

**INVESTIGATION OF THE EMERGENCE OF A NOVEL  
BLEEDING DISORDER OF CALVES (BOVINE NEONATAL  
PANCYTOPENIA) IN GREAT BRITAIN**

(An investigation commissioned by Defra's scanning surveillance programme)

BRIEF FOR DEFRA – 18 JANUARY 2010



This brief describes the investigation to date of the emergence of a novel bleeding disorder in calves, BOVINE NEONATAL PANCYTOPENIA (BNP), carried out in Great Britain.

## **Background**

The Scottish Agricultural College (SAC) observed a small number of unexplained cases of bleeding in calves during the summer calving seasons of 2007 and 2008 through their national scanning surveillance programme. From the beginning of 2009, similar reports from other EU countries were increasing, which triggered a Great Britain-wide investigation commissioned by Defra's Scanning Surveillance Programme. Scanning surveillance is carried out by the Veterinary Laboratories Agency (VLA) in England and Wales and by SAC in Scotland and the two agencies collaborated and designed an investigation in Great Britain (GB) aided by the Moredun Research Institute and Edinburgh University. The first confirmed case in Scotland was reported in April 2009 and the first confirmed case in England was reported in May 2009.

## **Investigation methodology**

The investigation applied standardised protocols, data handling and interpretation for all participating laboratories throughout GB. The investigation team was formed using experts from a range of disciplines to ensure high standards in all. The project team consisted initially of pathologists, virologists, cattle veterinary experts and epidemiologists with the potential to include other specialists as required.

A clinical case definition to assess eligibility of calves for inclusion within the investigation was distributed to all participating laboratories and a standardised protocol for necropsy was designed. Standardised sets of samples were sent for histopathology examination by two pathologists and interpretation and classification schemes were agreed and applied by both.

An extensive questionnaire was designed to capture standardised information on the husbandry and health status of case calves and their dams. All completed questionnaires were sent to the Centre for Epidemiology and Risk Analysis (CERA) at VLA and stored in an electronic database.

In an attempt to establish the extent of this disease, a survey was conducted among private veterinary cattle practices. A letter was sent asking practices to identify any cases of unexplained bleeding in young calves in the last three years. The letter was also intended to alert the private veterinarians to the investigation and encourage submission of suspected cases to VLA or SAC. All responses were sent to CERA and entered into an electronic database.

Additionally, national cattle demography data were examined retrospectively for signs of increased mortality among calves less than one month of age in different regions of the country.

## **Main outcomes**

- The official name of this disorder is currently "Bovine Neonatal Pancytopenia" with an agreed common term of "Bleeding Calf Syndrome". This terminology has been agreed with researchers elsewhere in Europe.
- Different clinical manifestations were seen ranging from calves being found dead to unexpected excessive bleeding with secondary infections and malaise.
- Most calves first showed clinical signs between 1-2 weeks of age and the majority died within a few days of first showing clinical signs.

- By December 2009, 89 cases had been examined by histopathology of which 97% of these had bone marrow pathology consisting of trilineage hypoplasia, which is the histological lesion of 'aplastic anaemia'.
- By January 1<sup>st</sup> 2010, cases had been reported in 27 regions of GB. The cases were seen in the most calf dense areas of GB (see attached maps – figures 2 and 3).
- The incidence of cases remained low and could not be detected through increased calf mortality in the national herd
- The survey among private veterinarians revealed very few suspected cases in 2007, a few more in 2008 and a large increase in suspected cases in 2009.
- By November 1<sup>st</sup> 2009, 75 cases had been identified through the scanning surveillance system and had husbandry information captured through the questionnaire

