. In this first study, 20 heparinized blood samples from lactating cows have been submitted to 2 different testing photometer protocols. The trial group was evaluated by the Vetphotometer at 520 nm with modified detergent (Diaglobal) and compared to the results obtained by spectral photometric evaluations (Spectral

photometer LS 500; 578 nm) that are regarded as “gold standard”. In a second study 15 heparinized blood samples from Holstein cows were collected for calcium measurements run either by Solaar AAS (Atomic Absorption Spectrophotometry; Thermo Fisher) or by the digital Vetphotometer (quidee).

## Results

In the first study, a very high correlation between the 2 different photometric calcium measurements was obtained. A linear correlation of  $0.9717x + 0.0152$  mmol/L was achieved. In the second trial a linear correlation of 0.9476 of total calcium between the 2 methods was achieved.

## Significance

A new digital calcium cow side test showed high correlation and accuracy compared to standard laboratory analyses. This new approach serves as a quick testing method for calcium in the blood plasma of lactating cows to help better estimate the need for suitable treatment and feeding management decisions. Monitoring calcium levels in dairy cow can be done very easily, quickly and with a high accuracy cow-side.