Approaches to fresh cow health assessments in dairy herds

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discuss tests and techniques used to evaluate the health of dairy heifers in the transition period between recent calving and entering the milking herd

Summary

The assessment of fresh cow health in dairy herds is often performed at “cowside”, with a number of subjective tests available to measure the effectiveness of the transition programme and the ability of the cow to be productive during the lactation, while coping with the inevitable demands of the lactation on its health and welfare.

Cowside assessments must be coupled with analysis of records regarding fresh cow health and performance and used to inform decision-making regarding environment and husbandry.

THE term “fresh” cow refers to recently calved cows entering the milking herd, but still in the transition phase – that crucial period when the cow is adapting to the lactating cow environment, increasing its feed intake, but already producing around 25 litres to 30 litres

(sometimes much more) per day.

It is well recognised that a transition programme to manage cows through the critical period around calving extends into this freshly calved period and many “fresh cow” programmes incorporate cows and data assessments for at least several weeks post-calving.

Many herds recognise the need to manage fresh calved cows and heifers differently to the main milking groups, but approaches differ widely – both in type of accommodation and length of stay in the fresh group (Figure 1).

It is important, as veterinary advisors, that we engage with farmers about the importance of regularly assessing fresh cow health and performance. This is often achieved as part of the routine visit (for example, through post-calving checks and observations about the housing environment) and off the back of “gateway” diseases such as left displaced abomasum (LDA) and metritis/endometritis events, but, perhaps less often, involves routine analysis of data.

This article reviews some of the more common fresh cow assessments and discusses practical ways of implementing these on farm.

Data analysis

While great emphasis is placed on individual fresh cow examination and monitoring, it must not be forgotten that assessment of records will be of great importance as an “early warning system” for fresh cow health and performance. Some key areas of data analysis for fresh cow assessments are discussed next.

Event data (LDA, mastitis, endometritis)

Diseases of the fresh cow period should be monitored against achievable targets and inform the veterinary advisor about current fresh cow health. Examples include:

• rate of clinical milk fever (target less than five per cent);

• rate of retained fetal membranes in cows greater than 24 hours calved (target less than five per cent);

• LDA rate (target less than three per cent annually – even for herds averaging greater than 10,000 litres);

• dry period origin clinical mastitis rate (target less than one in 12 fresh cows affected in the first 30 days post-calving); and

• endometritis (target less than 10 per cent for cows more than 21 days calved).

LDA in particular is very informative about the transition period – a poor survival rate for fresh cows to an LDA event is indicative of inadequate transition management (Figure 2).

Milk recording data (first test day post-calving: yield, constituents, cells)

Rapid increases to peak yield at 30 days to 40 days are often not recommended as this will result in a greater energy deficit due to the slower increase in peak dry matter intakes post-calving. However, a failure to reach predicted yields in fresh cows at 30 days to 40 days will suggest issues with the transition period; a wide range of yields during the fresh cow period will also point to issues with intakes and/or health.

Milk constituent data can also be monitored to inform about fresh cow health – particularly milk protein percentage as this will increase with improved energy status (thought to be via an increase in microbial protein production in the rumen, but also due to sparing of amino acids as more starch bypasses the rumen to the small intestine; Hayton et al, 2012).

However, care must be taken with analysis of this data – particularly if using butterfat to protein ratio (FPR), as butterfat is influenced by other factors independent of energy status, particularly ration composition. For example, a UK study concluded FPR had a much reduced ability to predict an early conception compared with other combinations of milk quantity and constituents, including a higher percentage of milk protein at the first and second test days in lactation (Madouasse et al, 2010).

Examples of production parameters that can be monitored include protein production in the first 50 days of lactation (target greater than 1kg for cows averaging more than 7,000 litres in lactation; Figure 3).

Finally, monitoring somatic cell count at the first test day will provide information regarding the likely udder health status of fresh cows; a fresh calver infection rate of more than 10 per cent should stimulate discussions regarding control of mastitis in the post-calving period.

Cow data (such as condition and mobility scores – if available)

If cow data regarding condition and other health indicators such as mobility and hock scores are collected then ongoing analysis of this data is vital to encourage continued scoring, as well as informing the advisor about current fresh cow management.

An excellent example is body condition scoring (BCS). Generally accepted as a measurement of energy reserves, but still under-utilised in practice, BCS is critical to monitoring the fresh cow period. BCS is often done cowside (see further on), but rarely systematically and routinely monitored.

