# The decline in dairy herd fertility – challenges for the veterinary profession

In the last of our series looking at fertility in Irish dairy herds, Teagasc veterinary researcher Dr John F. Mee, Teagasc, Moorepark Dairy Production Research Centre, Fermoy, Co. Cork, examines the role of the practitioner.

The core role of the veterinarian remains individual animal examinations but this must be supplemented with systematic herd fertility investigation and veterinarian-led herd fertility management.

## Introduction

Despite declining dairy herd fertility (Mee, 2004a) and numerous publications and lectures exhorting undergraduates and practising veterinarians to engage dairy clients in a holistic transdisciplinary approach to bovine fertility management (Green *et al*., 2007a; Mee, 2007), this is not the common approach adopted in many veterinary practices worldwide. This approach is mainly confined to large, intensive, increasingly automated dairy units and multi-person, specialised veterinary practices in, for example, North America, Australia, New Zealand, Israel and the UK. In dairy industries where small, full-time, family-run farms still predominate, as in Ireland and much of continental Europe, the role of the veterinarian in dairy herd fertility management has not changed greatly.

## Why have some veterinarians not changed their approach to bovine fertility management?

A recent survey of UK producers found that while the majority would like their veterinarian to be more involved in monitoring overall herd performance, less than 50% agreed that veterinarians make effective use of available milk and fertility records (Ben Bartlett, NMR, personal communication, 2007). A survey of veterinarians' attitudes to provision of herd health schemes in the UK showed that small practice size was the primary reason for veterinarians not running such schemes and poor client motivation was the primary factor underlying lack of farmer adoption of such schemes (Wassell, 1995). These results must be viewed in the context of a more recent UK survey which found that 80% of vets agreed or strongly agreed that farm

animal work will continue to decline (RCVS, 2006). In a recent Irish survey, only 5% of veterinarians replied that they felt fertility advice was an opportunity for developing their livestock practice (Damien O'Donoghue, Pfizer Animal Health, personal communication, 2007). In a recent New Zealand survey, the barriers to adoption of fertility management plans were listed as lack of client demand (37% of vets), data issues (28%) and veterinary practice issues (35%) (Fowler and Tiddy, 2006). These 'needs analyses' and communication with veterinary and non-veterinary colleagues nationally and internationally indicate that the likely current critical constraints to change in service provision in Ireland are as outlined here.

### *No client demand*

One of the simplest reasons for lack of veterinarian-led change is because clients have not demanded it. They call the veterinarian to solve problems rather than to build best-practice. This applies with older, more conservative clients with family-run small herds where contact man-hours per cow are still high. Paradoxically, other clients do not demand a change in veterinarian services because they are doing much of this work themselves, are employing para-veterinarians or are using natural service bulls, roll-over cows and high culling to mask poor fertility management.

### *Can't justify cost of service*

Secondly, many veterinarians are unable to justify to their clients, themselves or their veterinary partners, the economic benefit:cost ratio of upskilling in, and providing, an alternative fertility management service. Clients of Irish practitioners are increasingly concerned about animal health component costs (Mee *et al.*, 2007). In addition, providing a fertility management service may not be as profitable, at least initially, to the veterinary practice as traditional 'fire brigade' work. This is often cited by veterinarians as the primary reason why herd fertility and herd health schemes fail to work in practice.

### *Lack of veterinary specialisation*

Thirdly, even if they can justify the costs, some veterinarians lack the confidence and the competence to provide a specialised fertility management service even when there is a client demand. Specialised fertility work may be seen as physically demanding and too complex to yield answers which can be sold to clients. This may be particularly true in small practices where the need to provide a service across species overrides the need to specialise in bovine theriogenology. In Ireland, 44% of veterinary practitioners are in one- or two-vet practices (Veterinary Ireland, personal communication, 2007) while in the UK the average number of full and part-time vets per practice is 6.5 but only 8% of vets have first area expertise in reproduction (RCVS, 2006).

