A new App to record congenital defects in dairy and beef calves

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Summary

- A mobile phone app. was developed for veterinary practitioners to collect data and images of 90 deformed calves in dairy and suckler herds.
- The three most common individual defects recorded were intestinal atresia / hydrops (blockage of the bowel), schistosomus reflexus, (calf turned inside-out) and palatoschisis (cleft/split in the hard palate of the mouth).
- The most common reasons for farmers to call the vet to attend these cases were to assist at a difficult calving (hydrops and schistosomus), to euthanise a calf (atresia) or to address a calf health problem (cleft palate).
- Use of a veterinary practitioner mobile app ensured more accurate recording of the types of congenital defects occurring in dairy and suckler herds.

Introduction

It is probable that the nature and extent of congenital defects (deformed calves) seen by veterinary practitioners on farms in the spring differs from that seen in the vet labs. This is because only a very small proportion of affected calves are brought to the vet labs and these are probably a biased sample of affected calves. Thus, the official presentation of such defects may not accurately reflect what is happening on farms. This has implications for the prioritisation of control of congenital defects. In order to determine whether this recording bias exists, a nation-wide study was set up with the largest corporate veterinary practice in Ireland. The objective of the project was to field-test a mobile phone app designed for use by veterinary practitioners to collect clinical case data on routine farm visits. Bovine congenital defects were used as an exemplar topic; others will follow. Ultimately, the aim was to assess the potential for practitioner-gathered clinical information, allied with analytics, to generate a repository consisting of an image gallery and associated clinical notes.

Research study

In total, 35 vets in 21 veterinary practices distributed nationally across 15 counties participated in the project. Information and images were collected during routine farm visits (mainly calvings) onto a mobile phone using Typeform. The questionnaire consisted of 15 questions; three photos could be collected/case. The results from the pilot study are reported here.

Description of the animals

Congenital defects were recorded in 90 dairy and beef calves; 59 in dairy (n=57 Holstein/ Friesian) and 28 in beef cows' (10 Limousin, 8 Charolais) calves. The dairy cows were most commonly bred by Holstein/Friesian (19) or Aberdeen Angus (16) sires and the beef cows by Charolais (9) or Limousin (8) sires. Both the dairy (17) and the beef (8) dams were most commonly bred by stock bulls, though breeding method was poorly recorded (53 missing). The majority of both dairy (46) and beef cows (18) were multiparous. The majority of calves were singletons (83), born at fullterm (86) mainly at assisted calvings (48).

Most common defects

The three most common body systems affected by the defects were the musculoskeletal (45), digestive (30) and multiple systems (5). The three most common individual defects recorded were intestinal atresia (17)/hydrops (10, blockage of the bowel), schistosomus reflexus (19, calf turned inside-out) and palatoschisis (7, cleft/split in the hard palate of the mouth). The most common reasons why the farmer called the vet to attend these cases were, in descending order, to assist at a difficult calving (hydrops and schistosomus), to euthanise a calf (atresia) or to address a calf health problem (cleft palate). On the majority of farms, no (49 farms) or only one case (10) of the recorded deformity had been seen previously.

The preponderance of externally-visible body system defects is not surprising given that necropsy examinations were not conducted. This mirrors farmer-recorded defect recording but diverges from necropsy-confirmed defects. Of the common individual defects recorded, the study confirmed the often under-diagnosed prevalence of intestinal atresia in Irish cattle herds. In contrast, the high relative incidence of schistosoma reflexus and palatoschisis differs greatly from both vet lab submissions and research study data.

Potential role for veterinary apps

By using farmer-, veterinary practitioner- and veterinary laboratory/researcher-recorded data a more accurate picture of the actual occurrence of congenital defects on cattle farms will emerge. To date the veterinary practitioner component of this conceptual model has been overlooked; this proof-of-concept study attempts to correct this deficit. The project also highlights the potential and capability of veterinary-practitioner apps to pick up changing trends in endemic, or the emergence of novel, congenital conditions. The Schmallenberg virus outbreak emphasised the importance of this veterinary practitioner and vet lab role. The repository generated here can be a valuable peer-to-peer awareness-raising, educational, investigative and surveillance, mobile phone-accessible, resource. This veterinary-practitioner-led data-recording model is also latent with possibilities for similar uses across other clinically relevant conditions for farmers.

Project upgrade

Following completion of this pilot project, a re-evaluation of the questionnaire has highlighted potential improvements to reduce missing data (no by-pass answer edict) and improve data (more precise question wording) and photo quality (specific image collection protocol).

Conclusions

This project highlighted a new picture of deformed calves occurring on dairy and suckler farms. The key value points arising from this pilot project were 1) app convenience of use by busy practitioners, 2) generation of a unique photo-archive and 3) ease of model upgrade based on practitioner feedback.

Acknowledgements

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