While there are many ways of analysing BCS data, including the mean group score during the fresh period and the proportion of fresh cows with BCS outside target range, the rate of loss through the fresh period is also important (Figure 4).

Cowside examination

Monitoring the success of the fresh cow period also needs to include cowside observations and measurements, both to inform data analysis (for example, BCS monitoring) and to investigate trends in the data further (for example, subclinical ketosis).

Examples of cowside examinations that should be discussed with farmers as part of fresh cow assessments include the following.

BCS

DairyCo launched a new training video looking at the use of BCS and information about the Penn State method of condition scoring (www. dairyco.org.uk /resources-library/technical-information/health-welfare/body-condition-scoring). While this approach differs in some ways from the work published by Edmonson et al (1989), it provides a systematic approach that offers practitioners the opportunity to review their condition scoring technique.

Practically, scoring fresh cows put forward at routine visits for post-calving checks should be supplemented with condition scores collected from transition cows at least monthly – this can be easily done at the end of the visit and provides a valuable reference point for further analysis.

California mastitis test

Often overlooked or used purely as a decision to treat fresh cows, the California mastitis test (CMT) can be discussed with farmers as another tool to monitoring infection status at calving and, therefore, the success (or failure) of dry cow management.

A CMT-positive at day four post-calving is likely to indicate intramammary infection and another “early warning” aid to fresh cow health – particularly if more than one in 10 fresh cows are CMT-positive on day four.

Rumen fill and faecal consistency

A subjective scoring system has been developed to visually describe rumen fill. Research has suggested this can be a valid indicator of dry matter intake, but timing of scoring is critical (Burfeind et al, 2010), as rumen fill will tend to be higher in the evening than the morning, making periodic assessment during routine visits potentially difficult to interpret.

Another simple cowside assessment involves scoring faecal consistency and examining faeces for abnormalities – particularly the presence of long (greater than 1.25cm) fibre particles (Figure 5).

Although faecal examination is often performed, little scientific evidence exists on the relationship between faecal abnormalities and issues with the fresh cow ration – particularly as individual cows and the effect of high milk yields and increased outflow will vary.

Metabolic markers – non-esterified fatty acids and ketones

Monitoring ketosis often requires sampling strategies that concentrate on the fresh cow period – particularly the first two weeks of lactation. Cowside milk and urine dipsticks and blood ketone meters allow rapid assessment of individual cow beta hydroxybutyrate (BHB) as part of a fresh cow monitoring programme (Figure 6) and this may be supplemented with serum values.

Both non-esterified fatty acids (NEFA) in pre-calving cows and BHB in fresh cows should be monitored – type II ketosis, characterised by infiltration of the liver by fat, can result in elevated NEFA, but normal BHB very early in lactation and, therefore, testing for ketones alone in fresh cow groups may miss these (Hayton et al, 2012).

Fresh cows should be sampled for BHB in the first two weeks and a target prevalence of 15 per cent of animals testing “positive” may be applied – but sample size is important. For example, sampling six fresh cows calved between 10 days to 14 days may be all that is available – but how do we interpret a single positive BHB result?

Sampling to monitor prevalence of disease requires at least nine and sometimes 12 samples to increase the probability prevalence of the disease in question (in this case, ketosis) is at least as high as the threshold set; spreadsheet tools are available (for example, www.ausvet.com.au/content.php?page=software) that can assist the practitioner in decision-making based on results obtained and the sample size used.

Mobility and lameness

Assessment of mobility allows rapid identification and treatment of fresh cows with impaired mobility and lameness.

Mobility scoring of fresh cow groups very regularly (more frequently than monthly) will also allow the “tracking” of fresh cows and monitoring of the number of apparent new lameness cases. This can also be divided by the number of recovered cases to give the net lameness index (Archer et al, 2009) where values greater than one indicate a worsening of foot health in the fresh cow period (Figure 7). This, therefore, brings us full circle and demonstrates again the need to “join up” cowside data with ongoing analysis of this data.

Environment examination

Finally, fresh cow assessments must always include the environment of the fresh cow groups and husbandry practices.

Useful conversations can be had at the end of the routine visit off the back of data analysis, and potential solutions and modifications put forward immediately and proactively.

While solutions are sometimes basic (Figure 8), discussions around fresh cow health and performance are often more complex and should only be had in the light of data analysis and individual cow assessments.