### *Poor data quality and availability*

Prior to the advent of the ICBF there was no Irish national fertility-recording database. Though such a service is now available, its value depends on up-to-date farmer entry of events, including pregnancy examinations, to ensure the data are reliable. Use of this decision support software service by practitioners has been very limited to-date. Veterinarians or their staff do not have the time to computerise raw breeding chart or notebook data, and where bulls run with the herd such data are often incomplete.

### *No financial incentive to the practitioner*

Lastly, where veterinarians earn a substantial proportion of their income from the state through veterinary meat inspection and disease eradication schemes, and where the latter work yields a higher income/hour than fertility work, they have less financial incentive. They may not be 'hungry enough' to provide a fertility management service. The opportunity cost of their time is high and they simply cannot see a competitive return on their investment in upskilling and providing this service.

Without promotion that addresses these identified barriers and drivers to adoption, little change in current fertility management practices can be expected.

## So what is the role of the veterinarian in fertility management on modern dairy farms?

One of the greatest challenges facing veterinarians in fertility management on dairy farms is the decline in dairy cow fertility. Six strategies were highlighted by Lucy (2001) to improve dairy reproduction: selection of cows for improved reproductive efficiency, a need to get back to basics in reproductive management, improved pre- and post-partum nutrition, staff retraining in large herds, development of new methods for managing reproduction and rapid transfer of new information and technology back to the agricultural community. Veterinarians have a greater or lesser role to play in all of these ameliorative strategies. The role of the veterinarian is to manage and target resources most effectively to get cows in calf within the optimum time for each herd.

In addition to these 'hard' technical issues, veterinarians also need to develop 'soft' skills in communication. The change in the role of the veterinarian will be evolutionary, rather than revolutionary. This evolution was best described by Andrew Biggs, president of the British Cattle Veterinary Association when he stated that "farm vets will have to become much more confident in data management, economics and consultancy and to become much more rounded non-clinicians" (Anon., 2006). In the absence of a holistic approach, the response to traditional veterinary therapies may become increasingly diminished (Buckley *et al.*, 2004).

| | |
|---|---|
| Strengths | Client contact, extensive knowledge, unique skills, farmer trust, access to pharmaceuticals. |
| Weaknesses | Marketing, too busy, disinterest, lack of specialisation |
| Opportunities | Decline in cow fertility, data availability, impartiality of service |
| Threats | Para-veterinarians, DIY clients, competing veterinarians |

**Figure 1: SWOT (strengths, weaknesses, opportunities and threats) analysis of veterinarians' role in herd fertility management.**

## What do veterinarians need to do to change their current role in fertility management on modern dairy farms?

The process of change begins with the incentives for change. Why should veterinarians alter their work routine to accommodate a new role in fertility management on dairy farms? For some it will be the financial incentive, whether this is because of client demand and increasing competition from other fertility service providers or diminishing income streams from medicine sales and emergency and ambulatory work (**Table 1**). For others it will be the intellectual stimulation of devoting more time to bovine reproductive problem solving and less time to routine state veterinary work or work in other species. Veterinarians should be conscious that change can be either managed or imposed and a change imposed is a change opposed.

The theory of reasoned action (TORA) states that the intention to alter behaviour is determined by the attitude towards the behaviour and the influence of others' views. Before embarking on a changed role, veterinarians need conduct a personal SWOT analysis (**Figure 1**) and to arm themselves with the required knowledge, skills and attributes both to address the five main causes of subfertility (management, nutrition, environment, genetics and herd health) and to effectively communicate their message to their clients.

