SUBMISSION ON:

Draft Australian Animal Welfare Standards and Guidelines for Cattle.

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Background.

This submission deals primarily with the issue of early calving induction (C6) which is a variation of option B in the Regulatory Impact Statement. Other industry submissions examining variations to the draft standards have dealt with the issues of disbudding/dehorning of calves, use of dogs on dairy farms and tail docking, and no further comment will be offered by Warrnambool Veterinary Clinic.

Warrnambool Veterinary Clinic is a large mixed animal practice employing 15 veterinarians and servicing over 250 dairy clients in western Victoria. Western Victoria accounts for over 25% of milk production in Australia. Milk production in this region has traditionally been based on a seasonal production, and 63% of dairy farmers calve in a seasonal pattern (that is in one calving period per year) (Bills 2009). The main reason for adopting a seasonal calving system is to match calving pattern with the availability of pasture so that all animals in the herd have calved before the peak of pasture growth in spring. This results in a dairy herd where the availability of feed is much better matched to the milk production of the herd. In Western Victoria, pasture growth is highly seasonal, with an estimated two-thirds of pasture growth occurring from late August to the end of November on rain fed pastures. A typical Western Victorian seasonal dairy herd will commence calving between May and July, and its peak nutritional demand will occur in the period from August to late November.

The remaining 37% of herds calve in a split-calving system (where there is more than one calving period per year). Reasons for dairy farmers adopting a split-calving system include availability of irrigation so that pasture growth can supply the needs of the second group of calving animals, availability of infrastructure to provide feed more efficiently to the milking herd a times of the year when grass growth is slow, increased labour and management skills to manage more than one calving group of animals on a dairy enterprise, and the desire to reduce the pressure on farm infrastructure from a single calving period. In the last 10 years, there has been an increase in the number of herds in the region that have changed from a seasonal system to a split calving system. There are two main reasons for the increase is:

- A desire to increase milk supply when dairy companies pay more for milk supplied to them; and/or
- A decrease in dairy cow fertility.

Proposed standards.

The Proposed Australian Animal Welfare Standards and Guidelines for Cattle (v 21.2.13) state

Standards

S7.1	A person performing *artificial breeding procedures* on cattle must take reasonable actions to minimise pain, distress or injury.
S7.2	A person in charge must ensure the *inspection* of calving cattle at intervals appropriate to the production system and the level of risk to the welfare of cattle.
S7.3	A person in charge must ensure *calving induction* is done under veterinary advice.
S7.4	A person in charge must ensure that induced calves receive adequate colostrum or be humanely killed at the first reasonable opportunity, and before they are 12 hours old.

and that

Induction of calving

G7.8 Herd management strategies should be adopted to minimise or eliminate the need to induce calving.

G7.9 Cows subject to an induction program should be inspected twice daily. Any cow requiring calving assistance or treatment should receive this intervention at the first opportunity.

G7.10 Calving induction should only be done when necessary for the welfare of the individual cow or calf.

Warrnambool Veterinary Clinic is supportive of these standards and guidelines, and has undertaken pro-active management programs since the 1980's which are aimed at reducing the need for calving induction in herds under our veterinary management. The process to include a cow in an early induction program is as follows.

1. Early pregnancy diagnosis (pregnancy testing at a pregnancy status of 17 weeks or less) to accurately determine predicted calving dates of cows.
2. Based on pregnancy testing results, planning with individual farmers a drying off strategy for their herd which maximises cow and udder health at the commencement of the next lactation.
3. Based on pregnancy testing results, cows will be allocated as potential early calving induction candidates if they are not likely to fit into a calving pattern which allows for optimal cow nutrition health and productivity.
4. Cows identified as early calving induction candidates will be dried off for a minimum period of 49 days.
5. Cows included in an early induction program will be examined at the time of induction to assess body condition, age and the presence of other conditions (such as mastitis). The owner will also be provided with advice on the management of induced cows.

6. Once cows are treated with a long acting corticosteriod, dairy cattle owners are advised to regularly monitor cows.
7. Cows are then examined by a veterinarian after 14 days after the initial induction to ensure cows have calved, or require retreatment.