References

- Archer S C, Green M J and Huxley J N (2009). The dynamics of dairy herd mobility, *Proceedings Cattle Lameness Conference*, University of Nottingham: 49-50.
- Burfeind O, Sepúlveda P, von Keyserlingk M A et al (2010). Technical note: evaluation of a scoring system for rumen fill in dairy cows, *J Dairy Sci* **93**(8): 3,635-3,640.
- Edmonson A J, Lean I J, Weaver L D et al (1989). A body condition scoring chart for Holstein dairy cows, *J Dairy Sci* **72**(1): 68-78.
- Hayton A J, Husband J and Vecqueray R (2012). Nutritional management of herd health. In Green M (ed), *Dairy Herd Health*, CAB International, Wallingford: 227-278.
- Madouasse A, Huxley J N, Browne W J et al (2010). Use of individual cow milk recording data at the start of lactation to predict the calving to conception interval, *J Dairy Sci* 93(10): 4,677-4,690.

Figure 1. A fresh cow group housed in a loose yard for one week post-calving and showing a very high stocking rate.

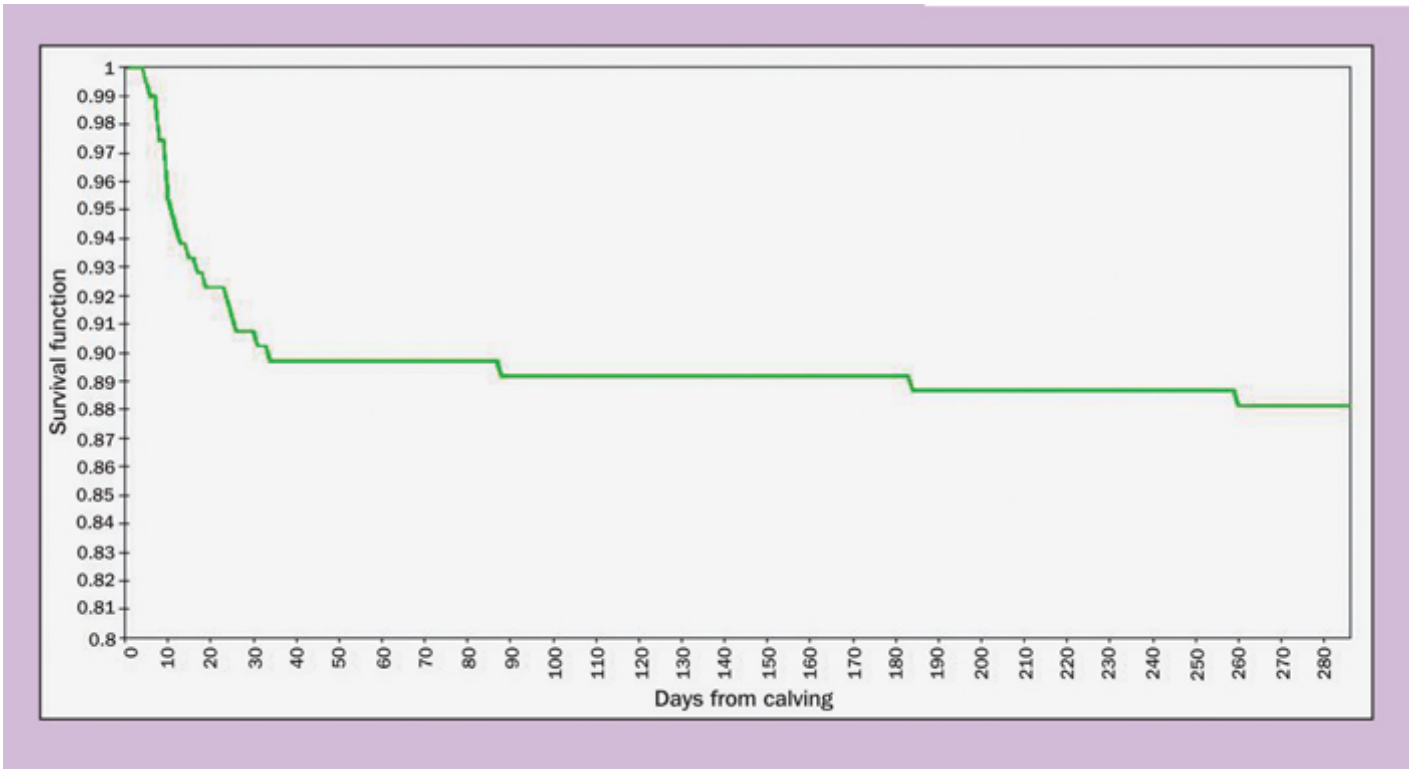

Figure 2. Decreased survival to LDA in a herd where almost 10 per cent were affected in the first three weeks of lactation during the year of interest.