Thus, whereas most dairy veterinarians are knowledgeable about infectious causes of subfertility, their knowledge of genetic effects on fertility (Horan *et al*., 2004, 2007) may be less comprehensive. All dairy veterinarians provide a manual pregnancy detection service but fewer provide a reproductive ultrasound or data analysis service (Mee, 2005). All dairy veterinarians palpate subfertile cows in inappropriate body condition but few link this to specific grassland management practices (Hennessy and Mee, 2007) or late embryonic mortality (Silke *et al*., 2002) or educate their clients in the practice and benefits of condition scoring. All dairy veterinarians observe poor grassland management or poorly mixed TMRs but few engage their clients in discussion about dairy cow feeding and the critical importance of DMI in relation to fertility (Patton *et al*., 2007). All dairy veterinarians walk through poorly illuminated, slippery cubicle houses but few suggest improved or alternative environments for breeding animals (Boyle *et al*., 2007). All dairy veterinarians have clients performing DIY-AI but few are aware of the critical insemination factors affecting fertility or audit client DIY-AI practices (Buckley *et al*., 2003). All dairy veterinarians assist at dystocia but few train their clients about when to seek professional assistance (Mee, 2004b, in press). All dairy veterinarians are presented with herds performing poorly but few collect reproductive data, analyse it and present their written conclusions to their clients.

In some cases, a first step may be in-practice meetings amongst veterinarians to share ideas, discuss problem areas and improve practice standards. The use of independent farmer focus groups to provide feedback on current veterinary services and suggestions for improved services is an innovative approach to guiding change (Loeffler *et al*., 2002).

**Table 1: Example of planned herd fertility services (HFS) offered by vets***

| Variable | Details (in order of importance) |
|---|---|
| No. of vets in practice | 1-7 |
| Herd size (No. of cows) | 25-2,500 |
| Main fertility problems | Repeat breeders, poor heat detection, and poor conception rates |
| HFS client profile | Fertility problem, large herd, educated client |
| Main components of HFS | Postpartum exams, records analysis, staff training, SOP design, problem investigation |
| No. of visits per year | 6-52 (depending on herd size) |
| Benefits to vet | Financial, personal satisfaction, client satisfaction |
| Benefits to client | Financial, improved fertility, records analysis |

* Questionnaire survey of 31 delegates at the Portuguese Buiatrics Congress, 2007

## How can veterinarians best implement their role in fertility management on modern dairy farms?

Though the goal may be veterinarian-led, planned, strategic management of reproductive performance, the uptake of this service has been highly variable within dairy industries internationally and within individual veterinary practices. Veterinarians cannot simply wait for the farmer to call for this specialised service, it must be promoted. The primary route to this goal remains through opportunities created by the clinical reproductive problems encountered by clients, so-called 'contact moments'. Rather than continuing to focus on problems of the indicator cow, the veterinarian needs to focus on what this cow tells us about the herd, become more 'data-literate' and realise that by repeatedly treating individuals alone they cannot influence the herd performance. Presented with these opportunities, particularly with a receptive client, it is up to the veterinarian to attempt to lever existing relationships to get higher levels of interaction with herd owners. Receptive clients have been defined as those with seasonal calving herds, larger herds, higher education levels, members of agricultural organisations, progressive and farm managers.

Each of these steps may take the veterinarian out of their clinical 'comfort zone', away from calling to the farm, examining and treating problem animals and towards 'paper-only' or 'web-based' consultations. The three stages of implementing veterinary herd fertility management are establishing current herd fertility performance, investigating the factors associated with it and designing a programme to improve it.

***Stage 1: Establishing current herd fertility performance***

Interpreting herd fertility performance data is a key role for veterinarians on modern dairy farms. Given the time constraints veterinarians work under and the poor quality of some on-farm data recording, collecting and analysing herd fertility data was a major limiting factor in veterinary management of herd fertility in the past. The recent emergence of specialist, often web-based, bovine herd fertility software ('the modern stethoscope') has greatly facilitated data access and analysis, though in some countries (e.g., Ireland) the number of herd owners recording and data quality are still limitations. HerdPlus (www.icbf.com) allows Irish veterinarians to assess current herd fertility performance, to examine temporal trends and to view comparisons with peer-groups and target metrics. The effects of chance due to small numbers in some groups or herds and outliers need to be recognised and KPIs (key performance indicators) interpreted accordingly (Mee and Buckley, 2003). Veterinarians need to scrutinise data sources to ascertain data quality and to be mindful of information not recorded in any source, for example, stock bull services. Many dairy farmers now have ample data on their herd's fertility and need technical advisers with appropriate skills in their interpretation.