In an attempt to maximise the number of cows which will calve early in the season, and to reduce the need for calving induction a number of procedures are undertaken in the majority of the seasonal (and split-calving) calving herds we service. These include:

1. Examination of animals prior to first insemination to detect uterine infection, and if present to treat.
2. Use of oestrus synchrony protocols to increase the numbers of animals inseminated after mating start date. Oestrus synchrony increases the number of animals likely to be inseminated in a shorter period of time.
3. Use of treatment protocols which allow cows not inseminated after a defined period (known as non-cycling cows) to commence oestrous activity and to be inseminated soon after mating start date. Research undertaken at this clinic has demonstrated treatment protocols trialled have the ability to create similar reproductive performance in treated cows as the naturally cycling portion of the dairy herd.
4. Provision of nutritional advice to maximise animal health once animals commence new lactation.

Despite these interventions, in seasonal calving dairy herds a proportion of the herd needs to have early calving induction undertaken to maintain a seasonal calving pattern. Undertaken correctly, the animal health outcomes of the induced cow (in our experience) are similar to cows calving naturally. Induction programs undertaken correctly result in few calves which are born alive. Calves born alive are humanely euthanased by dairy farmer clients as soon as they are found.

RETROSPECTIVE ANALYSIS OF PRODUCTION AND POST-PARTUM DISORDERS IN INDUCED AND NON-INDUCED COWS ON 11 WESTERN VICTORIAN DAIRY FARMS.

In 1997 herd health records from clients of Warrnambool Veterinary Clinic were retrieved in order to compare various outcomes for cows with a planned induction program compared to cows that calved naturally (D Beggs, 1998). The planned induction program was similar to the process described above which determined candidates for early calving induction. Of 1822 cows, 375 were induced, and 1447 calved naturally. Table 1 provides an analysis of each parameter measured in this study.

In these herds, naturally calving cows and induced cows had similar outcomes post-calving for the following conditions: dystocia, empty at 20 weeks and litres of milk. Induced cows had lower rates of milk fever (hypocalcaemia) 2% compared to 4%, but higher death rates (0.4% compared to 1.3%), although total numbers were low (5 cows compared to 6 cows). In the induced cows, there were higher rates of retained placenta (RFM) and endometritis.

Where inductions are well planned, induced cows have low death rates, less milk fever, similar milk production levels, but higher rates of uterine infection than non-induced herd mates. Since this study was undertaken, our practice has become more aggressive in the treatment and detection of RFM, and the early detection and treatment of endometritis, so that few incidences of both conditions are present by mating start date.

WELFARE IMPLICATIONS FOR LATE CALVING COWS AND CALVES IN SEASONAL CALVING SYSTEMS.

Late calvers are defined as those cows not calving until after the mating start date (MSD) for the next season. These cows are typically candidates for calving induction so that they calve early in the calving pattern, allowing them to reach optimal fertility at MSD. The induced cows will then have the maximum chance to get in calf early and hence calve in the normal pattern and remain in the early calving group in the next calving season. However, if late calving cows are left to calve naturally there are several welfare implications for them.

- The management and care of late calving cows is made more difficult in an environment where economics dictates on farm management priorities. In the typical management cycle farmers must monitor and check cows and heifers for 9-11 weeks prior to mating start date and then commence mating the cows that have calved by mating start date. If the calving period is extended (due to an inability to undertake calving induction) management of a large group of later calving cows will become less diligent as the mating period will take priority over other farm tasks. As many farmers undertake many practices to improve herd fertility (such as synchrony as described above) in many situations the inevitable result will be less intensive observation of late cows on the point of calving.

