EP 1: Management strategies to reduce the risks from calf losses

Laura Rice says: Welcome to the Care4Dairy podcast series. I'm Laura Rice. Care4Dairy has developed best practice guides to support the welfare of dairy calves, heifers, cows, and end of career animals. The guidelines consist of a series of fact sheets on key topics, some of which are discussed in the podcast series.

Laura Rice continues: The project is farmer-centred and benefited from involvement of stakeholders from farming and veterinary organizations, as well as academia. There are four Care4Dairy podcasts, each looking at the different stages. In each episode of this series, I'll be joined by two guests, a representative from Care4Dairy and either a farmer, farm advisor, or a veterinarian.

Laura Rice continues: So today we are discussing management strategies to reduce the risks from calf losses and morbidity and mortality. And I'm joined by Dr. Catherine McAloon, a veterinarian from UCD Ireland, and our Care4Dairy representative Dr. Claire Littlejohn from IDELE. Thanks for joining me today to discuss this topic.

Claire, can you tell me a bit about you, IDELE, and how you got involved with Care4Dairy?

Claire Littlejohn answers: Yes, so I'm a researcher and I did my PhD in animal welfare and behaviour and in IDELE, I work as an animal welfare and behaviour researcher, but in ruminants. So that's how I joined the Care4Dairy project.

Laura Rice says: And Catherine, you're a veterinarian at UCD School of Veterinary Medicine and an European Specialist in Bovine Health Management. Tell me about your background and what led you to working in this area.

Catherine McAloon responds: Thanks very much. Yes, so I'm a veterinarian and after working for a while in practice in Ireland, I decided to return to UCD to do a specialisation in bovine health management. I did an extra three years training in that and also did a research degree in dairy cow nutrition. So, my European specialisation, I suppose, gives me an opportunity to work in the university. I do a bit of a mix of research, clinical work and teaching veterinary students. I'm very passionate about calf health, so I have lots of ongoing research in this area and we do a lot of troubleshooting calf health problems on farm as well.

Laura Rice asks: And you're also involved with the Animal Health Ireland roadshows on calf health. So, can you tell me a bit about that too?

Catherine McAloon answers: Yes. So, I've had the privilege of chairing the technical working group on Calf Care in Ireland for the last few years. I guess our remit is in knowledge transfer and dissemination of best practice to farmers.

Catherine McAloon continues: So, each year we organise a series of roadshows in January, before the calving starts here, because we're very seasonal in Ireland. And I guess it's just reviewing the key areas around calf health and welfare before each season. So, the roadshows have been very successful over about the last eight or nine years or so.

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Laura Rice asks: And Claire, promoting a strong immune system is fundamental to reducing calf losses. What are the Care4Dairy best practice recommendations to achieving this goal?

Claire Littlejohn explains: In the Care4Dairy project, we have three main recommendations. Firstly, to deal with the colostrum, we have to ensure an adequate passive transfer of antibodies to all calves by consuming colostrum within two to three hours after their birth.

Claire Littlejohn continues: Then there should be a second colostrum intake within six to 12 hours after birth. And this intake should bring to at least 10 percent of the body weight of the calf. If they are suckling either their dam or a foster cow, we have to ensure that cow is healthy, has enough colostrum and that it's of adequate quality. And we also have to make sure that the calf has access to the teats. By retaining contact with their dam or a foster cow and having the possibility to interact with other calves this will help them to develop positive feeding behaviours which obviously will support their immune system and also help them to stay healthy.

Claire Littlejohn continues: Another recommendation would be to rear them outdoors with, obviously, adequate shelter and comfortable lying areas as it can improve their health and lower morbidity and mortality rates. And finally, the third recommendation would be that to space out stressful events to prevent calves from becoming overwhelmed by those as it can impede their growth and cause immune suppression.

Laura Rice says: And so, you're recommending to keep the animals stress free and happy and healthy and it has a much more positive effect on the calf and suckling. Catherine many farmers across Europe do not allow the calf to suckle colostrum during the first day or longer as recommended best practice.

Laura Rice continues: What have you seen in practice that works well to ensure adequate colostrum intake and immunity in a calf allowed to suckle the cow?

