Measuring the Success of a Dairy's Colostrum Management Program

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Due to the multiple layers of the placenta, antibodies from a calf's dam cannot cross the placental wall and consequently, calves are born devoid of functional antibodies to diseases found on farms. These antibodies must be obtained from the timely intake of high quality colostrum and is termed transfer of passive immunity or TPI. By measuring the amount of antibodies (specifically immunoglobulin G- known as IgG) in a calf's serum at 2 to 7 days of age, one can determine the success of newborn calf programs on a particular farm. Studies show that calves with higher levels of antibodies have reduced sickness and less chances of death early in life. Previous recommendations used a single cut off of 10 g/L of serum IgG to denote calves that received adequate antibodies. However, this system did not accurately explain what happened on farm regarding the health of calves. The newly recommended system uses 4 categories to better describe and predict the chances of disease or death due to illness. Categories can be assessed by measuring the total protein, % brix, or IgG concentration in serum from a blood sample collected at 2 to 7 days of age. One point to note, these values and their resulting percentage of calves in each category can help one determine the overall success of a colostrum feeding and management program.

Transfer of Passive Immunity (TPI) category	Serum IgG Category (g/L)	Total Serum Protein (g/dl)	% Brix Refractometer	Recommendation of % of calves in each category
Excellent	≥ 25.0	≥ 6.2	≥ 9.4	> 40
Good	18.0-24.9	5.8-6.1	8.9-9.3	~30
Fair	10.0-17.9	5.1-5.7	8.1-8.8	~20
Poor	< 10.0	< 5.1	< 8.1	< 10
Reference: Lombard and others. 2020. Journal of Dairy Science Vol 103, page 7611.				