- The management strategy of creating a group of cows eligible for early calving induction allows this group of potential late calvers to have improved nutritional management and to receive extra observation as discussed above, compared to allowing them to calve naturally.
- Providing optimal nutrition to a late calving cow is difficult and presents animal welfare concerns as well as economic costs. Because these cows have "missed" optimal pasture production they need to be fed concentrate and fodder supplements to provide a diet that satisfies the demands of a cow early in lactation. However, most farms do not have the ability to feed different groups of cows. Hence, the late calving cows can often either be under fed or need to be provided with high levels of grain which often causes nutritional problems such as lactic acidosis.
- Calves born to later calving cows and reared as replacements will have the highest risk of calf diseases such as diarrhoea and pneumonia. This is because the calf rearing area is often heavily contaminated with infectious agents from large numbers of calves reared earlier in the season.
- As a calving pattern becomes less concentrated over a number of seasons due to not inducing cows, the animal welfare concerns described above become greater. The farmer will be less able to manage pasture peaks to meet demands of the herd and the overall nutritional quality of the herd's diet will deteriorate as more of the diet will be composed of harvested feeds such as hay and silage and bought in concentrates.
- As the calving pattern becomes less concentrated, it will become necessary to use artificial insemination for a longer period to achieve optimal herd replacement rates. Calves will be reared from later calving cows, and as these calves will be reared out of the optimal pasture growth period they will be more likely to suffer diseases such as parasitism. Also there is the potential for poorer growth rates of these replacements due to them having less opportunity to consume quality pasture. Heifers of lower liveweight at first calving have increased the risk of calving difficulty, lower milk production, lower fertility and higher rates of early removal from the herd.

As it is demonstrated above, the seasonal calving system has evolved in many dairy regions as the most efficient form of milk production which results in the best nutritional outcomes for the dairy herd. Better nutritional outcomes result in higher milk production at a lower cost for the producer, but with the benefits of improved animal welfare for the milking herd and herd replacements.

DAIRY COW FERTILITY AND ITS CONTRIBUTION TO THE NEED FOR CALVING INDUCTION.

Dairy cow fertility has declined on an international basis for the last 30 years. In Australia there is evidence of a similar decline in fertility since 1996. Important reasons for the decline in fertility include:

- Increased per cow milk production resulting in partitioning of nutrients into milk volume and away from reproduction;
- An increased variation in the oestrous cycle of dairy cattle which results in decreased oestrus behaviour, and reduced precision of the timing of ovulation;
- Increased farm intensity with fewer managers or skilled staff per cow;
- An inherent decline in breeding values for fertility indicating that cows are genetically less fertile.

In seasonal and split-calving dairy herds the standard measurement for reproductive performance in the six week in-calf rate. This is the percentage of the herd which becomes pregnant in the first six weeks of the mating period. A second measure is the percentage of the herd empty after 21 weeks from the start of a mating period. As shown in Figure 1 (which is derived from data collected at Warrnambool Veterinary Clinic), the six week in-calf rate has declined by about 1% per year, and the 21 week not in calf rate has increased by about 0.8% per year since 1996. The fewer cows pregnant after six weeks will result in an increase in the number of calves born later in the calving season.

An important aspect to consider in these statistics is that **the dairy farmer has had little control over the decline in cow fertility**. As examined in the Consultation Regulation Impact Statement v 1.0, the result of modern breeding practices is a dairy cow which cannot maintain a tight seasonal calving pattern without using reproductive management tools such as calving induction.

A Dairy Cow Fertility Analysis undertaken by Dairy Australia in 2011 indicated the principle reason for the decline in reproductive performance from 2001 to 2010 has been a large decline in conception rates, and a small decline in submission rates. Figure 2 indicates the decline in cow conception rates in 18 dairy serviced by Warrnambool Veterinary Clinic from 1996, which shows herd reproductive performance of herds serviced by us reducing at a similar rate to those examined in the Fertility Analysis .

The Dairy Cow fertility analysis also provided valuable data which examined the rate at which the typical (or median) dairy herd becomes pregnant. Results are shown in Tables 12, 15, 18 and 21 from the Analysis report at the end of this submission. These tables indicate the rate of decline in herd fertility from 2000 to 2009. In 2009 the median herd had the following rate of cows becoming pregnant: by 6 weeks 48.8%, by 12 weeks 66%, by 21 weeks 78.8% and 81.6% by the end of mating. In 2000, these statistics were: 52.5%, 73%, 86.2% and 87.2% respectively. These statistics demonstrate that over the ten year period of time examined in this study, dairy cows get into calf more slowly, and this is an important in understanding the need to undertake calving induction in seasonal herds in Australia at the current level of fertility. It is also important to note that in the 10-15 years prior to 2000, dairy cow fertility in Australia was already decreasing, so the data presented follows on from an initial decline in reproductive performance.