IMAGE: TotalVet, QMMS/SUM-IT.

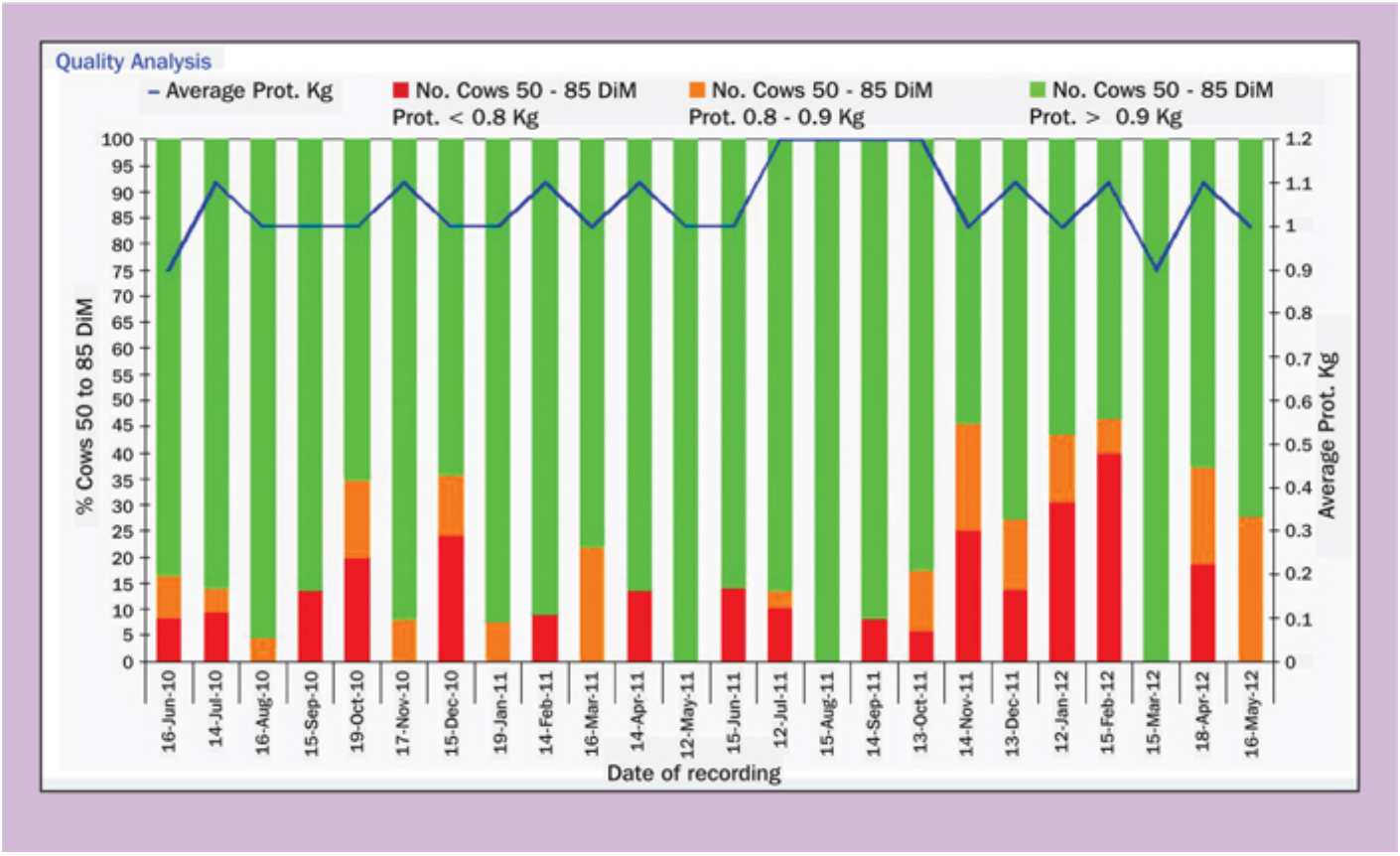

Figure 3. An increase in the percentage of cows that have reached 50 days in milk and are producing insufficient milk protein suggests issues with negative energy balance in fresh cows during winter 2012 in this herd.