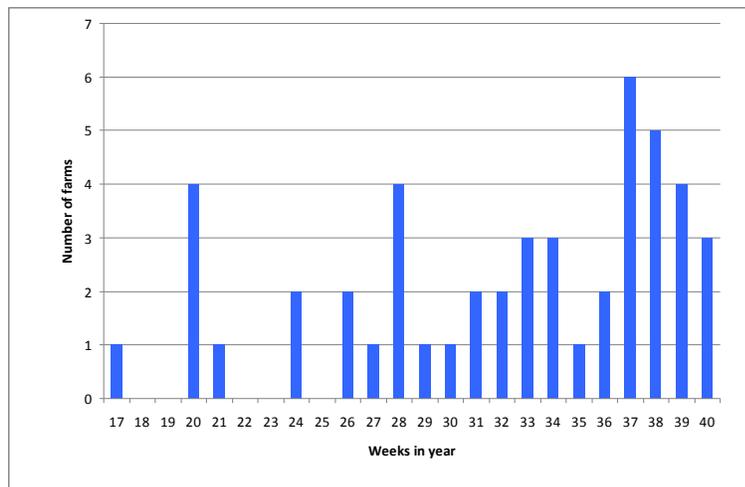
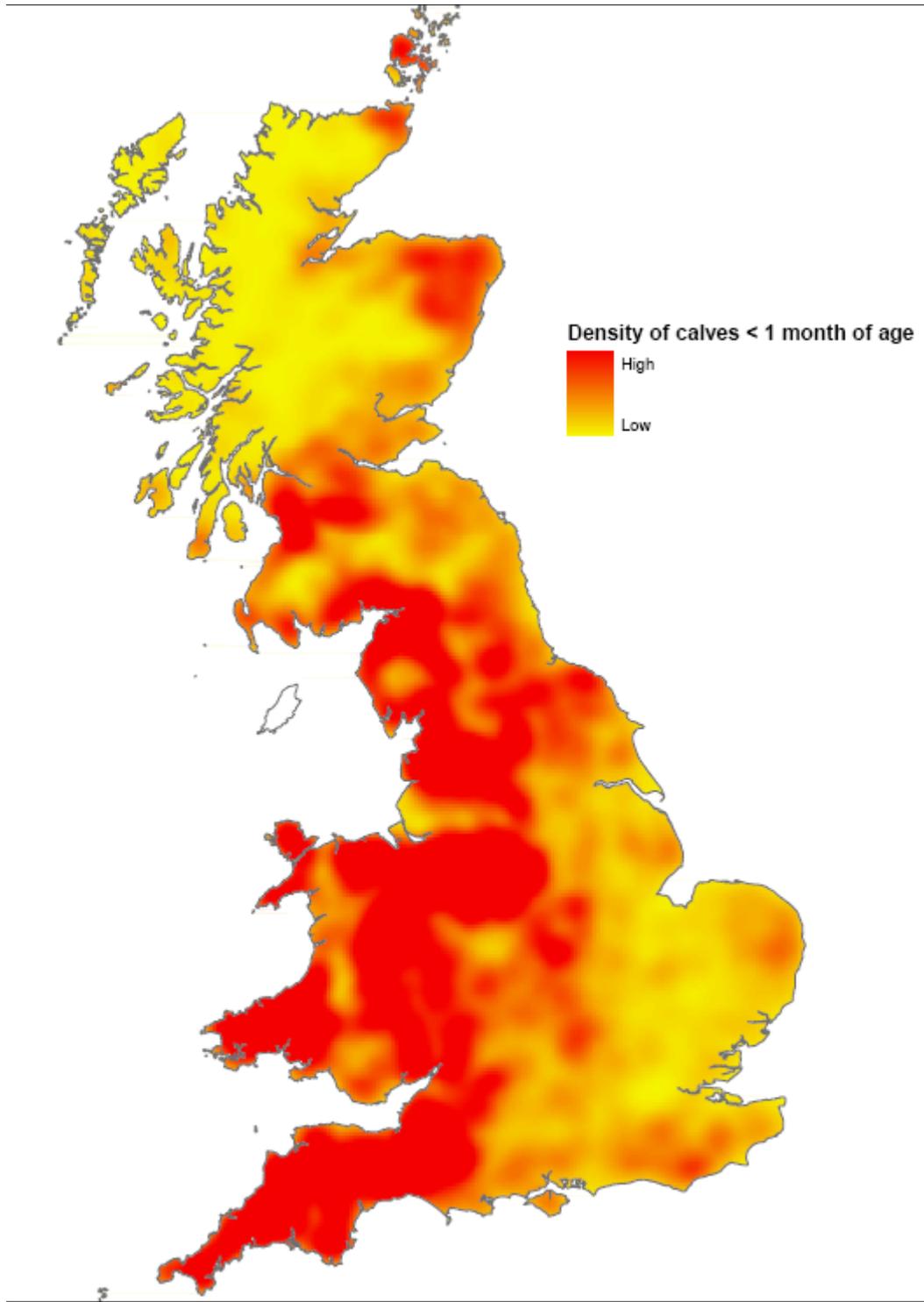


Figure 1: Graph showing the number of farms reporting their first case to a VLA or SAC laboratory (by week)

Figure 1 shows the week each farm reported its first case to a VLA or SAC laboratory subsequent to the start of the investigation (week 17 was the week commencing 19 April 2009). All of the farms represented in figure 1 were included in the epidemiological case report.