Figure 3 demonstrates the decline in fertility breeding value since 1990 in Australian Holstein cows sired by AI bulls since 1990 (ADHIS 2009). This graph indicates that there has been a steady decline in genetic breeding value for cows over the period which has only levelled in recent years since the introduction of breeding value assessments for AI sires in the Australian bull proofs reports. Recent data indicates little improvement since 2006 (D Abernathy, ADHIS, pers.comm). In 2010 fertility became a more important component in the Australian Profit Ranking of AI sires, and in 2013 a new measure for fertility was included in bulls proofs provided by ADHIS.

The heritability of fertility in cattle is considered to be low (anywhere between 3% and 7%), compared to the heritability of production indices at 30% (P Williams, ADHIS, pers comm). For the inherent genetic fertility of the Australian dairy herd to improve a 10-15 year period will be required to return to levels present before 1990. However, based on evidence to date, it is possible that use of genomic technology in the Australian dairy herd has the potential to increase the rate of genetic improvement for many traits (including fertility), so that improvement in fertility might increase faster than it has declined. Other research being undertaken in Australia is examining the following aspects of cow fertility:

- how nutrition might increase cow fertility, for example looking at the influence of dietary protein on cow conception patterns;
- how closer examination of the genetics of fertility may improve fertility, by looking at the genes which have the most influence on fertility; and
- examining specific subgroups of the dairy herd in Australia may lead to a shift to a more fertile dairy herd (cows which produce milk with a higher protein percentage have higher six week in-calf rates than cows with lower milk protein percentage).

THE NEW ZEALAND INDUCTION CODE.

In New Zealand, since 2005 routine calving induction for management purposes has been carried out according to industry agreed codes. Since 2010 annual reduction targets have been in place so that from June 1, 2012, within an individual herd, the level of inductions should not exceed 4% of the herd's total size. Essential elements of the code include:

- cows must be identified and recorded by the veterinarian on the farm induction plan at least 60 days before the start of inductions, and only those cows on the plan be presented for induction;
- cows should be no more than 12 weeks from their expected calving date, and no less than 8 weeks from their expected calving date;

- any calf born alive will be euthanased humanely with a firearm or captive bolt device; and
- monitoring of induction procedures on farm will be undertaken as part of farm drug use audits.

For proper operation of the code it is necessary for dairy farmers to undertake pregnancy testing of their herd at the correct stage of gestation and for animals to have a permanent form of identification. Other guidelines apply to cow selection, cow age, cow disease status and body condition, cow and calf management.

Essentially, the code mimics the calving induction protocols undertaken within our dairy practice. A flow chart of a typical NZ management plan is included as figure 4.

It could be argued that the dairy industry in Australia should immediately adopt a similar reduction in the level of calving induction as the New Zealand dairy industry. However, there a several differences between the dairy industries of the two countries which requires the dairy industry in Australia to develop its own strategy. These differences include:

- the inherent superior fertility of the New Zealand dairy herd. The median 6 week in-calf rate in Australia is 50% in seasonal calving dairy herds. In New Zealand this rate is 66%.
- New Zealand has a target to achieve a national 6 week in-calf rate of 78% by about the year 2020. Australia has a target to achieve a 5% increase (from 50 to 55%) by 2017.
- The issue of the need to reduce calving induction has been addressed since the early 2000's in New Zealand and therefore has collected a large amount of industry commitment to achieve targeted reductions. The number of dairy cattle that are induced in the Australian industry has been traditionally low (2-4%) compared to new Zealand (10-15%). In Australia the issue has received less attention by the dairy industry, as there have been programs implemented by the industry that have achieved greater animal welfare outcomes than a reduction in calving induction. Such programs include large programs to reduce mastitis, lameness, calf health, and programs to improve the nutritional management of dairy cattle.