IMAGE: TotalVet, QMMS/SUM-IT.

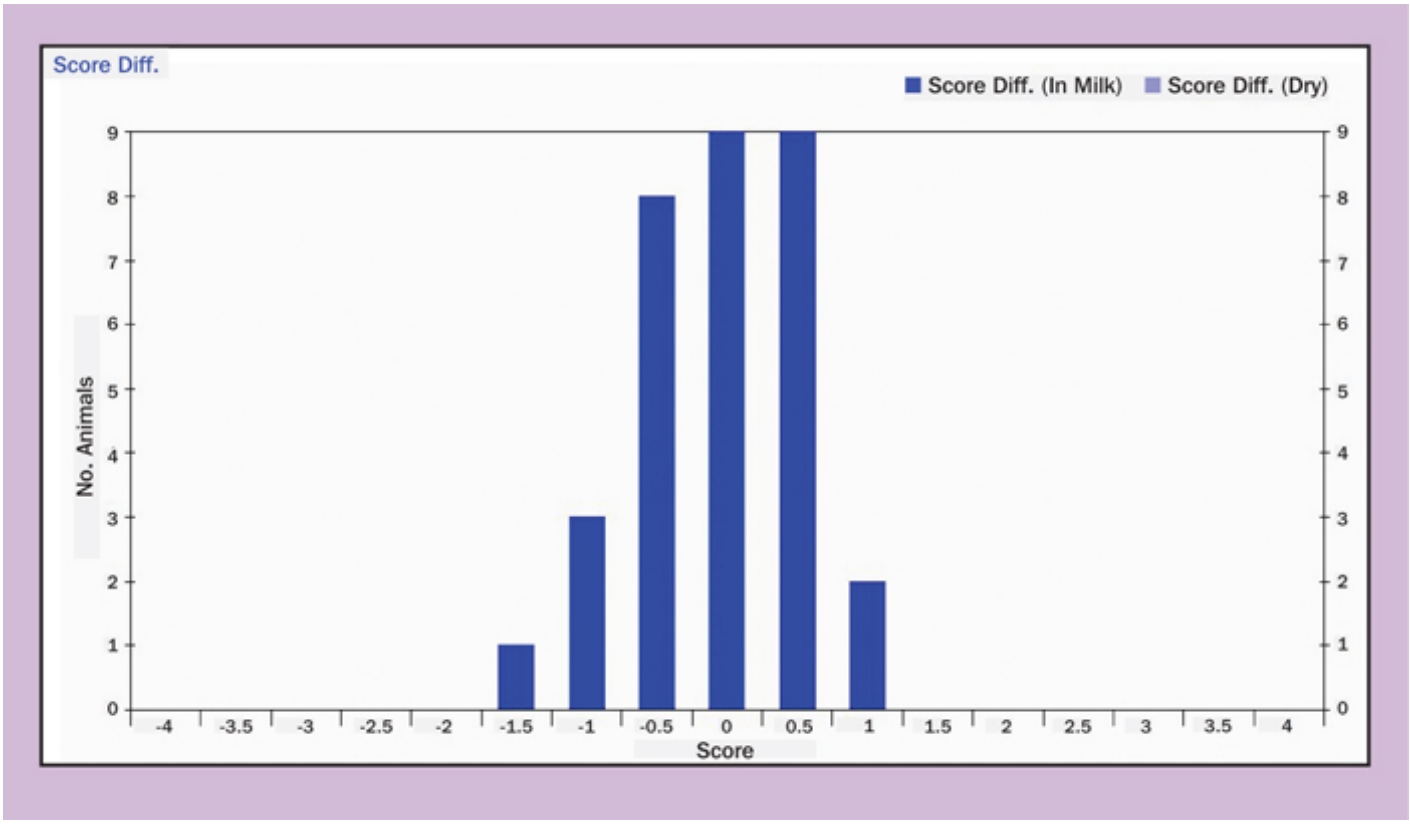

Figure 4. Body condition score (BCS) difference between calving and early lactation (40 days to 80 days calved) during the period of interest, showing very few cows are losing greater than 0.5 BCS points.

IMAGE: TotalVet, QMMS/SUM-IT.

