

Evaluation of Failure of Passive Transfer in neonatal dairy calves in the Netherlands.

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INTRODUCTION

Colostrum management is the single most important management factor in determining calf health and survival. Although good progress has been made in the past years, there remains a considerable opportunity for many dairy farmers.

A recent US study reported Failure of Passive Transfer (FPT) affected 15.6% of calves tested, indicating a need for continued efforts to improve colostrum management¹.

OBJECTIVE

The objective of this study was to obtain prevalence data on FPT in dairy calves in the Netherlands and to identify risk factors for FPT at herd level.

MATERIALS AND METHODS

Neonatal dairy calves (n = 274), aged 2-7 days, from several commercial farms in the Netherlands were enrolled in the study. The IgG concentration in serum samples collected from the calves was evaluated at the Royal GD Deventer (The Netherlands) with a validated turbidimetric assay.

Cut-off values for FPT and for evaluation of colostrum management:

- ▶ FPT cut off: IgG < 10 g/L² (Gay, 1983).
- ▶ Respiratory protection cut off: IgG > 15g/L^{3,4}.
- ▶ Standards defined by Godden et al.(2019): excellent (≥ 25.0 g/L), good (18.0-24.9 g/L), fair (10.0-17.9 g/L), and poor (<10 g/L)⁵.

Information gathered on each farm to identify risk factors for FPT: number of animals (lactating cows, youngstock raised on the farm, animals younger than 1 year, animals aged 1-2 years), average age at 1st calving, vaccination (respiratory disease, neonatal diarrhoea), prevalence of calf diseases (diarrhoea, respiratory disease), neonatal mortality. To evaluate the risk factors for FPT the Wilcoxon rank sum test was used.

Depending on the threshold used, 21% to 44% percent of neonatal calves experienced Failure of Passive Transfer. There is still a considerable opportunity to improve the colostrum management practices on Dutch dairy farms.



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RESULTS

The average and median of the serum IgG level in the sampled animals: 16 g/L (range 0-35 g/L).

Proportion of calves with FPT depending on the cut off value (10g/L IgG or 15g/L IgG) is shown in **Fig.1**.

Distribution of colostrum quality categories (based on Godden et al.2014) among the tested calves is shown in **Fig.2**.

These results were worse than a proposed distribution reflecting good colostrum management (>40% excellent, ~30% good, ~20% fair and <10% poor). On farms with good colostrum management score, the age at first calving of the heifers was reduced by 1.09 months compared to other farms (p=0.013; Wilcoxon rank sum test).

AUTHORS' AFFILIATION

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REFERENCES

1. Urie et al. J Dairy Sci 2018;101:9168-84;
2. Gay C. Proc. 4th Int. Symp. Neonatal Dis. Vet. Infect. Dis. Org., Saskatoon, SK, Canada; 1983: 346-364;
3. Furman-Fratczak et al., J Dairy Sci 2011; 94:5536-43;
4. Wlodek et al. Prev. Vet. Med. 2014;113:231-240;
5. Godden et al. Vet Clin North Am Food Anim Pract 2019;35:535-556.

FIGURE 1. Proportion of calves with FPT with cut-off values of 10g/L IgG and 15g/L IgG.

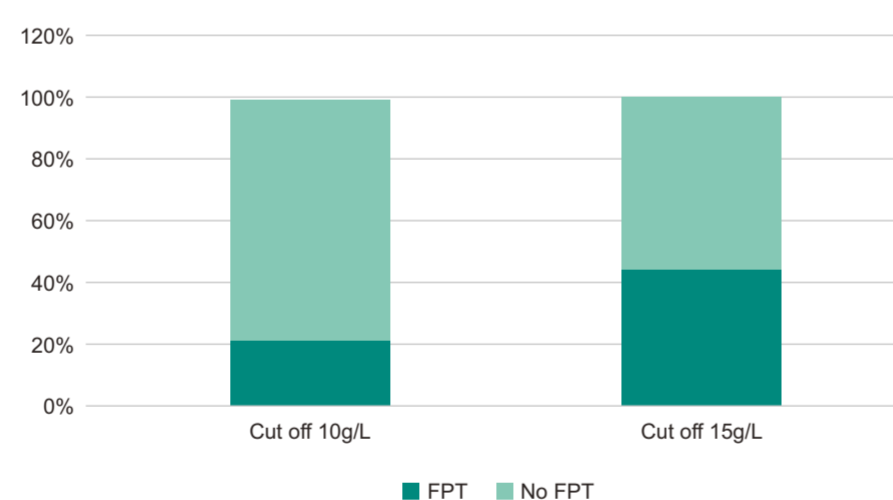


FIGURE 2. Distribution of colostrum quality categories (based on Godden et al.2014) among the tested calves.