***Stage 2: Investigating factors associated with current herd fertility performance***

The veterinarian is uniquely qualified to investigate why a dairy herd's fertility performance is suboptimal and to prioritise remedial actions. In order to ensure a methodological approach to each herd, drawing up an SOP or using a published SOP is the first step in an investigation. Such an investigative audit should encompass farmer assessment, records analysis, herd-level investigation (feeding, genetics, condition score, milk production, infections, mineral status), cow-level investigation (identification, health status, problem animal examinations), service factors investigation (general, AI/DIY-AI, natural service), problem identification and written report recommendations (Mee and O'Neill, 2005). This protocol has worked best where the farmer, farm manager, veterinarian and other relevant advisors meet on the farm and go through all aspects of the problem in a systematic manner.

***Stage 3: Designing a program to improve future herd fertility performance***

The dairy veterinarian is no longer viewed as the sole fertility service provider, but they are still viewed as the most important (Fowler and Tiddy, 2006). The roles of the veterinarian in a programme to improve future herd fertility on dairy farms may be listed as follows:

1. Lead the change from clinical calls only to a planned approach to herd fertility.
2. Demonstrate the benefit:costs of the program.
3. Schedule herd fertility management consultations.
4. Assist the farmer in setting SMART (specific, measurable, attainable, realistic, time-limited) goals.
5. Implement veterinary fertility management.
6. Monitor performance through animal examinations, laboratory results and data interpretation.

The design of a veterinary herd fertility management programme has recently evolved from scheduled herd visits (Borsberry, 2005) to a hazards analysis critical control point (HACCP) approach (Lean *et al*., 2003).

### Lead the change

Dairy veterinarians need to be as proactive in marketing their unique skills in herd fertility management as their competitors. Only veterinarians have the opportunities to expand clinical calls into a discussion about herd fertility management. Careful selection of clients likely to adopt such a programme and early 'wins' build confidence in both clients and the veterinarian and lead to word-of-mouth service promotion.

### Demonstrate cost benefits

Many studies on the economic costs of poor herd fertility have been published internationally (Seegers, 2006). However, fewer studies have been published on the cost

benefits of veterinary management of dairy herd fertility indicating a constraint requiring research. The most recent studies indicate a potential 4:1 benefit:cost ratio (Casura *et al*., 2000, Haab, 1999). The role of the dairy veterinarian is to convince clients that in their herd, with their level of fertility performance, veterinary management is cost effective. They may do this through innovative pricing (cost/hr, cost/month or cost/litre of milk sold, bespoke, subscription contract consultations, discounts on diagnostics, medicines and on routine and out-of-hours calls), herd-specific cost calculators (Roelofs and Hamoen, 2006) and forward planning of the annual fertility budget.

### Schedule consultations

The frequency of fertility management consultations, by appointment, depends on the calving pattern and size of the herd; being more frequent in seasonal, large herds during the breeding season and less frequent in non-seasonal, small herds. Such consultations should commence before cows are dried off to prepare for the reproductive cycle.

### Set goals

In designing a programme to improve future herd fertility performance, the ultimate goals should be set by the farmer and the role of the veterinarian is to assist the farmer in measuring and achieving these goals. Goals should be SMART (specific, measurable, attainable, relevant and time-limited), e.g., a 21-day submission rate of 75%. Setting interim mini-goals keeps all concerned focused, builds a sense of achievement and demonstrates progress or regression. Goals should focus on factors directly under control of the farmer and the veterinarian.