There have been significant implications for the new target for inductions in New Zealand. In many herds the cow wastage rate has increased significantly, as cows not fitting into a calving pattern, and which exceed the threshold for induction levels are culled prematurely from herds. Rates of culling of 20% or more are not uncommon in New Zealand (M Bryan, pers.comm), a rate which has implications in itself for animal welfare. At this rate of culling, less opportunity exists to selectively remove animals from herds which suffer conditions having welfare implications such as mastitis and lameness.

However, if the industry in New Zealand achieves its stated target of a 78% 6 week in-calf rate, the issue of calving induction will be reduced, as very few animals will be required to be induced so that they calve within the herd's calving pattern.

SUMMARY.

It is our view that the welfare implications to induced cows and calves can be managed satisfactorily with the code of practice described above. It is also our view that our dairy farm clients aim to minimise the number of animals induced to calve early, and that if underlying cow fertility was similar to that in New Zealand, very few would undertake the procedure of early calving induction. It is therefore incumbent on industry research bodies to undertake the necessary research to improve the underlying genetic basis of fertility in the Australian dairy herd, and to provide extension to ensure rapid uptake of the most recent information by dairy farmers.

An immediate cessation of the practice of early calving induction in seasonal calving dairy herds in southern Australia would have negative animal welfare outcomes due to the following:

- Changes in calving pattern relative to the required feed supply for lactating and replacement animals;
- A dramatic increase in the number of animals culled because they do not fit into the required seasonal calving pattern (culled because they are empty or late); and
- The welfare implications of the loss of opportunity to cull those animals suffering conditions with welfare implications (such as mastitis and lameness) due to increased rates of culling of late calving animals in a seasonal calving system.

A phasing out strategy as described below will reduce the welfare and economic costs associated with an immediate cessation of early calving induction.

RECOMMENDATIONS TO THE REVIEW.

1. **It must be acknowledged that dairy farmers have had little control over the declining fertility of dairy cows. However, dairy farmers do have control over the welfare of the cow which is induced, and the induced calf.**
2. **Strategies are available to reduce the need for calving induction, but in most cases will not eliminate the practice in many seasonal calving dairy herds.**
3. **The Dairy Industry and many research organisations (including Warrnambool Veterinary Clinic) are undertaking research which is targeted to increase the fertility of the Australian dairy herd.**
4. **The immediate banning of calving induction will result in increased animal welfare concerns in seasonal calving dairy herds in Australia. A ban has the potential to reduce farm viability due to lower milk income and higher costs associated with a ban. Lower farm viability has the potential to reduce animal welfare in affected herds. A ban also has the potential to affect the viability of the milk processing sector by changing the milk flow characteristics in dairying regions where calving induction is practiced. For an orderly transition from the current situation to a situation where no calving induction is undertaken, a phased strategy needs to be implemented.**
5. **Properly undertaken, calving induction programs developed with veterinary supervision result in few animal welfare issues for cows and calves.**

6. **A Code of Practice for calving induction needs to be developed between Dairy Australia, Australian Cattle Veterinarians, and the Australian Veterinary Association for implementation in 2014. The code will be based on the Operational Guidelines: Induction of Calving June 1, 2012 developed in New Zealand.**
7. **The code to be implemented for two periods of 5 years. The first 5 years will be a period of monitoring dairy herd fertility, undertaking research into management aspects which assist herd fertility, and improving the genetic basis for cow fertility. This period will also alert dairy farmers of the need to change practices so that calving induction can be reduced. Results of these investigations will then determine the targeted reduction in calving induction during the second 5 years period. After the second 5 year period there will be an agreed phasing out of calving inductions in the Australian dairy industry.**
8. **The practice of inducing cows late in the season, and without undertaking early pregnancy testing to be phased out over the next three years. This practice results in no advantages to the dairy herd owner except to increase milk production from the late induced cow, and doesn't increase her likelihood of getting in calf to calve early in the next season.**

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Beggs D S: Retrospective analysis of maternal death rates, milk fever, reproductive disorders and levels of production in induced and non-induced cows in 11 western Victorian dairy farms. Submitted for Master in Veterinary Science (Dairy Medicine and Production) dissertation, 1998.

Bills, J: Situation and Outlook Report 2009. Dairy Australia.

Proposed Australian Animal Welfare Standards and Guidelines for Cattle (v 21.2.13). Animal Health Australia, 2013.