- The 75 calves originated from 49 herds. Of these, 29 were mainly dairy herds, 15 beef suckler herds and 5 were classified as "other".
- The herds were larger than the national average and 30 kept sheep. The proportion of organic farms was larger than expected.
- At least one vaccine had been administered to the dams of affected calves, and these included e.g. BTV, BVDV, IBR and Leptospira vaccines.
- The majority of case calves were housed and the majority were reported to have received colostrum from their own dam.

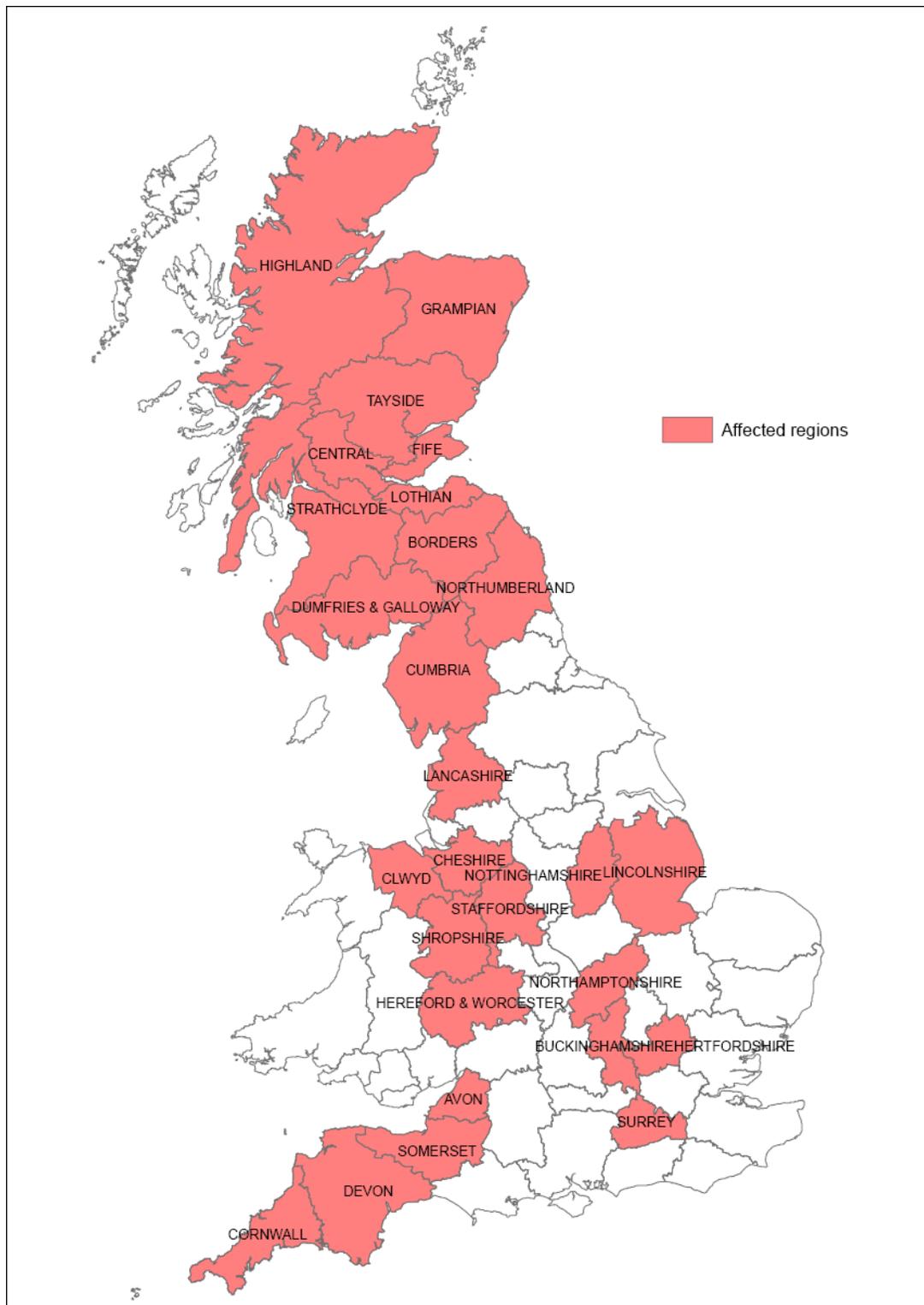
- A case control study is currently being planned to examine some of these practices in more detail and to assess whether any of them pose an increased risk of this syndrome.
- Further investigation into potential immunological and infectious causes are being undertaken
- Longitudinal studies to map the epidemiology within farms are currently being designed.



CREATOR: CERA GIS Team

DATE: 12 January 2010

Fig. 2: Density of calves <1 month of age on 1st of June 2009\*  
(Source RADAR)



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**Fig 3: GB regions with at least one reported case of Bleeding Calf Syndrome**