Catherine McAloon responds: Yes, I think that's very interesting, I suppose, in terms of the farm system, I think that's probably the most fundamental at the start and really understanding that all different systems can work. And I guess it's about trying to provide bespoke advice to the farm system that you're working with. So, for that, cow-calf contact systems or foster cow systems they are certainly becoming increasingly popular. But there are logistics in terms of management of how the cows are calved so that there's not mismothering, et cetera, hygiene in the calving pen, stocking rate, all those things are quite important in terms of success.

Catherine McAloon continues: But I suppose regardless of the system, whether it's cow-calf contact systems or whether it's withdrawing the calf and hand feeding colostrum, the principles are largely the same. Ultimately, the calf colostrum intake has to be supervised, which means adequate labour and trained staff, et cetera. We can't just leave it to chance, as we know from historic data that can be very risky.

Catherine McAloon continues: We still need to test colostrum quality, so that can be done whether we're hand feeding colostrum or feeding it cow to calf. And testing the actual quality is very important. So, things like a Brix refractometer is a cheap piece of kit that every farm

should have. And we look for a reading above 22 percent on a Brix refractometer to deem that colostrum is adequate to feed to the calf. So, the quality, the supervision, and then finally the volume is important. Ensuring that the calf is vigorous enough soon after birth to get up and suckle, or if we are hand feeding colostrum that we make sure that we are feeding enough.

Catherine McAloon continues: So, I suppose to go back to the piece about what works well, in Ireland, we've about 1.1 million calves arriving inside 12 weeks. So, it's a slightly different system here in that it's more common that calves are hand fed colostrum. And again, that's just to do with the current system.

Catherine McAloon continues: Of course, systems can change, but again, the principles are exactly the same that farms are tuned into the absolute necessity to deliver colostrum by whatever means, whether it's cow to calf or directly fed to calf by hand. The process is similar to what Claire alluded to, at least the Irish industry advice is, quality is largely driven by how quickly, so there are lots of considerations, such as how the cow is managed in terms of low stress, but also her diet and her body condition score. All of these things are important, that she's in good health, that she's not running milk before calving so that she's not transitioning already, and that colostrum is collected quite quickly after calving. We would say ideally collect colostrum within the first hour after calving and that colostrum is fed to the calf within the first two hours and that we'd feed at least three litres, but then of course a second feed, or you could potentially feed four litres at one feed for lots of big calves. So again, we stick to the rule 10 percent of body weight. That can be difficult to ensure if you're doing a supervised cow-calf contact system. Again, the proof is in the pudding, it should be evidence-based, in terms of, you need to be very careful, have mortality, morbidity rates monitored. If your system is not broken, you don't need to do anything about it. If there are gains to be had in calf health, then it's about revising the colostrum management protocol.

Catherine McAloon continues: And then finally, if we are collecting colostrum by hand, which would be commonly done here, again given that there's probably large numbers of cows calving per day, it's difficult to have the labour or infrastructure to ensure adequate supervision. Then, hygienic collection and proper storage of colostrum so that it's not left unrefrigerated is very important, it needs to be collected very cleanly. These are neonates, so we need to collect it cleanly and then, if it's not being fed straight away, it should be refrigerated for a maximum of 48 hours or potentially frozen and fed later, or we are feeding a defrosted source. Again, there's a whole lot of detail, but the principles are the same, supervised, making sure it’s good quality colostrum is given quickly and enough of it.

Laura Rice says: You are both saying volume is very important within that first day. Care4Dairy also have recommendations that aim to reduce disease challenge and stress. Claire, can you tell us about these?

Claire Littlejohn answers: Yes, so the recommendation to reduce disease challenge and stress. We have important practices that we refer to as best practices. First of all, a farm must have staff who are trained in order to obtain a good human animal relationship. They have to use low stress handling techniques, so for that, they can use positive reinforcements, for example, grooming or treats, the use of treats, for example.

Claire Littlejohn continues: When there are painful procedures, such as castration or disbudding for calves, they have to ensure that every care is taken to minimise the stress for the animals and the pain that they experience because that can impact their recovery and it can accumulate with other stressors to negatively impact their health and welfare. They have to use the appropriate medication, which is either anaesthesia, sedatives or other pain relief. And at the farm level, another best practice recommendation would be health planning. For example, vaccination protocols, staff training to make sure that they correctly diagnosis and follow an effective treatment protocol for the management of those health issues.