Axford, M: Australian Dairy Herd Improvement Scheme; presented at WestVic Dairy AGM, 2009.

Dairy NZ: Model New Zealand calving induction management plan. 2012.

FIGURES and TABLES

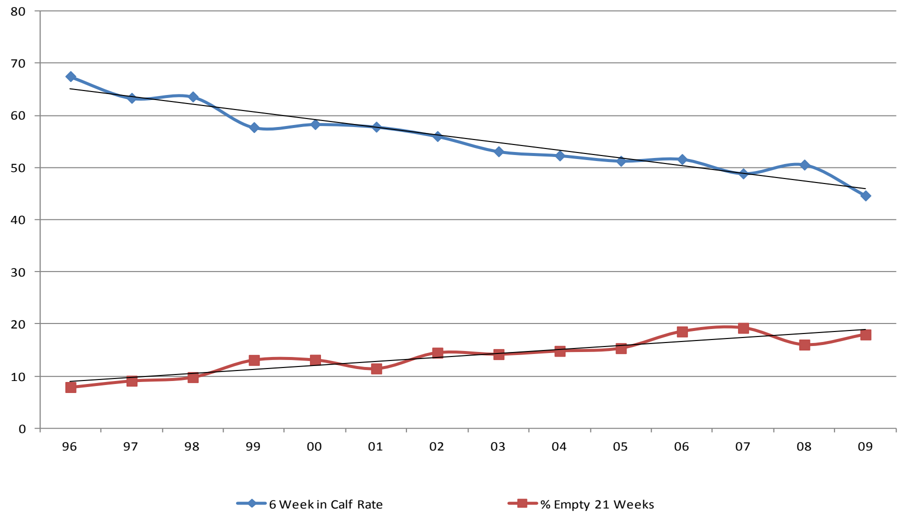

Figure 1: 6 week in-calf rates and 21 week not in-calf rates in south-west dairy herds 1996-2009 (Hamblin, 2009).

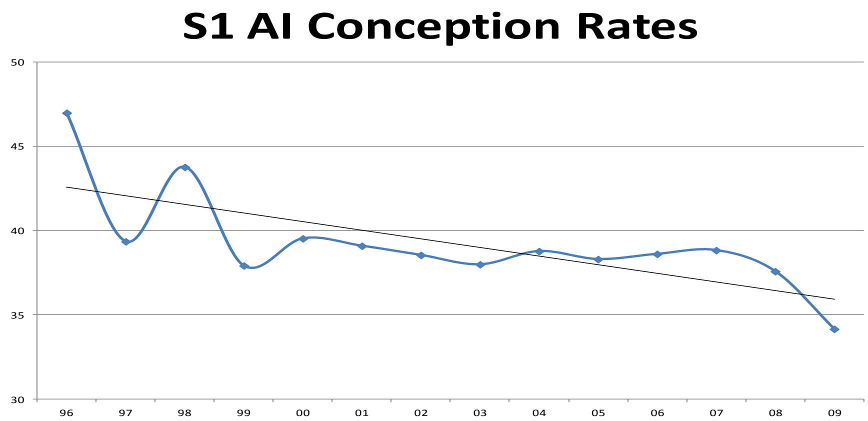

Figure 2: First service conception rates in south-west dairy herds 1996-2009 (Hamblin, 2009).

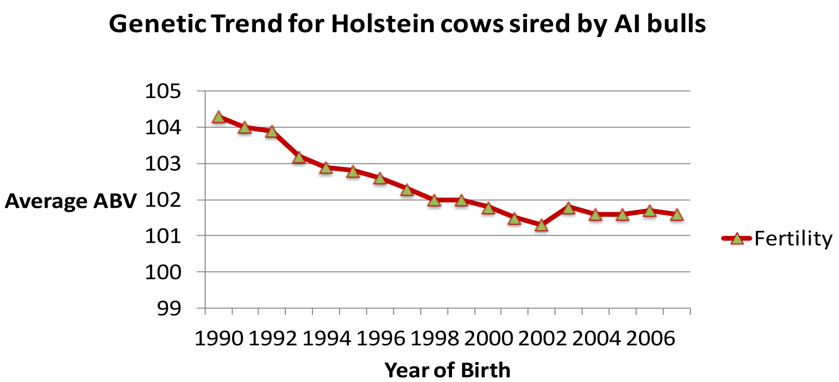

Figure 3: Decline in fertility Australian breeding value since 1990 in Australian Holstein cows sired by AI bulls since 1990 (ADHIS 2010).