Figure 5. Examination of fresh cow faeces after washing through a fine sieve.

Figure 6. Positive screening tests for urine or milk ketones allow assessment of ketosis prevalence in fresh cows.

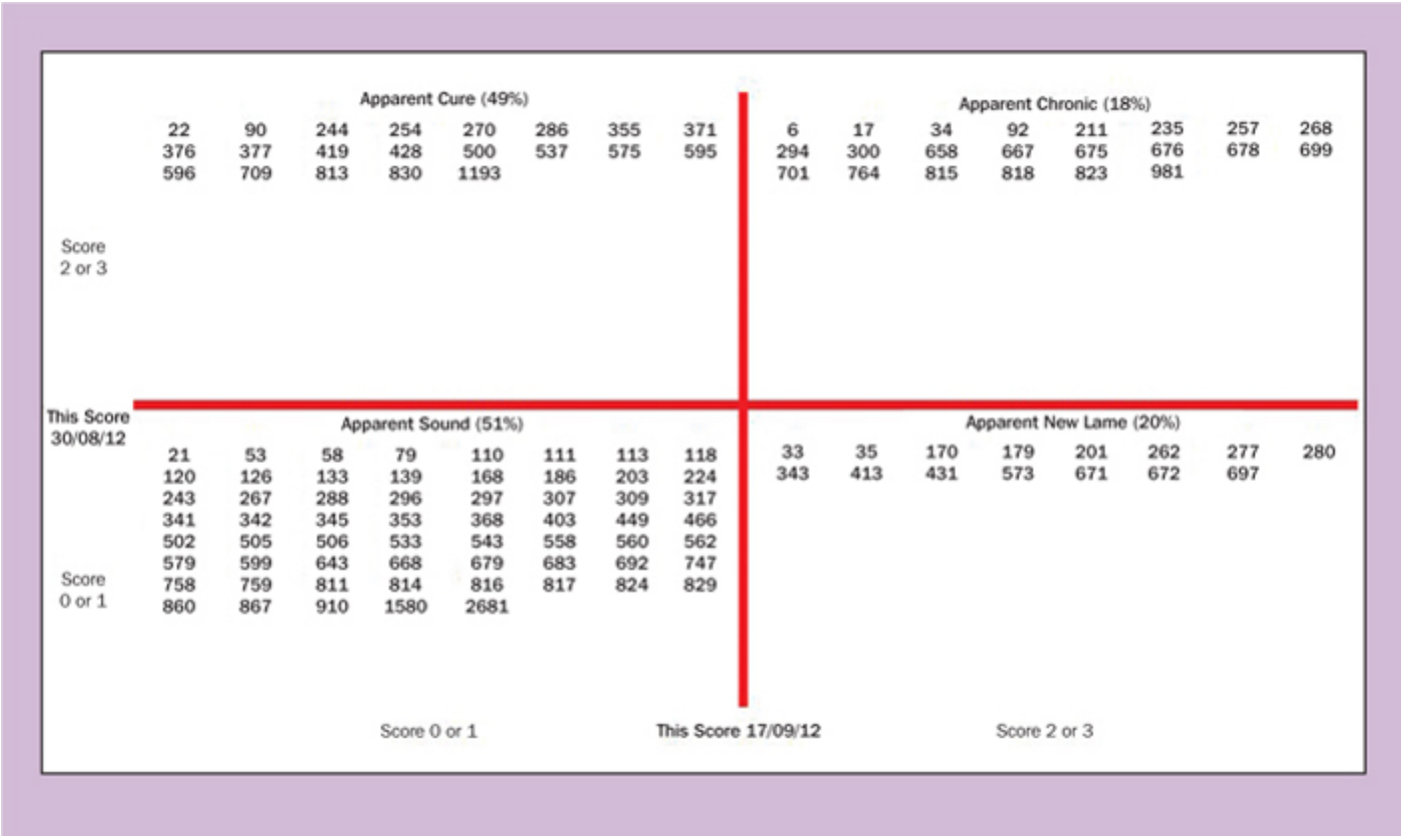

Figure 7. Apparent new lame (total 15) and apparent cure (total 21) using mobility score data in first lactation heifers. In this example the Net Lameness Index is less than one.

IMAGE: TotalVet, QMMS/SUM-IT.

Figure 8. Poor feed face management in a fresh cow group – lack of available feed and poor feed face design.