Claire Littlejohn continues: Biosecurity is another very important topic. Calf enclosures should be separated from other animals. Except, of course, if they are with their dam or a foster cow. And calves should be reared in, as much as possible, homogenous groups because that would help prevent disease transmission between them and with other animals, which is obviously vital for the animal and the farm.

Claire Littlejohn continues: For the staff, their workflow should always go from clean to dirty. And they should obviously follow biosecurity routines. For example, when handling sick animals, they should have specific protective equipment to help them limit disease spread between animals.

Laura Rice asks: And Catherine, what have you seen as the key success factors for calf environments in practice?

Catherine McAloon responds: Yes, that's a really interesting question and some colleagues in the research group at UCD have been looking at the impact of the environment on calf pneumonia, a very common calf disease. We get asked this question a lot, “how do I build the ideal calf shed?”, whether that is for cow-calf contact system or whether it is for calves reared separately. The principles of environment and how it can impact disease in calves is important. But it's also an area where we do lack a lot of research in terms of, really concrete advice. So, a lot of it is again, working with the farm you have and trying to promote the most environmental factors that can control the controllables, so it's not going to be a one size fits all, this means that control measures should be adapted to the farm. I think the reality is that we have a lot of research now to show that we shouldn't be rearing calves in isolation. They should be at least pair housed or group housed or potentially reared with their dam, but still, they need an area separate for themselves to lie.

Catherine McAloon continues: I guess it's about access to lots of fresh water, access to feed but I guess specifically to the environment, there are a few things that we would look at, to really try and distil into the detail, if we were looking at a farm, either design or investigation of a health problem. Those things would be the kind of shelter that's provided, so it depends if the cow or if the calf has access to indoors and outdoors or whether it's just indoors. Those kinds of things are important. They certainly need an area to exercise and run around. There's nothing more heartening to see as young calves playing around in a clean, well-bedded shed, with lots of room.

Catherine McAloon continues: Other considerations, I suppose there are three factors. One is ventilation, the other is temperature control and finally moisture control within the environment. How we go about that is, ventilation's quite a difficult one, but ultimately, we need to provide fresh air to the calves, to remove stale air and pathogens from the shed. We

also need to make sure that is done without creating a draft or, increased air speed around calf level because that can really upset them. So that can be done in lots of different ways. At least in Ireland, we rely a lot on the wind, which we have quite a lot of, so it's about shed design to promote adequate air inlet, shed orientation to the prevailing wind, allowing fresh air through the shed, but not at calf level. Again, blocking up drafts at calf level, that kind of thing. There are all sorts of different ways, in hutches, for example, their positioning is important. And also, there are systems where we can actually control the ventilation in the shed, like positive pressure ventilation system. It's whatever we can do to maximise fresh air and remove that stale air without drafts.

Catherine McAloon continues: The temperature control is important because calves, particularly under four weeks of age, really need to use energy to keep warm. If we don't do that for them, then they have to direct that feed energy away from immunity and growth and so on, and they become cold stressed. And that's a problem right across Europe. So how we do that is, again, it's back to shed design, but ultimately things like bedding, lots and lots of fresh clean bedding with high nesting scores. That means that they are cosy, and their legs are tucked up within straw. And that's important for the young calf.

Catherine McAloon continues: There are other things that I've seen work like calf jackets potentially, on some farms, but I don't think they're a one size fits all again, for some farms they work, for some they won't. We need to feed calves enough milk, because that also helps ensure temperature control.

Catherine McAloon continues: It's about controlling the environment where possible. Unlike pigs, poultry, or potentially some of the veal systems, where it's completely controlled in a closed system, we really have to work to reduce the environmental risk factors for disease, to make sure that we're controlling everything we possibly can in a farm environment and that will be different from farm to farm. Finally, the drainage is important as well. So, we'd like a sloped floor, channels cut in it, able to really try and help remove that moisture from the shed, because obviously there's a lot of urine build-up and so on. Having adequate drainage within calf pens, whether it's a pair housed calf or whether it's a group housed calf or even under hutches, again, that's important. I think those things are really the kind of details that we want for environmental controls. The one thing that will modify all of this is stocking rate, so that they're not overstocked because you can do a lot by making sure that there are not too many animals in the one airspace or the one floor space. So at least in Ireland at the moment, we're recommending a minimum of two meters floor space that is likely to go to three meters floor space, given the new EFSA advice, at least for the kind of bedded area. And then with much more space allowed for them to play. So, there's quite a lot in the environment and again, it comes down to each individual farm where we could make marginal gains to promote the individual environments to allow the calves to express, as normal a behaviour as possible, play, foraging and social interaction, et cetera.