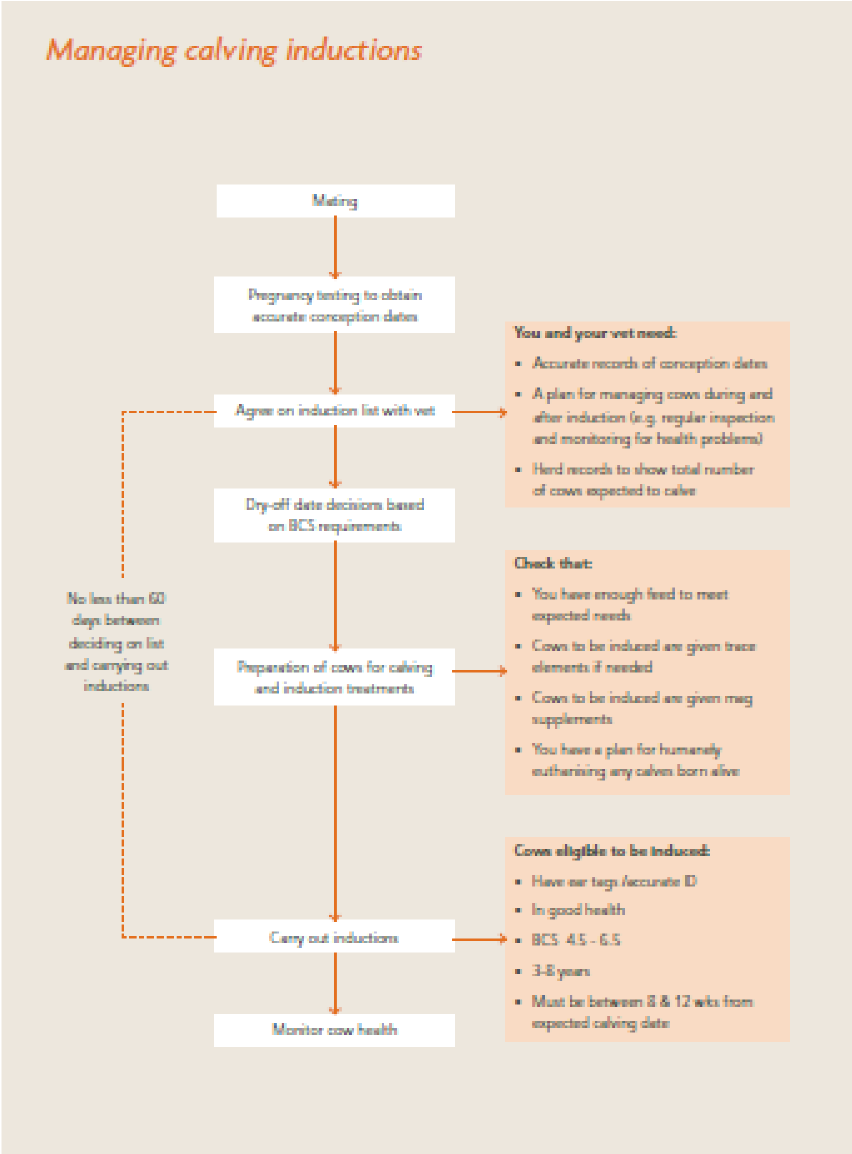

Figure 4: Model New Zealand calving induction management plan (Dairy NZ, 2012).

Table 1: Comparison of disease and production outcomes in induced and non-induced cows on 11 western Victorian dairy farms (Beggs, 1998).