### Implement veterinary fertility management

Only dairy veterinarians can implement a comprehensive fertility management programme as they are the only multi-disciplined service provider who can integrate animal, management and data resources. Implementing veterinary fertility management involves the dairy veterinarian making a direct input into all relevant aspects of herd fertility management. Scheduled reproductive examination of animals (vaginal, uterine and ovarian) using a reproductive management calendar remains at the core of this program (Borsberry, 2005). In seasonal herds this may involve pre-mating-start-date examinations or in non-seasonal herds post-end of voluntary waiting period examinations. Outside of these visits, farm SOPs improve identification and treatment of problem cows. Veterinary supply and administration of pharmaceuticals to manipulate reproductive events and prevent or treat general ill health is a critical component of herd fertility management. Equally indispensable is veterinary knowledge of herd health, biosecurity and disease epidemiology and the role of vaccination strategies in fertility management. In dairy industries where high level veterinary fertility services have been provided for years, experienced veterinarians employ paraprofessionals to conduct routine fertility work and the vets migrate to full farm consultancy with fertility as only one aspect of their service (Scott McDougall, personal communication, 2007). Interestingly, while hoof trimmers are employed in veterinary practices in the UK, fertility paraprofessionals are not listed (RCVS, 2006), similar to the situation here.

### Monitor performance

Unlike other fertility 'experts' in dairy farming, the veterinarian is a regular visitor to the farm. In one survey, 96% of farmers reported having regular contact with their veterinarian (Fowler and Tiddy, 2006). Only veterinarians can examine the cows, conduct 'animal-based' measurements, collect appropriate samples for investigation, diagnose, prevent and treat ill health, assess feeding, environment, insemination and herd genetics and interpret herd health, production and fertility data. The role of the veterinarian in performance monitoring is to bring all these disparate management elements and data sources together to highlight both suboptimal performance and to suggest probable causes, make recommendations and prioritise solutions. The veterinarian is ideally placed to offer perspective on the herd's performance both through data analysis and knowledge of local herd cohorts. He or she should be able to identify 'at-risk' herds likely to benefit from a veterinary fertility management programme based on their risk factors for poor herd fertility.

## Challenges and prospects

So how can veterinarians and animal scientists in academia and research assist their colleagues in practice to be more successful in bovine fertility management? One might expect the answers to lie in more and better veterinary research and teaching but perhaps what practitioners need is not more of the same algorithmic approach but different. Undergraduate teaching of bovine theriogenology adequately imparts tier two competencies and it is incumbent on veterinarians to commit to life-long learning (Root Kustritz *et al*., 2006). The challenge for veterinary research is to provide veterinary practitioners with the empirical evidence that all the components of the alternative heuristic model proposed for use in the field have been successfully tested both individually and together.

In descending order of priority, these are the three key areas in which veterinary research and teaching can enhance the prospects of veterinary practitioners in the transition from client-led to veterinarian-led fertility management:

- Firstly, veterinary practitioners need hard economic evidence to show their clients that the holistic approach to fertility management actually works and is more cost-effective than the traditional 'fire brigade' approach. Hence, there is an urgent need for new research intervention studies which test these hypotheses in commercial dairy herds, similar to that with mastitis control in the UK (Green *et al*., 2007b). This needs to be supported by economic simulation models (Overton, 2006) that are user-friendly to allow practising

veterinarians to personalise research findings to their clients' management systems.
- Secondly, veterinary undergraduates and practitioners need increased levels of formal training in communication skills to tackle the primary constraint to adoption of veterinary fertility management, lack of farmer motivation.
- Thirdly, veterinary faculties need to provide a fourth level referral theriogenology service for veterinary practitioners as currently available, for example, in Denmark (Petersen *et al*., 2006) to support practitioners through the transition needed to be more successful in fertility management.

In conclusion, the decline in dairy herd fertility internationally has highlighted the limited impact of traditional veterinary approaches to herd fertility. The core role of the veterinarian remains individual animal examinations but this must be supplemented with systematic herd fertility investigation and veterinarian-led herd fertility management. The role of the veterinarian will continue to change with the growth of paraprofessionals, DIY farmers and herd fertility data providers and the availability of inexpensive or automated reproductive technologies. Veterinarians who fail to engage in this process of change risk being marginalised by others keen to promote their herd fertility services.

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