Laura Rice says: So, their environment is really important, and it makes a huge difference. And Claire, what would you say are the best practice recommendations regarding monitoring calf health?

Claire Littlejohn answers: The best practice that are recommended in the Care4Dairy project are to enable proactive, prophylactic care, but also to ensure a responsive intervention as soon as illnesses or injuries are identified.

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Claire Littlejohn continues: And in order to appropriately do that, farmers should conduct regular health management planning and review it with input from both their farming advisors or their veterinarian to make sure that they can safeguard the health status of all animals on the farm. And so that should ensure that there's both a preventative, but also a responsive plan in place.

Claire Littlejohn continues: And if there are complications occurring during those established protocols, best practice farms would seek veterinary advice before revising the protocol that they are currently using. And obviously, last but not least, all health plans should obviously comply with local regulation.

Laura Rice asks: And as a veterinarian yourself, Catherine, how can veterinarians best support farmers in health planning, including when they should call a veterinarian?

Catherine McAloon responds: Yes, I think there can be a huge benefit to having the veterinarian as part of calf health, but the same applies across all life stages. We talk about herd health problems. We talk about our herd health cycle and, farmers are used to monitoring fertility benchmarks and cell count benchmarks and so on. But sometimes the mortality, morbidity, the key performance indicators around rearing calves, have to be really looked for. So, I think that seeing your veterinarian as not somebody who is just there to react and troubleshoot a problem but can be involved in the proactive health planning is a key consideration. And having that veterinarian so that they, really understand the farm system, so what's the labour requirement, who is available, who needs to be trained, maybe a refresher course on calf care. We do, at least in Ireland, lots of refresher courses in the early season, December, January, so that things like Standard Operating Procedures are in place. And I think whatever the farm system is or the farm size, that they can be really helpful. So, things like, what's the colostrum protocol, who's in charge of delivering that, who's going to test the colostrum, when is the veterinarian coming to monitor the passive transfer in the calf? We would recommend that there are screening tests done on 10 to 12 calves, blood tested for passive transfer to evaluate the colostrum management performance and that Standard Operating Procedures are in place for the cleaning of both colostrum and feeding equipment. So whether calves are on automatic feeders or not, there needs to be a system in place for how often the teats are cleaned and rotated, or how often milk bars and buckets are properly cleaned, and there's detail within that. I think having input into the hygiene as well as, the overall feeding plan, those things are really important.

Catherine McAloon continues: For the specific health challenges on the farm, there's not a one size fits all vaccination program. Some calves will benefit from young calf vaccination, some will be better having it later. Again having, a good relationship with your veterinarian so that you can have that advice bespoke and tailored to the farm.

Catherine McAloon continues: Protocols for management of sick calves, so that every farm knows that at the development of diarrhoea, for example, that, ideally those calves are isolated or there's some kind of hospital facility where they can still have sort of contact, but can maybe break infection, control infection cycles. Early intervention is important with any calf disease, whether it's scour, or diarrhoea, or pneumonia.

Catherine McAloon continues: So again, having a protocol that the farm would, at least getting electrolytes delivered to the calf on day one and that then they know when to call the

veterinarian. So, if it's ill, the calf's not feeding, for example, for maybe a couple of feeds, if it's recumbent, if it has a temperature, that those are things that will need intervention. Again, working with your veterinarian to develop a bespoke protocol so that calves are treated very promptly and effectively.

Laura Rice summarises: Yes, it is important to get the veterinarian involved at an early stage. The take home messages are the importance of promoting a strong immune system in the calf, which is done through colostrum intake from suckling, calf comfort and reducing stress and reducing disease through health planning and biosecurity and then getting veterinary advice early.

Thank you so much for your time to my guests Dr. Claire Littlejohn from the Care4Dairy Consortium and Dr. Catherine McAloon from UCD.

Laura Rice continues: Thank you for listening. For more information, visit the Care4Dairy website, www.care4dairy.eu, where you can find more information on this podcast topic, the other podcast in the series, best practice guides and fact sheets on the welfare of dairy calves, heifers, cows, and end of career animals. My name is Laura Rice.

Thank you for listening.