Outcome	All cows	Non-induced cows	Induced cows
Milk fever	4%	67 (4%)	9 (2%)
Dystocia	8%	8%	6%
Retained placenta	5%	4%	9%
Endometritis	18%	12%	41%
Empty by 20 weeks	9%	8%	11%
Death	0.7%	0.4%	1.3%
Lactation length			89% of non-induced
Litres			88% of non-induced
Ratio			99% on non-induced

Tables 12, 15, 18 and 21 from the Dairy Herd Fertility Analysis 2011, with data showing reproductive performance changes from 2000 to 2009.

Table 12 Distributions of 6-week in-calf rates by year for mating periods in 30 herds between 2000 and 2009

Year	No. mating periods included	Minimum	25th percentile	Median	75th percentile	Maximum
2000	21	20.0%	41.9%	52.5%	58.4%	72.0%
2001	26	29.6%	43.2%	58.2%	62.3%	70.7%
2002	31	29.0%	43.6%	49.0%	54.4%	71.9%
2003	32	16.0%	41.3%	52.3%	59.2%	71.2%
2004	32	28.2%	40.8%	49.3%	58.2%	66.7%
2005	30	18.6%	43.8%	49.6%	60.6%	71.2%
2006	33	23.8%	36.3%	46.4%	56.5%	69.5%
2007	32	22.8%	38.4%	44.1%	53.1%	66.3%
2008	35	24.3%	38.2%	45.5%	55.0%	69.0%
2009	31	27.7%	36.2%	48.8%	55.7%	65.3%

Table 15 Distributions of 12-week not-in-calf rates by year for mating periods in 30 herds between 2000 and 2009

Year	No. mating periods included	Minimum	25th percentile	Median	75th percentile	Maximum
2000	21	14.6%	22.6%	27.0%	34.3%	51.1%
2001	26	11.8%	19.4%	24.8%	31.4%	48.4%
2002	31	14.2%	23.2%	29.4%	35.6%	59.5%
2003	31	15.9%	21.3%	29.5%	40.7%	63.8%
2004	32	13.0%	20.9%	29.8%	39.0%	56.1%
2005	29	12.1%	24.7%	28.8%	40.4%	53.3%
2006	31	12.6%	25.0%	34.9%	41.2%	51.8%
2007	31	18.1%	30.8%	39.2%	46.1%	59.4%
2008	32	11.9%	24.8%	32.0%	41.2%	56.6%
2009	30	17.7%	24.1%	34.0%	42.4%	48.8%

Table 18 Distributions of 21-week not-in-calf rates by year for mating periods in 30 herds between 2000 and 2009

Year	No. mating periods included	Minimum	25th percentile	Median	75th percentile	Maximum
2000	21	7.7%	10.7%	14.8%	21.2%	35.7%
2001	26	7.6%	9.2%	18.4%	22.2%	31.6%
2002	30	8.2%	14.2%	17.5%	24.2%	59.5%
2003	30	8.1%	11.9%	16.6%	25.2%	57.3%
2004	32	7.7%	13.0%	20.3%	27.9%	56.1%
2005	29	6.6%	13.1%	19.3%	31.5%	48.7%
2006	31	7.1%	16.0%	21.5%	39.0%	51.0%
2007	29	8.7%	21.4%	25.5%	39.2%	59.4%
2008	31	7.1%	13.9%	18.8%	35.8%	55.2%
2009	30	9.2%	15.8%	21.2%	33.9%	47.3%

Table 21 Distributions of not-in-calf rates by year for mating periods in 30 herds between 2000 and 2009

Year	No. mating periods included	Minimum	25th percentile	Median	75th percentile	Maximum
2000	21	6.0%	8.7%	13.8%	16.7%	35.7%
2001	26	6.6%	8.7%	16.7%	21.0%	27.8%
2002	29	5.2%	13.3%	15.5%	22.9%	59.5%
2003	29	6.7%	11.6%	15.1%	23.3%	57.3%
2004	32	7.7%	13.0%	18.2%	27.0%	56.1%
2005	28	6.6%	11.8%	18.2%	30.1%	48.7%
2006	31	7.1%	15.5%	20.4%	39.0%	51.0%
2007	29	8.7%	14.5%	24.2%	39.2%	59.4%
2008	31	7.1%	12.0%	15.8%	35.8%	55.2%
2009	29	8.7%	12.4%	18.4%	33.9%	47.3%